DISASTER INVESTIGATION

All about the M/V Estonia disaster 1994

A contribution to better ferry safety at sea

This book is dedicated to my beloved friend Elke Masczyk

14 August 1951 - 9 March 2002

"... je refuse la guerre et tout ce qu'il y a dedans... Je ne la déplore pas moi... Je ne me résigne pas moi... Je ne pleurniche pas dessus moi... Je la refuse tout net, avec tous les hommes qu'elle contient, je ne veux rien avoir à faire avec eux, avec elle... c'est eux qui ont tort... c'est moi qui ai raison, parce que je suis le seul à savoir ce que je veux: je ne veux plus mourir."

L-F Céline

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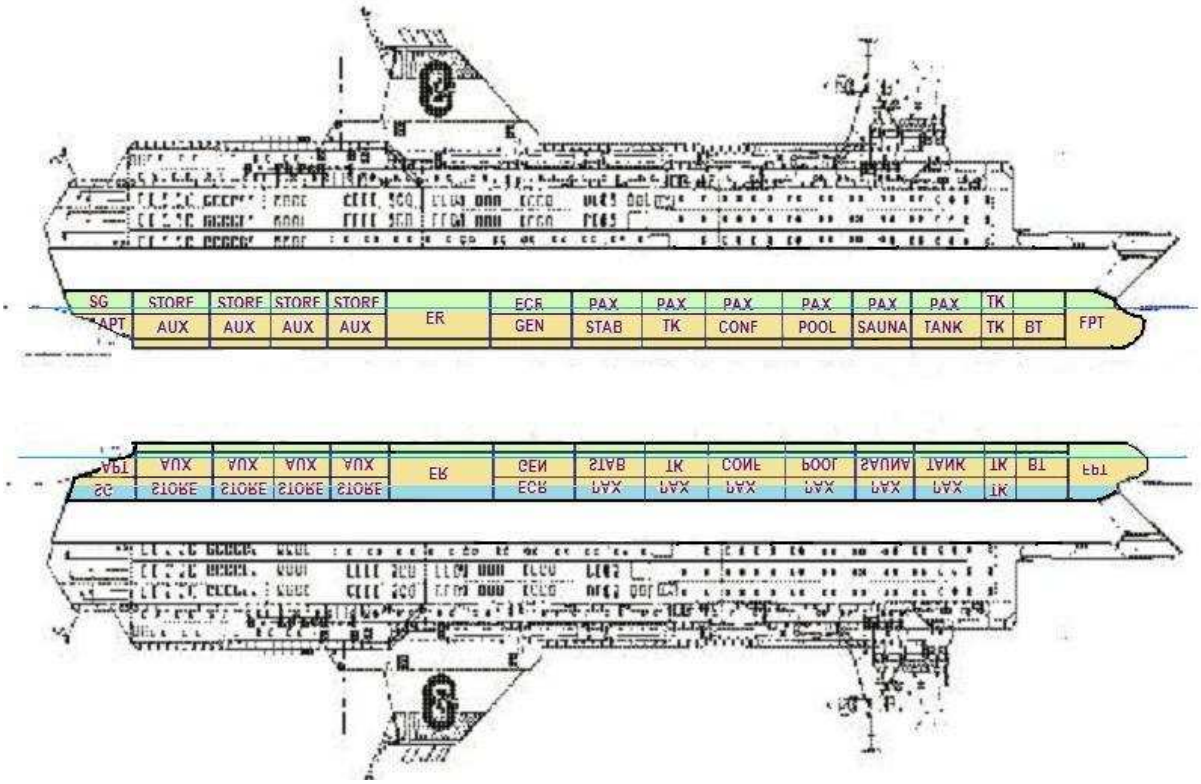
PREAMBLE 2009 TO THE ENGLISH EDITION OF KATASTROFUTREDNING

It is with great pleasure this book is put on the Internet in PDF format 2009.

The MV Estonia *sinking* is still not explained 2009! Even worse – more false info is spread!

According two research establishments, Chalmers University/SSPA/**Safety at Sea**, Ltd., at Gothenburg/Glasgow and **HSVA** at Hamburg 2008, the *capsized* but still floating M/S Estonia sank on 28 September, 1994! They were 2006-2008 paid >SEK 12 millions by the Swedish government/Vinnova to explain why. How did she sink?

No details or calculations (!) are available in any reports about the capsized *floating* condition at 01.30 hrs and why/how it changed in the next 20 minutes permitting *sinking*! As seen in below (simple) figures the M/S Estonia, *prior capsize*, floated normally on/displaced 11 930 m^3 buoyancy in the hull (10 666 m^3 air, 1 264 m^3 solids, permeability 0.894, in **14** watertight compartments) according Archimedes with 6 886 m^3 volume *above* waterline but *below* the watertight main deck (6 156 m^3 air and 730 m^3 solids, permeability 0.894) ***reserve buoyancy***. Total *hull* volume is 18 816 m^3. Everybody agrees to that.



Above main deck in the *superstructure* and *deck house* were another 3 906 m^3 of solids.

According above research establishments Estonia loaded 1 000's of tons of water in the superstructure >2 m above waterline, which resulted in the vessel capsizing and *floating* upside down at 01.30 hrs. Evidently the water in the *superstructure* doesn't affect *buoyancy* after capsize!

Upside down, after capsize, Estonia thus still *floats*, now with 3 191 m^3 of hull above waterline. About 5 012 m^3 of **water** is then *inside* the 14 watertight hull compartments compressing the air there. The vessel displacement is still 11 930 m^3: the displacement consists of two parts; 8 024 m^3 *compressed* air/solids in the hull + 3 906 m^3 solids in the superstructure/deck house. So the buoyancy of the capsized ship consists 67% of compressed air in the hull and 33% of submerged solids! It seems everybody also agrees to that.

No air can escape from the **14** hull compartments in this condition, so *the vessel cannot sink*. In model scale 1/40 and tests the model evidently floats higher after capsize, as the air pressure inside the model hull is less. **But neither ship nor model can sink after capsize!** Archimedes looks after that! *Any undergraduate student using a calculator can conclude that a capsized, floating ship cannot sink.* But according above research establishments and Chalmers University it can!

Dr. Dracos Vassalos of Safety at Sea, Ltd., has refused to assist in explaining the alleged loss of buoyancy of MV Estonia's **14** watertight compartments between 01.30 and 01.52 hrs. Vassalos is not interested to resolve the confusion he is causing. And he lectures stability at the University of Strathclyde. Poor undergraduates.

Strangely enough the Safety at Sea Ltd 's partner SSPA, Gothenburg, part of Chalmers University, makes exactly the same unexplained error, when calculating *buoyancy* in **14** watertight compartments and floating *after* capsize and performing model tests of the sinking (SSPA report no. **4006 4100-4**). None of the research establishments seem to know that capsized ships also float on solid material buoyancy that was *above waterline* prior capsize!

In order to sink the model, SSPA releases air from the capsized hull via two hidden valves in the bottom! **This is unscientific, improper cheating!** SSPA is part of Chalmers University of Technology and has been informed about the manipulations. According the President of Chalmers, Ms Karin Markides, *the Chalmers opinion is that the process has been open and well meets the demands put on a complex process such as this* (letter Ref. No.: C2008/627 of 25 August 2008). This is nonsense. The errors have been pointed out to the scientists, which have ignored them!

The Swedish Government states in its Proposition "**Ett lyft för forskning och innovation**" (A step up for research and innovation) (prop. 2008/09:50) that the importance of public confidence remains and is reinforced, when handling questions of suspected manipulations of research at Swedish universities.

The university is responsible to investigate suspicions about manipulations of research as per Chapter 1, § 16 of the Rules for Higher Education Institutions (högskoleförordningen) (1993:100). The university, as employer, must also take actions against employees when manipulations of research have been observed.

In the latest Proposition above the Government suggests that the responsibility of the university remains to investigate suspected manipulations of research, but that also an external investigation of suspected manipulations of research by experts outside the university may in certain cases contribute to the confidence of any investigation.

In this case Chalmers University, SSPA and Ms Karin Markides are breaking the law.

SERIOUS ERRORS IN THE SSPA REPORTS

The SSPA report no. **4006 4100-4** - **Foundering tests** - contains serious errors. The errors concern what happens when M/S Estonia in **full scale** and **model scale** capsizes and floats upside down on the compressed air enclosed or trapped in the hull. Evidently the pressure on the enclosed air differs in full scale and model scale as explained with the below figures 1-4. When the scale is 1/40 the water pressure on the air inside a capsized hull is abt. 50 times smaller than in full-scale. But the vessel does not only float on compressed air upside down. The total volume of the ship's superstructure and deck house below water is then about 59 190 m^3 and it contains a fair amount of buoyancy. With an average permeability of 0.934 (space full of water) there is still 3 906 m^3 of material (incl. cargo) in the superstructure and deck house that provides buoyancy.

FULL SCALE

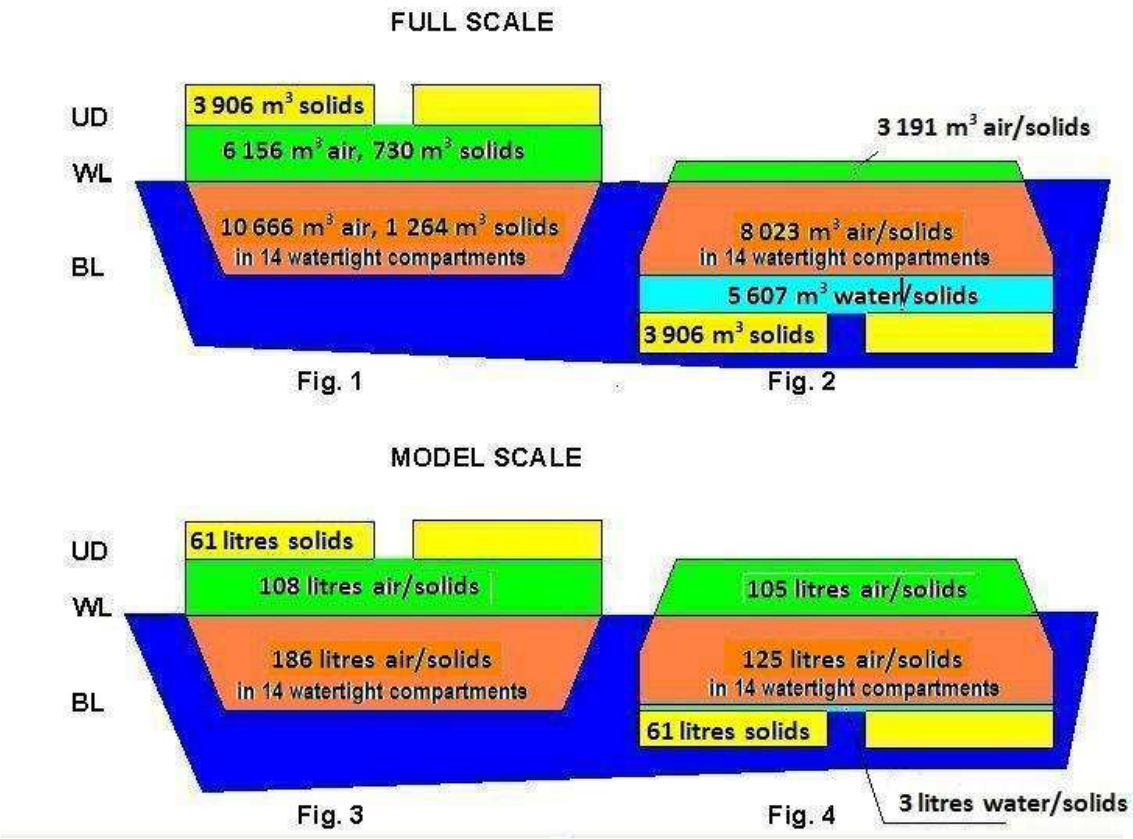
In fig 1. below Estonia (full scale) floats in the **water**. Her **displacement**, i.e. the volume of water below water line pushed aside by the hull, is abt. 11 930 m^3 (10 666 m^3 air, 1 264 m^3 solids in **14** watertight compartments) and she has abt. 6 886 m^3 (6 156 m^3 air, 730 m^3 solids) ***reserve buoyancy*** between waterline (WL) and main

deck (UD). Her draught is abt. 5.2 metres. The vessel floats due to this displacement/buoyancy; compare Archimedes! The total volume in the hull (**displacement** + ***reserve buoyancy***) is then abt. 18 816 m^3 of which 16 822 m^3 is air and 1 994 m^3 is solid material.

Above the hull is the car deck superstructure and the deck house but they do not contain any *air* providing buoyancy. However, the superstructure and deck house, below water after capsize, contain material that occupies volume which in turn provides buoyancy; e.g. if there is 3 910 tons of steel (specific gravity 7.82) in the superstructure and deck house below water, it occupies 500 m^3 and thus provides 500 m^3 extra buoyancy or, if there were 5 000 tons of other objects in the superstructure and deck house with specific gravity 1.47 (wall and ceiling panels, carpets, furniture, cargo, etc), it occupies 3 406 m^3 and provides another 3 406 m^3 extra buoyancy. Note that this extra *non-air* buoyancy is not subject to compression. **Thus Estonia probably had about 3 906 m^3 of buoyancy in superstructure and deck house that would assist her floating upside down after capsize.**

When Estonia has capsized, fig. 2, she floats upside down due to buoyancy of solid material now below water + air trapped inside the hull. The air in the hull is compressed due to external water pressure at a new equilibrium. The bottom of the compressed air bubble in every watertight compartment is say 5 metres below waterline and the air has been compressed to abt. 11 215 m^3at abt. 1.5 bar.

As you still need 11 930 m^3 **buoyancy** to float on and you have 3 906 m^3 in superstructure and deckhouse + 11 215 m^3 compressed air at 1.5 bar in the hull, there is abt. 3 191 m^3 volume of the hull that remains above waterline. That's where the ***reserve buoyancy*** ended up. Estonia thus floats upside down with >2 metres of the hull above waterline, WL. 5 607 m^3 of original air volume in the hull is replaced by **sea water**.



MODEL SCALE

In model scale, say 1/40 used by SSPA, the total volume of the hull is only 18816/64000 = 0.294 m^3 or say 294 litres of which 186 litres is **buoyancy** (the model weighs 186 kgs and displaces abt. 13 cms) and you have 108 litres of ***reserve buoyancy*** - see fig. 3. The model also has an unknown amount of buoyancy in the

superstructure/deck house which should correspond to 61 litres of air. When the model turns upside down, it floats on 61 litres of solid material below water and 125 litres of compressed air inside the model hull. But then the outside water pressure on the air is only about 10 cms of water or 1.01 bar, so the volume of compressed air inside the model is only reduced by abt. 3 litres! As the model requires 186 litres **buoyancy** to float, there remains 105 litres ***reserve buoyancy*** in the hull above WL after model capsize - see fig. 4. **Thus the model will float with about 10 cms of hull (4 metres full scale) above WL**! Reason is simply that the pressure to compress air in the hull is abt. 50 times smaller in scale 1/40.

To adjust that height to full scale you have to allow abt. 55 litres (3 529 m^3 full scale) of air to escape from the model. The model will then still float with the remaining 50 litres of air (3 191 m^3 full scale) above WL.

If Estonia full scale would have floated upside down, Estonia model scale would have floated upside down. No sinking. Apparently it was not the case as in the model tests the model sinks slowly (after air in the hull is slowly being released).

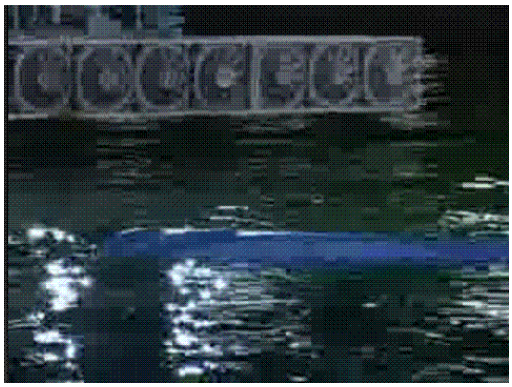


Fig. 5 - SSPA model of Estonia floats after capsize!

How does SSPA describe this in its report?

> *"A number of tests were carried out where the model capsized, trapped air and remained floating upside down. The volume of this trapped air was measured, and a mean value was found to be around 40 litres* (2 560 m^3 full-scale) *. Also the pressure of the trapped air was measured. The scaling laws give for the present situation that about 20% of the trapped air should be evacuated to give a proper remaining amount of trapped air in the model, see Appendix 1. In this case around 8 litres* (512 m^3 full-scale) *could be let out in order to fulfil the scale laws. The two valves in the bottom of the model were calibrated giving a flow of 6.7 litres* (429 m^3 full-scale) *each per minute at the actual pressure. This means that one valve could be held open a little more than 1 minute during the test."*

Not very scientific or convincing and not in accordance with real full scale and model scale situations. There is no mentioning that there are 14 watertight compartments in the hull. SSPA ignores completely the extra, permanent buoyancy provided by the superstructure and deck house that are now below water. That buoyancy is around 3 906 m^3 full-scale or 61 litres model scale. 105 litres air model scale is 3 529 m^3 full scale and maybe this what Estonia had *above* waterline after capsize. There are about 125 litres air and 61 litres of solids below waterline to float on. 6.7 litres model scale is 429 m^3 full scale! Why let that out per minute? SSPA knows that the full scale ferry could not have sunk at all after capsize.

The SSPA report does not include any descriptions and calculations of buoyancy of solid material in hull, superstructure and deck house and (compressed) air in the hull of Estonia full scale and in model scale and available buoyancy after capsize. It is very serious. How can you explain sinking, if you do not calculate available buoyancy at every instance?

CONDITION FOR IMMEDIATE SINKING

It should be noted that, if Estonia full scale did not have 6 886 m^3 ***reserve buoyancy*** in the hull as assumed in figure 1 above, but only 4 000 m^3 ***reserve buoyancy*** and much less buoyancy in the superstructure and deck house, she would have sunk immediately after capsize. The total air volume in the hull then would have been compressed to <10 000 m^3 at capsize. The capsized hull floats deeper and the pressure would be higher on the air in the hull, >1.5 bar, and the remaining buoyancy provided by compressed air would be too small to allow floating. The ferry, upside down then, sinks **at once** and the air in the hull is compressed more and more - to say 6-7 bar when it touches bottom at 80 metres. The volume of the air in the hull is then compressed to less than 3 000 m^3.

In model scale, the model will float with equivalent of 7 056 m^3 ***reserve buoyancy***, i.e. 105 litres, and you have to remove these 105 litres of air, at once, to allow the model to sink. If you only remove 6.7 litres each minute (429 m^3/min full scale) it takes the model 16-17 minutes to sink ... as shown in model tests videos but it has nothing to do with reality. **You must evidently remove all the excess air ... at once**! And that's where the model test goes wrong! Apart from ignoring constant buoyancy in the hull, superstructure and deck house due to solid volumes there being submerged.

FULLSCALE COMPUTER SIMULATIONS

The *full scale* computer simulations done by **Safety at Sea, Ltd., Glasgow**, strangely also copy the slow, 16-17 minutes, sinking as per SSPA model tests. But in full scale the air is compressed at once after capsize and the ship should sink immediately, if that were the case ... so why does the computer animation exactly copy the model sinking? Air being let out? It is not possible! There are 14 watertight compartments with plenty of compressed air! The Glasgow company **Safety at Sea Ltd**'s (associated with Strathclyde University) computer simulation is full scale and there is no need to let out any air. The computer simulations are also faked! One moment the simulated ship is seen floating upside down with bottom/keel high above waterline, the next is sinks ... slowly. But there is no way the air inside the 14 hull compartments can escape ... slowly. The authors of the simulation, **Dracos Vassalos** and **Andrzej Jasionowski**, suggest that water flows up from below?? **But where does the air go?** It is quite serious when scientists of a university starts to fake their work! Because that is what they are doing. Actually the work is done by underpaid students that are forced to manipulate the input to achieve the desired result of their teachers!

SUMMARY

The model tests and theoretical calculations 2008 by Vinnova/SSPA of Estonia capsizing do not compare with or reflect full scale or reality.

As Estonia, full scale, would have **floated** after capsize, the model would also have floated, albeit much higher, and never sunk regardless if some adjustments were done by allowing trapped air to escape.

If Estonia full scale, would **not have floated** after capsize, she would have sunk immediately. To show this in model scale, you have to allow, say 105 litres of trapped air, to escape at once. To play around with one valve letting out only 6.7 litres each minute, first aft and later fwd, delays the sinking 16-17 minutes, actually seen in the model tests videos. But it has nothing to with reality. The computer simulations of the same thing by **Safety at Sea,** Glasgow, are also faked! This is very serious and has nothing to do with real safety at sea.

Anders Björkman, 2009

'Thorough and unbiased marine casualty investigations are the most effective way of establishing the circumstances and causes of a casualty.'

IMO Res. A.849 (20) - 5.1.1

"*All this was inspired by the principle that in the big lie there is always a certain force of credibility; because the (public) more readily fall victims to the big lie than the small lie, since they themselves often tell small lies in little matters but would be ashamed to resort to large-scale falsehoods. It would never come into their heads to fabricate colossal untruths, and they would not believe that others could have the impudence to distort the truth so infamously. Even though the facts which prove this to be so may be brought clearly to their minds, they will still doubt and waver and will continue to think that there may be some other explanation:"*

Adolf Hitler / Mein Kampf

"All truth passes through three stages; First - it is ridiculed .... Second - it is violently opposed.... Third - it is accepted as being self evident."

Arthur Schopenhauer

"A half truth presented as a whole truth becomes, in the end, a total lie."

Robert Ardrey

PREAMBLE 2005 TO THE ENGLISH EDITION OF KATASTROFUTREDNING

This book was first published in Swedish on the Internet 2000 and in English 2001 as a contribution to better safety at sea. After a slow start there were sometimes >3 000 visitors per month. In September 2003 the web site was closed by the ISP without explanation, which however arrived a little later as a letter in the mail. A lawyer warned to sue the author/investigator for defamation, etc, due to certain published facts without further explanations or evidence. The advantage of an Internet book is that it is very easy to correct and improve it. The author therefore decided to verify and update all information on the site. Much has happened since 2000 but the Swedish government and authorities still refuse to review all new proven facts that **the complete Estonia accident investigation 1994-1997 was misinformation and manipulation from day one by a small group of persons at the request of the Swedish government at the time.** The author hopes that any future Swedish government decides according to international and national law to review the new proven facts so that the correct cause of the 'Estonia' accident 1994 can be established.

According to Professor Mati Öun of the Estonian defence ministry the 'Estonia' transported military material on the voyage 27-28 September 1994 (announced at the Estonia symposium at Tallinn 27 September 2005). The material in two trucks was escorted to the ship by the Estonian defence forces and handed over to 15 Swedish persons (passengers) on the 'Estonia' that probably were employed by the Swedish Intelligence agency, MUST. The trucks were secured just behind the forward ramp of the ferry.

The purpose of the Swedish presence on the 'Estonia' at Tallinn was probably to supervise the military cargo during the voyage.

During the voyage the 'Estonia' experienced two sharp noisy impacts around 01.00 hrs followed by heavy listing a few minutes later. It seems that the 'Estonia' had collided with something - maybe a submarine! The collision damaged the underwater hull of the 'Estonia', several watertight compartments were flooded and initial stability was lost and the 'Estonia' rolled >30-40° but soon found a new equilibrium at <15° list. People inboard could evacuate to open decks during 10 minutes, while the vessel quickly sank in less than 35 minutes without capsize. The vessel lacked basic lifesaving equipment! You had to jump overboard to save yourself. The same day the Swedish Prime Minister Carl Bildt suggested that the accident was caused by the ship's visor fitted on the superstructure. It had fallen off. But it had never fallen off!

In order to blame the accident on the ship's bow visor, it was simply removed from the wreck by the Swedish defence forces (navy) under water a few days after the accident. Then there were three years of official

'investigation' **how the visor caused the accident. Naturally every essential piece of information was falsified in the investigation! This book shows how the information was falsified. When it was originally written in Swedish 1999 the author thought that the 'Estonia' sank due to serious mismanagement of the vessel by the Owners, which was covered up to protect incompetent persons. Today he has changed opinion based on the new findings. The book has been up-dated accordingly.**

Anders Björkman
M.Sc.
Beausoleil, France
2005

PREAMBLE 2001 TO THE ENGLISH EDITION OF KATASTROFUTREDNING

It is with great satisfaction that the English edition of my Swedish book **Katastrofutredning** is on the Internet for an international audience. The 1994-1997 international, i.e. Estonian, Finnish and Swedish, joint investigation of the 'Estonia' accident 1994 must be considered the *most* shameful attempt in modern maritime history to cover up the real facts of a tragedy.

Every essential alleged fact of the cause of accident in the official Final report (5) is false or manipulated!

On 28 September 1994 at 00.36-01.36 hrs (local time) the RoRo-passenger ferry 'Estonia' sank in the Baltic and at least 852 persons died or disappeared. Immediately in the morning the Estonian president **Lennart Meri** decided that an *Estonian* commission was appointed to investigate the casualty.

KEEP IT CONFIDENTIAL, I.E. YOU CAN STATE WHAT YOU LIKE

However, later the same day the prime ministers of Sweden, Finland and Estonia instead decided that a *joint Estonian, Finnish and Swedish* Commission should do the investigation, i.e. **collect all relevant information and present the facts and the cause of the accident.** Sweden put diplomatic pressure on the Estonian government that *it* (Sweden) should chair the Commission. Furthermore the investigation was to be *secret* - the public should have no insight - and all evidence, other material and analysis were to be *confidential* until the end of the investigation.

You wonder why the casualty investigation couldn't have been done in the normal, proper way. Why should Sweden lead the investigation? Because Sweden had already decided to present a false report?

The media was immediately fed - and published - stories how and why the ship had sunk. The *bow visor* had fallen off! And when *visors* fall off, ships sink, media reported, quoting unknown 'experts'! The general public had no idea what a bow visor on a ferry was but it believed the fairy tales. In retrospect it is easy to show that this information was false. A week later, on 4 October, the Commission confirmed the early findings - the *bow visor* (sic) had caused the accident.

THE VISOR AND THE PART OPEN RAMP - 17 OCTOBER 1994

The public was told that the *bow visor* had fallen off - it could allegedly not be seen on underwater pictures taken of the wreck on 2 October 1994 (a lie - outside observers were not permitted to look at the films) - and that the inner ramp protecting the *superstructure* had been forced partly (sic) open (another lie - it was closed). The public was told that the ramp could be seen open a little. Water leaking into the *superstructure* 2.5 meters above waterline had then sunk the ship, it was suggested. Two weeks later, on 17 October, the day *before* the visor itself was allegedly found at the bottom of the sea far away from the wreck, the Commission reconfirmed the first findings about the visor and the ramp. Water on the car deck in the *superstructure* above waterline then completed the disaster - sinking. The Commission never explained how fast or slow the water had entered into the *superstructure* and *why* water in the *superstructure* above waterline would cause the sinking of one *'in principle'* unsinkable undamaged passenger ship hull. ***It had never happened before or later in maritime history*** and in the end it was never clarified. Capsize and floating upside down due to un undamaged underwater hull had happened several times due to water flowing into a superstructure but in this case there was no capsize! At the same time a false position (sic) of the wreck - found 30 September - had been announced and marked by a **blue** buoy strange things happened at the wreck a mile southwest of the **blue** buoy.

A normal person evidently asks why a false position of the wreck of a mysteriously sunk ferry is announced. The Commission has never replied.

The **visor** was *officially* found on 18 October 1994, allegedly one mile west of the wreck and marked by a **red** buoy, and, in a secret salvage operation directed by the Swedish Navy (sic), the visor was salvaged mid-November 1994. However - there is no evidence whatsoever that the suggested position of the visor or that of a **red** buoy - a mile west of the wreck (of which a false position had been announced two weeks earlier) - was true. The visor had apparently been found at the wreck early October and was thus salvaged at the wreck itself mid-November 1994!

This author maintains that the visor never fell off the ship and that, thus, the visor was attached to the ferry when it sank. In order to support the false suggestion that the visor had fallen off earlier, it was simply removed from the wreck early October under water using explosives. The deck hinges were very strong and never damaged when the ship was floating; they had to pull off the visor underwater, so that the visor arms were torn off at the hinges 3.9. The Swedish Royal Navy assisted! Remember - Sweden wanted to lead the investigation.

This author also maintains that >2 000 tons of water would have flooded the superstructure in less than one minute, if the ramp was open, and that this would cause immediate capsize - heeling 180° upside down - when the critical heel angle 37° was exceeded.

A sloppy and completely unprofessional **dive examination** of the wreck was made on 2-4 December 1994 by an American (sic) offshore and underwater service company, Halliburton with present U.S. vice president Dick Cheney then as director. Halliburton was appointed as divers by, and under the control of, the legal counsel of the Swedish Maritime Administration (sic) and the Halliburton offer to dive was not cheapest, nor the most professional. No proper records were made of the divers' activities and no examination of the alleged damages to the visor attachments on the ferry wreck took place!

Soon after the Commission met again on 15 December 1994 (the public had evidently no access) and confirmed (sic) for the third time that the bow *visor* had caused the accident. But now the scenario of the accident had been modified!

A MODIFIED SCENARIO 15 DECEMBER 1994 - AND SOME PROVEN LIES

In the new explanation of the accident, based on alleged reports (not filed anywhere) of the Halliburton divers, the visor had pulled the inner ramp of the *superstructure* fully open, so that large amounts of water had entered the *superstructure* and caused a sudden listing and the start of the sinking at 01.15 hrs - and the final sinking more than 35 minutes later after 01.50 hrs. It was now clearly stated that the ramp had been locked *before* the accident - confirmed by divers (!) - and that *all* ramp locks had been ripped apart by the visor - also confirmed by the divers (no written records exist and it is a lie). 1 000's of tons of water had entered the *superstructure* in a very short time.

The author is working with ferries for 30 years - and with the *safety* of ferries. Evidently - if, say, 2 000 tons of water had come into the *superstructure 2.5 meters above waterline*, the ferry would have capsized immediately - and floated upside down – figure P1.

This has happened many times. But the 'Estonia' accident is the first and only such accident, when it didn't happen. The author finds it very strange.

Figure P1 – Floating capsized ferry

The Commission later concluded that it was the *visor* locks that were incorrectly designed and manufactured 1979 by the shipyard - a *design fault*. Due to this old design fault, the ferry had sunk 1994.

Only in December 1994 the correct *wreck* position - 2 100 meters southwest of the previously announced position of the **blue** buoy - was given.

THE IMPOSSIBLE SEQUENCE OF EVENTS

The 'Estonia' was allegedly doing 15 knots in head seas of Beaufort 7 with 4,2 meters waves (not proven), when the ramp of the *superstructure* two and a half meters above the waterline was suddenly ripped fully open at 01.15 hrs. Anybody who has been to sea on a ferry knows that in such conditions the waves do not even impact against the visor because it is heard and you have to slow down. But let's assume that the ramp was fully open.

The opening was 5,4 meters wide and 6 meters high at the fore end of the ship superstructure but more than two meters *above* the waterline. When however the ship pitched down, the opening was at least two meters below water.

You would then have expected that the first wave entering the superstructure at 15 knots speed during less than two seconds contained 180 tons of water. It would have smashed everything inside the superstructure and trimmed the ship on the bow - and would probably have stopped the ship. It is unlikely that the ship would have pitched up above the waves later after this first wave entry. However, if it did and it is alleged that speed was maintained for two minutes, the ferry would have pitched down again below water after another six seconds and scooped up another 180 tons of water. You should know that this water was only extra cargo weight loaded inside the *superstructure* of a ship with an undamaged *hull*, on which the ship floated, and that the ship could only have sunk due to water inside the *hull*. But in the Estonia case water only entered the *superstructure*:

Then the ship would definitely never have pitched up again but would have gone down like a submarine while capsizing - like the 'Herald of Free Enterprise' 1987 or the 'Jan Heweliusz' 1993. The *superstructure* would quickly fill up with >2 000 tons of water in less than 60 seconds, the ship would *capsize* and ... **float upside down on the watertight hull below the *superstructure***.

But this true, correct and realistic scenario, easily proven by model tests was never presented to the public or the media. **The Commission instead started to present stupid lies about water in the *superstructure slowly sinking* the ship.**

Figure P2 – Floating capsized ferry

These lies are still the official Truth and explanations why the ship sank.

In order to confuse the public the Commission mixed up capsize/sinking and hull/*superstructure* and presented some *'experts'* to explain that ferries sink with water in the superstructure 2.5 meters *above* waterline.

The author has of course 1996-2002 publicly stated that the official announcements are incorrect and that he is prepared to discuss them with the government investigators. The only answer has been that the *author* is unintelligent, unscientific, unreasonable, conspiratorial and trying to bring down democratic governments (!), etc. Strange? Can we believe these investigators and *'experts'*? Or are they simple criminals? What hidden agenda do they have?

COVER UP THE WRECK AND THE BODIES

The **Swedish government** (sic) decided, on 15 December 1994, that neither wreck nor dead bodies should be salvaged. It was the ultimate decision to pave way for the total cover up. No dead bodies could ever be identified. The underwater hull could not be examined for leakages. No crime could ever be established. The legal counsel of the Swedish Maritime Administration, Johan Franson, had previously explained that it was too difficult and expensive (>US$ 150 million) to do the salvage job (no evidence of course - it could be done for much less) and a Swedish Ethical Advisory (sic) board had agreed that it was unethical to salvage the bodies. Together with Finland and Estonia an international agreement was later signed and national laws adopted to the effect that nobody could ever examine the wreck and its underwater hull and the bodies of the 'Estonia' - the wreck was to be covered up by concrete, the bodies were to be abandoned. The preparatory legal work was completed on 30 March 1995. After that no further examination of the wreck and dead bodies was possible.

On 3 April the Commission published its **Part report** (16)* reiterating for the fourth time that the *visor* had caused the accident. In retrospect it is easy to show that every essential statement in the report was false - but few reacted in April 1994 - 99.9% of the public believed the previous misinformation of the Commission. The Commission said that the **Final report** (5) - with *all* relevant information - was a formality to be published in a few months. **No other causes needed to be investigated!**

The Swedish/Estonian/Finnish law to prevent diving and examining the wreck went into force on 1 July 1995 and Swedish work to cover up the wreck started to 'protect' the wreck: >300 000 tons of rock and sand were deposited *around* the wreck - mainly 100-200 meters south of it. The international treaty to the same effect did not come into force until August 1995. The work to cover the wreck and bodies was cancelled in 1996.

The law to prevent diving is very effective; anybody suggesting diving and examining the wreck is conveniently accused of suggesting disturbing graveyard peace and thus upsetting the relatives of the victims, who apparently are no longer interested in why the ship sank and people died.

On 21 October 1996 the Swedish government appointed its Board of Psychological Defence, **SPF**, to handle communications of information to the relatives of the victims. The SPF told all Swedish authorities not to discuss any questions concerning the 'Estonia' mentioned in, e.g. the printed press, by outside experts (like the author) e.g. how and why the ship had sunk and why the 'Estonia' had not sunk as suggested by the Commission.

THREE YEARS OF LIES

For more than three years the Commission stated at infrequent media contacts that the 'Estonia' was correctly certified with correct lifesaving equipment and completely seaworthy, etc. and that only a *design fault* of the visor locks 1979 had caused the accident - the loss of the visor - and the sinking - water in the *superstructure*.

All these alleged facts are false and part of a well (not very well!) planned disinformation programme.

Very big waves - 10 meters high - and loads on the visor had allegedly destroyed the visor locks during the night of the accident - it took 10 minutes - the public was told, and the visor locks were incorrect. The visor had pulled the ramp fully open - 30 m² - so that waves could move into the ship's *superstructure* and heel the ferry.

Then, strangely enough, the big waves disappeared, because the ship stopped heeling - and up righted according to survivors that managed to get out during about 10 minutes. Water flowed into the superstructure very slowly during 15 minutes according to the Commission. No water flowed out, which was strange. As soon as the ship stopped, all water should actually have flown out! Survivors said that the ship was slowly sinking for more than 20 minutes between the time they noticed the heeling and they got out and when they jumped overboard later. The Commission suggested that the survivors didn't know what they were talking about!

This was all the public had to know why the ship sank.

On 5 December 1997 the Final report of the accident was published after over three years of secret deliberations. No real investigation took ever place. The Commission of course met and dined and wined 20 times but what they did is not recorded. In the meantime two investigators had died and five others had been dismissed or resigned. *All essential facts in the Final Report are false, and that is the message of this book.*

Never in modern history has such a dishonest and untruthful document been published to explain a big maritime tragedy.

ALL ESSENTIAL FACTS ARE FALSE

If you bothered to check, e.g. the ship certificates, it was obvious that they were not correct and that the lifesaving equipment was not as per SOLAS. There are no valid certificates presented in the Final report (5). Further verification of the published data - which has taken the author several years - then showed that **every essential fact** in the Final Report (5) **was falsified**, often **based on manipulated investigations**, to hide the fact that the ship was unseaworthy. No real accident investigation thus took place. How and why the ferry had sunk due to water inside the *superstructure* was evidently not explained then or earlier (it is physically impossible). Why somebody decided to cover up the Truth is still not clear. To be able to blame the accident on the visor Swedish divers removed it a few days after the accident in a - naturally - secret operation assisted by the Swedish and Finnish navies.

The large majority in Sweden and Estonia said nothing neither in 1994 nor 1997 or 2001! Silence. There were a few critical voices - but it was considered normal - and the officials (Commission, governments, administrations, police, prosecutors, church, universities, etc), the Swedish SPF and the media wrote them off as unintelligent, unscientific and unreasonable amateurs - or conspiracy theorists.

THE CONSPIRATORS AND THE HIDDEN AGENDA

The conspirators - because it was a conspiracy from the start, the first day - were satisfied. They thought they had managed to cover up the Truth as per their hidden agenda. Many of the conspirators were given high offices in the Swedish and Estonian administrations, where they today regularly praise the work of the Commission and the content of the Final report and ridicule the few professional marine investigators and journalists, who continue to research the accident with the aim to improve safety at sea.

These persons of the investigation are all charlatans and criminals. But, and this is sad, they are *'respectable'* in Swedish society today. To be respectable in Sweden today is like being a good party man in a communist state - you repeat the official policy without own thinking. It is a virtue in today's Sweden and Finland and Estonia.

The Final report (5) is official party policy in Sweden and Estonia today - regardless what party governs. And a large majority of the public plays along - it has a feeling for what Truth (or Lie) the government wants to adhere to. The hidden agenda was ... and is ... national security.

THE 'RESPECTABLE' CONSPIRATORS

It is a tragedy for the relatives of the victims and for the survivors (and for some members and experts of the Commission). It proves that innocent victims and witnesses of a big accident have no chance against a government and its servants. Many of the conspirators are still middle age and have years of public service to fulfil. Most of the politicians, who initiated the conspiracy, are gone from office (but alive). Many Swedish technical *'experts',* who once were young honest men full of initiative and activity, have become bureaucratic servants of the Swedish Maritime Administration (still middle age) to continue the cover up - they are conspirators and criminals. They are, i.a.

Sten Anderson,
Johan Franson,
Ulf Hobro,
Dr. Michael Huss,
Per Nordström,
J-O Selén and
Åke Sjöblom.

Other Swedish non-political co-conspirators (civil servants or 'experts') and criminals are

Ann-Louise Eksborg,
Olof Forssberg,
Gunnel Göransson,
Olle Noord,
Hans Rosengren and
Bengt Schager

of the Swedish Accident Investigation Board and

Professor Olle Rutgersson

of the Royal Institute of Technology. Some Finnish conspirators are

Kari Lehtola,
Heimo Iivonen and
Tuomo Karppinen

of the Finnish Accident Investigation Board and

Dr. Klaus Rahka

of the Finnish State Research Institute, VTT, and

Veli-Matti Junnila

of Ship Consultancy Ltd OY/AB, etc, etc.

What were and are the motives of their doings? Evidently all conspirators may not know what actually happened 1994 but all has supported the false cause and events and none has told the Truth. All has presented false versions - based on different interpretations? - but all support the official, false version as presented in the Final report (5) 1997. You wonder if the conspirators were given orders - directives - to do what they did. Or did they falsify their work, only because they know that it had been done before for some strange reasons, and it worked then?

Or did they falsify the work just as a routine - something you can do, because the risk is small to be discovered, and it serves your personal ambitions and you are well paid - and you can still sleep without thinking, what you have actually done? This author believes that most conspirators falsified their parts of the Final report simply because they wanted to impress their masters; to show that they were 'good' men and women - *respectable* - in the new Swedish or Finnish society, where Truth does not matter when national security is at stake.

Anyway - it was a big teamwork behind the shameful manipulations and it seems to help later - they can all blame each other.

The **SPF** seems to coordinate the efforts. Who actually wrote - or compiled - the Final report (5) is unclear. It cannot have been the Commission. It met the last time in March 1997 and agreed a manuscript of the Final report and the printed Final report (5) was published in December 1997. But the March manuscript does not exist! Apparently somebody re-wrote whatever the Commission had compiled and created something glossy - and convincing after a superficial study; maybe Franson? But as stated - **every essential fact is false**. There is no evidence for any conclusion or finding in the Final report (5). The verbal testimonies of some key witnesses have been manipulated to suit. All other testimonies have been suppressed. The Swedish media is too weak to look into the matter. Future research students of ship stability and safety and marine accidents should investigate. The author has no idea what is going on in the heads of the conspirators. The author is only interested in safety at sea.

MS MONA SAHLIN - THE SPIDER IN THE NET

The conspirators are today - year 2001 - headed by the Swedish deputy minister of trade and transport - Ms **Mona Sahlin**. She regularly states that the Final report (5) is generally correct and that no new information or facts have been presented showing that the official conclusions are 100% false. She bases her false statement on other false statements of the numerous co-conspirators mentioned above. It is very evident to anybody who has studied the developments, but nothing happens. We are told that the political position of Ms Sahlin is very strong and it is not possible to move her - to get a new investigation done. Too many embarrassing questions and answers would then be presented - it is best to censor the whole affair is the official message. It is a clever strategy - every Swedish citizen including, naturally, the members of Parliament shall become a co-conspirator. It has **been done before**!

The time is ripe for **Disaster Investigation** - the book that tells it all. The Truth of the 'Estonia' accident must come to light. But it will not be easy.

THREE JOURNALISTS FIRED

Three journalists in two daily Swedish newspapers tried to pursue to ideas of the author. Early 2000 they were all fired from their positions **Appendix 5**. Tough luck.

And nobody - not even their colleagues bothered to support them.

It was a clear signal from the Swedish establishment - **do not question the official 'Estonia' information!**

THE IMO WAS FOOLED 1995

The conspirators did not only falsify the investigation, they persuaded the International Maritime Organization, IMO, to accept the false information and to modify international rules for safety at sea 1995, most of which (the amendments after the accident) today are nonsense. The conspirators were clever. They knew the weaknesses of the IMO - bureaucracy, lack of technical expertise, the ease to manipulate the Assembly and Committees, etc. - and the IMO complied. The IMO did not dare to question the findings of the Commission supported by so many 'experts'. Another tragedy. International safety at sea work suffers.

"Why rock the boat?" they seem to ask.

"Why not?"

I like boats and ships. And they have to be safe. And the conspirators make ships unsafe.

HOW DEMOCRACY DIED

But even more serious, as one reader has observed, democracy in Sweden died on 28 September 1994. The Swedish Prime Minister Carl Bildt ordered that the investigation should be covered up - due to national security? - and the Swedish establishment just followed orders - no discussion. Plenty of money and other means were provided. To make ships less safe. And the establishment succeeded for many years - in spite of the corruption that followed. It explains the experiences of the author, who met the Swedish chief technical investigator **Börje Stenström** already on 31 October 1994:

> *"The author ('little Anders') did not understand, what it was all about".*

In retrospect it is easy to see that Stenström was embarrassed that he had to lie to the author about technical matters. The author met Stenström several times 1995-1996 and Stenström became more and more confused. It was said that Stenström suffered from a cancer, but this author never observed it. Stenström conveniently passed away in February 1997. But Stenström was partly right - the other matters - what it was all about - the author still doesn't understand. It is a pity that the author never got an opportunity to ask Stenström who forced him to lie!

In April 1995 the author in a letter to the Commission described their impossible statements - *"no reply"*. When, probably by error, the biggest Swedish daily Dagens Nyheter, DN, on 15 August 1996 published a long article by the author concluding that the official statements of the Commission were not possible, the response was immediate

> *"the suggestions were unscientific and unintelligent rubbish by an unreasonable person"*.

After such a stupid comment by ignorant members of the Commission DN never published any criticism of the Commission and the **SPF** was brought in to handle the government information. DN (**Anders Hellberg**) had for years published misinformation about the accident and Anders Hellberg wrote a book about the accident, while the investigation was still on, confirming the false facts. One year later - August 1997 - the author asked Dr. **Michael Huss** and Professor Olle Rutgersson at a meeting to explain the stability calculations of the investigation. The only answer was that the author was

> *"conspiratorial"*.

A few days later (the author spent a holiday week in Sweden pestering the Commission) the new head of the Swedish Commission delegation Ann-Louise Eksborg assured that clarifications to all the author's suggestions would be given in the Final report, and a week later the former head of the Swedish delegation, Olof Forssberg, wrote from the Ministry of Transport that

> *"it was not possible to discuss the matter until the Final report was issued".*

At a casual meeting with Johan Franson and Sten Anderson of the Swedish NMA in 1998 the author asked, if it were really Swedish practice that passengers were supposed to jump into the water and swim ashore to save themselves from a sinking ferry. *"No"* said Franson *"they climb down the rope ladders at the side and swim to the life rafts that are thrown into the water by crew members"*. Sten Anderson had a painful look.

The Final report published in December 1997 states that the cause of the accident 1994 were badly designed and manufactured visor locks 1979. Everything else was in order. The ship was in excellent condition. That an alleged event 1979 causes an accident 1994 evidently has to be explained and proven. The Final report does not provide any *evidence* whatsoever - not even for the alleged cause. Why more than three years of top secret deliberations were necessary to make such a simple - and evidently false - conclusion is not clear either, except that Democracy definitely died in Sweden on 28 September 1994.

NO RELIABILITY - NO VALIDITY - NO DISCLOSURE - NO SIGNIFICANCE

The Final report lacks *reliability* defined as -

> **"an independent analysts ought to reach the same conclusions as the Commission"** and
> **"the reliability and completeness of the official data should not be affected by the investigator's understanding of the purpose and scope of the database".**

This author has not been able to reach the same conclusions as the Commission using the official data.

The Final report lacks *validity* defined as -

> **"the found causes must be true causes and be predictive".**

This author has not been able to verify any causes of the Commission or that that they could have been predictive. On the contrary the author has found that many 'scientific' reports to support the causes are falsified.

The Final report lacks *disclosure* defined as -

> **"ability to distinguish between events and underlying causes"** and
> **"ability to reflect the sequence of effects and their interactions"** and
> **"ability to identify a causal relation between different levels of explanation"** and
> **"ability to distinguish between human error, technical failure, and environment"** and
> **"ability to relate failures to the basic system modules: Technical, human, etc,** and
> **"ability to identify tasks or operations not performed"** and
> **"ability to identify tasks or operations performed below standard".**

This author has not been able to make any sense of the Commission's disclosures what happened on board.

The Final report lacks *significance* defined as -

> **"ability to identify preventive measures"** and
> **"ability to identify consequence-reduction measures"** and
> **"ability to formulate recommendations for prevention"** and, finally,
> **"ability to formulate recommendations for consequence reducing measures".**

The author concludes that the official investigation of the 'Estonia' accident lacks all significance and is one simple, big lie - a conspiracy. The official, final report (5) should be retracted. Evidently the responsible parties will never admit to it and will never agree to a new investigation. Welcome to new Sweden! Please avoid Baltic ferries!

THANK YOU

The author thanks all persons who have contributed with information, observations, suggestions, ideas and analysis of various matters of this, his very personal investigation of the 'Estonia' cover-up and for the constructive discussions, often per e-mail, with interested parties. Any errors in this book are only due to the author - point them out and they will be corrected - it is easy with a book on the Internet (the corrections will be duly marked as such). The author will continue the work for real safety at sea. Now is the time for other experts - in other fields - to take over the continued examination of the

reliability,
validity,
disclosures and
significance

of the 'Estonia' disaster investigation (and other Swedish political affairs). Good luck. Nobody in the 'respectable' Swedish establishment will thank you. Therefore no new public investigation will be permitted within the next 20-30 years. Prove me wrong - and I will be glad - but a realistic view of Swedish 'democracy' is that nothing will be done to change the corruption of Sweden. The problem is not the 'Estonia' - it is the Swedish system as summarized by Mr Johan Franson, Director for Safety at Sea, Swedish NMA and one of the chief conspirators in the cover-up in the Swedish daily FinansTidningen, March 1999 (see also **3.12**):

> ***"Mr Björkman has bombarded the world, at the limit to maniac energy, with his basically conspiratorially founded opinions about the Commission and the cause of the sinking. ... Representatives of Swedish safety at sea, among them myself, chose to work with matters, that we consider more important for the safety at sea, than to discuss with Anders Björkman."***

It is a pity that a criminal person like Franson heads the Ship Safety Inspectorate of the Swedish Maritime Administration and that Scandinavian shipping companies do not work for his removal. Franson seems mentally ill and is not capable to do a proper job. His only task is to prevent a serious analysis of the Estonia accident to improve safety at sea. This author has no intent to discuss anything with Franson but feels only sorry for his staff. Franson was appointed to the job early 1995 by the Swedish government and is paid directly by the government. Franson and the kingdom of Sweden are an embarrassment to everything concerned with safety at sea.

Anders Björkman, M.Sc.

Naval Architect, Safety at sea consultant

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* - References are shown in Part 5.

Foot notes are at the end of each chapter.

'We need free information. A nation which is afraid to permit the citizens themselves to judge truths or lies, is a nation that is afraid of its citizens.'

President John F. Kennedy, February 1962

'It is felt deeply worrying that three amateurs should be able to overthrow the government of an independent state. Behind this (the demand for a new 'Estonia' investigation - the author's note) *is primarily shipbuilding engineer Björkman and ... . They are unbelievably aggressive in their points of view but completely unable to do a proper analysis of cause and event.'*

Kari Lehtola, head of the Finnish delegation of the 'Estonia' Commission 1.5, 15 March 2001 (on Swedish Television SVT)

FOREWORD

The 'Estonia' accident took place in September 1994. The Final Report of the accident investigation was published in December 1997 suggesting that the visor caused the accident. It is a prime example of so called cognitive dissonance, e.g. that a wife protects the husband that violates their daughter.

Since then several attempts have been made to have the investigation re-opened to review new proven facts never examined by the official investigation, e.g. **that the visor did not cause the accident.** This book is one such attempt. It describes in detail the incompetence of the investigators, who did not investigate the vital questions of the accident and just blamed the accident on the visor. On 20 September 1999 and 4 January 2000 the responsible Swedish minister, Ms Mona Sahlin, announced that there were no reasons for a new investigation. Sahlin is a typical wife protecting her husband!

No new (sic) facts of sufficient value had been presented about the 'Estonia' 1994, in spite of the fact that 90% of the information in this book was then known to Ms Sahlin. According to Ms Sahlin this book does not contain any new facts changing the official report.

On 16 March 2001 Ms. Sahlin, after secret consultations with the heads of the political parties in the Swedish parliament, again announced that no new investigation was needed.

> *"Maybe some technicians together with some trustworthy laymen could review the new facts (*including the ones in this book?*),"*

Ms Sahlin thought and the heads of the other political parties did not disagree. But why the secrecy?

CAUSE AND EVENT

The head of the Finnish investigators Mr Kari Lehtola 1.5 added on Swedish television the night before, that the author - duly named - of this book was an

'amateur - completely unable to do a proper analysis of cause and event'.

and that it was worrying that he

'should be able to overthrow the government of an independent state".

Figure F1 - Ship floats upside down after capsize

The author has no intent to overthrow the Finnish government, but it is interesting to note the Lehtola remark about cause end event. Mr Lehtola and his colleagues in the Commission have stated that a lot of different

'events' took place when the 'Estonia' sank, but for most of these alleged 'events' there is no proven or identified cause.

If water (2 000 tons) had entered the *superstructure* through an opening in the *superstructure*, the 'Estonia' would simply have capsized and floated upside down. But it never happened. And the Commission never explained why the 'Estonia' sank or how the watertight hull was filled up with water. Eight years after the accident these questions are still without explanation. Why? Because the visor didn't cause the accident!

EVENTS AND CAUSES

This book is not about cause and event, but events ... and causes.

Ms Sahlin and Mr Lehtola and the heads of the Swedish political parties are unfortunately not properly informed about the laws and codes for international maritime accident investigations, which Sweden, Finland and Estonia have adopted in the United Nations. UN-resolution IMO A.849 (20) and its Code for Investigations of Accidents and Incidents at Sea, paragraph 13, are clear.

> "when *new facts changing previous conclusions are presented they shall be reviewed and investigated ..."*

It is as simple as that. The reason is of course that the safety at sea will be improved. The cost is minimal.

If Mr Lehtola, who announced a false wreck position 1.3 and lied about many other matters of the accident - believes that the author is an amateur - *"completely unable to do a proper analysis of cause and event"* - he is kindly invited to demonstrate it on this web site.

Ms Sahlin cannot ignore in 2001 that new proven facts have been presented 1997-2001, which require a *full* new investigation - the events disclosed by the Commission have different causes than concluded by the Commission. In the United Kingdom several marine accident investigations ('Derbyshire', 'Gaul', and 'Marchioness') have been formally re-opened (sometimes 10-15 years) later, when new facts have been presented. This has then resulted in real improvements to safety at sea.

SEVERAL ERRORS OF FORM AND PROCEDURE WERE MADE DURING THE OFFICIAL 'ESTONIA' INVESTIGATION 1994-1997

Without proper procedure the conclusions cannot be correct or acceptable.

The first error was that all concerned parties did not have access to or insight in the investigation.

United Nation resolution IMO A.849 (20) does not permit the *secrecy* of the 'Estonia' investigation 1994-1998. The secrecy made it possible to hide and manipulate facts, to arrange private meetings between the investigators to *negotiate* what should be decided and be made public. This situation - the secrecy - is the origin of all *conspiracy theories* that are around.

The second error of procedure was that the draft of the final report - both the factual and the conclusive parts - was not sent to the concerned and interested parties for comments and review *before* the Final Report was issued.

It was a logical consequence of the first error - the secret investigation itself to prevent an open discussion. With normal procedure plenty of factual errors in the Final Report would have been easily spotted before publication.

The third error is that the investigation is not re-opened, when new proven facts are presented contradicting the official ones and modifying the analysis and the conclusions.

Trade unions, survivors, relatives, the shipyard and private persons have during 1994-2001 pointed out several faults that *must* be reviewed - to clarify the accident and to improve safety at sea.

A fourth error was that several investigators were partial.

The shipping company itself was part of the Commission and investigated itself **1.7**! Errors of procedure are serious. Several investigators **1.5** were members of the MAIIF[1] - the Marine Accident Investigators International Forum - the rules of which state that the members shall follow the UN-resolutions, codes and laws. During the 'Estonia' investigation these investigators did not follow the ethical rules of the MAIIF and the UN resolutions. A basic requirement for an accident investigation is that *all* facts in the Final Report are proven and clearly described.

FACTUAL FAULTS OF EVENTS

This book is a description of a surprisingly large number of **factual faults** - falsifications, lies, disinformation, cover-ups, etc. of events and conditions in the Final Report (5),[2] which the **author** has found.

1. Salvage of the victims - all dead bodies could have been recovered during the first week.

2. Seaworthiness - the ship was not seaworthy.

3. Watertight subdivision - was not as per the SOLAS (Convention for Safety of Life At Sea).

4. Life saving equipment - was not as per the SOLAS.

5. Port State Control by Sweden - manipulated several times 1993-1994 to hide unseaworthiness.

6. Visor - it was probably attached to the ship, when it sank (the Atlantic lock was probably damaged earlier).

7. Ramp - the bow ramp was never open during the accident.

8. Water inflow through an open ramp - the published figures are false.

9. Speed and course - the published figures are false.

10. Stability - the ship should have capsized immediately with 2 000 tons of water in the superstructure.

11. Sinking - the ship could not sink due to water in the superstructure.

12. Plot of accident - the plot is a falsification (shows an undamaged ship turning and drifting)

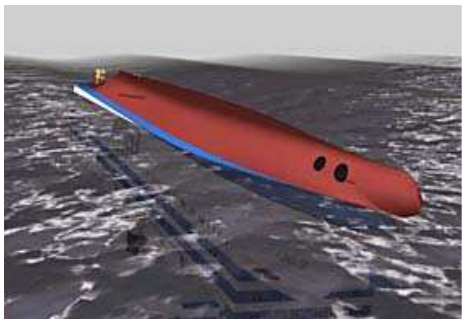


Figure F2 - Result of capsize

13. Testimonies - survivors' testimonies have been changed.

14. Dive investigation December 1994 - the results are manipulated.

15. Damage to starboard front/collision bulkhead - not reported by the Commission.

16. Destroyed evidence - several objects salvaged December 1994 were thrown into the sea.

17. The visor was damaged before the accident - and used as cause of accident to hide the truth.

18. Major hull modification work was done 8 months before the accident - stabilizers were fitted.

19. The swimming pool - was built into the double bottom.

The list can be made longer but the author is naive enough to think that above should be enough to call for a new investigation. However, the author is also a realist - evidently no new investigation will be made for obvious reasons.

An accident is often an unfortunate combination of events and existing conditions. The 'Estonia' accident is a prime example. There were many deficiencies prior to accident and, when the ship then sprang a leak, they all contributed to (caused) the disaster. And it is obvious that the investigators **1.5** connived to hide the real facts to protect some vital interests. The investigators were not interested at all of a serious investigation.

SEAWORTHINESS

Several important institutions, the seafarers union ITF, the Royal Institution of Naval Architects, London, the Swedish Ship Masters Association, the Independent Fact Group, the shipyard, and private individuals have reported a big number of facts to the effect that the 'Estonia' was not seaworthy on the 27 September 1994. The Independent Fact Group has produced proof (31) that the protocol of the last Port State Control 940927 at Tallinn is falsified in the Final Report and that deficiencies, which should have been repaired or rectified before departure and/or stopped the vessel, have been ignored by the investigators **1.23** and **1.33**. There are many observations that the condition and fitness of the 'Estonia' and crew training were very bad. The Commission only refers to anonymous person stating that the 'Estonia' was in perfect shape to show the contrary.

Naturally the 'Estonia' was not seaworthy in spite of the statements of the Commission to the contrary.

It would have been very easy for a Swedish government ship inspector to stop the 'Estonia' at Tallinn on 27 September 1994 by just declaring that the ship could not enter a Swedish port in its present condition. Swedish government inspectors were onboard, observed many defects and did nothing

WATERTIGHT SUBDIVISION

Evidence has been presented that the watertight doors in the watertight bulkheads were *always* open at sea and that the doors could not be closed locally, i.e. the watertight integrity of the ship was lacking **1.23** and that the ship was not seaworthy. It results in listing and sinking, if the ship is leaking. If the ship was leaking *before* the accident has not been investigated.

The Commission never investigated the watertight subdivision of the 'Estonia'.

LIFE SAVING EQUIPMENT

The 'Estonia' did not have lifeboats and life rafts under davits for all persons aboard **1.33**, i.e. she was not seaworthy. The equipment consisted to 55% of throw-overboard-rafts (Solas60 type), which were illegal for trade on the open seas - they remained since the ship was classed for coastal trading only 1980-1993. The Final Report comments this fact that the ship was according to the rules - what rules? SOLAS? Not possible! Furthermore the Commission states that the life jackets were of an approved type - no manufacturer or description is given - in spite of the fact that all survivors reported big difficulties - the life jackets were ripped off, when the passengers jumped into the water.

The Commission's opinion of the life saving equipment is wrong.

THE SWEDISH NATIONAL MARITIME ADMINISTRATION - SJÖFARTSVERKET

It inspected the 'Estonia' at the port of Tallinn (sic) already in January 1993 - before the *first* voyage to see if particular Swedish requirements were fulfilled **Appendix 7**.

The evacuation test at Tallinn seems manipulated- it was of course impossible to evacuate 2 000 passengers aboard with life saving equipment for only 996 persons, but a test of 15 minutes (sic) 1993 - in port - proved the contrary.

Hence the ship was inspected four or five times at Stockholm according the PSC protocol (the Paris-agreement) 1993/4 without any defects noted. Finally Swedish NMA surveyors at Tallinn inspected the 'Estonia' again on *the day before the accident* (see above), when apparently a large number of defects were suddenly noted. The Final Report does not mention any of these controls and inspections in detail.

The author thinks it is impossible that the Swedish NMA1993/4 can have avoided to detecting the deficiencies of the 'Estonia' described in this book. You must be a quite incompetent ship inspector to have missed all the defects on the 'Estonia' making her 100% unseaworthy!

It means that there was a serious conflict of interest for the Swedish NMA. In spite of this the Swedish government *asked* the NMA to investigate many questions 1994-2000 about the 'Estonia' - the legal position, an analysis of consequences, salvage of the wreck, if **the information in this book required serious study** (in Swedish), etc., and to carry out several projects - a dive inspection, a report to an Ethical Advisory Board, etc. In all cases the NMA gave misleading information to the government and it was always the same person that did the work - **Johan Franson 1.16**. The reason was apparently to protect the NMA.

The Commission falsified the Final Report to protect the Swedish NMA.

THE VISOR AND THE WAVE LOADS

The Commission stated in October 1994 that the wave loads had ripped off the visor, when the 'Estonia' was upright. The visor was kept in place by, i.a. two hinges on the deck with a break strength >350 tons each. The Commission suggested that the hinges were torn apart by a sudden overload in the forward direction *after* the visor locks had been ripped open. How this overload developed is not clear. Wave loads directed upwards and aft cannot pull apart a hinge in the forward direction. Testimonies to the effect that the visor was attached to the ship, when it sank, have been censored. It is also certain that calculations about the wave loads on the visor have been manipulated to increase the loads **3.2** **3.6**, **3.7**, **3.8**, **3.9** and **Appendix 2**. The normal wave loads on the visor in severe weather are in fact fairly small and cannot damage anything as proven by 100's of visors with total 1 000's of service years without incidents. The Commission cleverly suggested that several wave *impact* loads damaged the visor, but it is another lie, as *impact* loads on the visor is just local, short-lived overpressure between visor and wave, when other wave loads are zero. Such impacts can only cause local plastic deformation of plate panels but can never damage locks and attachments. The only wave that could have damaged the vessel would have been a freak wave of unusual size, but such a wave has never occurred in the Baltic and it would have been noticed at once. So all suggestions that several wave loads/impacts damaged the wrongly designed and manufactured visor locks and hinges during several minutes without being noticed by the crew were just inventions to suit a false cause of accident. But the public believed the lies. Big waves - yes, they are dangerous and naval architects and ship builders worldwide do not understand that, the public was repeatedly told by media. Real experts telling the real facts were censored.

The most probable theory is therefore that the visor was attached to the ship after it had sunk and *that it later was removed under water by help of explosives* **3.10** and **4.1**, which is based on information given to the author not until February 2001. The assumed removal of the visor under water 3 to 6 October 1994 actually explains many strange happenings of the early part of the investigation 28 September to 15 December 1994.

The statement of the Commission that the visor should have fallen off before the listing and should have caused the accident is false.

THE BOW RAMP

Evidence has been presented that the ramp was never open. The Commission stated in October and December 1994 that the ramp had been forced or ripped open and permitted water to enter on the car deck in the *superstructure* >2 meters above the waterline. The ramp locks were ripped apart. However, pictures taken of the locks 1994 made public 1998 show that the locks are not even damaged **3.10**.

The statement of the Commission that the ramp was ripped open 1994 is false.

Analysis 2000 by the Independent Fact Group of pictures taken by divers of Mr Gregg Bemis 2000 of new damages to the ramp indicates that the ramp must have been opened and later closed between 1996-2000!

SPEED AND COURSE

The Commission has confirmed that the speed and course were unchanged until *after* the listing occurred. However there are no evidences **1.26**, **1.47** and **Appendix 2**.

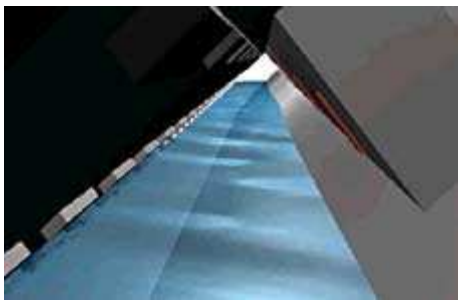
The statement that the speed was unchanged until after the accident/listing occurred is false.

WATER INFLOW

The Commission has informed various amounts of water inflow into the *superstructure* through the open bow ramp at different times, which do not add up according to the laws of physics. 1 800-3 600 tons should have flowed into the superstructure and on the car deck *in one minute* **1.9** and **Appendix 4** and the ship should have stopped and capsized immediately and floated upside down on its watertight *hull* according to this author, while the Commission reduces the inflow considerably. In two different places of the Final Report the Commission states that at the same time on the one hand only 55 tons/minute flowed into the superstructure (according to Dr. Huss) or, on the second hand, it was >666 ton/minute (according to the Commission).

During two minutes around 01.29 hrs the *deck house* >10 meters above the waterline suddenly filled up with 14 000 ton according to the Commission, but the ship did not capsize nor stop - it floated on the deck house and drifted >1 000 metres eastward to sink at about 01.53 hrs.

All statements by the Commission about water inflow through an open ramp are false.



Figures F3 – F6: With 2 000 tons of water on the car deck in the superstructure ...

... the 'Estonia' would have listed 40 degrees and ...

STABILITY

International expertise has since the accident 1994 questioned the official calculations, why the 'Estonia' did not capsize immediately due to water in the *superstructure*.

The investigators always stated that the Final Report (5) should give the answer. This is not the case. The Commission instead falsified all stability calculations - assuming that parts of the *deckhouse* (decks 4-8) 10-20 meters above the waterline were 100% watertight.

The stability calculations of the Commission are wrong (intentionally falsified).

... immediately tipped on the side ...

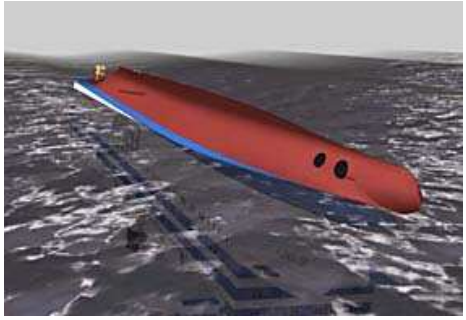
SINKING

As the Commission falsified the stability calculations, it could never explain the sinking of the ferry. The ferry was evidently initially floating on its watertight hull, which was properly subdivided into 14 compartments.

The hull - 18 000 m^3 - had large reserve - 6 000 m^3 of buoyancy- when floating normally on 12 000 m^3 displacement, and should have survived with two compartments flooded. *With 1 500-2 000 tons in the superstructure **above** the hull on the watertight car deck the 'Estonia' should immediately have capsized and floated upside down on the undamaged hull.*

The Commission instead stated that the hull was flooded from above starting 15 minutes *after* the accident. The flooding of the hull then lasted for 20 minutes, so that the ship sank. No further details were given.

The sinking as described by the Commission is physically impossible.



... to float upside down on the undamaged hull.

THE PLOT OF THE ACCIDENT - A FALSIFICATION

The plot of the accident - figure 13.2 in the Final report - is a pure falsification. It shows the turning and drifting of an *undamaged* ship that never sinks. The falsification is very easy to spot - an independent expert cannot re-make the plot. The plot is then edited with false information 1.9.

The official plot of the accident is an intentional falsification.

TESTIMONIES

The Swedish 'Estonia' survivors association 'Neptun' and the new 'Arbetsgruppen för utredning av 'Estonia's förlisning' (The work group to investigate the sinking of the 'Estonia), Agnef, have informed that survivors have not been questioned properly and that information given to the police has been edited by the Commission until it is not recognizable. The sequence of events in the Final Report does not agree with most survivors' testimonies 2.1 and 2.12. Instead the Commission believes and uses only the testimonies of four key crewmembers, which have been changed several times. At least three of them lied about what happened - it is easy to show 1.48.

The Commission falsified all testimonies to 'suit'.

UNREPORTED DAMAGES

At a private diving expedition in August 2000 big hull damages were filmed, which had not been reported by the Commission in 1994 **1.16** and **3.10**. One damage - the one in the middle of the starboard collision bulkhead at the side of the ramp, probably caused by explosives *after* (!) the accident - shows clearly that the sequence of events of the Commission cannot be correct.

The Commission in its Final Report did not report all damages.

DESTRUCTION OF EVIDENCE

In the Swedish daily Dagens Nyheter 010311 was reported, and confirmed by the Finnish members of the Commission, that a great number objects were salvaged by divers in December 1994 and later thrown back into the sea - classified as unimportant scrap.

The most important object/scrap - the locking bolt of the visor bottom (Atlantic) lock was thrown back without being photographed, measured, etc. It supports the author's theory that the Atlantic lock was damaged *before* the accident and that, e.g. the bolt had not been used for a long time. It was thus rusty and dirty.

But there is other evidence that the visor was damaged before the accident **3.7**.

The Commission destroyed evidence that contradicted its false cause of accident.

MAJOR HULL MODIFICATION WORK WAS DONE 8 MONTHS BEFORE THE ACCIDENT

Fin stabilizers were fitted in January 1994, i.e. openings were cut in the most highly stressed parts of the underwater hull. The matter was not investigated, if, e.g. the work was correctly done. An incorrect installation could have caused the leakage that apparently sank the 'Estonia after causing the loss of stability and the sudden listing. The 'Erika' tanker accident in 1999 was later blamed on faulty steel hull repairs a year before the fatal accident.

The Commission did not investigate recent hull modifications and repair works done.

THE SWIMMING POOL

The 'Estonia' was fitted with a strange swimming pool arrangement on deck 0; the pool was probably recessed into the double bottom - see the arrangement below. The swimming pool - on port side - was located between the conference rooms aft and the saunas forward - and you reached via a spiral stairs from deck 1 **Plan of decks 0 and 1**.

It meant that the regular height of the double bottom was reduced and that the inherent protection against grounding was reduced. Survivors on deck 1 noted that water flowed up from the swimming pool compartment indicating that the ship was leaking. The water may have also come from the stabilizer compartment or the sewage treatment room aft of the swimming pool. The leakage may also have started below the swimming pool.

The Commission destroyed evidence that survivors noted water inflow on deck 0.

The analysis of the Commission does not fulfil reasonable requirements.

THE SEQUENCE OF EVENTS

The Commission established already on 4 October 1994 the sequence of alleged events five days earlier: first loss of the visor, then a *partly* open ramp and water on the car deck in the superstructure, later increasing list from **01.16** hrs and finally slow sinking until **01.48** hrs. On 15 December 1994 the Commission *changed* the sequence of events - the ramp had then been *completely* pulled open at **01.14-01.15** hrs, followed by a sudden water inflow and listing, later by a closed (!?) ramp, so that the water inflow was reduced, and the ship sank later at **01.55** hrs. No proven facts supported the suggestions then, 1994, or today, 2001. Based on the evidence in this book none of the official sequences of events is possible **1.9**. The plot is a falsification. That the Commission could not have analysed all facts and causes already the 4 October 1994 is self-evident. Probably the 'Estonia' sank already at **01.32-01.36** hrs after leakage of the *hull* started at **00.30**-**00.40** hrs, which caused the sudden listing already at **01.02** hrs as noted by a majority of survivors.

The question remains why a complete analysis was not done later? The answer is that the investigators did not want to admit that the alleged sequence of events from the 4 October 1994, based on four crew members untrue testimonies - particularly the time of the listing at 01.15 hrs - was rubbish, i.e. no analysis was made 1994-1997: the Commission only wrote a report, which tried to prove the first suggested, false sequence of events with fabricated causes. The Commission does not show in the Final Report (5) how it wrote off other possible causes of accident, e.g. leakage, which is a basic requirement in a complete analysis.

The official sequence of events is totally untrue.

LEAKAGE

Leakage of the hull below the waterline as cause of accident has never been investigated, e.g. due to a faulty stabilizer installation, rust below the swimming pool incorrectly fitted as part of the double bottom or repair works carried out onboard. The Final Report does not even mention the possibility. If you study all the protocols of the Commission meetings, you find that other causes of accident are only treated once the 27-28 February 1996 (act A168*), when the Commission decided that

> *"Chapter 8 shall be enlarged to state that other causes of accident like explosions and collisions have been studied but found improbable".*

That decision is not found in the Final report, nor why an explosion or collision was improbable and how this investigation was done. A possibility of leakage is e.g. badly supervised welding repair work in dry-dock or aboard at sea. A fact which is not reported in the Final Report, and which has never been noted in the media, is that almost the whole engine crew survived - 13 men except three officers **1.42**. The ten survivors were two officers incl. the watch keeper 3/E Treu, one systems engineer (plumbing and pumps) - Sillaste, the A/C engineer and his assistant, *two welders* and three oilers, incl. the watch keeper, Kadak. The systems engineer - Sillaste - stated several times that the 'Estonia' was leaking **1.3** and that the bilge pumps were running. According to a report by the CNN also quoted by the Swedish news agency TT soon after the accident a crewmember stood in water to his knees in a compartment before the listing occurred.

The Final Report does not say if *"hot work"* was carried out during the last trip. A common cause of accident is then fire or explosion, if you do not check if the surrounding is gas free. It is very strange that the Commission 1994 never interviewed particularly the welders, the repairmen and the oilers about what had been done earlier aboard during two weeks - if major works were done. 14 months after the accident the two welders and one oiler were in fact interviewed by the Estonian administration together with 23 other surviving Estonians. The 28 February 1996 the Commission wrote in its protocol (act A168*) that

> *"An agreed document about testimonies had now been created".*

The wording is revealing. Compare **2.1** where the summary of testimonies of the Commission four, five months after the accident is shown and which was hence modified (created?) in the Final Report (5).

The Commission limited its investigation only to confirm its own, untrue cause of accident.

THE GERMAN INVESTIGATION

After the Commission had *'created'* or produced an *'agreed'* document about testimonies, the German group of experts **3.13** sent a report 22 July 1996, (act B155** - secret according to the Swedish secrecy law §8.6 until 9 March 1998), of 87 pages exclusive of three appendices, which completely contradicted the analysis and all public statements of the Commission at that time. The Germans showed, i.a. that the visor was badly maintained, that the visor was lost *after* a sudden listing occurred at **01.02** hrs and that the ship floated in a stable condition with 40-50 degrees with the funnel against the wind, etc. The Germans demanded that another ten objects from the wreck should be salvaged for complete analysis and that a further eight areas should be filmed and that the watertight doors should be studied. The German evidences were not analysed by the Commission and the demands were refused against the rules of UN-resolution A.849 (20), in spite of the fact that orally the Commission had told the Germans the opposite. By using the Swedish secrecy law SL 8.6 the Commission succeeded to silence the Germans.

The Commission censored all German evidences about bad maintenance, the actual design, etc., and the German group of experts did not protest.

STABILITY *AFTER* THE ACCIDENT

Neither the Germans nor the Commission has analysed how a stable condition developed after the sudden listing - see part 3. The 'Estonia' was probably leaking below the waterline before the listing developed, e.g. the *hull* was damaged in way of the sauna/pool compartment or the starboard stabilizer on deck 0 or in some other location, e.g. the welders were working on a tank, which was not gas free and that there was an explosion causing a leak. Perhaps the work supervisor - an officer - died. The whole ferry was shaken - it was observed by many survivors before **01.00** hrs. Then they tried to do something and there was a second impact - water spread into several compartments, which resulted in the sudden listing - duly noted by all survivors at about **01.02** hrs **2.1**. Then water spread everywhere through *open* watertight doors below the car deck. The ship sank slowly but in a stable condition and the visor was lost, when the list was very great. In this analysis all observations fit with what was observed aboard. Leakage of the hull below the waterline followed by loss of initial stability thus cannot be excluded as a contributing cause of accident. What actually caused the leakage should be investigated.

The Commission and the German experts never made correct stability calculations, which would have demonstrated already 1994 that all suggestions about water in the superstructure were false.

INSURANCE FRAUD

Neither the leading hull underwriter nor the P&I club Skuld has ever taken an active interest into the real cause of the accident **3.20**. They paid all claims long before the investigation was terminated *when no evidence was available to prove the alleged cause of accident*. That the manipulated, official investigation is part of a clever insurance fraud is today a valid consideration.*

The silence of the insurance underwriters during the investigation supports the suggestion that the investigation was manipulated as part of an insurance fraud.

A great number of new, proven but not reported facts are presented in this book. The investigations and analysis of the Final Report (5) are *incomplete*. Sweden (or Finland or Estonia) is then forced according to the UN resolution to re-open the investigation, exactly as the United Kingdom has re-opened the 'Derbyshire'- and the 'Gaul'-investigations (and others) under the impartial eyes of e.g. lord Donaldson, which has contributed to real improvements of safety at sea 1997-1999.

This book is a contribution to factual debate about the 'Estonia' investigation and a simple explanation of many questions surrounding the 'Estonia' to eliminate all ***lies*** produced by the Commission. **The choice of the word *lie* is intentional - lie is lie and does not become truth, if it is repeated.** The president, Mr Lennart Meri, of Estonia, the Estonian government and the young prime minister Mart Laar (born 1962) and the former transport minister Andi Meister **1.5** and **1.20** do not seem to understand the causes how and why the 'Estonia' sank in September 1994. You still ask in 2001, why it was so difficult to investigate a simple accident at sea and why the public had no access to the investigation.

President Lennart Meri is primarily responsible that the accident has not been investigated properly and that all new facts have been ignored.

He seems to have been a good person but the 'Estonia' made him totally corrupt **4.5**.

The Swedish governments under prime ministers Carl Bildt, Ingvar Carlsson and Göran Persson, ministers such as Margaretha af Ugglas, Mats Odell, Ines Uusmann and Mona Sahlin, advisors as Jan-Olov Selén, Jonas Hafström and Birgitta Wallström, and all so called 'experts' of the National Maritime Administration (Sjöfartsverket) as directors of safety at sea Bengt-Erik Stenmark, Johan Franson and Per Nordström (deputy), director Sten Anderson and certain surveyors, and all 'experts' of the Swedish Board of Accident Investigation (Statens Haverikommission (SHK)) as the directors general Olof Forssberg and Ann-Louise Eksborg, and master mariners Olle Noord and Hans Rosengren and Dr. Michael Huss and psychologist Bengt Schager **1.5** seem to *systematically* during the past years to have given away false and misleading information about the condition of the 'Estonia' at departure from Tallinn the 27 September 1994, about *why* and *how* she sank in about 30 minutes, six hours later in the middle of the Baltic, about the condition of the wreck and why you could not salvage the dead. The Swedish NMA directors general Anders Lindström (1995-2000) and Jan-Olof Selén (2000-) have not made things better by refusing to investigate the false information.

WHAT 'ACTUALLY' HAPPENED TO THE 'ESTONIA' WILL PROBABLY NEVER BE ANSWERED

Deputy NMA director of safety at sea Per Nordström wrote to the **author** 981223, ref. 0701-9836282, which he copied to directors Johan Franson and Sten Anderson **1.5** and **1.16**. Nordström considers that

> *"the Estonia report and its recommendations are of little interest, as the work at the IMO after the loss of the 'Estonia' quickly surpassed the work of the Commission and new rules were developed, which were more comprehensive than those of the Commission".*

Nordström says further that

> ***"the question what 'actually' happened to the 'Estonia' will probably never be answered".***

This is a surprisingly uninterested and lazy position of the Swedish NMA, which according to its own ideas, wants to become the best NMA in the world with the highest safety at sea. Nordström says that the 'Estonia' report is of *'little'* interest and does not clarify what happened. Nordström is deputy director of safety at sea!

Then Nordström says that the Swedish NMA

> *"has accepted the explanations of the Commission as being trustworthy".*

You should wonder on what basis such acceptance is built? Nordström evidently refuses to clarify anything. Doesn't the Swedish NMA know that a ferry floats on its *hull* and that the *hull* needs to be water filled so that the ship sinks? Hasn't the NMA noted that the Commission never explained how the ferry was alleged to have sunk? Hasn't the NMA noted all contradictions in the official Final report (5)?

You should further note that the Commission never developed any new *'rules'* in the Final Report.[3] The Swedish NMA is responsible for safety at sea - to accept the suggestion that more than 850 persons including more than

500 Swedes died at sea 1994 due to badly designed and manufactured visor locks 1979 is to make things too easy. It is also intellectually dishonest.

It is to say that wool socks grow on trees!

The ferry owner's responsibility is to carry passengers and cargo timely and safely from load to discharge ports with no harm to people or the environment. The Owners of the 'Estonia' never accepted that responsibility.

It is up to the Flag States, Classification Societies and port state control to stop those owners that do not comply with rules and regulations and who thus run a substandard operation. The Owners of the 'Estonia' was the Flag State that manipulated its own port state control and hired a Classification Society to issue incorrect certificates. Of course such Flag State has no interest to find the Truth of the 'Estonia' accident.

TOURIST ATTRACTION

One reason to salvage the 'Estonia' is naturally that the peace of the 'Estonia' will never be guaranteed. The 'Estonia' will within 10-20-30 years become a tourist attraction to be studied with a mini submarine, etc. The 'Estonia' will never rust away but will lie at 50-70 meters depth for hundreds of years, as a monument over Swedish (Finnish and Estonia) incompetence to maintain and to improve safety at sea. To prevent this, the 'Estonia' should be raised. When the 'Estonia' is raised it is easy to establish the cause of the accident - a leakage below the waterline. The visor was probably removed under water by explosive devices to support the false theory that it had been lost before the accident. The author has no other explanation why the visor was allegedly found detached from the hull after the accident.

PROVEN FACTS

Most of the proven facts in this book have been advised to the Swedish, Finnish and Estonian governments, the Swedish NMA and the Commission during 1995-1999. They have also visited this web site several times. All facts have been ignored. The Swedish government ignored the first request for a new investigation 1999. In proposal no 1:1999/2000 to the Swedish Parliament Ms Mona Sahlin stated that a new investigation should not be done. She added:

> *'There were some evident deficiencies in the investigation or persons that put up questions about it, but my judgement* (sic) *is that they are not serious enough to demand a new investigation'*, (TT 990927).

In spite of *'some evident deficiencies'* nothing is done.

The contributions of Ms Sahlin support the various conspiracy theories and increase the secondary trauma of relatives and survivors, which the Analysis Group is worried about **1.36**. When the Germans handed in its report to a Stockholm court of law 991230, Ms Sahlin only repeated 000104 the same statement after having the read the thousand pages German report, that:

> *'no new facts have been reported which require a new investigation'*.

Ms Sahlin and Mr Lehtola have no respect for the truth and they are afraid of the citizens. Nevertheless - the author hopes that students of risk analysis and safety management will use this book in order to develop better safety at sea.

THE RE-OPENING 1998 OF THE 'DERBYSHIRE' ACCIDENT 1980

It is quite easy to re-open an accident investigation. A British example:

THE MERCHANT SHIPPING ACT 1995

Whereas on or about the 9th day of September 1980 the ore/bulk/oil motor vessel **DERBYSHIRE**, registered at Liverpool Official Number 364425, sank in the Pacific Ocean off Okinawa with the loss of 44 lives and whereas a shipping casualty has occurred;

And whereas a Formal Investigation was held into the said casualty, pursuant to an order of the Secretary of State made on 11th June 1987;

And whereas the Wreck Commissioner made a report to the Secretary of State, by Report of Court No. 8075; And whereas the Secretary of State is satisfied that new and important evidence which could not be produced at the investigation has been discovered;

Now the Secretary of the State for the Department of the Environment, Transport and the Regions in pursuance of the powers conferred by section 269 of the Merchant Shipping Act 1995 hereby orders **that the whole of the case shall be reheard by Her Majesty's High Court of Justice.**

17th December 1998

Dated

John Prescott

Secretary of State for

The Department of Environment, Transport and the Regions

To help **Her Majesty's High Court of Justice** some questions were suggested which the **High Court** should clarify:

Causation

1. What were the most probable cause(s) of the loss of the "DERBYSHIRE"?

2. What possible causes (previously considered by the Formal Investigation or Lord Donaldson's Assessment) can be eliminated in the light of the new evidence of the wreckage of the "DERBYSHIRE"?

3. What other possible causes of the loss of the "DERBYSHIRE" remain open?

Fore-end flooding

4. In so far as material to the loss of the "DERBYSHIRE", was the design of the "DERBYSHIRE" in way of her fore-end (from frame 339 forward - including her hull, bow height, deck , deck openings and fittings) in accordance with the standards applicable at the time she was built?

5. Is the design satisfactory in the light of what is now known?

6. In so far as material to the loss of the "DERBYSHIRE" in way of her fore-end? If so,

(a) what repairs were carried out?

(b) was her condition satisfactory after such repair

Hatch Covers

7. In so far as material to the loss of the "DERBYSHIRE", was the design of the hatch covers of the "DERBYSHIRE" in accordance with the standards applicable at the time she was built?

8. Is that design satisfactory in the light of what is now known?

Standards

9. At the time when the vessel was:

(a) designed; and

(b) built;

were the regulations and classification society rules for:

(i) assignment of freeboard;

(ii) design of her fore-end (from frame 339 forward - including her hull, bow height, deck, deck openings, and fittings); and

(iii) design of her hatch covers

inadequate in any respect material to the loss in the light of the then current state of knowledge and what ought reasonably then to have been known or anticipated?

Seaworthiness

10. When the "DERBYSHIRE" sailed on her last voyage from Sept-Isles was she in all respects seaworthy for her contemplated voyage to Japan in so far as material to her loss?

11. Did she cease to be seaworthy in any respect material to her loss at any time prior to her loss, and if so in what respects where and when?

Frame 65

12. (a) Is there any evidence of defective design, construction or repair of the structure in way of frame 65 in the wreckage of the "DERBYSHIRE" which would materially impair the safety of the vessel or those on board her?

(b) Are the present-day classification society rules and instructions to surveyors adequate as regards the quality of design, construction and repairs of the structure in way of frame 65?

Navigation

13. (a) Was the information and advice provided to the "DERBYSHIRE" by Oceanroutes Inc. adequate and appropriate in the circumstances?

(b) If not, then did the inadequacy or inappropriateness of such advice and information cause or contribute to

the "DERBYSHIRE's" close encounter with typhoon "Orchid"?

(c) Did the master navigate appropriately in the light of the weather information available to him?

Recommendations

14. (a) What steps should be taken to avoid a similar loss in the future?

(b) Should the current regulations or current classification society rules or instructions to surveyors be amended to avoid a similar loss in the future?

During 60 days spring/summer 1999 the above questions were answered in London in a fairly civilized manner.

It is very easy for a responsible Swedish minister to re-open a Swedish technical inquiry 2001 or anytime following Swedish law why >500 Swedes died on the 'Estonia' on 28 September 1994. Follow the British example. Order a Swedish court to clarify the 19 technical questions given in the beginning of this Foreword.

Anders Björkman
naval architect, M.Sc
Beausoleil, France - Freiberg, Saxony, Germany - Heliopolis, Egypt
1999-2001, 2004

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[1] Marine Accident Investigators International Forum **http://www.maiif.net** for its rules and members. The MAIIF is generally not interested in the 'Estonia' accident and its investigation in spite of the fact the MAIIF members participated in the investigation and signed the Final report.

[2] References with a number are shown in **part 5**. A reference with a letter followed by a number is an act in the archive of the Swedish Board of Accident Investigation, SHK, Stockholm, Sweden.

[3] The opinion of the author is simple - if the explanations of the Commission are trustworthy, the Commission and the NMA have nothing to hide and should explain the outstanding questions. By refusing to do so neither the Commission nor the Final Report can be considered trustworthy.

"Håkan Bergmark, 41, from Stockholm was one of the first who dived down to the "Estonia". He says that he saw and filmed a big hole in the side of the ship. He did not consider it much at the time. 'It wasn't my task to find the cause of accident. But when the Final Report of the Commission was issued many years later I was very surprised', says Bergmark, who today would like to forget all about the "Estonia". Two of the four other divers, who were down together with Bergmark, do not want to comment on the "Estonia" at all."

Fredrik Engström, Swedish daily Expressen 22 August 2000

"When I 1998 started to dig into the sinking I was told by relatives to victims, that the Commission member Olof Forssberg (former director general of the Board of Accident Investigation) had admitted that there was a hole in the ships starboard side. Somebody put the question at a meeting with relatives autumn 1994. Yes, said Forssberg immediately."

Knut Carlqvist - Swedish daily Finanstidningen 12 January 2000

"Der finnische Leiter der offiziellen Untersuchungskommission, Kari Lehtola, sagte, die Kommission habe kein Loch in der Fähre entdeckt. Selbst wenn es ein solches Loch gebe, hätte dies nicht zu der Katastrophe führen können." (Or in English - "The Finnish leader of the official accident investigation, Kari Lehtola, said that the commission has not discovered any damage hole in the ferry. And even if such damage existed, it could not have caused the disaster").

Der Spiegel, 2 September 2000

PRESS VOICES

A very good review of the media reporting is found at Kenneth Rasmusson's **home page**.

The culture editor, Knut Carlqvist, of the Swedish daily FinansTidningen has the past years opened his pages for a constructive debate about the 'Estonia' investigation and on the day five years after the accident 990928 he wrote the following:

How the 'Estonia' became political

At four o'clock in the morning captain Esa Mäkelä on the 'Silja Europa' sailed towards the accident site. Everywhere life rafts were seen, some empty, some with weak or life less persons, often water filled. The ferry was doing only a few knots and at one questioning he explains why:

"I was all the time afraid that she floated, bottom up. I was very afraid to ram her. I wasn't sure that she had sunk, I thought only she had capsized. It was not until the morning, when I didn't see anything that I was certain."

How could the 'Estonia' sink in half an hour? Already the 'Titanic' had watertight bulkheads and the safety at sea has improved since then. Nevertheless Anders Hellberg of the Swedish daily Dagens Nyheter on 29 September 1994 reported that water on the car deck was the probable cause of accident. The article was written already on the evening of the accident and at this early time had *"several experts"* their opinions ready. The bow visor was of an old type and it had fallen off in the heavy weather. The sources of Hellberg were probably from the Swedish National Maritime Administration, NMA. The evening papers repeated the suggestion and a guess - even if based on earlier incidents - became an established fact.

Prime minister Carl Bildt flew on the day of accident to Turku to discuss with his Finnish and Estonian colleagues. No effort should be spared to investigate the cause, it was stated. An investigation commission was formed with the Estonian transport minister Andi Meister as chairman, which already on the same day sat down to question three key witnesses of the crew. But the questioning had hardly started when Meister announced that a charter plane was waiting and that they should fly back to home to Tallinn. The story was published in the Swedish daily Svenska Dagbladet on 2 October. The decision was *"to say the least strange"* according to the Swedish investigators and the sources of the paper - certainly members of the commission - thought that Meister was incompetent. But after that loss of temper the lid was put on, probably by order from the top.

The kidnapping of the key witnesses must be connected with another incidence. Two days after the accident the Estonian secret police made a raid at the Estline office at Tallinn and collected all documents concerning the 'Estonia' (SvD 4.10). To

secure evidence or to destroy them? It remains to find out.

On 30 September the wreck was found at 70 meters depth by echo sounder and the sonar pictures were sent for analysis. The Estonian director of the shipping company Estline refutes in the Finnish daily Hufvudstadsbladet the theory of an open bow visor and ramp. A ship of 12 000 tons does not sink so fast, even if trucks on the car deck get lose, the engines stop and water leaks through the bow visor. *"It is only child's talk."* He believes the 'Estonia' had hit a mine.

But from the rafts survivors had seen that the visor was missing, when the ship sank. Therefore the matter was settled. The probability to hit a mine at the same time when the visor fell off is probably zero (no mine could have ripped off the visor high above the waterline). In some mysterious way the water must have flowed down below the car deck, in spite of it being watertight and in spite of it being 17000 cubic meters air as buoyancy below it. Otherwise she should have capsized and floated upside down.

Sunday 2 October doctor Nuorteva announced the result of the echo sounding:

"At the bow is a large object that either has been ripped off or hangs from the wreck. The object could according Nuorteva be the damaged visor or a part of the visor" (DN 3.10).

The SvD adds that the object was of the same size as the visor and that it was seen on all four pictures. At the same time the ship was filmed by an ROV and two days later the first pictures of the wreck were available.

Some journalist should have asked what was at the bow, but all attention was given to the wreck itself. We are told that the bow ramp had a one meter opening at the top, i.e. it was almost closed. Hellberg writes:

"It has been enough to enable so much water to enter the car deck so that the ship became unstable, listed to starboard and capsized."

From the video films of 2 October it is clear that the ROV-camera made a seven minutes trip to what is assumed to have been the visor, but the sequence has been edited away from the publicly available copy.[4] Not a word about the matter in the Final report.

The reason is of course that the visor could not be situated at the bow if the scenario should fit. If it had fallen off under way, it should be found at a distance from the wreck. Internally the members discuss at this time the damages on the starboard hull side - also below the waterline.

"There are pictures of these damages that we have got from the new films taken by the underwater camera",

says the observer Sten Anderson to Anders Hellberg (DN 18.10). Did the visor cause them? In such case it must have been hanging on the protruding ramp, when the ship was still listing. In such case the bow ramp could not have been ripped open and then water on the car deck could not have caused the accident.

A good guess is that the patrol ship the 'Tursas' was sent geese hunting east of the wreck a few weeks while the parties discussed what to agree. Then they decided to *"find"* the visor a nautical mile west of the wreck.[5] The pictures that Sten Anderson talks about have been edited away from the copy of the video film and the damages are not mentioned in the Final report.

But the 'Tursas' found other things along the course of the 'Estonia'.

"We have found scrap but it is probably from other parts of the ship",

says Kari Lehtola to SvD (9.10). Two days later he explains that the 'Tursas' has found a large metal object, unfortunately not the visor, but

"only a steel plate".

All these objects were found east of the site of the wreck.[6] The visor is then *"found"* west of the wreck. What was the origin of the scrap? And the steel plate? The 'Estonia' was allegedly in good condition, when the visor fell off. Not a line about

scrap and steel plates in the Final report.

Nobody knew what had happened the first days, the involved parties were quite open. They include also surviving crewmembers telling Estonian secret police one thing and journalists another. The watchman Silver Linde is an example: in questioning on 3 October he states that the mate told him before the accident to check the *'big bang*' on the car deck. To Bo G Andersson he had said two days earlier at Turku:

"Somebody, we do not know whom, it may have been a passenger, alarmed about something happening down in the ship."

Linde when down and met several passengers in the stairwell *'who screamed that water had entered the interior of the cabins below the car deck"* (DN 2.10). That version was later repeated in front of Mert Kubu of the DN at Tallinn. An alarm came to the bridge about water below the car deck.

"They awoke when water started to enter the cabins" (DN 7.10).

This is what several survivors from deck 1 testify and not that water flowed down in the stairwells from above. The ship was not yet listing, when they awoke. So what was the origin of the water?

Bosse Brink reports in SvD (7.10) about the *"strong political influences"* of the investigation in Estonia. But if there were political influences in Estonia, there are also political influences here. The Swedes had to choose to play with or to confront the Estonians. They chose not to confront them.

The German experts think that they can prove damages caused by explosives at the bow of the 'Estonia'. That the group is bluffing is improbable, considering upcoming legal processes. The suggestion can be combined with the theory that the ship was subject to sabotage.

There is damage at the bow on the starboard side, big enough to allow the ROV-camera to easily swim into the car deck in December 1994. A hanging visor or an explosive device may have ripped open the shell plate, but on the inside there are 12 inch frames spaced 60 cms apart. The frames must have been cut away by divers. It is not mentioned in the papers. The Commission on the contrary denies that divers were inside on the car deck, even if anybody can see with own eyes on the video copies that divers are on the car deck

We know and they know that we know. Apparently very strong interests are at stake.

The accident investigation was incomplete due to *political* reason. The responsible parties do not want to produce the Truth. Editor Knut Carlqvist does not approve the Final report. His method is to investigate and analyse and compare all early statements in the media with what was later produced by the Estonia commission. Carlqvist fights on **Appendix 5**.

Also the Swedish daily Göteborgsposten, GP, disapproved the Final report on the day five years after the accident. 990928 wrote Anders Kilner, co-writer of editorials of the GP, the following article:

Not the last Word of the 'Estonia'

… Today is five years since the 'Estonia' sank during a voyage from Tallinn to Stockholm with almost one thousand persons onboard. When the ship sank on 28 September 1994 852 human beings died. 137 were saved. It was the largest disaster in the Nordic countries since the war. How did it happen?

Many are convinced that the Swedish-Finnish-Estonian accident commission has not clarified the real causes The Commission has even been criticised for not wanting to produce complete clarity. In addition many parties has presented suspicions that the truth has been hidden, which is an enormously serious accusation.

In February this year the government produced its final statement not to modify the agreement of graveyard peace signed by Sweden, Finland, Estonia and Denmark. The bodies shall not be salvaged. A week ago the government announced its decision that a new accident investigation shall not be appointed. Now the time to prosecute any crime has expired.[7] The Majority of survivors are unhappy with the conclusions of the commission about the causes of the accident. They have good

reasons for that. ...

The picture of causes that has emerged at the side of the Final report is that a rather old and badly maintained ship, which in addition was incorrectly loaded, was driven too hard, that some of the officers lacked qualifications and that the lifesaving equipment and the safety procedures were absolutely deficient. It was a disastrous combination: on the one hand many irresponsible parties, on the other hand no possibility to pinpoint a responsible party for the accident ... Safety cannot ever be complete, but it can be improved.

Therefore it is important that the criticised report of the Commission about the 'Estonia' does not become the last word. There are too many question marks. Why not permit an international commission, independent of the directly concerned parties and governments and interests take over? It is not too late for such a decision. Not even five years after the disaster.

Yes, why not? The request is still valid today almost seven years after the accident. A new independent commission has a lot of proven facts to review. And a crime like murder can, and should be, investigated for 25 years.

In the GP 000115 Anders Kilner proposes that the readers **Go home and study history**! Then he writes:

> *"… A historic description in a day-for-day perspective does not become less interesting, when you know what happened ... When much of modern history does not cover more than personal memory, there is always a risk that our judgement of cause and effect is failing. … The falsification of history and the manipulation of facts ... is a dangerous combination ... there is a flow of denials and excuses of what was historically necessary. They are lies.*
>
> *The democratic system of government, which has made the foundation of our fast welfare development and which is base for peace must be defended with knowledge against the forces, which want otherwise."*

This author has grave doubt about the democratic system of government in Sweden. The rule of law seems to be abandoned. The rule of law has been replaced by the opposite - un-law (orätt (Swedish), Unrecht (German)). The government and its spokesperson, the SPF 1.49, ignore international resolutions and laws how to investigate marine accidents and produce rubbish reports and stupid statements.

They lie straight into the face of relatives, survivors and the public with false empathy. "Yes, we feel sorry with you and the terrible accident. Yes, it is terrible that a visor can cause these things. No, this Bjorkman from Egypt is unintelligent, unscientific and unreasonable, he doesn't know anything". The public feel that they are manipulated but cannot formulate their doubts. The question is too complicated - it is easy to lie about individual facts and the public are blinded by these lies.

The author has a unique position to cover the drama. He is an outsider with perfect knowledge of the Swedish language and ferry operations. This book is a contribution to revealing *all* the official lies about the 'Estonia' and to find out what really happened. Cross-references are included for easy navigation between the chapters. Part 1 is a day-to-day repetition of the investigation and how the Commission manipulated all relevant information to the public. **Part 2** is information what actually could have happened. **Part 3** is a technical review - correct information compared with the manipulations of the Commission. **Part 4** shows that the end of the story is nowhere in sight.

The author hopes (but has his doubts) that the Press and the Media will use this book, when they make their voices heard then. They have been fed incorrect information too long now in order to support the lies of the Commission.

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[4] See further **1.4** that 16 hours of film was made. The visor probably hanged from the starboard side.

[5] The visor was officially not found until 18 October 1994 **1.14**.

[6] At Glasgow on 27 October 1999 Karppinen stated that the 'fragments' were west of the wreck **1.14**, **2.26** and **4.4** about different statements of the positions of the fragments. The fragments were first found on 5 October 1994.

[7] Year 2000 the investigation of the sinking of the 'Marchioness' 1989 in England was re-opened by the vice Prime Minister John Prescott. At that accident 51 persons drowned after a collision with a tug, the master of which probably was drunk. Prescott thinks that the responsible persons should go to jail.

*'**We cannot establish the truth**, instead we can establish clarifications, better structure of the available information. The truth of past times is always difficult to establish and it requires that you have complete background information about all matters and such complete information does not exist'.*

Björn Körlof, director general of the Swedish **Board of Psychological Defence,** SPF, 23 April 2001 (in Swedish Radio) after having been ordered by the Swedish government to create a 'fact bank' of 'Estonia' information not included in the Final report (5). Mr Körlof retired from the SPF 11 November 2001

'It is felt deeply worrying that three amateurs should be able to overthrow the government of an independent state. Behind this (the demand for a new 'Estonia' investigation - the author's note) *is primarily shipbuilding engineer **Björkman** and ... They are unbelievably aggressive in their points of view but completely unable to do a proper analysis of cause and event.'*

Kari Lehtola, head of the Finnish delegation of the 'Estonia' Commission, 15 March 2001 (on Swedish Television SVT)

WHEN WOOL SOCKS GROW ON TREES

Chapter dedicated to
Ms **Vendela Dobson-Andersson** of the (Swedish) Board of Psychological Defence - Styrelsen för Psykologiskt Försvar - **SPF**
21 October 2001 and
Ms **Mona Sahlin**, deputy minister of commerce and responsible for 'Estonia' affairs and
Mr Ingvar Carlsson, prime minister of Sweden who ordered the cover-up in 1994.

Trofim D. Lyssenko was born at Karlowka outside Poltava on 30 December 1898. He did not get a very good education - two years in the village school and then three years training in a gardening school. By 1925 he got appointed to the plant research station at Gandsha in the Caucasus. His first step to fame came on 7 August 1927, when the Soviet daily Pravda, reported that young Lyssenko had developed plants - wine - that could grow in the winter. It was the early times of cross fertilisation and gene manipulations and Lyssenko had jumped on the band wagon. Everything was possible. Lyssenko stated that it was even possible to cross fertilise, e.g. trees with sheep, so that wool socks would grow straight on the branches. The nature was fantastic. Work and money were not necessary. Let nature do the work! Lyssenko's society (a state governed by terror) needed disinformation like that.

When Lyssenko further developed his ideas at the '2nd Union Congress of the Shock Workers of the Collective Farms' at the Grand Hall of the Kremlin on 11 to 17 February 1935 no less than comrade J.V Stalin himself interrupted Lyssenko in the middle of his speech with a

'Bravo, comrade Lyssenko, bravo'

and encouraged the 1436 delegates to give him a long standing ovation.

J.V Stalin no doubt knew that the scientific base of the Lyssenko theories was total rubbish, but that unscientific and manipulated scientific theories can be used for political ends - to cover up mistakes ... and crimes. To support Lyssenko Stalin arranged that all true biology scientists in the USSR, even foreigners, were executed or deported - the remaining 'scientists' evidently wholeheartedly supported Lyssenko. Lyssenko was elected to the Academy of Sciences, etc. and rose to the top. On 31 July to 7 August 1948 Lyssenko confirmed *all* his findings and announced amazing progress confirming the politics of the day and the past at the meeting of the Lenin Academy of Agricultural Sciences of the USSR in his famous speech about '*The Positions of Biologic Science'.*

Evidently there were no real biology scientists left in Russia at that time and there was no real scientific biologic progress in Russia at all since 1917. All Lyssenko said was fantasy. Lyssenko reached the summit of his career circa 1950-1951.

The difficulties started when the USSR wanted to export its biologic, scientific findings, etc. to more knowledgeable and advanced countries, which it had occupied after the Second World War, e.g. Germany! The German scientists quietly told the new German dictator Ulbricht that Lyssenko was a charlatan and that all his biologic theories were 'Scheisse' - all of them! Ulbricht then had a choice. He could of course do what Stalin had done supporting Lyssenko, but in a *very* unusual move Ulbricht permitted young biology students to write papers questioning the Lyssenko ideas. Wool socks or knickers could not grow straight on trees, etc. In the end of 1965 the German Communist dictatorship formally put all Lyssenko theories where they belonged - on the rubbish heap. Of course Ulbricht had until then officially supported Lyssenko. And six years later Ulbricht was himself disposed of.

THE PRINCIPLE OF ARCHIMEDES DOES NOT APPLY

The scientific treatment of the 'Estonia' investigation 1994-2001 is very similar to the Lyssenko affaire 1927-1965 to cover up political or social mistakes and crimes of any kind. You invent some new scientific theories - in this case, e.g:

"a ship does not float in water on its hull any longer as per the principle of buoyancy of Archimedes established circa 252 BC but on the deck house in the air, etc."

- and then you gain support for the idea by using manipulated 'scientists' and bureaucrats - mostly the latter - and an 'understanding' media - very important. That this performance was possible 1994-2004 in Sweden (and not 1927-1965 in the USSR) is not so surprising.

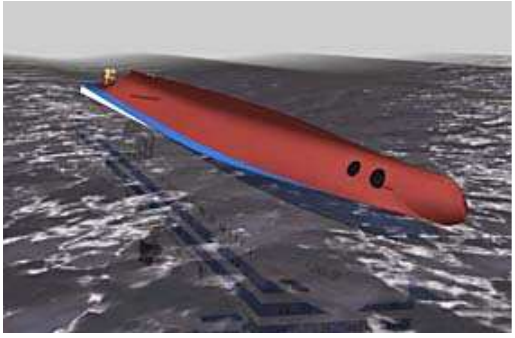

Figure W1 -The 'Estonia' floats on the deckhouse?

The political game is the same - stupid scientist (read Huss and Karppinen) are always available (particularly in Sweden and Finland) to produce false reports - and so are numerous bureaucrats (read Franson, Eksborg, Lehtola & Co) ready to support them - encouraged by, e.g. minister Mona Sahlin. It seems that the civil servants in Sweden and Finland are programmed to spread disinformation to support the objectives of their Masters. The media is what it is. It has never heard of Archimedes. And the Swedes and Finns that should know dare not say anything.

It was Sweden that mainly produced the now infamous Estonia Final report (5), so naturally the Swedish government and its bureaucrats strongly support it, particularly after the government appointed new, pure charlatans to direct the Board of Accident Investigations (BAI/SHK), the National Maritime administration and its Board of Ship Safety Inspections and appointed the past head of the BAI/SHK as appeal court judge. The allies Finland and Estonia are naturally giving moral support. The similarities with Lyssenko are striking - exchange biology with safety at sea and you have the 'Estonia' affaire in a nut shell. And it is interesting to note that, when exporting the shit (5), it is, again, Germany that starts the process to have it reversed. The **German group of experts** appointed by the shipyard started the process but did not dare to point out the Lyssenkoist manipulations of the laws of physics and principle of Archimedes by the Commission. Other Germans are following up by new divings on the wreck. But the situation is slightly different today. Ulbricht could reverse the Lyssenko developments 1950-1965 and nobody actually cared. Lyssenko was a pure product of a dictatorship and an inhuman ideology. What shall Sweden do about the false Estonia **Final report** and the **Stockholm agreement**? Where is the honourable way out? Nobody except some Swedish charlatans is today prepared to stand up to defend the Final report (5) and the Stockholm agreement - the other responsible parties are silent. Ms Mona Sahlin has decided 19 April 2001 that the (Swedish) Board of Psychological Defence - Styrelsen för psykologiskt försvar **SPF** shall collect all missing information in a 'fact bank' and establish how

and why the 'Estonia' actually sank, i.e. how the *hull* was filled with water between 01.30-01.52 hrs on 28 September 1994. This author has of course told Ms **Vendela Dobson-Andersson** of the SPF - what to do (see Dnr E8/01 in the SPF archive). **It is very simple**. But Ms Dobson-Andersson has declined the solution, so that Ms Mona Sahlin can rest comfortably in her office. Maybe because she will lose her job - to spread disinformation about the 'Estonia' - in the process?

WE CANNOT ESTABLISH THE TRUTH...

But - come on Vendela! - there are always other jobs for bureaucrats. Your boss, Björn, has obviously stated that the *'truth cannot be established'* (see above - so what is the 'fact bank' for?) - it is *his* job - but it does not mean that *you* have to propagate that the principle of Archimedes does not apply in Sweden. It applies in Sweden today, it applied, when the 'Estonia' sank on 28 September 1994, and it applied before Archimedes formulated it at 252 BC regardless what some charlatans stated in the Commission 1994 and in Sweden today and it applies to all ships. Apply it - it is very simple.

"WOOL SOCKS DO NOT GROW ON TREES!"

But even more serious, Vendela. Haven't you understood that your job is not a joke? It cannot be written in your job description that you shall sit and protect lying civil servants and politicians and in the process lie to worried relatives and survivors about what is going on and maybe hiding a crime in the process. But this is what you have been doing for exactly five years according to the plan. Shame on you, comrade Dobson-Andersson. How can you do such stupid, boring and unproductive work every day?

In Germany (and the United States) other principles apply. The German physicist and Nobel price candidate Jan Hendrik Schön was 2000 suspected of falsifying measured data to confirm his own fantastic theories of nano-physics and micro-electronics. In July 2003 an investigating commission found that an intentional manipulation of basic measured data to support theoretical conclusions could not be eliminated. Evidently the scientific reputation of Dr. Schön was destroyed. Likewise it is very easy to verify the intentional manipulations of all scientific *'evidence'* of the Estonia accident investigation. Permit a small investigation commission to check a sample of Estonia data - it will find that every essential piece of *'evidence'* is false. Including the latest master piece - the 2003 SPF Pre-study to prove the sinking of the Estonia. Here Vendela is really caught with her wool knickers down!

And there is no end to the manipulations. In March 2004 the SPF announced that they were going to produce a video animation of sinking based on the false Pre-study.

'The situation, that somebody will not accept the results of the investigation, does not mean that the investigation must be done again.'

Johan Franson, Swedish director of safety at sea, to Ms Mona Sahlin (s), deputy minister of transport, 990218

PART 1. HOW SURVIVORS AND RELATIVES WERE MISINFORMED 1994-1998

1.1 A PRIME EXAMPLE OF FALSIFICATION OF HISTORY

This is an enlarged and up-dated edition of the book **'Lies and Truths about the M/V Estonia accident'** that was published hard-copy in February 1998 (1) and which demonstrated that the 'Estonia' sank due to leakage below the waterline. The book described clearly that the **cause of accident** of the **Commission** was impossible. The information of the book was told to the Commission 1995-7, but it saw no reason to consider it **3.19** - as it should as per UN resolution IMO A.849 (20). The book got good reviews by several newspapers and technical magazines and nobody has shown that the content is incorrect. That was 1998.

The objective is to publish a more comprehensive analysis, based on proven facts, about the 'Estonia' accident and particularly about its *investigation*. One purpose is to start a factual and constructive discussion about what the Commission thought happened aboard the 'Estonia' on 28 September1994 in order to improve safety at sea in general and safety on ferries in particular. **The investigation, conclusions and the Final Report itself by the Commission are wrong from A - Z.** The work for safety at sea suffers.[8]

The Swedish government and its national maritime administration have decided - so far successfully - to cover up the Truth in a well-planned disinformation campaign. Nobody wants to factually discuss the 'Estonia' sinking in Sweden today.

It is the **author's** hope that this book can be used teaching naval architects and master mariners an example to learn from accidents, even if - in this case - a completely false Final Report (5) was issued in 1997 which prevented serious discussion for several years.

Evidently this book shall be used by students of risk analysis and safety management, when analyzing the 'Estonia' accident. These students will face an interesting task - to compare the official Final Report (5) with the observations in this book.

ONLY ONE CAUSE OF ACCIDENT ANNOUNCED AND INVESTIGATED

The Commission confirmed its sequence of events of the accident and its most probable (only) cause, already announced on 4 October, on 17 October 1994, only nineteen days **after** the accident and one day **before** they, reportedly, had found the visor 1 570 meters *west* of the wreck **1.11** and **before** they had investigated the wreck by divers. No *'less probable'* causes were ever investigated.

Never has the cause of a big maritime accident been confirmed in such a short time. And no evidence was ever produced - then or later - for the alleged cause and its consequences. It was quite cleverly done - immediately after the accident the public was presented by TV and media numerous emotional stories about the accident including the visor story. In such a way the visor story was etched into the minds of the people as "truth" without giving them a chance to query it in a rational manner.

The Estonian chairman of the Commission, first Mr Andi Meister, later Captain Uno Laur, repeated the same story several times, i.e. that the crucial event which caused the accident on 28 September 1994 was that the 14 years old *locks* of the bow visor of the ferry *were incorrectly designed and manufactured* in 1979. It had led to seven initial events leading to the sinking (the eighth event) on 28 September 1994 shown below.

It will be demonstrated in this book that there is no evidence for any of the events (i)-(viii) and that the ship probably sank earlier than stated.

False - invented - Events	Real Events
(i) the badly designed and manufactured ***visor locks*** in the *superstructure* had first been damaged by big external wave loads in the severe weather at **00.55-01.05** hrs,	The visor *bottom* (Atlantic) lock was probably damaged earlier and not in use at this accident as judged from its damages. The side locks broke, when the ship sank or later.
(ii) the visor at the forward end of the *superstructure* had then between **01.02/5-01.12/5** hrs, thus for 10 minutes moved up and down and hit against the fore peak deck on top of the hull (which had not been damaged) and then the ***visor hinges on the deck*** broke, deck plating and a very strong deck beam in the *superstructure* were cut by the lifting lugs below the hinge arms and the visor pushed forward against the ramp,	There is no evidence that the visor was lose for ten minutes and it is a fact that the vessel suddenly listed - and up righted - already at **01.02/5** hrs.
(iii) the ***six locks of the ramp*** (the ramp was closed and locked prior to this) protecting the *superstructure* were broken or ripped apart and the ramp was pulled fully open (and hit against the fore peak deck, in spite of the facts that neither the ramp nor the fore peak deck showed any impact damages),	The ramp was never locked but apparently held in place by a rope around its top. The rope was secured on the open deck aft of the visor. The ramp locks are not even damaged on the wreck!
(iv) the visor, **after having pulled the ramp fully open**, fell off the ship at about **01.14/5** hrs, while the ferry was on a westerly course from Tallinn to Söderarm (course and speed were unchanged and maintained prior to this and for another two minutes later),	The ramp was never pulled open and the visor never fell of the ship, when it was upright or floating. The visor hanged on to the wreck, when it sank!
(v) a large amount of ***water*** entered into the ***superstructure*** of the car deck >two meters above the waterline at **01.15**[9] hrs, while the speed and course were unchanged, as stated, during two minutes,	Only small amounts of water leaked in at the closed, but non-tight, ramp.
(vi) the garage (***the car deck space inside the superstructure***) was filled with > 6 000 tons of water (the total time for this event is unclear), and	With only (sic) 2 000 tons of water in the *superstructure*, the ferry would have turned upside down and floated upside down. If less water came in before the vessel stopped, all water would flow out by itself.
(vii) the ship started to ***heel*** and the watertight (sic) deck house (on top of the superstructure) was later filled with water, the ship was on the side - 90 degrees list at **01.30** hrs - which led to the final, eight event that	The 'Estonia' would immediately have turned upside down, when the angle of list was 40 degrees, when the righting arm (GZ) was zero!
(viii) the ship *sank* 22 minutes later at **01.52** hrs - the ship floated on the deck house for 22 minutes. Finally, two conditions for these events were that:	The ship sank already **01.36** hrs judged from the clock on the bridge.
(ix) **the crew could not be criticised**[10] (i.e. it did everything according to the emergency plans, etc.) and that	**The crew is lying**!
(x) **the ship was also in perfect condition** (i.e. all life saving equipment, certificates, etc. were perfect)**.**	The ship was unseaworthy on departure Tallinn.

The commission has produced a video **MS Windows MediaPlayer v.7** *CIF 352x288, 256 Kbps, 6,9 Mt* of (i - viii) above. There is no evidence for any essential statements in the video. Normal waves do not even lift the visor! That the port side lock failed first is not proven. That the visor can pull open the ramp is not proven - the ramp is locked. But if the visor is lost and the ramp is down and the speed is forward, water evidently enters the superstructure - it is well shown. Then the 'Estonia' should have capsized, turned upside down and floated. Not sink as shown in the video.

The Commission met for the last - 20th - time at Helsinki on 12 March 1997 and agreed a 228 pages Final Report in English (5), which then was published on 3 December 1997, i.e. 38 months after the accident. The Swedish edition of the same report was issued in December 1998, one year later, 50 months after the accident.

All essential facts in the Final report are false and cannot be proven. All the presented evidences are false or falsified!

The Final report (5) investigates only ***one*** cause for the sudden listing - ***water on top of the car deck inside the superstructure*** - and states erroneously that the 'Estonia' then sinks slowly during 30 minutes instead of capsizes immediately, when the angle of list is 40 degrees to float upside down, **1.9** and **1.15,** on the undamaged, watertight ***hull*** **-** fig. 1.1.1.

Figure 1.1.1 – Capsized, floating ferry

The Final report (5) therefore cannot explain why the ship sank without capsizing after the alleged *'accident'* due to the visor locks. The evidence for the *'accident'* - the lost visor - is very poor and does not convince an intelligent observer. There is in fact no evidence that the visor fell off the ship prior to sinking!

MISSING INFORMATION - THE SHIP WAS UNSEAWORTHY

The Final Report (5) does neither mention nor describe the availability of ***bilge pumps*** aboard **1.24** nor the ***watertight doors/bulkheads*** inside the *hull,* which shall be closed at sea **1.23** to prevent sinking due to hull leakage and flooding one compartment. That the 'Estonia' could only have sunk due to *leakage* of the hull below the waterline and flooding of several compartments is not mentioned and is thus not investigated.

Ships normally sink due to leakage - leakage of the 'Estonia' was never investigated 1994-1997 - and the responsible parties will not investigate leakage today.

The Final Report does not mention that the *life saving (rafts) equipment* under davits were lacking **1.33** at the deck house- and that it meant that the so called approved *evacuation plan* required that 1 196 persons aboard had to jump overboard (sic) and to swim ashore or to a raft thrown into the water to survive **1.34**, which naturally was not an approved method of evacuation in 1994 on an open, often ice cold sea. The result was that many drowned or froze to death. The 'Estonia' was evidently never seaworthy on the Baltic (31).[11]

The Final Report (5) is only a badly written report about an alleged faulty visor on the 'Estonia' and faulty visors on other ferries.

The Commission refused categorically during 38 months to discuss its invented theory about ***water on top of the car deck in the superstructure*** as no honest naval architect would support it. The investigation was completely secret from September 1994 to December 1997 (some reports were even secret until March 1998) and the Commission refused to answer any questions from outside experts. There is no evidence that a proper accident investigation actually took place. Most time seems to have been used to fabricate the false Final report (5). Extracts of video films of the wreck were provided 1994-1997 but the extracts were edited as part of the disinformation. The Final Report is quite a clever labyrinth of contradictions, which is difficult to describe, but an attempt is done in this book. The reader has to accept that many observations are repeated in the various chapters, the reason being that if you follow the various links you might miss some information.

After the publication of the Final Report in English the Commission was dissolved and, e.g. the Swedish Accident Investigation Board (Statens Haverikommission, SHK), does not reply to any questions about it, in spite of the fact that they signed it, **1.38** and **3.19**. The reason is as follows:

If the 'Estonia', with unchanged speed (>14 knots) and course forward during only *one* minute, had lost its visor and, if the ramp had been pulled fully open, then big waves would have filled up the car deck in the *superstructure* every fifth or sixth second Appendix 4 due to pitching. Each wave added at least about 180 tons of water, which was pushed inside on the car deck with a velocity of about 7 m/s. The whole ramp opening (30 m²) would be filled up, three, four meters above the car deck, when the bow was down into the wave; all cargo (trucks and cars) should have been pushed aft, light fittings and TV cameras for monitoring would have been torn away and persons on the car deck would have been smashed to pieces by the water.

Fig.1.1.2 - 'Estonia' after 1 minute

The immediate damage would have been enormous. The waves straight into the car deck superstructure space would have caused an enormous noise - it would have been like the ship colliding with a wall. When the waves were stopped by the cargo on the deck, the water would spread on top of the deck inside the superstructure, but it is probable that the ferry would trim on the bow, stop and list *immediately* already after only five, six waves - in less than a minute. The ferry would have lost its propulsive power already at 30 degrees list (after five waves), would have been impossible to control and would have stopped. A ship naturally cannot sail at 14 knots with an open bow ramp in four meters high waves, Beaufort 7, when the fore ship moves up five meters and down five meters as suggested by the Commission!

Fig.1.1.3 - 'Estonia' after 2 minutes

Then the ferry would have capsized, 1.9, 1.15 and 2.16 in one minute, the deck house windows would have been smashed, the deck house would have been flooded and the ferry would float upside down on the undamaged underwater *hull* and its undamaged water- and air-tight compartments.

This is very easy to demonstrate with model tests (and one reason the Commission never did any model tests with an open ramp) and by correct calculations. The 'scientific' calculations of water inflow into the *superstructure* done by the Commission are falsified - see Appendix 4.

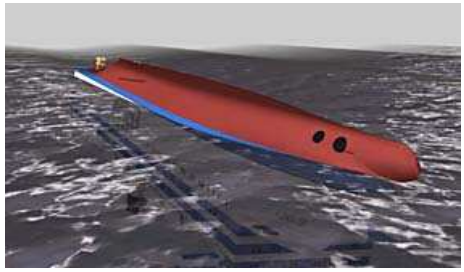

Fig.1.1.4 - 'Estonia' after 3 minutes

The above sequence of events, which is the logical development with a fully open ramp, was evidently never reported. Most of the survivors reported 2.1 instead that there were two severe bangs before **01.00** hrs, that the ferry already at about **01.02/5** hrs first rolled a little and then heeled *suddenly* >30 degrees to starboard, when the survivors held on to fixed things, and then the ship up righted and reached a stable position at about 15 degrees list, 2.1, 2.12 and 3.16, so that you could escape to deck 7 during several minutes. When the ship rolled to an almost upright position, it was possible to get out. Then it took a fairly long time, 20-30 minutes, before the ferry was at the side - 90 degrees list - at about **01.30** hrs and sank on the stern a few minutes later between **01.32-01.36** hrs. **Why did the 'Estonia' lose stability and sink in such a way?**

The author thinks the 'Estonia' sank due to a severe leakage of the hull below the waterline starting at 00.55 hrs - inflow 100 m³/minute, that water spread into several compartments of the hull through open watertight doors on deck 0 (tank top), that the initial stability was suddenly lost due to large free water surfaces in several compartments on the tank top, so the ship heeled and that a new equilibrium was reached at about 15 degrees list. The leakage may have started at the stabilizers, which had been installed eight months earlier, and which had never been tested in rough weather. The lying crew probably discovered that the 'Estonia' was leaking prior to the sudden listing.

THE OPEN STARBOARD PILOT DOOR

In this stable but sinking condition with 15 degrees list the starboard side of the superstructure was below water. It seems that the starboard pilot door at about frame 122 in the side was also open at this time, 1.4, 1.16 and 2.24 - the crew was unloading cargo through the door (!?) or it was not properly locked - and that therefore water also started to enter into the superstructure causing further listing.

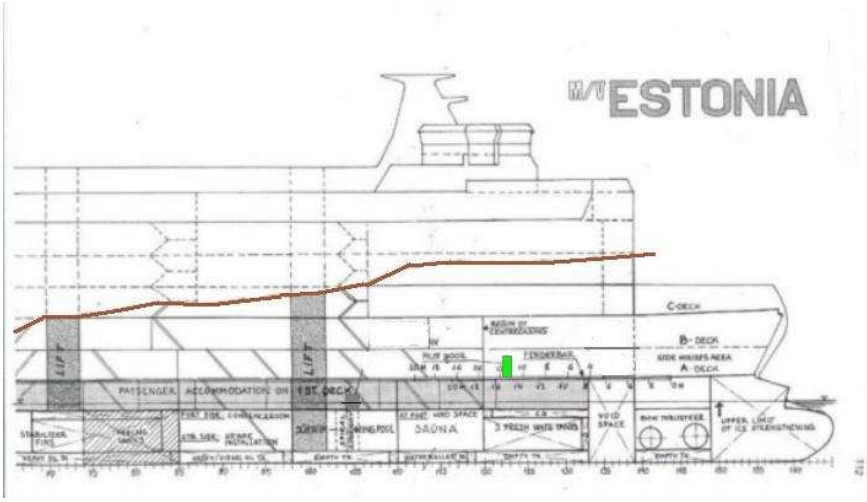

Fig.1.1.5 - Pilot door at fr. 122 starboard side

When more water then leaked into the hull the vessel didn't upright so that 10-15 minutes later deck 4 aft starboard was under water and the *superstructure*/car deck 2 started to fill from above through openings aft (ventilators on deck 4 - inflow say another 100 m^3/minute) causing stern trim and an increased list 90 degrees at **01.30** hrs and that the ship then sank quickly stern first at 0**1.32-01.36** hrs. This is the only logical explanation.

The Final Report (5) does not mention the possibility of leakage of the *hull* at all. The Commission has also made great efforts to hide all films and observations of the open starboard pilot door that was visible down on the wreck above the mud line. Films have been cut/edited and sand has been deposited on the wreck to hide the pilot door.

CLASSIC EXAMPLE - THE 'HERALD OF FREE ENTERPRISE'

There is a classic example how a car ferry *capsizes* with water on the car deck without sinking - the **'Herald of Free Enterprise'** - outside Zeebrügge in Belgium on 6 March 1987 in fairly calm weather. She had no visor but a normal bow door - of steel - in the front bulkhead of the *superstructure* above the car deck. Through negligence the door was not closed at departure, which was not detected due to bad control routines. When the ferry with bow trim accelerated just outside the harbour entrance, the bow wave moved straight into the *superstructure* car deck space, the ship started to heel and turned out of the dredged fairway and capsized one minute later outside the fairway with 500-1.000 tons of water on the car deck a few hundred meters outside the harbour. The weather was fair. Luckily the water was shallow (15 meters) and the **'Herald of Free Enterprise'** ended up on the side on top of a sand bank but 188 persons drowned. Had it been >20 meters depth the ferry would have turned upside down and floated keel up and probably all 540 aboard had died. The whole accident took two minutes.

DISINFORMATION ABOUT THE 'HERALD OF FREE ENTERPRISE'

In (25) the **'Herald of Free Enterprise'** accident is described completely different (for Swedish readers) by the so called Swedish Analysis Group appointed by the government - free translation from Swedish:

> *"The 6 March 1987 at 19.08 hrs the car ferry "Herald of Free Enterprise" left Zeebrügge to sail for Dover. There were 540 persons aboard. When the ferry after 20* (sic) *minutes voyage changed* (sic) *course, it capsized and water flowed into the open bow door. The ferry came to rest on its port side on top of a sand bank - two thirds were below the waterline. 351 passengers could be saved".*

The above is evidently pure disinformation! The authors of this misleading description of the 'Herald of Free Enterprise' accident are listed at 1.36. One of the authors - **Christina Jutterström** - was later (June 2001) appointed head of the Swedish public television.

A lot of people lying for the Swedish government about the 'Estonia' have later been appointed to - given - high positions in the administration.

The responsible parties for the 'Herald' accident were later identified - both crew onboard and management ashore - and were sentenced in court. A responsible party for the 'Estonia' accident has still not been identified.

The official explanation is that the 'Estonia' sank (*'capsized'* the Commission says) due to water *on* the car deck 2,5 meters *above* the waterline in severe weather, Beaufort 7 and >4 meters waves. The water had reportedly ended up on the car deck inside the *superstructure* on top of the *hull,* as visor locks and hinges had broken, the visor had fallen off, the ramp protecting the superstructure had been pulled fully open and the forward part of the superstructure was wide open, so that (a little? - the Commission says 33-55 tons/minute) water came in every time, when the bow dipped into four, five metres high waves and when the ship moved forward at unchanged speed (14 knots).

That sequence of events is not possible according to above description what happens, when the ramp is pulled fully open. The reason is that any water temporarily loaded on the car deck inside a superstructure in an otherwise undamaged ship with an intact hull only creates a heeling moment that tips the ship upside down. It goes fast - 1 500 tons should have been sufficient to tip the 'Estonia' upside down in severe weather - capsize.

The capsize occurs, when the heeling moment of water in the side of the superstructure exceeds the ship's normal righting moment of the hull due to buoyancy. **Then the ship turns turtle!** The ship then floats upside down. A heeling moment cannot sink a car ferry. It is *elementary!*

Ships only sink when they lose buoyancy (leak) of the hull or are overloaded, when the old and added weights exceed the available buoyancy of the *hull*, which is never the case with water on the car deck in a *superstructure*. With water in the superstructure ferries capsize and float upside down before overloading occurs - the extra weight of the water in the car deck then flows out.

The Commission had apparently no idea about these simple facts, when it met for the first time on 28-29 September 1994 and started to spread the incorrect water-on-the-car-deck-in-the-*superstructure*-theory 2.16. Or they knew and decided to censor the fact at the request of their chiefs.

THE FALSIFICATION OF HISTORY STARTED ON THE SAME DAY OF THE ACCIDENT

That is normal. Millions of people were shocked and it was extremely easy for the Commission to manipulate everything. Nobody could think clearly. Somebody - on the day of the accident - planted the disinformation that the visor had fallen off and this impossible suggestion was supported by the lying crewmembers. The author was however at sea in the Mediterranean and got very interested - could it happen to his ferries? Therefore this book is necessary. A factual review how the Commission 1.5 - the nine investigators and several experts and observers of three nations and their maritime administrations - manipulated everybody including the International Maritime Organization, IMO. It is now seven years after the accident, but it is never too late to present the Truth, which is very easy to verify. Appoint a new investigation and investigate the real facts!

Ask the lying crew what really happened.

Because the investigation has developed into an ongoing conspiracy. Swedish civil servants and politicians are still lying about the investigation and dismissing all new facts as irrelevant - and that they have been investigated.

The 'Estonia' sprang probably a big leak at about **00.55** hrs in the hull, when several persons aboard experienced hard shocks 2.1. The shocks were not caused by waves hitting the hull - it was something else. The first shock was a collision between an unknown object and the visor causing a big indent 6-8 meters above waterline. It could only have been caused by a contact with an *outside* object. The Commission suggests that the visor collided when it fell off against bulbous bow, but it is not possible. The second shock ripped open the side shell below waterline. One or two hull compartments started to fill up. In principle there was no danger. The 'Estonia' should have floated after leakage and with one or two compartments full of water, if the watertight doors were closed.

Fig.1.1.6 - The buckle in the 'Estonia' visor - what caused it?

But the Commission never investigated, if the 'Estonia' sprang a leak, or if the watertight doors were closed inside the hull.

It is a grave error. The *hull* of the 'Estonia' on decks 1 and 0 was divided into 14 watertight compartments below the (car/bulkhead) deck 2. The various compartments were in too many locations connected by watertight, sliding doors in the bulkheads. On deck 0 there were *ten* watertight doors.

Two watertight compartments on deck 0 could only be accessed by opening a watertight door; the *stabilizer compartment* and the compartment forward of the stabilizer compartment. If it were a leak inside the *stabilizer compartment* you could only reach it by opening a watertight door. This arrangement was incorrect and very dangerous.

On deck 1 there were *five* watertight doors in the passenger accommodation, one watertight door to the engine control room and several doors elsewhere aft. Access to the engine control room was via two watertight doors! - albeit with a vertical emergency exit ladder to the car deck 3 meters above.

The number of W/T doors was too large and not as per the SOLAS 1.23. The 'Estonia' was therefore incorrectly built and certified and not seaworthy for the open Baltic. She was once 1980 only built for protected, coastal trading.

All watertight doors shall be closed at sea. It was impossible on the 'Estonia', because i.a. the public toilets for passengers on deck 1 were in the second and fifth watertight compartments. That the doors were open have been confirmed by passengers and also by the Estline inspectors Karl Karell and Tomas Rasmusson to the Commission (acts A60f, g*), and by the Swedish NMA inspectors.

The Final Report does not mention nor describe the watertight door system at all.

That is another grave error. Water could spread to several compartments in the *hull*, which caused sudden listing >30 degrees at 01.02 hrs. Passengers saw water on deck 1 forward before 01.00 hrs.

The bridge was probably informed that the ship was leaking and that the engine crew had started the bilge pumps and may have closed some watertight doors. One survivor - Sillaste - has informed that the *bilge pumps* were running 1.3. When and **why** were the bilge pumps started?

The Final Report (5) does not even describe the bilge pump system and especially the fact that the bilge pumps suck from the bilge on deck 0 of the *hull*, which is six meters *below* the car deck, not from the car deck 2 and the *superstructure*, which is >two meters above the waterline 1.24.

One survivor (the patrolman Linde) has told the Swedish daily Dagens Nyheter and testified before the Commission that passengers noticed water noticed on deck 1 prior to the accident (the listing). The situation was thus critical. It is probable that the watertight doors on deck 1 at that time were open. But as described in 1.23 the control and indication of the watertight doors on the bridge were unclear - and you could *open* the

watertight doors from the bridge! It is thus possible that watertight doors in the *hull,* e.g. the doors closed by the crew on deck 0 to isolate the damage, were opened from the bridge and that it contributed to the accident.[12]

THE DEFECTIVE WATERTIGHT DOOR SYSTEM CONTRIBUTED TO THE ACCIDENT

It is a sad fact that the accident could have been prevented at any time between the first heel at 01.02 hrs and until the superstructure started to fill from deck 4 above at say 01.20 hrs by just closing all the watertight doors and starting the bilge pumps at full speed. At that time the damaged and leaking ship was still floating, albeit with >1 500 tons of water on deck 0. If the watertight doors had then been closed, the leakage would have been isolated in one hull compartment, which would have filled up 100%, while the water in the other compartments could have been pumped out. Probably, after first having closed some watertight doors, and then accidentally having opened the doors, there was no more hydraulic power in the system - and the watertight doors could not be closed.

Leakage of the *hull* as cause of accident was never investigated. The watertight door system is not described at all. The investigation was manipulated from the beginning with a false cause of accident - the visor protecting the ramp of the *superstructure*.

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[8] The author thinks it is hard to understand why the Commission and its sponsor, i.a. the Swedish government refuse to even discuss the content of the Final Report. The Analysis Group, which was appointed to review the actions of various Swedish institutions **1.36**, should according to its instruction *not* review the work of the Commission.

[9] Estonian times.

[10] The decision not to blame the crew was taken early and is not explained in the Final Report. It was part of the Swedish-Estonian deal to cover up the true cause of the accident.

[11] Two Swedish NMA inspectors from Malmö, Åke Sjöblom and Gunnar Zahlér **1.33** surveyed the 'Estonia' the 27 September 1994 at Tallinn. They found many defects. See supplement 223 in the Final report (5) and (31). Sjöblom was asked to shut up and change his early testimonies. Later he was appointed chief of the Swedish southern and western Ship Safety Inspection regions. He was paid extra money by Franson to continue shutting up. Now he is retired - but he still shuts up.

[12] The author will in this footnote describe why and how he believes the investigation was manipulated. The ship sank due to leakage and open watertight doors of the hull. The ship was unseaworthy. The visor and the ramp were damaged before the accident. They could not be locked properly and were kept in place by temporary means. When the ship sank, the visor was still attached to the ship, which was confirmed, when the wreck was filmed. However, the films showed the old damages around the visor and these were used to blame the accident on the visor design and manufacture. Later the Commission was told - ordered - only to investigate this cause of accident. But as the visor was still hanging on to the bow (and the ramp was closed), Mr Kari Lehtola told the media a false wreck position and ships guarding the wreck was moved to the false wreck position 2 100 meters northeast. Then apparently the visor was detached from the wreck *under* water by divers and fell to the bottom. On 18 October the Commission stated that the visor had been found one mile west of the wreck. No position was given. Later the Swedish navy lifted the visor up from the bottom - naturally at the wreck. No position was given. Later the Commission corrected the false wreck position and informed the alleged visor position - 1 570 meters west of the wreck. This very complicated charade was necessary to be able to blame the accident on the visor. The Commission apparently thought that they could write a completely false accident investigation report by moving wreck and visor around.

Marine casualty or incident safety investigation *means a process held either in public or in camera conducted for the purpose of casualty prevention which includes the gathering and analysis of information, the drawing of conclusions, including the identification of the circumstances and determination of causes and contributing factors, and, when appropriate, the making of safety recommendations'.*

IMO res. A.849 (20) 4.6

1.2 THE SECRET COMMISSION APPOINTED ON 28 SEPTEMBER 1994

The night of the 28 September 1994 the passenger ferry 'Estonia' allegedly sank at about 01.48-01.55 hrs according official but unproven information. As will be shown later the 'Estonia' probably sank already at 01.32 hrs. A Mayday was sent on VHF Channel 16 at 01.24-01.30 hrs - probably interrupted by the sinking.

Many ships in the vicinity did not understand that the 'Estonia' had sunk and never assisted **1.20**. The Final Report (5) does not mention this. A proper Mayday was never sent. Only a few ships went to assist, but they could only pick up 30-40 persons in the water (about 100 were picked up by helicopters). The assisting ships could not launch any lifeboats or rescue boats **1.37**. At least 852 persons died including more than 500 Swedes.

Already at 06.00 hrs the Estonian president Lennart Meri **4.5** informed his countrymen about the accident. Meri declared the day of national mourning and that all flags would fly from half pole, and said that:

> *day we must in thought and deeds support those who have been hit by sorrow".*

An Estonian-Swedish joint-venture company, Estline, was behind the ferry operations. The ferry itself was registered in Estonia and Cyprus, and it was Estonia, which was responsible to make a correct accident investigation.

THE INTERNATIONAL MARITIME ORGANISATION

Estonia had become a member of the UN International Maritime Organisation, IMO, already in 1992 and Estonia had therefore adopted several resolutions about how to carry out an investigation and the procedures, e.g. *it should be public* and all results and conclusions should be informed to the IMO. Resolution A.637 (16)[13] is about Cooperation of maritime accident investigation. The resolution has recommendations in connection with accident investigations according to the United Nations Conventions on the Law of the Sea, 1982 (art. 94(7), art. 217(5) and art. 223)). An accident investigation (e.g. the 'Estonia'), regardless if it is done by the flag state (Estonia) or by an administration of another state shall be carried out so that:

> *… 2.(a)(i) ... the public shall be permitted to attend.*

According IMO res. 637(16) point 2.(a)(i) it is clear that the Swedish public had the right to attend the investigation. But Sweden, Estonia and Finland did not permit relatives, survivors, cargo owners or *any* interested party (underwriters, other shipping companies, trade unions) to attend the investigation 1994-1998. *Everything was kept secret.* You wonder why? The answer is that a false cause of accident was immediately announced and it would have been discovered, if the investigation were public. And who ordered the secrecy? The answer must be that it was done by persons with a particular interest that the true cause should never be known.

Estonia thus ignored completely all the IMO resolutions 1994 (and also the SOLAS rules). Instead the same day the prime ministers of Estonia, Finland and Sweden decided that a joint and international (but private? 1.5) Commission should be formed to investigate the accident and that its chairman should be an Estonian. That was all! The cover-up started the same day the accident took place 4.4 and misleading information was immediately fed to the media.

The same day the Estonian Foreign Office informed that the Estonian Commission talked to a Norwegian diving company to assist in the investigation,[14] i.e. an Estonian Commission was already formed on 28 September! But the Estonian Commission quickly stopped talking to the company - Stolt Comex - to assist with the investigation. The words of President Lennart Meri at 06.00 hrs that

> *"This difficult day we must in thought and deed support those who have been hit by sorrow".*

had quickly lost its content only 12 hours later. The cover-up had already started. **Secrecy during an accident investigation is not permitted.**

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[13] Res. A.637(16) was replaced in November 1997 by Res. A.849 (20) which in principle says exactly the same thing in a Code of marine accident investigations. Sweden, Finland and Estonia have adopted but ignored both resolutions.

[14] **Press Release from the Ministry of Foreign Affairs Republic of Estonia Immediate Release 28 September, 1994 21:15 PM** …The Crisis Commission established by the government held a press conference at 7:00 pm to review their work during the day. The Commission was chaired by Minister of Transportation ... Andi Meister **1.5**). ... The Commission said that the reasons for the tragedy are not clear and are under investigation. To this end the Commission has opened negotiations with a Norwegian diving company to assist in the investigation. The Commission Chairman said that the cause of the accident can only be determined with a review of the ferry, which lies 80 metres beneath the surface. ... The Commission called for anyone knowing who was travelling on the 'Estonia' on a ticket under another name, could they please inform their local police station ...

'Governments should take all necessary steps to ensure that they have available sufficient means and suitably qualified personnel and material resources to enable them to undertake casualty investigations'.

Imo Res. A.849 (20) 11

1.3 THE FALSE POSITION OF THE WRECK IS ANNOUNCED

During the night to Wednesday 28 September 1994, just before the alleged *'accident'*, i.e. the sudden listing due to water loaded on the no. 2 car deck several, 2,5, meters above waterline, systems engineer Henrik Sillaste attended, as he has testified, a compartment inside the hull on deck 0 below and forward of the engine control room, ECR, on deck 1. He said that he was repairing a fault in the vacuum toilet system; 1.48 about his trustworthiness - it is clear that Sillaste is lying or is being quoted incorrectly or that his written testimonies have been changed or manipulated.

The fault is not described in the Final Report.

The author thinks that Sillaste is describing something he had repaired previously in port. It is probable that he had been called down to do something more urgent, e.g. 2.23. Sillaste has later told Estonian journalists that he is incorrectly quoted in the Final Report (5). This is very good. Sillaste knows exactly what happened. But he has not yet told the full truth.

So let's assume that Sillaste was repairing a fault in the vacuum toilet system. Let's assume that the vacuum toilet system manifold was installed adjacent to the two sewage tanks on deck 0 adjacent to the conference rooms - see **Figure 1.3.1** below.

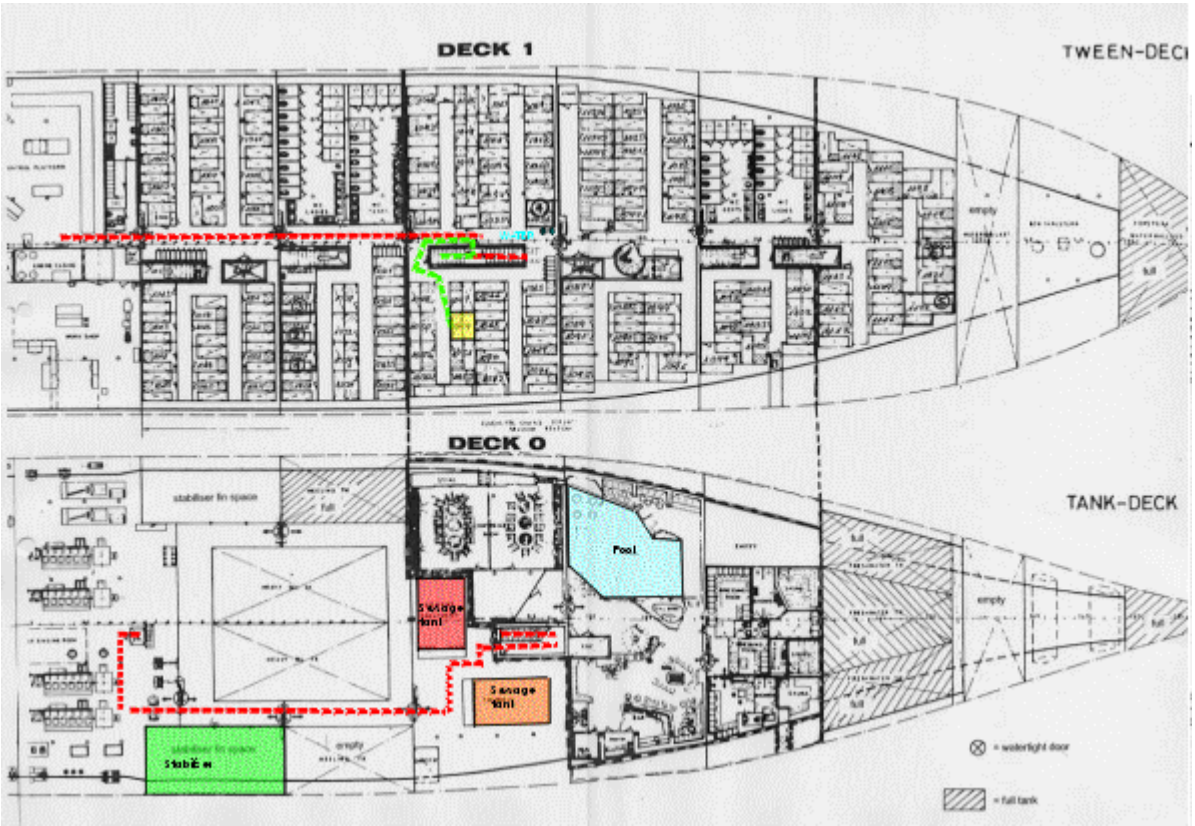

Figure 1.3.1 – Sillaste's way from sewage tanks on deck 0 to ECR on deck 1

THE STRANGE STORY OF SILLASTE

According to the edited testimonies (chapter 6.2.4 in (5)) which the Commission has included in the Final Report Sillaste had been called upon at 00.30 hrs (according a later hearing it was 00.45 hrs to suit another scenario) and the innocent repair work, which had nothing to do with the *'accident'* had taken about 20-25 minutes. Then the 'Estonia' was suddenly shaken by some impacts and heeled over according to Sillaste **2.1**.

While ***all other*** passengers were stricken by panic and tried to escape - they all reported a sudden listing >30° to starboard- Sillaste returned quietly - as he says - after one or two minutes up to the ECR on deck 1, where oiler Kadak and third engineer Treu already were in place.

Sillaste had not suspected anything unusual before or after the *'accident'* - the listing. Only some 'strange' noises. Therefore he apparently walked to the ECR to find out what was going on. Sillaste was calm, e.g. didn't rush straight up to open decks to save his life. No, Sillaste walked to the ECR.

We do not know or are told how Sillaste returned to the ECR. Referring to **fig. 1.3.1** above it seems logical that Sillaste would have rushed into the *stairwell* adjacent to the sewage tanks and climbed up to deck 1. Then he could walk back on deck 1 in the centreline corridor to the ECR via three open watertight doors - but then he would have met a lot of passengers **2.12** screaming for help on deck 1. Alternatively Sillaste could have walked back on deck 0 through three, assumed open, watertight doors to the generator room below the ECR and taken *a vertical ladder* up to the ECR, or proceeded into the engine room aft (via another watertight door), up a sloping ladder and then into the ECR (via another watertight door).

Regardless what way Sillaste took - he was probably not in the sewage tank room but in the engine room - he states that *he returned to the ECR without meeting any passengers*. He does not mention the watertight doors but they must have been *open*, as his colleagues state in other hearings that the watertight doors were closed long after the *'accident'* occurred (even if they had no means to know it).

THE BOW RAMP IS CLOSED

On the car deck monitor in the ECR, which then showed the bow ramp from inside, Sillaste saw, and it is clearly described, how water leaked in at both sides of the **closed** but not tight bow ramp at least two minutes *after* the sudden listing **1.30**, i.e. the ramp was not open. This is a very strange observation. All other passengers had reported a sudden, >30° listing, and were rushing up to open decks, while Sillaste instead calmly looks at a monitor of a closed ramp. In a later testimony Sillaste said that engineer Treu had asked him to check the car deck via the monitor. The cars were in place and Sillaste could not see any water on it (he saw the roofs of the cars), even if some water apparently was leaking in at the ramp. The light was still on on the car deck.

Sillaste was certain that 3rd engineer Treu had seen that water entered at the closed ramp and Treu has testified to this effect - the ramp was closed after the sudden listing. At the last questioning Sillaste was requested to sketch what he had seen in the monitor. It is the sketch, figure 6.1 in the Final Report (5) - figure 1.3.2 to the right, showing a **closed** and leaking ramp! Henrik Sillaste is a consistent observer. In total five hearings he told, with minor exceptions in details, the same story. The first questioning (2) was held nineteen hours after the accident by Finnish police (Jari Paakkari) with director/master mariner Simo Aarnio **1.5** from the Finnish NMA present as expert and an Estonian interpreter.

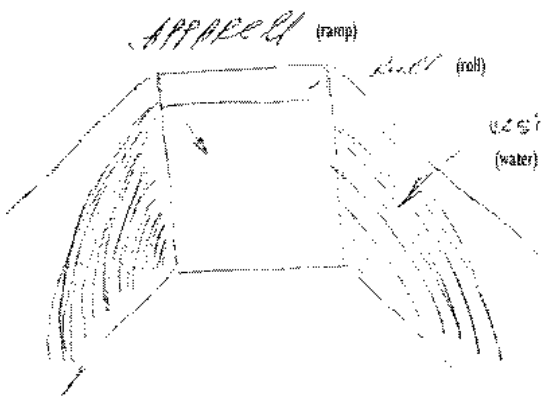

Figure 1.3.2 - The closed ramp at the forward end of the superstructure two minutes after the sudden listing. Fig. 6.1 in (5).

What Sillaste says is that, when he was on deck 0

> '*...I noticed that something was wrong because the ship heeled over to starboard*'.

Can we believe that? Didn't Sillaste observe anything before the heel to starboard? Was he really fixing the toilet system? Where was he? According to surviving passengers the ship heeled suddenly >30 degrees at about 01.02 hrs and later became stable at about 15 degree list while rolling. Due to the strange listing Sillaste returned to the ECR (it took one or two minutes), where he saw on the monitors (2) that

> *"water entered at the sides of the ramp, more on the starboard side".*

It is thus clear that the ramp was still **closed** *two minutes* after the first sudden strong listing >30 degrees had occurred. Sillaste never saw an open ramp. Sillaste says later in (2) that

> *'My opinion is that Treu then had told the bridge that water was entering the ship. The **bilge pumps** were running to pump out the water'.*

THE BILGE PUMPS

Notice that Sillaste talks about *'**bilge pumps**'* and *'water was entering the ship'*. In the Final Report (5) this is described as follows:

> *"While he (Sillaste) was still in the control room, the systems engineer (Sillaste) heard the bridge ask if it was possible to upright the ship. He (Sillaste) thought that the third engineer at that time had informed the bridge that water came in on the car deck. The **pumps** were on to get the water out. Then the ferry heeled more and lose objects fell around him".*

Note that the Final Report (5) speaks, apart from an open ramp, about water on the *car deck*, while Sillaste (2) talks about water entering the ship = the hull below the car deck. Note the sentence: *'The pumps were on to get the water out (from the car deck)'.* What pumps? Water on the car deck inside the superstructure above the waterline flowed out by gravity through scuppers. There were no pumps with suction from the car deck and the superstructure 2,5 meters *above* the waterline and Sillaste knew this!

The six bilge pumps of the 'Estonia's were situated below the car deck with suction only from the bilges of the hull six meters below the car deck in each watertight compartment. So if the bilge pumps were running, there was water in one, two - or more! - watertight compartments on deck 0 below the car deck 2 in the hull! It is clear that the Commission in the Final report (5) changes the statement of Sillaste to make the illogical impression that water was pumped out from the *superstructure*.

Sillaste had worked 18 months aboard the 'Estonia'. He knew the various systems. When did Henrik Sillaste give his observation about the **bilge pumps**? According to documents with the Commission it was at the *first* questioning (2), nineteen hours after the accident:

> *"The **bilge** pumps were on to get the water out"*.

Five days later he repeats it for the Estonian police:

> *"The **bilge** pumps were on to pump out the water"* (act D13).

That the bilge pumps were running is evidence that the hull, decks 0 and 1, of the 'Estonia' was leaking and that the hull plates were damaged. The Final Report (5) does not mention the bilge pumps of the hull 1.24 at all!

The Final Report (5) has censored all information about the **bilge pumps** pumping the *hull bilges* on deck 0 dry in order to support the history of water on the no. 2 car deck in the *superstructure* above the *hull*. It is quite easy to reveal this falsification of the Final report.

Another question is: Who started the bilge pumps? And when were they started. And why?[15]

PANIC AMONG THE PASSENGERS - CALM IN THE ECR

The staff in the ECR, Treu, Sillaste and Kadak, is alleged to have talked four times to the *bridge* about up, i.a. righting the ship *after* the listing.

It was then full panic onboard to get out from the passenger accommodation public spaces, but on the bridge the crew allegedly talked calmly to the crew in the ECR. Can we believe that? Of course not.

No alarm had been sent from the bridge at that time. According to the surviving passengers **2.1** the ship had suddenly listed a lot >30° (at 01.02 hrs) and up righted and reached a position with a list <15° and then the passengers had immediately started to evacuate to open decks, but the Final report (5) states that the only crew action on the bridge was to telephone the ECR (at 01.16 hrs) and ask if you could ballast the ship upright. It does not make any sense! The vessel was already almost upright. Otherwise you could not get out!

WHY SILLASTE WAS CALLED DOWN

It is of course possible that the engine crew knew that the ship was leaking and that Sillaste had been called down to assist isolating the leakage and starting the bilge pumps just before the sudden listing took place. The logical way to do this was to close the watertight doors around the leaking compartment, e.g. the sewage tanks or the stabilizer room - and to **start the bilge pumps**! You normally start bilge pumps, when one hull compartment is leaking and filling with water. The Commission mentions nothing of this sort.

According to the Final Report Sillaste and his colleagues stayed at least another *seven* minutes **1.48** in the ECR, *before* alarms were given at **01.22** hrs and their evacuation took place a few minutes later, but there are no statements or evidence to the effect that Sillaste saw an open ramp in the superstructure. Or that he was in the ECR for that matter! No normal person stays down in a bottom of a ship that is sinking.

The author thinks that Sillaste escaped immediately to the open deck after the sudden listing, wherever he was, probably in the engine room. The sudden listing was maybe caused when the bridge by mistake opened the watertight doors around the *leaking* compartment and water spread, e.g. into the engine room - and the list developed - and when Sillaste was suddenly standing to his knees in water - in the engine room.

Thus he never looked at the monitor in the ECR and never heard any conversation with the bridge. His testimony is not trustworthy. It is probable that the Commission has made up his story (Sillaste has later told Estonian journalists that the Commission has falsified his (already false?) testimony).

SPECULATIONS - FALSIFICATION OF HISTORY

Because in spite of the fact that Sillaste the 28 September told the Finnish police and the Commission that he thought the 'Estonia' sank due to leakage, the biggest newspaper in Sweden - Dagens Nyheter, DN, speculated the following day (29.09.94)

> *'Water on the car deck is a possible cause'*,

and supported this speculation or guess by

> *'Most experts* (sic) *agreed on Wednesday night that the tragedy was caused by water ... on the car deck'.*

Who actually told the media about water on the car deck in the *superstructure* is not clear. And no names of any *experts* were given then or later. The falsification of History had started at full speed - supported by un-named *'experts'*.

Mr Erik Wedin of the Swedish NMA disagreed and was quoted that

> *'...it alone could not have caused the catastrophe'.*

Further according to DN

> *'During the Wednesday it was clear that there were only two probable causes for the catastrophe: (1) water has entered through one of the doors or (2) the ship ended up sideways in the seas after all four engines had stopped (and the cargo shifted)'.*

Why it was clear that there were only two probable causes was naturally not explained.

WERMELIN AND THE VISOR 28 SEPTEMBER 1994

A person named Hans Wermelin told DN 28 September 1994 that

> *'the visor has been ripped off!'.*

Wermelin was a technical consultant at Stockholm working for Baltic ferry companies with company ADC Support, which later got various jobs by the Commission. Wermelin was paid SEK 140 000:- for writing Chapter 10 of the Final Report (5). How Hans Wermelin already on 28 September - *the day of the accident* - could know that the visor had been ripped off is one of the mysteries of the 'Estonia' disaster.

DN also informed that Swedish Prime Minister

> *'Carl Bildt knew personally several persons aboard. Bildt was informed at 01.30 hrs (Swedish time).*[16] *… we must check everything (varje sten måste vändas på'),*

Bildt told DN (more about Bildt in **4.4**). Lethola **1.5** said that Sillaste should have said that

> *'a cover on the car deck has permitted water to get in'.*

But according to the police report (2) Sillaste had never talked about a leaking cover on the car deck, but that the ***closed*** bow ramp at the forward end of the superstructure was leaking, there was water in the ship and that the *bilge pumps were running*. Who Mr Bildt knew aboard has never been published!

It is interesting to note how the media concentrated the interest on the unbelievable water-on-the-car-deck-in-the-superstructure-2,5 meters-above-waterline story and never mentioned the word leakage, bilge pumps and watertight doors/bulkheads of the hull below waterline or why a ship is actually floating. The instability of a ship with lose water loaded on top of the car deck in the *superstructure* was not reported 28/29 September or later. It could only have caused capsize - the ship turning upside down - or more likely - nothing! The water should have flown out when the ship stopped.

The Commission was then busy trying finding the wreck.[17] The wreck was officially found 30 September p.m.

The Commission **1.5** apparently had a first or second informal meeting on Thursday 29 September at police headquarters at Turku between 08.30 - 20.30 hrs (act A1). In the morning only Lehtola, Iivonen, Arnio, Forssberg, Rosengren, Stenström, Anderson and Göransson were present. At 09.00 hrs there was a press conference (about the rescue work). At 14.00 hrs Meister, J. Kreek and Enn Neidre and another Estonian

(Indrek Tarand?) joined the meeting (Neidre had probably arrived to Turku the day before). Later Karppinen arrived. They questioned three Estonian crewmembers. There are no records of the meeting.

According to the Final Report (5) chapter 8.2:

> *"At its first meeting on 29 September 1994* (i.e. before the wreck was found) *the Commission decided that the wreck should be examined with a submarine Remotely Operated Vehicle (ROV) to ascertain her general condition and whether the* ***bow visor had been detached*** (sic)*".*

Thus - the visor scenario was clearly established by the Commission already on 29 September - before the wreck had been found (sic) or filmed - and later no other damages or causes were going to be examined or investigated.

The reader should note that *already on the day of the accident* (28 September) Mr Wermelin had suggested that the visor had been ripped off and on the following day the Commission, which was not yet formed, decided that an ROV should ascertain that the visor had been detached. But the wreck had not been found! Isn't strange?

STRANGE MEETINGS

The Finnish and Swedish members of the Commission and observer Sten Anderson and expert Simo Arnio had another informal meeting on 30 September 1994 at Turku, i.e. the Estonians and a Danish observer were not present, when a number of questions were reviewed (the wreck was still not found):[18]

1. … Discussion about partition of jobs … Loading = Estonia + Sweden, … , Pass.list = Finland, … , Weather = Estonia (but …).

2. … (about exchange of info per fax), 3. …(about the next meeting), 4. …(about records of meetings),

5. **Estonia's involvement with NATO/Russia** about the wreck.

6. … (how to handle the public media), 7. …(about an archive),

8. Swedish Accident Investigation Board members visit Nordström och Thulin this afternoon. Load plan.

9. … (about a meeting with the Swedish NMA), 10. …(about air rescue), 11. …(about contact with Estonia), 12. …(about hearings),

13. Discussion about **the necessity to guard the wreck**.

14. … (about crew alarm), 15. …(about plans and drawings of the ship - they are in Finland),

16. Finally: The Helsinki newspaper writes that **one of the Estonian members of the Commission is involved with illegal arms trade!**

There is no protocol or record from the meeting - only the order of the meeting above - with so many **interesting topics**. The Swedish and Finnish members of the Commission did not discuss the salvage of dead bodies or the causes of accident (water on the car deck in the *superstructure*, lost visor?) and Mr Simo Arnio did not inform that the 'Estonia' was leaking according to statements by Mr Sillaste two days earlier.

Instead it seems that they discussed the partition of jobs (sic), the *cargo* aboard (loading, loading plan), *the wreck* (Estonia's involvement with NATO/Russia, guarding the wreck - which was not yet found) and a newspaper article that one Estonian member was involved in illegal *arms trade*.

Why the Commission at the meeting did not question survivors (passengers and crew) present at Turku about what had happened aboard is not known.

They discussed *'contact Estonia'*, i.e. they did not know who the Estonian investigators were - they were officially not appointed until the 10 October **1.5**.

The behaviour of the Swedish and Finnish members of the Commission on 30 September 1994 is very strange. Instead of interviewing survivors what had happened and calculate stability with water in the superstructure they bureaucratically met and discussed the partition of jobs - and Estonia's involvement with NATO/Russia (?) - and the necessity of guarding the wreck (how?) - and that an Estonian member of the Commission (who?) is involved with illegal arms trade (!), if you shall believe the written order of the meeting (act A2).

Why would the Commission concern itself with *guarding* the wreck? From what? What had it to do with the accident investigation?

What Estonian member of the Commission was trading in arms? What Helsinki newspaper reported that?

THE FALSE WRECK POSITION

At the same time of this unusual meeting the wreck was found on the 30 September.[19] While the Estonian Foreign office informed at 18.00 hrs GMT that a *Swedish* ship was still searching for the wreck, Radio Sweden had already announced that the *Finnish* (navy) vessel 'Suunta' had found the wreck at 15.00 hrs GMT. The wreck was first scanned by sonar, probably on 30th September, and later filmed by an ROV on 2 October 1994 **1.4** by the Finnish vessel 'Halli' and reported to be in position N59°23'54.60" (N59°23.9'), E21°42'10.20" (E21°42.2') by the head of the Finnish investigators team, Kari Lehtola.

This position was later found to be false 1.14! The reason for the false wreck position has never been explained. Maybe the Finnish vessel 'Halli' didn't know how to establish a position at sea? Or more likely - the Swedish war ship HMS 'Furusund' or HMS 'Urd' and its divers were examining the wreck to prepare for the removal of the visor still attached to it.

Sonar pictures were immediately taken of the wreck, but the media was not permitted to see copies of the pictures, which evidently could not show dead bodies, etc. The Commission stated that the sonar pictures were *'difficult to interpret'*, but everybody who knows **what a sonar picture looks like** knows that it is quite clear - particularly when it is a 155 meters long wreck with a height 25-30 meters above the sea floor. Mr Lehtola examined the sonar pictures and declared to media that the bow was pointing west and that the wreck was resting on its port side. Later it was found that the bow was pointing east and that the 'Estonia' was resting on its starboard side. It is apparently difficult to interpret sonar pictures.

WRECK ISOLATED - A FALSE POSITION ANNOUNCED

The wreck, and probably also the visor (!) **1.4**, were found by the Finnish navy already on 30 September 1994 (perhaps earlier by a Swedish ship), but this Mr Kari Lehtola for unknown reasons would not tell the public and the media. It is a fact that Mr Kari Lehtola, chairman of the Finnish AIB, instead told the media a *false* position of the wreck, i.e. in his own words he *'isolated'* the wreck at a position 2 100 meters northeast of the actual wreck position. You should wonder why a high Finnish civil servant presents lies to the public!

The false wreck position was valid for several months and created confusion. When relatives and survivors arranged an ecumenical ceremony at the *'position of the wreck'* on 26 November 1994, it did not take place above the wreck - it was at the false position! Independent safety at sea experts were misled.

The Swedish government (Minister Ines Uusmann) later asked the Finnish government *why* a false position of the wreck had been announced. Lehtola then explained his decision in a letter dated the 11 January 1995 (act

24.408 in the **German final report**) to the head of department Mr Juhani Korpela of the Ministry of Transport, Helsinki (Trafikministeriet, Helsingfors). Lehtola says that he had

> *'discussed the matter with his legal colleagues, i.a. with the Swedes Johan Franson and Olof Forssberg. We concluded that ... I (Lehtola) had been touching the outermost limits of my responsibilities'.*

Korpela certainly informed his superiors (the government) what Lehtola had written, but then nothing happened. The Finnish government accepted that Lehtola simply had lied, after discussing with Franson and Forssberg, about the position of the 'Estonia' wreck for several months and permitted him to continue to head the Finnish investigation. Naturally the Finns informed Swedish minister Ines Uusmann, but she did not take any actions either. You wonder why a Swedish minister accepts that the top investigators of an accident agree to lie!

Thus - the ship sank on 28 September. Crewmember Sillaste told the Finnish police that the ship was leaking and that the bilge pumps were running and there are many indications that the Commission must have known at this time about a severe hull leakage and a failure to stop it, e.g. that the watertight doors did not close - or were opened. So when the Commission met 29 and 30 September they did not discuss any cause of accident at all, while a false cause of accident was made up by help of Mr Wermelin and the media - the visor.

SWEDISH RESCUE SERVICE - RÄDDNINGSVERKET - DIVES ON THE WRECK 1 OCTOBER 1994

In December 1999 a Swedish Navy lieutenant and dive specialist - H. Bergmark - informed Der Spiegel journalist J. Rabe that he and about 10-13 other persons had dived on the 'Estonia' already on 1 October 1994. Bergmark had been called up already on 28 September to be stand-by and had sailed to the wreck on the Swedish navy vessel 'HMS Furusund' (or 'HMS Urd') on 30 September. The diving lasted more than 24 hrs and a large number of 20 minutes videos were taken of the wreck. The purpose was to inspect the hull and Bergmark suggested that they found a gash in the hull below the car deck on starboard side. This inspection has never been officially announced or acknowledged by Swedish authorities and the Commission has never made any reference to the findings.

RUMOURS IN THE MEDIA

On 1 October DN announced that Sillaste had said (sic) that he had seen water on the car deck -

> *'the visor was pushed up and the ramp pulled down' - 'seamen saw an open visor'.*

DN and other media seem to have published a lot of rumours without substance about an open visor and a pulled out ramp. Maybe they wanted to put the blame on the crew, which had failed to save the ship. But the alleged statement of Sillaste in DN was not in accordance what he had told the Finnish police (2).

The scoop of DN that seamen saw an open visor and a pulled out ramp was disinformation (compare 1.44). And we have to remember that Sillaste was alleged to have seen the ramp closed two minutes after the 'accident', when everybody else on the ship was panicking, trying to get out.

WATER ON DECK 1

On 2 October DN published that, according to the AB Linde,

> *'people escaped from deck 1, which was filling up with water'.*

It is probable that Linde had met these people on deck 7, where he was when the sudden listing took place. If there were water at the side on the no. 2 car deck at this time, no water could evidently have been seen on

deck 1, but the media reported water on deck 1. **Sten Anderson**, the Swedish NMA observer in the Commission, explained in DN that

> *'Silver Linde met passengers who rushed up and screamed that water flowed into the cabins below the car deck. It supports the theory that water has entered the car deck'.*

You can here observe how the strange behaviour also spread to observer Sten Anderson in the Commission. Passengers stated according to Linde on deck 7 that water flowed into cabins on deck 1 in the *hull* three meters below the watertight car deck no. 2, and the conclusion of Anderson was that the water came from above inside and at outboard the side of the *superstructure*, through the watertight, solid car deck no. 2 above the cabins and two meters above the waterline.

Anyway DN Sunday 2 October reported that

> *'Linde was completing his (fire) patrol round. Somebody alerted that something was happening down below in the ship. Linde was sent down. He heard persons screaming that water had entered through the interior of the cabins below the car deck'.*

Linde had actually completed his fire round and returned to the bridge when he was sent down again. This DN report actually supports the assumption that the ship was leaking on deck 0 before the sudden list, that the leak had been isolated (by Sillaste?) by closing some watertight doors on deck 0 and starting the bilge pumps, and that the water started to rise up on deck 1, where the passengers lived!

Sten Anderson informed to DN the same day, when talking about third engineer Treu and Sillaste, that

> *'they saw water on the car deck'.*

What Anderson referred to was of course that Treu and Sillaste were alleged to have seen water *leaking* in at the *closed* bow ramp at the forward end of the superstructure **1.10** on a monitor in the ECR several minutes *after* the sudden listing had occurred. But Sillaste did not see any water on the deck according to (2). It was full of cars and trucks - you could not see the deck. Actually the ship must have been heeling >15 degrees at this time (and rolling), so any water on the car deck must have been hidden on the starboard side below and behind the trucks and cars there. But how could Treu and Sillaste see little water leaking in at the ramp *after* the listing, while Linde reported that people escaping from deck 1 reported that deck 1 was filled up with water - *before* the listing.

It must be recalled here that later - on 15 December 1994 - the Commission changed everything reported in the media and in the police records above. The ramp had immediately been pulled fully open 1.17 according to the Commission and there was no time to see a leaking ramp two minutes after the 'accident' - the listing. Treu and Sillaste must have been mistaken. According to the Commission the ramp was fully open at 01.15 hrs. Thus Treu and Sillaste could not have seen a closed ramp at 01.18 hrs! Regardless, at 01.20 hrs the vessel had stopped! If the ramp was open, all water would have flowed out by itself. This is basic. But according to the Commission more water came in through the open ramp. This is not possible. The opening was pointing east and in lee, away from the waves.

WERMELIN AGAIN

Monday 3 October consultant Hans Wermelin spoke again in DN about the accident.

Wermelin now stated that a ship not only lists but sinks (sic) with water on top of the car deck in the *superstructure*. No correction to this completely false information has ever been published by DN. or anybody.

DN should have published a simple technical report what happens with water on the car deck in the *superstructure* - capsize and floating upside down on the *hull* - or simply nothing - the water flows out. Apparently there was not one expert in Sweden (or Finland and Estonia) knowing a little about ferry stability 1994.

False information was immediately fed to the public by Mr Wermelin. A false wreck position was necessary to establish the false cause of accident as announced by Mr Lehtola.

Why was a false wreck position announced and why were not divers sent down to film the wreck without visor immediately?

Probably the visor was found hanging on the wreck superstructure side on 30 September as seen on the sonar pictures and Swedish navy divers were actually sent down on 1 October to inspect the wreck, but this the Commission evidently could never admit. The divers, at a second expedition on 3-4 October, probably blow off the visor under water using explosives and made at the same time a big hole in the 'Estonia' fore bulkhead just aft of the visor. The Commission never reported this hole! It was found by Czech divers not until August 2000. A picture of the big hole can be seen in a later chapter 3.10. The Commission has always maintained that there is no hole in the bulkhead - the bulkhead is undamaged. The film with the hole has been shown on Swedish and Estonian TV 2000, but the sequence with the hole was cut out! Isn't it strange? What a wonderful world they live in in Sweden and Estonia. Censored films about mysterious wrecks are shown on TV, and nobody reacts. OK, an arrest order was issued for the heads of the divers and a panel of 'experts' was invited to discuss the film and explain it to the viewers after the show. Yes, they said, we could not see any hole. So there is no hole. The Czech divers never saw or filmed a hole. Not even an ass hole.

Actually when the author saw the film of the explosion hole in the bulkhead of the 'Estonia' for the first time, at Pilzn, December 2000, he finally concluded that everything that the Commission had stated so far was false. Thus this book. He was then living across the border at Freiberg, Saxony and had plenty of time to reflect over all the previous information given to him.

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[15] And when did they start the bilge pumps? It is amazing that a Final Report about the sinking of a ship does not have one word about bilge pumps in it.

[16] Bildt was informed about the accident 60 minutes after the Mayday was sent.

[17] **Press Release from the Ministry of Foreign Affairs Republic of Estonia Immediate Release 30 September, 1994 18:00 (GMT +2)** … Finnish authorities are now attempting to locate the ship. When the ship has been located it will be photographed to determine the next steps required. However, strong winds and rough conditions are expected to continue until Wednesday, next week, making any operations difficult. The Governments of Estonia, Finland and Sweden have pledged that they will do all that is necessary to uncover the cause of the disaster…

The international commission has two main responsibilities:
one, to investigate the causes of the disaster; and
two, oversee and co-ordinate any further operations.
In Tallinn, a Danish observer 1.5 has arrived, and experts from Finland and Sweden are also in Estonia to assist in the work of the *international commission*. …

[18] See act A2.

[19] **Press Release from the Ministry of Foreign Affairs Republic of Estonia Immediate Release 29 September, 1994 20:50 PM…** The Commission reported that a Swedish survey vessel has been attempting to pin point the exact location of the 'Estonia', while the Commission has opened negotiations with several diving companies. … (Subj: Wreck of M/S Estonia found! Sent from: guchw@gd.chalmers.se 30/9 at 1700 (GMT+1) The Estonian Ministry of Foreign Affairs writes (see footnote above) (in part): The [Government Crisis] Commission reported that a Swedish survey vessel has been attempting to pin point the exact location of the 'Estonia'. Swedish radio news just reported that the Finnish (not Swedish) survey vessel 'Suunta' localized the wreck of the 'Estonia' about half an hour ago (that is, at 1530 GMT)).

[20] The author was at sea in the Mediterranean, when the accident took place and above extracts from the press were published. When reading them many years later you get the impression that a few persons were feeding false information to the media and that the media just published it without further analysis **1.44**.

'The lead investigating State should be responsible for establishing the investigation parameters based on the laws of the investigating State and ensuring that the investigation respects those laws'.

IMO Res. A.849 (20) 7.7.3

1.4 THE FIRST FALSE CAUSE OF ACCIDENT 4 OCTOBER 1994

Four, five days after the accident, on 2 October 1994, the wreck was filmed officially for the first time at 70 meters depth by a Finnish ROV camera.[21] The press announced that you could see a big hole, where the visor had been on the superstructure, but it was wrong - the ramp was closed. No big opening in the superstructure. Media said that the films showed a plastic bag on the hull - it has later been suggested it contained explosives **4.1** - and may have been left by the Swedish divers that dived the day before **1.3**. The filming was according to the media concentrated to the fore ship, where the *visor reportedly was missing*.

But did the journalists really see the films themselves or did they only report what members of the Commission told them?

The video filming was allegedly done in four parts between 13.14,40 - 19.49,38 hrs on 2 October 1994, total 2 hours 46 minutes according to the Finns (Lehtola in letter to the author 1998) - **16 hours were reported in the media**. It could be that they filmed for 16 hours and that the result was a shorter, edited film, but the media clearly stated that Lehtola had viewed 16 hours of film.[27] More sonar pictures were also to be taken! The video (2 hours 46 minutes according to Lehtola in letter to the author 1998) is at the AIB-Finland archive, i.e. the Finnish Accident Investigation Board. A copy of the films - five cassettes - are also in the Swedish SHK-archive (act B1 a,b,c,d,e). The filming was done from the Finnish oil pollution prevention vessel 'Halli', with a Finnish navy crew. The photo group of the Finnish border guard reportedly did the actual filming by ROV. No written video logs exist about what was filmed, when and where and by whom. The films have little value from evidence point of view. The Commission was represented aboard by Dr. Tuomo Karppinen and Captain Simo Aarnio **1.5**.[22]

Later information suggests that three video films were taken by the Finns using two ROV-cameras: The 'Jutta 1' film is between **12.26** and **18.54** hrs with stops between **13.59 - 14.51** hrs and **15.15 - 17.28** hrs - total three hours, five minutes film. The 'Jutta 2' film, i.e. a continuation, is between **18.54** and **20.08** hrs - one hour, 10 minutes film. The 'Simo 1' film is between **13.14 - 20.04** hrs with a long break between **14.51 - 17.51** hrs and minor breaks later - three hours, 12 minutes film, thus total seven hours, 27 minutes Finnish video film is available. But probably the two ROV cameras filmed eight hours each and only edited films were filed and made available to the public. The Finns sent five (sic) films to Sweden as on 5 October 1994 '5 off video-film from Halli, 1-2 Oct, of which 1 off Betacam' were registered at Swedish SHK (act B1).

Persons, who have seen the edited films (there is, as stated, no written video log describing the findings), when they became public in 1998, say that the quality is very bad and that you cannot see the complete fore ship of the superstructure - i.e. the *starboard* side of the front bulkhead and upper, open deck 4 cannot be seen, only blurry pictures of the port side are shown! This is very strange as, reportedly, the filming, 16 hours or only less than three hours, had been concentrated on the *fore ship!* It is quite possible that all filming between 15.15 - 17.28 hrs showed the visor at the wreck ... that you could not show and must be edited away.

In the Final Report (5) fig. 8.2 is a picture of the upper, open deck 4 shown - port side of the ramp protecting the superstructure - torn open (as reported) at 65,2 meters depth filmed at **13.52** hrs **3.10**. At **13.53** hrs they filmed the port visor hinge, fig. 8.16 in (5), at **14.02** hrs they filmed at the bottom lock on the fore peak deck and the bolt, fig. 8.15 in (5), at **14.12** hrs they looked at the port ramp deck hinge again, fig. 8.11 in (5).

It is *only the port side* and the centre line of the fore ship superstructure which are shown - and all parts are at about 63-65 meters depth and it took only **20** minutes filming. There are no video pictures of the *starboard*

(lower) side, which should be at about 72-78 meters depth, as the 'Estonia' was lying with the starboard side down. Either they did not film that area of the superstructure (or forgot to film it) or the pictures of the starboard side are cut - edited - off from the film.

This author believes that the visor was still attached to the *starboard* side of the superstructure of the wreck on 2 October 1994. Maybe the work to remove the visor under water had already started on 30 September or 1 October and the first ROV-filming was arranged to produce invented *'evidence'* that the visor had fallen off far away, when the ship was still floating? At this time the false wreck position was public and probably also guarded by some Finnish ship.

EVIDENCE OF DIVERS VISITING THE VESSEL ON 1 OCTOBER 1994

On one of the ROV video films taken 2 October 1994 is seen on the sea floor the guard rails of the bow ramp. The ramp was at that time almost closed on the wreck. The guardrails/fixed railings were originally welded on the top/sides of the ramp and have apparently been cut off and removed from inside the ship. That the guardrails have been cut off from the ramp inside the superstructure can be seen on a video taken 2-4 December 1994 (act B40 c). Thus it seems somebody had tried to open the ramp under water before 2 October 1994 and at that time removed the guard rails. It is assumed that this was the work of the Swedish divers on 1 October 1994 **1.3**.

THE STARBOARD PILOT DOOR FILMED 1 OCTOBER 1994

Interestingly enough there is a video film (act B1b - without written log) taken on **1 October 1994** in the afternoon, i.e. one day before the above mentioned Finnish films. The film is a 'seabed survey' where the sequences between 14:54.28-14:55.32 and 15:01.45-15:07.33 hrs are missing, total 1 min 4 s and 6 min 48 s. It is in this area you would expect to see the *starboard forward pilot door* in the side of the superstructure, which was just in the mud line. The area was filmed again by another ROV on 2 December 1994 - the Smit-Tak mud line survey - but that film is also edited at the same location **1.16**. When divers led by Gregg Bemis in 2000 visited the location, it was completely covered by sand **2.24**. It would appear that the Swedish divers had accessed the car deck on 1 October and cut off the guard rails. Very strange! **It seems that the Commission has made great efforts to hide the fact that there is a pilot door in the side of the superstructure.**

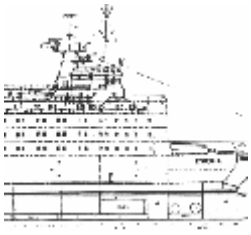

Fig.1.4.1 - Pilot door

REDUCED SPEED

The Commission informed Finnish media[22] 1994 that the films showed that the ship had *lowered the speed* before the accident.

How you can see on an ROV video film of a wreck that the ferry has slowed down before the visor fell off/the accident occurred is not known?

In the Final report (5) the ship does not reduce speed until after the accident - the alleged loss of the visor. The correct position of the wreck was again established by GPS on 2 October.

THE VISOR AT THE BOW

Sunday the 2 October the results of the analysis of the sonar pictures taken on 30 September **1.3** by Dr. Nuorteva of the Finnish Hydrographical Bureau (or Finnish Navy) were announced. Swedish daily Dagens Nyheter (DN):

> *'At the side of the bow there is a big object, which either has been ripped off or still hangs from the wreck. The object could according to Nuorteva be the damaged visor or part of the visor'* (DN 3.10).

Swedish daily Svenska Dagbladet adds that the object

> *'was of the same size as the visor'*

and that you could see it on all *four* pictures.

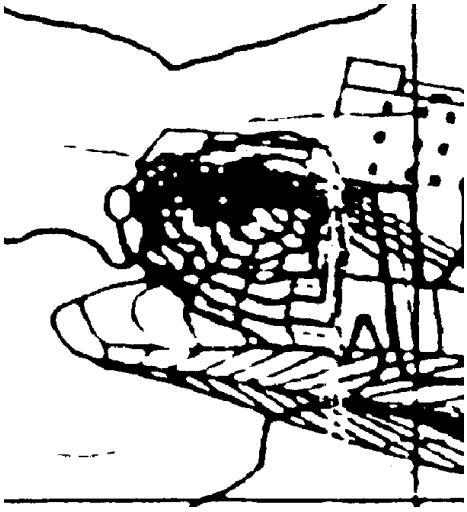

Figure 1.4.2 - object at 'Estonia's bow - according to the Swedish NMA!

The object found at the bow, which according to Swedish daily Dagens Nyheter had been ripped off or still hang from the bow, disappears then from all discussions. **What was it?**[23] And why was the object not filmed on 2 October? The picture, which Dr. Nuorteva studied, could maybe be the picture to the right, which was published by the Swedish NMA in 2000. At the bow there is a seven metres high *'pyramid',* which looks like the visor upside down. Compare **1.14**. The picture of the wreck has been sketched in on top of the barymetric chart. It seems they found the visor at the wreck. The Commission never admitted that they had found the visor at the bow on 2 October. Instead the Commission said that the visor was missing. A *'search'* started. On 10 October the Estonian Foreign Office announced that the visor had not been found after one week's *'search'*. In the press release they then said:

> *' ... Dr. Nuorteva of Finland said that it would not be useful to continue searching for the missing bow visor until the route of the ill fated ferry can be further studied. Mr. Heimo Iivonen is carrying out this work now'.*

The Commission later stated that they searched during one week *east/south* of the wreck (if it were east/south of the actual or false visor position is not clear. A *'search'* south of the false wreck position is, de facto, north of the actual wreck position) and they had, as reported, not found the visor. To find a 15x12x7 meters large steel object on the sea floor at 70-80 meters depth with sonar should be child's game. The statement by the Commission that they did not find the visor must be considered with great caution.

Then admiral Iivonen, **1.5** and **1.20,** studied the route of the 'Estonia' *before* the accident and apparently had the brilliant idea to search *west* of the wreck (false or real wreck position is not clear), and see; there they found the visor on 18 October.

Admiral Iivonen should of course explain how he established the course and speed of the 'Estonia' *before* the 'accident' - the route was plotted by the radars at Finnish Utö, but this plot then disappeared **1.13**![24] It was again hinted that the speed had been reduced before the accident - at 01.00 hrs **3.18** f. But there was also information that the speed had been increased or maintained until the accident occurred.[25] The visor was thus officially found on 18 October *'one mile west of the wreck'*.

The analysis of the 'sonar' pictures of Dr. Nuorteva taken the 30 September 1994 should be re-made when the 'Estonia' investigation is re-opened. What did Dr. Nuorteva see on the four pictures? Why were other experts not permitted to see the pictures? And the same applies to the film of 2 October. The object at or below the bow must have been visible on that film - 16 hours film was taken according media 1994, 2 hours 46 minutes were available 1998 but only 20 minutes show the port side of the superstructure. Why was not the starboard side filmed?

HOW TO START AN INVESTIGATION

The objective of the first stage of any casualty investigation is to collect as many facts as possible, which may help understanding of the accident and the events surrounding it.

The scope of any investigation can be divided into five areas:

· people · environment · equipment · procedures · organization

Conditions, actions or omissions for each of these areas may be identified, which could be factors contributing to the disaster.

During the initial stages of every investigation, investigators should aim to gather and record all the facts, which may be of interest in determining causes.

Investigators should be aware of the danger of reaching conclusions too early, thereby failing to keep an open mind and considering the full range of possibilities.

With this in mind, it is generally recommended that the fact-finding stage of the investigation process itself be kept separate from the complete analysis of the collected evidence leading to conclusions and recommendations, and that a structured methodology be adopted to ensure the effectiveness of that analysis. Having said that, the analysis may well help to identify missing pieces of evidence, or different lines of enquiry that may otherwise have gone undetected.

Investigation checklists can be very useful in the early stages to keep the full range of enquiry in mind, but they cannot cover all possible aspects of an investigation, neither can they follow all individual leads back to basic casual factors. When checklists are used, their limitations should be clearly understood.

The initial stages of an investigation normally focus on conditions and activities close to the accident and only primary causes also called "active failures", are usually identified at this stage. However, conditions or circumstances underlying these causes also called "latent failures" should also be investigated.

A factor to consider during an investigation is "recent change". In many cases it has been found that some change occurred prior to an occurrence which, combining with other causal factors already present, served to initiate the occurrence. Changes in personnel, organization, procedures, processes, *environment* and *equipment* should be investigated, particularly the hand-over of control and instructions, and the communication of information about the change to those who needed to know. The 'Estonia' had experienced two "recent changes" before the accident:

· *change of flag and trade* (Finnish/coastal to Estonian/short international voyages) *without any improvements in life saving equipment, watertight subdivision, emergency procedures, etc.,* and

· *major surgery eight months before the accident - big steel work of the underwater hull and installation of stabilizers.*

None of these "recent changes" were ever considered by the Commission.

Information should be verified wherever possible. Statements made by different witnesses may conflict and further supporting evidence may be needed. To ensure that all the facts are uncovered, the broad questions of "who?, what?, when?, where?, why?, and how?" should be asked.

In reality the Commission never asked any questions of "who?, what?, when?, where?, why?, and how?". Instead the Commission immediately announced what had happened - and caused the accident - and speculated about not raising the wreck.

THE FIRST, FALSE CONCLUSIONS

On 4 October the Commission, which was not formally constituted 1.5, issued a press release via the Estonian Foreign office at 18.30 hrs - **Interim report no. 1.** Meister, Forssberg and Lehtola presented eight preliminary conclusions (no evidence was presented), i.a.:

1. Beyond all reasonable doubt the capsize of the ship was caused by water collected on the car deck and resulting loss of stability.

2. Water entered at the bow ramp.

3. *The bow visor was lost under way*. ...

4. *After the loss of the visor* waves have hit against the forward ramp. *The wave forces have gradually opened the ramp locks. This has resulted that water entered in on the car deck ...*

5. The time sequence is not yet established.

6. It is not yet possible to clarify any problems with the ramp locks ... or *why the ramp was opened by the waves.*

7. ...

8. ...

It is thus established that the Commission already on 4 October 1994 - four days *after* sonar examination of the wreck finding a big object at the bow, three days *after* the Swedish Räddningstjänsten dive inspection and two days *after* the wreck was filmed for 16 hours or 2 hours 46 minutes - with no visor seen (?), but two weeks *before* they officially found the visor - established *beyond all reasonable doubts* that water on the car deck in the *superstructure* had made the 'Estonia' to *'capsize'*.

In reality the ship had never capsized - it had sunk under mysterious circumstances, but it had never capsized.

The ship was then allegedly en route for Sweden, even if the route the last hour had not been established. The visor had allegedly been lost *before* the sudden listing occurred, but there was evidently no proof for that on 4 October. How the Commission knew that

> "*4. After the loss of the visor waves have hit against the forward ramp. The wave forces have gradually opened the ramp locks. This has resulted into water entering in on the car deck …"*

is unknown - the ramp protecting the superstructure opened outwards against the waves - waves hitting the ramp from outside pushed the ramp only against its frame and rubber seal. How could *waves* open such a ramp *after* the visor had been lost?

Swedish daily newspaper Dagens Nyheter said on 4 October (i.e. must have been informed on 3 October, before the Interim report no. 1 was issued) that

> *"the visor has been ripped off"*.
>
> *"... the 'Estonia' will be raised "*

was also reported.

On 6 October Captain Sten Anderson of the Swedish NMA said to DN that

> *'You can rip off the bow of any ship'*.

This was really a stupid and untrue statement - never in history has the bow been ripped off a ferry in the Baltic.

WHAT HAPPENED ON DECK 0 (THE TANK TOP) AT 00.30-01.00 HOURS?

Nobody from the Swedish NMA informed that otherwise undamaged ferries of the 'Estonia' type actually capsize and float upside down on the watertight *hull* due to water on the car deck in the *superstructure >2 meters above waterline*.

And even if you can rip off the bow of a ship above waterline, neither the NMA nor the Commission ever demanded speed limitations of ships in severe weather, **1.47** and **3.6**. And nobody bothered about the bow ramp, also above waterline.

On 7 October DN published an interview with watch keeping AB Silver Linde by an Estonian-speaking journalist Mert Kubu. The interview was probably a few days old and Linde told things that he later changed in front of the Commission.

Linde said that there had been a hard blow aboard at 00.40 hrs[26] Estonian time, when he was on the car no. 2 deck in the *superstructure* 2.5 meters above the waterline making his fire watch round. Linde did not know what caused the blow. *The ramp was tight.*

Linde continued his fire round below the car no. 2 deck down to decks 1 and 0, six watertight compartments on deck 1 and three on deck 0, and found no cause for alarm. See the **Plan of decks 0 and 1**. (Later Linde has said that he didn't continue the round down to deck 1 and 0).

The path of Linde on decks 1 and 0 is interesting. Linde probably came down on deck 1 via the forward stairs and then passed five *open* (sic) watertight doors on deck 1, when inspecting the accommodation there. Then Linde probably went back and took the stairs down to deck 0, where he passed two *open* (sic) watertight doors.

WATERTIGHT DOORS

Normally these doors should have been closed and Linde must open and close them when passing. Then strong warning bells would have been activated - awaking sleeping passengers on deck 1. Therefore these watertight doors were probably always open or blocked or the warning bells were disconnected.

The Commission has never asked Linde for details about this (compare **1.23**). Nor has Mert Kubu and the DN, but it is understandable. But on 10 October (see below) DN reported about the watertight doors. After having inspected the three passenger spaces on deck 0, Linde probably took the lift back up.

It is of course possible that a severe hull leak had developed on deck 0 further aft - in the stabilizer or sewage tanks rooms - at this time, which was handled by Sillaste and Treu, and Linde could very well have been unaware of the drama just 10-20 meters further aft.

Linde was not supposed to inspect the engine and service spaces on deck 0. At 00.45 hrs (sic, because in later testimonies it was 15 minutes later and decks 1 and 0 were never inspected) Linde was back on the bridge and met second officer Kannussar and third officer Tammes (also in the Final report (5) Linde is back to the bridge much later). At 01.02 hrs Captain Arvo Andresson arrived to the bridge. A watch change at 01.00 hrs, as reported in the Final Report (5), did not take place. Then there was an alert about water on deck 1 (sic), which was received by Kannussar via telephone. Linde left the bridge to go down and investigate. Then the ship heeled. In the Final Report (5) chapter 6 Linde tells another story.

If in fact Sillaste and Treu at this time were trying to isolate a leakage on deck 0, the bridge must have been informed, and if the sudden list was caused by remote opening of the watertight doors from the bridge, then Linde should have observed something of all this, when he returned to the bridge.

On 8 October DN published an interview with oiler/motor man Kadak, who said that, when the angle of heel was about 50 degrees, then everything fell over. Kadak then escaped through (open) watertight doors, which

were not closed as some persons (Treu) remained. Kadak passed apparently through the engine room and up through the casing to the funnel. In the Final Report (5) Kadak says other things **1.48**. *Normal emergency escape from the ECR in the hull is via a ladder to the car deck or via usual stairs in the passenger accommodation!*

THE SECOND FILMING OF THE WRECK

On 9 October the wreck was filmed a second time by an ROV from the Finnish coast guard vessel the 'Tursas' with Dr. Tuomo Karppinen aboard again, i.e. the actual position of the wreck was then known to three Finnish vessels. Evidently they didn't film at the false wreck position.

The reason to film again was probably to verify that the visor was no longer attached to the bow - it had been blown off using explosives and torn off and fallen down on the sea floor, 1.14 and 4.1 at a second Swedish Räddningstjänsten dive expedition 3-4 October 1994.

Video 1 of that film is edited - the sequence between 22:21.24-22.22.30 hrs, 1 min 6s, has been cut and replaced by an 18 second long sequence recorded 3 hrs earlier. What a stupid editing. The result was two films by Tursas on 9-10 October 1994 between 21.55 - 02.19 hrs - abt 4h18m film available in Finland. Nevertheless the Finns sent four films to the Swedish SHK, where they were filed in act B 2. Many years later SHK informed that act B2 only contained two films plus a summary!

Thus - on 9 October they filmed on the *starboard* side of the *superstructure*, which had apparently not been filmed on 2 October - a close-up of the back of the starboard side visor lock is shown in figure 8.18 in (5) at 67,6 meters depth. One meter *above* the side lock there should be a huge damage opening, a hole caused by explosives, in the side collision bulkhead of the *superstructure* **3.10**; it is not mentioned in the Final report and is not shown on any official films or pictures. This is very strange. The reason is probably that this damage was caused in the time between the two filmings of 2 and 9 October, when the visor was finally blown and pulled off and removed!

On 10 October DN informed that the watertight doors in the hull below the car deck on the 'Estonia' were open at the time of the accident. The Commission never investigated the matter. The watertight door system is not mentioned at all in the Final Report (5). Nor it is explained that the ferry actually floated on the hull and, if the hull were damaged, the ferry would still float if the watertight doors were closed.

OFFER TO SALVAGE BODIES DECLINED

On 11 October Swedish media informed that the Norwegian dive company Stolt Comex easily could salvage all bodies for about SEK 2 millions (eight days at SEK 250 000:-). The cost was just to cover direct expenses of Stolt Comex, which did not want to profit from the accident. It was a very nice gesture. The offer[27] was valid for a couple of days, as Stolt Comex had its equipment at Helsinki. Stolt Comex had already on 28 September 1994 - the day of the accident - given the same offer to the Estonian government; see footnote 14 in **1.2**.

NOBODY IN ESTONIA OR SWEDEN REPLIED TO THE OFFER.

In December, when the offer had expired, the Swedish government (Ines Uusmann) turned down the offer - Stolt-Comex was not a professional company!

Stolt-Comex had already earlier - on 6 October 1994 - made its offer in writing to the Swedish government to salvage all dead bodies. But the government never replied - it should of course have said yes! The reason was probably the following:

If Stolt-Comex had rescued all dead bodies - which they had experience to do - already in October 1994, the government could not use the dead bodies as an excuse to prevent a complete investigation of the wreck under water or to refloat the wreck.

Stolt Comex would also have seen the missing visor below the bow! **The government instead produced a law preventing visiting the wreck 1.19. By keeping the dead bodies in the wreck you could always blame the incomplete findings on them. Video films of the wreck were edited - they showed dead bodies, the Commission said, etc., but evidently there were no bodies *outside* the ship at, e.g. the bow. The only logical reason to prevent salvage of bodies was to use the bodies as hostage to prevent a proper investigation of the wreck. Because a proper investigation of the wreck never took place 1.16.**

THE FIRST SWEDISH NMA REPORT

The NMA official report, supplement 502 in (5), written by Franson 1.16 what Sweden could do with the wreck and the dead was handed over to the minister of transport Ms Ines Uusman on 11 October.

Sweden had in theory no legal obligations, it was suggested. That there was a conflict of interest regarding Franson of the NMA and the sunken ferry, which had been approved to sail on Swedish ports, had not been noted. On 14 October Mr Gunnar Fredriksson of the Swedish daily Aftonbladet published a column with the title:

> *"The sea is a proud grave"*.

A few days later Swedish journalist Yrsa Stenius supported this. Fredriksson and Stenius are well-known informal 'megaphones' for the Swedish establishment. Just when the Commission had been appointed the Swedish political establishment decided not to salvage wreck and dead bodies, even if the official decision was not made public until 15 December 1994 1.19.

In retrospect you see the reason clearly why salvage of bodies was not possible. Mr Lehtola had announced a false wreck position. The visor had no doubt been found at the wreck and Swedish Navy divers had successfully removed it using explosives and Stolt-Comex would have seen it when salvaging the bodies. A completely misleading first interim report had been issued about the cause of the accident. To cover up the real facts nobody should be able to examine the wreck himself.

But the accident had to be investigated - in spite of most 'facts' having already been established in the first interim report.

All false facts - lies - about the 'Estonia' accident were already established prior to the appointment of the Commission.

Thus, from now on all new published facts to support the suggested cause of accident, faulty visor design, had to be manipulated. This will be described in the next chapters.

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[21] **By Jan Lindroth TURKU, Finland, Oct 4 (Reuter)** - The 'Estonia', a ghost ship lying at the bottom of the Baltic Sea, is keeping its secrets -- for the moment. Remote-controlled video cameras have shot **16 hours** of footage of the wreck of the huge car and passenger ferry that sank a week ago, but the ship's windows simply reflect the camera lights, refusing thementry. Inside the vessel are the bodies of more than 800 men, women and children, their lives ended suddenly when a pleasure cruise over the Baltic Sea turned into a nightmare as water rushed in through the ferry's front door. *"It looks a little like a ghost ship, but of course we can only see parts of the ship through the cameras, only a few square metres at a time,"* said **Tuomo Karppinen**, a member of the board of inquiry examining the disaster. Karppinen, who has seen almost all of the footage, told Reuters no bodies had been seen. The grainy film footage gives an ironic sense of calm and tranquillity, as the remote controlled machines glide along the exterior of the ship. *"We have seen no bodies, not one, and we did not see anything dramatic. There are very few objects around the vessel, just a newspaper, **a plastic bag**, things like that,"* he said. **The images have concentrated on the Estonia's bow section** -- or lack of one. The footage showed the bow door, which acts as the bow of the ship and lifts up in port, has been torn off. **A gaping hole is seen where the 50-tonne door should be.** The camera moves slowly along the hull of the white-painted ship, picking out its name and port of origin, "Estonia, Tallinn," before **showing lifeboats hanging uselessly from derricks**.

The cameras zoom in on the bridge, where Captain Aavo Andressen is said by Estonian authorities to have gone down with his ship. The flashlights are reflected in the windows, which refuse to reveal the interior. *"We tried to film through the bridge but we did not see anything there,"* said Karppinen. The remote controlled cameras are likely to shoot further footage in coming days. The video camera did not linger outside ordinary cabin windows, where each one probably conceals a horrible secret. Of the more than 1 000 passengers and crew, most of those who escaped shortly after midnight last Wednesday were on the top decks, enjoying a drink in the bar or one of several shows put on during the 12-hour voyage. Below decks, the older passengers, or families with young children were in their beds and asleep when the ship lurched and sank suddenly. They are probably still trapped in their cabins.

[22] **This morning's (Oct. 4, 1994) Hufvudstadsbladet (Helsinki) writes:** Video film supports the theory about Estonia wreck. The stem visor disappeared - the interior ramp damaged. The ferry disaster of a week ago, the worst ever to have taken place on the Baltic Sea, was caused by the loosening of the ill-fated m/s 'Estonia's stem hatch. **The ship is lying on the seabed south of Utö with its stem visor completely detached.** This is what is shown by the video footage which the international investigatory commission in Turku was provided with on Monday. *"First the lock of the stem visor broke. This permitted the visor to move, and then the stresses on it increased,"* says **Tuomo Karppinen**, the member of the Finnish commission who directed the filming of the wreck and presented the material for the press in Turku on Monday evening. The ramp which in raised position is supposed to function as a water-tight barrier behind the stem visor did not withstand the sea water after the visor was gone. The ramp is still on its hinges but has been opened about a meter at the upper extremity. *"The amount of water which forced its way in onto the car deck is judged to have been of sufficient quantity to make the ship lose its stability, and this resulted in the vessel capsizing,"* the investigatory commission says in its statement. The under-water cameras also show that **the vessel had lowered its speed before the accident.** Even though we now know the way by which the water began to force itself into the 'Estonia', we still do not know why. The investigatory commission will try, among other things, to determine if it was a sudden stress or cracks in the metal which made the lock of the stem hatch give way.

[23] 'Estonia' sank with the stern first and the author thinks that the stern hit the bottom at 73 meters depth at 01.32 hrs. Then the bow sank and hit the bottom at 83 meters depth about 150 meters east at 01.36 hrs. The clock on the bridge stopped at **01.35** hrs. The object at the bow must have followed the ship to the bottom. It cannot possibly have fallen off, when the 'Estonia' was floating.

[24] **ahrvid@linnea-grind.stacken.kth.se (Ahrvid Engholm) writes:** It must be stressed that we do not yet know the exact times for a lot of things…. There are 'speculations' that the bridge of 'Estonia' had some strange indications:- about 20 minutes before, but we don't know for sure. … I've used the Finnish time (or EET) throughout … At 12.00 EET (= Finnish time) the captain changes course from west to more south and decreases the speed from 15-16 knots to eight knots. This can be verified by the Utö fort radar station's observations. At the same time one of the crew members, a fireman, makes his hourly routine check around the ship and on the car deck and doesn't notice anything exceptional. The course change and the decrease of speed was 'probably' made to turn the ship more to the wind and thus make the trip more pleasant to those passengers who were still in the restaurants and night club. The course could be corrected later when the restaurants would be closed and people were sleeping. Shortly before 01.00 EET the speed was lowered to five knots. This again according to Utö radar observations. The ship maintained this speed the rest of the time. At 01.00 EET … the car deck was still completely dry but (the watchman) heard some loud noise from the bow, went up to the bridge and reported about his observation. …

[25] **STOCKHOLM, Oct 5 (Reuter) -** A Swedish ship captain said on Wednesday his ferry -- travelling as fast as he dared -- was overtaken by the 'Estonia' car ferry shortly before it sank last week, with the loss of more than 900 lives. Jan-Tore Thörnroos, captain of the car ferry 'Mariella', told Swedish radio he was sailing at 10 to 12 knots, the maximum speed he considered safe in the Baltic's stormy seas last Wednesday night. *"My judgement is that the 'Mariella' could not go faster than 10 to 12 knots in that sea and wind,"* Thörnroos said, estimating the 'Estonia' was travelling at around 15 knots. Thörnroos, whose ship was sailing from Helsinki to Stockholm, said the 'Mariella' and the 'Estonia' sailed side by side for several hours before the Tallinn to Stockholm vessel pulled away. *"It's obvious that the faster you sail in such high seas, the more pressure there will be on the hull,"* Thörnroos said. The 'Estonia', carrying more than 1 000 people, sank early last Wednesday when its bow door broke off in the heavy seas, allowing water to flood into the ship and sink it. Thörnroos said the 'Estonia' was around nine nautical miles ahead of the 'Mariella', when it sank*. The 'Estonia' had disappeared by the time the 'Mariella' arrived, but its crew rescued several survivors. **REUTER.**

***** Actually the 'Mariella' was about 7 miles straight north of the 'Estonia' at 01.32 hrs - see plot in **1.20** - and was making 14.6 knots on a westerly course. And Thörnroos was never on the bridge between 00.00 and 01.24 hrs, so how could Thörnroos state that the 'Estonia' 'pulled away' - and that the 'Estonia' overtook the 'Mariella', etc? Compare testimony of 2nd mate Eklund on the 'Mariella' in **1.9** as follows: *"At 22.00 hrs I saw the 'Estonia' at an angle in front of us, about 30°, on the port side. ... Her course at 22.00 hrs was almost westerly and she sailed steady there beside us. ... I saw the 'Estonia' all the time on the radar. ... At 01.30 hrs ... I heard on Channel 16 how the 'Estonia' said once Mayday. ... I replied to the 'Estonia' at once but they did not respond back. ... Meanwhile I recorded her position from the radar .* ***From hearing the Mayday-call and until the radar echo of the 'Estonia' disappeared I think it was only about six minutes.*** *The times can be seen from the log book I kept during the night. ... After hearing the Mayday we saw the lights of the 'Estonia'. ... During the voyage towards the position of the 'Estonia', her lights disappeared and she also disappeared from the radar. Just before she disappeared from the radar I thought she turned to port ...this happened very quickly ... because the vector disappeared, I assumed that the 'Estonia' sank. ... We were using all three radars. ...During the voyage to the position of the 'Estonia' I manoeuvred the ship ... I also kept the log book. ... In the log book I wrote the exact times taken from the GPS Navigator".*

It can be added that Eklund didn't wake Thörnroos until he heard the Mayday so Thörnroos had no possibility to know the speed of the 'Estonia' prior to the accident.

[26] In DN Swedish times are used, here changed to Estonia/Finnish times. Linde was in 2001 sentenced to nine years in prison in Finland for drugs smuggling with another ferry.

[27] **APn 10/05 0217 Ferry SinkingCopyright, 1994. The Associated Press. All rights reserved. By MATTI HUUHTANEN Associated Press Writer TURKU, Finland (AP) 5 Oct. --** Salvage teams from several countries have wamped investigators with offers to refloat the ferry 'Estonia' or retrieve bodies trapped in the vessel on the Baltic seabed ... *"We've had all sorts of offers…"* Tuomo Karppinen … said Tuesday. *"However, we cannot make decisions on retrieving the bodies or refloating the ship. Those will happen at a much higher, political level"* … He did not say how the salvage teams proposed to bring up the bodies, or how much money they might be asking for the job….. A Swedish member of the nine-man commission, Olof Forssberg, said his government was under pressure to find the lost bodies. *"I think we should do everything in our power to refloat the ferry,"* Swedish Prime Minister Carl Bildt said Tuesday. … Ingvar Carlsson, who will replace Bildt as head of the Swedish government Friday, said efforts should be made to bring up the wreck. But investigators say the cost could be prohibitive. ***"There's a good case for floating the vessel but we are talking in sums upward of $100 million,"*** Karppinen said.*"At the moment, there's a fifty-fifty chance of it happening."* A Norwegian salvage vessel was bound for the accident spot, some 70 miles south of Turku, Finnish radio reported. The ship could be ready to begin work as early as today (5 Oct), said … a representative of Stolt Comex Seaway, which owns the salvage ship. Kari Lehtola … said it was too early to say whether salvaging the vessel was feasible. *"We really just don't know at this stage,"* Lehtola said, after viewing **16** hours of video film taken by underwater robot cameras. **Investigators decided Tuesday to retrieve more sonar pictures of the wreck before taking further action. …**

*'**Marine casualty investigator** means a person or persons qualified and appointed to investigate a casualty, or incident, under **procedures laid down in national legislation** for the furtherance of marine safety and protection of the marine environment'*

IMO res. A.849 (20) 4.7

1.5 THE CONSPIRATORS OF THE COMMISSION APPOINTED 10 OCTOBER 1994

Regardless of the fact that an Estonian only or a joint Commission was decided on 28 September and that a 'Commission' started to work informally already on 28/29 September and that the Commission had already announced a possible cause of accident on 4 October, the names of the members of the Commission were not announced until 10 October 1994 at 17.00 hrs (GMT+2) by the Estonian government, as per table 1.5 (3) below.

Many and varied contributory factors can play a significant part in the events preceding a marine casualty or incident. The question of who should be charged with the responsibility for investigating and analyzing human factors therefore becomes important. The skilled marine casualty and incident investigator generally is the person best suited to conduct all but the most specialized aspects of human factor investigation.

An investigator should have appropriate experience and formal training in marine casualty investigation. The formal training should include specific training in the identification of human factors in marine casualties and incidents.

In some cases, a human factors specialist may be of significant value in the investigation.

None of the appointed investigators of the Estonia accident had appropriate experience and formal training in marine casualty investigation.

Table 1.5 - Original members of the Commission 1994

Estonia

Andi Meister, Chairman, Minister of Transportation and Communications
Uno Laur, Member, Master Mariner, Merchant Marine Consultant
Indrek Tarand, Member, Permanent under-secretary, Ministry of Foreign Affairs

Finland

Kari Lehtola, Member, Director, Disaster Research Planning Committee
Helmo Iivonen*, Member, Managing Director, Sea Rescue Service
Tuomo Karppinen*, Member, Senior Research Scientist, Hydrodynamics

Sweden

Olof Forssberg*, Member, Director General, Board of Accident Investigation
Hans Rosengren*, Member, Captain, Technical Nautical Investigator
Börje Stenström*, Member, Naval Architect, Chief Maritime Investigator

Denmark

Niels Mortensen - Observer - Deputy Chief of Division, Casualty Investigation and Supervision Board

Those members marked with * were members of the Marine Accident Investigators International Forum, MAAIF, who *must* follow the UN resolutions about marine accident investigations.
During the investigation the Commission did not follow the codes of the UN at all! The Swedish members also did not follow Swedish law (1990:712) about accident investigations.

Meister, Lehtola and Forssberg all had law degrees. They must have been aware of the fact that the investigation was going to be done under no legal procedures or jurisdiction whatsoever. The Commission should in principle just meet, discuss the accident and publish a report about it. If the truth about the accident was going to be reported was another matter.

EXPERTS AND OBSERVERS

Other experts and observer were also appointed to assist the Commission.

The NMAs of Norway, Estonia, Sweden and Finland got observers, but **Germany,** where the ferry was built, was *excluded from the Commission.*

The Danish observer Niels Mortensen was replaced in November 1994 by **Knud Skaareberg Eriksson;** footnote **1.14**.

Norwegian observer was **Tom Getz.**[28] He too never attended any meeting. Finnish observer was **Tom Sommardahl**. Estonian observer (or expert) was **Kalle Pedak**, head of the Estonian NMA.

But none of the Danish, Norwegian and Finnish observers ever participated at any meeting of the Commission 1994-1995. Why appoint an observer that does not observe?

Swedish observer was **Sten Anderson***, member of the MAAIF, Swedish NMA.

A new Finnish NMA observer was appointed and started attending the investigation one year later.

Sweden appointed mid-November 1994, tekn. dr. **Mikael Huss** from the Royal Institute of Technology (Kungliga Tekniska Högskolan), Stockholm, as stability expert, psychologist **Bengt Schager**, Halmstad, as expert to review testimonies, and Captain **Olle Noord** (nautical expert).

Finland appointed Captain **Simo Aarnio** **1.3** of the Finnish NMA as expert from the start. Other Finnish and Estonian persons were appointed as experts.

It must be recalled that, when the Commission was announced on 10 October 1994, the (only!) cause of accident had already been established six days earlier. Not one member or expert of the Commission has ever publicly disagreed with it. In retrospect it is quite surprising how in total fifteen members[29] and more than ten experts and observers during three years never discussed or investigated any other cause, e.g. leakage.

NO DIRECTIVES

In the Final Report (5) page 14 the Commission says that

> *"the members ... did not receive any directives from their governments ... but only represented themselves".*

It means that the Commission was *'private'* and not as per any UN resolution or national legislation. But even if the Estonians only represented themselves, there was a serious conflict of interest **1.7**, and even if the members said that they only represented themselves, several members were later dismissed and new ones appointed by the Estonian and Swedish governments **1.20**.

The Commission decided - or somebody instructed the Commission to decide - immediately that the whole investigation was going to be secret and that all evidences were not going to be available for the public during the *'investigation'*. The public media did not protest - it was content to publish what the Commission announced at regular intervals without critical review **1.44**.

The main weakness of the *'investigation'* commission was that witnesses could not be questioned under oath.

The crew could say whatever they liked - or what they were told to say - and nobody could protest.

In fact, the Commission hearings of the crew members were just 'discussions' - no protocols were made and tape recordings were of bad quality. Later the Commission could conveniently refer to various statements of the crew that suited the alleged cause of events. No serious party was ever permitted to question the crew.

The observers were only from the three national maritime administrations of Estonia, Finland and Sweden. These administrations had committed serious errors in the past about the ship, which evidently was unseaworthy, and they were naturally interested that this fact was not made public. This will be described in later chapters.

What can you say about the other members of the Commission and the 'experts'? They were supposed to bring their particular knowledge to the investigation, but it seems that they all were manipulated only to produce material supporting the alleged cause of events, which will also be described later.

ETHICAL PRINCIPLES

In 1997 an OECD conference considered the following seven general ethical principles for accident investigators:

· **Selflessness** Accident investigators should act solely in terms of the public interest. They should not do so in order to gain financial or other material benefits for themselves, their family, or their friends.

· **Integrity** Accident investigators should not place themselves under any financial or other obligation to outside individuals or organizations that might seek to influence them in the performance of their official duties.

· **Objectivity** In carrying out public business, including making public appointments, awarding contracts, or recommending individuals for rewards and benefits, accident investigators should make choices on merit.

· **Accountability** Accident investigators are accountable for their decisions and actions to the public and must submit themselves to whatever scrutiny is appropriate to their office.

· **Openness** Accident investigators should be as open as possible about all the decisions and actions that they take. They should give reasons for their decisions and restrict information only when the wider public interest clearly demands.

· **Honesty** Accident investigators have a duty to declare any private interests relating to their public duties and to take steps to resolve any conflicts arising in a way that protects the public interest.

· **Leadership** Accident investigators should promote and support these principles by leadership and example.

Ethical behaviour and principles are a prerequisite for any investigation conducted "without fear or favour" in the interests of maritime safety. This is in the interests of the public in general, seafarers, ship owners and the maritime industry in general.

None of the appointed investigators and experts followed the above seven principles.

Let's face it! All the investigators were totally corrupt and served particular - not public - interests. No central archive of information was therefore made - all info was scattered around at various places in three different countries so that the participants could negotiate the result. The 'experts' evidently had no possibility to check any information concerning their particular field held by another party.

Even if the UN/IMO resolutions are not perfect, they would have been a good base for the investigation procedures.

By immediately ignoring the UN/IMO resolutions the Commission fixed the stage for later drama - a 100% manipulated investigation report (5).

It was not the first or the last time **it happened** - but the 'Estonia' investigation must be considered the most shameful scam in maritime history.

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[28] The Danish and Norwegian observers are not mentioned in the Final Report (5). According to the protocols they never attended any meeting, even if they were formally appointed as shown.

[29] Six members were replaced, died or were kicked out from the Commission during the investigation - **1.6** and **1.20**.

1.6 CHANGES IN THE COMMISSION

Only 30 minutes after the appointment of the Commission the Estonian Foreign Office announced a correction (6). Indrek Tarand was replaced by **Enn Neidre** - Member - Master Mariner, Estonian Shipping Company. The reason for this first change of the Commission has never been reported.

Evidently a permanent secretary in the Foreign Office, Indrek Tarand, had no qualifications whatsoever to investigate a *marine* accident but maybe he was an honest man who did not fit into the Commission.

And who was Enn Neidre? Well, he worked for the shipping company to which the 'Estonia' belonged - he was thus 100% partial and should not have been accepted as an investigator, even if he was not the only one in the Commission to be partial.

A person with inside information about the accident was brought into the Commission to assist the cover-up!

1.7 THE OBVIOUS CONFLICTS OF INTEREST

The Swedish and Finnish members were civil servants, seafarers, teachers or consultants, which earlier had been involved with accident investigations and had no apparent connection to the casualty or the ferry. The same thing cannot be said about the Estonian members.

Andi Meister was politically responsible for safety at sea in Estonia, and formal head of the government Estonian Shipping Company (ESCO) owning the vessel. Meister had indirectly certified and approved that the 'Estonia' could sail in the Baltic without life rafts under davits for all aboard and with no safety systems. Meister had never investigated a marine casualty. He was a politician although with higher legal education.

Uno Laur was introduced as the managing director of the Average Agency CMM,[30] an ex ESCO employee and an experienced maritime specialist, e.g. as representative of the London P&I club. It was not said that he was the predecessor of Enn Neidre at ESCO, or that he was the personal observer of the Estonian President, Lennart Meri, in the Commission, **3.18** and **4.5**.

Enn Neidre, was the head of the Navigation Department of ESCO and Safety Advisor of Estline and the supervisor ashore of the crew of the vessel. Neidre had a unique position to control the surviving crewmembers. Neidre must have been aware of the facts that the 'Estonia' lacked correct life saving equipment, sailed with open watertight doors and that dry evacuation was not possible for all persons aboard. Neidre was immediately on the spot in Finland, when the survivors came ashore and he talked to them. Captain Neidre knows exactly what happened aboard at the time of the accident. He participated actively in the cover-up of the truth.

The Estonian prime minister (or President) appointed three persons, who were very much involved with the 'Estonia' and its operations and safety to investigate an accident to the same ship.

The Finnish and Swedish members did not complain about this conflict of interest among the Estonian members. Why did the Estonian government appoint three investigators, which were in fact going to investigate themselves? These persons were easy to manipulate - and two of them later left the Commission.

The three observers from the Estonian, Finnish and Swedish national maritime administrations were probably also part of the numerous conflicts of interest - because there was more than one! The Finnish maritime administration had once approved the ship and certified it 1980-1993, the Swedes had checked the ferry several times at PSC and particular Swedish surveys without any remarks and the Estonians had issued the certificates. Probably the observers from Denmark and Norway then left the Commission - they did not want to attend a manipulated investigation by their colleagues. Because the manipulations must have been obvious to them from the beginning.

Most members, Swedish, Finns or Estonians, behaved very strangely.[31] During the investigation all members and experts refused categorically to answer any simple questions of the author about the ship and the accident - apparently because everything was still *'under negotiations'* in the Commission.

The Swedish head - Olof Forssberg - had previously been legal counsel at the Ministry of Defence and used its limousine services, when The Commission met at Stockholm. Börje Stenström had started his career in the Swedish Navy, so two of the Swedish investigators had very good military connections. And it was the Swedish navy that salvaged the visor **1.16**. It was probably the same Swedish Navy that had blown off the visor from the wreck under water after the accident!

All members of the Commission had particular interests that the true accident cause was not made public! So what could the true cause of accident have been?

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[30] Consulting of Merchant Marine (CMM Ltd.), Gonsiori 30 - 4, 10128 Tallinn, Postal Address: P.O.Box 5055, EE 11002 Tallinn Tel: +372 (6)010722, 010723, 009740 Fax: +372(6)010722, E-Mail: cmm@online.ee , Out Of Hours: Capt. Uno Laur Mobile: 5015006

[31] The author happened to meet Börje Stenström already Monday 31 October 1994 at the IMO in London, where we both worked in an expert panel about improved oil tanker environmental safety. I congratulated Stenström to his appointment to the Commission and asked if he **1.15** had made a stability calculation for the 'Estonia' with water on the car deck, which would show that the ferry should have turned turtle. Stenström went pale and said that he could not discuss the investigation and that the author *'didn't understand what was involved*'. We met several times 1995/6 and each time Stenström refused to talk about the investigation. In October 1996 Stenström wrote to the author termination the friendship. Stenström then died early 1997. At another time the author met Huss (in August 1997). Huss refused to explain why the 'Estonia' didn't turn turtle with water on the car deck and accused the author to be *'conspiratorial'*. Forssberg wrote to the author 7 April 1997 saying that he had no intention to discuss the conclusions of the investigation. That discussion should be held among the readers of the report, Forssberg thought.

1.8 AN EARLY MISTAKE - THE RAMP WAS CLOSED WHEN THE 'ESTONIA' SANK

At its second meeting at Tallinn on 17 October 1994 the Commission reviewed new information available as a result of new video films taken of the wreck on 9 October[32] and confirmed in an Interim Report no. 2 (7), signed by Meister, Forssberg and Lehtola, that

1. **The visor was lost under way (***between Tallinn/Stockholm***).**

2. **Water entered the car deck at the forward ramp.**

The visor was officially still missing at this time and it had evidently not been inspected, when the Commission announced the above two statements!

The visor was reportedly found the next day 18 October 1994 **1.14** but no evidence exist that such was the case. A stability calculation with water on the car deck in the superstructure >2 meters above the waterline had not been done either **1.15** to establish what happens with water in the *superstructure* on top of a watertight hull on which the whole ferry is floating.

At the meeting at Tallinn the Commission questioned surviving crewmembers (very bad sound recordings of the hearings exist), i.a. AB Linde, who stated that he had jumped into the sea, when the ship was on the side and that he had reached a raft, which was close to the bow at about **01.30** hrs. He could see that the visor was missing.[33]

He could also see that the ramp was ***closed*** (8).

Linde was asked to repeat the latter statement in front of the Commission. Karppinen, who led the questioning, then quickly changed the subject and started asking Linde, if the glass windows in the port, then upper, undamaged side (the ship was listing 90 degrees) of the *deck house* were intact or damaged, when the ship sank. Evidently Linde had seen these windows - he was walking on them at 01.30 hrs - and some persons almost stepped through them to fall into the ship!

The Final Report (5) does not record Linde's statement that the ramp protecting the superstructure was closed *before* the ship (bow) sank. In the official report (5) the ramp should have been wide open at this time. When you listen to the tape (9) of the questioning, you get the impression that the Commission tested Linde to state that he had seen the *visor* missing - the Commission was pleased - but that it was a big surprise, when Linde went on to state that he had seen the *ramp* closed! Evidently the ramp was found closed down on the wreck as seen on the video films of 1, 2 and 9 October, but if the ramp was seen closed at 01.30 hrs *above* the water on 28 September - when - and how - would enough water already at 01.15 hrs have entered the 'Estonia' through the bow opening of the superstructure to flood the hull and to sink her?

Later 1.17 the Commission changed the finding that the ramp was closed at this time - it had been pulled fully open at 01.15 hrs - to suit a modified, false course of events. Linde is thus a witness that can prove the Commission wrong and a dangerous person.

Later - at an unknown time and for unknown reasons the ramp had closed itself. How this had taken place the Commission could never explain in the Final report (5). The reason is simple - the ramp was never open!

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[32] **RTw 10/10 0813 Searchers film sunken Baltic ferry HELSINKI, Oct 10 (Reuter)** - Searchers used a remote-controlled video-camera during the night to film the wreck of the Baltic ferry 'Estonia' for only the second time since it sank. Strong winds and heavy seas have hampered attempts to find out why the ferry's bow door was ripped off in a storm on September 28, sinking the ship with the loss of more than 900 lives on a voyage from Tallinn to Stockholm. The Finnish coast guard vessel 'Tursas' managed to film the wreck during a brief easing in the bad weather on Sunday night and Monday morning. The 'Tursas' and an Estonian vessel also scanned the Baltic seabed with sonar underwater location devices. **They did not find the visor-shaped bow door,** which was raised and lowered to allow vehicles on and off the ferry. But Kari Lehtola, a Finnish member of the board investigating the disaster, told the Finnish News Agency (STT) that metallurgists

would be able to draw *"far-reaching conclusions"* from the video about why the door sheared off. *"It is possible that thanks to the new pictures we can work out events even if we never find the visor,"* he said. … REUTER

[33] The same information 3/E Treu had given at three questionings - the question is, if it is true. There is information that the visor was still attached to the ship, when the list was >90 degrees, **1.4**, **2.1** and **Appendix 5**. In the same raft as Linde were Sillaste and Kadak (33).

*'The situation that you from a safety point of view are not permitted to assume and to calculate with **the buoyancy of a deck house**, does not exclude that such a buoyancy **actually exists**. It exists and therefore the sequence of events as described by the Commission is very likely'.*

Johan Franson and Jan-Olof Selén, Swedish NMA, 15 December 2000

'Even if the investigation later has been subject to quite a lot of criticism, I dare state that with regard to the circumstances under which the investigation was done, the result has been shown to be very valid'.

Mikael Huss to the Swedish NMA, 26 November 2000

'The detailed time sequence of the course of events has still not been clarified, but considerable amounts of water flowed into the car deck (the superstructure) *between 01.15 and 01.30 hrs (Estonian time). The ship sank due to the space being filled with water and it disappeared from radar screens at 01.48 hrs. The clock on the radio station on the bridge stopped at 23.35 UTC (01.35 hrs Estonian time)'*

Commission press release 15 December 1994 (13) - para. 6

*'**We must proceed to do a major study of the actual sinking.** How did the Estonia sink and why did she sink so fast? That experience may provide still more knowledge to improve safety at sea both in today's and tomorrow's shipping. Latest 1 February next year it shall be informed to the Government office what or which research institute or consortium that has been given this task'.*

Mona Sahlin, Minister, Swedish Parliament, 17 March 2005

1.9 THE ALLEGED SINKING

Members of the Royal Institution of Naval Architects and all students and researchers of marine accidents are particularly welcome to study these pages about the alleged sinking of the 'Estonia' and to verify the observations and conclusions. Please also check 2.17 and 3.12 for more stability data, Appendix 4 for water inflow data and 4.4, why everybody lied the way they lied.

THE STRANGE VISOR POSITION

The visor was *'officially'* found the following day (18 October) one mile west of the wreck. The only evidence of the location of the visor, i.e. its position, is the position of a **red** buoy (sic) allegedly established early December 1994 by a Swedish Coastal Artillery, KA, vessel, i.e. two months after the visor was found! The positions of the ship 'Tursas' that located the visor 18 October 1994 and the ship 'Nordica' that salvaged the visor mid-November 1994 have never been announced and it is not known when the **red** buoy was put at the position and by whom. It is very strange that 'Tursas' could not inform its own and the visor position on 18 October 1994 and that the visor position was not confirmed by the salvage vessel 'Nordica' mid-November 1994 or that a **red** buoy was anchored at the visor before and after salvage. It is unclear why the Swedish Coastal Artillery sent a vessel early December 1994 to the **red** buoy in order to establish its position = the visor position - *after* the visor was salvaged. But the position of the visor in the Final report (5) is that of a **red** buoy established early December 1994. How can anybody believe that the position of **red** buoy taken December 1994 should be the same as the lost visor position more than two months earlier? Why was the **red** buoy still there?

There is today a lot of information to the effect that the visor was attached to the *superstructure* of the vessel, when it sank, thus the visor could hardly have fallen off *'under way'* (at 01.15 hrs) 33 minutes before the sinking (at 01.48 hrs) as stated by the Commission on 17 October 1994 and it could hardly have been found one mile west of the wreck on 18 October.

In December 1994 the Commission suggested that the final *'sinking'* of 'Estonia' was later - 01.54 hrs.

The 'Estonia' had had a westerly course from Tallinn to Stockholm, **so a rational person would expect the visor to be found east of the wreck, if it had been lost under way**, so that waves then could hit against the ramp

and open it **1.4**-3,4, when the ship moved westward, etc, and that ship then had capsized (and sunk?) west of the visor.

But the *visor* was allegedly found one mile west of the (false or real position (?) of the) wreck and it should have raised several questions in the Commission. How did it end up there? The ferry could have heeled first (due to leakage of the hull!), turned around, lost the visor later (it may not have been properly locked) and then drifted to the wreck position. Alternatively the ship had turned before (the crew was aware that something was wrong) and was on its way back to Tallinn, when the accident otherwise took place as stated by the Commission **1.14** except for the 180° turn after the heeling. But these questions are not discussed in the Final Report.

A third alternative, the most likely, is that *all* information that Commission had published between 28 September and 17 October 1994 about the visor was disinformation and that the visor was *attached* to the ship, when it sank (between 01.32 and 01.36 hrs).

The actual circumstances *where* the visor was found need be further investigated.

To support the alleged loss of the visor *before* the accident - the listing at 01.15 hrs - the Commission simply arranged that the visor be removed from the bow of the wreck *below* water by divers from the Swedish Navy using explosives a couple of days after the accident. This strange, alternative possibility will be discussed later in this book.

EVIDENT FALSIFICATIONS

The author now thinks it is time to introduce the *detailed* sequence of events of the accident produced by the Commission *after* the visor was lost as described in the Final Report (5) of December 1997 and the dramatic 35-37 minutes that then followed between, allegedly 01.15 and 01.50/52 hrs, which the Swedish NMA considers *'very likely'*. We will not consider the 10-20 minutes of noise, etc. prior to the alleged loss of the visor. The alleged failures causing visor loss and ramp opening are described in detail in **3.7** and following chapters.

The Commission thus alleges that the visor fell off *'under way'* at 01.15 hrs, when the vessel was doing 14-15 knots. This strange event should have taken place 1 560 meters west of the final resting - wreck - position. The casualty was due to a design fault of the visor locks, which were too weak and could not withstand the wave loads. The visor pulled the inner ramp fully open, when it fell off. The forward end of the superstructure was thus fully open. Water then allegedly entered on the car deck of the *superstructure* through the big opening forward >2 meters above the waterline, when the bow pitched down into the waves. There are no witnesses to this event. The crew in the engine control room only saw a closed ramp on the monitor.

The weight of the water loaded on the car deck then allegedly caused the ship first to immediately heel (but not capsize) at 01.15 hrs. As more water came in, the angle of heel increased. Then the ferry turned 180° and proceeded back on an easterly course.

AN UNPROVEN TURN 2 400 METERS WEST OF THE WRECK

According the Final report (5) chapter 12.5, page 161:

> *"It has been discovered both from the sonar investigations of fragments on the seabed and from manoeuvring simulations that the ESTONIA made a port turn at an early stage of the accident."*

The turn allegedly took place (see below), between 01.16 and 01.20 hrs, when the list was only 15-30°, 2 400 meters *west* (sic) of the sinking/wreck position at 01.52 hrs, i.e. 32 minutes before the 'Estonia' sank.

Facts are that ***no*** sonar investigations were done 2 400 meters west of the wreck, ***no*** fragments have ever been investigated on the seabed 2 400 meters west of the wreck (or anywhere - all information about fragments on

the seabed is false, as nothing falls off a ship when list is 15-30°) and ***no*** manoeuvring simulations have ever shown that the 'Estonia' should have done a port turn.

All statements about a turn during the sinking are not proven. All statements that the 'Estonia' then drifts 2 400 meters at 2,2 knots speed are not proven. All statements that the 'Estonia' *superstructure* high above the waterline is loaded with water are not proven. As everything else that the Commission invented about the sinking.

To further study the strange port turn between 01.16 and 01.20 hrs and the amazingly high speed when drifting while flooding, the stable conditions - no capsize - has the Swedish government on 17 March 2005, i.e. 10 years and five months after the sinking, announced a SEK 8 million research study:

The Swedish government has 17 March 2005 decided that the Swedish agency VINNOVA, as responsible for the Vinnova, so called **Safety at sea program**, shall order a research project concerning a study of the sinking of the M/S Estonia on 28 September 1994 between 01.15 hrs (the visor falls of when the Estonia is on a westerly course) and about 01.52 hrs (the Estonia sinks 1 560 meters east of the visor) and how the port turn took place, how the ship was flooded while drifting at high speed..

The principal objective of the study is to develop knowledge that may contribute to better safety at sea for ships in ***Swedish*** waters. The government has allowed SEK 8 million for this purpose.

Responsible for the government study is **Claes Unge** (VINNOVA), tel +46-8-473 31 77 and **Gunnel Färm** (chairperson of the program board of the safety at sea program), tel +46-73-600 38 45.

Responsible for the present VINNOVA safety at sea program is Per Ekberg, Sjöfartsinspektionen.

More information in Swedish about the government study is at **regeringens pressmeddelande** of the 17 March 2005.

THE SINKING CONTINUES

At around 01.30 hrs the angle of heel was allegedly >70° but the ship was stable. Between 01.30 and 01.50 hrs the listing ferry drifted eastward at >2,2 knots constant speed and suddenly she sank (sic) at about 01.50-01.52 hrs.

The author is absolutely certain that this scenario is impossible and that it is an intentional falsification like every other essential information in the Final report. It is thus very good that the Swedish government 10 years later orders a new study.

BASIC PARTICULARS AND ASSUMPTIONS - HULL - BILGE PUMPS - SUPERSTRUCTURE - SCUPPERS - DECK HOUSE

The official 1994 scenario, e.g. assumes that the principle of Archimedes does not apply. The reader should therefore know the following - it is basic naval architecture and ship stability theory:

The 'Estonia' (weight about 12 000 tons) floated on the watertight *hull*, which had 12000 tons of buoyancy force and 6 000 tons of reserve buoyancy and was subdivided into 14 watertight compartments indicated in green and blue and purple in the figure 1.9.1 below by watertight bulkheads. The top of the *hull* was the watertight car deck no. 2, which was >2 meters above the waterline.

Water in the watertight compartments of the *hull* was pumped out by *bilge pumps*.

The car deck no. 2 freeboard deck (>2 meters above the waterline) was protected by a weather tight *superstructure* with a ramp at the forward end. The *superstructure* space is indicated in red in the figure 1.9.1. Water on the car deck (one open space) inside the *superstructure* entering at the forward ramp would collect at the lowest point on the deck and would make the ship *list and trim* and could not flow down into the hull below.

Small amounts of water in the *superstructure* flowed normally out through *scuppers* in the car deck by gravity.

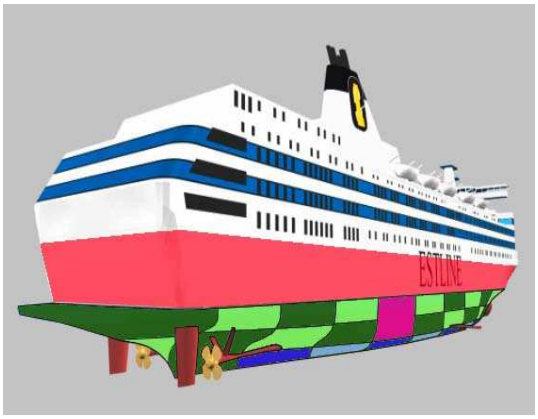


Fig. 1.9.1 - Various parts of the 'Estonia'

On top of the superstructure was the *deckhouse* (decks 4-8). The *deckhouse* was >8 meters above the intact waterline and neither watertight nor weather tight, as it was fitted with windows and doors and other openings. The deckhouse is evidently indicated in white (with blue stripes) in figure 1.9.1.

THE FALSE SEQUENCE OF EVENTS

The sequence of events *after* the visor was lost as per the Commission is shown in figure 13.2 of the Final Report (5) and reproduced below. Each arrow represents the position and heading of the 'Estonia' at one-minute intervals, e.g. four minutes *after* the visor fell off the 'Estonia' was heading south and another 33 minutes later she allegedly sank.

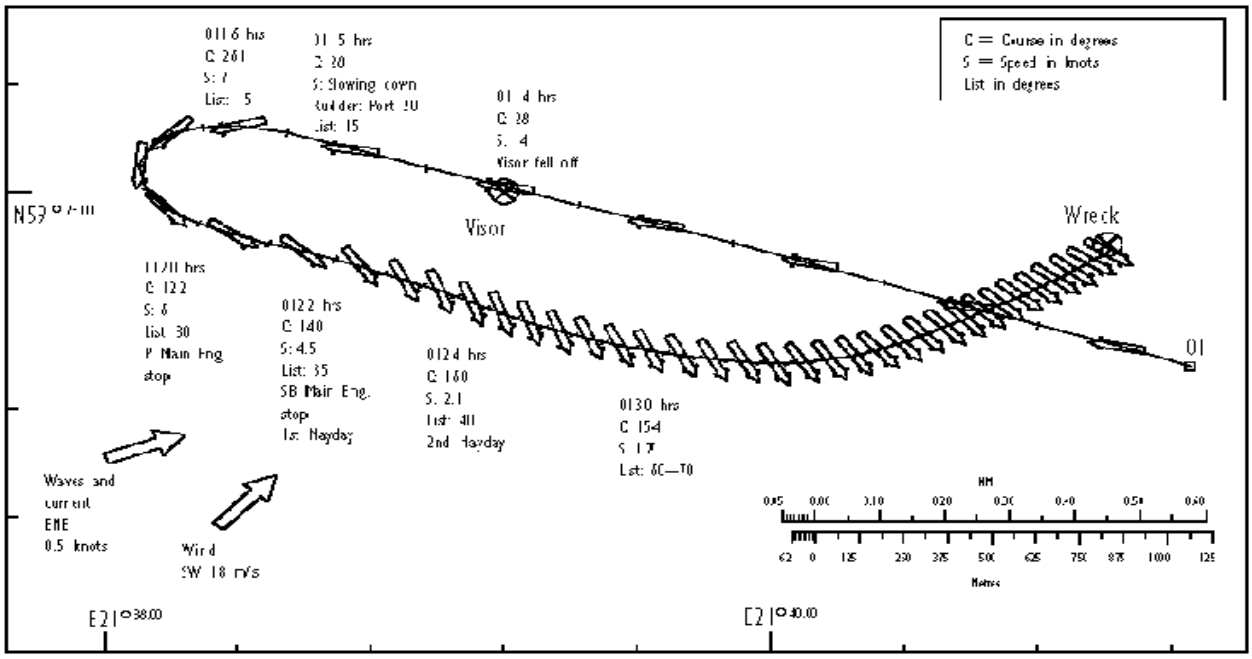


Figure 1.9.2 - Sequence of events as per the Commission (fig. 13.2 in (5))

<u>The plot is in fact a falsification</u>. It shows the movements of a completely *undamaged* ship, which makes a 180° turn and then drifts due to (exaggerated) wind and (exaggerated) currents - it never sinks, e.g. at the Wreck position - but continues to drift after that, but those arrows after 01.54 hrs have been edited away (sic) from the plot.

Then various arbitrary - but cleverly misleading - pieces of information (no evidence exists) have been added on the plot - times, courses, speeds, angles of list and events. The falsifications are described below:

THE FERRY STARTS TO HEEL AT 01.15 HRS

In the Final Report (5) page 22 the Commission confirms that *the visor fell off* at **01.15** hrs (on 28 September), when the ship was under way to Söderarm (course 281°) with unchanged speed, about 14/15 knots, exactly as announced on 17 October 1994 **1.12**-1. Then the ramp was pulled fully open but see **1.10**, water started to enter the *superstructure* > 2 meters above waterline, when it pitched below the waves, and the ship started to heel - 15 degrees after one minute, 30 degrees after six minutes (when evacuation from inboard to open decks was impossible) and 40 degrees after 10 minutes. The reason for the heeling was that the water collected in the side of the *superstructure* and produced a heeling moment.

Calculations of the author shows that 2 000 tons of water should have entered the superstructure in less than 2 minutes. These calculations are easy to confirm with, e.g. model tests. This enormous lose weight should have heeled the vessel >40° and then the ship should have capsized and floated upside down at 01.15 hrs. Therefore the first allegation of the Commission cannot be true.

THE FERRY TURNS AT 01.16 HRS

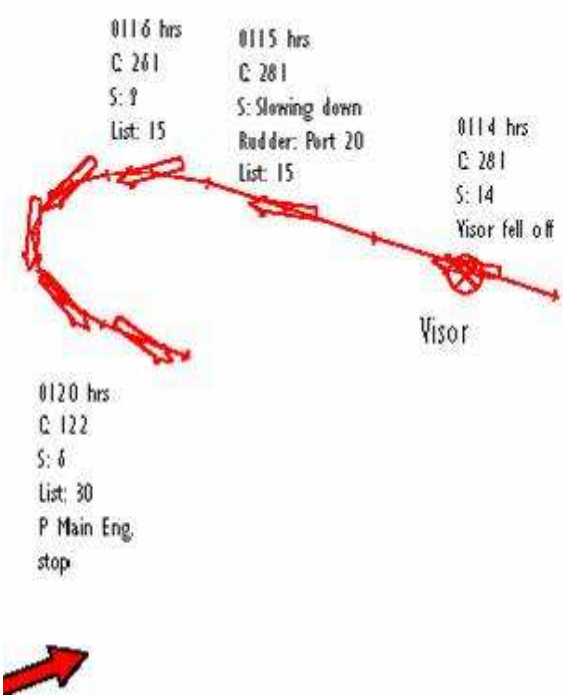


Figure 1.9.2A – 'Estonia' turns 01.16-01.19 hrs

The ship started after two minutes to turn (159°) port according to the Commission, first towards, later away from the waves between 01.16-01.19 hrs on the plot, as in the above plot the visor falls off at 01.14 hrs. The evidence for this event - fragments and simulations - is false.

After the visor had fallen off at **01.14/5** hrs, the 'Estonia' thus continued at 14 knots for two minutes straight forward half a mile with the 4,3 meters high waves on the port bow - she was still *'under way'* towards Söderarm - but with the bow ramp in the *superstructure* pulled fully open - the visor had been lost and the list was 15 degrees. The vessel was then pitching up/down with amplitude of 4-5 meters and a period of 6-8 seconds, so the open bow with the ramp down in the *superstructure* was about 25% of the time several meters below water, when water flowed in due to pitching and forward motion. The Commission does not consider that this water in the superstructure would have stopped the pitching and trimmed the bow permanently below the water - the 'Estonia' should have gone under as a submarine after one minute - actually capsized and turned upside down - before any turn could take place!

THE STRANGE EVENT AT 01.20 HRS - WHY DOESN'T THE FERRY UPRIGHT?

At **01.20** hrs the ship has turned 159° and his heading back at 6 knots with the waves on the stern (sic). The list is 30° to starboard into waves and wind due to 1 500 tons of water inside the superstructure and the ramp is wide open. **No more water can enter the superstructure car deck at this instance.** The bow opening is not facing the waves any longer! **You would thus expect that all water inside the superstructure flows out from the superstructure at this time, when the vessel pitches and trims on the bow! And that the vessel up-rights and gets 100% stable again.**

It is a little later that the Mayday message is sent ... to the effect that there is a problem. The Mayday conversation stops around 01.30 hrs. According to the official plot of the accident it was impossible for water to enter the superstructure after **01.20** hrs due to the fact that the opening was facing away from the ways and the ship was moving with the waves. But the Commission decided - without any evidence - that more water flows into the superstructure. Very strange.

THE ENGINES STOPS AT 01.24 HRS

After having turned 159° and proceeded under engine power on contra course for a few minutes, the Commission suggests, that the engines stopped (there is no evidence) and that the ship then drifted about 2 000 meters sideway from about **01.24** hrs (the list was 40 degrees) to the position of the wreck, where the ship suddenly sank/disappeared (sic) 28 minutes later at **01.52** hrs with >135 degrees list. The Commission had however stated in Swedish daily DN 941019 that

> *'Nothing in the statements of the crew indicates that the Master managed to turn the ship and return towards Tallinn, before she sank'.*

But in order to connect the position of the visor, *which was **not** known 17 October 1994*, with the position of the wreck a 180° turn and >2 000 meter of drifting were necessary. Evidently it was not the Master that turned the ship - the Commission later tells us that it was the officers on the bridge that initiated the turn - engines running - by turning the rudder fully to port when the ship was listing to starboard.

The mystery here is why the water inside the superstructure never flowed out with the bow ramp opening away from the waves!

FRAGMENTS ON THE SEABED

In order to prove the port turn the Final Report (5) chapter 12.5 states that *'fragments'* found during a sonar search of the seabed helped the Commission to determine, that a port turn had in fact taken place **1.14**.

When were these *'fragments'* found and what were they?

The Commission stated that the Finnish vessel 'Tursas' found and filmed *'fragments'* on 5 October, but then the 'Tursas' never searched (a) *half a mile west of the visor* (sic! - it was not yet officially found) or (b) *half a mile south of the visor*. No films of the *'fragments'* exist!

Notice the logical summersault - small *'fragments'* indicating the turn of the ship were found and filmed long before the big visor was (officially) found - but these fragments were not found, *where* the turn allegedly took place a 1000 meters west of the visor. What type of *'fragments'* was found and how and where? It must be big *'fragments'*, as sonar can only see fairly large objects at 80 meters depth, and it must be assumed that the *'fragments'* were buried in deep clay and mud.

Unfortunately the Final Report (5) does not say what the *'fragments'* were, their positions, how they were found and how and why they fell off the 'Estonia' before, during and after the turn. According a press release of 6 October from the Estonia Foreign office quoting the Commission the 'Tursas' found the fragments - *'smaller objects' - east and south of the wreck*[37] (it is not known if it was from the false or correct wreck position), i.e. at least 3 000 meters from the location of the alleged turn!

OBJECTS FALL OFF WHEN THE LIST IS <30 DEGREES AT 01.18 HRS

It is very strange that small *'fragments'* were allegedly found and filmed, *before* the very big visor was found! And these *'fragments'* would prove the port turn, *after* the visor was lost, i.e. the fragments had fallen off the ship *after* the visor fell off when the angle of list was <30 degrees.

What *fragments* could have fallen off a few minutes after the visor, when the angle of list was not very big? **The fragments are an obvious lie of chapter 12.5 of the Final report (5).** After the report was published Commission member Tuomo Karppinen announced (at Glasgow, October 1999) that the *'fragments'* were found 200-300 meters straight west of the true wreck position - see figure in **2.26**. But according to fig. 1.9.2 above the 'Estonia' never passed that area - before, during or after the accident and according to the Estonian press release nobody searched that area at the time. And the fragments should prove the turn at **01.16-01.19** hrs >2 000 meters further to the west! The statement in chapter 12.5 in (5) cannot be correct. No *'fragments'* ever confirmed the port turn.

The author is rather concerned about these fragments falling off the 'Estonia' *after* the visor had allegedly fallen off. Why cannot the Commission clarify this matter? The fragments must have been found 3 000 meters west of the wreck if they proved a turn. And how could they fall off so early? And why do *'fragments'* fall off a ship ... and why does not the water in the superstructure flow out?

DID THE SHIP ACTUALLY TURN?

Did the heel to starboard initiate a turn to port? No - model tests showed clearly that the 'Estonia' with starboard list would not turn to port. The Commission then tried another angle. They say in the Final Report that a simulation of manoeuvres (sic) should have indicated that a bow wind would make the ferry turn into the wind - but not turn 180°. No reports of such simulations or model tests are included in the Final report and its supplements.

As the Commission could not prove the port turn with *'fragments'* and model tests and simulation, it says instead in chapter 13.3 of the Final Report (5) that it considers it clear (sic), that it was the *officers* on the bridge that initiated a reduction in speed and a turn to port. The crew on the bridge should have been alerted by (a) *the noise, when the ferry collided with the visor before the list occurred* and (b) *the sudden list* (sic) at 01.15 hrs. But there is no **evidence** that the two or three persons on the bridge actually initiated a slow down or a turn or if there were any persons on the bridge in the first place.

Note here the logic of the Commission - the ship is said to have collided with the visor, which is not proven - it could have been attached to the ship, when it sank. And then there should have been a sudden list - but according to e.g. 3/E Treu there was no sudden list - the ramp was still closed and there was only a slow increase in list 1.3. And due to this alleged collision the officers on the bridge are assumed to have initiated a 180° turn to port. Why not starboard away from the waves? Logic?

The repeat statement of the Commission on page 223 of the Final Report (5) that the watch-keeping officers reduced speed and initiated the port turn is not proven. To make a sharp turn to port you need to turn the rudders maximum angle to port - it takes about 30 seconds, i.e. the alleged turn was initiated 90 seconds after the loss of the visor. But the rudders were found **1.16** turned to maximum starboard angle 35°. After the turn to port - which took a couple of minutes - the bridge apparently turned the rudders full starboard again, which takes another 60 seconds. How, why? After the turn ending at 01.19 hrs the crew must have put the rudders amidships - the ship continued straight - and later they turned the rudders full starboard?

EYEWITNESSES TO THE SINKING - NO TURN, NO DRIFTING, THE 'ESTONIA' IMMOBILE

However - there are eyewitnesses to the sinking of the 'Estonia' and they never mention a turn. On 24 October 1994 the Finnish police interviewed second officer Ingemar Eklund of the 'Mariella', who had seen the 'Estonia' at **01.30** hrs and that the ship disappeared already at **01.36** hrs (act A93c). The testimony of Mr Eklund was discussed at a Commission meeting 26-27 January 1995. His watch had started at 22.00 hrs and he had *all the time* seen the 'Estonia' since then. He told the Finnish police:

> *"At 22.00 hrs I saw the 'Estonia' at an angle in front of us, about 30°, on the port side. ... Her course at 22.00 hrs was almost westerly and she sailed steady there beside us. ... I saw the 'Estonia' all the time on the radar. ... At 01.30 hrs the Master Thörnroos called the bridge and asked about the weather. I replied something about the pitching and at the same time, during the telephone call, I heard on Channel 16 how the 'Estonia' said once*

Mayday. I think her next words were about blackout and heavy listing. I told the Master to come to the bridge, which he did. I replied to the 'Estonia' at once but they did not respond back. When the Master arrived on the bridge I was still trying to contact the Estonia but she didn't reply. Meanwhile I recorded her position from the radar. ***From hearing the Mayday-call and until the radar echo of the 'Estonia' disappeared I think it was only about six minutes.*** *The times can be seen from the log book I kept during the night. As soon as the Master arrived on the bridge we changed course towards the 'Estonia'. ... We also saw the' Estonia' optically; I had looked at her several times earlier during the night with binoculars and recognized her silhouette. ... During the voyage towards the position of the 'Estonia', her lights disappeared and she also disappeared from the radar. Just before she disappeared from the radar,* ***I thought she turned to port*** *...this happened very quickly ... because the vector disappeared; I assumed that the 'Estonia' sank. ... We were using all three radars. ...During the voyage to the position of the 'Estonia' I manoeuvred the ship ... I also kept the log book. ... In the log book I wrote the exact times taken from the GPS Navigator".*

THE MISSING MARIELLA LOGBOOK

A copy of the 'Mariella'/Eklund logbook does not exist in the Commission's archive, so we do not know what position of the 'Estonia' was recorded. The logbook has disappeared. Note that Mr. Eklund thinks that the Mayday was at 01.30 hrs and that the 'Estonia' sank already at **01.36** hrs and that the positions of the 'Estonia's were recorded at **01.30** hrs and **01.36** hrs and that ***she appeared to turn just before disappearing at 01.36 hrs***. Eklund is quite clear - he did not see the 'Estonia' drifting >1 300 meter sideways until say **01.52** hrs. Eklund was at the time of the Mayday talking on the phone to the Master of the 'Mariella', Jan-Tore Thörnroos (who was in his cabin), when the Mayday was heard, and he has told the Commission in November 1994 that the 'Estonia' was not moving, when she was under observation between **01.30** and **01.36** hrs, i.e. the position of the 'Estonia' didn't change. It is quite obvious that a ship without engine power and listing on the side does not turn or drift very fast or long, in spite of all later suggestions to the contrary.

Note that Eklund gave his testimony after the Commission had announced its cause of events and the finding of the visor. Therefore the Commission had to modify it to suit.

HOW THE COMMISSION FALSIFIED EKLUND'S TESTIMONY

It is interesting to note how the Commission presents (falsifies) Eklund's testimony in the Final report (5) chapter 7.5.3 (page 104):

> *"The officer of the watch* (Eklund) *was talking on the telephone with the master* (Thörnroos) *about reducing speed when the first* (sic) *Mayday call was received. On learning of the call the master went quickly to the bridge. ... at 01.32 hrs ... we turned towards the site of the accident. When she was four nautical miles away, the radar image of the ESTONIA disappeared at about 0150-0155 hrs* (sic)*."*

Evidently the Commission decided to censor the observations of the eyewitnesses on the 'Mariella' - they did not see a turn at 01.16-01.20 hrs. Later the Commission totally falsified the testimonies of Eklund/Thörnroos to the effect that they had seen the 'Estonia' sinking at **01.50-01.55** hrs as shown above! Media has also published other statements of Thörnroos about the 'Estonia's movements prior to the Mayday (but then Thörnroos was in his cabin and could not have noticed anything).

In the Jörle/Hellberg book 'Katastrofkurs (20), chapter 15 (page 120) the call Thörnroos/Eklund is described as follows:

> *"The ship* (Mariella) *made 10 knots* (sic)*, when the master Jan-Tore Thörnroos called the watch keeping mate Ingemar Eklund to order a further* (sic) *reduction in speed. »I thought it was too much slamming at the bow" he* (Thörnroos) *has told. During the call Eklund heard the first* (sic) *Mayday from the 'Estonia'."*

Jörle/Hellberg makes a big deal about the 'Mariella' making only 10 knots (not proven of course - it was 14.6 knots according to a plot in the Final report (5)) - and that the 'Estonia' was going faster. In reality the 'Mariella' kept about the same speed as the 'Estonia'. And Eklund never testified about reducing the speed (they might in fact have increased the speed to reach the 'Estonia').

In the Jörle/Hellberg book 'Katastrofkurs (20), chapter 34 (pp 246) the position noted in the log book by Eklund is described as follows:

> *"When the last Estonian word is heard from 3rd mate Andres Tammes on the 'Estonia, the time is 01.30,06 and the Estonian ship is visible on the radar screen* (of the 'Mariella') *but* ***does not make any forward speed*** (sic). *... Ingemar Eklund notes the position given by the radar and gets N 59.22 and E 21.39* (sic). *... Life rafts and lights were clearly visible when the 'Mariella' arrived in the area.*
>
> *The 'Mariella' is now heading towards the 'Estonia' but loses ... sight of the lights at 01.34-01.35 hrs. But still there is a radar echo* (sic). *A quarter of an hour later, at 01.50,27 the 'Mariella' tells the 'Silja Europe', that they have a radar echo five miles south. ... Jan-Tore Thörnroos and other officers on the bridge of the 'Mariella' say that this echo disappears about five minutes later, thus 01.55 hrs. ...*
>
> *This time, 01.55 hrs, shall be compared with the official time 01.48 hrs ...* ***then the echo disappeared on the radar screen of the Utö fortress."***

Note that Eklund told the Finnish police that the radar echo disappeared, when the lights went out. The positions and the times are nonsense and the logbook of the 'Mariella' has, as stated, disappeared. And the recordings/plot of the radar screen at Utö has disappeared **1.13**.

In the Jörle/Hellberg book 'Katastrofkurs (20), chapter 35 (pp 255) the port turn seen by Eklund (and his colleagues - sic) is described as follows:

> *"It means that the turn reasonably was made between 01.15 and 01.20 hrs and that the engines stopped thereafter. If we compare with the time when the officers* (sic) *on the 'Mariella' see that the 'Estonia' is turning - a short moment before* (sic) *the first 'Mayday'-call at 01.22 hrs ... we see that the times align correctly."*

Observe the strange reporting above about the turn - Eklund was alone on the bridge on the 'Mariella' when he hears the end of the Mayday at 01.30 hrs (or the beginning at 01.22). The master of the 'Mariella' comes up to the bridge and course is changed at 01.32 hrs towards the 'Estonia'. Later more officers come to the bridge of the 'Mariella'. And Jörle/Hellberg then reports gladly that all these officers observed the 'Estonia' turning before the first 'Mayday'-call took place at 01.22 hrs. But then Eklund was still alone on the bridge and had not seen anything - he was on the phone to the master.

In the Jörle/Hellberg book 'Katastrofkurs (20), chapter 2 (pp 19) all above is also described - but no port turn is mentioned. But Jörle/Hellberg are sure about the port turn - in chapter 23 (page 183) they say:

> *"Eklund had nevertheless been given a little pre-warning* (about the Mayday). *He* (Eklund) *tells us that the 'Estonia' about one half or one minute before the 'Mayday' tried* (sic) *to turn. It is a manoeuvre which is clearly seen on a big professional radar screen. Every echo has a vector - an arrow of different length indicating speed and course of the ship. If a ship turns, the arrow changes quickly direction. So the echo of the 'Estonia' looked like that just before ... the Mayday call."*

Aha - Eklund told Jörle/Hellberg about the 'Estonia' port turn and that it took place just *before* the Mayday call at **01.22** hrs. But then Eklund was talking to the master on the phone about other things. And later Eklund told the Finnish police that the *'turn'* - or what looked like a *'turn*' - took place when the 'Estonia' sank - at **01.36** hrs. Then vectors and arrows disappeared.

If the speed is zero there is no vector arrow - and you cannot see if the ship is turning. Why would a ship at zero speed turn?

But officially according to the Commission the 'Estonia' was drifting > 1 300 meters at 2.2 knots until after 01.50 hrs - and there were echoes (and vectors?) on the radar screen. More about Jörle/Hellberg in **1.44**. They are clever disinformers and they have cleverly falsified Eklund's statements - one (Hellberg) is a star reporter of the biggest Swedish daily Dagens Nyheter, the other (Jörle) is today information chief at the Nuclear Power Inspection Board.

A normal person reading Eklund's testimony gets the impression that Eklund was chatting with the Master Thörnroos on the phone and thus did not hear the initial Mayday on the VHF. But during the call Eklund heard the Mayday conversation Estonia/Silja Europe. According to the Final report (5) Eklund or Thörnroos then contacted Silja Europe already 01.25 hrs on VHF and at 01.28.31 the Mariella didn't see the 'Estonia'. This was 8 minutes after the alleged turn.

LET'S ASSUME THE PORT TURN TOOK PLACE!

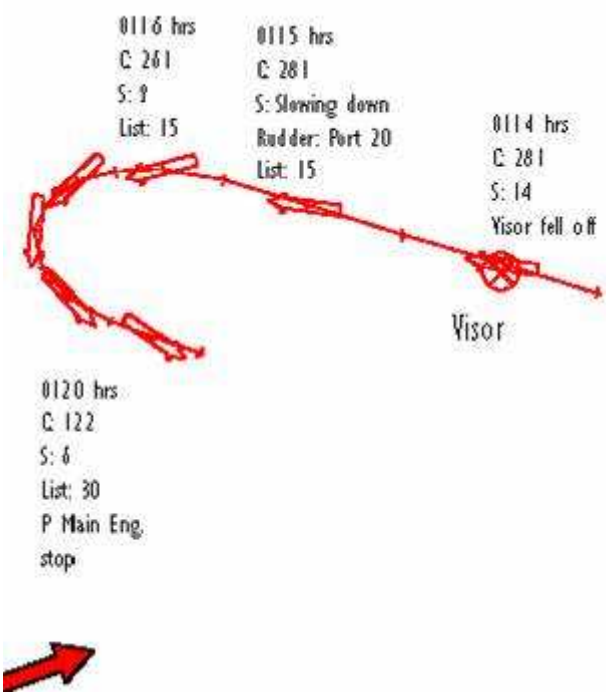


Figure 1.9.2A – 'Estonia' turns 01.16-01.19 hrs

But let's assume that the port turn took place after the alleged loss of the visor and the sudden listing (which either took place at **01.02!** (see below) or after **01.15** hrs) and that the speed then was 10-14 knots and long before the Mayday was sent. How much water would enter through the open bow ramp into the *superstructure* during the suggested manoeuvre?

The author's conclusion is simple - 1 800 - 3 600 tons would have entered during the first minute, when the speed was still >14 knots - the 'Estonia' would have capsized immediately and floated upside down on the *hull* and there would never have been time for a turn and, even less time for >32 minutes of floating and drifting >3 000 meters. For detailed calculations see below (and Appendix 4). And no survivor would have time to escape!

DR. MICHAEL HUSS, FRINA - INVENTOR OF THE FALSE PLOT

The project to reconstruct the last 35-40 minutes of the fatal voyage and to answer the question, *how* the 'Estonia' could lose the visor 1 560 meters west of the wreck and later heel, turn and sink (sic - without capsizing!), was given to the stability expert of the Commission - **tekn. Dr. and docent Mikael Huss, FRINA, etc, 1994** of the Royal Institute of Technology, Stockholm.

Dr. Huss is one of these useful 'experts' - like Johan Franson 1.16 - that is always available - it seems - to assist in official cover-ups of accidents or crimes using false 'scientific' reports. Huss evidently broke all RINA ethical rules about the moral responsibilities of naval architects at work. Huss was later assisted by Captain Hans Rosengren - member of the Commission and the MAIIF.

The reader should know the following about basic naval architecture:

BASIC PARTICULARS AND ASSUMPTIONS - BUOYANCY - INTACT STABILITY - DAMAGE ASSUMPTIONS - DAMAGE STABILITY - WATER IN THE SUPERSTRUCTURE - CAPSIZE - SINKING

***Buoyancy* of the 'Estonia' was provided by the *hull* only, i.e. the 'Estonia' floated on the *hull* (the principle or general theory of cause and event of Archimedes),**

***Intact stability* of the 'Estonia' was provided by the watertight *hull* and the weather tight *superstructure,* i.e.**

when the 'Estonia' heeled due to a heeling moment, the shifting centre of buoyancy of the *hull* would provide a righting moment and resist the heeling moment; the weather tight *superstructure* would prevent water to flow on top of the *hull* when the *superstructure* side came under water, when heeling,

***Damage assumption* was a collision and two compartments of the *hull* flooded and the side of the *superstructure* damaged (above the damage waterline)**

***Damage stability* of the 'Estonia' was provided by the watertight compartments of the *hull*, i.e. two adjacent compartments could be flooded and the 'Estonia' had still enough *buoyancy* to float on the remaining compartments of the *hull* with the *superstructure* above water and enough stability to be upright with water on top of the *hull* (in the *superstructure* - damaged in the side).**

***Water inside the superstructure* of the 'Estonia' was only extra cargo loaded on the ship with an intact *hull*. This extra cargo would load itself on the lowest point of the *superstructure* lower deck - the car deck - and heel and trim the ship according to the principles of *intact stability*,**

***Capsize* occurs, when the *residual stability* is nil, i.e. when any heeling moment due to weather or (shifting) cargo, e.g. water in the *superstructure*, exceeds the righting moment of the *hull* and *superstructure*; the result is *capsize*, i.e. the *hull* and *superstructure* turning upside down and the vessel floating upside down on the air in the (intact or damaged) *hull* and with assistance of buoyancy in hull, superstructure and deckhouse.**

***Sinking* occurs only, when the weight of the ship and cargo exceeds the available buoyancy of the *hull, superstructure and deckhouse* and when *capsize* has not occurred previously.**

THE FIRST ATTEMPT OF DR. HUSS TO SIMULATE THE ACCIDENT

In his first report (12) written in 1994 Huss, FRINA, stated that it took only **6** minutes to fill up the car deck space in the *superstructure* with **2 100** tons of water **1.15** - inflow 480-240 tons/min ***through a wide open ramp*** - and that the ship then *capsized*, i.e. floated upside down on the undamaged watertight *hull*.

This calculation was not too bad - but this was not what the Commission wanted to hear!! And it was not what the survivors had experienced!

Huss had been employed as *'expert'* to the Commission in November 1994 to demonstrate how the 'Estonia' sank *slowly* during 38 minutes with water on the car deck **1.5** *without* capsizing. He had apparently not been properly briefed, what he should do and report.

Huss knew, or should have known, what of course would have happened during the first few minutes: If the ramp in the *superstructure* was wide open (pulled open) at **01.14-01.15** hrs, if the speed was 7,46 m/s (14.5 knots), if the waves were 4.3 meters high with a period of 8-9 seconds, and if the relative motion amplitude (up/down vis-à-vis the water surface) was ±5 meters at the bow ramp, the opening forward, 2,0 m above the waterline/bow wave, should be under water about 1.5 seconds every 5,5 seconds, when the ship headed and pitched straight into the waves on the port bow (wave direction 160-180°). The opening was 5,4 meters wide and about 3 meters, on average, below water at each downward motion. **Then 180 m^3 of water flows into the forward opening of the *superstructure* every time the bow dips into a wave** (1,5 seconds every 5,5 seconds), as the area (5,4x3,0 m^2) x speed (7,46 m/s) x time (1,5 seconds) = 180 m^3/dip into the wave. In one minute about 1 963 m^3 (60/5.5 = 10.9 waves of 180 m^3 = 1 963 m^3) flows in; **Appendix 4** for detailed calculations. If the direction of the waves were on the bow side, the inflow was slightly reduced, but according to the Commission sequence the 'Estonia' headed straight into the waves at **01.16-01.17** hrs, when the speed was about nine knots (inflow about 1 200 tons/minute). If you consider that the ramp acts as a plough forcing more water into the *superstructure* of the ship, the inflows may be doubled. The above assumes that the ship actually pitches up again, when the first wave with 180 tons have entered the superstructure.180 tons would trim the ship >one meter on the bow and may have stopped the relative motion altogether - the ship might not have pitched up again; but would have gone down like a submarine. But let's assume that the ship pitches up and then pitches down again and scoops up another wave and that the superstructure is gradually filled up with more

and more water with each wave encountered every six second. The above is very easy to verify with, e.g. model tests.

With 1 963 tons of water (11 waves) on the car deck in the *superstructure* at 01.16 hrs, the 'Estonia' should have capsized, stopped and floated upside down on the *hull* in the stormy weather 2.16. It should have taken a few minutes to fill the *deck house*. Nobody would have survived! 'Estonia' should have floated upside down latest at 01.19 hrs.

TESTIMONIES OF SURVIVORS CENSORED

There were other big problems for the Commission. The surviving passengers testified about something completely different.

Surviving passengers stated 2.1 that the 'Estonia' listed suddenly already at about **01.02-01.05** hrs >30 degrees, and then became stable at about 15 degrees list, while rolling a lot - it was possible to evacuate during several minutes, when the decks were almost horizontal.

For unknown reasons the Commission has falsified/delayed (a) the time of the listing 10-15 minutes 4.4 and (b) never reported the big list >30 degrees and (c) that stability was re-established at a smaller angle of heel - say 15 degrees.

How could the angle of heel be reduced, if water continuously flowed into the superstructure?

The survivors then stated that the ship slowly sank, while the list increased. The ship was on the side at **01.30** hrs, when many survivors jumped into the water and their watches were broken and stopped. The survivors testimonies tally with the observations of the 'Mariella' - see above.

It is very likely that the ship sank at 01.32-01.36 hrs. And therefore the 'Estonia' could not have turned at 01.16 hrs and drifted between 01.24-01.52 hrs.

All this Huss knew or should have known in 1994.[34] The Commission certainly knew it (later) and it was the main reason, why the Commission 1994 had great difficulties to explain the alleged (unproven) sequence of events - sudden listing at **01.15** hrs, *'fragments'* falling off, and final sinking *without* capsize at about **01.54** hrs after >3 000 meters drifting.

THE BOW RAMP PARTIALLY OPEN

The Commission had first stated 4 October 1994 that the bow ramp of the superstructure was ***only partially open*** (permitting an inflow of only 60-120 tons of water per minute 1.15) and all three survivors in the Engine Control Room had testified to this effect 1.48. Later the Commission discovered that it - a partially open ramp as testified by the ECR staff, would not have caused *sudden* listing/capsize - so it decided 15 December 1994 that the ramp had been pulled fully open even if the crew maintained it was closed - and then it probably discovered that it would have caused *immediate* capsize.

Huss was thus probably ordered to reduce the inflows into the *superstructure* to fit the alleged - read false - sequence of events? The delay of the time of the heeling from 01.02 to 01.15 hrs was probably an attempt to align a testimony of a watchman (Linde) with the testimonies of the ECR staff - even if the many survivors testified that the listing started at 01.02 hrs and that there was a fair or short time to evacuate.

In his first attempt (12) Huss thus managed to reduce the inflow to **2 100** tons in **6** minutes - see table 1.9.1 below - when the ship had only turned 150° port, while the speed was quickly reduced during four minutes, which also reduced the water inflow - but then the ship would have capsized 1.15 at **01.20** hrs, when the first scenario ends with the ship floating upside down. Huss cautiously writes (12)

"After this event (i.e. 2 100 tons had flowed into the superstructure) *water starts to enter the upper decks* (i.e. the deck house; decks 4-9). *The ship is then lost* (i.e. capsizes and floats upside down). *The time depends on how quickly the upper decks fill up".*

When the 'Herald of Free Enterprise' capsized due to water inside its superstructure (the bow door was fully open), the upper decks in the deck house filled up in less than a minute. Then the HFE had capsized and the voyage was ended. We know why the HFE capsized, but we do not know what happened to the 'Estonia'.

BASIC PHYSICS - WATER INSIDE A SUPERSTRUCTURE HEELS A SHIP

Water inside a superstructure above water line heels and trims the ship. The relationship between the free water in the *superstructure* and the resulting *angle of list or heel* in below table 1.9.1 is generally correct, even if Huss does not consider the *trim* caused by the very large amounts of water, which evidently collects at one end of the superstructure, when it fills up, and trims the ship on the bow. Huss assumes that the water in the superstructure does not modify the trim, which pushes the bow down below the water.

Table 1.9.1 Water inflow into the *superstructure,* listing, speed and turn as per Huss' first estimates 1994/5 (12)

Estonian Time (h. m.s)	Time after Loss of Visor (min)	Water in the Superstructure (tons)	List (degrees)	Water Inflow (tons/min)	Velocity of Heel (degree/min)	Wave Direction* (°)	Speed (knots)	Turn to port (°)
01.14.00	0.0	0	0	500	14	120	14	0
01.15.00	1.0	500	14	400	7	140	10	20
01.16.00	2.0	900	21	400	4	170	6	50
01.17.00	3.0	1 300	27	300	5	210	3	90
01.18.00	4.0	1 600	32	200	3	240	1	120
01.19.00	5.0	1 800	35	300	4	260	0	140
01.20.00	6.0	2 100	39/180!	-	180	270	0	150

(* 180° = bow straight into the waves)

CONSTANT WATER INFLOW - SUDDEN STOP AFTER FOUR MINUTES - 150 DEGREES TURN IN SIX MINUTES

As you can see, Huss thought 1994 that the inflow into the *superstructure* through the wide open ramp was quite constant 500-200 tons/min regardless of speed and wave direction and that *the speed was zero knots after four, five minutes*, i.e. the ship stopped almost immediately. **The distance made after losing the visor was about half a mile - the ship would then have capsized more than two miles from the actual wreck position (sic) and more than three miles from the false wreck position 1.3.** With 2 100 tons of water loaded inside the *superstructure* the list was 39 degrees (the Huss calculations are only 90% correct as he forgets that water starts to flow out when speed is >3 knots and turn to port is >90° away from the waves) and an inside view (from the bow - no cars/trucks) of the inside of the *superstructure* at zero (sic) trim is figure 1.9.3 right. No water has flowed out but you would expect most water to flow out when the ship trims on the bow and its open ramp.

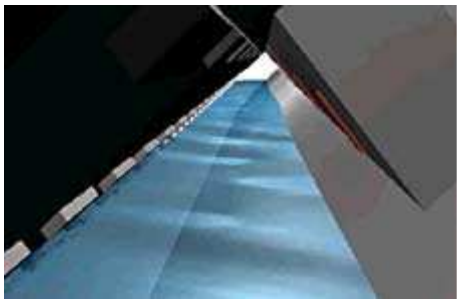


Fig. 1.9.3 Water in the superstructure

Compare figure 2.16.1D. The water reaches the *underside* of deck 4 above! The trim is assumed to be zero. An outside view of the 'Estonia' shortly after that time (01.20 hrs) is figure 1.9.4 right. Evidently nobody can walk on the sloping decks at this time. It is at this time or later that three crew members on deck 1 decide to start evacuation 1.48. The first Huss report seems to have been based on the information about a sudden list, say 14 degrees and then a slowly increasing list, and not based on real inflows. Huss didn't seem to be aware of the fact that the visor was allegedly found 1 560 meters due west of the wreck (that position was not official until December 1994, when the false wreck position was 'corrected'. When Huss started his work, he must have been confused by plenty of disinformation of the Commission).

Fig. 1.9.4 'The 'Estonia' listing 45°

But with 2 100 tons of water loaded in the *superstructure* Huss knew - *"The ship is then lost"!* She quickly tips on the side - 90 degrees list - see figure 1.9.5 right. The Commission (Forssberg/Stenström) apparently could not accept the results. **The speed could not be zero after only four minutes,** because the ferry could then not reach the *'position of the wreck'* >3 000 meters east and sink at **01.52** hrs; Huss first attempt ended >3 000 meters west of the wreck position at **01.20** hrs! No - after four minutes the 'Estonia' had only turned 120° according to the alleged (false) sequence of events of the Commission/Huss and was only listing <30 degrees.

Fig. 1.9.5 'The 'Estonia' capsizing

But Huss knew that the ship was lost, i.e. would have floated upside down as indicated in figure 1.9.6.

Note above that Huss assumed in his first attempt that the 'Estonia' started its turn *at once* at 01.14 hrs and immediately also slowed down to reduce the inflow - there was however no evidence for these *two* independent actions from different consoles on the bridge and later the Commission agreed (sic) that the ship first started to list for two minutes before turning to port; the reduction in speed was later (you need speed/power to turn 120-180° south and east). Dr. Huss evidently in the first attempt did not describe how the *hull* was flooded and why the ship sank. He vaguely stated that the ship was *'lost'* but meant capsize/floating on the hull upside down. He could later never explain any flooding of the *hull.*

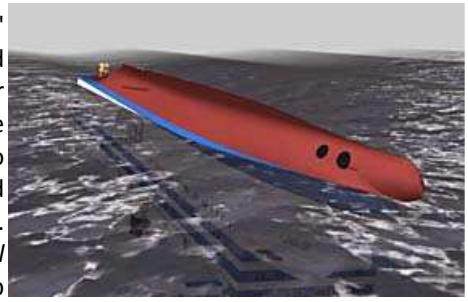


Fig. 1.9.6 'The 'Estonia' floating upside down

It is interesting to note how nonchalantly the *'experts'* consider 2 000 tons of free water in a *superstructure* - as if it was a *small* weight being used in an inclining experiment in harbour. 2 000 tons of extra free water was more or less 60% the total deadweight of the ship of which 80% was already used. And the weight was loose! It was a monster! But on paper it was just an imaginary weight listing the ship - not trimming it - according to Huss. And this monster weight never caused any capsize! Later the Commission suggested that the 'Estonia' floated on the deck house! The windows in the deck house were never smashed. The ferry floated on the deck house!

THE SECOND ATTEMPT OF HUSS/ROSENGREN TO SIMULATE THE ACCIDENT - THE FIRST FALSE PLOT

Dr. Huss was apparently soon thereafter told by the Commission to *'improve'* - read *'falsify'* - on the simulation - he must then have been given more details (the real story?) - and Hans Rosenberg, member of the Commission, came to assistance and suggested that they should use the *navigation* simulator at the Kalmar Marine Academy. Now the serious falsifications started. The whole cover-up of the 'Estonia' accident was in the hands of Dr. Huss and his co-conspirator, Captain Rosengren.

The Final Report (5) clearly states that the plot of the 'Estonia's last 40 minutes - figure 13.2 in (5) reproduced in this chapter - has been done on the navigation (sic) simulator of the Marine Academy at Kalmar, Sweden. The navigation simulator was made by Norcontrol A/S, Horten, Norway. This type of simulator can be programmed with the particulars of a ship and then predict the results of various navigation (rudder, engine) manoeuvres with a certain correction for wind and current. Naturally the ship's *hull* must be undamaged and upright. Another condition is that you know *when* the different manoeuvres take place - reduction in speed, rudder turned, etc.

The simulator cannot be used to predict a manoeuvre with big heel, as the characteristics of the ship then change and are not known. Likewise you cannot simulate the movements of a *sinking* ship, as then the total displacement, including water trapped inside the deck house, increases >200-300%, i.e. the mass of the ship is modified (increased) - and the characteristics of the ship are changing and not known - the ship evidently moves much slower or stops, particularly if there is no engine power. Therefore the plot of Huss/Rosengren is wrong within a few minutes.

Evidently a *navigation* simulator cannot calculate *stability* - intact or damage of a ship. These data including the increase in mass had to be input separately - and it is here the falsifications of the plot are crystal clear.

Evidently it was not possible for Huss to accept that the water inflow was 1 963 m^3/min at speed 14,5 knots (7.45 m/s) in head seas as suggested by, e.g. the author and easily verified by model tests, as then the 'Estonia' would have capsized immediately. Huss started to produce other calculations - maximum 250-400 m^3/min according to apparently/certainly falsified calculations and mathematical models (see figures. 4.2, 3 and 4 in supplement 522 in (5)) to cause an initial list and much, much less inflow later (to prevent capsizing).

To avoid a critical review of the results of the second attempt Forssberg classified all the reports of Huss as secret during the investigation. This is typical - a false report is classified secret to prevent it being disclosed as forgery!

Then they (the Commission, Huss, Rosengren?) decided to reduce the speed - from 14 to 9 knots under two minutes *before* the turn - but the speed could not be zero - the ship must turn 180° and sail or drift almost two more miles for 38 minutes, before it sank at the wreck position 1 560 meters east of the visor. It is during this time *'fragments'* fall off the vessel.

Dr. Huss and Rosengren thus tried with the help of the simulator and other 'scientific' (sic) methods to reconstruct the last 40 minutes of the 'Estonia'. Their results are shown in figure 4.12 in supplement no. 522 of (5) by Huss - **Simulation of the Capsize**. This report is not dated and has no reference number, etc. **This report is a pure falsification.**

SMALL WATER INFLOW DURING 28 MINUTES - NO SUDDEN LISTING

Assuming that the turn actually took place, Dr. Huss predicted that it now took **6-19-28** minutes to fill the *superstructure* with **1 000-1 500-2 000** tons of water (inflow **166.7-38.5-55.6** tons/min), when the angle of heel increased to **22-29-37** degrees (heel velocity 3.67-0.54-0.89 degrees/min), i.e. there was no sudden listing, and that it then took the 'Estonia' **19** minutes to stop, and, after having drifted another **9** minutes, the ship capsized (which did not happen): after the *'capsize'* Huss/Rosengren allows the ship to drift sideways (upside down?) another **9-10** minutes at >2 knots to suddenly sink at the wreck position.

How and why the *hull* is flooded in this scenario, so the ship could sink, is not described. It could evidently not be described - a ship cannot drift >2 000 meter with >2,2 knots and simultaneously sink.

Figure 4.12 in supplement no. 522 is identical to figure 13.2 (or 1.9.1 above), when it comes to the courses, speeds, positions and times - all arrows at one-minute intervals are identical (the simulated ship is of course assumed to be undamaged). **However - the alleged amounts of water on the car deck in the *superstructure* and the corresponding angles of heel differ completely.** The differences are shown in table 1.9.2 below. But let's first review the background of the Huss second and final report - supplement no. 522 of (5).

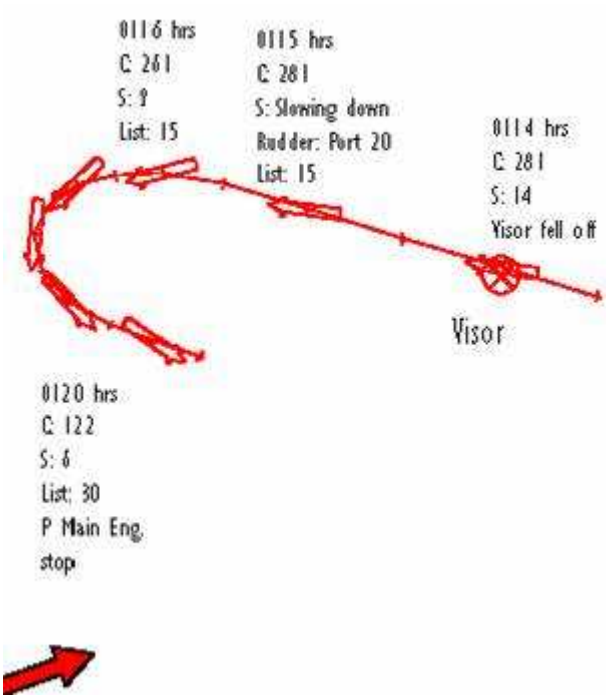


Figure 1.9.2A – 'Estonia' turns 01.16-01.19 hrs

Two minutes and 24 seconds after the loss of the visor, i.e. during the turn, the 'Estonia' steamed according to Huss/the Commission against the waves with about 9 knots, when about **1 200 tons/min** should have flowed into the *superstructure* according to the author's calculations. Huss reduced the inflow to **83.3 tons/min**! The speed was then zero **19** minutes after the loss of the visor! Until then only total **1 500** tons water had entered (during 10 minutes!) into the *superstructure* according Huss, when the angle of heel was only about **29** degrees (according to correct intact stability calculations) at **01.33** hrs. This condition is a safe and stable condition - albeit with a list and much reduced stability range.

However - the problem with this calculation was that the ship, according to both the Commission and survivors, was on its side at **01.30** hrs (see below) with an angle of list (say 90 degrees) much, much greater than 29 degrees of Huss and sank soon afterwards.

***Why the water in the superstructure (1 500 tons) didn't flow out, when the speed was zero and when the bow was directed away from the waves, Huss does not explain*. The condition with 1 500 tons of water in the superstructure is stable and safe. Huss does not calculate the trim caused by 1 500 tons of lose weight or any weight. You would have expected, when the listing ship at zero speed was pitching with the opening away from the waves, that <u>the water simply would have flowed out, when the ship trimmed on the bow!</u> The open bow ramp should have acted like a big scupper!**

Instead Huss states that another **500** tons (!) flowed into the *superstructure* during another **9** more minutes - the 'Estonia' is alleged to have drifted sideways then with the opening of the *superstructure* away from the waves and no water could have entered then - it should have flowed out when the ship trimmed on the bow - the vessel was still floating safely on the unsinkable *hull* albeit with a list but the speed was zero - and all water should simply have flowed out - and the ship would have up righted! Alternatively the 1 500 tons would have flowed to the stern and trimmed the ship so that the bow was high above the water and no more water could have flowed in. Anyway you look at - after the 180° turn the ship should have been safe. **But Huss completely ignores that water in the superstructure trims the ship (and that the water should flow out due to bow trim).**

Furthermore, when the 'Estonia' with an alleged total of 2 000 tons of water on the car deck in the *superstructure* and with a list of 37 degrees (the righting arm GZ was zero), she would have capsized (half a mile from the position of the wreck!) at 01.42 hrs - table 4.3 in supplement 522, which is also shown in table 1.9.2 below.

Table 1.9.2 Differences between Huss' figures 1995/6 (Suppl. no. 522) and the Commission/Final Report 1997

Estonian Time (h. m. s)	Time after Loss of Visor (min)	Water in the Super-structure as per Huss (tons)	Inflow as per Huss (tons/ minute)	List as per Huss (degrees)	Wave Direction (°)	List as per Final Report (degrees)	Velocity of Heel (degrees per min) based on (5)	Diff. in List between Huss and Final Report	Speed acc. Huss (knots)	Speed acc. Final report (knots)
01.14.00	**0.0**	**0**	**400.0**	**0**	**135**	**0**	**15.0**	**0**	**14.5**	**14.0**
01.14.30	**0.5**	**200**	**400.0**	**6**	**135**	**-**	**15.0**	-	**14.5**	~
01.15.00	1.0	(340)	285.7	(10)	~	**15**	**15.0**	(+5)	~	~
01.15.12	**1.2**	**400**	**250.0**	**11**	**150**	**15**	**0**	**+4**	**13.0**	~
01.16.00	2.0	(571)	250.0	(15)	~	**15**	0	±0	~	**9.0**
Turn starts										
01.16.24	**2.4**	**700**	**83.3**	**17**	***180**	**-**	**5.0**	-	**8.5**	~
01.20.00	**6.0**	**1 000**	**38.5**	**22**	~	**30**	**5.0**	**+8**	**5.5**	**6.0**
Turn finished Water inflow stops										
01.22.00	8.0	(1 077)	38.5	(23)	~	**35**	**2.5**	(+12)	~	**4.5**
Alarm aboard										
01.24.00	10.0	(1 154)	38.5	(24)	~	**40**	**2.5**	(+15)	~	**2.1**
01.27.00	13.0	(1 269)	38.5	(26)	~	(50)	(3.3)	(+24)	~	~
01.30.00	16.0	(1 385)	38.5	(27)	~	**60-70**	**3.3-5.0**	(+33/43)	~	**1.7**
01.33.00	**19.0**	**1 500**	**55.6**	**29**	**255**	**80**	**6.7**	**+51**	**0.0**	2.2
01.40.00	**26.0**	(1 888)	55.6	(35)	255	**110**	**2.5**	(+75)	0.0	2.2
01.42.00	**28.0**	**2 000**	**55.6**	**37/180!**	**255**	**115**	**4.0**	**+78/-65**	**0.0**	**2.2**
01.43.00	29.0	2 056	-	180!!	~	(119)	4.0	(-61)	0.0	2.2
01.51.00	37.0	-	-	180!!	~	(150[c])	4.0	(-30)	-	2.2

(figures in brackets are estimated by the author – *180° = head waves)

[a] *"During the port turn water continued to enter the car deck and the list increased to 20-30 degrees where the vessel for some minutes stabilised as the water inflow decreased".* (Chapter 13.2.6 of (5))

[b] *"By about 0120 hrs all four main engines had stopped ... The main generators stopped about five minutes later. After the main engines stopped, the 'Estonia' drifted with a list of about 40 degrees and the starboard side towards the waves".* (Chapter 13.2.6 of (5))

[c] *"... and **the vessel started to sink**. At a list of about 80 degrees the bridge was partly flooded. This happened shortly after 0130 hrs as indicated by the clock in the chartroom ... The emergency generator stopped at the same time ..."* (Chapter 13.2.6 of (5))

As you can see Huss calculated that the inflow into the *superstructure* was only **38.5** tons/min **6** to **19** minutes (between 01.20 and 01.30 hrs) after the loss of the visor, which then increased to **55.6** tons/ min **19** to **28** minutes after the accident (between 01.30 and 01.42 hrs) and the *original Kalmar plot is allegedly based on these figures* - **that the ship floated high up on the hull, when it was <2 000 tons of water on the car deck - 28 minutes after the accident** (in reality the plotted ship was undamaged)**.**

Of course the inflows and the times are nonsense, but the Commission was still not very happy with the simulation. Further falsifications were required. The list with vessel floating stably was reported by the key witnesses (Linde, Treu, Sillaste and Kadak 1.48) and by passengers to have been **70-90** degrees at about **01.30** hrs. And 'Mariella' saw that she sank at **01.36** hrs. The sinking time the Commission just changed to about **01.50-01.52** hrs to permit the ship to drift to the wreck position in the plot.

HOW THE FALSIFICATION WAS DONE

It is certain that Huss/Rosengren falsified the plot above (figure 1.9.2 reproduced here again) as follows:-

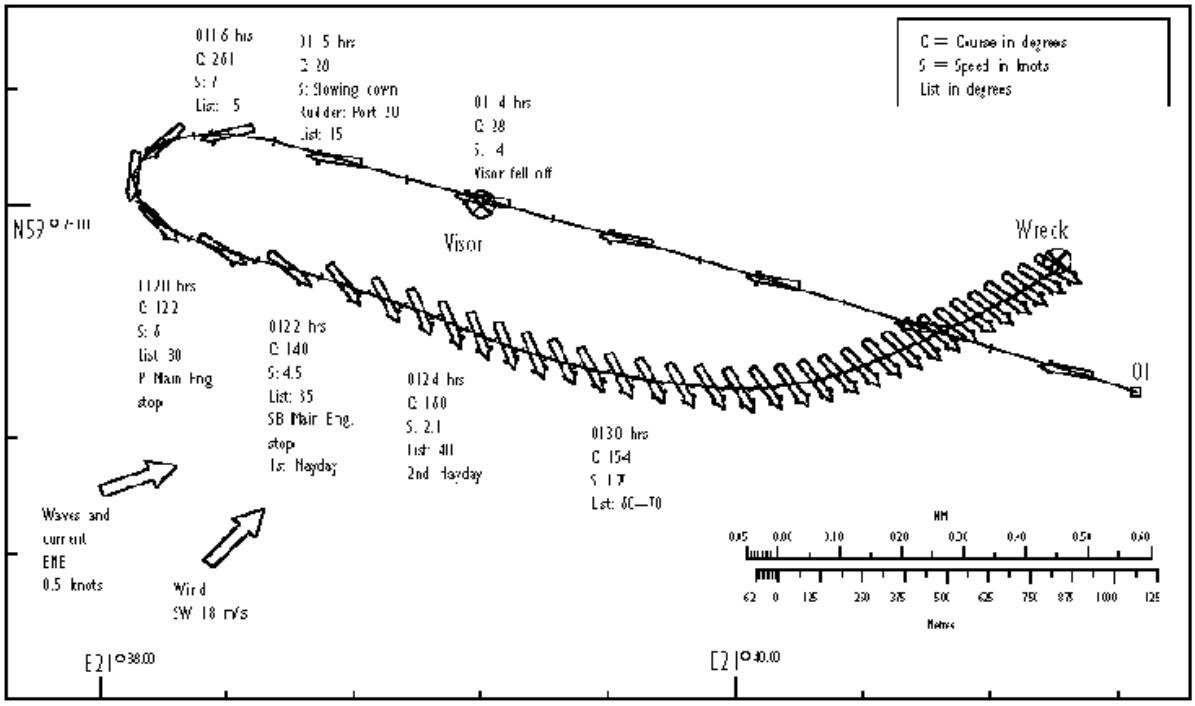


Fig. 1.9.2 - Fig. 13.2 of (5) - The falsified plot of the sequence of events

The simulated ship was assumed to be *intact* (upright) the *whole* time **01.14 - 01.52** hrs and the only (*navigation*) parameters were engine power, rudder action and weather/current. Then Huss/Rosengren managed to produce a plot, where the *undamaged* vessel managed to turn 180° degrees with reduced engine power and speed between 01.16 - 01.20 hrs - *"Good God, the first part of the manipulation was achieved "*- and then they arranged that the intact ship with stopped engines was *drifting* by manipulating the wind/sea current parameters (very strong current!), so that the ship arrived at the wreck position at **01.52** hrs, when they stopped the plot - *"Success, thank you God"* - Huss/Rosengren had managed to get a plot, where the simulated - intact - ship moved between a visor position at **01.14** hrs and a wreck position at **01.52** hrs with a 180° turn. That false plot could then be used as base for further falsifications.

Evidently the *undamaged*, simulated ship continued to drift with >2,2 knots to northeast after 01.52 hrs, but that could not be shown, so it was edited away. It is evident from the plot above that the simulated ship must have continued to drift after **01.52** hrs. But could the Commission edit the video films of the wreck, then Huss/Rosengren could edit the Kalmar plot! Finally Huss/Rosengren just added the false angles of list to the plot at various times (prior to *capsize*) and stated that the relevant angles of list were the result of the (small <2 000 tons) amounts of water on the car deck in the superstructure. It looked good, but it was not good enough. The angles of list were much too small at the alleged times!!

VERY EASY TO RE-MAKE THE FALSIFICATIONS

It is fact very easy to re-make the above falsified plot, but then the ship is completely *undamaged* the whole time and the current/wind parameters have to be adjusted to suit - and evidently the ship continues to drift after 01.52 hrs at >2,2 knots (Thank you to the students at the Kalmar Marine Academy re-making the false plot).

THE COMMISSION MODIFIES/FALSIFIES FURTHER THE HUSS/ROSENGREN PLOT AND DATA. THE SECOND AND FINAL FALSE PLOT

So the Commission took the figure 4.12 in supplement no. 522 of (5), produced by Huss/Rosengren, and shamelessly changed all angles of list/times to *'suit'* (e.g. the manipulated testimonies of the crew **1.48**) - which

is the figure 13.2 above in the Final report (5) - with no considerations to the physical relationship between angle of list and amount of water on the car deck in the *superstructure*. Otherwise figures 4.12 in supplement no. 522 and 13.2 in the Final report are identical!

The Commission cannot produce any documentation that figure 13.2 of the Final Report is true. All members of the Commission agreed that the falsified plot suited their dark purposes.

That Dr. Huss, FRINA, and Captain Rosengren at this occasion didn't resign from the Commission is a mystery. Then they had a golden opportunity to leave the Commission with some honours. But Dr. Huss never resigned, and surprisingly, he still defends (see below) the above manipulated figure 13.2, which is only a manipulated version of his own plot/figure 4.12 in his report; supplement no. 522. Why - **2.7**?

Probably because figure 4.12 is based on falsified inflow figures through an open ramp into the *superstructure*. Interesting enough Dr. Huss shows in his second report - chapter 4.4 in suppl. no. 522 - a comparison between Finnish water inflow calculations through an open ramp. The Finns thinks that the water inflows should be twice as big (sic), i.e. the ship should have capsized in half the time.

INFLOW 666 TONS/MIN DURING THREE MINUTES 01.24-01.27 HRS - TRIM EFFECTS IGNORED

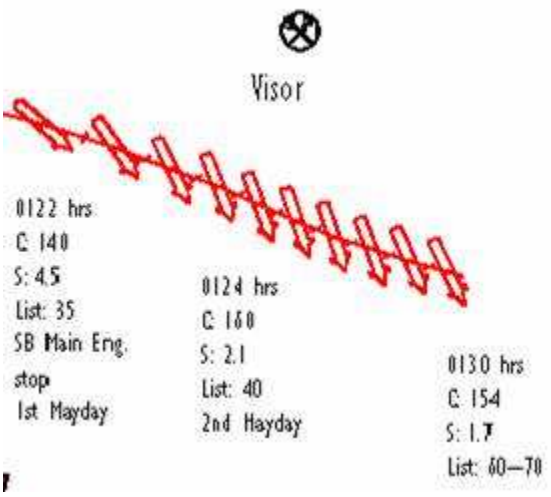


Figure 1.9.2B – 'Estonia' drifts sideways 01.20-01.30 hrs! Big inflow of water!

The Commission decided that the angle of list increased to 40 degrees in **10** minutes (inflow 200 tons/min, velocity of heel 4,0 degrees/min at **01.24** hrs) with **2 000** tons on the car deck, and to 50 degrees after **13** minutes (01.27 hrs) with **4 000** tons of water on the car deck (inflow **666** tons/min, velocity of heel 3,33 degrees/min during three minutes), and to 110 degrees (sic) at 01.40 hrs (velocity of heel 4,61 degrees/min), as a result of alleged increasing amounts of water on the car deck in the *superstructure* and *in the deck house*, which is summarized in table 1.9.3 below.

There is no evidence at all for the Commissions figures. The Commission had no idea that the ship would capsize with >2 000 tons inside the superstructure. It is crystal clear that the Commission used the falsified plot of the Huss/Rosengren second attempt but changed the angles of list to further falsify it in the Final report (5)!

The Commission evidently ignores that their increased amounts of water should also trim the ship. But as Huss evidently chose to ignore the trimming effects of the water, the Commission decided to do the same thing.

Table 1.9.3 Differences between the figures of Huss and the Commission/Final Report (5)

Estonian Time (h. m. s.)	Time after Loss of Visor (min)	Water in the Super-structure as per Huss (tons)	Water in the Super-structure /*in the Deck House* as per the Final report (tons)	Angle of List as per Huss (degrees)	Angle of List as per the Final report (degrees)	Diff. in Amount Water in the Ship: Final report/Huss (tons)	Diff. in Angle of List: Final report/Huss (degrees)	Inflow into super-structure as per Huss (t/min)	Inflow into super-structure Final report (t/min)
01.14.00	0	0	0/0	0	0	0	0	400.0	200.0
01.24.00	10.0	1 154	2 000/?	22	40	>+846	18	38.5	200.0
01.27.00	13.0	1 269	4 000/?	26	50	>+2 731	24	38.5	666.6
01.33.00	19.0	1 500	6 000/*14 000*	29	80	+18 500	51	55.6	333.3
01.42.00	28.0	2 000	8 000/*22 000*	37	115	+28 000	78	55.6	220.0

[a] *"During the port turn water continued to enter the car deck and the list increased to **20-30** degrees where the vessel for some minutes stabilised as the water inflow decreased".* (Chapter 13.2.6 of (5))

[b] *"By about 0120 hrs all four main engines had stopped ... The main generators stopped about five minutes later. After the main engines stopped, the 'Estonia' drifted with a list of about **40** degrees and the starboard side towards the waves".* (Chapter 13.2.6 of (5))

[c] *"... and **the vessel started to sink**. At a list of about **80** degrees the bridge was partly flooded. This happened shortly after 0130 hrs as indicated by the clock in the chartroom ... The emergency generator stopped at the same time ..."* (Chapter 13.2.6 of (5))

Note the difference in water in the ship between the estimates of Huss/Rosengren and the Commission 19-28 minutes after the loss of the visor - **18 500-28 000** tons at 01.33-01.42 hrs! Notice the difference in the angle of list between the estimates of Huss/Rosengren and the Commission **28** minutes after the loss of the visor - **78** degrees at **01.42** hrs! Notice the difference in inflow amounts.

Huss estimates that the inflow into the *superstructure* was 55.6 tons/min after 19 minutes - at 01.33 hrs - and the Kalmar plot is based on it, while the Commission says that then the *deck house* filled up with about 7 000 tons/min and the superstructure with 333.3 tons/min. But no water flowed into the hull!

WHY THE PLOT IS FALSE

The reason why Huss/Rosengren stop calculating the inflow, when 2 000 tons have entered the *superstructure*, is that they knew that then the ship would *capsize* (and they cannot explain, why it didn't happen). The Commission has no knowledge at all about stability - it assumes that you can add water, as you like, that the ship is stable (later the Commission invented the story that the ship floated on the deck house), doesn't trim and that the ship continues to float (and drift at unchanged speed).

The angle of list was **75** grader according to the Commission at about 01.32 hrs (**28 degrees according to Huss**) Then the Commission reports in chapter 13.6 of the Final Report (5) page 183 that *"18 000 tons of water had flowed in divided between the car deck and decks 4 and 5* (sic) *in about 15 minutes"* which is of course a completely unstable condition - see figure 1.9.7 - where the centre of gravity **G** is located >8 meters outside the centre of buoyancy **B** (decks 6 and 7 are also flooded). Huss/Rosengren evidently knew that, so they never included any water (14 000 tons!) in the deck house in their plot. According to the Commission (figure 13.2 i (5)) and as shown in table 1.9.3 above only 4 000 tons had flowed into the *superstructure* in 13 minutes. It means that in two minutes the *deck house* filled with 14 000 tons - inflow 7 000 tons/min or 117 tons/sec! The Final Report says that the inflow was 20 tons/sec.

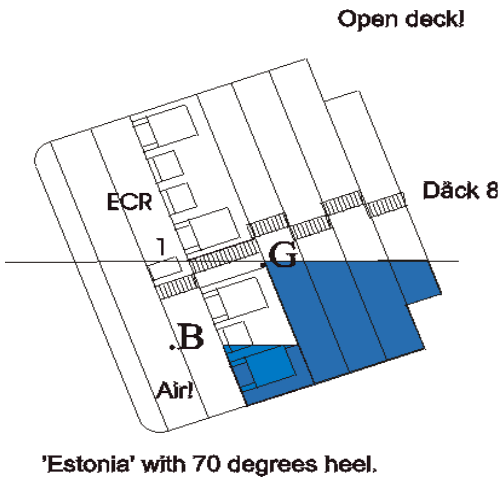


Figure 1.9.7 - the 'Estonia' with 70° list - unstable condition

The higher figure indicates of course that the ship was going to capsize - the heeling moment turning the ship upside down is about 100 000 ton-meter - but in spite of the increased weight and the heeling moment at **01.32** hrs the Commission states that *the ship continued to sail/drift eastwards with a speed >2 knots*[35] *for another 20 minutes.*

Where the 18 000 tons of water were actually located inside the ship is not known: assuming the average length of superstructure /deckhouse to be 120 meters the flooded cross area is 150 m². Say that the superstructure (decks 2 and 3) is 6 meters high and decks 4 and 5 are together 5.6 meters high the flooded width is >13 meters, i.e. more than B/2 3.12. To sink the ship you needed only about 3 000 tons of water in the hull - but the hull was never flooded before 01.30 hrs according the Commission.

THE 'ESTONIA' FLOATS ON THE DECK HOUSE 01.24 HRS

The Swedish NMA - director general Jan-Olof Selén and the director of safety at sea Johan Franson - have commented upon the above in a letter dated 2000-12-15 reference 0799-0036172 to the Swedish ministry of Economy (and Transport) - minister Ms Mona Sahlin:

> *''The (Swedish) NMA will underline that, when calculating damage stability, you are not permitted to allow for the buoyancy in a deck house (superstructure), unless it is watertight. On ferries the deck house (superstructure) is not watertight, because there are doors, which are easy to open and windows that cannot resist water pressure. The situation that you from safety point of view are not permitted to assume and to calculate with the buoyancy of a deck house (superstructure), does not exclude that such buoyancy actually exists. It exists and therefore the sequence of events as described by the Commission is very likely'.*

The Commission clearly shows that the *deck house* (decks 4-7) is *not* watertight and thus is flooded with 7 000 tons/min in two minutes, nineteen minutes after the loss of the visor but twenty minutes before the ship sank, but that this sudden inflow or flooding of the deck house then stopped - how is not explained - so that the ship floated for another twenty minutes on a *watertight part* of the deck house, and the Swedish NMA (Franson/Selén) also thinks that there is an *unaccounted buoyancy force* in the deck house, which prevented the 'Estonia' to capsize. This is normal Swedish practice - you state one thing to prove one thing and another thing to prove another thing, even if the two statements are contradictory 3.12. Selén is the Director General and head of the Swedish NMA, Franson is Director of

The reader should know the following:-

BASIC PARTICULARS AND ASSUMPTIONS - DECK HOUSE - INTACT STABILITY - WATER IN THE DECK HOUSE

On top of the superstructure was the *deck house* (decks 4-8). The deck house was >8 meters above the waterline and neither watertight nor weather tight,

The contribution to the *intact stability* of a *deck house* on a ship is always nil, as the deck house is neither watertight nor weather tight; actually the weight of the deck house would act as a keel (of a sailing ship), when the ship had capsized and floated upside down,

***Water in the deck house* does not affect the *stability* and *buoyancy* of the ship *hull* and *superstructure* in any way; *water in the deck house* is not part of the ship in any way from *stability* and *buoyancy* aspect, when the ship lists.**

However, neither the Commission nor Dr. Huss, nor Franson/Selén of the Swedish NMA, explains how the *hull* was flooded and why the ship actually sank!

THE 'ESTONIA' DRIFTS 1 300 METERS IN LIEU OF SINKS 01.30-01.52 HRS

The movements of the ship never stopped according to the Commission and Huss/Rosengren. The 'sinking' ship continued to move/drift east or northeast with a speed >2,2 knots sideway, in spite of the fact that it filled up with 28 000 tons of water and should have stopped. At **01.30** hrs the 'Estonia' had reached the following position as per a *'simulation'* (another falsification!) in the Final Report (5) - see figure 1.9.8 below. Evidently there is no evidence that the ferry ever was in this position, but the picture is illustrative.

You can see the lifeboats: nos. 1, 3, 5, 7 och 9 starboard, where no. 9 is completely below water and no. 7 is in the waterline, while nos. 2, 4, 6, 8 och 10 port remain on the upper side. You see also two white 'squares' fore and aft of the lifeboats and they are the sloping ramps for the life raft containers that can be thrown overboard. Starboard aft rafts are below water (no white square seen) and should at this time have been ripped off the ramp, opened up and drifted away.

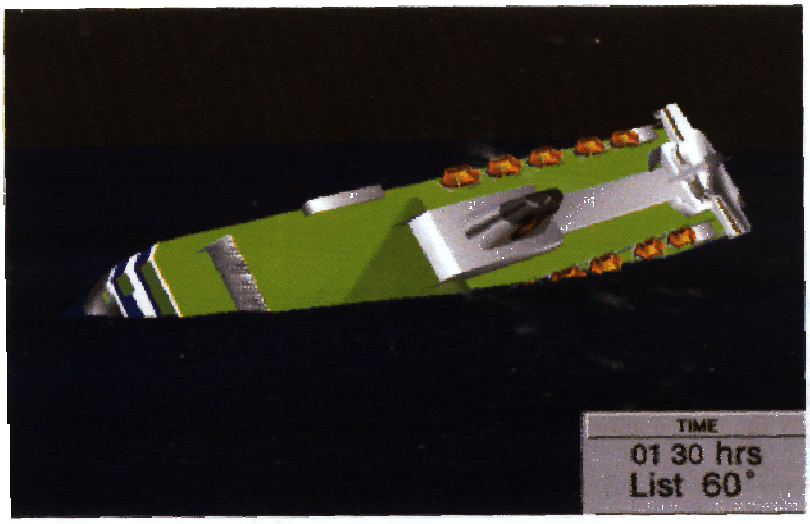
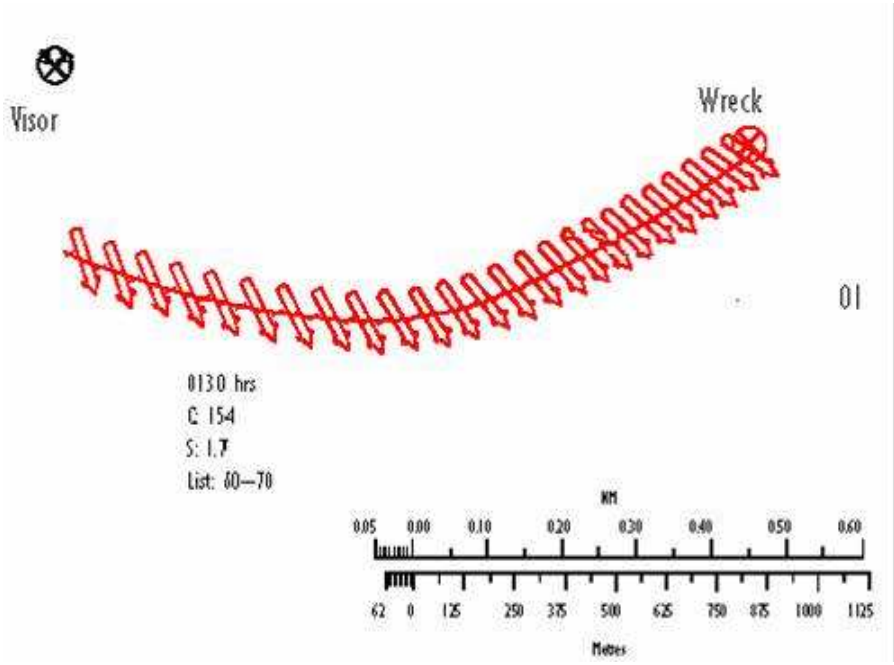


Figure 1.9.8 - The position of the 'Estonia' at 01.30 hrs according to the Commission (figure 13.3 in (5)) - *"... and **the vessel started to sink**. At a list of about **80** degrees the bridge was partly flooded. This happened shortly after 01.30 hrs as indicated by the clock in the chartroom ... The emergency generator stopped at the same time ..."* (Chapter 13.2.6 of (5))

Alternatively they were so hard secured to the ramp that they never released. We do not know how many of the 60+ rafts that was actually released. The number of rafts found has never been published.

There are reports from survivors in 20 different rafts A-U in chapter 6.3.12 of the Final report (5).

Very few of the rafts seem to have been opened on the ship. The waves/wind enters from right in the picture below. The funnel is into the wind. The Final report explains that the port life rafts were released just before or after this time, but it has never explained how the persons were supposed to enter the rafts. The list is 60 degrees, i.e. the green decks slope 60 degrees. The hidden port outer side of the deckhouse, superstructure and the hull slopes 30 degrees. If you were on the outside you would slide into the water, if you were on deck 7 below the lifeboats you could no longer get out on the outside. If the port life raft containers were released at this time, they would bounce against the port outside and disappear into the sea. No orderly evacuation was possible at this time.



The ship is evidently sinking and should have capsized but Dr. Huss & Co. states that it moves with >2,2 knots (the current is <0.5 knots) sideway (sic) for 22 minutes 1 300 meters northeast to suddenly sink at **01.52** hrs (see figure 1.9.1 above). **However, there are no evidences that the 'Estonia' actually drifted in such a way.** The author thinks that the 'Estonia' sank at **01.32-01.36** hrs, because the clock on the bridge stopped at **01.35** hrs.

Figure 1.9.2C – 'Estonia' drifts 001.30 – 01.50 hrs with 2.2 knots speed while sinking!

KUKK'S STORY

The assistant mate Einar Kukk was at this time - just prior to 01.30 hrs - on deck 8 - in line with the lifeboats in their stowed positions. He told the Finnish police on 29 September (12.30 hrs) that there were 70-100 persons on decks 7 and 8 then and that you could only move by creeping.

At 01.30 hrs Kukk jumped into the sea (he looked at his watch). It is probable that the ship was much lower in the water than shown in the picture. Kukk had also observed that the sudden listing took place just after 01.00 hrs. You can see the bridge *above* water on the above figure 1.9.8 and the clock was in the chart room just starboard of the centre line - and it could not come below water until the bow was below water - at 01.52 hrs according to the Commission/the falsified plot. It is thus likely that that part of the bridge was underwater at **01.35** hrs. Surviving passengers on the port side have stated that they jumped into the water at **01.30** hrs, when the stern disappeared under water and the angle of list was 90 degrees - not **60** degrees as in figure 1.9.3 above. Eklund's testimony as reported above also supports the sinking at **01.32-01.36** hrs. The 'turn' as observed by Eklund just before the sinking could have been a radar echo of the bow pointing towards the sky, when the stern had hit the bottom and the ship slowly turned around that position. The stern should thus have hit the bottom at 73 meters depth already at **01.33** hrs, and then any **movement of the 'Estonia' must have ceased.** The ship was 155 meters LOA.

HENRIK SILLASTE

Our hero Sillaste from chapter 1.3 of this book had at this time evacuated from the Engine Control Room, ECR, at about 01.24 hrs 1.48 and was now - a miracle - at 01.26 hrs, on the outside of the port, flat *hull* of the 'Estonia', where he was opening life raft containers (see Raft "S" - chapter 6.3.12 in (5)).

He secured these rafts - how many are not known and not to what he secured them - and when the angle was correct, he cut the ropes so the rafts slid into the water. There are no ropes attached to a drop-over-board life raft container. The containers are heavy and difficult to handle - you need two men to slide a container on a flat deck, and how these life raft containers ended up on the port side is not known. Anyway Henrik Sillaste inflated several rafts and was together with Silver Linde and Kadak in raft "S" - apparently one of the rafts launched by Sillaste. Later - Linde found another raft and moved over to it - all according to (5). Strange story.

Key witness Sillaste is such a useful person to the Commission - he is on deck 0 when the ship heels at 01.15 hrs and does not see anything strange there. Then he is in the ECR on deck 1 between 01.17 and 01.24 hrs and sees water entering into the *superstructure* at the *partially open ramp*, and the finally he is on the outside of the ship deck 7 at 01.27 hrs launching life rafts and at 01.30 hrs he is safely inside a life raft floating in the water. But the ship does not sink until 01.52 hrs. What a fantastic and lucky escape.

On the figure above you can also see that no. 1 starboard lifeboat was still above water, when the list was 60 degrees with a good stern trim. There are speculations that this lifeboat was launched before or after the accident, the listing, **2.25** and **3.18**. It may have been launched as late as 01.30 hrs, when it was just a few meters above the water.

You can speculate, if Rosengren/Huss were aware of the fact that the ship actually sank at 01.32-01.36 hrs, because Huss reported that the speed and stability were then zero (01.33 hrs) (sic) - the ships was only drifting? Figure 13.2 is remarkable - after 01.33 hrs the ship starts to move to northeast and the plot records *another 20 minutes* (!) of movement sideway at 2,2 knots in a completely unstable and alleged sinking condition. This speed 2,2 knots is maintained unchanged (!) until the ship sank. But the speed cannot be 2,2 knots, when a ship sinks - it must be zero. But the plot is of course of a completely undamaged ship. It is quite a bad falsification.

THE LATE CLARIFICATIONS OF THE HEADMASTER OF THE KALMAR MARINE ACADEMY

On 21 February 2001 the headmaster of the Kalmar Marine Academy and the boss of Hans Rosengren, Mr Rolf Zeberg - wrote to the author:

> *"My dear Anders Björkman,*
>
> *... I have full understanding with your displeasure of the 'Estonia' accident investigation. I too think it has big deficiencies and contains too many compromises - but it is probably the result when you are not appointing a neutral and really competent Commission.*
>
> *I have earlier pointed out that the Kalmar Marine Academy in no way was connected to the investigation of the Commission. I do not know who got the idea to simulate the sequence of accident events on our navigation simulator, but it was probably Hans Rosengren himself that suggested it, as it had successfully been used earlier to simulate other accidents but then collisions and similar.*
>
> *Anybody aware of the objective of a navigation simulator and its technology is probably also aware of the limitations, **e.g. what precedes the sinking of a ship*** (and that the navigation simulator does not calculate stability - AB note). ...
>
> *... I hope you reach your objective, which apparently is that a new 'Estonia' investigation is decided.*
>
> *Good luck*
>
> *Rolf Zeberg"*

Unfortunately Mr Zeberg has not voiced his scepticism officially and Captain Rosengren is still a teacher at the Academy (teaching his pupils how to falsify accident investigations with false plots?). Anyone familiar with plots of navigation simulators should quickly have spotted that the plot presented by the Commission was the plot of an *undamaged* ship making a turn and then drifting and never sinking.

THE FALSIFICATIONS WERE INTENTIONAL

The conclusions are clear. Dr. Huss', FRINA, *second* attempt to simulate the last 40 minutes of the 'Estonia' was a ***real*** attempt to falsify the sequence of events. It can be shown that the original plot **01.14 - 01.52** hrs is based on the simulated movements of an *undamaged*, floating ship that never sank at 01.52 hrs (it continued to

drift), that the plot was cut or edited after 01.52 hrs and that arbitrary angles of heel have been added later. Dr. Huss and Captain Rosengren must then have known that the whole investigation was being manipulated, when they made the plot - why otherwise use an *undamaged* ship to simulate the plot? Huss was probably ordered by Forssberg to produce the false plot already in January 1995 just after having handed in his first report, which clearly showed what would have happened with water in the superstructure. Thus the conspiracy to cover up the Truth was in full swing then.

The Commission used the plot of Dr. Huss and Captain Rosengren and changed heel angles and times further to *'suit'* some observations aboard to make the falsifications more convincing. Then nothing fitted anymore. Evidently neither Huss/Rosengren nor the Commission could explain why the *hull* was flooded, so that the 'Estonia' sank. Instead they were only worried about the amounts of water in the *superstructure* and the resulting angle of list and that the vessel would **not** sink - or capsize - so that it could drift >3 000 meters before it sank at the position of the wreck at 01.52 hrs. The long description of the flooding of the *deck house* was added to make the scenario more convincing. This could not be done without shameful manipulations and falsifications of basic stability principles, and the times, angles of heel, etc.

Figure 13.2 in the Final Report (5) is thus a falsification.
Dr. Michael Huss and Captain Hans Rosengren of the Commission made the original falsifications and the whole Commission made further falsifications.
The falsification is evidence that the total Final Report (5) is wrong.
There was no port turn. The visor was attached to the ship after the listing.

Dr. Huss has since never managed to convince anybody that his calculations and simulations were correct and he had problems to perform his job as a teacher of naval architecture and instability (!) and floating on the deckhouse at the Royal Institute of Technology, Stockholm, where he had spent all his career since graduation.

HUSS' LAST EXPLANATION - THE RESULT IS VERY VALID - THE THANK-YOU GIFT

In a job application to the Swedish NMA Dr. Huss, FRINA, wrote on 26 November 2000:

> *'Even if the* (Estonia) *investigation later has been subject to quite a lot of criticism, I dare state that with regard to the circumstances* (sic) *under which the investigation was done, the result has been shown to be very valid'.*

The *'circumstances under which the investigation was done'* were apparently that you could lie and falsify as you - or the Commission - liked.

Dr. Huss got the job at the Swedish NMA in April 2001 appointed by Mr Franson 1.16. The appointment was quite irregular, apart from the fact that Dr. Huss lacked the relevant qualifications for the job. It was made public on 16 April 2001 on an obscure notice board in the cellars of the Swedish NMA headquarters at Norrköping (according to standard procedures?). In a circular letter of 9 May 2001 the other eight applicants were informed that somebody else (Huss name was not mentioned) had got the job. If they wanted to appeal the decision by Franson, they had to do it before 8 (sic) May 2001. It seems the new job of Dr. Huss, FRINA, was a Thank-you gift from Mr Franson for the 'Estonia' job - the falsified simulation of the last 40 minutes.

What does the Swedish NMA staff think about that? Ask them! Or apply for a job there. It seems serious naval architects are leaving the NMA and that the new boss Huss is looking for new ones (the time to apply expires 7 November 2001 - Note February 2002 - the NMA has informed that the job was cancelled all together).

Dr. Huss is still FRINA. The author was invited to present a paper at a RINA conference in March 2002 about, i.a. the above. However, RINA decided at the last moment to stop the presentation, so you have to read the paper at the above link instead. RINA is not interested in safety at sea anymore. Quite sad!

RETURN TO THE FANTASY WORLD OF THE COMMISSION

But let's return to the 17 October 1994. The Commission has just told the media and public that the visor had fallen off the 'Estonia' on her way to Stockholm and that this was a contributory cause of the accident (the proximate cause was later 'design fault' of the visor itself). The visor was not yet found. Dr. Huss was not yet appointed and the Commission was still not aware about the great difficulties of Huss/Rosengren to simulate or reconstruct a false sequence of events based on the alleged proposal that the visor was lost *'under way'* and that water entered into the *superstructure*. The falsified figure 13.2 of the Final report (5) had not yet been produced.

It is very probable that the visor was not lost *'under way'* and that the statement on 17 October was false. From that date all information of the Commission had to be manipulated to suit.

On 19 April 2001 the Swedish government requested the Swedish Board of Psychological Defence (sic) to clarify to it, the Parliament and the Swedish public how (on earth!) the *hull* of the 'Estonia' was flooded with water and how the ship (the hull) actually sank during *the end of the sequence of events* shown above (say between 01.30 and 01.52 hrs) without capsizing due to alleged cause - design fault of the visor. When this is written (28 February 2002) the Board has not even started with the project. And on 26 August 2002 the Board has still not discussed the possibility that the plot is a falsification.

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[34] At a meeting with Dr. Huss at the Royal Institute of Technology at Stockholm in August 1997 the author friendly asked Huss to clarify his calculations. Huss refused and accused the author to be *conspiratorial* (sic) and left the room. Huss' boss, professor Olle Rutgersson, who witnessed the event, was very embarrassed. As the 'Estonia' sank slowly in 35-45 minutes according to the Commission, it was obvious that Huss had been forced to manipulate his calculations. The author informed that the inflow should have been 1 800-3 600 tons/minute of water on the car deck **Appendix 4** instead of 10-20 times less and this was apparently *conspiratorial*. Professor Rutgersson is one of the Swedish governments *'independent'* experts who has later been asked to review e.g. the information in this book. Rutgersson has never had the guts to confirm any error in the Final report - all new observations are difficult to analyze! *Professor Rutgersson does not dare to criticize the faulty calculations of one of his employees.* In 2001 the government decided to close the department of Naval Architecture at the Royal Institute of Technology and to transfer the activities to the Marine Academy at Gothenburg.

[35] The remarkably high speed >2 knots for 20 minutes, when the 'Estonia' half sunk drifts sideways, is necessary so that the 'Estonia' reaches the wreck position.

[37] **Press Release from the Ministry of Foreign Affairs Republic of Estonia IMMEDIATE RELEASE Nr. 94.10.03 06 October 1994 17:15 (GMT +2) THE BALTIC FERRY DISASTER.** Reports from the Estonian Government Commission, and the International Joint Investigation Commission. The Estonian Government Commission met today at 11:00 am and discussed the current state of the investigation. More video footage of the wreck was studied ... The International Joint Investigation Commission into the 'Estonia' ferry disaster issued a press release which reported on the search for the bow visor of the 'Estonia'. The report is quoted below:

"... The Finnish coast guard vessel 'Tursas' and the Estonian coast guard vessel 'EVA-200' have searched for the bow visor of the m/s Estonia throughout the night. Early on the morning of the 6th of October, however the search had to be interrupted due to strong winds. The search was begun in the immediate vicinity of the wreck. *The search has so far concentrated primarily immediately to the east and the south of the wreck* which, according to the available information, would match the route taken by the m/s Estonia. *Smaller objects found on the sea bed would appear to confirm this presumed route.* The search has thus been interrupted, and will be continued as soon as the winds allow. The board of Investigation requests that the representatives of the media do not contact the 'Tursas' directly for information, as the sonar scans and the analysis of the data requires the uninterrupted attention of the crew". The search was never continued. On the 8-9 October the 'Tursas' was anchored at the wreck and filmed it. Then the 'Tursas' was in port until 17 October. Then the 'Tursas' found the visor - without any search - on 18 October. Then there were no more searches for *'fragments'.*

1.10 HOW MUCH WATER DID ACTUALLY ENTER THE CAR DECK AT THE FORWARD RAMP?

You should ask how the Commission on 17 October 1994 could have made its second statement 1.8.2 - water entered into the superstructure 2.5 meters above waterline - based on some video films.

The ramp at the forward end of the *superstructure* was found 18 October 1994, according to the Commission, only *'partly open'* at the top as seen on the wreck, **1.12**-3 and page 22 in (5), and it had only been observed from the outside by an ROV (but compare **3.10**) sent down from the Finnish vessels 'Halli' and 'Tursas' on 1, 2 and 9 October 1994. Silver Linde (8) had said that the ramp was closed and the bow high above the water, when he was in a life raft close to the bow at 01.30 hrs **1.8**, *before* the ship sank.

Divers had at that time not investigated the bow ramp locks - it was also not done six weeks later, **1.16** (v) and **3.10**, in spite of the fact that the *divers* then, according to Tuomo Karppinen, *got written instructions (9) to verify that the ramp had actually been open*. In German magazine 18/96 (10) Forssberg said that the ramp opening found was too small for a diver to get into the superstructure (when? October or December 1994?) and that it would have been necessary to cut steel to get into the garage and that was why the inside of the car deck and the inside of the ramp and its locks were not examined.

There was no evidence on the video films, *when and if* the bow ramp had in fact been open and how much - under way, before the sudden listing, after or when the ship sank to the bottom.

The three key witnesses in the ECR were reported that they had seen the ramp at the forward end of the superstructure leaking but closed, 1.3 and 1.48. Linde had evidently not seen the ramp open, because he was never at the ramp, when it was supposed to have been ripped open.

In spite of all this the Commission states, without any evidence whatsoever, in several places in the Part and Final reports (16), (5) that the ramp had been fully open[38], but in either reports (16) and (5) not one witness is quoted to have seen an *open* ramp in the superstructure. And if the ramp was *not* open - how could water get into the *superstructure*?

Copies of the video films (act B40b, c) of the ramp taken 9 October 1994 were not available until 1998. Persons, who have seen the films 1999 say to this author, who has never seen any of the films, that there are no signs that waves or the visor should or could have pulled open the ramp and that the ramp later should have closed itself. The ramp seems to be deformed inboard and to be stuck in its frame **3.10** (damages probably caused when the visor was removed be explosives at the bottom of the sea). The quality of the copies of the video films is very bad and no written video logs of what was filmed exist that is indicating manipulations and fraud.

The video films - the only evidence that the ramp in the *superstructure* had been open - do not prove that the ramp was open.

[38] You ask: How did the Commission on 17 October know that the ramp had been ripped open from its six locks and that the locks were broken, when not one lock had been filmed or examined? **The Commission simply lied 3.10**!

1.11 THE SECOND FALSE CAUSE OF ACCIDENT 17 OCTOBER 1994. NO PASSENGERS INTERVIEWED!

The Commission also presented the ***cause of accident*** at the meeting (7) on 17 October 1994. It was stated that defective visor locks was the proximate cause of accident.

It is not known how the Commission could have established this amazing cause so quickly based only on some video films and some interviews with crewmembers. The visor had not been found. Nobody had taken close-up photos of the locks. No details of the locks were available.

No dive inspection had officially been carried out. The rumours that Swedish divers had visited the wreck early October and removed the visor have not been confirmed but need be investigated.

The visor had officially not been found and naturally not been examined. The visor locks had not been investigated.

No damaged parts of the wreck, e.g. the ramp or the visor locks had been salvaged and examined.

The sequence of events of the accident **1.9** had not been clarified. They had not even been put together. We know today that that official sequence, made up, negotiated, long afterward, is false.

The statements of the 137 survivors had not been analysed, experts had not been appointed, **no stability calculations had been done,** etc. Several survivors had e.g. stated that water had been seen on deck 1, down inside the *hull* below the car deck (no. 2) *before the sudden listing*. There were also rumours about water in the engine room. These statements were obviously ignored, censored, by the Commission.

No testimonies confirmed water up on the car deck in the *superstructure* high above the waterline, unless you believed 3/E Treu down in the ECR on deck 1, who said that he had seen it on a TV-monitor. The possibility that Treu lied **1.48** is conveniently not considered in the Final Report (5).

BLAME THE ACCIDENT ON A TECHNICAL FAULT - E.G. SOME LOCKS

Historically, the international maritime community has approached maritime safety from a predominantly technical perspective. The conventional wisdom has been to apply engineering and technological solutions to promote safety and minimize the consequences of marine casualties and incidents. Accordingly, safety standards have primarily addressed ship design and equipment requirements. Despite these technical innovations, significant marine casualties and incidents have continued to occur.

Analyses of marine casualties and incidents that have occurred over the past 30 years have prompted the international maritime community and the various safety regimes concerned to evolve from an approach which focuses on technical requirements for ship design and equipment to one which seeks to recognize and more fully address the role of human factors in maritime safety within the entire marine industry. These general analyses have indicated that given the involvement of the human in all aspects of marine endeavours including design, manufacture management, operations and maintenance, almost all marine casualties and incidents involve human factors.

In the 'Estonia' disaster human factors didn't play any role - except some stupid naval architects and shipyard workers making defective visor locks 14 years earlier ashore!

One way the maritime community has sought to address the contribution of the human factor to marine casualties and incidents has been to emphasize the proper training and certification of ships' crews. It has become increasingly clear; however, that training is only one aspect of human factors. There are other factors, which contribute to marine casualties, and incidents, which must be understood, investigated and addressed.

The following are examples of these factors relevant to the maritime industry: communication, competence, culture, experience, fatigue, health, situational awareness, stress and working conditions.

Human factors which contribute to marine casualties and incidents may be broadly defined as the acts or omissions intentional or otherwise which adversely affect the proper functioning of a particular system, or the successful performance of a particular task. Understanding human factors thus requires the study and analysis of the design of the equipment; the interaction of the human operator with the equipment and the procedures the crew and management followed.

It has been recognized that there is a critical need for guidance for accident investigators, which will assist them to identify specific human factors, which have contributed to marine casualties and incidents. There is also a need to provide practical information on techniques and procedures for the systematic collection and analysis of information on human factors during investigations.

This book should result in an increased awareness by all involved in the entire marine industry of the role human factors play in marine casualties and incidents. This awareness should lead to proactive measures by the marine community which in turn will result m the saving of lives, ships, cargo and the protection of the marine environment, improvements to the lives of marine personnel and more efficient and safer shipping operations.

However, during the 'Estonia' accident investigation the Commission carefully ignored all human factors aboard and blamed the accident on some people ashore that 14 years earlier made mistakes designing and manufacturing visor locks.

MEANINGLESS DISCUSSION

In April 1997 the author contacted Forssberg for some clarifications of obvious manipulations during the investigation. Forssberg, surprisingly, replied that he never was going to comment on the Final Report (5), which he then had worked with for almost three years and which then was finalized. One month later Forssberg was dismissed from the Commission by the Swedish government (or he resigned at his own request) after having *'lied'* about an old letter. Forssberg was then appointed as an advisor at the Swedish Ministry of Transportation and wrote, again, spontaneously to the author 30 October 1997 the following:-

> *"... (it) is meaningless to start a debate about the cause of the sinking of the 'Estonia' before all documents are on the table, i.e. when the Final Report of the Commission is public. I want however emphasize that behind the content of the part report was a united Commission with access to highly qualified experts in your field of technology".*

Forssberg, whose trustworthiness is in severe doubt, has since never explained how he managed to establish the cause of accident so fast in October 1994 and what he thinks about the statements of 3/E Treu.

It is thus not known if and how the Commission analysed other causes than the one presented on17 October 1994 as *'one of the most probable causes of accident'.*

There is no evidence for the alleged cause of accident announced on 17 October 1994. All other available facts indicate that this cause is false. To blame the accident on innocent persons ashore 14 years earlier is simply ridiculous!

1.12 'ONE OF THE MOST PROBABLE CAUSES'. THE RAMP WAS NOT OPEN

Meister, Lehtola and Forssberg wrote a quite detailed document (7) about events and causes of the accident, which on 17 October 1994 was sent to the governments of Estonia and Finland, to the Swedish NMA and to the shipping company Estline, as follows:

> **1. The bow door (visor) has** (sic) **separated from the ship as a result of failure of all three locking mechanisms. According to the observations made by members of the crew this happened at about 01.15 when water was simultaneously observed on the TV-monitor, entering the car deck from openings along the vertical sides of the forward ramp. The failures have taken place, in case of the two side locks, in the welding of the locking eye plates to the bow visor and in case of the centre lock (as previously shown) by failure of the lugs carrying the locking plunger unit.**
>
> **2. Following the failure of the locking arrangements the bow visor has opened up under the wave loads. The deck mounted hinge points have eventually failed as a result of uncontrolled movement of the 55 tons visor, leaving it attached only by hydraulic actuating cylinders.**
>
> **3. During the subsequent unrestrained movement of the bow visor it hit the bow ramp in several modes, including hits from the rear to the upper protrusion of the ramp, causing it to become dislodged from its locking arrangements and to move to a *partly open position*. The bow visor has ultimately separated from the ship and disappeared overboard.**
>
> **4. *Partial opening of the ramp* had allowed water to enter the car deck due to heavy sea. *Collection of water on the car deck eventually led to the loss of stability and capsizing of the vessel.***
>
> **5. After the vessel had turned over to almost 90 degrees starboard list, which is estimated to have taken place in less than twenty minutes after the damage to the forward ramp, it started to sink with the stern first. The ship disappeared from the radar screen of a Finnish surveillance station[39] at 01.48.**
>
> **6. The vessel turned during the phase of losing stability and landed on the seabed with an almost easterly heading. It is assumed at this stage that this was partly an attempt by the officers on the bridge to turn the ship around and partly by the wave action after the ship had lost propulsion power.**
>
> **7. The locations of the EPIRBs have not been found during the video documentation and their status is therefore not known at the present time.**
>
> **8. Emergency MAYDAY signals were sent by 'Estonia' at 01.24 and were received by ships in the area and the MRCC at Turku.**

On 17 October the Commission thus repeated that the visor had been detached for some reasons (no evidence of anything), that the ramp had moved to a partially open position, and that ship had *capsized,* even if the latter evidently was not the case. A capsize does not take 33 minutes between 01.15 and 01.48 hrs (or 01.02 and 01.33 hrs!) <u>A capsize is a sudden loss of stability</u> - not buoyancy - resulting in the ship turning very quickly - and later floating - upside down on the *hull* - no buoyancy loss. Capsize is only caused by stability loss.

No other causes of accident have since been presented to the governments of Estonia, Finland or Sweden. Nobody in these governments have for seven years questioned the work of the Commission or if it fulfils international standards of accident investigations. *That a semi-private accident investigation Commission manages to establish a strange sinking accident with >850 lives lost in three weeks, without having examined the wreck with divers or having found and examined the visor, is in fact a miracle.* The ship was in principle unsinkable with a watertight *hull* subdivided into 14 watertight compartments, but it sank in 30-40 minutes and the alleged cause of accident - water in the *superstructure* - due to faulty locks of the visor on the superstructure was established in record time.

Note again from the above official statement that the *ramp* protecting the *superstructure* is reported *not* to have been fully open. Note paragraph 4 where it is stated that the *stability* was lost and that the ship

***capsized*. Evidently the 'Estonia' never lost its stability and it never capsized - it sank slowly, while the list increased - she was stable, albeit with a list, >148 survivors got out. Linde, Treu, Sillaste, Kadak - our chief witnesses - had no problems to get out and survive.**

But the most unbelievable thing of the whole investigation circus is that no other possible causes were ever mentioned or investigated.

A BIG HOLE IN THE SIDE - BUT NOT IN THE FINAL REPORT

The following day 18 October the Swedish daily Dagens Nyheter **Appendix 5** reported that, apart from partial opening of the ramp, the visor or its attachments had ripped a big opening damage in the *hull* plating (they probably meant *superstructure* plating as the visor was not attached to the hull plating except via its bottom, Atlantic lock, and its deck plating is not damaged at all), which had accelerated the sinking process. The damage opening in the hull (superstructure?) side plating had been seen on the video films, which was confirmed by the Swedish NMA observer in the Commission, Captain Sten Anderson. Later, when the Final report (5) was published, no hull (or superstructure) side damages were reported.

The ship had been subject to threats.[40] The author has checked all protocols of the 20 meetings (most of them only one page long, very poor, no descriptions at all) of the Commission. Not a word about leakage or *bilge pumps.* What happened to the testimony of Mr Sillaste **1.3** that there was a big leak and that the bilge pumps were running? Not a word about *watertight bulkheads* and *watertight doors* and their control/indication, that water on the car deck tips the ship upside down, not a word about the possibility that the crew could have made mistakes or lied, not a word about slowing down the ship before the accident, etc.

The Commission is only worried *how* to write the water-on-the-car-deck-in-the-superstructure Final Report. It is clear that only a few persons headed by Stenström actually tried to write such a report. The contributions of the others were only stupid opinions. In the beginning each 'meeting' or casual get together lasted two days - the first day followed by a good dinner followed by a second day of chat. Obviously the Commission thought it was easy for Stenström to write a false Final Report. But then the work slowed down. Stenström started to have doubts. A typical (confidential) protocol from the 13th meeting 26/27 September 1996 at Stockholm is (act A204a*) as follows:

> 26 September
>
> 1. Chairman Forssberg welcomed the participants and opened the meeting. The order of the meeting and list of participants are attached to the protocol.
>
> (Order of meeting - 1. Opening of the meeting, 2. Approval of the order of the meeting, 3. Chairman, 4. Discussion about the Final Report, 5. Work schedule, 6. Dates for next and following meetings, 7. Various).
>
> 2.The order of the meeting was approved.
>
> 3. The Commission started to review the proposal of the Final Report as per the order of the meeting.
>
> 27 September
>
> 4. The work continued.
> 5. It was decided that the next meeting was going to be at Stockholm 19-21 November 1996.
> 6. The meeting was closed.
>
> At the protocol:
>
> *Olof Forssberg*

The above is the only report how the Commission did its investigation in September 1996. It is evidently impossible to review the work of the Commission 1994-1997 based on protocols such as the one above, which did not even follow the order of the meeting. The Commission apparently did nothing but review the 'proposal' of the Final Report. Proposal? Stenström had given up. He died five months later.

The Commission then divided into different management-, work- and editing groups, which anyway worked without coordination, as reflected in the Final Report (5) **1.21**.

The very short and limited protocols of the Commission do not confirm that there was any *proper* investigation at all. Nothing is properly recorded - and today not one former, surviving member of the Commission dares to explain any unclear statements in the Final Report (5).

The reason for this is probably concluded in **4.5**.

On 17 October the Commission thought that only partial opening of the ramp protecting the *superstructure* was sufficient to sink the ship. This was a stupid invention of Stenström.

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[39] The radar was at Finnish Utö - about 25 NM from the position of the accident **Appendix 5**.

[40] **Johannes Johanson, director of Estlines, told 4 October** that the shipping company had been informed last year that an accident might occur on the Baltic. He said that security measures had been intensified after the warning. (**Finnish News Bureau - Reuter**). The Final Report (5) does not mention any 'security measures' aboard.

1.13 MANY ERRORS IN 'THE MOST PROBABLE CAUSE'. THE PLOT OF UTÖ DISAPPEARS

The Commission never explained to the public 1994-1997 that the ferry 'Estonia' consisted of three distinct parts - (a) the **watertight** *hull* on which she was floating, (b) the **weather tight** *superstructure* on top of the *hull,* where cars and trucks were parked, which contributed to stability at large angles of heel (if intact) and (c) the **open** *deck house* on top of the superstructure, where most passengers and crew stayed, which didn't contribute to any positive stability at all - rather the opposite - it was just a big weight reducing stability and trying to turn the ship upside down.

Point 1.12-1 states that three visor locks have been broken and how. It was not pointed out that the visor was attached to the *superstructure*. Regarding the time 01.15 hrs you have to remark that several surviving passengers had stated another time, **01.02 hrs,** for a completely different event

- sudden listing, >30 degrees to starboard and equilibrium at 15 degrees list -

which the Commission never mentioned then or later, which alerted all passengers, which were awake, to immediately start evacuation **3.18**. It is a fact that nobody saw, heard or felt that the visor actually fell off, so the time for that event (if it took place) cannot be stated. Three crewmembers are stated to have seen that water entered into the superstructure at a leaking but closed ramp. 3/E Treu is quoted to have said that it was at 01.15 hrs. The others had noted the sudden list (>30 degrees) earlier and then entered the engine control room *"when water simultaneously was observed on the TV-monitor entering the car deck along the vertical sides of the forward ramp"*, **i.e. the ramp was still closed after the listing - the accident.** With regard to the passengers statements the ship had already listed 30-40 degrees and was sinking at that time - 01.15 hrs **2.1**, i.e. the sinking - the leakage - must have started earlier to cause the sudden listing. That 3/E Treu lies has been established later **1.48**.

Point 1.12-2 is a proposal that the visor moved up and down around the deck hinges (and hit against the forepeak deck). **There is no evidence for that.** Nobody saw, heard or felt these events. The testimonies that the visor was moving have simply been made up. The forepeak deck, against which the visor should have hit, is undamaged. In **2.1** expert Schager summarizes the testimonies of 122 survivors. Nobody talked about a visor moving up and down.

There was in fact no possibility that the visor could have moved around the hinges: as soon as it was filled with water, it would rest against the forepeak deck due to its own weight, 55 tons, and the water inside the visor, 100-150 tons. The pitching accelerations were too slow to allow the visor, empty or full of water, to move.

Then, the Commission states, the deck hinges were broken, but not how and why (and they have never done it later). The Commission did not know in October 1994 how the hinges were designed and how the forces acted on them, so it was just an unproven assumption that the wave forces acting aft (or the ship movements) had broken the hinges in the forward (!) direction **3.9** (The hinges have obviously been pulled apart after the accident - under water?).

Point 1.12-3. How did the Commission know that the visor had dislodged the ramp, when neither the visor had been found nor the ramp and its locks had been examined? If the visor fell off, when the ship was *in an upright position*, then the visor must have pushed the ramp forward.

But how did the Commission in October 1994 know that the ramp had been ripped open, when nobody had seen the ramp from inside, where the locks were?

The ramp was seen from outside to be closed on the video films - or open a little at the top.

Today we know for certain that the ramp was held in position by mooring ropes and never could have been open; **3.7**, **3.8**, **3.9** and **3.10**, but that was not clear in October 1994.

The visor could of course have been lost, after the ship started to heel and when the ferry had a big list, without touching the *ramp, but then no water would have entered the superstructure*. How the Commission could have eliminated that possibility is not described in the Final Report (5). Or how the very poor port hinge may have broken, when the ship sank, and the visor was still hanging from the ship attached by the starboard hinge? But then the visor should have been found at the wreck.

PARTLY OPEN RAMP

Point 1.12-4. Note that the Commission states that the ramp protecting the *superstructure* was *partly* open/leaking, evidently because some crewmembers in the engine control room, ECR, were alleged to have stated exactly that, but these three persons stayed in the ECR for seven minutes *after* the listing and should have seen a completely open ramp. **No survivors have seen an open ramp** and, if the ramp were only leaking, enough water (>600 tons) to suddenly list the ship (>15 degrees) could not have entered into the *superstructure in less than 10-15 minutes*. The Commission was conscious of these facts, when it announced them. In two internal and secret status reports dated 24 and 28 October 1994 (act A32*) Stenström writes (in paragraph 10 in both reports) about a partly open ramp:

> "(10) *The openings along the sides of the forward ramp may have had an effective area of 0,2-0,5 m². It may have permitted that one or two cubic meters of water per second may have entered the car deck and that enough water to cause a loss of stability* (sic - capsize?) *had collected during 500 - 1 000 seconds".*

According Stenström it should have taken 8 - 16 minutes to fill up the car deck in the *superstructure* through an, at the edges, leaking ramp with 500 or 2 000 tons of water, i.e. the crew should have had ample time to notice this event and to stop the ship and to prevent the capsize.

Stenström then thought (or calculated) correctly that a certain amount of water - 2 000 tons - would cause total loss of stability, i.e. *capsize*, but the ship never capsized. Note further that at this time - 17 October 1994 - the Commission still considered that the ramp protecting the *superstructure* had not been pulled fully open, but thought that it was only partly open during the whole accident.

In spite of the fact that water cannot *continuously* flow into the *superstructure* with a velocity of 4-5 m/s four meters ***above*** (!) the waterline (which Stenström should have known), the statement means that Stenström knew that you needed about 500-2 000 cubic meters of water on the car deck in the *superstructure*, so that 'Estonia' should have *capsized* after 8-16 minutes (sic) of increased heeling moment **2.19**.

Later Stenström discovered that it was not possible to present such a scenario - the ship would not have sunk but floated upside down - then the Commission had to change the statement to mean that the ramp protecting the *superstructure* had been *suddenly* pulled *fully* open and that >1 000 tons came in within one minute - listing - but that then that the inflow was considerably reduced, as the list was stable **1.9**. As stated earlier the author met Stenström in London on 31 October 1994 and tried to discuss the matter - Stenström refused flatly.

The author had known Stenström closely since 1992. We met often to discuss oil tanker safety after collisions and groundings. The author knew about Stenström by name before that. Stenström had developed clever ideas about crude oil washing of oil tanker cargo tanks and how to measure the oil left in ballast water carried in oil cargo tanks late 1970's and in the 1980's. The author had at that time developed the **Coulombi Egg tanker**, which the IMO later (09.1997) approved as better protection of the marine environment than double hull. But after 31 October 1994 Stenström changed character. The author was then also heavily involved in roro-passenger ferry conversions and up-gradings (SOLAS 90 was coming into force 01.10.94) and very concerned about ferry safety. 1995-1996 Stenström appeared more and more depressed. Stenström died in February 1997 (allegedly by a cancer) and could thus not attend the celebrations when the Coulombi Egg was approved by the IMO in September 1997. Regardless, Stenström had already in October 1996 informed the author that he (Stenström) never wanted to meet the author again. Sad story.

In retrospect it is easy to conclude that the Commission had presented a lot of lies previously and that Stenström could not make sense out of all contradictory information.

What all surviving passengers had observed was simply that the ship lost its *initial stability*, when it *suddenly* heeled >30 degrees to starboard at about **01.02** hrs, and that the ship soon after was *stable again* at 15 degrees list at 01.05 hrs, i.e. *the 'Estonia' never capsized* as the Commission states in points 1.12-4 but was floating with help of the weather tight superstructure. Thereafter the listing increased slowly, until the ship was (still stable) on the side at **01.30** hrs and sank with the stern first - probably at **01.32-01.36** hrs. *Such a development could not possibly have been caused by water on the car deck 2.5 meters above the waterline* **2.16**. And this Stenström knew on 31 October (the author could see it in the eyes of Stenström. Stenström was lying to the author!). It means that the falsification of the cause of the accident started very early.

When point 1.12-4 was announced the Commission had apparently still not made proper stability calculations with water on the car deck in the *superstructure* **1.15**.

The conclusion is that sufficient with water could *never* have entered through a *partial opening* of the ramp protecting the *superstructure* to sink the 'Estonia'.

The Commission (and Stenström) later realized its enormous error because at the next meeting - on15 December **1.17** - it stated that the ramp had been pulled *fully* open at 01.15 hrs and that large amounts of water had flowed into the *superstructure* (in spite of the fact that the star witnesses in the ECR had stated the opposite). That this should have caused *immediate* capsize, the Commission did not realize - or hid from the public. It is then the Commission (and Stenström) really starts to be entangled in a web of contradictory and false statements. It had, e.g. to make up the story that the ramp had closed itself later during the 'accident' - one way or another!

THE 'ESTONIA' WAS NOT DRIFTING

Point 1.12-5. In spite of the fact that Finnish shore radar and several other ships saw the 'Estonia' sinking, a false position at a false time of the wreck was announced **1.14**. Finnish shore radar staff at Utö is alleged to have stated, that the 'Estonia' sank at 01.48 hrs, but the time is not proven. After the accident a plot was circulated within the Commission, apparently originating from Utö, where, apart from the 'Estonia', also the 'Silja Europa' and the 'Mariella', and other ships were plotted - see figure 17.1 in the Final Report (5) below.

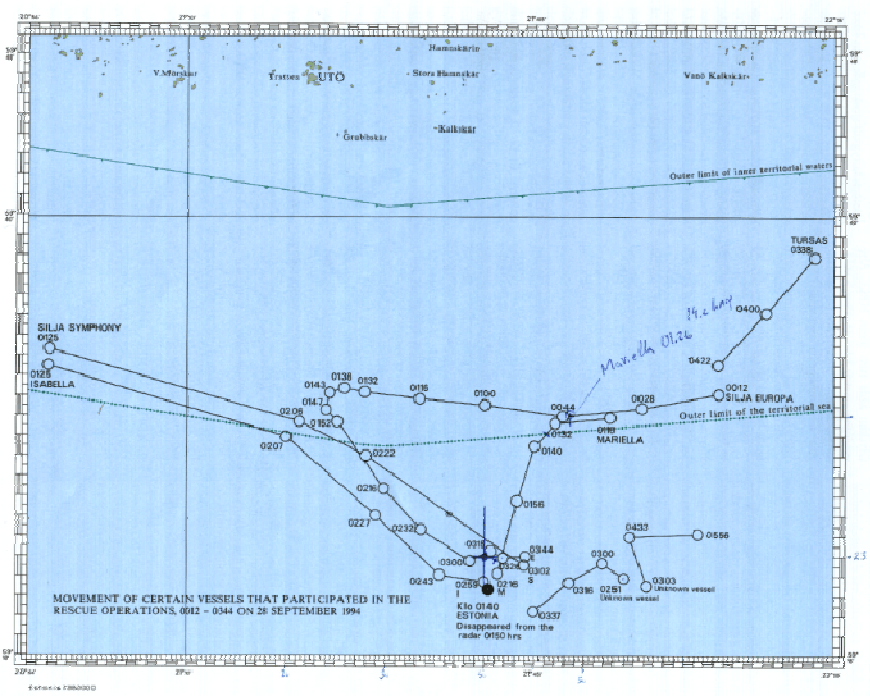

Figure 1.13.1 - Figure 17.1 of the Final Report (5)

All ships in the area were tracked by Finnish shore radar at Utö. You can, e.g. see that the 'Mariella' was about 10 miles astern of the 'Silja Europe' at 01.16 hrs - four minutes before the Mayday! - and that both the 'Silja Symphony' and the 'Isabella' made 21 knots to reach the position of the accident starting at 01.25 hrs. **When the rescue operation was reconstructed, the movements of *all* ships could be established except the 'Estonia'.** The 'Estonia' was instead marked with a black dot 1,5 nautical miles south (!) of the correct position of the wreck (?) at 01.40 hrs with a note *'Disappeared from the radar at 01.50 hrs'*, i.e. it seems that the 'Estonia' was not drifting at all between 01.40 and 01.50 hrs. No explanation to this is given in the Final Report (5). Instead the course of the 'Estonia' was plotted in another diagram developed by Michael Huss and Hans Rosengren much later - the falsification figure 13.2 in (5) **1.9**, where the 'Estonia' is drifting with a speed >2 knots at 01.25-01.52 hrs.

THE REAL PLOT EXISTED

The real plot of the course of the 'Estonia' has however existed **Appendix 5**. It was sent from Utö to Helsinki after the accident and the Commission got a copy. Rosengren got a copy from Admiral Heimo Iivonen and showed it to the Master of the 'Silja Europa', Esa Mäkelä, in November 1994. Rosengren then said that the plot was *"incorrect".* Regardless - even an incorrect plot should have been included in the Final report (5) with an explanation why it was incorrect.

A plot of the course of accident actually exists in the SHK Estonia archive - act I4 (Finnish Navy Radar Plot) - recorded by SHK on 2 October 1994. But that plot is only above figure 17.1 from the Final Report (5), which Rosengren (if it is the same plot?) declared *'incorrect'*, which applies to the position of the 'Estonia' 1,5 miles south of the wreck position at 01.40 hrs. The plot act I4 is dated Utö 28 September 1994 and was sent by fax to the SHK on 1 October. The plot is a copy of another fax sent to somebody at 17.40 hrs on 28 September (probably from Utö to the mainland). It could also be a falsification put into the SHK archive later.

But if the position of the 'Estonia' is incorrect - 1,5 miles too far south - what shall you say about the other information on the plot, which is included in figure 17.1 in the Final report? Is it correct? Is e.g. the time 01.40 hrs for the 'Estonia' correct? And is the statement *'Disappeared from the radar 0150 hrs'* correct? That a radar echo disappears 1,5 miles south of an alleged wreck position at 01.50 hrs is no evidence that a ship sank then. But maybe all statements about latitudes were 1,5 miles wrong?

The Master of the 'Mariella' has at questionings in November 1994 stated that the 'Estonia' sank, i.e. disappeared from his radar, at about 01.40 hrs (later changed by the Commission (?) to 01.55 hrs), and this information is used in Part 2 of this book (actually 01.36 hrs as stated by the mate). If the 'Estonia' sank at 01.40 or 01.36 hrs, it is naturally quite impossible that the visor was ripped off at 01.15 hrs and for the 'Estonia' to turn 180 degrees and sink 1 570 meters east of the visor in 21 minutes, **1.9** and **4.3**.

Regardless - act I4 confirms that the Utö radar station plotted the 'Mariella' and the Silja Europa' and other ships already from **00.12** hrs, i.e. 50 minutes *before* the listing occurred at the 'Estonia' at 01.02 hrs as per passenger statements **2.12**! Why Utö radar station on 28 September 1994 only plotted the 'Estonia' as a dot is unclear and should be explained by the person sending the fax/plot at 17.40 hrs on 28 September to the Finnish mainland. If the 'Estonia' made a 180° port turn at 01.16-01.20 hrs, as alleged by the Commission, the Utö radar station should have seen it **1.9**. Actually Utö should have been in a position to have plotted the fantastic movements - drifting - of the 'Estonia' - 1,5 miles east between 01.20-01.48 hrs - if it actually took place. Actually as Utö shore radar plotted the 'Silja Europa' between 00.12-03.00 hrs and the 'Mariella' between 01.18-01.58 hrs every ten minutes, it must also have plotted the 'Estonia' during the same time, say 01.00-01.36 hrs. The 'Estonia' was just behind the 'Silja Europa' and in front of the 'Mariella'.

Anyway - the statement of the Commission on 17 October 1994 that Utö radar station saw the 'Estonia' sinking at 01.48 hrs is not proven.

Point 1.12-6 does not say in what direction the 'Estonia' should have turned. It is not possible that a southwest wind/sea turned the ship to port. And two days later, after having found the visor **1.14**, the Commission told the Swedish daily Dagens Nyheter that

'Nothing in the statements of the crew indicates that the Master managed to turn the ship to return towards Tallinn before she sank'.

One day the 'Estonia' turned after the accident and *after* the visor had been lost, two days later she did not turn at all after the accident and *after* losing the visor, and in the Final report (5) the 'Estonia' turns again *after* the visor fell off and the ramp was pulled fully open. Probably the plot of Utö showed that the 'Estonia' turned (and slowed down?) long before any visor fell off and that was the reason why the plot was censored - or another *incorrect* plot was produced! And the position of the visor was known, or? **4.3**!

FALSE INFORMATION ABOUT EPIRBS

Point 1.12-7. The Commission stated on 17 October that they had *not* found the emergency transmitters, the EPIRBs. According to the Final report (5) chapter 8.11 they had been found already on 2 October at Dirhami on the Estonian north coast. Later the Commission has stated that both EPIRBs were switched off and were never activated. No evidence exists for the statement. However, the EPIRBs would not have been activated until the ship *sank* and the EPIRBs were *released* - and maybe they were in fact released at about 01.35-01.36 hrs and then sent an alarm. **It** was maybe the reason to deny their existence. Because the Commission said that the ship sank 15-20 minutes later.

Point 1.12-8. The Commission (Iivonen) did not dare to inform the public that several ships, e.g. the 'Anette' had heard the 'Mayday' on VHF channel 16 at **01.20** hrs and that these ships did not go to assist the 'Estonia' due to confusion ashore and on other ships - they did not know that the 'Estonia' had sank until the morning, **1.2** and **1.20**. The 'Anette' did not hear any traffic of channel 16 after 01.30 hrs from any ship!

Unfortunately no open discussion about the cause of accident of the Commission was possible in October 1994. The shocked public had no access to correct and necessary information. This was probably part of the disinformation strategy of the Commission.

All information given on 17 October 1994 was pure *disinformation.* Stenström must have known it. When he met the author 31 October 1994 he was too confused to admit it.

'There is no reason for the (Swedish) NMA to particularly comment upon the various dates and positions of the wreck and visor, when they were found, as stated by Björkman. It is a question of no importance for preventive safety at sea work'

Safety at sea director **Johan Franson** to the Ministry of Economics (and Transport), 15 December 2000

1.14 FALSE SEARCH FOR VISOR. REPORT OF FALSE POSITION OF WRECK. EXPLOSIVE DAMAGES FILMED!

After the wreck (but officially not the visor) had been found on 30 September **1.3** and filmed on 1 and 2 October **1.4**, the Finnish coast guard vessel 'Tursas' reportedly searched for the missing *visor*. The Commission thus suggested that the visor had not been found at the wreck - the 'Tursas' had to search for it. The Estonian Foreign office later sent out press release that the search of the *visor* continued.

The 'Tursas' reportedly searched as follows:- Between the 1 and 6 October the 'Tursas' searched an area about one mile south of the *'wreck'* extending two miles east and one mile west, i.e. a three square miles area (south of the 'wreck'). The information must be taken with great reserve - it is not known, if the search was done relative the *false* or the *true* wreck position - or was done at all.

This author believes that the Commission knew already 30 September - 2 October that the visor was at the wreck and that Swedish and Finnish divers were working to remove the visor, so it is interesting to study the *'information'* about the alleged search for the visor and the *'fragments'*.

The *'fragments'* seem to be pure disinformation to reinforce the myth about the lost visor.

'FRAGMENTS' FOUND ON 5 OCTOBER

It was reported that various *'fragments'* were found on 5 October by the 'Tursas', which allegedly proved the port turn of the 'Estonia' 2 500 meters west of the wreck and 1 000 meters west of the visor **1.9** *after* the alleged loss of the visor. However the position of the visor was not officially known on 5 October, so this statement by the Commission in the Final report (5) is an invention. Evidently the 'Tursas' never searched the bottom 1 000 meters west of the visor, later found 1 560 meters west of the wreck, where the turn took place for *'fragments'*. On 8-10 October the search continued, but the 'Tursas' was then in the vicinity of the wreck anchored there at various positions - they filmed objects on the sea floor including the wreck (and the visor!) for the second time with an ROV.

The *'fragments'* were reported in a number of newspapers e.g. the Swedish daily Svenska Dagbladet, SvD.

The SvD on 8 October:

> *"According to a Finnish member of the Commission the 'Tursas' (a Finnish coast guard vessel) found a big object close to the route, which the 'Estonia' used to follow ... Toumo Karppinen: ... it must be in the vicinity of the 'Estonia'.*[42]"

Note the expression *'a big object close to the route which the 'Estonia' used to follow'* - you get the impression that the Commission knew the route on 7 October. What could the big object be?

The SvD on 9 October:

> *"...When searching with echo sounder in the area, objects* (sic) *have been found on the sea floor along the route of the 'Estonia'. According to Olof Forssberg, chairman of the Swedish group of the Commission, it is probably among other objects* (sic) *the visor that has been found. Kari Lehtola: We have found scrap but it is probably from other parts of the ship.* ***These parts tell what course the 'Estonia' maintained.***[43]"

Note the expressions *'among other objects'* and *'along the route of the 'Estonia'* and *'these parts tell what course the 'Estonia' maintained'* - you get the impression that the Commission had access to a plot of the course of the 'Estonia' and/or that several *'objects/parts'* had made a long trace of the 'Estonia' on the bottom. What all these objects/parts consisted of and why they suddenly would have fallen off have never been explained.

Only the visor was later alleged to have fallen off - position of which at that time was unknown. What were the other *'objects/parts'* and had they fallen off before or after the visor fell off, 1 560 meters west of the location, where the wreck had been found? SvD on 10 October:

> *"Kari Lehtola dismisses the opinion of his Swedish colleague Olof Forssberg that the visor has already been found during the search with echo sounder until now; Kari Lehtola: Metal parts* (sic) *have been found but they are not big enough to be the visor."*

Note the expression *'Metal parts have been found'*, - smaller than the visor - but these are not described in the Final Report (5). What were these *metal parts*?

The metal parts are supposed to confirm the course and the port turn 2 400 meters west of the wreck position. What kind of metal parts was it? And how and why had they fallen off? And how, when and where were they found and identified. Swedish news agency TT on 11 October:

> *"Kari Lehtola: No bow visor has been found, but a fairly large **steel** object. Records of the Commission show that the metal part, apart from the scrap, was 5-7 x 10 meters and had the shape which coincided with the visor. Later examination, when the part had been filmed, shows that it is "only a **steel** plate".".*

Note that *'a fairly large steel object'* was found, 5-7 x 10 meters with the shape that coincided with the visor and that it was <u>filmed</u> - probably on 9-10 October! The object is not described in the Final Report.

There is no film/picture available of the steel object and it is not described in any video log! If it were not the visor, it could have been shell plating, which had been ripped off - causing leakage.

In Dagens Nyheter on 11 March 2001 (i.e. six years later) Lehtola informed that the *'**steel** plate'* was a sun roof (awning) of corrugated thin plate (which had been filmed at the sea floor in 1994, even if the 'Estonia' didn't have any 'sun roofs' - of plastic). But why would a sun roof fall off ***before*** the ship allegedly sank? And the scrap? What was the scrap, that was found - and where? We have never been told. In retrospect all talk of *'fragments'*, *'scrap'*, *'steel plates'*, etc. was just disinformation to hide the fact that the visor had already been found and filmed at the wreck. Evidently the Commission could not announce a position of the alleged steel plate - as it had already announced a false wreck position.

AN EXCHANGE OF FAXES

The German group of experts **3.13** found a fax-exchange between the Finnish Board of Accident Investigations (PCIMA) to the Swedish Board of Accident Investigations (SHK) about the above as follows (reported in their final report chapter 24 - you wonder if the 'fax-exchange' is real - or later falsifications) - thus:

Fax sent on 09.10.94 from PCIMA (Finnish Accident Board) to SHK (Swedish Accident Board):

> *»Message: Good morning! Due to bad weather the search for the visor was discontinued during the whole day, but now Nuorteva has further analysed the* (sonar) *pictures* (taken 30 September). *At the location on the sea bottom, where "Estonia" on basis of the object did capsize* (sic - that position - about 2 500 meters west of the wreck - was not known 9 October 1994, only the position where she sank)*, there is a 10 m long and 5-7 m broad object on the bottom. It is probably of metal. The form fits well with the visor. Depth is 70 m, the bottom is hard.*

Karppinen, Aarnio and the ROV I team go onboard of "Tursas" at Nagu at 11.00 (Finnish time) and the work starts at ca. 13.00 hrs. They shall video film at first the "large object". Attached please find a sonar picture including an enlargement of it.«

Note the *'location on the sea bottom where "Estonia" on basis of the object did capsize'* and that this capsize position has never been given (only the sunk position). Why did Lehtola send this strange fax?

The Germans notes (confusingly):

"Again the Finns indicate that the visor is lying next to the vessel and that the 'Estonia', on basis (or because of) the object (the visor), did capsize. The attached sonar picture turned out to be part of a sonar recording with printouts at the right side indicating latitude and longitude and possibly course and speed every 30 seconds commencing at 22.47.01 and ending 22.49.31. The big object is visible on the recording between 24.47.31 and 22.49.01 (sic - for 90 seconds)*. Latitude (y) and longitude (x) are stated by code groups of 6 or 7 digits which were found to be based on the Finnish geodetic system. The Federal Maritime and Hydrographical Agency of Germany were able to decode the groups indicating latitude / longitude although some uncertainty remains, because the quality of the recordings is very poor and one or two digits might be missing. Under consideration of these uncertainties the positions indicated on the sonar recording are approximately 450-500 m to the NW of the actual wreck position. Attempts to get a clear copy of the recordings are in progress."*

However, the Germans could never ascertain the real position of the big object, but there is no doubt that it was in the vicinity of the wreck - maybe exactly at the wreck of which a false position had been announced.

Actually, the *'object'* was supposed to be, where the 'Estonia' capsized - but the 'Estonia' never capsized anywhere - allegedly she only turned 2 400 meters west of the wreck position, slowed down and drifted almost two miles before sinking (but in reality she never drifted very long - a sinking ship is quite heavy and does not move). The *'object'* should of course have been where the visor fell off - but that position 1 560 meter west of the wreck had not been searched on 9 October (and officially the visor was still not found).

THE LARGE OBJECT IS FILMED

The next fax the Germans found was from PCIMA (Finnish Accident Board) to SHK dated 10.10.94 - the large object had been filmed by ROV. The text is very strange - not very scientific:

»Message: Good morning! The large object turned out to be a steel plate. The search for the visor has again been discontinued due to strong wind. Nuorteva is of the opinion that it is not useful to continue the search without having drawn up a probable plan. It does not make sense to drive around at sea into the blue. It takes a few days to make up the plan. This is the reason to consider whether the Swedish vessels should come along. What do you think about it?«

On the 8-9th October the 'Tursas' and Mr. Karppinen had filmed the wreck and the steel plate but no film of this plate exists anywhere. And then Mr. Karppinen returned ashore. The Germans noted:

"Now the probable visor next to the ship is a steel plate of 7 x 10 m, which still has to be adjacent to the wreck. But it is never mentioned again."

Even more surprising is that the *position* of the large object was never mentioned. And - of course - the alleged film of the 'object' does not exist! The above 'fax exchange' found by the Germans in the SHK archive smells disinformation. Do serious accident investigators write such stupid faxes?

VISOR FILMED 9 OCTOBER

Mr Tuomo Karppinen was aboard the 'Tursas' on 9 October, when the 'Estonia' wreck was filmed for the second time. Börje Stenström sent a fax (act I 15) on Monday 10 October to Karppinen, and this fax was recorded in the SHK diary (act I 15) to be about*' filming of **visor** and ramp'.*

However, the fax itself is mostly about *'why the ramp was not tight'*! Why the secretary, Gunnel Göransson, of Stenström/SHK wrote in the diary that the fax was about '***visor** and ramp*' is not clear unless it of course was about filming the visor. There was an *'attached plan'* to the fax - did it show the **visor**?

Börje Stenström wanted in the fax that Karppinen (who Stenström thought was still on the 'Tursas') filmed the wreck with the ROV *'according to the attached plan'.* The attachment of Stenström's fax is available. It is in English (the fax is in Swedish) and it says:

> *"These additional pictures are primarily needed for further investigation of damages to the bow **visor** and ramp and for evaluation of likely sequences of events".*

Stenström clearly talks about pictures to investigate damages to the ***visor***. There are references to an attached sketch in the fax attachment (the attached plan?), where different objects are marked with capital letters, but no bow ***visor*** is shown, only the ramp - the sketch is a copy of figure 8.1 of the Final Report (5) without any damages marked and is further discussed below.

It seems probable that both the ***visor*** and the ramp were indicated on the **original** *'attached plan'* and that Karppinen was told to film the bow of the ship *without* showing the **visor**! The sketch of the bow without the visor has later replaced the '*attached plan*' with the visor.

Karppinen replied in good Swedish the same day - 10 October - per fax (act I 16) - he was still on the 'Tursas', but the filming has already been completed. Karppinen thanks Börje Stenström for the picture (the plan?) of ***'the visor** and the ramp'.*

Then Karppinen writes that they had changed plans and were out at sea already on Sunday (9 October) - they thought they had found the ***visor*** with the sonar.

It was of course easier to search with sonar (echo sounder) from the surface than using a slow ROV down on the bottom at 83 - 64 meters depth, which can only see a few meters.

Therefore Karppinen says in the fax that they could not find the **visor** with the ROV but that they had probably found the *visor* with *sonar* at the wreck, because in the next sentence of the fax Karppinen says that, when they had found the *visor* with the sonar,

> *'we filmed again the **visor** and the ramp with the ROV'.*

There is no doubt that Karppinen on the 'Tursas' filmed the visor, which thus had been found (again?) the 9 October!

Then Karppinen writes in perfect Swedish in the fax -

> *'A summary of our observations is attached*'.

A FALSIFIED ATTACHMENT

The attachment - as found in the archive in December 2000 - is however only a copy of the sketch of Stenström's alleged attachment (to the fax - act I15), which does not show a visor, with various comments in English - it is the damages in figure 8.1 in the Final Report (5). There is no *visor* on the sketch. All of the observations are *repetitions* of observations made on 2 October by the 'Halli' and already reported to the media by the Commission **1.12**. But the big damage opening in the steel structure - probably due to explosives seen in figure 1.14.1 right is not mentioned. It is just above letter A on the starboard side - filmed at 22.45 hrs - in the sketch (act I16) below - figure 1.14.2. The sketch in act I16 is probably a falsification.

Figure 1.14.1 - The damage that the Commission censored

It has apparently replaced the original plan how to film the visor and the bow. There was no reason whatsoever for Karppinen on 10 October to report to Stenström exactly the same damages, which had already been filmed and recorded on 2 October and announced to the media on 4 October.

And it is 100% certain that the Commission filmed the explosive damage opening - it could not have missed it - and immediately decided never to mention it. Later the films were edited to this effect - the sequence with the damage was cut out!

The sketch attached to fax I16 on 10 October 1994 is shown below (fig 1.14.2):

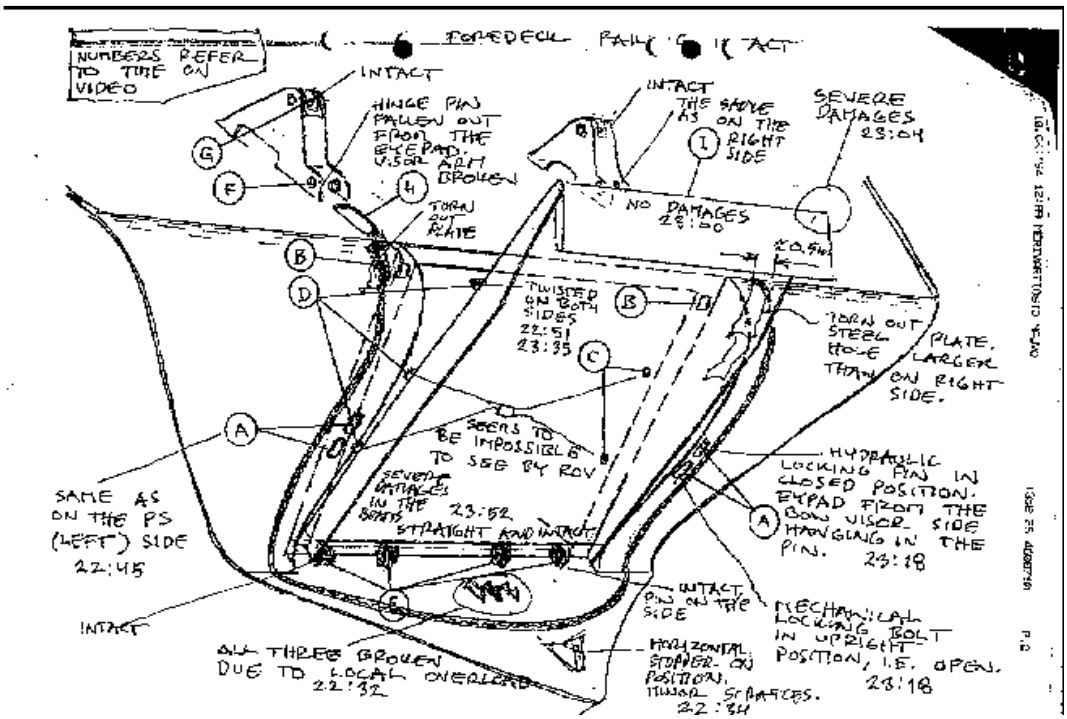

Figure 1.14.2 - Attachment to fax I16

When you study acts I15 and I16 you get the impression that the attachments do not belong together with the faxes!

Note for example on the above *'picture'* of Karppinen what is written about the three lugs of the Atlantic (bottom) lock on the forepeak deck, which had already been filmed on 2 October:

> *'all three broken due to local overload'*

- why repeat this statement one week later? And it is not even true - what you can see on the film is three rusty, broken lugs - probably damaged previously due to a collision sideways. And is the handwriting Karppinen's?

VISOR ARM BROKEN 9 OCTOBER

There is actually one reference to the *visor* on the sketch - it says (item F) that the starboard *'visor arm broken'*. Evidently we cannot see any broken *visor* arm on the sketch, but how and why could Karppinen write on the sketch that the starboard visor arm was broken? The visor was officially not found until nine days later. And the visor arm was not broken - it was the hinge lugs that were broken - bent off!

No damages were recorded to the fore peak deck. According to the Commission the **visor** had hit down several times on the forepeak deck - but it is totally undamaged.

The big hole - figure 1.14.1 - that private divers discovered, measured, recorded and filmed in August 2000 3.10 probably caused by explosives in an attempt to remove the visor under water - is not mentioned at all on the *'picture'* attached to fax I16. It was probably one of the items that should not be filmed!

Furthermore, Karppinen writes in the fax that he will bring with him the video films (made Sunday 9 October), when they - Stenström and Karppinen - meet Monday (Tuesday?) night 11 (sic) October at Nådendal (Nantali).

THE FOUR VIDEO FILMS

There were **four** un-edited video films, which were filed in act B2 94-10-14 at SHK. The SHK diary, written by Ms Gunnel Göransson, says **14 October** that act B2 contains

> *' 4 off video film (ramp, **visor*** (sic) *i.a.) taken 94-10-08--09'*,

i.e. **the films of the *visor* taken 9 and 10 October (by Karppinen on the 'Tursas') were in the Swedish Accident Investigation Board (SHK) archive on 14 October 1994!**

THE VIDEO FILMS OF THE VISOR DISAPPEAR

When Swedish TV4 news reporter Joachim Dyfvermark on 23 February 2000 tried to obtain copies of these **four** video films of the ***visor***, the SHK director general Ann-Louise Eksborg stated in a letter of 1 March 2000 (ref. A 04/99) that act B2 only consisted of **three** (sic) VHS-bands of which two were un-edited recordings and that one film was a *summary*. **The films of the *visor* (and the steel plate?) and the exploded hole/damage had disappeared or been edited**! These were not the only edited video films. The German group of experts have concluded that *all* video films are edited **Appendix 5**.

Stenström got the fax from Karppinen on 10 October. Karppinen and Stenström then inspected the 'Estonia' sister vessel **'Diana II'**, when they were at Nådendal/Nantali on 11 October. But they must also have watched the video films of the visor (act B2).

Stenström and Karppinen knew for sure that *the visor was at the wreck*. Stenström and Karppinen never edited any video films. It is crystal clear that it was Stenström that handed in the four films - unedited - to the SHK when he returned on 12-13 October 1994. One film showed a big 'object' - the visor that became the steel plate. But five years later there were only two films and one summary. Who made the summary? So why and how did the 'object' - the steel plate disappear? And why are all films of the area with the big exploded hole censored?

THE VISOR DISAPPEARS 12 OCTOBER - MINE HUNTING

About the same time, on the 12 October (act I22) the Commission announced *'continued search for the **visor**'.*

The Finns sent a Fax to the Swedes as follows (from the German final report) - fax from PCIMA to SHK dated 12.10.94:

> *»Message: Heimo Iivonen has now investigated the possibilities of continuing the search for the visor. We are ready to commence the search on Monday, 17.10. We will receive assistance from* (Finnish) *Navy forces. Dr. Nuorteva is employed by them. If it suits you, we are requesting that Sweden sends an expert in **mine hunting*** (sic) *by Friday, 14.10. He could come along with the Finnish reconnaissance vessel and simultaneously he could prepare himself for the situation, in case assistance from Swedish vessels should be required. Assistance might become actual at the beginning of week 43, i.e. as from 24.10.94.*
>
> *If our proposal suits you, we kindly ask you to inform us of the name of the expert and contact details.«*

So no search was actually done between 12 and 17 October and it should be clear that the Finns now planned to find the *'visor'* which they had already located two weeks earlier.

The 'Tursas' was in port until 17 October. AND - suddenly on 18 October 1994 (act I 28) the Commission reported that the visor had been found - *'a mile west of the position of wreck'* and filmed! But no latitude/longitude of the visor position was given.

Act I 28 is strange description of the find - the Finnish navy - the 'Tursas' left port on 17 October with *Swedish* navy officers (mine hunting experts?) aboard, anchored somewhere on the18 October - **no position is given** - sent down the ROV and - hast du mir gesehen - there was the visor - which was filmed (again?) *without search with sonar*. Then the 'Tursas' went back to port - what further *'assistance from Swedish vessels'* was required is not clear. No position lat/long could evidently be given - it would prove the official wreck position was false.

The visor was thus officially found on the 18 October 1994 by the Finnish coast guard vessel 'Tursas' about a mile **west** (!) of the wreck (which was reported in Lloyd's List the 20 October 1994), i.e. the Commission said the wreck was located one mile **east** of the visor.

HOW TO REPORT A VISOR POSITION RELATIVE A FALSE WRECK POSITION?

It must be recalled that at this time the false position of the wreck was still valid. This is probably the reason why the real position of the visor was not reported - no latitude/longitude.

It was much later - 9 December 1994 - when the Swedish Navy (sic) reported to the Commission the position of the visor or - actually - the position of a **red** buoy allegedly positioned *above* the visor (which was then already salvaged).

The visor position was about N59°22',97, E21°39',33 ± 100 meters and this is the position of the visor given in the Final Report (5). It was on about 70 meters depth. How (or if) it ended up, there nobody has explained **1.9**. The German group of Expert **3.13** has later suggested (as shown above) that the visor was in fact found at or in the vicinity the wreck itself. It could very well have been that the visor, the '*big object*', the steel plate, was

actually filmed at the wreck - or attached to the wreck - on the 9 October - the damaged visor arm - see above. Why not? The *'big object'* has disappeared from all available video films taken 9-10 October.

It is certain that a **blue** buoy was anchored at the false wreck position, while the **red** buoy was initially anchored at the wreck! The 'Tursas' thus went to the **red** buoy (the wreck) and filmed the visor below the bow of the wreck. The **red** buoy was later moved.

THE **BLUE** AND THE **RED** BUOYS

The below figure 1.14.3 shows a *'sonar picture'* of the wreck and its surroundings reportedly made the summer 1996 by the Swedish NMA or its subcontractors. However - we do not know when the barimetric depth curves were recorded. Something looking like the visor is seen at the bow (Note that south is up on the picture)

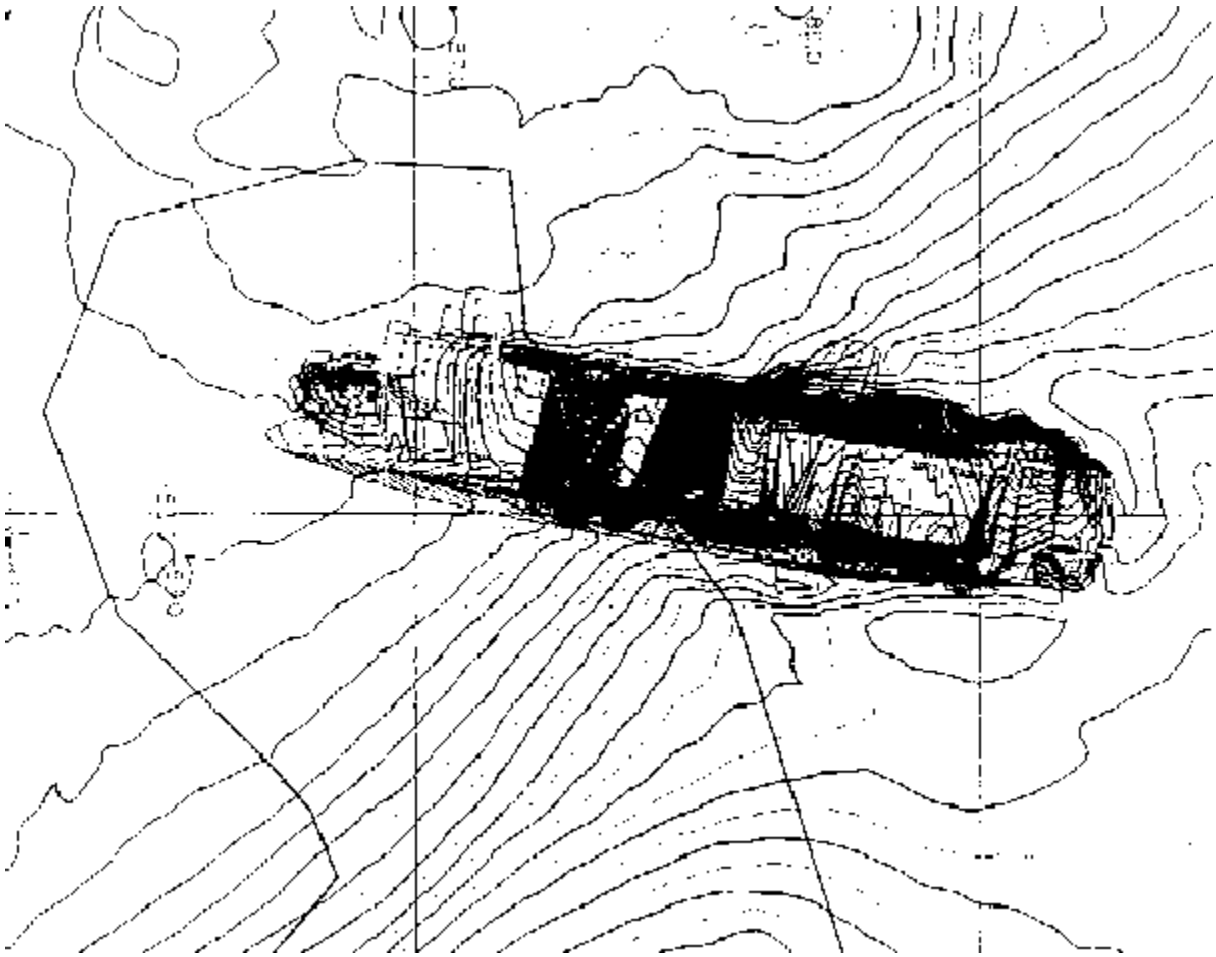

Fig 1.14.3 - A picture of the 'Estonia' on the sea floor - unknown date

To clarify the various alleged - false - positions of wreck and visor as reported by the Commission they are repeated here.

30 September - the Finnish Vessel the 'Suunta' found the wreck and probably the visor of the 'Estonia' at 15.30 hrs GMT on 30 September by help of sonar. Four sonar pictures were taken. A big object - probably the visor - was seen on all four pictures adjacent to the wreck. No position was announced.

2 October - the wreck and the visor, probably hanging on the starboard side, were then filmed for the first time on 2 October by the Finnish vessel 'Halli' with an ROV. The position of the wreck was then reported at N59°23'54.60" (N59°23.9'), E21°42'10.20" (E21°42.2')[41] by Kari Lehtola. **This position was intentionally false**

(the correct position was announced more than 10 weeks later). A **blue** buoy was definitely anchored at that false wreck position because on the 2 December the dive ship 'Semi I' went to the **blue** buoy and tried to dive but found no wreck. It is probable that the real wreck position was marked with a **red** buoy, but it was not at the wreck on 2 December, when the 'Semi I' finally found the wreck.

When the Swedish NMA 941110 requested offers for a dive examination **1.16** they used the false position of the **blue** buoy of the wreck and the dive barge 'Semi 1' went to that location and found no wreck. When the NMA was asked by the Ministry to comment upon the findings in this chapter (of the Swedish version), the NMA replied in letter of 5 December 2000 (reference 0799-0036172):

> *'There is no reason for the (Swedish) NMA to particularly comment upon the various dates and positions of the wreck and visor, when they were found as stated by Björkman. It is a question of no importance for preventive safety at sea work.*
>
> *The NMA would like to remind about what it said in its report December 1994 about the wreck position .... The erroneous position from Finnish authorities, which only meant that the NMA dive examination ... was delayed a few hours should definitely not be noticed in a serious treatment of the Estonia disaster. ".*

The first wreck position of the Finnish authorities were later amended - probably after the Swedish NMA mishap - by the Commission to an *'as found'* position at N59°22'56.13", E21°41'00.98" and it is this position which is given in the Final Report (5). It is probably also correct.

It is *2 112* meters between the two wreck positions - the false position is northeast of the real one. The visor was allegedly about 3 150 meters from the false wreck position and 1 570 meters from the 'as found' wreck position. When Huss **1.9** started his work to reconstruct the accident in November, he was probably not given any positions at all.

8-9 October - the wreck and the visor - now probably on the bottom below the bow - it had been removed by explosives which caused damage to the ship - see figure 1.14.1 - was again filmed on 8-9 October by the Finnish vessel 'Tursas'. The purpose of this filming was to film the parts of the wreck that were previously hidden by the visor on 2 October

Three Finnish ships thus visited the wreck several times at the correct position, but none remarked that the Commission had announced a false wreck position.

THE VISOR FINALLY FOUND 18 OCTOBER

The visor was 'officially' found on 18 October by the 'Tursas', but no position (latitude/longitude) was announced or that the position was marked by a **red** buoy - only the vague *'one mile west of the wreck'*, probably an incorrect invention - the visor must be found somewhere away from the wreck! - that could later never be explained.

The visor was visited several times in November by the Swedish navy ship HMS 'Furusund' and filmed by an ROV to prepare for the salvage of the visor, but no exact position of the visor from that ship's logbook is available. Strangely enough no civilian salvage company was asked to quote for this job, which became a purely *Swedish navy* operation. The HMS 'Furusund' filmed the visor with ROV, so that a hook could be manufactured to lift up the visor. When the hook was ready, the visor was salvaged on 12-19 November 1994 by the Finnish ice breaker/crane ship 'Nordica', which was however under Swedish navy control. The visor was then brought to Hangö, Finland. But the salvage was in principle a 100% Swedish *military* affaire. The author has not been able to locate any log books of the attending ships recording, where they actually were, when they filmed and lifted the visor. Persons, who have seen the logbooks state that it appears that the ships didn't know what position to enter - pencil was used, not ink. At the time of salvage no official position of the visor existed except *'one mile west of the wreck'*, but at that time the false wreck position was still valid.

You would of course expect that the visor position should have been recorded in the log books every time the ships were on top of the visor marked by the **red** buoy.

The Commission - which reported to the media mid-November about the salvage - said that the visor, when still attached to the 'Estonia' *before* the sudden listing - the accident - had been lifted by ten meters waves and then crashed down on the fore peak deck, which had been observed by eye witnesses.[45] The visor was otherwise in perfect condition. The accident was caused by *design fault*. These repetitions of earlier inventions were of course necessary to indoctrinate the public that the visor loss had caused the accident. Note the big indent in the visor in fig. 1.14.4. The Commission suggested it was caused when the visor fell down on the bulbous bow of the 'Estonia'.

Fig 1.14.4 - The 'Estonia' visor after salvage

Paint from the bulbous bow was allegedly found in the indent. However, there is no evidence for that. More probable the indent is due to contact with another object.

No means to protect the visor at Hangö were taken. Nobody was permitted to inspect the visor (except the Germans later). It is very easy to see that the visor never had fallen off the ship as alleged by the Commission. There are no scrape marks below the visor arms or on the starboard lifting hydraulic cylinder, or on various lugs that allegedly cut through steel, etc. On the other hand the original paint remains. Opposite the hole in the superstructure caused by explosives the visor aft plates are buckled forward, which suggests that the visor rested against the superstructure, when the hole was blown open.

VISOR POSITION ANNOUNCED 9 DECEMBER

On 9 December 1994 the Swedish Navy (sic) reported the position of the visor to the Commission or - actually - the position of a **red** buoy allegedly positioned above the visor. The position was about N59°22',97, E21°39',33 ± 100 meters and this is the position of the visor given in the Final Report (5). It (the visor - not the buoy) was on about 70 meters depth. How (or if) it ended up there nobody has explained **1.9**. When the stated position of the buoy was actually recorded is unclear. Who placed a **red** buoy on top of the visor is not known either. Or was the **red** buoy first placed at the real wreck position and later moved to the false visor position?

In 1998 it was decided to move the visor from Hangö to Stockholm.[46]

THE GERMAN EXPERTS ABOUT THE VISOR

In Chapter 24 of the Final report of the German Experts **3.13** which can be read at **http://www.estoniaferrydisater.net** is stated:

> *"In summary it has to be assumed that the Swedes and Finns had found the visor next to the bow of the wreck, possibly the bulbous bow even resting on the visor, already on the 01. or 02.10.94, but decided to keep this secret as well as the actual position of the wreck and to continue the search for the visor. The Estonians were sent to search to the east (where the visor definitely never was) while the Finns with the help of Swedish mine hunting experts and vessels clarified something around the wreck which apparently had to do with Swedish mines. On 18.10.94 the visor was "officially" located and sometime later the "mines" operation was completed, where after*

the recovery of the visor at a position about 2 100 m SSW off the alleged wreck position was carried out from 12th to 19th November 1994. The visor was picked-up and lifted to the surface by the Finnish multi-purpose ice breaker NORDICA assisted by the Swedish mine hunter FURUSUND".

The Germans do not understand that the Swedish "mines" operation was simply to assist the removal the visor from the wreck under water!

A first attempt took probably place 30 September - 1 October using explosives resulting in the visor still hanging on to the starboard side of the wreck, which was filmed on 2 October. The second attempt took place 3-7 October, the visor was pulled off and the starboard hinge arm was broken at the hinge and then the visor fell down to the sea floor below the wreck, where it was filmed on 9-10 October.

The conclusion of this chapter is that the alleged finding of the visor on 18 October 1994 is 100% suspect - *the visor position is not recorded or documented properly or at all!*

Perhaps the Commission - which had met on17 October at Tallinn **1.8** then decided - they were forced to it - to finally *'find'* the visor the next day, in spite of already knowing where it was - at the wreck. If the 'Tursas' actually was out sailing on 17-18 October is not even ascertained - the whole 'fax exchange' quoted by the Germans above seems suspect. The position *'one mile west of the wreck'* was an improvisation - they could not give a position in the area searched 2-10 October - so they put the visor just outside that area.

Stenström thought probably that he could invent a scenario based on the 'Herald of Free Enterprise' accident, which he had probably misunderstood - he thought that the 'Herald of Free Enterprise' survived much longer with water on its car deck in the *superstructure* and didn't capsize after two minutes. But Huss could never make a proper plot of the accident with the false positions of the visor and the wreck - he had to falsify the plot **1.9**.

In these circumstance first the Finnish 'Tursas' and later the Swedish HMS 'Furusund' and the Finnish 'Nordica' (all three ships manned by Swedish navy personnel) could neither record in their logbooks nor tell the media, where the visor was (as it was at the wreck all the time). Finally - on 9 December - the Commission decided to refer to a report from the Swedish navy (coastal artillery), that the visor had been below a **red** buoy, which allegedly was moored 1 570 meters west of the real wreck position.

Does any sensible person believe in the Commission after this? Is the above the result of a professional investigation into a marine accident, where at least 852 persons died?

So the falsification of History by the Commission had to continue.

There is evidently no evidence that the visor was found in the alleged position 1 570 meters west of the wreck. It was simply false information of the Commission to be able to blame the accident on the visor. Because the 'Estonia' had apparently sunk due to severe hull leakage below waterline and this simple fact could not be admitted.

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[41] The Swedish NMA (Franson) reported this position to the Swedish government already on 11 October 1994 - see supplement 502 in (5).

[42] At a safety at sea conference at Glasgow 27 October 1999 **Appendix 1** the author asked Karppinen about the *'fragments'*. Karppinen then showed an overhead picture, where all *'fragments'* (debris on seabed) were located a few hundred meters *west* of the *'as found'* position of the wreck. The 'Estonia' had never passed that location!

[43] How the fragments could show the course of the ship is not explained. Or where the plot of Utö is.

[44] Lehtola had at this time access to films taken on 2 October by the 'Suunta' and on 9 October by the 'Tursus'. These films only show the outside of the wreck, i.e. no dead bodies. In spite of this the films were kept secret for a long time. Later only edited versions have been made available.

[45] **HANGOE, Finland, Nov 21 (AFP)** - A Swedish shipping expert investigating the sinking of the 'Estonia' ferry in September said Monday a design fault had caused the ferry bow visor to be ripped off in a storm. The 'Estonia' was sailing from Tallinn to Stockholm when it went down in a storm with the loss of 912 lives. Börje Stenström, a member of the investigating committee set up to look into the sinking, said the construction of the 'Estonia' was too weak to withstand the force of waves in the Baltic Sea before it went down. However, a Danish maritime expert, Morten Skrydstrup, said it was *"improbable that the force of the waves could have torn the bow visor off the 'Estonia' ferry."* Skrydstrup, a director of shipping consultancy Knud E. Hansen, said he *"could not think of an example of a ship sinking in Nordic waters simply because of bad weather."* Members of the enquiry team from Estonia, Finland and Sweden earlier examined the ferry's outer bow door recovered from the seabed Friday by the Finnish icebreaker Nordika and the Swedish naval vessel Furusund. According to the investigators, the lower part of the bow visor was lifted several times by the force of waves up to ten metres (30 feet) high, as testified by an eyewitness. As a result the upper mountings gave way, Stenström said. ***"There is no evidence that the bow visor was worn out or damaged, the accident was caused by a combination of the weakness in the design of the bow visor, the speed of the 'Estonia' and the strength of the waves in the Baltic,"*** he said. Stenström said he believed that the 'Estonia' tragedy, in which at least 912 drowned during the night of September 27 to 28, "will have a great deal of influence on the construction of ferries and similar ships in the future". **It was out of the question to blame the 'Estonia's captain or the shipping line Estline on the grounds the vessel was going too fast in bad weather, the Swedish expert said.** No guidelines covering the subject exist, he said. In Copenhagen, however, Skrydstrup told the Danish news agency Ritzau: *"Ships are built to deal with the worst storms, and the storm wasn't particularly fierce at the time of the catastrophe." "The bow-visor was either badly maintained or had not been hermetically sealed, otherwise it could not have come off,"* he added. The Danish maritime affairs board added meanwhile that it was *"too early to draw conclusions from the sinking." "These are very complex matters, which have to be established and it wouldn't be right to reach a decision on the real causes of the catastrophe at the moment,"* the board's chief inspector Knud Skaareberg Eriksen, observer in the Commission **1.5,** said.

[46] The visor was moved in November 1999 to Sweden. The owner, Statens Sjöhistoriska Muséum has informed that it is not accessible for the public.

1.15 STABILITY OF THE 'ESTONIA' CALCULATED BUT CENSORED. FORSSBERG MANIPULATES THE INVESTIGATION

On 26 October 1994, when Stenström made his status reports **1.13**, he also sent a fax (11) to Forssberg, where he requested that the stability of the 'Estonia' with water on the car deck in the *superstructure* should be calculated and that the heads of the Estonian and Finnish delegations should be informed. Forssberg *refused* the request according to a note on the fax. The reason was probably the idiotic 'Status Report' attached to the fax. There Stenström stated that he thought that the inflow into the *superstructure* through a *partly open ramp* was 1-2 m^3/second and that it should have taken 500 - 1 000 seconds to fill up the car deck, so that the 'Estonia' *capsized*. It should however be verified, according to Stenström. Stenström did not understand that 500 - 1 000 seconds of water inflow - 8.33-16.66 minutes! - causing slow listing should have been detected by the crew and that the suggestion destroyed the false sequence of events - sudden listing - already announced to the media by Forssberg and others first 4 October and later 17 October.

The fax is also evidence that Stenström was *not* aware of the statements of the survivors of a sudden list - >30 degrees - and then equilibrium at about 15 degrees list. Stenström thus wrote that the list developed during 8.33-16.66 minutes - slowly - exactly as Treu had (been forced to?) stated in his early testimonies to the Commission.

By chance the author met Stenström in London Monday the 31 October 1994 (we were members of an IMO-panel about oil tanker safety) and the author kindly suggested to Stenström to check the stability with water in the superstructure. Stenström went pale and told the author that he *'did not know what was going on'*. But the author knew. The 'Estonia' should have turned turtle in one minute with 1 500-2 000 tons of water on the car deck in the *superstructure*. Later until 1996 Stenström always refused to discuss the stability of the 'Estonia' with the author and, in October 1996, Stenström informed that he never wanted to see the author ever. In February 1997 Stenström died of cancer.

DR. HUSS CALCULATES THE CAPSIZE

In spite of the refusal of Forssberg the Swedish expert Huss (naturally) calculated the stability in a report to the Commission/ SHK (12) dated 950104 **1.9**, where Huss shows that it should have taken **six** minutes to fill up the car deck in the superstructure of the 'Estonia' with 2 100 tons of water, **if the ramp was completely open**!

Then the 'Estonia' should have *capsized* and floated upside down on the undamaged, watertight *hull*.

Forssberg registered both the fax (11) and the report (12) as *confidential* working papers, which were *not* circulated among the other members of the Commission. It seems that Forssberg and his unknown masters planned to write the false investigation report themselves. Neither Huss nor Stenström protested against this strange censorship. The above shows how Forssberg manipulated Stenström and the Commission already latest at the end of October 1994, while Huss was manipulated by Stenström and Forssberg in January 1995. The falsifications of investigation information continued with the dive examination - see next chapter.

SURVIVORS SHOULD NOT BE INTERVIEWED

At about the same time the expert Bengt Schager asked permission from Forssberg to interview a large number of passengers and crew to obtain a clearer picture of the course of events. The request was denied immediately by Olof Forssberg himself without checking with the other members of the Commission, e.g. Lehtola. Bengt Schager was told that he should only study the *protocols* of the questionings by the police and make a summary report. This Schager later made in two reports **2.1**, which were handed in to the Commission at the meetings in January and March 1995. According to these reports the sudden listing had occurred already at 01.02-01.05 hrs and then the 'Estonia' had floated with stability and increasing list - without capsizing - until about 01.30 hrs.

The Commission apparently decided to completely ignore all these new facts, as the heads of the three investigation delegations had already announced that the accident - the listing - occurred at 01.15 hrs. The reports of Schager were also registered as secret working papers in the SHK archive.

Many experts of the Commission were fully aware in November 1994 that the official cause of accident and the alleged course of events were manipulations - directed by Forssberg.

'I think we should do everything in our power to re-float the ferry'

Swedish Prime Minister Carl Bildt, 4 October 1994

'*Dive examinations of the wreck have revealed* (established) *that the inner ramp was locked in the closed position before the accident. After the loss of the visor the ramp has been in a considerably more open position than the present position on the wreck, at least during a part of the development of the accident'*

Commission press release 15 December 1994 (13) - para. 5

'It was reported that observations done during the diving (2-4 December 1994) *had given more information about the course of events, which was reported in a separate report to the meeting. It was particularly reported that the ramp now is considered to have been* ***fully*** *open during a certain period of time. It is confirmed that the ramp locks were in the locked position with a question mark for the port lower lock pin, which was only partly pushed out into its pocket'*

Commission meeting protocol 15 December 1994 (act A81a*)

1.16 A 100% MANIPULATED DIVE SURVEY. MR JOHAN FRANSON. HOLES IN THE HULL PLATE CENSORED

The dive examination of the wreck took place on 2, 3 and 4 December 1994, at the request of the Swedish government. The then legal counsel of the Swedish NMA and the present (since 1995) director of safety at sea, Johan Franson, headed the expedition to establish, if dead bodies and/or the whole wreck could be salvaged. That was the official task.[47] Nothing else should be done - no salvage of parts or luggage - see below - from the wreck was decided by the Swedish government.

Johan Franson is a very interesting person in the investigation of the 'Estonia' accident. **What can the head of the legal department of the Swedish NMA 1994 have to do with all this?** It is easy to explain; if an accident occurs and the NMA can be held liable in any way, the head of the legal department shall be informed. And the Swedish NMA was involved:

It had passed the 'Estonia' at several PSCs at Stockholm 1993-1994 (and previously 1980-1993, when the ship was under Finnish flag),

Its ship inspectors were training the Estonian NMA 1994, particularly about ship safety,

It had checked the 'Estonia' for particular Swedish safety requirements 1993 and approved her for regular trading on Swedish ports (even if the ship had traded on Sweden 1980-1993),

Its inspectors were the last to have been inspecting the 'Estonia' the day before the accident, when they found many defects constituting unseaworthiness, etc.

Never the Swedish NMA had attempted to arrest the 'Estonia' at PSCs in spite of obvious defects - unseaworthiness.

As a result relatives of victims later brought charges against the NMA at a court at Paris, which are still pending (January 2004).

ULF HOBRO

The Estline safety superintendent Ulf Hobro, when the accident took place, was a previous NMA employee. After the accident Mr Hobro returned to the NMA - as the head of the Stockholm office - appointed by **Johan Franson**.

MICHAEL HUSS

The expert, Dr. Michael Huss, of the Commission, who made the falsified plot of the accident based on likewise false inflow and stability reports **1.9**, was made technical director at the NMA at Norrköping in 2001 - appointed by **Johan Franson**. Actually the author applied for the same job end 2000 and was actually interviewed for it (the NMA later refused to pay the expenses) and in a letter dated 9 May 2001 arriving end May he was informed by the NMA that he had not got the job - and in order to appeal this decision, please do it before 8 May (sic) 2001. The author had not seen the official appointment made on a notice board (in the cellars of the NMA building in April 2001?). Your author was negligent.

ÅKE SJÖBLOM

The NMA inspector Åke Sjöblom, who made the last inspection of the 'Estonia' on 27 October 1994 and found many defects **1.33** was appointed head of the Gothenburg office by **Johan Franson**.

The only way to rise in the Swedish NMA administration seems to be to sink a ferry and then lie about it. The remaining collective staff then voluntarily, Swedish style, toes the line and keep the silence.

In spite of the many apparent conflicts of interest the Swedish government 1994 asked the NMA - Franson - to investigate and report about many questions. The government knew that the NMA had made serious errors so it was easy to convince the NMA to play along. Legally Sweden had no obligations; ethically it was best not to salvage the victims, regarding salvage of the wreck it was possible but not to be recommended: to cover the wreck at the bottom of the sea was an excellent idea, *'expert'* Franson advised in 1994. When the government later asked the NMA, if the questions raised in this book should be reviewed, they were of no value for safety at sea according to *'expert'* Franson, etc. The great demagogue Franson today often makes references to others, when he presents his conclusions to the government - the relevant staff is properly trained.

Strangely Franson is not paid his salary by the Swedish NMA - he is paid directly by the government. Thus he has a deputy - Per Nordström whose salary is paid by the NMA. But the official NMA organisation chart is clear - all safety inspectors report to Franson - nobody to Nordström. Only Franson liaises with Nordström. In the early days it was not so easy.

REASON TO DIVE

Regarding the dive examination headed by Franson in December 1994, Franson has in letter of 24 January 1997 to the author explained:[47]

> '*There was **only one reason** for the NMA examination of the 'Estonia' in December 1994, i.e. to get information of importance for an inquiry ordered by the government from the NMA ... When the examination was planned the NMA asked the Commission through the Swedish Accident Investigation Board (SHK) if it too wanted to examine the wreck. As such was the case, the NMA made an agreement with a diving company about **two** investigations. The NMA does not supervise the work of the SHK. The relationship is rather the opposite.*'

In a spontaneous letter of 6 February 1997 Franson added:

> *'The NMA decided to examine the 'Estonia' with divers, as certain information was needed for the NMA work to investigate the consequences of a decision to recover bodies of victims of the 'Estonia'. The Commission 'joined' the dive expedition after its own decision. **Two independent decisions made by two authorities, not the government, were the reason for the diving**.'*

In both letters *'certain information'* and *'information of importance'* were left vague. In reality the following happened:

Johan Franson visited Tallinn on 9 November and met the chairman of the Commission, Andi Meister, probably to inform him about the Swedish government decision to dive on the 'Estonia'.

The Swedish NMA purchasing division (Mr Anders Bjäringe) then sent an inquiry about diving and underwater examination dated 10 November 1994 to eight dive companies. The job consisted of two parts - one with sonar and ROV, one with divers.

The *first* part was only a geological survey around the wreck to make a barymetric chart including the thickness of the mud layer, and to *film* the wreck on the bottom from *outside* by ROV. No search for bodies outside the wreck was required or specified. It was not specified that reference points were going to be fixed on the wreck so that the location of particular areas of the wreck filmed by the ROV could be determined.

The second part was a dive examination of the *inside* of the wreck and the *outside* of the bow/forward area of the superstructure. That job could be extended in scope. All observations should be video filmed. No subcontractors could be used. The contractor could not speak to the media. The offers were expected to be filed before the 21 November 1994.

HULL NOT EXAMINED

It is worth noting that the underwater hull should *not* be *examined i*n detail e.g. for any structural damages, which requires careful marking with reference points, if ports and doors were closed, if sea inlets and valves were in order, etc. Actually - a proper examination of a hull at 80 meters depth in darkness had never been done before or later. The inquiry specification in this respect was very sloppy.

First on 16 November 1994 Franson contacted the Commission (Stenström) per letter/fax and wondered, if it wanted to examine the 'Estonia'. It was at the time of the salvage of the visor by the Swedish navy. Stenström replied by a letter/fax the 20 November (act B27) - the day after the visor had been raised - that the Commission wanted to examine damages to the bulb and on the outside of the ramp.

Stenström suggested:

> *"The locks of the ramp should be carefully examined. A visor deck hinge bolt was going to be recovered. The position of the rudders should be verified. On the bridge the diver should salvage a GPS-computer, verify the engine controls, check the control panel of the watertight doors and collect the log/record of the engine and navigation computer. The securing arrangements of the EPIRBs on the bridge roof were to be checked."*

Stenström did not request any video filming.

It is worth noting that also the Commission was *not* interested to *examine* the underwater hull for possible structural damages, open port holes or pilot doors in the superstructure, the condition of sea inlets, etc. Nor was it interested to examine the fore peak deck against which the visor had allegedly hit several times prior to its loss and on which the ramp had fallen.

The big *'object'* - the steel plate on the bottom - filmed on 9-10 October was not going to be examined, nor any *'fragments'* found previously.

TWO EXAMINATIONS

Two examinations were thus ordered by the NMA from a company - Rockwater A/S - at the end of November 1994 - one for the NMA account (68 hours diving) including filming only about salvage of victims and/or the whole wreck, another for the Commission only about the cause of accident (31 hours diving) without filming. Total cost SEK 7.5 millions. Other companies, e.g. Stolt Comex had offered a much lower price. Why the Swedish NMA chose Rockwater A/S as contractor is not known.

ROCKWATER A/S - WHO WERE THEY?

Rockwater A/S was a wholly owned company of the American Halliburton company - a service company in offshore and oil. Halliburton is one of the largest American companies not accepting trade unions and has not a very good reputation. It is not clear why the Swedish NMA decided to use Halliburton. Its offer was not the cheapest and it had never participated in a casualty investigation. And they could not do the geological survey. It was later allegedly subcontracted to the Dutch Smit Tak company (but Smit Tak never made a geological survey - see below).

AN INCOMPLETE INVESTIGATION ORDERED

The dive examination was not completely specified by the Swedish NMA in order to establish, if the wreck could be raised. The underwater hull was not to be examined fully, the watertight subdivision and watertight doors inside the ship hull were not to be examined at all, the car deck with 1 000 tons of cargo was not going to be inspected, ports and doors in the superstructure and sea inlets in the hull were not to be examined, etc. The qualifications of the divers were never specified nor recorded. Could they actually examine a wreck? It seems that the divers were normal underwater maintenance divers. The psychological aspects were not mentioned - the divers had to count bodies of victims inside the ship, but were they trained for that? And it was not required to make proper logs of all diving and filming activities.

EARLY SWEDISH DIVERS

According to the Swedish daily Expressen (22 August 2000) *five* Swedish divers had also examined the 'Estonia' in 1994 prior to the official dive expedition. **When and why** exactly the Swedish diving(s) took place is not known for certain. One of the divers was Mr Håkan Bergmark, who had observed a big hole in the ship's side, which the Commission has never reported. The Expressen had previously (990418) informed that the divers were supervised by Mr Gustav Hanuliak, who has informed that he had spent more than six weeks at the wreck - during the dives 2-4 December 1994 and later during the summer 1996. Hanuliak has cryptically told the media that he knew exactly what had happened. If Hanuliak also supervised the five Swedish divers earlier is not known and when it should have taken place is unclear. Hanuliak was appointed by Franson. This author believes Mr Håkan Bergmark was part of the Swedish team that dived on the Estonia 30 September - 7 October 1994 and remove the visor under water and tried to open the ramp!

Mr Hanuliak has never commented upon the big hole in the starboard collision bulkhead discovered, filmed and recorded by private divers in August 2000 **3.10**. The official reports of the diving in December 1994 are very poor and it is difficult to know what actually happened.[48]

DIVE EXAMINATION - AT THE WRONG POSITION

The official dive examination thus started on 2 December 1994 with twelve American or British divers in place. There is no report about any Swedish divers. The examination was delayed, as the dive vessel first went to the **blue** buoy of the wrong wreck position **1.14** as ordered by Franson. Franson didn't seem to know the correct wreck position. After a quick search the wreck was located 2 100 meters southwest of the false position. The Rockwater divers then worked non-stop in four teams of three divers using two dive bells. They were connected by cable to the surface for verbal instructions, communications, air supply, etc. and the dive commander could follow on video, what was going on down below, and to give directions. At 21.58 hrs on 4 December the examination was completed - 100 hours of diving had been done.

How the dive boss, Mr. Dave Becket of Rockwater AS, under the control of Johan Franson and/or Gustav Hanuliak could simultaneously and continuously supervise two plus two teams working non-stop about 50 hrs has not been told.

The wreck looked something like the picture right when the divers came down at 60-80 meters depth. All work had to be done in artificial light.

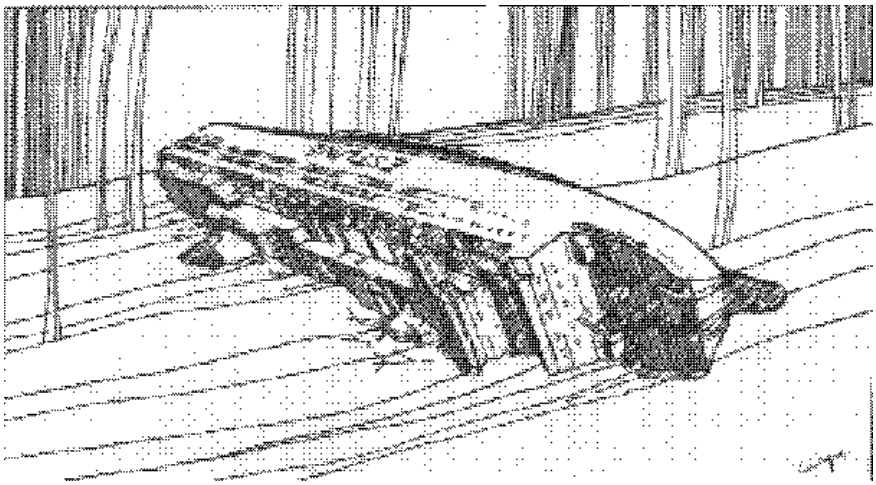

Figure 1.16.1 - the 'Estonia' on the sea floor

WORK DONE FOR THE COMMISSION

For the Commission the following work was done by the divers as per the Final Report (5):- The rudder positions were checked (the rudders were in the full starboard location - 35°), the bulbous bow was inspected, the outside of the ramp was examined - the inside was not accessible, **the locks could not be examined** (sic) **3.10**. One deck hinge bolt was salvaged. The fixtures of the EPIRBs on the monkey bridge were examined. The bridge was examined and some parts salvaged, e.g. the GPS. It is not stated, if the control panel of the watertight doors were examined; there are no records at all in the Final Report about watertight doors. *The engine controls were full astern.* Some extra works were done - the lugs of the visor Atlantic lock on the fore peak deck were cut off - they should have cut out the deck plate instead, because the Germans later alleged that the lugs had been re-positioned and re-welded on the fore peak deck. The Atlantic lock bolt (weight about 30 kilograms) was salvaged and later thrown back into the water without being filmed. The ship's bell was salvaged and brought ashore. That was all! *That these jobs took 31 hours dive time is not recorded anywhere.* (Actually more work was done - see below, but it was not reported).

NO FILMS OR PHOTOS OF DAMAGES TAKEN

No pictures/photos/films were taken of any alleged damages examined - e.g. the ripped open deck 4 forward, the damaged transverse strong frame at fr. 159, the ripped open front bulkhead port and starboard, the fore peak deck, the ramp locks, the watertight door panel, etc. The Final report (5) later only published unclear copies of video pictures of alleged damages taken by an ROV in October 1994. Evidently much better pictures could have been taken by a proper underwater photo camera.

THE ROCKWATER REPORT

The report of Rockwater A/S (supplement no 503 in (5)), which is neither signed nor dated and the author of which is anonymous, says in para 2.8 that the investigation for the Commission by Rockwater should *not* be reported by it. That report is probably falsification. There are no records at all made by members of the Commission, what was actually done and *who* actually directed the divers to do the *'examinations'* for the Commission. The persons who attended on the dive barge for the Commission and maybe directed the examinations of the Commission and reported to the Commission are unknown. Stenström and Karppinen were probably on board and also the head of the Estonian NMA, Arne Valgma. But no written reports about the diving for the Commission's account exist anywhere. Everything seems to have been done orally to simply the falsification of History.

It is of course remarkable that the Commission cannot inform who directed the divers to examine the wreck for its behalf. All allegedly damaged parts down on the wreck associated with the loss of the visor and pulling open the ramp should of course have been closely examined by the divers and filmed but nothing of this sort was done. There is no evidence of any report to the effect that the ramp had been locked before the accident or that the ramp had been pulled fully open and how the ramp could have closed itself later. You could in fact conclude that the divers didn't examine many alleged damaged parts and that the Commission just made up its own stories about damages. The censorship of the big damage hole on starboard side of the ramp is clear evidence in this respect.

A proper dive investigation including filming/photographing should have included the following:

Video log sheets identifying the diver/camera man and with film counter/times and commentary; each sequence of any film should be identified by counter time and be described in the written commentary.

Daily dive report sheets describing personnel and equipment used.

Individual diver's report sheets describing each diver by name or pseudonym, his dive times, activities, findings, observations, etc. and what supervisor was controlling him.

Today no proper and reliable records exist at all of the diving. It is clear evidence that the diving was part of the cover-up.

DESTROYED EVIDENCE

It is not clear what was salvaged and what the Commission threw back into the water. According to the Swedish daily Svenska Dagbladet on 11 March 2001 (i.e. six years later) the dive supervisor Gustav Hanuliak stated that a large number of salvaged objects were thrown back into the water! Another Swedish daily the Dagens Nyheter reported the same day:

> *"The information of Gustav Hanuliak in Sundays Svenska Dagbladet was no news to Lehtola. - "I checked the matter today with my colleague Tuomo Karppinen (technical expert in the Finnish delegation) and he also remembered that objects, classified as unimportant scrap, were thrown away", says Lehtola. Lehtola remembers well that at **the same time also other objects were thrown back into the sea**. - "It was mainly the bolt of the Atlantic lock they talked about at that time. But it had no major importance for the examination, as the bolt was measured and the shape changes were recorded. In addition we had **underwater** pictures of the bolt.*
>
> *- You can say it would have been good if the Atlantic lock bolt had been saved, but as stated it was no big loss. Regarding the other objects, which were thrown back, we have saved the fracture/rupture surface of the other half, the one attached to the visor. We were thus able to analyse the surfaces of the rupture.""*

It is strange that no pictures of the bottom lock bolt (or other salvaged parts) were taken on the barge.

The author thinks that the bolt was rusty and showed signs not to have been used lately - the Atlantic lock was probably damaged before the accident **3.7**. It is also interesting to note that parts attached to the visor - probably the lugs of the side locks, at least the starboard one, were salvaged and then thrown back - reason being that the parts still attached to the visor could explain what happened. The reaction of dive leader Mr Johan Franson was described in DN:

> *"Safety at sea director Johan Fransson, Swedish NMA (Sjöfartsverket) former chief investigator, has not the same recollections as Gustav Hanuliak. Hanuliak acted as dive advisor to Johan Fransson and has in his own words spent more than six weeks at the accident location. - "I have no information that salvaged objects, which might have brought clarification to the cause of accident, should have been thrown back into the sea. This is new information to me, and I should have been informed, if it happened", says Johan Fransson."*

Actually Franson had nothing to do with the examination of the Commission - see below. It was two simultaneous but independent examinations taking place. One official reason (excuse) that parts were thrown into the sea was that there was no space in the helicopter. Nevertheless - many objects were apparently salvaged, e.g. the guardrails on the ramp **3.10** and then thrown back.

In conclusion it is remarkable to note that there exist *no* proper written record of the underwater examination of the 'Estonia' and parts salvaged by the Commission.

WORK DONE FOR THE SWEDISH NMA (FRANSON)

The Swedish NMA (Franson) was only interested if dead bodies and/or the whole wreck could be salvaged and according to contract the divers did the following for the NMA account (supplement no. 503 in (5)) as Franson had to report his findings to the government the following week:

The hull was examined from outside by an ROV *without divers*. A mud line survey was done by ROV. The superstructure was examined by ROV. No damages were recorded except at deck 8 port side aft. Camera time with ROV 4 hours and 48 minutes.

A proper examination of only the *underwater* hull - 150 meters long, 24 meters wide and 6 meters deep - about 5.000 m² - should have taken considerably more time - and divers must be used. The ROV only swept past the hull - without any reference points - from a distance: cracks, leaks and buckles in the hull could *not* be observed this way and their positions could not be decided. To film the port (upper) side *undamaged* superstructure and *deckhouse* for several hours was of little interest. Those who have seen the films, when they became official in 1998, have great difficulties to locate themselves. The films are incomplete and/or edited - extracts of very simple ROV logs do not fit the films, etc. It seems as if the ROV-films of the outside hull have been edited, so that it is impossible to follow the inspection and to determine locations. The mud line survey was not complete - parts of the starboard *superstructure* and hull side were not shown - the forward front and side areas (see below - the starboard pilot door). The forward *starboard* collision bulkhead - with the big hole **3.10** in the superstructure was not filmed - or the film was edited. The above circumstances support the suggestion that there is one or more unreported underwater *hull* damages or open/damaged shell/pilot doors somewhere.

According (28) it was neither Rockwater A/S (Dave Becket) nor Smit Tak who guided the ROV at the above examinations. According Dave Becket it was a Swedish police officer. The author of (28) thinks that the police officer was Mr Bo Wide. He was later during the dive examination ordering divers to examine particular cabins on deck 6 - see below - to locate pieces of baggage.

THE MUD LINE SURVEY

The result of the mud line survey (not the geological survey) is seen below (from a Smit Tak report 8 December 1994).

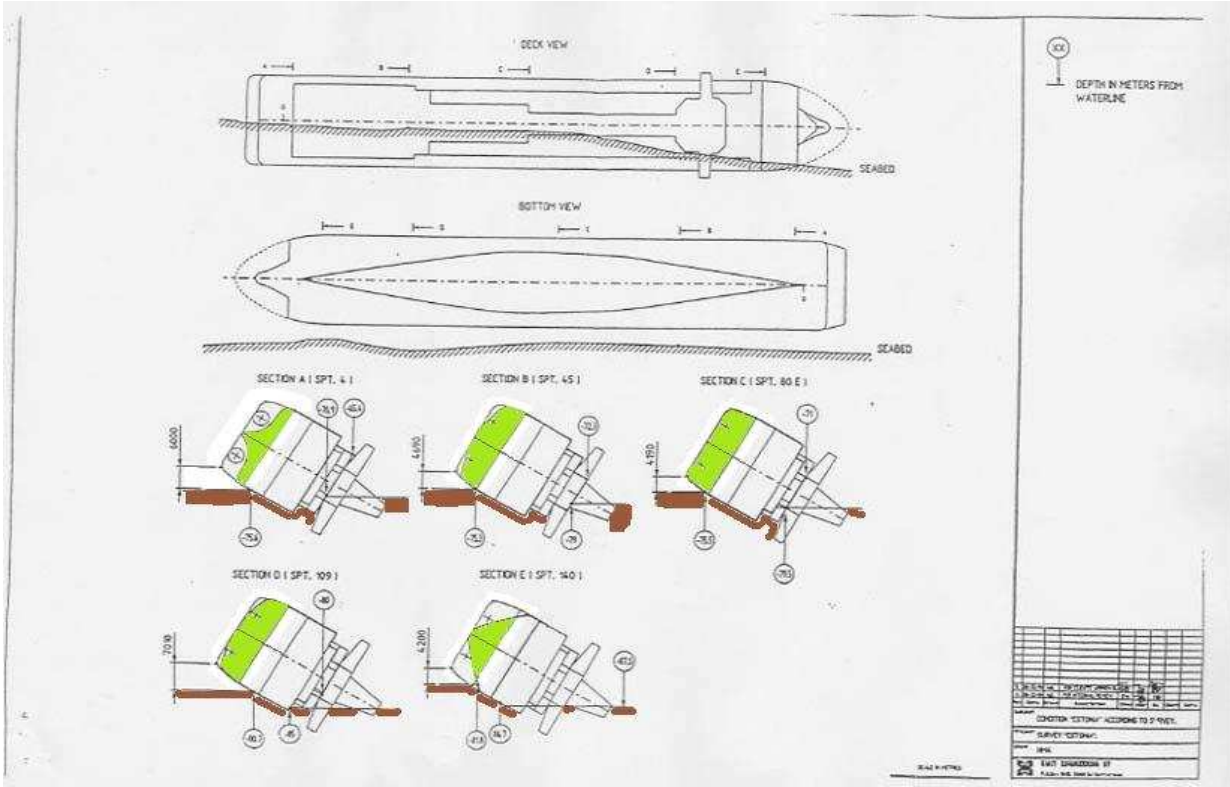

Figure 1.16.2 - the 'Estonia' on the sea floor according to Smit Tak

As can be seen part of the *starboard* superstructure side forward and the **whole starboard underwater hull side below the car deck and the whole flat bottom** are above the **mud line** and could have been examined and filmed. However, all parts of the starboard underwater hull and superstructure *side* are not visible on the films and to see all parts of the flat bottom is impossible. **It seems that the films have been edited!** Another presentation of the forward part of the wreck on the seabed is figure 1.16.3 below (made by Rockwater 1994). We are interested in Section D, i.e. how the starboard side of the hull and the *superstructure* below the bridge rested on the bottom:

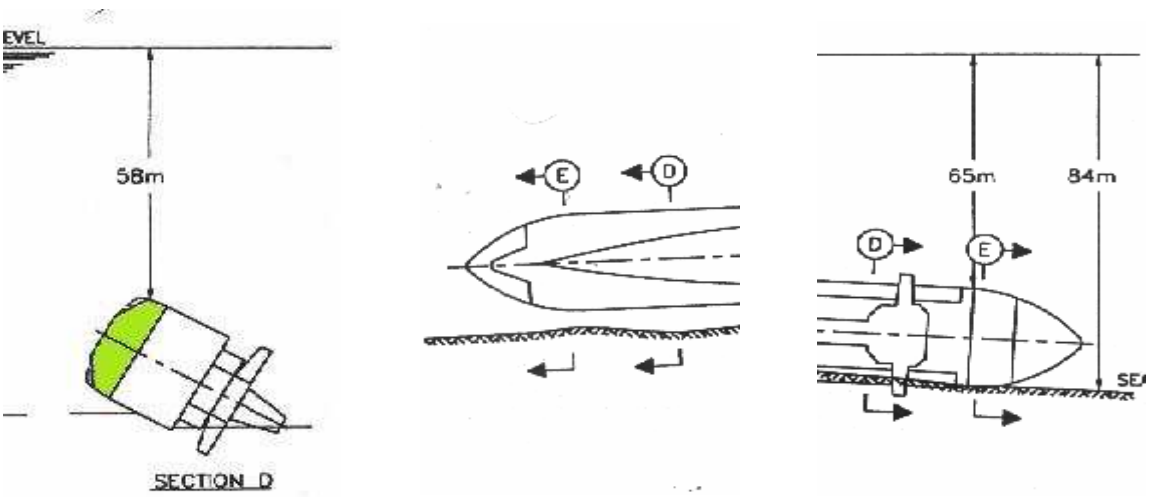

Figure 1.16.3 - the 'Estonia' on the sea floor at Section D according to Rockwater A/S

THE STARBOARD PILOT DOOR

From the above plan, figure 1.16.3, it is clear that also the *superstructure* side at frame 109 or Section D (where it becomes parallel with the centreline - just aft of the bridge) is *above* the mud line. The superstructure starts at the car deck indicated by a line inside the ship.

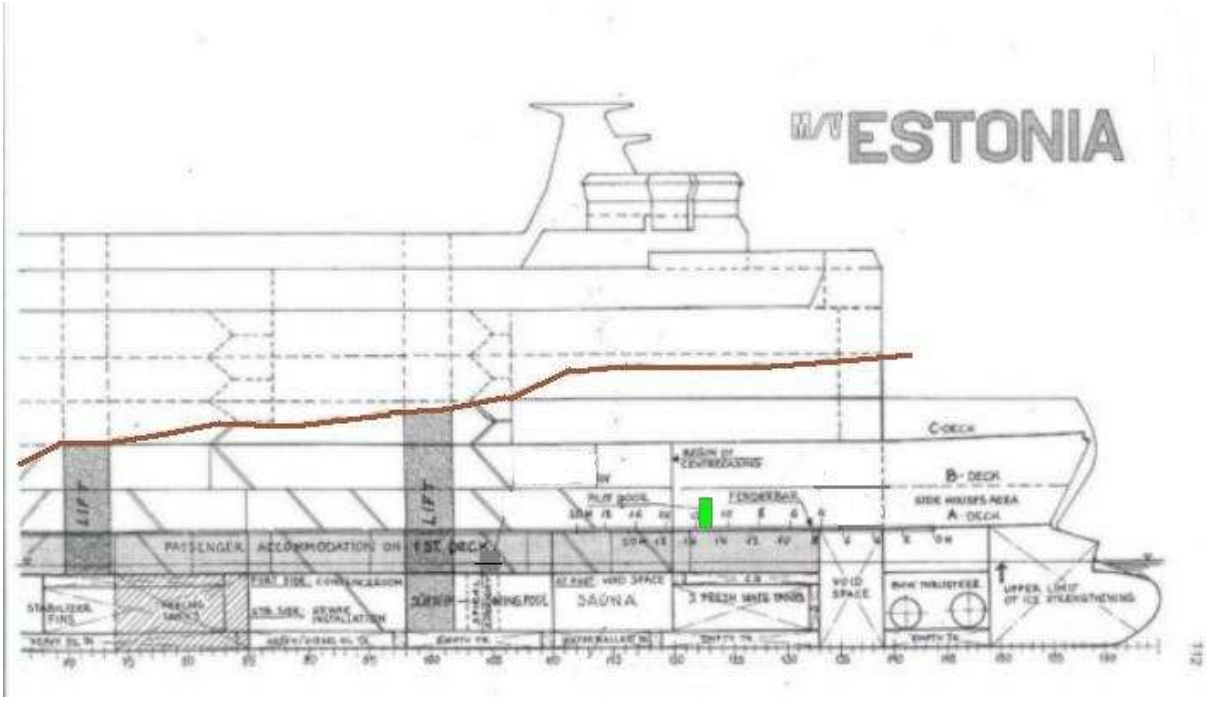

Fig.1.16.4 - Pilot door

The **forward starboard pilot** door is situated in that area (at frame 122) and should thus have been visible on the mud line video. However, the video films of both 1 October (seabed survey) and 2 December (mud line survey) have been edited in just that area, i.e. the films have been cut and the *superstructure* side and the pilot door cannot be seen! This pilot door would provide easy access into the car deck space - if it were open! The German group of experts **3.13** has suggested that this door was opened just before the accident - the listing - and that crew throw suspect cargo overboard carried in two trucks that had been parked just aft of the forward ramp. These trucks had been loaded last at Tallinn. If the starboard forward pilot door were open, when the ship listed due to hull leakage, massive amounts of water would have entered there and collected on deck 2 and assisted the listing.

THE SAND HEAP

The Gregg Bemis dive expedition **2.24** inspected the area (Section D) in 2000 and found that the *superstructure* side was covered by sand (!) up to the level of the fender between hull and superstructure that didn't match the seabed mud, i.e. sand had been deposited against the wreck to change/raise the mud line and to cover the *superstructure* side and the pilot door. The whole area below the wreck - where you could have seen the *superstructure side* in 1994 - was filled with sand in 2000! It can hardly have been swept in by, say currents.

Cargo inside the superstructure may not necessarily block the pilot door opening from inside - the cargo rests on the underside of deck 4 >13 meters above the keel. The pilot door is only 7,6-9,6 meters above the keel.

It is a fascinating hypothesis that the *'big hole'* that Mr Håkan Bergmark noticed in the side, when he dived, was the *open* forward pilot door, and that the Franson divers used the same door to access the car deck 2-4 December 1994! Evidently they could never inform the public that the divers accessed the car deck via an open

door in the superstructure side! The public would of course have asked why a side door was open in the superstructure of the wreck in the first place. The open pilot door was probably seen already on the ROV-video taken on 1 October 1994, which was then edited not to show the opening **1.4**.

It may be added that the *port* pilot door may have been fitted further aft of amidships at frame 79 - it is indicated on the General Arrangement, and that the *starboard* pilot door discussed above was fitted at fr. 122 forward as shown in figure 1.16.4 above - the small rectangle just above the fender.

HOLES IN THE HULL STEEL PLATES

The German Group of experts have carefully studied the Smit Tak mud line video. The Germans suggest (chapter 29.5 in their report) that you can see holes (!) in the hull steel plates in different locations on the film. Figure 1.16.5 right is the shell plate filmed at an unknown location but it seems to be on the starboard side aft - based on the depth 74,2 meters. The triangular shaped 'hole' is difficult to explain. Figure 1.16.6 below is two pictures of the same damage in another location - probably forward of the previous hole based on the depth 76,7-76,0 meters starboard (lower) side; you get the impression that the shell plate has been ripped open and it would have been interesting to see how the damage extends to the left.

Fig.1.16.5 - Hull plate hole - depth 74,2 m

In figure 1.16.7 right are two pictures - not of the same location. Left is in alleged hole taken at 58,9 meters depth (at 13.13 hrs) and right another 'hole' at 71,9 meters depth (at 17.17 hrs). 58,9 meters seem to be the depth to the upper port bilge (see figure 1.16.3 above).

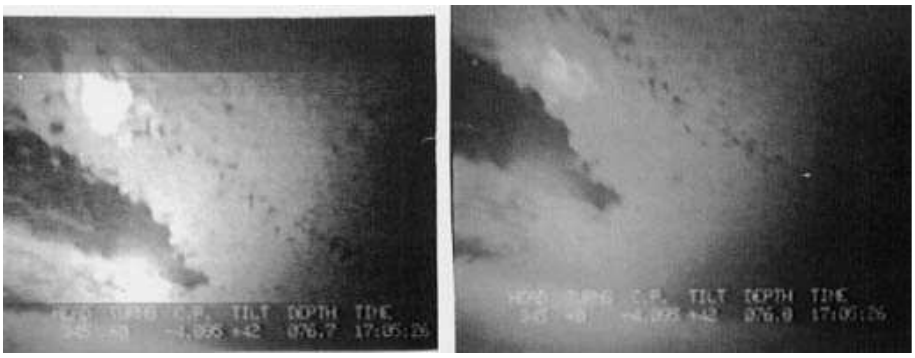

Fig.1.16.6 - Hull plate hole - depth 76,7 and 76,0 m

It can be added that the original film of Smit Tak probably was a colour video but it was treated so the frames became blurry on the publically available copy.

The Germans have later tried to improve the frames and then the result is black/white.

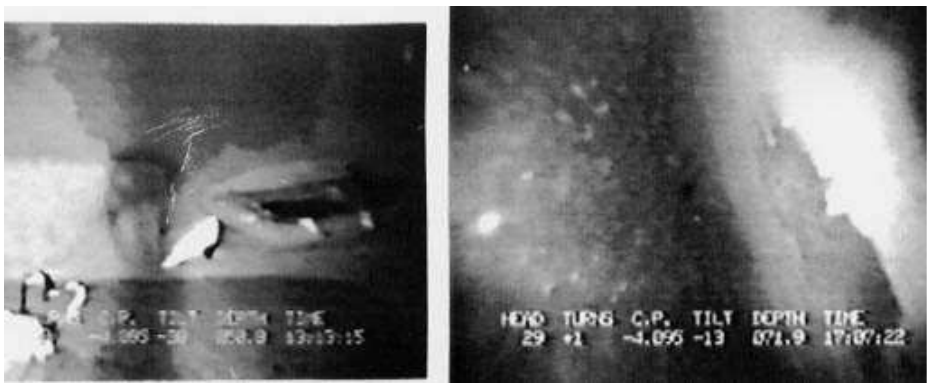

Fig.1.16.7 - Hull plate holes (?) - depth 58,9 and 71,9 m

One German conclusion is that some of the damages must have existed before the accident, i.e. at departure Tallinn. Double bottom ballast tanks should have been communicating with the sea. The author has seen many underwater colour videos of hulls taken at class inspections in lieu of dry-docking. The result is then crystal clear picture sequences in bright colours - often starting and ending at known locations (frame numbers) on the hull so you know where you are. The above pictures are very confusing and the original film should be re-examined.

INSIDE THE WRECK - SEARCH FOR LUGGAGE!

The Rockwater divers inspected the inside of the wreck as follows (access to decks 8-4 of the deck house was easy through existing doors and windows on the port (upper) side) of the deck house - the purpose was only to locate bodies and to study any damage to the accommodation internal structure - wall and ceiling panels: Deck 8 - nine cabins aft were examined from outside and ten meters of corridor from inside - it took 2 hours and 59 minutes. The Master's and Chief Engineer's cabins were not examined. The aft structure was damaged (due to vessel hitting the bottom there).

Deck 7 - eleven cabins were examined from outside and one cabin and the stairwell from inside - it took 1 hour 42 minutes.

Deck 6 - seven cabins forward were examined from inside - this was done as follows (28):

> *directed by a Swedish police officer (Bo Wide) the diver (John) broke into seven cabins in the search for one or more pieces of luggage. It took several hours and had nothing to with the official examination* - (see below) -

four cabins were examined from outside, the stairwells amidships and aft and the casino were inspected from inside - it took totally 8 hours and 2 minutes - most of the time was spent looking for luggage in the seven cabins.

Deck 5 - twenty-two cabins were examined from outside, three cabins, the aft saloon and twenty meters of corridor from inside - it took 7 hours and 10 minutes.

Deck 4 - about 42 cabins were examined from outside (looking through the window), a stairwell and ten meters of corridor from inside - it took 11 hours and 11 minutes.

Deck 1 (inside the hull) - the divers cut two holes in the port (upper) side of the hull - figures 1.16.8 and 1.16.9 - and inspected 16 cabins and 20 meter corridor from inside - it took 11 hours and 14 minutes. JAIC says that the holes were sealed to prevent access after the 1994 dives but this is not true. The pictures right are from 1996, when further unreported inspections took place.

Fig.1.16.8 - Aft hole in shell at deck 1 port side at abt 55 m depth

The Rockwater report (supplement no. 503 of (5)) states clearly that access to deck 0 via the spiral staircase 110 was not possible. The German group of experts have later studied in detail what the diver did on deck 1. The Germans suggest that there is a one hour gap in the dive log, when they suggest that the diver went down to the swimming pool compartment on deck 0 **3.18**. The sewage tank and stabilizer rooms on deck 0 were not inspected.

According to official records it took **42 hours and 28 minutes** to inspect (and film) the inside (about 90% of the time) and outside of the wreck (10% of the time - mostly the deck house port upper side (sic)). Why the outside underwater hull was no examined in detail is not stated. The time to inspect decks 4 and 5 seems to be exaggerated - **18 hours 21 minutes** to look into 60-70 windows from outside and to swim through a stairwell and 30-40 meters of corridor. There are 16 video films of above + one 'mud line' video.

Fig.1.16.9 - Forward hole deck 1 port side

It is clearly stated in the Final report (5) and its supplement no. 503 that the car deck no. 2 was not inspected at all, i.e. the Rockwater divers never entered the superstructure. The Rockwater report does not mention the starboard pilot door.

What were the other **25 hours and 32 minutes** used for? 68 hours dive time was specified and paid for.

A LOT OF DIVE TIME NOT RECORDED

As seen in 3.10 the answer is probably that the divers inspected the no. 2 car deck (the superstructure) and observed that somebody else (the Swedish divers?) had tried to open the ramp from inside earlier under water (October 1994), which for obvious reasons could not be reported in 1994 or in supplement no. 503. You actually have to watch the available (edited) video films yourself to find out, that more than was reported in the Final report (5) was done.

Many areas were *not* inspected by the NMA/Rockwater to verify, if salvage of the wreck was possible:

Deck 0 - totally ten watertight compartments were not visited (even if it is probable that one diver spent about one hour in the pool compartment). The sewage tanks and stabilizers rooms were not inspected.

Deck 1 - four storerooms aft, the engine room and the ECR were not examined.

Decks 2/3 (the garage/car deck) superstructure - stern ramp, the whole car deck, the cargo and the bow ramp were not examined from inside.

None of the 22 watertight doors in 12 watertight bulkheads on decks 0 and 1 were examined. One or two doors on deck 1 were reported to have been seen in the closed position, but there is no evidence. According to the contract the whole inside of the 'Estonia' was going to be examined, but it was not done.

The starboard collision bulkhead at the ramp was not examined - there is a big damage there **3.10**, *which probably is the result of an explosion.* Neither the Finns in October, nor the Swedes (incl. Rockwater) in December 1994 or in the summer 1996 have ever filmed the *starboard* collision bulkhead with the big hole. This is very strange.

THE VIDEO FILMS DISAPPEAR

Even if the Rockwater A/S divers made the video films, they never got access to them. According to (28) they only recorded one original film on the dive barge - no copy was made. When it was completed, it was put in a special box. Only the Swedish members of the Commission had access to this box. When all video films had been made, a helicopter was ordered and transported the films to Sweden (to the NMA or the police is not known). 21 cassettes were recorded. Where the originals are is unknown. Films accessible to the public are edited copies only. The starboard collision bulkhead and many other parts of the outside are not shown. When Rockwater wrote its dive report, it had apparently not access to the films. If a written dive log was kept is not known - only extracts exist of a very rough log without any descriptions of what damages was seen, etc. Rockwater has later stated that they had copies of the un-edited films and that they have been burnt later,

reason being that you could see dead bodies on some films. Why films of the outside wreck, where there were no bodies, have been edited is unclear. Probably to hide damages that were not reported - but who knows?

Various persons have later, when the films became publicly available in 1998, studied these. It is obvious that the films have been edited from the clock/counter shown on the frames. The Swedish Board of Psychological Defence, **SPF**, has at a meeting on 23 August 2000 with the *'Contact Group to follow the future protection of the wreck of the M/S Estonia'*, i.e. six years after the accident, decided to find the answer to the question why certain times on some video films of the wreck are not in chronologic order. The SPF has later informed:

> *"The explanation to the time shifts is so called operative breaks. The filming was not continuous. There were pauses and movements relative to the wreck. During these breaks, when no filming took place, the camera clock continued to run.*
>
> *The time shifts are also due to editing of the material done at the request of the **Swedish Board of Accident investigations**, SHK. Pictures of remains of victims have been taken out, which causes time shifts. In certain cases there are 'reverse' time shifts, i.e. the film continues after a break with an earlier time than at the break. The explanation is that at a first stage some sequences were cut out by mistake and which were later added. At the final check it was concluded that these sequences could contain important information that may simplify for those that should examine the films".*

THE SWEDISH BOARD OF ACCIDENT INVESTIGATIONS REQUESTED EDITING OF THE FILMS

There were 99 hours of diving but only 43 hours of films. One explanation is that the divers were moving around and shut off the camera, another reason is that remains of victims were seen. The inside of the deck house and superstructure was filmed during 32 hours and the inside of deck 1 of the hull 11 hours. None of these films can clarify the cause of the accident. But then there are the films of the outside hull and a short sequence inside the superstructure taken by ROVs with or without divers. On the outside and inside the superstructure there were no victims. The SPF explanations why the ROV films of the outside and inside the superstructure were edited are not convincing.

SALVAGE OF LUGGAGE

First in February 1999 the Swedish daily FinansTidningen (990203) reported that Franson made a third job inside the wreck, which was filmed:

> *Late night 3 December 1994 Franson or the Swedish policeman Bo Wide ordered a diver (John) to go through the window of cabin 6129 on deck 6 and proceed into the corridor. For several hours the diver, following Swedish police instructions (Bo Wide), broke into cabins nos. 6118, 6124, 6130, 6132, 6134 and 6230, which were all thoroughly examined to locate one or more pieces of luggage or suitcases.*

Mr Franson and his boss, the Swedish government, have never officially reported about this job and why it was done. Evidently no video log recording the diver job, the diver's findings and his supervisors exists. The letters of Franson to the author of 24 January and 6 February 1997 above about the diving were thus misleading.

The report in the FinansTidningen was not reprinted in other Swedish dailies, but it is clear that diver John were searching for suitcases for several hours. The Rockwater report - supplement 503 - describes the job as a 'condition survey'.

INSIDE INSPECTION OF THE SWIMMING POOL AREA ON DECK 0

Another diver went probably down into the swimming pool compartment on deck 0 - but no films exist officially. The evidence should be a one hour gap in the dive log, when the diver was supposed to be on deck 1. Actually it has been reported that a film exists, where one diver (the one inspecting deck 1) swims into the swimming pool room area on deck 0 via the spiral staircase from deck 1 and then swims towards the conference room and sewage tank room aft in the centreline of the ship. The deck 0 on top of the double bottom is then a sloping wall on the divers right side - all the lose furniture has fallen down into the starboard bilge 10 meters below the diver. The deck 0 is inclined 120 degrees towards the diver. When the diver arrives to the watertight door leading into the adjacent compartment he stops and remarks that he has found *sand* (!). End of film. How could *sand* be noticed in this location? It is about 14 meters above the sea floor and inside the ship. One possibility is that the sand was inside the double bottom tanks and had collected and got stuck on top of the centreline girder inside the double bottom, when the ship listed 120 degrees. If the inner bottom deck 0 plates were fractured at the centreline, sand could very well flow out there, when disturbed by the diver. The inspection of deck 0 is a mystery and what was found.

The Commission and the Final report (5) state that the deck 0 compartments were not inspected at all, while a film exists of a diver on deck 0. The diver may very well have found internal damages proving the leakage of the inner bottom (and the hull) and the Commission censored the findings.

MOST PARTS OF THE WRECK WERE NOT EXAMINED

The following is a summary - not complete - of items not examined during the divings.[48]

(i) Three bodies on the bridge were not identified.
(ii) The positions of the monitors on the bridge supervising the garage were not observed.
(iii) The chart room behind the bridge was not visited.
(iv) The cabins of the Master, Chief engineer and the Radio officer were not examined - not even via the windows.
(v) The inside of the bow ramp and its hydraulic were not examined. The alleged damaged ramp locks were officially not examined. No parts of the ramp were officially salvaged.
(vi) The car deck and the cargo were not examined. The divers never visited the garage 3.10 and below - Smit Tak ordered a survey of the car deck.
(vii) The control panel of visor and ramp in the garage was not examined.
(viii) A majority of compartments below the car deck and the watertight doors were not examined.
(ix) The whole starboard superstructure (i.e. car deck side) was not examined - part of it was below the mud line but an attempt could have been from inside 2.1. Some survivors thought that part of the side had been ripped open.
(x) An unknown number of objects were salvaged and later disposed of.
(xi) The damages on the focsle deck at the forward ramp and the opening between the virtually closed ramp and its frame are not properly recorded - how could the ramp open, let in water, and then close itself?
(xii) The examination of the underwater hull was incomplete.
(xiii) The watertight door panel on the bridge was not checked in spite of it being a contractual matter.
(xiv) The starboard underwater hull plating i.w.o. the sauna/pool compartment was not recorded from outside.
(xv) The big damage in the starboard collision bulkhead was not recorded anywhere 3.10!
(xvi) The findings of the diver on deck 0 have been censored.
(xvii) The starboard pilot door leading into the superstructure (above the mud line) has not been examined, if, e.g. it were closed.

A SLOPPY EXAMINATION

The author's opinion is that the dive examination was extremely sloppy and unprofessional. The examination was badly planned and specified. It was a waste of taxpayers' money. Neither Franson nor the Commission was interested in a proper examination. The examination was done for show only - and to permit Swedish police to salvage luggage. Therefore the official report of the diving is so bad. Nobody could even make an effort to falsify a professionally looking examination report.

It is quite disappointing that the only result of 99 hours of diving at a cost of SEK 7.5 millions is some films and a badly written report not stating what was done at various locations at various times. It is not possible for an outside observer to get a complete picture what was done - and why - and what the analysis was.

THE SMIT TAK SURVEYORS - INSIDE THE CAR DECK

The Final report (5) does not report the work of salvage company Smit Tak. Rockwater states in its report (see above) that Smit Tak only did the geological survey around the wreck (1 mile radius), but in the Smit Tak report no. 94/060 dated 8 December by Jan ter Haar, Salvage master, it is on the contrary reported that another company - a third party - did that survey. Apart from ter Haar, three other Dutchmen were aboard the dive vessel and carried out underwater inspections of the 'Estonia'; Chris Bos, *diving foreman* (sic), and Henk Hocksma and Eric de Graaf. What were these four men doing? Apparently they examined, if the wreck could be salvaged! How did they do it? Let's quote from their report (no. 94/060 dated 8 December 1994 kindly given to the author):

> *"... a special survey by ROVs is made on request of the salvers' team in order to conclude the possibility of salvage of the vessel 'Estonia'. The survey on the bottom side of the ship and* ***the internal inspection of the car deck*** *(sic) are conducted simultaneously with the internal inspection of the wreck by the Rockwater divers ... During the survey two types of ROVs were used, i.e. one ROV of the type Sprinter from SARB and one ROV of the type UFO from Rockwater. ... The survey of ... the bow ramp and* ***internally inside the car deck*** *was carried out by the Sprinter ROV. ... An* ***ROV survey was conducted in the car deck covering until a distance of 20 meters inside the wreck****. It was observed that cargo had fallen to the lower side ... Silt has been observed in the car deck."*

Smit Tak - salvage master Jan ter Heer - does not inform ***how*** the Sprinter ROV managed to get into the car deck, as the opening at the ramp was too small for entry and there are no other openings - except the starboard forward pilot door! And it is clear that the car deck was visited by the Sprinter ROV, and, as you do not send in an ROV unattended, you can be sure that it was accompanied by divers.

But officially, i.e. according to the Final report (5) the car no. 2 deck and deck 0 were not inspected at all. And how could silt have entered the car deck of the superstructure? The bow ramp was only partly open and well above the bottom **3.10**! Some observers suggest that (i) the ROV (and the divers) entered through an opening in the starboard (lower) superstructure side! And that the silt entered through the same opening. That opening should have been cut in the superstructure under water - in October 1994! - to enable access to the car deck in the attempt to open the ramp from inside! After the dive inspection in December 1994 the opening was closed again and covered by sand and the Commission decided to edit the dive films to hide that the car deck had been filmed. *This author believes access was easier - the divers used the starboard open pilot door at fr. 122!*

ANALYSIS OF CONSEQUENCES - PURE DISINFORMATION

After the sloppy dive examination, the Swedish NMA produced another report - an Analysis of Consequences - on 12 December 1994. It was written by Franson alone - on the dive barge - and was not discussed with anybody.

Franson said that it was possible to salvage the 'Estonia'. There were no technical difficulties, even it a similar operation had never been done before (sic). The cost - SEK 1 500 millions. Where this cost came from is unknown - no offers had been requested. Many salvage companies were ready to raise the wreck immediately,

but none got a chance.[49] In 2001 offers to salvage the two halves of the oil tanker **'Erika'** were announced - cost French Francs 40-50 millions. The 'Erika' was bigger than the 'Estonia' and the two halves are lying at bigger depth - 120 meters - 10 kilometres apart and the offers to raise them were 15-20 times cheaper than the cost announced by Franson to salvage the 'Estonia'.

The difficulties were the psychological and physical risks of the personnel handling the dead bodies (no psychological risks had been reported by the divers that filmed the inside of the wreck and bodies a week earlier), Franson wrote. Suddenly Franson was an expert of psychology. That >10 000 bodies have been recovered after, e.g. earthquakes Franson had never heard of.

FRAGMENTISED BODIES

Also, if the 'Estonia' were going to be salvaged, you had to consider that many bodies inside the wreck were going to be fragmentised - damaged beyond recognition - according to Franson. Why the bodies were going to be 'fragmentised' is not clear. If the wreck was lifted straight up by help of pontoons and a wire cradle under the hull, inside wall and ceiling panels would not be disturbed and the bodies would remain in place - undamaged. **The Smit Tak report, quoted above, states exactly the same** - it was of course very easy to salvage the wreck, move it to a sheltered location with little depth, remove all bodies and later pump the wreck dry and tow it into port, etc. **Smit Tak is one of the most experienced salvage companies in the world.**

But at various presentations to the Swedish government and other agencies laymen Franson stated the opposite and recommended that salvage should **not** be done, and the Swedish government decided just that on 15 December 1994. The Smit Tak staff must have been quite surprised at these developments - on the 8 December 1994 they had stated that it was easy to salvage the ship and the victims, the following week Franson stated exactly the opposite and then came the Swedish government decision to this effect. The Smit Tak staff got the message - and decided to shut up for good.

OFFICIAL SUMMARY

The Commission 1997 in the Final Report (5) chapter 8.4 summarised all above as follows:

> *"The Swedish government ordered a diving survey of the wreck to establish the condition of the interior of the vessel and the feasibility of lifting the entire wreck or recovering individual victims."*

That was all. No mention of any search for luggage, etc. but maybe the Commission did not know that. And

> *"... - for the Commission - a survey of the navigation bridge and the vessel's bow area* (was commissioned) *... The diving survey was supplemented by ROV inspection of certain areas."*

That was all. The Commission did not look for any hull damages that could have caused the sinking. And in spite of surveying the bow area they did not see or report the big hole in the front bulkhead **3.10**. And even if they inspected the inside of the car deck, they stated that they did not do that because they could not get inside - the easiest solution to hide all damages seen on the car deck, probably caused in an earlier attempt to open the ramp from inside. There is no mentioning of any pilot door in the superstructure!

The incomplete dive examination is a good reason to have the investigation re-opened. Until then many private divers will visit the wreck to check for themselves. And by reading this book they now know where to look for the unreported damages![50]

A factual analysis of the Franson expedition is that it was incomplete, sloppy, unprofessional and misleading. All reports of Franson are full of numerous lies. Franson was a few months later appointed director for safety at sea (sic) at the Swedish NMA by the government. Franson evidently had no qualifications for that job - he had never been to sea and knew nothing about safety at sea. Since 1995 Franson has continued to harass real safety at sea experts from his high position - and all his staff at the NMA supports him.

THE CONTINUATION OF THE SAD STORY

In spite of the fact that officially the *inside* of the ramp was never examined, the Commission decided to change a little in its previously announced sequence of events. The Commission had of course then calculated that the 'Estonia' could never have suddenly listed suddenly, unless the ramp had been wide open - and now was the time to announce that - the divers allegedly had noted that the ramp had been locked *before* the accident, that the ramp locks had been ripped open, and - of course - that the ramp had closed itself later to the position as found. There are no written reports by the diving company Halliburton or by Smit Tak or anybody in the SHK archive to this effect - the Commission and Franson just invented all of it in December 1994 - to suit the false cause of events!

All results of the dive expedition were manipulations.

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[47] In order to find out what exactly happened during the dive expedition the author wrote to Johan Franson in January 1997, before the Final Report (5) was published. And Johan Franson replied - the Commission and Sten Anderson had refused to reply with reference to everything being confidential.

[48] The information is collected based on the Final Report (5) and media reports, etc.

[49] **By MATTI HUUHTANEN Associated Press Writer HELSINKI, Finland (AP)** -- Any attempts to re-float the sunken ferry 'Estonia' or retrieve bodies from the disaster site will take place next spring at the earliest, a maritime official said Wednesday (5 October). A week after the tragedy, attention focused on the ship, which sank in a violent storm and killed more than 900 people. Many of the bodies are believed still in the hull. *"A decision on whether to raise the 'Estonia' can be made at the earliest in the spring,"* said Johan Franson, the chief legal officer for Sweden's maritime department. *"The weather isn't right to do any big work at sea at this time of year."* Franson, a top-ranking member of the 'Estonia' probe, will present his findings to the Swedish government next week. Sweden, which had the largest number of victims on board, is taking the lead role in deciding what to do about the sunken ferry. Ships with sonar equipment were continuing the search for the bow door. Investigators say the ferry sank because the bow door was ripped off, letting water in and destabilizing the vessel. The investigators have suggested a cruising speed that was excessive for the weather conditions may have contributed to the stress on the door. Jan-Tore Thörnros, captain of the ferry 'Mariella', said he was moving at 10 to 12 knots in the rough sea when 'Estonia' overtook his ship at an estimated 15 knots, shortly before the disaster. *"We found we could not go faster,"* Thörnros said. Families of the victims are pressuring the governments of Finland, Estonia and Sweden to retrieve the bodies. Until that happens, the families will be left without official word of the fate of their loved ones and in some cases life insurance payments may be delayed. Salvage companies from Scotland, Norway and other countries have swamped investigators with offers to raise the 'Estonia' or retrieve bodies from the hull. Storms and cold winter weather have already hit the Baltic, making any salvage operation extremely difficult. Investigators have said that with the ferry 180 to 280 feet below the surface, any attempt to haul it up or have divers go inside will be difficult, and may cost at least $100 million. The Estonia sank off south-western Finland on Sept. 28, while travelling from the Estonian capital of Tallinn to Stockholm, Sweden. Only 137 people survived, most of them strong young men. "I think we should do everything in our power to refloat the ferry," outgoing Swedish Prime Minister Carl Bildt said Tuesday (4 October) in Stockholm. A Norwegian salvage vessel was in the vicinity of the accident, 70 miles south of Turku, Finnish radio reported.

[50] Areas of interest are: (a) the forecastle deck openings and the deck beam fr. 159 port and starboard. Is the beam actually cut - and how?, (b) the starboard shell plating just above the bilge and the flat bottom i.w.o. the conference and sauna/pool compartments on deck 0 and the heeling tank. Is the plate fractured? (c) all areas in the fore end structure, where the German group of experts suggest you can see damages due to explosive devices, (d) inside of the ramp (it is possible to swim in) - the ramp locks, (e) the area behind the famous 'sand heap' covering the superstructure side, etc.

*'The apparent fact that the ramp had been fully open for some period of time, a**llowing water ingress at a very high rate**, complicates the probable time schedule'*

Commission record of meeting (act A81a*) of 15 December 1994 - paragraph 4

1.17 THE THIRD FALSE CAUSE OF ACCIDENT 15 DECEMBER 1994. RAMP OPEN *DURING* THE ACCIDENT

The Commission only met officially for the third time at Stockholm on 15 December 1994. The Commission then confirmed in paragraph 3 of its Press Release (13) that the **strength of the locking devices,** associated with the *bow visor* in combination with wave loads on the visor during the severe weather and the course of the ship at the time, **is the main cause of the accident.**

Evidently the strength of the locking devices had not been examined and investigated at that time. The alleged cause of the accident was simply an invention of the Commission.

As the public had suspected that the *speed* of the ship had been too high in the severe weather, which should have contributed to the accident and that you also should put blame on the crew, the Commission added the following in paragraph 4 of the Press Release (13)

> *4. The Commission noted that the influence of the speed of the vessel on the loads on the visor is still under investigation. It was noted that studies made by research laboratories (SSPA and VVT) did not show any signs that the movements and accelerations of the ship had exceeded normally expected values at voyages in severe weather.*

No studies by the SSPA and the VVT about ship movements at different speeds in severe weather dated 1994 exist in the Final Report (5) or its Supplements. It was much later that model tests were done **Appendix 2**, where very big impact loads in the vertical/up and longitudinal/aft directions were recorded *every* minute, which should have stopped the ship. There are no particular comments about movements and accelerations in the SSPA report (because they were very severe and you would have expected the ship to slow down).

THE RAMP WAS LOCKED

Paragraph 5 of the Press Release (13) is very interesting

> *5. Dive examinations of the wreck have revealed (established) that the inner ramp was locked in the closed position before the accident. After the loss of the visor the ramp has been in a considerably more open position than the present position on the wreck, at least during a part of the development of the accident.*

It is not clear how the Commission could have concluded the above - locked ramp? The official dive reports in the Supplement to the Final report (5) do not support the allegations - there is no mention of the ramp locks. And how could the divers in December 1994 have established that the ramp had been locked nine weeks earlier? The divers did not officially inspect the bow ramps inner/upper side, where the locks were located 1.16 (v) and (xi), but compare with 3.10 and 4.2.

Note that the Commission already on 17 October had stated that the visor had dislodged the ramp from its locks **1.11**-3 (thus the ramp must have been locked! Why would the divers (sic) confirm this?) and that the Commission already then stated that the ramp had been *locked* beforehand, i.e. the locks (pins and pockets) and hooks should have been damaged/ripped apart. But there is no evidence for that. An intelligent accident investigator would then ask the divers to confirm and document that the locks had been ripped apart. But it was never done.

Today we know that the ramp was probably closed, but not locked (it was secured by ropes at departure), when the divers inspected **3.10** and that the divers tried to open the ramp after having cut some hole somewhere, so that they could get into the car deck. The Germans **3.13** suggest that the ramp could not be locked due to twisting, but that the ramp was secured by a rope fixed to bits on the upper, open deck 4 and around the top of the ramp. In spite of the fact that you can see on the video films that the divers were inside the car deck and also behind the ramp, the Commission officially stated in the Final Report that the divers did not inspect the *inside* of the car deck or the ramp. Thus the confusing statement that dive examination had confirmed a locked ramp.

THE RAMP WAS OPEN

It is also not known how the Commission managed to conclude that

> *'the ramp has been in a considerably more open position than the present position on the wreck, at least during a part of the development of the accident'*.[50]

The statement is very strange. The present position was that the ramp was stuck in its frame as it had been pushed and deformed in the ***aft*** direction at mid-height, so that the top part was bent a little forward, causing a small opening at the top.

According to the Interim Report no. 2 **1.12**-4 in October 1994 we were led to believe that the part open position of the bow ramp only had enabled a little water to enter the car deck, but now it was suggested that the ramp later had been considerably more open than the present position found by the divers, so that 1 000 tons of water came quickly into the car deck (then the ramp must have been fully open!), so that the 'Estonia' heeled 15 degrees during several minutes **2.19**. Later, when the ferry was still floating or had sunk, we do not know what

> *'at least during a part of the development of the accident'*

means, the Commission suggested that the ramp closed itself to a part open/closed position - and less water flowed in. But still the ship sank! Why?

CONSIDERABLE AMOUNTS OF WATER IN THE SUPERSTRUCTURE

In the Press Release (13) paragraph 6 the Commission therefore protected itself with

> *6. The detailed time sequence of the course of events has still not been clarified, but considerable amounts of water flowed into the car deck* (the superstructure) *between 01.15 and 01.30 hrs (Estonian time). The ship sank due to the (crew and passenger) space being filled with water and it disappeared from radar screens at 01.48 hrs. The clock on the radio station on the bridge stopped at 23.35 UTC (01.35 hrs Estonian time).*

Naturally the Commission was forced to state that *'considerable amounts'* of water had flowed into the superstructure and on the car deck between 01.15 - 01.30 hrs **1.9** to cause a sudden listing (they forgot that the ship should have capsized and floated upside down), even if there was no evidence for it, but already when the Press Release was made the Commission had apparent difficulties - agony - to explain the relationship between alleged water on the car deck in the superstructure and the angle of heel -

> *"The detailed time sequence of the course of events (that) has still not been clarified ".*

It has in fact never been clarified! Why? Because the whole idea of a wide open ramp is not true.

The Commission never managed to establish the detailed time sequence of events in spite of Dr. Huss' attempts 1.9 to reconstruct a course of events with a wide open ramp. That the ship would have capsized

immediately with an open bow - as you would have expected - could evidently not be stated. So a false time sequence had to be invented!

Dr. Huss thought that the *'considerable amounts'* of water filling the car deck of the superstructure were total only **1 500 tons** between 01.14 and 01.33 hrs - **during 19 minutes with a wide open ramp** - followed by **capsize**, while the Commission suggested that it was 2 000 tons filling the car deck between 01.14 and 01.24 hrs - during 10 minutes with wide open ramp, another 2.000 tons to 01.27 hrs - during 3 minutes! with wide open ramp - thus total 4 000 tons during 13 minutes - and total 6 000 tons on the car deck at **01.33** hrs - four times more than suggested by Huss - and another 14 000 tons in the deck house (not considered by Huss) also at **01.33** hrs and - *no capsize*!? At this time the Commission suggests that the 'sinking' (sic) begins (and that the ramp closes?) - the watertight underwater hull (!) is suddenly flooded - which does not end until another 15 minutes later (sic) - and during that time the ship moved/drifted about 1 000 meters, while the total weight of the ship increased 2-3 times due to inflow of water. Fantasy - all of it! Because the visor never fell off the ship - it was attached to the ship all the way to the bottom, and must later be blown off using explosives and pulled off to support the false allegations.

HOW DID THE 'ESTONIA' SINK?

Evidently the Commission avoided carefully to explaining how and why the 'Estonia' actually sank - and when the sinking began. How were the 14 watertight hull compartments below the car deck and the superstructure filled with water? That evident question was never answered.

The statement "*The ship sank due to the (crew and passenger) space being filled with water...*" is intentionally misleading, because these hull spaces could not be filled with water, when the superstructure was already full of water causing capsize.

THE RAMP WAS CLOSED

According to the testimony of AB seaman Linde (8) **1.8** to the whole Commission the ramp was closed at 01.30 hrs (sic), when Linde in a raft in the water (together with Kadak and Sillaste!) saw the bow above the water with a closed ramp, when the ship sank stern first. Linde is quite sure - the ramp was closed above water before the ship sank.

How could the ramp move, if it was held in place by two hooks, **four** side locks and two hydraulic cylinders? The reader should know that the ramp was not locked but just pulled in place by ropes.

The Final Report (chapter 8.6.5 in (5)) gives a very short answer. The two upper hooks, pulling the ramp tight, are said to have slipped off their pins, even if no evidence is presented. It is not said that each hook was shaped by a forged steel bar with cross-area 75x25 mm and break load >25 tons ... that could not 'slip' off. All four side locks were reported to have been deformed or ripped apart, but no pictures are shown, as there are no damaged locks to show except one lock that seems to have been damaged earlier! The Commission does not say that each side lock had a break load of >25 tons **3.10**, which could never have been ripped apart by a lose visor hanging on the ramp.

THE RAMP WAS FULLY OPEN

Stenström partly explains the above falsification of History in his (then) confidential status report dated 15 December 1994 (act A81b*), where he states in paragraph 8:

> *"8. ... When the visor fell of the ship* (at 01.15 hrs - sic)*, it had pulled the ramp to a fully open position, which permitted initially large amounts of water to enter the car deck during a short period of time* (sic)*. It might explain the initial quick listing to starboard as observed by survivors. The later development might have been the result of the ship turning away from the waves, which reduced the water inflow* (through the ramp opening, author's note -

compare **1.9**). *The main engines stopped at this time and the ship drifted in the waves, while it filled with water* (sic) *and sank".*

The secret status report of Stenström (act A81b*) was naturally completely wrong apart from just stating that the visor had pulled apart all ramp locks /hooks and pulled the ramp fully open, as a reduced water inflow through the ramp opening should have stopped the listing and the water on the car deck should have flowed out[51], the ship would have up righted and the ship would never have sunk. Had more water flowed in, the 'Estonia' should have turned turtle, capsized and floated upside down on the watertight hull. And not to forget - in October 1994 the crew in the ECR had reported that the ramp was closed two minutes after the sudden listing **1.3**.

However, the Final report (5) announced later a completely different course of events as outlined above - the water inflow was 2 000 tons between 01.14 and 01.24 hrs, i.e. about 200 tons/minute, when the ferry had forward speed into the waves, then another 2,000 tons between 01.24 and 01.27 hrs, i.e. 667 tons/minute - an *increase* of 300%, after the ferry having stopped and turned back towards Tallinn away from the waves 1.9. More water would flow in when the vessel had stopped and when the opening was away from the waves!? Not very logical at all. According to basic principles all water should have flowed out!

In the record of the meeting (act A81a*) the question about the ramp is described as follows:

> *"It was reported* (at the meeting) *that observations done during the diving (2-4 December 1994) had given more information about the course of events, which was reported in a separate report to the meeting* (the dive expedition report? - it does not exist in the archive - author's note). *It was particularly reported that the ramp now is considered to have been **fully** open during a certain period of time. It is confirmed that the ramp locks were in the locked position with a question mark for the port lower lock pin, which was only partly pushed out into its pocket".*

Unfortunately we do not know who reported/considered that the ramp in the superstructure had been **fully** open during a *certain* time, and how and why, and how anybody knew that the ramp had been locked. The reader is again asked to compare with observations in **3.10**. In the Final report (5) there is no evidence anywhere that the ramp had been fully open in spite of statements to this effect.

It was probably the Swedes in the Commission, together with Johan Franson from the Swedish NMA, who by a manipulated and intellectually dishonest dive report, misled the whole Commission to believe that the ramp had been pulled fully open during the accident. Otherwise a lot of water could never suddenly have entered the superstructure, so that the 'Estonia' suddenly listed at 01.15 hrs (or 01.02 hrs). How the ramp then later could close itself was never discussed at the meeting or ever. That the ramp had never been open was out of the question. It was sufficient to announce that the ramp had been fully open, which the Commission accepted. If this obvious manipulation led to the resignation of the Commission chairman Andi Meister later is another question **1.20**.

The suggestions of Stenström in December 1994 were evidently based on no facts at all - everything was invented.

How Stenström then could have stated that the ramp had been in a fully open position and then closed itself between 01.18-01.28 hrs, we may never know.[52] Evidently *all* the proposals of Stenström were intentional disinformation - the 'Estonia' had listed already at 01.02 hrs and then the visor was still in place and this could not be said. To manipulate everything the Commission instead made up the story that the visor had fallen off at 01.15 hrs - and pulled open the ramp fully. But the Commission had then no knowledge about the ramp lock design.

CLEAR BUT CONFUSING DISINFORMATION

The history of the ramp is clear evidence of the disinformation of the Commission. The Commission at first believed that it was sufficient to state (on 4 and 17 October; **1.4** and **1.12**) that the lost *visor* had caused the

sinking and that water had entered into the *superstructure* through a *partly* open ramp according to witnesses **1.3**. The Commission used the word *capsize*, even if it was evident that the ship had not capsized.

During the month of November some members of the Commission detected that the ramp must have been fully open to quickly allow 1 000-2 000 tons of water to heel the ship 20-37 degrees **1.9** and that then the vessel must turn turtle. Therefore they were forced to modify the course of events with the statement that the visor had pulled the ramp fully open, which did not agree with the crew testimonies of September 1994 or what would really have happened, if the ramp was pulled open **1.1** - instant capsize.

And all the video films - both the Finnish from 2 and 9 October and later the Swedish from 2-4 December showed that the ramp was closed, pushed into the frame. Therefore the divers of Franson were told to say (or the statements were just invented) that the ramp locks had been pulled apart and the ramp itself had been pulled open, and so the Commission could announce on 15 December that the ramp had been open a certain (sic) time **3.10**. It did not solve the problem. A fully open ramp should have caused immediate capsize, **1.1** and **Appendix 4**. So an emergency solution was the statement that the ramp had been fully open only during a *certain* time of the accident, and that it later had closed itself, stopping the listing and permitting some hundreds of persons to escape and that it should have taken 30-40 minutes for the ship to sink - how could later never be explained. In such a way the Commission tried to silence the few critics in December 1994, who tried follow the developments.

STABILITY CENSORED

It is interesting to note that no stability calculations were discussed at the third meeting and that the media did not ask any questions, why the stability matter was not mentioned in the press release. How could the Commission confirm a course of events without stability calculations? It could not - so no stability calculations were done at the time. Later completely falsified stability calculations were produced 3.12.

The conclusion of this chapter is that the Commission consciously - intentionally - misled the public in December 1994, when it changed the course of events from a leaking ramp to a fully open ramp of the superstructure. Evidently the falsification of History had started already on 28 September **4.4** and then it was known that the ramp had never been pulled open at all and the sinking was due to severe leakage of the hull. Probably the visor was found at the bow on 30 September **1.14** and removed from the wreck a few days later. Starting from December 1994 *all* information of the Commission was therefore adapted to support the false course of events about water-on-the-car-deck-in-the-superstructure and the falsification of History was organised. The Commission started with the strength of the visor locks.

An accident must have a proximate cause - and the Commission chose the visor locks made 1979 - fifteen years before the accident. To suit this false allegation the Commission also decided that the ramp had been fully open during the accident.

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[50] The record of meeting (act A81a*) of 15 December paragraph 4 says …

"The apparent fact that the ramp had been fully open for some period of time, allowing water ingress at a very high rate, complicates the probable time schedule".

Paragraph 3.3 says …

"An updated time table for sequence of events was presented - in agreement with … Finland(s) … list",

i.e. two months after the accident the Commission started to change the course of events.

[51] You only need 600 tons of water on the car no. 2 deck two meters above waterline to heel the ship 15 degrees **1.9**. But with only 600 tons of water on the car deck, the car deck itself and the water on it were completely *above* the water line **figure 2.16**.1 - and the water should have flowed out by itself, if the ship stopped with the bow turned away from the waves.

[52] The author's opinion about Stenström is that he was a quite knowledgeable engineer 1994 - how he could be manipulated to start telling about a lose visor and a pulled open ramp, which later was closed, is a mystery, the solution of which he brought with him, when he died **1.20** - Forssberg had started the corruption process of Stenström in October 1994 **1.13** in connection with the removal of the visor and the censorship of the stability. Then Stenström probably arranged the Swedish navy salvage of the visor at the wreck to complete the manipulation of the investigation and to solidify the falsification of History. Stenström was a reserve Swedish navy engineering corps commander.

1.18 THE FALSIFIED STRENGTH ANALYSIS OF THE VISOR LOCKS. WATER IN THE ENGINE ROOM CENSORED

It is remarkable that paragraph 3 of the Press release of 15 December 1994 states that **the strength of the locking devices** associated with the *bow visor* in combination with wave loads on the visor during the severe weather and the course of the ship at the time **is the main cause of the accident.**

There was no evidence for this statement on 15 December 1994, particularly in view of the author's present assumption that the visor was still attached to the ship, when it sank, and that it was removed under water.

It was not until 19 December 1994 that the Commission, Stenström, *ordered* from the Royal Institute of Technology, KTH, Stockholm, a very limited strength analysis of the *visor* locks (14). The locks of the ramp were never analysed, as they were inaccessible. The procedure confirms that Stenström and the Commission manipulated the media with a misleading press release in December 1994.

The request of the Commission (Stenström) to the KTH also shows how the dive examination was limited. The Royal Institute was asked only to examine the **visor plates**, to which the lugs of the side locks had been welded. Then they say that *'The lugs remain down on the wreck and cannot be examined further'.* In previous correspondence (15) from the Finnish research laboratory VTT[53] dated 29 November 1994, i.e. four days before the dive examinations, the VTT proposed, and the proposal was underlined and highlighted with bold letters in the letter

> ***"For a complete examination and model tests, the lugs of the side locks and the broken parts of the Atlantic lock must be salvaged from the wreck".***

In spite of this request not being granted, the VTT made several studies 1995-1997 to prove what the Commission had stated already in December 1994. VTT became a co-conspirator of the falsification of history.

The ramp locking devices were never analyzed at all!

To do a proper strength analysis of the visor locks it is necessary to describe the environment where the locks were used and the loads the locks are subject to. The weather was not severe at the accident (wind southwest, force 7 Beaufort, 4,3 meters waves) and the buoyancy loads on the visor was small as the visor was only submerged three, four meters. It seems that initially only a very simple hydrodynamic load estimation was made of the total load on the visor in irregular waves with no regard to the distribution and transmission of the load to the hull via various locks and other contact points and in what order collapse would occur **Part 3**.

In this case the Commission assumed that one external, irregular load in excess of the design load acted on the visor in the aft and upward direction. The Commission never examined the possibility of extra loads due to water inside the visor as suggested by the German group of experts, which could have acted in a forward direction. The Commission did not consider that the visor could have been ripped off by a transient impact force sideways, when the ship (and visor) was heeling, as suggested early by this author, or that an explosion may have occurred between visor and ramp, which was proposed much later **3.18**. There were at least four different possibilities how the visor was lost but only one was analysed. That the visor was subject to fatigue, which might have reduced the strength, was not considered.

When the strength analysis is completed you have to judge the results against the requirements. If the strength does not fulfil the requirements, defects may develop.

There are two types of defects in this case - fractures and damages due to too high tensile forces, e.g. plastic deformation and ruptures.

Fractures may develop due to fatigue or lower excessive loads. Damages (deformations, collapse, buckling and ruptures) may occur, when the load is really excessive. Plastic deformation of lock parts would cause that the

lock didn't fit. In this case the Commission stated that the external load on the visor had been excessive resulting in an excessive load in the various lock parts and the hinges resulting in the parts being torn apart (even if we were not told in what order the various parts had been damaged).

Evidently the weakest part of any lock should have been damaged first, e.g. the visor lug of the bottom lock or the bolt **3.7**. Now the strongest part had been damaged - the three lugs and two bushings welded to the forepeak deck. Why? A reply has never been given.

RESULTS ANNOUNCED BEFORE THE ANALYSIS WAS DONE

Regardless - the strength analysis announced in the Press release of 15 December 1994 had not been carried out because the Commission (Stenström!) stated the result even before the study was ordered from the KTH or the VTT. Later the Commission ordered additional studies and model tests, etc. but it seems it was always a silent agreement that the results must be what the Commission (Stenström) already had concluded in the autumn 1994. As this was not possible, the reports were written in a very artificial and complicated language, so that the Commission could interpret the result any way they liked. Not one writer of any strength report handed in to the Commission is today prepared to explain, what the report actually says! Anyway - most of the strength reports about the visor locks are of little interest, as it was not the visor that caused the alleged inflow of water. The interesting part was of course the ramp and how it would have opened. But it was conveniently forgotten by the Commission (Stenström). Not one strength analysis of the ramp locks and structure was ever done. It was only stated that the ramp had been ripped open. No evidence was ever presented!

You must evidently prove the proximate cause of an accident before you publish it.

FIVE DIFFERENT DESCRIPTIONS OF THE ACCIDENT. WATER IN THE ENGINE ROOM

The Commission thus had great difficulties at the end of 1994 to explain what actually happened to the 'Estonia'. This can be further exemplified by what five different Swedish 'yearbooks' 1994 wrote about the 'Estonia'. The author assumes that the editors contacted various members of the Commission or other 'experts' to get an up-to-date description about the findings. The results are five different descriptions:

(1) Året i Focus 1994 - The Year in Focus 1994, Norstedts Förlag, Stockholm, ISBN 91-1-943462-6

> *"... Soon after midnight a number of sudden impacts are felt on the 'Estonia' ... a seaman is sent down to the car deck to check the lashings of the trailers and the bow ramp, which was also monitored by internal TV ... There was water on the car deck -* ***water that started to penetrate into the engine room aft****. The engine staff reports its observations to the bridge and leaves its work place below the waterline.*
>
> *... It was clear from the beginning that the movable part of the bow, the so called bow visor, had been struck off and caused flooding of the car deck and that therefore the stability of the ferry was totally lost ... In connection with the bow visor being forced out of its foundations and falling down ... the ramp was pulled down to a fully open position."*

Here we note that, apart from water on the car deck in the superstructure, *water started to penetrate into the engine room aft* - and that it was reported by the engine staff 1.48.

In the Final report (5) the engine staff doesn't mention anything about water in the engine room - three engine crewmembers were instead trying to save the ship for at least seven minutes.

(2) Kamera 94 - Camera 94, Bengt Forsberg Förlag, Malmö 1994, ISBN 91-7046-183X

> *"Just before half past twelve (midnight) a crewmember went down to the car deck.»I got the shock of my life" he stated later. "****The water reached to my knees****." ... (the ramp) had been ripped open by the heavy waves. The*

amount of water ... made (the ferry) dangerously instable. Just after half past one the vessel capsized completely and then it took only five minutes before she sank."

Here we can note that a crewmember was standing in water to his knees on the car deck.

The Final report (5) naturally doesn't mention it. Note further that the ship sank at about 01.35 hrs. The Commission later changed the time to after 01.50 hrs.

(3) Årets Största Händelser i Bilder 1994 - The Most important Events in Pictures 1994, Erich Gysling, ISBN 3-906557-04-9

*"During a storm and in heavy seas water started to flow into the bow door and **flowed down to a compartment below the car deck**. The 'Estonia' listed ... within a few minutes the ship sank to the bottom ... about 140 survived.*

An expert commission, which in September 1994 had examined the 'Estonia' in Sweden, had concluded that the bow visor could cause problems, if the ship was experiencing very extreme weather conditions. This was exactly what happened ... on the 28 September. The bow door was ripped away in the storm and water started to flow in."

Here is suggested that the accident scenario was known *before* (sic) the accident took place: an expert commission had studied the 'Estonia' *before* the disaster. It is also suggested that water flowed down below the car deck, which never occurred according to the Commission and its Final report (5). And 140 survived. And the ship sank soon after the listing occurred.

(4) När Var Hur 1995 - When Where How 1995, Forum, ISBN 91-37-10550-7

*"The waves penetrate a leaking door at the bow. **The water is soon knee high on the car deck and flows also down into the engine room**. The 'Estonia' cannot be manoeuvred. The ship ends up with the side against the waves and starts to heel. The 'Estonia' capsizes and sinks. The whole sequence of events takes six minutes from the first Mayday. Survivors stated that the ship turned over and sank in only a few minutes."*

Here we are again told that the water was knee high on the car deck in the superstructure. And then it took only six minutes after the Mayday (sent 01.22-01.30 hrs) when the 'Estonia' turned over and sank at say 01.35 hrs.

It seems to have been written by Dr. Huss **1.9** who then insisted that it took six minutes for the ship to capsize - but not to sink.

(5) Anno 94, Corona AB, ISBN 91-564-1994-5

*"The 'Estonia' starts to heel and sinks in severe weather ... (assisting ships/helicopters) can only save 140 persons ... The cause for the fast accident sequence of events appears to be the bow door of the ship having been ripped off in the severe sea state. When the car deck and **the engine room** fill with water the ship loses its ability to manoeuvre."*

Here is again suggested that the engine room fills with water ... and that 140 persons are rescued.

In four out of five descriptions above of the accident **the engine room** (or a compartment below the car deck) is flooded early. It is also mentioned in **2.23**. This event, indicating leakage of the hull as cause of accident, disappears totally in the Final report (5). The engine room naturally cannot be flooded via the car deck. The engine crew **1.48** states later in (5) that the engine room was dry. The engine staff is evidently lying.

In two descriptions we are told that the water was knee high on the car deck. We now know what would have happened then - immediate capsize and floating upside down. So where was the water knee high? In the engine room? 3/M Treu had announced just that on television on the afternoon of the accident (picture right). He says *'In the engine room there was water to the knees'.*

Figure 1.18.1 - *'In the engine room there was water to the knees'.*

And two yearbooks suggest that 140 survived. The Commission considers it was only 137.

In conclusion, in December 1994 the Commission announced that the (defective) strength of the locks caused the whole accident, while various year books are mostly talking about water in the engine room. How could this misunderstanding have developed? The Swedish government however was satisfied - it believed the Commission and the defective locks. The water in the engine room had to be forgotten.

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[53] VTT is the national Finnish research laboratory.

"... (it) is meaningless to start a discussion about the cause of the sinking of the 'Estonia' before all (sic) *documents are on the table, i.e. when the Final Report of the Commission is made public. I want however to point out that behind the content of the Part report was a united Commission with access to highly qualified experts within your field of expertise"*

Olof Forssberg, 'consultant' at the Swedish Ministry of Transport, to the author 971030

'Reports, or relevant parts of reports, into the circumstances and causes of a marine casualty should be completed as quickly as practicable, and be made available to the public and the shipping industry in order to enhance safety at sea and protection of the marine environment through improved awareness of the factors which combine to cause marine casualties'

IMO res. A.849 (20) 12.3

'Reports should include, wherever possible:
.4 a narrative detailing the circumstances of the casualty;
*.5 analysis and comment which should enable the report to reach logical conclusions, or findings, establishing **all** the factors that contributed to the casualty;'*

IMO res. A.849 (20) 14.6

1.19 A 100% FALSE PART REPORT. FALSIFIED MODEL TESTS TO SUPPORT THE PART REPORT

The Swedish social democratic government (i.a. Prime Minister Ingvar Carlsson and Transport Minister Inez Uusmann) decided on 15 December 1994 that the 'Estonia' should not be salvaged and that no bodies of victims should be recovered.

Thus the same day when the Commission met for only the third time **1.17** and produced a *modified* but fully unproven sequence of events (the ramp was fully open, etc) and long before the Final Report (5) was published December 1997 and all documents were public in March 1998 and long before anybody knew what exactly had happened, the Swedish government decided that salvage would not take place. In retrospect the decision of the government 1994 was a tragedy and a strong support for a *conspiracy*.

It is today clear that *all* essential facts presented by the Commission 28 September - 15 December 1994 to the government, media and public were false due to the secrecy arrangements adopted from the start of the investigation.

The strange visor position - a mile west of the wreck of which a false position had been announced - had only been determined a week earlier (9 December) and had not been explained. But it is a historic fact that the Swedish government brutally interfered in the accident investigation and drastically permitted a change of course of the investigation with fantasy modifications of the sequence of events.

The government decided that the area of the wreck would be regarded as a grave. To secure its peace the wreck should be covered up in concrete or by stones and particular rules established together with Finland and Estonia to legally protect the grave. **It meant that no further examinations of the wreck were possible.** Luckily this decision was never fully implemented and it is today fairly easy to dive and inspect the wreck.

The Swedish NMA (Franson) presented a report on 10 February 1995 how to cover the wreck.

The Swedish government decided on 2 March 1995 that the Swedish NMA should cover up the wreck with concrete or similar and to liaise with the Finnish authorities. That the Swedish NMA had no competence or expertise to cover up a wreck on the bottom of the sea was not considered.

Who has ever heard about a government deciding, before the inquiry into the accident was completed (it took another three years), that a wreck shall be covered up in concrete? Cargo owners, relatives and

survivors were not asked about their property being salvaged. And interested parties were not asked if more evidence needed to be collected from the wreck. And the official dive investigation of the wreck 2-4 December 1994 later turned out to be totally manipulated. All films of the diving were edited not to show anything of interest.

Due to the Swedish decision 15 December 1994 the Swedish Foreign Office contacted their Finnish and Estonian counterparts how to legally *'protect'* the wreck and the dead bodies. Both governments were willing to cooperate. At a meeting at Stockholm on 16 January 1995 all three governments agreed to introduce national laws to prosecute anyone disturbing the peace at the wreck and that an international agreement would be adopted to the same effect. The relatives of the 'dead bodies' were not consulted.

At a follow-up meeting on 7 February 1995 at Tallinn the international agreement was agreed - it was then signed on 23 February 1995. They also discussed common principals to apply national law. To disturb the peace at the wreck should be regarded a criminal act. ARTICLE 4.1 of the agreement stated:

> *1. The Contracting Parties undertake to institute legislation, in accordance with their national procedures, aiming at the criminalization of any activities disturbing the peace of the final place of rest, in particular any diving or other activities with the purpose of recovering victims or property from the wreck or the sea-bed.*

You get the impression that any diving with the purpose of only securing technical evidence establishing the real cause of accident would still be possible. But it was a false impression - no diving of any kind to secure evidence was to be permitted.

THE SWEDISH LAW OF GRAVEYARD PEACE

The Swedish law of graveyard peace is described in proposition1994/95:190 to the Parliament. It was adopted on 30 March 1995 and signed by Prime Minister Ingvar Carlsson and justice minister Laila Freivalds. Thus a few days before the Commission was going to present its **'part' report** (**which later turned out to be 100% false**) - see below - the wreck was off limits for anyone interested in the accident. It must be recalled that at this time all relevant evidence was confidential and that the public had no access to the meetings of the Commission. Individual members of the Commission had said nothing. The public only knew what the Commission had stated in various press releases. **All essential information of the Commission at this time has later been proven false.**

The law itself entered into force 1 July 1995.

The law (in the Swedish language) is below. It is similar but not identical to the UK law adopted four years later (right below):

Lag om gravfrid i och vid Estonia 1 § I denna lag finns bestämmelser till skydd för gravfriden i vraket efter passagerarfartyget 'Estonia' och i ett anslutande område i Östersjön. Det skyddade området är rektangulärt och har, enligt det geodetiska referenssystemet World Geodetic System 1984 (WGS 84), följande positioner som hörn.	**The United Kingdom 1999 No. 856 MERCHANT SHIPPING The Protection of Wrecks (M/S Estonia) Order 1999** Made 17th March 1999 -Laid before Parliament 26th March 1999 - Coming into force 12th May 1999. The Secretary of State for the Environment, Transport and the Regions, in exercise of the powers conferred by section 24(1) and (2) of the Merchant Shipping and Maritime Security Act 1997[1], and of all other powers enabling him in that behalf, hereby makes the following Order: 1. - (1) This Order may be cited as the Protection of Wrecks (M/S Estonia) Order 1999. (2) This Order shall come into force on 12th May 1999.
1. 59 grader 23,500 minuter nordlig bredd, 21 grader 40,000 minuter östlig längd 2. 59 grader 23,500 minuter nordlig bredd, 21 grader 42,000 minuter östlig längd 3. 59 grader 22,500 minuter nordlig bredd, 21 grader 42,000 minuter östlig längd 4. 59 grader 22,500 minuter nordlig bredd,	2. For the purposes of this Order "the protected area" means the area delineated by geodesics joining in sequence the following points - 59° 23.500'N, 21° 40.000'E; 59° 23.500'N, 21° 42.000'E; 59° 22.500'N, 21° 42.000'E; 59° 22.500'N, 21° 40.000'E[2].

21 grader 40,000 minuter östlig längd	
2 § Dykning och annan undervattensverksamhet får inte bedrivas i vraket efter passagerarfartyget 'Estonia' eller inom det område som anges i 1 § andra stycket. Förbudet gäller dock inte verksamhet som avser att täcka över eller skydda vraket eller att förhindra förorening av den marina miljön från vraket, om verksamheten bedrivs av en myndighet i Estland, Finland eller Sverige eller på uppdrag av en sådan myndighet. 3 § Den som uppsåtligen bryter mot 2 § döms till böter eller fängelse i högst två år. För försök döms till ansvar enligt 23 kap. brottsbalken. 4 § Föremål som någon har kommit över vid brott mot denna lag eller föremålets värde skall förklaras förverkat, om det inte är uppenbart oskäligt. Detsamma gäller ersättning som har lämnats till den som har begått ett sådant brott. Egendom som har använts som hjälpmedel vid brott mot denna lag får förklaras förverkad, om det behövs för att förebygga brott eller om det annars finns särskilda skäl. I stället för egendomen kan dess värde förklaras förverkat. 5 § För brott mot denna lag döms vid svensk domstol, även om 2 kap. 2 eller 3 § brottsbalken inte är tillämplig.	3. - (1) A person shall not do any of the following, or cause or permit any other person to do any of the following, in the protected area: (a) tamper with, damage or remove any part of a vessel lying wrecked on or in the sea bed, or any object or body in or formerly contained in such vessel; (b) carry out diving or salvage operations directed to the exploration of any wreck or to removing any object or body from it or from the sea bed; or (c) use equipment constructed or adapted for any purpose of diving or salvage operations. (2) Any contravention of paragraph (1) above shall be an offence punishable on summary conviction by a fine not exceeding the statutory maximum or on conviction on indictment by a fine. Signed by authority of the Secretary of State for the Environment, Transport and the Regions. Glenda Jackson Parliamentary Under-Secretary of State Department of the Environment, Transport and the Regions 17th March 1999 ---------- EXPLANATORY NOTE - (This note is not part of the Order) This Order makes provision for the purpose of giving effect to the Agreement between the Republic of Estonia, the Republic of Finland and the Kingdom of Sweden regarding the M/S Estonia (Cm 4252). The date of the United Kingdom's accession to the Agreement will be published in the London, Edinburgh and Belfast Gazettes. The Agreement designates the wreck of the M/S Estonia and surrounding area as the final place of rest for the victims of the disaster. United Kingdom accession to the Agreement is subject to a reservation to article 4(2) which requires that disturbance of the final place of rest be punishable by imprisonment under national law. Accordingly the offences created by this Order (which are subject to section 24(3) of the Merchant Shipping and Maritime Security Act 1997) are punishable by fine.

With this law the Swedish (and other) government(s) may have succeeded to prevent all further Swedish (and others) work to examine the wreck to clarify the accident. You can end up in prison in Sweden two years breaking the law (in the UK you are only fined)! Any objects recovered from the wreck will be confiscated. The Swedish government can however, in order to do work to protect (read cover up with concrete) the wreck itself, allow diving. The UK law is much milder - only diving is forbidden and you are only fined, if you break the law. The British will not confiscate any objects recovered. But the British law is still a mystery - there are 1 000's of wrecks around Britain and no law to preventing to dive on them and film and to have a look. Why is the United Kingdom prepared to prevent its citizens to dive on the 'Estonia' in the Baltic? Isn't the United Kingdom interested in safety at sea? United Kingdom was interested in why 44 British subjects had died on the 'Derbyshire' 1980 and reopened the investigation 1998 **Foreword**. Why is it of no interest to know why >850 persons on the 'Estonia' died? The British law is badly written - it prevents diving made by, e.g. a Swedish contractor to protect the environment!

It is in this light that the Part Report (16) must be seen. The Commission could now say and manipulate evidence any way it liked - nobody could disagree, as the wreck was off limits and all evidence confidential.

However it should be possible to dive - it seems that only the diver himself may be prosecuted. Persons directing the diving - even if they are aboard the dive vessel - may escape prosecution according to the Swedish law. The English law may prosecute a person that may cause or permit a diver to dive, whatever that means. However, if the purpose of the diving is not to explore the wreck from inside but only to have a look from outside, you may escape prosecution in the UK. You will only be prosecuted for using dive equipment. Strange laws to ensure graveyard peace. However, diving is not required to re-open the 'Estonia' investigation. Just review the official 'allegations' against the later facts.

A CORRECT ANALYSIS

Once all facts are collected, they need to be analyzed to help establish the sequence of events of the accident, and to draw conclusions about safety deficiencies uncovered by the investigation.

***Analysis* is a disciplined activity that employs logic and reasoning to build a bridge between the factual information and the conclusions.**

The first step in analysis is to review the factual information to clarify what is relevant, and what is not, and to ensure the information is complete. Thus, this process can give guidance to the investigator as to what additional investigation needs to be carried out.

In normal investigation practice, gaps in information that cannot be resolved are usually filled in by logical extrapolation and reasonable assumptions. Such extrapolation and assumptions should be identified and a statement of the measure of certainty provided.

Despite best efforts, analysis may not lead to firm conclusions. In these cases, the more likely hypotheses should be presented.

After fact finding and analysis it should be possible to give a description of the occurrence, its background, tuning, and the events leading to it in, e.g. a Part report.

The Part report should include such factual items as:

- the weather conditions;
- the operation(s) involved;
- the equipment in use, its capabilities, performance and any failures;
- the location of key personnel and their actions immediately before the accident;
- the pertinent regulations and instructions;
- uncontrolled hazards;
- changes of staff, procedures, equipment or processes that could have contributed to the accident;
- what safeguards were or were not in place to prevent the accident;
- response to the accident (first-aid, evacuation, search and rescue);
- medical treatment actions taken to mitigate the effects of the accident and the condition of injured parties, particularly if disabling injuries or death ensured;

- damage control including salvage;

- inventory of all consequences of the accident (injury, loss, damage or environmental damage); and general ship's condition.

It should also be possible to identify active and underlying factors such as:

- operational deviations;

- design aspects of hull structural failure;

- defects in resources and equipment;

- inappropriate use of resources and equipment;

- relevant personnel skill levels and their application;

- physiological factors (eg. fatigue, stress alcohol, illegal drugs, prescription medicine);

- why safeguards in place were inadequate or failed;

- role of safety programs;

- problems relating to the effectiveness of regulations and instructions;

- management issues; and

- communication issues.

In the 'Estonia' investigation the Commission avoided carefully during the first six months to present any facts and analysis of above self-evident type but was of course forced to present some information. The result was the Part report. It was a necessary part of the cover-up.

THE PART REPORT - A FIRST TEST TO MISINFORM THE PUBLIC

The Part report (16) is only 32 pages and was issued on 3 April 1995. It is a purely technical report only about one thing - the defective visor and how it supposedly fell off.

The Part report does not explain that the 'Estonia' was initially floating on its watertight, subdivided *hull* with a good freeboard and with a *superstructure* above the hull and bulkhead deck with a *deck house* on top. But it clearly states (on page 31) that the vessel ***capsized*** (sic) due to water in the *superstructure* and because the *deck house* was flooded. **But the ship never capsized - it sank slowly.** How the *hull* was flooded has never been explained.

The Part report does not include anything about hull leakage, bilge pumps, watertight doors, life saving equipment, safety systems, maintenance, crew competence, etc. or about stability with water on the car deck in the *superstructure* and how to abandon ship.

The alleged sequence of events **1.9** was not described and no reports of survivors testimonies were included **2.1** - the Commission evidently had no idea how to present these things - they totally contradicted everything in the Part report - so they could not get published - they were in fact censored.

The Commission instead stated in the completely misleading Part report that

> *"The Final Report, that will be issued later, will include all other factors and circumstances, which have contributed to the accident".*

Of course that was not the case, when the Final report was issued on 3 December 1997.

Then only *further* falsified factors and circumstances were presented, as will be described later. The Part report only repeated exactly the cause of accident from 17 October (the second meeting) as modified 15 December 1994 (the third meeting of the Commission 1.12) and it was not much to report in the media.

In retrospect year 2001 it is easy to conclude that the Part report was an intentional attempt 1994 to cover up the real cause of the accident. All essential facts in the Part report are false, falsified or not proven.

As it was common knowledge before the publication of Part report that it declared the shipyard of the 'Estonia' responsible for the alleged defective design and manufacture of the alleged defective visor locks 1.22 - a design fault, the yard had previously informally proposed another cause - defective maintenance during 14 years of service (particularly the last 18 months) and associated reduced strength of the visor locks. The yard added that lack of maintenance also had resulted in a leaking visor, water inside the visor, added weight, increased loads on the locks and that it was this weight and load that made the visor hinges break and the visor to tip forward and to break the locks. If that had actually caused the ship to sink, the Germans never admitted. The Commission reputed the informal German proposal without any comments neither in the Part (16) or the Final (5) reports.

ALL FACTS AND CONCLUSIONS WILL REMAIN UNCHANGED

Instead the Commission wrote in the preamble of the Part report:-

> *'The Commission has earlier concluded*[54] *that the accident was initiated by the locks of the bow visor, which could not resist the resulting loads under actual conditions due to the speed, course and sea conditions. This conclusion is still valid '.*

and

> *'The content in this Part Report may be expanded and revised … but it may be assumed that* ***all facts and conclusions as now presented will remain unchanged*** *in principle'.*[55]

The amazing sequence of early - not proven - events established only nineteen days after the accident, when the Commission met for the second time, was again confirmed as the Truth and fact.

The accident was *'initiated by too weak locks'* of the visor.

It has not been proven!

The visor had fallen off under way to Sweden (the ship was otherwise undamaged) at 01.15 hrs.

That the visor had fallen off has never been proven!

Water had forced itself into the *superstructure* at the ramp opening - **the ramp was fully open** - but the ramp had closed itself later - when? - as found on the wreck.

Every seaman knows what would have happened - immediate capsize.

But in spite of the fact that the ramp was fully open and the speed was in excess of 14 knots, the ship had only *'capsized'* (sic) slowly, i.e. started to heel at 01.16 hrs but did not sink until after 01.50 hrs.

And during these 34+ minutes the ferry turned 180° and drifted more than two miles. It was not stated in the Part report but had to be announced in the Final report 32 months later. The latter suggestion is of course false.

There was not one word in the Part Report that surviving passengers reported a sudden listing >30 degrees starboard already at 01.02/5 hrs and that the ship then was in a stable condition with about 15 degrees list **2.1**, i.e. it did not capsize, and only sank slowly, permitting at least 230 persons (probably more) to escape to open decks and to abandon ship and 137 to survive. Actually the Commission treated the survivors with outmost contempt at this crucial time - they were not in a position to contribute to the investigation - they were shocked victims, the observations of which could not be taken into consideration.

The Commission made it clear that the Final report was a formality to be published a few months later. However, the public had to wait for 32 months for a Final report in English and 44 months for a Final report in Swedish (or Finnish or Estonian). In the meantime one Commission member and one expert died and five members were dismissed or resigned **1.20**. It is clear that there were big problems inside the Commission to write the Final report based on the false statements of Part report and falsified testimonies of some crew members (which were continuously changed).

It is not a healthy business to write a false accident investigation report.

NINE FALSE FACTS AND CONCLUSIONS

The part Report (16) presented nine conclusions, which today (year 2001) have no foundation.

First it says that the ship capsized due to large amounts of water on the car deck in the superstructure, that the 'Estonia' lost its stability and that the *deckhouse was filled with water.*

In reality the 'Estonia' never capsized and she never lost stability, when the deckhouse was flooded. She floated stable on the side for at least 30 minutes, while she heeled more and more and then sank. *It was not possible with water on the car deck in the superstructure!* If the deckhouse had flooded, when it was water on the car deck, the 'Estonia' should immediately have turned turtle - capsized - and floated upside down; **1.9**, **2.16** and **2.17**. Nobody should have survived.

Then the report states - evidently - that the accident took place in severe weather and that similar conditions had only occurred twice, when the 'Estonia' ran the trade since 1993.

This suggestion had already been refuted by, e.g. Mr Esa Mäkelä, Master of the 'Silja Europa', which ran exactly the same trade on the same days and who had stated in November 1994 that *similar weather had occurred often* Winter 1993/4. The same information was given by the SMHI (the Swedish weather bureau). The weather was not as bad as reported.

The third suggestion was that the visor locks had broken due to the speed, the heading and the wave/sea/weather loads.

Instead of showing any evidence the Commission just stated these alleged 'facts'. That e.g. the bottom - Atlantic - lock might have been damaged before the accident and was not in use was not considered.

The fourth statement was that the visor locks had been designed and manufactured with less strength as required by calculation, and that, when the yard manufactured the visor, there were no work instructions, etc.

The Commission had not examined and analysed the condition of the visor and its locks *prior to* the accident, when this was announced. The Commission had not even asked the yard (sic), how they had designed and manufactured the locks or how the calculations had been done. It was done considerably later; **1.1**, **1.22** and

3.6.

In its fifth conclusion the Commission said that *after* the locks were broken, the visor had hit against the stem and forepeak deck for ten minutes *after* 01.00 hrs, and that these repeated hits were clearly heard by passengers and crew.

But regardless that the crew for ten minutes heard that something was wrong, no action was taken, e.g. to reduce speed. It was full speed until *after* the sudden heeling took place. The Final report (5) has similar info but puts no blame on the crew. It is strange. In reality very few passengers had heard strange noises - some recalled **two hard impacts** at 00.50-01.00 hrs. That is all 2.1. No crewmember has stated that he heard repeated hits from the bow - see Chapter 6 in (5). **The forepeak deck is not even damaged 3.9.**

Then there is a jump in the conclusions - there are no clear conclusion and evidence, why the visor hinges on the no. 4 open focsle deck forward (the top of the superstructure) had broken, except that the hinges had been broken by a sudden overload in tension (in the forward direction >700 tons).

It was stated that the surfaces at the ruptured parts showed this, but by what type of outside load was not clear 3.9. It is a fact that the Commission could not demonstrate, why the very strong hinges had broken.[56]

As the sixth conclusion the Commission suggested that the visor had pulled open the ramp protecting the superstructure.

There is no evidence for this. And the Part Report could not show what would actually have happened then - the ramp itself would have been bent aft, when it got under water, the forepeak deck would have been smashed and the water inflow through the opening would have been very, very big - 1 800-3 600 tons/minute followed by immediate capsize. The ramp was in fact never open, 1.10 and 3.10, i.e. here the Part Report presented a complete lie! The Commission was forced to repeat the lies from 15 December 1.17. The big hole in the starboard collision bulkhead was not mentioned.

Then the Commission pointed out as the seventh conclusion that Class rules regarding visors had been reinforced, since the 'Estonia' was built. Unfortunately the Commission did not point out that strength of hull doors in ship superstructures is the responsibility of the flag administration (Estonia) according to rule 12 in the Load Line Convention 1966.

The eights conclusion was that the 'Estonia' lacked a proper collision bulkhead (or that it was in the wrong position) in the superstructure (not the hull). This conclusion is correct - but it was not pointed out that the responsibility for collision bulkheads in superstructures belongs to the flag administration (Estonia).

Then there was a conclusion about lack of knowledge by administrations, shipyards, shipping companies and crews. However shipyards, shipping companies and crew associations had no insight into the investigation.

That was all. Not a word about why 852 persons had died and why only 137 had survived and how and why the ship had sunk. Every essential information in the Part report was false!

The Part Report is thus very easy to criticise (apart from lies and falsifications of History).

PLENTY OF HIDDEN FACTS

No mention of the ***unchanged speed until after the accident*** in spite of ten minutes of alleged warning (noises).

No mention that the ship was only designed for protected coastal trading Finland/Sweden and that the new trade was short international voyage over open seas. The Estonian administration had not even approved the

stability manual **2.17**, correct life saving equipment and evacuation plan; **1.33** and **1.34**, etc. No permanent trading certificates had been issued.

There is no explanation why the visor was lost 1 570 meters *west* of the wreck, etc. **1.9** and **1.14**.

The sudden list >30 degrees starboard at about 01.02 hrs and that the ship was stable with a list for a long time are not mentioned. There are no stability calculations. The calculations of Huss **1.9** and **1.15** were kept secret until the Final report (5) was published.

There are no explanations why and how the ship sank and no details about bilge pumps or watertight doors.

It does not show the design of the locks of the inner ramp of the superstructure and why they were broken. That the ramp might not even have been locked was not considered.

There is no mention about the experiences of surviving passengers - the time for the sudden heel, water on deck 1 prior to the accident, the stable condition after the sudden heel, etc.

No other possible causes were mentioned.

The Part Report does not explain how the key witnesses in the ECR escaped at 01.20-01.30 hrs , when the list was >60-70-90 degrees and when >500 passengers were allegedly caught inside the ship 1.48. The testimonies of the key witnesses in the ECR cannot be true!

The amazing performance of the forward ramp at the forward end of the *superstructure* was not explained. It was seen closed and leaking at 01.15-01.17 hrs two minutes *after* the sudden listing, then it was alleged to have been fully open, and finally it closed itself before the sinking as seen down on the wreck. The relationship between water on the car deck in the superstructure and angle of list (of the hull) could not be given and were later falsified; **1.9** and **1.13**-4. The ramp was seen closed at about 01.30 hrs, when the ship sank.

Why only 137 persons survived was not discussed or if any of the 852 dead could have survived, if the lifesaving equipment was in order.

The Part Report made three recommendations:

1. *about modifications so that existing ferries comply with international rules for safety.*

Comment: According to the Commission the 'Estonia' was in full compliance with the SOLAS for short international voyages. As is shown in this book, it was not the case. But the Commission suggested that other ferries did not comply with the SOLAS.

2. *about bow arrangements on ferries ... and their effects on safety*.

Comment: After the accident some visors were welded tight. But it was only for show. Later they were in normal use again.

3. *about arrangements for subdivision of enclosed decks of large areas above the waterline.*

Comment: The result was the so called **Stockholm agreement**, which does not contribute to safety at all.

In retrospect it is easy to see that the whole Part report was disinformation and falsification of History. It was no doubt written only by Stenström and Forssberg.[57]

The Commission evidently refused to discuss the Part report with the public.[58] It can be seen from the records in the SHK archive that Forssberg and Stenström were worried about the reaction of the public about the report. The reaction in the media was tepid as the report only repeated what had been said before and the public had no idea of the real facts. But it hardly helped the Commission. It should now write the Final report.

GERMAN PROTESTS

On 3 August 1995 the German Group of Experts made its first oral presentation for the Commission. The Germans disapproved of most of the information of the Part report but never made any suggestion that the report was totally false.

The Germans later gave written evidence on14 August and 11 October 1995 to support their observations given earlier. All German information was made secret/confidential by the Commission (acts B104** and B122**) according a Swedish secrecy law and became official only in March 1998. Only a reporter of the biggest Swedish daily Dagens Nyheter, Anders Hellberg, could access the letters and use the content to produce more disinformation **1.44**

The German letter (51 pages) in act B104** is quite interesting and supported by photos, drawings, etc.

The 'Estonia' had at least 12 serious defects only at the visor/ramp at departure Tallinn 27 September 1994:
(i) the stem profile was damaged,
(ii) the visor did not rest on its intended supports,
(iii) cracked weldings were obvious,
(iv) buckles and deformations (prior to the accident) evident,
(v) badly repaired hydraulics,
(vi) damaged rubber packings,
(vii) defective deck hinges,
(viii) the visor did not fit any more,
(ix) electric indication open/closed out of order,
(x) manual side locks not used, (xi) *the ramp was probably not locked* and
(xii) the bridge indication was out of order.

Even a layman understands that these defects indicated that the visor was not in good shape. The Commission decided to ignore all this German information in the Final report, where it instead states that according to unnamed person the visor was in perfect shape (sic).

The German report - act B104** above - was however discussed at the seventh meeting of the Commission on 22 and 23 August 1995, but as mentioned the critical reports of the Germans are not included in the Final Report (5); **1.22**, **3.13** and **Appendix 5** - collusion!

The Commission summarized the German information as follows in its meeting record 23 August 1995:

> *"their way of analysing is different and they try to find a connection between the accident and the maintenance of the ship"*

That was all! The Commission then never mentioned the different German way of analysing the accident. In the Final report (5) **1.21** the German observations are not mentioned at all. Instead the Commission (page 35 in (5)) states that

> *"Individuals concerned with maintenance of the ship during the various periods of her life have generally expressed satisfaction with the vessel as a sound and trouble-free one.".*

Actually the maintenance of the ship the last 18 months was not investigated at all by the Commission 1.46.

The Commission just asked a few anonymous persons about the ship and they apparently stated that the ship was OK - several years back. But if you do not do any maintenance the last 18 months, doesn't it affect the condition of the ship?

FALSIFIED MODEL TESTS TO SUPPORT THE PART REPORT

The Commission continued to regularly spread disinformation in the media. Thus the Swedish daily Dagens Nyheter on its first page 31 August 1995 stated:

> ***'One wave may have knocked out the 'Estonia' - model tests provide a new picture of the disaster'***.

Stenström announced that measurements at model tests by the SSPA Marin AB at Gothenburg, Sweden showed that if the 'Estonia' made 14,5 knots then the load of one single big wave during the night of the accident was sufficient to knock out all safety systems **Appendix 2**. The assumption was that the 'Estonia' pitched down into the approaching wave and that the visor was hit straight on. It was nicely illustrated by three pictures - (a) the wave hits the visor, (b) all locks are simultaneously ripped apart/the visor moves and the hinges are also ripped apart and (c) the visor falls off pulling open the ramp and a few seconds later the superstructure forward part was open to the sea. That the Commission previously had stated that the visor was hitting up/down on the forepeak deck during 10 minutes was thus forgotten. Stenström stated further that:

> *'Our original theory is correct; it was the locks that were broken first - that the locks were too weak we concluded already in the spring - they had only one third of the required strength'.*

As per **3.6**, **3.7** and **3.8** one wave cannot possibly damage all locks at once, but Stenström announced the opposite. Stenström forgot to mention that the model tests did not measure any loads on individual locks or hinges. It was only the total load on the visor in a seaway that had allegedly been measured. But such details are easily forgotten when you spread disinformation. Now the public got the impression that the SSPA Marin AB officially was behind the Commission. And correct strength tests of the locks were done much later - with the opposite result - the locks were stronger than expected.

Then Stenström added that

> *'it took only ten minutes from the first damage until she was lying with the bow open against the sea and the waves were rolling in on the car deck'.*

When Stenström made the statement he knew for sure that water on the car deck would have caused the 'Estonia' to capsize and to float upside down after a few minutes.

But the reporters of Dagens Nyheter did not check the model test report themselves and did not ask any pertinent questions. Dagens Nyheter just printed the unproven statements of Stenström. It might have been to ask too much of the reporters to check the model test report (it was secret until the end of the investigation), but if they had done so, or had asked an expert to have a look, they would have been told that the model test report was probably false!

Evidently 100-tons loads do not hit the visor every minute or 600-tons loads every four minutes in 4,2 meter waves.

And how on earth can a 1 000-tons load suddenly hit the visor as pointed out by Stenström. The loads on the visor in regular 4,2 meter waves were periodical and very moderate - small - only due to a little buoyancy - 40 tons - when the visor was submerged for one and a half second. No impacts! How could suddenly the load become 25 times greater in irregular waves of same height 4,2 meters when the visor was only half submerged?

The answer is that the SSPA Marine AB report was faked Appendix 2.

The reason was simple - various people had asked the Commission, if really one or more waves could knock off a visor on a ferry in the Baltic. The classification society Lloyd's Register had >100 ferries with similar visors in areas with much bigger waves and had never had any problems whatsoever. The answer was of course the model tests - look here, we have measured very big loads! What could you answer? But the test report itself was secret. Later - to back up the faked model tests, similarly faked *'simulations'* were calculated and they were likewise manipulated to show the same result. The *statements* in chapter 12.2.4 in the Final report (5) to these effects are thus false. The Commission states:

> *"Qualitatively the simulated results agree well with the experimental data".*

This statement in the Final report (5) is a lie to support the false experimental data.

Obviously anyone asking the question how a 700-tons or 1 000-tons force could have been measured in model tests would only have been dismissed by the statement that simulations produce similar loads. Furthermore the Commission states:

> *"The experimental time histories of the vertical load on the visor have high upward peaks similar to those of the simulated records and in the downward direction the loads are negligible".*

This statement is also false. It is more probable that the very high upward modelled peaks are false as no simulated records exist (!) to support the experimental data.

But Stenström and the Commission were at this time forced to back up its weak *invention* about the visor in the Part report with false model tests with the results spread in the media. It was absolutely necessary to fool the public. Otherwise the disinformation campaign would never succeed.

The ferry industry kept quiet. It had never experienced any problems with wave impacts on fore ships of their ferries before or after the 'Estonia' accident, i.e. full scale experience contradicted the Commission and just confirmed that with model tests and simulations you can produce any result you like.

(The ultimate manipulation - how SSPA faked further the model tests (to hide the true cause of accident!) - June 5 2008)

15 SECRET MEETINGS TO WRITE THE FALSE FINAL REPORT

After the publication of the Part Report the Commission met at least 15 times to write the Final Report. All work was confidential - the public had no access - and no proper records of the deliberations were kept **1.12**. It was not a serious accident investigation - the total sequence of events and the cause of accident had been made up already in 1994 - and a majority of the *'scientific'* reports handed in to the Commission 1995-1997 had to be edited to suit. It takes time to falsify a report.

All members of the Commission must now have been aware of the swindle.

But they all happily worked on. Of course there were resignations, dismissals and two persons passed away during the investigation but nobody dared to suggest that the whole investigation was - a swindle.

It was not healthy to participate in the falsifications.

It may be easy to falsify a proximate cause of accident and a course of events - but all statements must be proven. That is the difficulty. But it simplifies with understanding governments that prevent collecting the evidence by making international agreements to this effect.

Thus after the Part report had been issued the Commission started to write the Final report **1.21**. Every delegation had a particular interest to protect in the swindle - the Estonians wanted that the report would

conclude that the crew had acted prudently, the Finnish wanted that the report would conclude that their initial approval of the ship was in order and that the rescue operations had been done correctly and the Swedes wanted that the report concluded that the safety arrangements and all surveys were in order (as the Estonian NMA had subcontracted all these matters to the Swedes).

It was probably the reason why they all agreed to the completely unrealistic sequence of events **1.9** and that the visor was to blame. They would all smell like roses, when the Final report was issued.

The Commission never appointed an official information secretary to handle contacts with outside, interested parties. It was logical, as the investigation was secret and all parties had agreed not to tell the public anything - in spite of protests from relatives and survivors. The Swedish government therefore on 21 October 1996 appointed the Board of Psychological Defence, (SPF), Stockholm, **1.49** to maintain contact with the (Swedish) relatives and, later, with the survivors. SPF suggested to the authorities not to discuss any questions raised by, i.a. the author.

DECEMBER 1996

Mr Lehtola said (Lloyd's List December 4, 1996) that the Commission's final report manuscript should be ready for release by February (1997).

Mr Lehtola also said -

> '*It is very possible the structure of the bow visor was not as good as it should have been. We have carried out a lot of calculations, and we have more still to do. I cannot really comment more - the results are not yet in and it is too early to draw final conclusions*'.

Thus two months before the manuscript should be ready for release, '*we (the Commission) have still more (calculations) to do',....'the results are not yet in... too early to draw final conclusions'*. This was said 20 months after the Part-Report was published in April 1995 and 24 months after the strength analysis was ordered to be done by the Royal Institute of Technology at Stockholm. The Final report (5) was in fact published exactly one year later.

All essential information in the Final report (5) has later been proven false. The visor never fell off the ferry.

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[54] The Commission had of course never concluded anything earlier - it had suggested that the visor had fallen off under way, etc. in various press releases, but noting was proven.

[55] Several conclusions were changed/modified in the Final Report (5), e.g. how the visor hinges broke **3.9**. But it didn't change the alleged cause of accident.

[56] An explosion between visor and ramp could result in a sudden tensile overload in the hinges, which 'blew off' the visor forward and bent the ramp inwards, aft.

[57] Forssberg suddenly wrote to the author on 30 October 1997 under the letter head of the government and suggested that

"... (it) is meaningless to start a discussion about the cause of the sinking of the 'Estonia' before all documents are on the table, i.e. when the Final Report of the Commission is made public. I want however to point out that behind the content of the part report was a united Commission with access to highly qualified experts within your field of expertise".

The letter was written after Forssberg had resigned or been dismissed from the Commission and the SHK **1.20**, 30 months after the publication of the Part Report, when still most of the records of the Commission were secret. All *'highly qualified experts'* still refuse to discuss the matter - but of course - the Commission had only access to them. It means that the *'highly qualified experts'* were used as part of the cover up.

"I do not believe any longer in the Commission. - it has not acted correctly ... I do not think that the quality is good of the Final report ... there were actually many defects on board. There are items that should have been mentioned in the Final report, which are not there ... It should have been more detailed and have better analysis".

Commission expert Bengt Schager in Swedish daily Svenska Dagbladet 970922

1.20 CHANGES IN THE SECRET COMMISSION. ONLY 61.5% OF ALL SHIPS ASSISTED

Enn Neidre was dismissed as a member of the Commission in April 1996 (but continued as an expert) and was replaced by Mr. Priit Männik, a high-ranking security police chief in Estonia.

THE SECRET POLICE ENTERS THE COMMISSION - AND LEAVES

Männik had supervised the questioning of the Estonian crew and survivors in 1994, but had evidently no experience of technical marine accident investigations. It seems that the job of Männik was to ensure that the final testimonies of the crew members tallied with what the Commission agreed to publish in the Final report. The crew members were apparently harassed by the Estonian secret police 1996/7 to toe the line. Männik was officially forced to resign in the autumn 1997 for alleged irregularities, probably in his job as police and not associated with the investigation, but it may also have been a charade. It would not look nice to have the head of the secret police signing an investigation report of a marine accident. Männik was therefore replaced by one of the Estonian experts in the Commission - Professor Jan Metsaveer, who was strength of materials expert and not an accident investigator (a useful idiot). Evidently it looked nicer to have an engineer signing the Final report.

THE COMMISSION CHAIRMAN RESIGNS

Andi Meister, chairman of the Commission resigned in July 1996 and was replaced by Professor Heino Levald, naval architect and expert in the Commission. It is interesting to note that Meister resigned a few months after the secret police chief Männik entered the Commission but Meister stated that the Swedes had manipulated the investigation work, particularly the video films of the dive examination. In retrospect (1999-2001) you can conclude that Meister was right **3.10**. The divers were on the car deck and filmed, but the Swedish dive expedition leaders stated the opposite, etc. Meister has since written a book about his observations during the investigation, but the author has not managed to obtain a copy of it. The Commission then did not have a chairman. During the autumn 1996 captain Uno Laur was appointed chairman by the Estonian president Lennart Meri.

TWO INVESTIGATORS DIE

The Finnish expert Simo Aarnio died suddenly in January 1996 and was replaced by another Finn. Börje Stenström died in February 1997 and was replaced by one of the Swedish experts of the Commission - Captain Olle Noord. Olof Forssberg was dismissed as director general of the SHK by the Swedish government in May 1997 and had to leave the Commission, but got a new job at the Ministry of Transport and was later appointed judge at the Svea Hovrätt appeal court in February 1998. Olof Forssberg was replaced by Ann-Louise Eksborg*[63] - **a person without any knowledge of marine accident investigations 4.5**. The last meeting of the Commission was in March 1997, when the Final report (5) was allegedly agreed (no manuscript exists!), so the only job of Ann-Louise Eksborg was to sign it (even if it didn't exist). The Swedish psychologist Bengt Schager resigned as expert in September 1997.[64]

It was thus quite chaotic in the Commission during the investigation (the falsification of History), but the staff changes had a certain logic. The persons who at the early stage started the falsification of History (Stenström, Forssberg, Neidre, Meister, etc) disappeared from the investigation and forced new, inexperienced persons to take over the rubbish. The latter probably did not believe that *all* essential information was consciously falsified

from the beginning but tried to make the best out of all contradictory information. It is interesting to note that the three Finnish investigators remained in the Commission until the end. About the latest statements of Lehtola and Karppinen *after* the Final report was published you can read in **Part 4**.

ADMIRAL HEIMO IIVONEN

The work of Admiral Heimo Iivonen in the Commission is quite unclear. He participated in the manipulated *'finding'* of the visor - see **1.4** - and as summarized below.

Iivonen is only mentioned twice in the twenty records of the meetings of the Commission. The first time is in January 1996. According the protocol, act A93a*, of the meeting 25/26 January 1995 admiral Iivonen then stated in paragraph 6 that

> *"The Mayday ... was received by ... six ... vessels ... and five land-based stations".*

According the Final report (5) it was however eight ships that heard the Mayday, but only five that went to assist, and one ship that did not hear the Mayday but went to assist at the request of another ship - three of these ships saved 33 persons from the water. Two other ships went to assist later. Two unknown ships were in the vicinity - plotted by Utö radar station - but did not assist in the rescue operation. One ship - the 'Tursas' - arrived much later and saved one person. All above is from the Final report (5). A position of the accident is alleged to have been stated in the 'Mayday'-message. No ship apparently headed towards that position - see plots below.

Table 1.20.1 summarizes which eight ships heard the Mayday. Of these eight ships three never went to assist - the **'Anette', 'Antares'** and **'Garden'.** It is quite remarkable and the Commission has no comments.

Table 1.20.1 - Ships that assisted or could have assisted the 'Estonia' 1994

Ship name	Time hearing Mayday	Time for change course	Arrival of table 7.6 (5)	Arrival of fig. 17.1 of (5)	Comments	Rescued
'Silja Europe'	01.20	01.40	02.30	03.00	Was 5 NM from the position of accident at 02.30 hrs acc. figure 17.1 in (5).	5 (+1) from helicopters
'Anette'	01.20	-	-	-	**Did not assist!**	-
'Antares'	01.20	-	-	-	**Did not assist!**	-
'Silja Symphony'	01.22	01.50	02.40	03.02	Was 4 NM from the position of accident at 02.40 hrs acc. figure 17.1 in (5).	20 from helicopters
'Finnjet'	?	01.33	03.20	-	-	0
'Finnmerchant'	?	?	03.25	-	-	0
'Mariella'	01.26?	01.32	02.12	02.16	Knows exactly where and when the *'Estonia'* sank!	15 from sea + 11 from helicopters[65]
'Garden'	?	-	-	-	**Did not assist!**	-
'Isabella'	did not hear	01.51	02.52	02.59	Was alerted by the **'Silja Europa'**!	17
'Finnhansa'	02.45?	02.45	04.30	-	-	0
'Ministar'	did not hear	-	04.30	-	-	0
Unknown	?	03.00	-	03.37	Could have been in place at 03.37 hrs. **Did not assist!**	-
Unknown	?	03.03	-	?	Could have been in place at 04.00 hrs. **Did not assist!**	-
'Tursas'	did not hear	01.30	05.00	-	Was in port at Mayday.	1 from sea

Only two ships immediately changed course at the end of the Mayday to assist the 'Estonia' - the **'Finnjet'** and the **'Mariella'**. The **'Silja Europa'** waited 10 minutes, the **'Silja Symphony'** and the **'Isabella'** 20 minutes, even if

the two latter were moving towards the position of the accident. The **'Silja Symphony'** and the **'Isabella'** increased the speed to 21 knots, in spite of the alleged severe weather, to reach the 'Estonia'. The **'Silja Europe'** took it very easy - <10 knots to reach the sinking 'Estonia'

INCORRECT POSITION OF THE 'ESTONIA' IN THE FINAL REPORT

The arrival times of the various ships differ in table 7.6 and figure 17.1 in (5). Figure 17.1 in (5) is shown below.

Note that the position 01.40 hrs of the 'Estonia' - a black dot - is 1,5 nautical miles or 2 800 meters south of the *'as found'* wreck position marked with a cross.

If a radar echo disappeared at the black dot at 01.50 hrs, it was not the 'Estonia' that probably sank already at 01.36 hrs. The **'Mariella'** had both visual and radar contact with the 'Estonia' at 01.30 hrs, when the 'Estonia' was seen immobile - probably just in the vicinity of the wreck position - the cross. On what information figure 17.1 in (5) is actually based remains a mystery - why does the Commission indicate an incorrect position of the 'Estonia'? Is figure 17.1 based on the famous Utö plot - the plot that disappeared **1.13**?

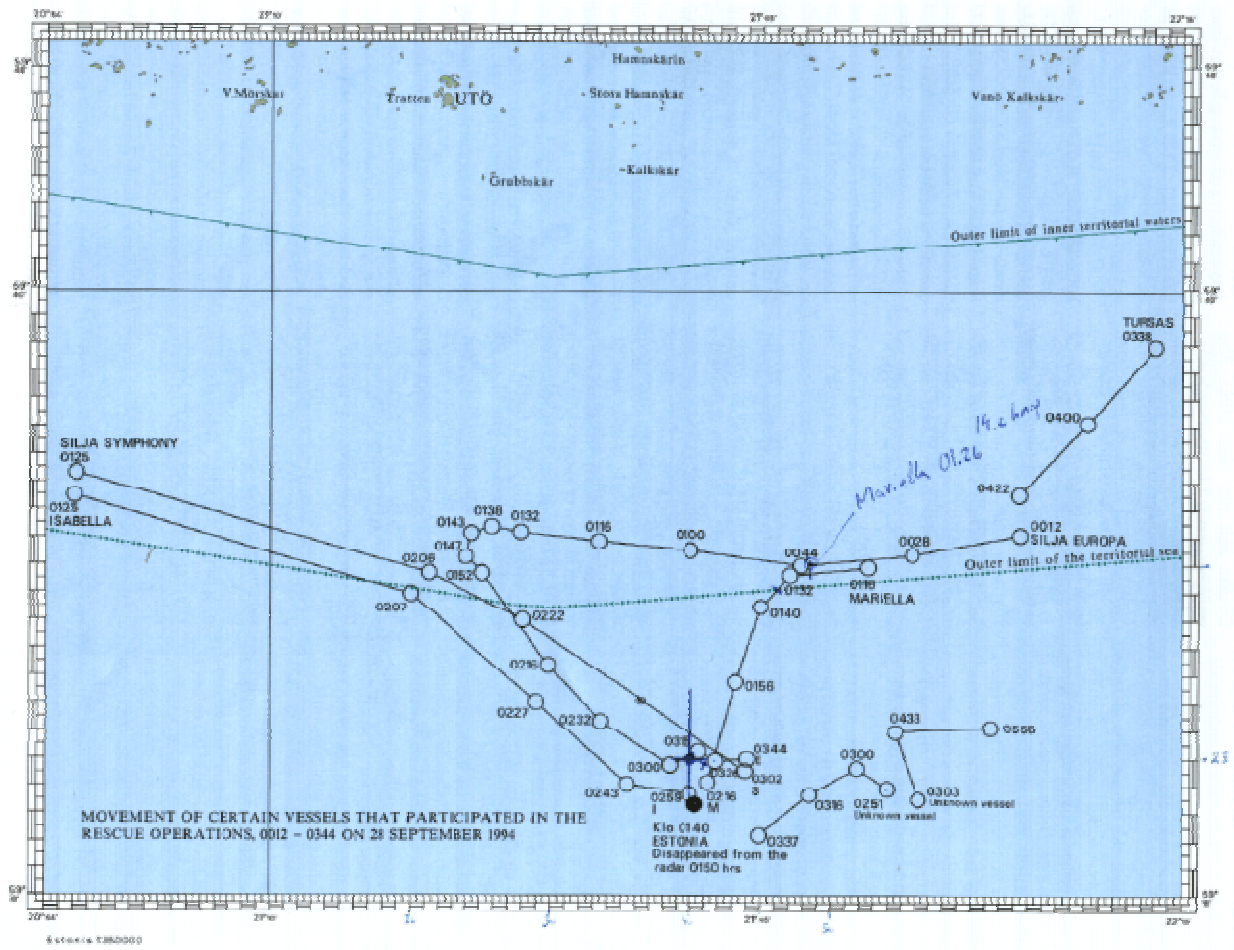

Figure 1.20.1 - Figure 17.1 in (5)

21 KNOTS TO REACH THE 'ESTONIA'

That the **'Mariella'** arrived first should be clear - about 02.00 hrs. If the **'Silja Europa'** arrived at 02.30 hrs is not clear - according figure 17.1 in (5) she had another 5 miles to the accident position and arrived at 03.00 hrs at very slow speed. Similar conclusions can be drawn for the **'Silja Symphony'** - arrival at 02.40 hrs is unclear -

according figure 17.1 she had another 4 miles to go to arrive at about 03.02 hrs. The **'Silja Symphony'** was 25 miles from the accident at 01.23 hrs. **'Silja Symphony' immediately increased the speed to 21 (sic) knots and arrived at 02.40 hrs. She had no problems to do 21 knots in the alleged severe weather - alleged ten meters waves, etc., where other ships state they had to slow down to 11 knots. Very strange. Maybe the waves were not ten meters?**

The **'Isabella'** arrived at about the same time 02.52/9 hrs and must have made the same speed as the **'Silja Symphony'**. You should conclude that the **'Mariella'** arrived first at 02.15 hrs and the three others about 45 minutes later at about 03.00 hrs. The **'Finnjet'** and the **'Finnmerchant'** arrived another 30 minutes later, i.e. six ships were at the accident position at 03.30 hrs, when the persons from the 'Estonia' had been two hours in the water at 12-13° C.[66]

Another - different - **plot** is made by the German group of experts **3.13** and is from Chapter 24 of its final report. It seems in this plot that the **'Silja Symphony'** arrived 45 minutes (!) before the **'Silja Europe'** and the **'Isabella'**. And no ship headed for the alleged wreck position. Note the positions of **'Mariella'** and **'Isabella'** - the only ferries that managed to pick up survivors.

NONE OF THE SIX SHIPS LAUNCHED ANY LIFEBOATS TO RESCUE PERSONS IN THE WATER

They all blamed the bad weather - compare **1.33** and **3.21**. But it could simply have been due to the suggestion that the assisting ferries were as unseaworthy as the 'Estonia'. The lifeboats did not work and/or the relevant crew was not onboard or had not been trained, so they could not launch any boats and assist.

It is a very sad fact that the Masters of the assisting ferries have given contradictory statements to the Commission. The **'Mariella'** had to slow down because of the weather. The **'Silja Symphony'** made 21 knots - weather was no problem. The famous Utö plot had to disappear because it showed that some Masters did not tell the Truth. Why? Because their ships were as unseaworthy as the 'Estonia'? The Masters and their shipping companies keep very quiet about the 'Estonia' and have *never* criticised the Final report (5). Maybe they carry a collective guilt not being able to assist correctly and save lives due to their own faults? It assisted the cover-up.

According to figure 17.1 in the Final report (5) there were two unknown ships 7-8 miles east of the wreck position at about 03.00 hrs (thus not the **'Finnjet'**, the **'Finnmerchant'**, the **'Finnhansa'** or the **'Ministar'** - see below) and these two ships could have assisted before 04.00 hrs. Utö radar station plotted these ships (on the plot that later disappeared). It means of course that the plot existed or must have been modified later. Somebody has suggested that the two ships appearing and disappearing were Swedish submarines of the **Västergötland** class that were exercising in the area.

According table 7.5 in (5) eight ships were on location to assist at 04.50 hrs - the six above mentioned + the **'Finnhansa'** and the **'Ministar'**. The **'Ministar'** was as far away as the **'Anette'** from the wreck position (but outside figure 7.1 in (5)) at 01.20 hrs and the 'Finnhansa' was further away. It shows that the **'Anette'**, the **'Antares'** and the **'Garden'** could have been on location at that time - 04.40-05.00 hrs. The **'Tursas'** arrived at 05.00 hrs according to (5) and saved one person.

28 KNOTS TO REACH THE 'ESTONIA'

The **'Tursas'** was according to figure 17.1 above at 04.22 hrs about 15 miles from the accident position making 9.5 knots. *In order to arrive at 05.00 hrs she must have made > 28 knots*, which she evidently did not do. How the **'Tursas'** reached the accident position should be investigated! She probably arrived much later - but according the Final report she arrived at 05.00 hrs and must have done 28 knots - and saved one person.

The **'Anette'** was about 35 miles from the 'Estonia' at 01.20 hrs and could also have been on location at about 05.00 hrs. The Master reported himself to the Finnish administration on 17 October 1994 for not having followed the procedures of the law of the sea. The **'Anette'** heard the Mayday on channel 16 starting at 01.20 hrs (sic). Later the **'Anette'** was in contact with the **'Silja Europa'** at 01.31 hrs, which is not shown in table 7.5 of

(5), and was told to 'stand-by' on channel 16. Then there was silence on channel 16 the whole night, in spite of table 7.5 of (5) reporting a lot of conversation on that channel. The **'Anette'** never heard a proper Mayday from the 'Estonia' which should have been sent on the emergency frequency 2 182 kHz starting with an alarm signal.

All ships receiving any Mayday shall then send a so-called Mayday relay, which neither the **'Anette'** nor any other ship did. According page 100 in the Final report (5) - table 7.5 - the MRCC at Turku/Åbo asked at 01.45 hrs the Helsinki/Helsingfors Radio to send a Mayday relay on channel 16. The procedure was quite strange.

The Helsinki/Helsingfors Radio instead sent a Pan-Pan message, but it was never heard, e.g. by the **'Anette'**. The Master of the **'Anette'** wondered in his report, if other ships had made the same fault as he. The Finnish administration sent the report to the Finnish Teleförvaltningscentralen (Finnish Radio telephone board), which replied that it should consider the matter, when the Final report (5) had been published. When (5) was published the whole matter had been forgotten. The **'Anette'** had a low freeboard and might have picked up survivors in the water after 2 or 3 hours. *It is worth noting that the 'Anette' plotted the 'Estonia' at 01.20 hrs 0,5 miles east of the position of the wreck!* The 'Estonia' could very well have been there - and sunk 15 minutes later 900 meters westward. But the **'Anette'** continued her voyage to Sweden, totally unaware of the drama 30 miles east.

The **'Antares'** and the **'Garden'** were both only 25 miles from the 'Estonia' and could have arrived at 04.00 hrs.

MANY SHIPS DID NOT ASSIST

According (5) (page 103) there was a great number of other ships in the vicinity, which did not assist: 12 government ships were at Pärnäinen about 60 miles away - none went to assist. Several ships were at Hangö, i.a. the rescue boat **'Russarö'** - specially adapted to pick up survivors in the water in severe weather, but she remained in port. One minesweeper left Hangö and arrived at 07.00 hrs. Survivors were rescued until 08.00 hrs in the morning.

The conclusion is that the Final Report (5) does not correctly describe what ships could have assisted the persons on the 'Estonia'. Three named ships never understood what was going on. At least 13 (or maybe 20 ships) could have assisted but only eight - 61.5% (or 40%) - went to assist (the 'Tursas' not included).

The Final report (5) suggests that the reason, why none of the assisting ferries launched any life saving equipment, was the severe weather. However, we know today that the weather was not as bad as later alleged **1.21** footnote 70. And we know that the **'Silja Symphony'** made 21 knots to reach the accident position, i.e. the weather did not prevent her. The reason why no lifeboats were launched may have been that they did not work or the crew was not available. The Commission may have used this situation to convince the Masters and the shipping companies no to criticise the Final report (5).

CONFUSION ABOUT RESCUED PEOPLE

The second time admiral Iivonen are mentioned in the records were at the meeting 17/18 December 1996 (act A208*) when he stated that

> *"Still some confusion about the number of people rescued"*

- two years and two months after the accident. Iivonen was responsible for the shore based lifesaving operations at sea! One reason for this confusion is maybe that rescued persons disappeared afterwards.

The Finnish sea rescue administration thus could only alert a little less than half of the ships in the vicinity of the 'Estonia', which could have been on the spot within 3-4 hours, and did not know several years later how many had been rescued **1.46**.

One consequence of an accident - that hundreds of persons had to jump into the sea - shall evidently not be examined by the person, who is responsible to save the persons. Admiral Iivonen had an interest to mislead the Commission.

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[63] Eksborg is a member of the MAIIF and should have followed the UN resolutions about marine casualty investigations **4.5**.

[64] Schager resigned in protest of the Commission, where he had worked for three years, and of the Final report. He had then been paid in excess of SEK 3 000 000:- in 'consultancy' fees! Do not say accident investigation is badly paid. In the Swedish daily Svenska Dagbladet 970922 Schager said

"I do not believe any longer in the Commission - it has not acted correctly ... I do not think that the quality is good of the Final report ... there were actually many defects on board. There are items that should have been mentioned in the Final report, which are not there ... It should have been more detailed and have better analysis"., etc. etc.

Bengt Schager thinks that the Commission did not permit that certain aspects were properly investigated. In the Swedish local daily Hallands Nyheter 990217 Schager said the following about the Estonians in the Commission:

"Their competence was not enough to participate in such an investigation. They had never done it before…".

About the crew the psychologist Schager said:

"We know that several crewmembers lied …".

The last statement is not included in the Final report (5). Note that it was Schager who wrote the summaries of testimonies **2.1** - that apparently includes *false* statements of the crew.

[65] 18 persons from the sea were saved by the 'Mariella' according to (20) **1.41**.

[66] The author has been told that another (Norwegian) ship, the 'Henriette', also heard the Mayday but did not assist. Letter to the owner has not been replied to

'Reports, or relevant parts of reports, into the circumstances and causes of a marine casualty should be completed as quickly as practicable, and be made available to the public and the shipping industry in order to enhance safety at sea and protection of the marine environment through improved awareness of the factors which combine to cause marine casualties'.

IMO res. A.849 (20) 12.3

'Reports should include, wherever possible:
.4 a narrative detailing the circumstances of the casualty;
.5 analysis and comment which should enable the report to reach logical conclusions, or findings, establishing all the factors that contributed to the casualty;'

IMO res. A849 (20) 14.6

1.21 THE 20TH MEETING OF THE COMMISSION. A 100% FALSE FINAL REPORT 1997

The 20th and final meeting of the Commission took place in March 1997 and the investigation was completed and the Final report (5) was agreed even if no manuscript exists in the archive. Only proof reading and printing of the report (that didn't exist) remained, media announced.

The manuscript agreed in March 1997 thus does not exist. Nobody knows what the Commission had agreed in March 1997. Was it the Final report issued in December 1997?

In May, after the Final report had been agreed, Forssberg was dismissed or resigned from the Swedish Board of Accident Investigation, SHK, and had to leave the Commission. Ann-Louise Eksborg, legal counsel at the Swedish Ministry of Defence, replaced Forssberg as director general of the SHK and she also took Forssberg's position in the Commission, (which was her part of the deal with the government). Eksborg took a great interest in the Final report that had already been agreed ... and probably changed it. Can it be that the Final report agreed in March 1997 was so bad that they had to get rid of some clowns agreeing it?

The Final report (5) was published on 3 December 1997. We do not know if it is the same report agreed in March. It starts with a lie on the cover, which is repeated on pages 1 and 3 (page 2 is blank):

that it is the Final report *'on the capsizing'* of the 'Estonia'. The 'Estonia' evidently never capsized but sank slowly during 35 minutes (how The Final report could not explain)!

According to the Commission the 'Estonia' was floating on its *hull* at 01.14 hrs, when she suddenly listed to starboard due to alleged water in the *superstructure* above the hull. The 'Estonia' was then making 14-15 knots straight into big waves! The visor had fallen off and ripped completely open an inner ramp protecting the superstructure ... water was quickly filling the superstructure ... and therefore the ship listed. But she never capsized, as you would have expected.

Instead the 'Estonia' turned 180° back towards Tallinn, the engines stopped and the vessel drifted at constant speed >2.2 knots with increasing angle of heel - and suddenly she sank at 01.52 hrs.

She thus sank - lost buoyancy - during at least 38 minutes, but she never capsized.

How the buoyancy of the *hull* (14 watertight compartments below the bulkhead deck - 18 000 m^3) was lost before, during or after this time was not explained by the Commission and is not considered anywhere in the Final report.

A ship floats on its hull and sinks only when the hull is flooded. The sinking takes place when the weight of the ship exceeds its buoyancy, which the Commission never understood. A ship capsizes when an imposed heeling moment (e.g. water in the side of a superstructure) exceeds the inherent righting moment of the ship. After capsize the ship floats upside down.

DID THE 'ESTONIA' SINK OR CAPSIZE?

Six years after the accident the Swedish government ordered its Board of Psychological Defence, SPF, to explain how the ship's hull was water filled and how the buoyancy of the hull was lost between about **01.30** and **01.52** hrs (the end of the events), when the ship allegedly, finally sank, **1.49** and **1.50.** The beginning of the events was water in the *superstructure* since 01.15 hrs and in the *deck house* since about 01.20 hrs, while the *underwater hull* was dry at those times. It was evidently not possible and the SPF had not started the work in 2002.

That the ship probably sank due to hull leakage starting 00.50-00.58 hrs should not be investigated by the SPF, the government instructed. The SPF should explain how the vessel was water filled based on the information in the Final report!

In the Preface (page 7) to (5) the Commission says dutifully that it has

> *"considered all available* (sic) *information directly related* (sic) *to the accident".*

The available information is alleged data about the ship, its operation, testimonies, weather, dive examinations and analysis of the visor. Information with an indirect (?) connection or information not available has apparently not been considered, e.g. the German information and (1). But even if the Commission apparently has considered *all* available information, it has decided to ignore most of it, so what remains shall *'suit'* the false conclusions.

SINKING NOT DESCRIBED

In order to get full understanding about the course of events the Commission states that is has carried out studies of the ship's movements and loads in irregular seas, strength analysis, manoeuvre characteristics and *"stability when flooded"*.

The latter is not true. The Final report does not explain at all how and when the ship underwater part - the alleged undamaged *hull* - with the buoyancy was flooded, so that the ship could sink, and as a consequence no correct stability calculations were done. Correct stability calculations would of course have shown that the ship capsized and floated upside down with a certain amount of water in the superstructure. It could not be said!

As shown in this book *all* essential studies of the Commission had then to be manipulated to *'suit'* the official lies about water in the superstructure. Not one of any study can be re-done by independent scientists and naval architects to obtain the same result. In most cases the result is of course opposite to what the Commission concluded.

NO PROVEN CAUSE

Furthermore the Commission states:

> *"This final report covers all factors and circumstances considered to have contributed to the development and outcome of the accident".*

This is clever, misleading wording. The *accident* is apparently the visor falling off under way due to defective locks, but it is not even proven in the report. It then blames the whole accident on the visor locks, which allegedly were incorrectly designed and manufactured in 1979/1980, i.e. 14 years before the accident.

There is no evidence at all for this in the confusingly written report.

And there are no details about the weather tight door/ramp locks of the superstructure behind the visor in the report and how water entering into the superstructure could have sunk the ship without causing immediate capsize/floating upside down.

The Preface (page 7 of (5)) is full of lies! Easy for a normal reader to spot.

All information from the German yard, which built the visor, is ignored! No other possible causes of accident are mentioned, e.g. leakage,[67] dangerous goods, bad maintenance, e.g. corrosion in the sauna/pool compartment or the sewage tanks, incorrectly installed fin stabilisers, crew error, incorrect design of watertight doors and/or bilge system, sabotage, welding aboard (explosion), drug smuggling, too high speed,[68] heavy weather, collision, etc. The Final report then states that the ramp in the *superstructure* was fully open but then evidently could not explain the course of accident with a fully open ramp **1.9**. Why didn't the ship capsize and float upside down? And when, and how, did the watertight *hull* fill up with water, so that the ship could sink?

The only evidence that the ship was in good condition was a number of anonymous persons just stating it.

All testimonies of the opposite were censored. Evidently many witnesses suggested that the condition of the ship was not good.

A FALSIFIED CERTIFICATE CONFIRMS SEAWORTHINESS

The members of the Commission never bothered to check for themselves the real condition of the ferry. That the ship was seaworthy is explained by that it was certified to this effect. That the certificates were false is not investigated! The certificates are not even included in the Final report! All information that the ship was not seaworthy has been censored in the Final report as shown in this book. It not only incompetence by the Commission - it is criminal!

The Final report, chapter 8.5.1, page 120 states that

> *"No external damages on the wreck have been observed, except the damages on the visor and in the area around the bow ramp."*

This is a very strange statement. As seen in **1.16** no examination of the hull was specified and was thus not carried out at the diving in December 1994. Later, when the 'edited' video films of the wreck became available to the public, independent observers have noted many un-reported and un-investigated hull damages - openings in the hull **Appendix 5**. And the area with the big damage in the front bulkhead **3.10** is reported by the Commission to be undamaged, so it is not explained.

This author believes that this particular superstructure damage was caused, when the visor was removed from the bow *under* water after the *sinking* using explosive devices. To finalize the job the visor was pulled off the wreck, when the visor hinges were torn apart.

THE FULL TRUTH AND NOTHING BUT THE TRUTH

According a statement of the Estonian president, Lennart Meri, who received the Final Report at Tallinn, it - the Final Report - was expected to contain the full truth and nothing but the truth about the accident.[69] There is no Truth in the Final report and therefore the Final report - the Truth - cannot be officially discussed in Estonia - the media and the public are silent. The Estonian president is the first supporter of continued falsification of History after the fall of the Soviet Union **4.5** and the Estonian media and public seem to support this policy.

As a reward for the falsification of History president Meri in February 1999 awarded an Estonian order - Riigivapi - of the third class to the Commission chairman Uno Laur.

When the Final report was issued the German group of experts in December 1997, the Swedish nautical magazine Nautisk Tidskrift and the Swedish Ship Masters Association in January 1998 stated that it was not convincing. The Swedish weather bureau SMHI did not approve 971204 the interpretations of the Commission of the weather.[70] The Royal Institution of Naval Architect magazine The Naval Architect disapproved completely the Final report in April 1998. Professor Anders Ulfvarson, Chalmers Tekniska Högskola, Göteborg wrote in the Swedish daily Svenska Dagbladet 980923 that the Final report lacked (a) an analysis how the ramp had opened and b) how the ship could have sunk. The Nordic (NTF) and the International (ITF) Transport workers Federations representing 600 000 seamen disapproved totally the report on 18 November 1998.[71] In October 1999 the Swedish ship engineers magazine Maskinbefälet demanded a new investigation. The Commission did not reply. Actually the Swedish Board of Psychological Defence had recommended all authorities to ignore any comments in the media **1.49**!

It is only the Swedish director of safety at sea, Johan Franson, Swedish NMA at Norrköping and minister Mona Sahlin who officially several times have stated that the Final report is complete (sic) and that there is nothing to criticise. But Franson is of course part of the case - he directed the dive examinations, **1.16** and **3.10**, and gave misleading information to the government. Why Minister Mona Sahlin is not interested in the Truth is not clear, but probably she is simply protecting friends and colleagues. Is there something to hide? And Ms Sahlin is not logic - six years after the accident she asked the Board of Psychological Defence, SPF, to clarify, how the *hull* was flooded so that the ship sank - but based on the Commission allegations; water enters only the *superstructure*. The *hull* is undamaged. In 2004 the SPF still has not been able to finalize this job, **1.51**.

WHAT A FINAL REPORT SHALL CONTAIN

The ultimate goal of a marine investigation is to advance maritime safety and protection of the marine environment. This goal is achieved by identifying safety deficiencies through a systematic investigation of marine casualties and incidents, and then recommending or effecting change in the maritime system to correct these deficiencies.

In a report that clearly lays out the facts relevant to the occurrence, and then logically analyzes those facts to draw reasoned conclusions including those relating to human factors, the required safety action may appear self-evident to the reader. Recommended safety actions in whatever form should clearly identify what needs to be done, who or what organization is the agent of change, and, where possible, the urgency for completion. **The 'Estonia' Final report (5) fails in all respects to achieve these goals.**

THE IMO

The UN maritime organization IMO does not say anything - the IMO is not interested in particular accidents, even if it appointed a special panel to review the safety rules after the accident without checking the facts of the 'Estonia' accident. The IMO panel just thought that ships sink with water on car decks in a *superstructure* and that visors suddenly fall off ships. No proper Formal Safety Analysis, FSA, was done before the Solas rules were changed (**chapter 5** of (1)).

The accident is of course still being discussed and the public has different opinions (these web pages have had >100 000 visitors since May 2000 to May 2004, but unfortunately with little result). Many believe that the *accident was caused by too high speed*, which caused the visor to be ripped open, water inflow in the *superstructure* followed sinking. The Final report does not consider it, as too high speed would have been criticism of the crew. Evidently the Commission chose already (or was told) 1994/5 to blame the accident on *design faults* of the visor locks and that the shipyard was finally to blame. However - all factual information from the shipyard was censored in the Final report (see next chapter) and the shipyard has never protested. Strange!

The Commission does not only falsify the information about the open ramp. It falsifies much, much more to protect the real culprits of the accident.

In principle all essential facts in the investigation report are falsified.

The opinion of the author is that the Commission thought that it had managed to cheat the public about the visor and ramp in 1994/5, so that it then 1995-1998 could falsify all other information too without being discovered. This unbelievable, shameful act has in principle succeeded. There was silence about the Final report and the 'Estonia' accident for several years. The authors of the Final report refuse to discuss the matter. They know it is best to say nothing. Their concern for safety at sea is zero. They show no respect for survivors and relatives of the victims. The following chapters will show how the Swedish administration covered up the errors in the Final report and protected the Commission.

The whole Final report must be considered a purposeful manipulation.

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[67] The Swedish daily DN wrote an editorial on 970927, just after the resignation of Schager **1.20**, with the following:

"It had been interesting to see how the Commission more comprehensively discounts the different theory of naval architect Anders Björkman who suggests that the 'Estonia' sank due to a leakage below the waterline. But his theory has always been dismissed".

It was the last time that DN mentioned the author or leakage as cause of accident **1.44**.

[68] According Swedish daily Svenska Dagbladet 970923:

"The Commission says - which is new - that the 'Estonia' had about the same speed as the 'Silja Europa' when the accident occurred ... The Final report therefore does not repeat that the 'Estonia' was driven too fast, and that for that reason you cannot criticise the crew".

According figure 17.1 in (5) the 'Silja Europa' sailed about 6.3 miles between 01.00 and 01.32 hrs - speed 11.81 knots!

[69] When the author pointed out some obvious errors for president Meri and his Public Relations secretary Ms. Epp Alatalu, **epp@vpk.ee** , that the final report does not quote surviving passengers correctly, there is no reply.

[70] The Swedish daily Svd 971204:

"The wind speed just before the accident was 16-20 m/s ... the wave height was about four meters ... such conditions and worse occur more than 300 hours per year. The wind speed was not particular. Such weather ... occurs 8-10 times per year" says Svante Andersson. *"... - It is not reasonable that a ship sinks in these weather conditions, then there would be no shipping in the Baltic".*

[71] ITF Assistant General Secretary Mark Dickinson has called for a new investigation into the 'Estonia' … disaster … Dickinson made the demand while speaking in Stockholm at a joint ITF/NTF conference on 18 November 1998, which looked at an independent analysis of the official Joint Accident Investigation Commission's (JAIC's) report into the tragedy as well as details of the work of a German group of experts... The independent analysis commissioned by the ITF from Corlett, Burnett & Partners shows that the official JAIC's findings are questionable and that a number of its central assumptions are not sustainable. The report presented a different time scale for the casualty and highlighted shortcomings such as **poor maintenance** in the operation of the vessel.

"Most importantly it is clear that the 'Estonia' was not seaworthy that night, and that she was not in compliance with international minimum requirements. These findings present a large amount of relevant information that could have a bearing on the chain of events leading to the casualty. They reinforce our concerns about the JAIC report and the investigation. It seems that the JAIC process was more of a political fix, concerned with appeasing vested interests, rather than identifying the circumstances surrounding the loss of the 'Estonia' and establishing the causes by gathering information and drawing objective conclusions. That is why the ITF is calling for a re-examination of the loss of the 'Estonia'."

Dickinson said and added that the new investigation should be transparent.

"To do otherwise would set an unfortunate precedent to be seized upon by those flag states, which have little regard either for the safety of life at sea or for the protection of the marine environment,"

he concluded. In April 2001 the Swedish government concluded that the ITF investigation had not provided any information that affected the official course of events and the cause of accident. The ITF did not object. Sweden just confirmed that it was one of those flag states, which have little regard for the safety at sea.

1.22 ALL GERMAN FINDINGS KEPT SECRET 1995-1998!

That the Commission was going to blame the accident on the visor locks - *design fault* - was known early, as the Commission already nineteen days after the accident and in the Part report in April 1995 had stated it. *But not until fourteen (!) months later*, in December 1995, the Commission was in written contact with the German group of experts of the shipyard (which itself investigated the accident 3.13 and requested information about *how the visor locks actually had been designed and manufactured* (17).

It was to say the least remarkable. The Commission had *de facto* concluded in the Part report **1.19**, that when the yard built the visor, sufficient detailed installation instructions, etc., were lacking. The Germans had protested against that and many other statements of the Commission, after having read the Part report, already in August and October 1995.

On 27 October 1995 the Germans sent a letter to the Commission (act B125**) with what the Germans thought that the Commission had accepted at earlier unofficial meetings, i.a.:

> *1. ...the original certificate (for the 'Viking Sally') issued 1980 was about **coastal trading** between Finland and Sweden.*
> *2. the front bulkhead and the bow ramp were considered to be the upper part of the collision bulkhead ... (as per contract).*
> *3. The ramp, designed as a prolongation of the collision bulkhead below the car deck is 4.9 meters forward of the collision bulkhead.*
> *4. The visor stem was fractured by four horizontal fatigue fractures ... **before the accident** ... Blue 'ice' paint was found inside the fractures.*
> *5. … **The Atlantic lock hydraulics were out of order** -* (the lock had been modified*), 3 mm welding seams (on the lugs) have not been made by the Meyer Werft, as the standard was 8 mm ... the visor lug is bent 15° to starboard ... there are no marks on the visor lug indicating contact by impacts ... 15° angle ... shows the angle between the centrelines of the visor and the ship, when the Atlantic lock was damaged.*
> *6. ... rubber packings were missing ... (on the visor) ...*
> *7. … the visor was leaking ... there was often 30 tons of water inside the visor ...*
> *8. ... **the visor hinges had been modified** ... the welding of the bushings were not original ...*
> *9. ... **if** the ramp was locked, it could not have been pulled open by the visor ... the upper hooks had a total strength of 80 tons ...*

The Commission never replied to the German letter - it was made *secret* according to the Swedish secrecy law SL 8:6 decided by Forssberg and was not official until 9 March 1998!

The Germans, but no other outsiders, had been permitted to examine the visor. And the Germans thought already in October 1995 that the Atlantic (the bottom) visor lock had been broken, when the visor had been bent or twisted 15° relative the ship centre line, i.e. it was not broken by an outside wave load in the aft/upward direction. *Furthermore the Germans stated that the visor could not pull open the ramp, as the ramp locks were too strong!* The Germans thus disapproved totally the whole course of events already in October 1995 (compare Hellberg **1.44**), apart from demonstrating that the maintenance and the condition of the visor were bad. However, the Commission ignored *all* German statements and told the media other information. Instead - on 21 December 1995 - the Commission (Stenström) in a fax (act B130a) wanted that the shipyard should *confirm* that the visor was incorrectly designed/manufactured!? Quite a strange accident investigation method!

The shipyard - or rather the German group of expert - replied on 22 January 1996 that the installation instructions were crystal clear and could not have been misunderstood by the welders. This letter was recorded

as act number *B137** by the SHK (18) and was also made secret as per the Swedish secrecy law SL 8:6 by Forssberg.* No written reply was ever given. The public had no knowledge about all this at the time.

In a letter 22 July 1996 (act B155** (19)), the yard stated that it assumed that the Commission was satisfied with the earlier statements, which should have been confirmed by telephone, i.e. that the visor was correctly designed and manufactured by the yard. The Germans produced more information in the letter, e.g. that the visor had been lost long *after* the sudden listing, which should have taken place at **01.02 hrs** (and not 01.15 hrs as suggested by the Commission) and that the ship later floated in a stable condition with 40-50 degrees list with the funnel into the wind (based on survivors statements). The Germans requested that another ten parts or objects should be salvaged from the wreck for complete analysis and that *eight further areas should be filmed for examination and that the watertight doors should be investigated.* This letter was also made secret as per SL 8:6 by Forssberg and was not made public until March 1998, i.e. three months after the Final report (5) was published. All German evidences were not analysed by the Commission and the requests for further examinations were ignored. The public had no idea that the Commission was hiding evidence.

All above letters evidently did not contain any information that should have been made secret according to Swedish secrecy law SL 8:6. The reason for secrecy was to hide the errors in the previous, public statements of the Commission and to fool the public.

The defects noted by the Germans may have affected the course of events as proposed by the Commission. The other observations of the Germans showed that the alleged course of events was not possible. It seems that the Commission could only do one thing - keep the German letters secret - and hope that they were forgotten after the publication of the Final report. It seems to be standard procedure when you falsify History.

The Final report (5) does not mention any of the German proven facts with one word, which is collusion. And the Germans never protested.

But let's now take a look at the watertight subdivision and integrity of the 'Estonia'. How could a ship with total 14 watertight compartments suddenly sink?

"When we approve exemptions (nine Swedish ferries - among them "Stena Nautica", "Silja Symphony", "Silja Opera", "Viking Cinderella" and "Malmö Link" - are approved to sail with open watertight doors at sea)*we look at each ferry individually, to see whether* ***some of the watertight doors may be open at sea****. One condition is that the vessel shall not sink after flooding of one, two or three compartments. Many passengers react against these exemptions in spite of the fact that they do not affect safety"*

Per Nordström, deputy director of safety, Sjöfartsinspektionen (DN 051230)

'all watertight doors shall be closed at sea … '

SOLAS II-1.15.9.1

1.23 OPEN WATERTIGHT DOORS - INCORRECT INDICATION AND REMOTE CONTROL - CENSORED

The Final report (5) does not describe the watertight bulkheads/doors in the *hull* of the ship; numbers, positions and how they close and open, and how the doors are remotely indicated/controlled.

This is a serious fault, as *it is very important to know, if the watertight doors/bulkheads are closed and are preventing water to spread, when a ship is sinking.*

If the watertight doors had been closed, and if the 'Estonia' only were leaking into one or two *hull* compartments, the ship may have listed but should not have sunk as a result of the leakage **2.17** - (or water on the car deck in the superstructure above the *hull*). Actually, neither the Commission nor the media nor the German experts has ever clarified to the public, that *hulls* of passenger ships like the 'Estonia' are in fact subdivided by watertight bulkheads with or without doors, so that the ship still floats after leakage in the *hull* (and for that matter, if water floods the *superstructure*). This second defence against sinking is totally censored in the Final report (5).

It makes a very odd impression that the Final report does not mention at all any watertight doors and bulkheads on the 'Estonia' and how a passenger ship - e.g. the 'Estonia' - actually floats on its *hull* - intact and damaged. You get the impression that the Commission *intentionally* deleted all mentioning in the Final report (5) of the watertight subdivision/doors of the *hull* as part of the conspiracy to convince the public that the ship sank due to water in the *superstructure*.

The 'Estonia' was correctly protected according to the SOLAS rules by 13 watertight bulkheads, which divided the ferry into 12 watertight compartments between the aft peak and tanks forward and the forepeak tank. These are simple rules since at least 30-50 years back and Sweden, Finland and Estonia have adopted them.

If in a collision one bulkhead is damaged and two compartments are flooded, the ferry will always float.

The risk of collision is always there. In most collisions, say 70%, you only rupture the *hull* between two bulkheads, i.e. no bulkhead is damaged and only one compartment is flooded. No problem - the ship floats. In more severe collisions, say 29%, you may damage one watertight bulkhead and two compartments are flooded. No problem again - all passenger ships above a certain size are designed to survive with two watertight compartments full of water. If two watertight bulkheads - a fair distance apart - are damaged in one collision - a very rare occurrence (<1% chance), three compartments are flooded and the ship may sink. However in *any* case the watertight doors in *all* the bulkheads must be closed at *any* time at sea. You never know, when a collision will take place, so the watertight doors must be closed.

The SOLAS rules say, i.a. that

> *'the number of openings in watertight bulkheads shall be reduced to a minimum depending on the design of the ship ...; satisfactory means to close the openings shall be provided'* (SOLAS II-1.15.1).

In engine compartments you cannot have more than one door in each bulkhead except in special cases (not applicable to the 'Estonia'). Further the rules evidently say

> ***'all watertight doors shall be closed at sea … '*** **(SOLAS II-1.15.9.1).**

A normal interpretation is that there are *no* watertight doors at all in the bulkheads *except* between engine rooms (for escape and emergency purposes).

Watertight doors between passenger and/or crew spaces in the hull are not permitted.

Any passenger or crewmember has to take the stairs up to the bulkhead deck and down again to reach an adjacent compartment.

THE 'ESTONIA' DID NOT COMPLY WITH THE RULES

The 'Estonia' did not comply with these rules - e.g., the engine control room, ECR, (sic) on deck 1 was itself fitted with two watertight doors - one leading into the engine room itself, one leading into the passenger accommodation forward. Even worse - on deck 0 below the ECR the same bulkheads were also fitted with watertight doors!

This was a very stupid/illegal arrangement - the ECR should of course have been located *inside* the engine room itself - no watertight doors! Who has ever heard of an ECR inside a *watertight* compartment *outside* the engine room?

A standard ferry normally has maximum five or six watertight doors between engine spaces - there are only two or three on smaller ferries. The 'Estonia' (ex 'Viking Sally') was an extreme, totally illegal exception approved by the Finnish administration - albeit for coastal trading. That the Swedish National Maritime Administration had never complained 1980-1994 is a mystery.

The 'Estonia' had totally twenty-two (!) off watertight doors:

> three between store rooms aft, eight in the engine spaces, two between engine and passenger spaces and seven in the public spaces forward. The bulkheads in the engine rooms - frames no. 66, A and L - had two doors each - not acceptable by the SOLAS. The bulkhead at frame L had in fact *three* doors fitted, one extra door to the passenger spaces. Bulkheads at frames 80, 91 and 101 had also two watertight doors each, where none should have been fitted (the 'Estonia' was a lengthened version of the Swedish flag 'Diana II' - an extra section had been fitted at frame 79 with frame marked by letters A, B, C, … etc.).

One reason why the 'Estonia' had too many watertight doors seems to be that they had moved the crew from watertight compartments without watertight doors on deck 1 in the hull to comfortable cabins in the deck house on deck 8. The hull compartments on decks 1 and 0 (!) below the car deck were then allocated to *passengers*, and as they did not like to run up/down in stairs to go to the toilets, watertight doors were installed. They also fitted a swimming pool compartment - with the pool piping recessed down into the double bottom! - a sauna compartment and a conference compartment for passengers on deck 0, which also were interconnected by watertight doors. And at the same time extra doors were fitted between the engine rooms themselves and to the passenger spaces without considering the risks of such doors. The passengers could walk into the engine rooms through the watertight doors!

The approval of the Finnish Administration in 1979 of this arrangement was not correct. It demonstrates the total incompetence of the Finnish Maritime Administration.

ILLEGAL WATERTIGHT DOORS - INCORRECT ESCAPE ARRANGEMENTS

Most of the watertight doors on the 'Estonia' were totally illegal. They should have been permanently closed/removed or welded tight and the passengers and crew should have been forced to walk up to the car deck level, when moving from one watertight compartment to another. Only a few watertight doors were permitted in the engine room(s) to be used as escapes in case of a fire.

The illegal watertight doors in the passenger accommodation in the hull also resulted in that the escape arrangements from these compartments became defective. Normally you shall have *two* escape routes (stairs) from any passenger compartment in the hull - if one is being blocked by a fire you shall use the other escape - *and it shall not lead through a watertight door*. The six passenger compartments in the hull of the 'Estonia' had only one correct escape - the normal stairwell with a door located in the centre of the compartment.

On deck 0 two watertight compartments - for stabilizers and heeling tanks - could only be accessed via watertight doors from adjacent compartments. Correct arrangement would have been direct access from deck 1 or 2. Thus, if the stabilizer compartment was leaking and flooded you could not access without opening a watertight door, when the flood water spreads!

WATERTIGHT DOOR CONTROL

All watertight doors should be able to be remotely closed from the bridge. The Germans, in correspondence with the Commission, (act B155**) have suggested that the controls and indications were manipulated - green light indicated an open door. The Germans have never pointed out that the whole watertight door arrangement was illegal.

If the remote closure functioned is not known. We know that the doors were open at sea to facilitate passengers and crew movements. It is possible that the local and remote closure function was shut off so, e.g. a passenger would not close the door.

The Final Report (5) states that the key witnesses in the ECR **1.48** had informed that the watertight doors were closed *after* the sudden listing had occurred. The statement is strange (and an invention of the Commission) - *there is no indication panel in the ECR for watertight doors showing, if the doors are open or closed.*

The previously mentioned secret letter act B155** (19) from the yard mentions the watertight doors on page 3 (The Germans had interviewed seamen, who had served on the ship under Finnish flag) -

> *"the light indication for the watertight doors on the bridge must have been changed after the ship was renamed the 'Estonia', because as long as she sailed under Finnish flag the lights were 'green' when the doors were 'open' (which was the normal condition) and 'red' when the doors were 'closed'."*

This information is sensational and shows that, when the ship was Finnish flag, she did not comply with the SOLAS-rules, which evidently require **closed** watertight doors at sea to be indicated by **green** lights.

It is probable that the 'Estonia' also did not comply with these rules, as it was impractical to close the watertight doors at sea, as 75% of the passengers on deck 1 could then not visit the public toilets **2.20** without walking a stair up and a stair down. It seems also to apply to the passenger compartments on deck 0. A passenger could take an elevator down to deck 0 and go through watertight doors to the swimming pool, sauna and conference room. Many passengers travelling with the 'Estonia' have informed that *the watertight doors were always open at sea.* Estline employees have given the same statements to the Commission.

INCORRECT HANDLING OF WATERTIGHT DOORS

It is further probable that incorrect handling of the watertight doors contributed to the accident, as the ship would never have sunk unless the doors were open.

The watertight doors had remote indication on the bridge. According international practice (not uniformly applied) a **green** light indicates a **closed** door (the normal, safe position) and a **red** light an **open** door (the un-normal, unsafe position). As the 'Estonia' highly probably sailed with at least five watertight doors on deck 1 forward always open, then five lights on the control panel on the bridge should have been **red** and the rest green at sea. There are other suggestions that there were no lights at all on the panel (as found by the divers **1.16** and then censored by the Commission).

According letter act B155** (19) the shipping company may have changed the indication lights for the doors on deck 1 earlier. They showed **green**, when they were **open**. That something is strange with the watertight door indication was confirmed by the former Commission expert Bengt Schager in the Swedish daily Dagens Nyheter (DN Debatt) 971203, where he wrote:

> *"When one of the Swedish company inspectors testified it was shown that … the inspector thought … that the chief officer wasn't informed about ... the meaning of the watertight door indication on the bridge. He (the chief officer) guessed that the doors were closed when the indication was green. The chief officer had worked on the 'Estonia' from the start of operations. He thus thought that the watertight doors in the cabin compartments on deck 1 were closed in watertight compartments (when the lamps were green). ... The following deficiencies were found ... The chief officer did not know the meaning of the indication lights of the watertight doors".*

The Final Report (5) does not mention the problems with the watertight door indication. And the Commission expert Schager does not explain, *why* he, based on unproven accusations of a Swedish Estline *'inspector'* whose name is Karl Karell, criticised the chief officer for guessing (sic), when the chief officer correctly pointed out that **green** lights indicated **closed** doors. According letter act B155** (19) it is suggested that all lights indicated green, even if five doors on deck 1 were open. This is extremely confusing, particularly when the Commission censors the whole matter. It would have been very easy to fix the defect - connect the lights correctly (even if the doors should have been welded tight). The German letter B155** also proposes that the ship was leaking before the accident.

The remote closing of the watertight doors was thus positioned on the bridge. Did the remote closing work? At a questioning by the Commission on 2 November 1994 (with Mr Bengt Schager attending) Mr Åke Sjöblom, ship safety inspector of the Swedish NMA, stated (act D6a*) that he did not test (sic) the remote closing of the doors from the bridge. The reason should have been that you do not do that with 500-600 persons aboard. Mr. Zahlée - see below - was supposed to do local testing below. Mr Sjöblom added that the

> *"deficiency of the watertight door remote control panel was that the chief officer had no idea what was open or closed. The lights were green and the chief officer thought* (sic) *it meant that the doors were closed. And so says the latest SOLAS rules. But on this ship green light meant that the doors were open."*

So at least two persons told the Commission that the watertight door indication panel was incorrect or confusing. And Mr Sjöblom did not test the remote closing!

WATERTIGHT DOORS KEPT OPEN FROM THE BRIDGE

On 2 November 1994 Mr Gunnar Zahlée, ship safety inspector of the Swedish NMA, was also questioned by the Commission (act D6a*). Zahlée had inspected the 'Estonia' at Tallinn the 27 September 1994, the day *before* the accident together with Mr Sjöblom. Zahlée informed that in port (Tallinn) the watertight doors were open, i.e.

> *'the doors got an input signal from the bridge to be kept open'.*

This was a very strange arrangement. You should not be able to *open*, or to keep open, the watertight doors from the bridge (sic) - only to remotely close a locally open door from the bridge.

Zahlée thus explained that he tried locally to close the doors in port but when any door was closed,

> *'they automatically opened immediately ... we didn't close the doors from the bridge, as there were persons aboard' ...*

i.e. the control panel on the bridge was arranged to prevent local closure.

The statement of Mr Zahlée is another sensation, i.e. the watertight doors could be kept open from the bridge and you could not close them locally.

The doors should of course always be closed - they should only be opened, when somebody passed through, and then they should close automatically. If, in the event the door was kept opened locally, you should be able to close it from the bridge.

The repeat statements from Zahlée and Sjöblom that you do not test the watertight doors system, when there are persons onboard, are strange. Very few passengers must have been on decks 1 and 0 at this time and there were only seven watertight doors in the passenger spaces. The other 13 watertight doors were in crew-only spaces. By remote closing a small alarm clock should have rung at each door, which then would close slowly. It takes 10-15 second. No risk for passengers and it would have been easy to advise a cabin steward to warn the passengers or to make an announcement via the public address system. But the remote testing was never verified by Mr Sjöblom. And the watertight doors should not have been installed in the first place!

With the above-described system of watertight doors the 'Estonia' was not seaworthy - she was frankly speaking very dangerous. We do not know why Mr Zahlée didn't demand that all doors were closed immediately (in port and at sea) - maybe the 'Estonia' accident had never taken place then. Mr Zahlée could easily have stopped the 'Estonia' at Tallinn by refusing her to enter a Swedish port.

The above system with open watertight doors in passenger accommodation in the hull seems to be standard practice in the Baltic. The author visited the Swedish flag M/S **'Trelleborg'** summer 2001 and found at sea open watertight doors in the passenger accommodation below the bulkhead deck. The Swedish Maritime administration doesn't seem interested to stop this dangerous practice.

ILLEGAL AND DANGEROUS ARRANGEMENTS ON SIMILAR FERRIES

The watertight doors control system of the 'Estonia' was probably manufactured by AEG as shown below:

Figure 1.23.1 shows the watertight doors control panel on a German built ferry similar to the 'Estonia'. The picture is taken year 2002. The ferry is (incorrectly) certified and approved by a European shipping administration for short international voyages.

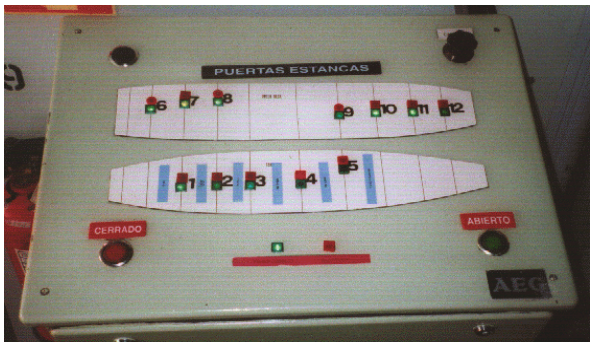

Figure 1.23.1 - Incorrect watertight door control panel - year 2002

There are twelve watertight doors in the hull - five doors (nos. 1-5) on deck 0 between engine rooms, which is in order, and seven doors (nos. 6-12) between crew and passenger spaces on deck 1, which is totally illegal according to SOLAS. Three watertight bulkheads have two watertight doors each (doors nos. 1 and 7, nos. 2 and 8 and nos. 5 and 9 are located on top of each other in the same bulkheads).

The indication is green for an open door and red for a closed door. The doors can be remotely opened from the bridge with the green push button to the right, which is illegal. Naturally the doors can be remotely closed with the red push button to the left.

When the doors are kept open from the bridge, an inexperienced person cannot close the door locally. When he pushes the local close-button, the door slides to the closed position, but when the push button is released, the door opens itself (as Mr. Zahlée observed)! To really close the door there is a little trick - turn the push button, when the door is in closed position. Then the door cannot be remotely opened from the bridge. This trick is not described on any notice board at the door.

After having remotely opened/closed the above doors a couple of times, the system failed due to low hydraulic pressure. It was no longer possible to close the doors!

(It is very simple to make the system legal: Disconnect the (green) remote opening button on the bridge. Change the light indication - red for open, green for closed. Permanently close doors nos. 6-12. Keep doors nos. 1-5 closed at sea).

It is very probable that the 'Estonia' had the same illegal system as shown above and that it contributed to the accident. A new investigation will find the truth.

1. The 22 off watertight doors were very likely open, when the accident (the sudden listing) took place (at 01.02 hrs)

2. The watertight doors were never closed, as

2.1 The crew on the bridge was thrown down to lee and never reached the close button(s), and

2.2 No surviving passenger on deck 1 heard the loud alarm bells, which are activated, when the watertight doors close

3. Leak water earlier flooded several compartments through the open watertight doors and caused first the sudden listing and later sinking.

In other chapters of this book is discussed the possibility that certain watertight doors were actually closed before the accident and that leak water was isolated between watertight bulkheads with these closed doors before the sudden listing occurred at 01.02 hrs, and that these doors were remotely opened from the bridge. The results were two severe bangs heard some minutes before the sudden listing took place. But no survivor from deck 1 has stated that he/she heard the very loud alarm bells indicating opening (or closing) of a watertight door. The possibility is still that the alarm bells were disconnected.

At the dive examination of the wreck **1.16** the control panel should have been filmed. If it were done is not clear - the Commission anyway censored all information about the watertight doors and their control system on the bridge and locally. The same thing the German group of experts **3.13** did - but the Germans still published (without any comments) a picture of the alleged 'Estonia' control panel for the watertight doors.

THE 'ESTONIA' CONTROL PANEL FOR WATERTIGHT DOORS

The picture right shows the 'Estonia' control panel for 22 watertight doors. It is a little more complex than the panel shown above. Top are two deck plans with indication lights red/green - deck 1 with 14 watertight compartments and 11 doors (***totally illegal***), deck 0 with another 10 or 11 doors (one door is maybe a hatch in the deck?) most of which are illegal. **The panel confirms that several watertight bulkheads had two or three watertight doors, which was totally illegal.** Bottom left on the panel are two buttons/indication lights - the left is green. Maybe is it on/off for the system. Bottom middle are four buttons and/or indication lights probably used for remote opening (the two upper ones - totally illegal) and for remote closing (the two lower ones). Bottom right is a dimmer and a small button for light bulb control. If it were possible to remote open/close individual doors is unclear.

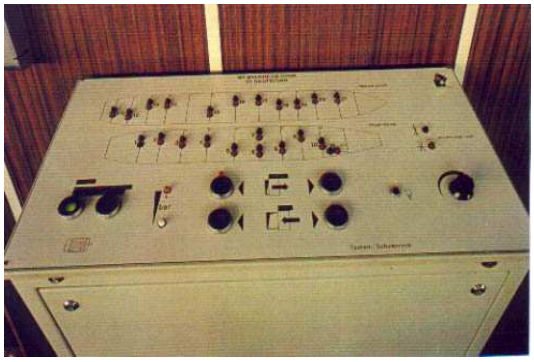

Figure 1.23.2 - The 'Estonia' control panel for 22 watertight doors

What is clear is that the complete system was wrong. You shall not be able to remotely *open* the doors from the bridge.

The suggestion of the author that the 'Estonia' watertight doors were remotely kept open during the whole accident is supported by the above picture. That an unknown crew member later should have closed the doors is unlikely. No survivor from the deck heard the very loud alarm bells, when watertight doors are closed (or opened).

The author is convinced that the defective watertight door system seriously contributed to the 'Estonia' accident, as the ship would never have sunk, if the doors were closed. Maybe some doors were closed at sea before the leakage, some watertight compartments filled up and then the doors were opened (!) from the bridge by mistake, when the crew attempted to close all doors, which resulted in two big bangs heard on the ship just prior to the sudden listing.[74] The author has never made an attempt to verify this (it is difficult to do such a test), but the result would have been a shock wave of water flooding the adjacent dry compartment - probably being noticed by some noise or bangs - and then loss of stability - sudden listing - due to the great free water surfaces on the inner bottom of several compartments.

The Final Report (5) thus censures the following facts:

(a) the 'Estonia' had too many watertight doors,

(b) most of them were not installed as per the SOLAS,

(c) they were always open at sea, and

(d) they were probably not closed after the 'accident'.

The incorrect and defective watertight doors system contributed to the accident.

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[74] In a letter to the author 960719 the expert B. Schager of the Commission said that: *"The watertight doors were closed"* at the accident. Asking how this was known Mr Schager informed by letter 960801 that: *"According testimonies the watertight doors were closed **during** the early events of the accident (at the beginning of the sequence of events)".* Naturally there is a difference. What is *'at the beginning of the sequence of events'?* The alleged noise at 00.55 hrs or the alleged listing at 01.15 hrs? And who closed them? From where? The bridge? Locally? No more clarifications were received from Schager. Nobody from the bridge survived and it was on the bridge that the indicating panel was located. Nobody was in the aft compartments with many watertight doors. Nobody was on deck 0 forward with three watertight doors. The 21 survivors from deck 1 observed that the five watertight doors there were open. The three survivors from the ECR had to pass watertight doors to escape. Thus nobody could have confirmed that all watertight doors were closed. And no survivor has heard the alarm

bells, when the watertight doors were closed. Schager - an expert in the Commission - obviously tried to fool the author with his two letters stating that the watertight doors were closed. But he confirmed that the watertight door were open before the accident, which thus contributed to the accident.

1.24 BILGE PUMPS RUNNING BEFORE AND AFTER THE ACCIDENT - CENSORED

It is unbelievable that the Final Report (5) does not describe *the bilge pump system* in any detail. There is not one word about bilge pumps in the whole Final Report! You get the impression that the Commission intentionally deleted all mentioning of the bilge pump system to avoid pertinent questions about it.

To prevent any ship from sinking there are several bilge pumps fitted aboard and the bilge pumps shall be able to empty - pump dry - any compartment in the hull that is leaking.

The 'Estonia' should have had at least four bilge pumps located in different compartments to enable one, or more, watertight compartments below the car deck in the hull to be pumped dry in case of leakage. The pumps were driven by engines or electrical motors and the latter were fed both from the auxiliary and emergency generators. The pumps should be connected to a bilge pipeline with a minimum diameter of about 136 mm, and each pump should have had a capacity of minimum 105 m^3/hour. Probably the actual capacity was much higher.[73]

Systems engineer Sillaste stated at two interviews immediately after the accident, one of which where the director of the Finnish NMA and the expert of the Commission captain Simo Aarnio (2) was present, that

> *"the bilge pumps were running"*

just after the listing had occurred and that Sillaste had the impression that the 'Estonia' was leaking **1.3**. These statements are not included in the Final report (5). Sillaste had probably been called down at 00.30 hrs to start the bilge pumps, but that he could not say - he said that he went down to fix the toilet sewage system - and then he never dismissed the suggestion that it was water on the car deck at 01.15 hrs, which caused the accident. Or the testimony has been edited to make that impression. This author believes Sillaste was called down to assist stopping a severe hull leakage and that it was Sillaste (and Treu) who started the bilge pumps.

It is not easy to design an idiot proof bilge system, as several pumps shall be able to empty both its own and adjacent compartments. The system can become over-complicated with a too large number of stop and control valves. By not mentioning the bilge system in the hull at all the Commission adds to the uncertainty about its contribution to the accident. Probably large amounts of water - 1 200-2 400 m^3/hour - leaked into the hull of the 'Estonia' and later spread through open watertight doors, when the crew did not manage to pump the relevant compartment(s) dry or to isolate the compartment(s) by closing the watertight doors. The result was unavoidable - sudden listing and later sinking on the stern, when the superstructure started to be flooded via the vents on open deck 4 aft or via an open pilot door on deck 2!

The bilge pump system of the hull may have contributed to the accident.

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[73] The 'Estonia' had total six, electric driven bilge pumps with total capacity 960 ton/hour located in four separate watertight compartments below the car deck, which thus could have controlled a minor leakage. With a major leakage you had to rely on the watertight subdivision and that the watertight doors were closed and allow the damaged compartment to fill up.

1.25 ROUTINES OF CARGO LOADING - DANGEROUS GOODS - CENSORED

According to the Final Report (5) the lightship centre of gravity of the 'Estonia' was located to the *starboard* side, so that it was either necessary to load more cargo on the *port* side or to fill the *port* heeling tank for no listing **2.17** in service. However, according to the Final report the 'Estonia' was loaded incorrectly at departure - more cargo was put on the *starboard* side, so that it was necessary to fill the *port* heeling tank 100% with 183 tons of water, but still the ship was not upright, when it left Tallinn.

This is, to say the least, a strange description how the ship was listing at the last voyage. There is no information how the ship was loaded at previous voyages. And as shown in 2.17 the lightship centre of gravity was in fact located to *port* (!), so you needed 100 tons of water in the *starboard* heeling tank for an upright condition in harbour. If the *port* heeling tank was full, it must have been 283 tons more weight on the extreme *starboard* side!?

If the 'Estonia' were incorrectly loaded at Tallinn, she should have listed to starboard in port, already *before* the port heeling tank was filled up. The Final report does not describe the heeling system, but it is certain that the heeling tank was not automatically filled up. The German group of experts have suggested that the 'Estonia' was leaking already at Tallinn, i.e. that one or two double bottom tanks on *starboard* side were filled with water (due to a hull leak and could not be pumped dry!) and that the *port* heeling tank was filled to compensate for that!

You get the impression that the crew loaded the ship totally arbitrarily.

UNKNOWN CARGO

The Final report does not describe in any detail what exactly was loaded on the last voyage. It is possible that *dangerous goods* were carried, which leaked out on the car deck and flowed to a collection tank, which later exploded. The possibility has not been investigated.

According a document in the Swedish SHK archive, act A61, the cargo consisted of 39 off trucks with a total weight of 970 tons, none of it dangerous, plywood, frozen fish, miscellaneous cargo, etc. The average weight was thus 25 tons - the heaviest truck weighted 55 tons and the lightest 6 tons. It should not have been too difficult to load 39 trucks, so that the ship floated without a list. The conclusion of the Final report, that four or five of the most heavy trucks - 200-250 tons - were incorrectly loaded on the *starboard* side, so that it was necessary to later fill the *port* heeling tank 100%, does not ring true. The German suggestion that the ship was leaking already in port has not been checked by the Commission. And the Final report does not investigate, if dangerous goods were carried and if the crew knew how to handle dangerous goods. Actually, every essential piece of information in the Final report (5) is false or misleading.

TRANSPORT OF MILITARY EQUIPMENT

The 'Estonia' was regularly used by the Swedish Military Defence forces to transport military equipment, apparently of ex-USSR origin, from Tallinn to Stockholm. This simple fact is not mentioned or investigated in the Final report (5). According to an agreement between the Swedish customs authority (Tullverket) and the Swedish defence authorities (Försvarsmakten) 1993 or 1994 the Swedish customs agreed to allow military goods to pass without normal clearance. Staff of the Swedish defence authorities informed when transports arrived. They were also attending in person on arrival, according to the head of information at the Tullverket, Mr Sven Peter Olsson. A customs clerk has informed that the 'Estonia' carried such military equipment twice in September 1994 and it has been confirmed by a Swedish military spokes person on Swedish TV autumn 2004. Thus it was *'normal'* practice that *'strange'* goods were carried by the 'Estonia' and were accepted/passed by the Swedish Customs. The Swedish defence authorities have in January 2005 in a report to the Swedish government again confirmed this. The Swedish (Svea) appeal court chief judge/president J. Hirschfeldt told, after a short investigation, the government that the defence authorities (not clear who?) had confirmed

a) two consignments of military (non-explosive) goods were imported on the 'Estonia' in September 1994 and

b) an agreement with Swedish customs not to stop them was in force.

The Hirschfeldt information to the government January 2005 has been challenged by Swedish journalist Sven Anér. Already 22 December 1994 the Swedish defence Headquarters (legal counsel Stefan Ryding-Berg) told Anér that it (the defence authorities) had no documentation of any kind about imports/transports of military goods by them on the 'Estonia' at any time 1994. On 15 April 2005 the Swedish defence Headquarters (legal counsel Stefan Ryding-Berg again) told Anér the same thing and added that there existed no agreement with the Customs, etc.

The present situation is thus that the Swedish defence authorities tells the government via its chief appeal judge/president Hirschfeldt one thing - that military goods were imported/a customs agreement existed, and, on the other hand, to Anér, that no such evidence exists at defence Headquarters. Confusing, to say the least. But according to the Swedish secrecy laws the defence Headquarters can say what it will to Anér. Secret documents simply do not exist.

The details about the cargo are thus still unknown; the type and origin of the cargos, weight, volume, value, what it was declared to be and its ownership, how it was carried (in trucks or lorries?), etc. Apparently it was ex-USSR equipment (probably from the Ukraine) that the Swedes wanted to study (or wanted to pass on to other customers). How the cargo could pass the Estonian customs and be loaded aboard is unclear. Probably the Estonian customs was corrupt and didn't care what was loaded as long as they were paid. It could thus be anything - nuclear, chemical, biological, medical, narcotics, etc. One proposal is that it was anti-aircraft equipment (radars/robots) from Ukraine to be re-sold to Iraq and that it was a 'private ' Swedish/Iraqi deal by certain Swedish military officers (the equipment was supposed to be transported by air to Egypt from Sweden and then on by boat to Jordan and by truck to Iraq).

Another question is whether the shipping company, Estline, was informed of these unusual practices, i.e. that its vessel was used to transport military equipment of unknown nature? No doubt the 'Estonia' senior officers aboard were informed and it should be the reason why 12 surviving Estonian crew members disappeared after the accident **1.46** and **1.41**. They were prevented to testify about the stupid business.

The Swedish customs/defence authority cooperation agreement is still (2005) according to Hirschfeldt in force and secret. Actually everything is secret according to Swedish secrecy law 1980:100, chapter 2 -1,2 §§. No honest person has any possibility to find out what really happened by asking the Swedish authorities.

The confirmation that the 'Estonia' carried secret cargoes of contraband type should be further investigated. Latest information (May 2005) is that the military contraband was carried a the Latvian heavy truck bound from the Ukraine (not confirmed) with registrations number AG 565 with driver Gunars Gobins, born 1964. The truck was passed and recorded by the Estonian customs (according to Hirschfeldt) and thus loaded on the 'Estonia' 27 September 1994 but the ship owners never registered the truck in the loading bill and never informed the Swedish customs (or the accident Commission) that the truck was aboard. It should be fairly easy to find out the background of Gunars Gobins and his truck.

According to Mr. Stephen Davis in an article '**Death in the Baltic: the MI6 connection**' in New Statesman Monday 23rd May 2005 it is suggested that British intelligence was involved in the smuggling.

As shown in other chapters of this book, Swedish Navy divers visited the wreck the week after the accident. They apparently tried to enter the car deck to remove cargo. At the same time they removed the visor using explosives. The visor then fell to the sea floor below the bow. Then the Commission was apparently ordered to blame the accident on the visor and its defective Germans locks manufactured 15 years earlier. It is the origin of the book you read - **Disaster Investigation**.

Dangerous goods may have contributed to the accident.

1.26 UNCLEAR ROUTE PLANNING - TURNING POINT - CENSORED

The Final Report (5) has no information at all about the 250 earlier, identical voyages of the 'Estonia' with e.g. the *normal* route, e.g. following the *Finnish* coast as the ferries from Helsinki. The suggested courses/speeds in the Final Report of the last, fatal voyage, i.e. along the *Estonian* coast (see figure 1.26.1 below) are not proven and seems to have been a one off trip. Normally the 'Estonia' followed the Finnish coast! The Polish vessel the 'Amber' met the 'Estonia' on 27 September 1994 at about 23.15/23.20 hrs Estonian time at position N59°22,5', E22°35,4', when the 'Estonia' had course about 260/265°. It means that the official position of the 'turning point' and the time - 00.30 hrs - for reaching it cannot be correct **2.25**.

The Independent Fact Group has convincingly shown that the Commission states completely incorrect courses, positions and speeds for the 'Estonia' *before* the accident (see **http://factgroup.tripod.com** and click on updates 01.02.11) in the Final report (5). According to the Fact Group:

> *"M/V Estonia departed on time at 19.00 hrs, and nothing abnormal was reported in the first and original witness statements, neither from the passengers nor from the crew, except from one witness stating that she was faster than normal. Her speed was about 18 knots. The ship left through the north exit where she suffered from hard wind and waves from the port side that caused a list to starboard. The course was 290° and the speed reduced to about 17 knots. At this time of the voyage she rolled quite a lot and it caused problem for the people in the restaurants. She was heading for the traffic zone outside the Porkkala fairway where she should change to a course more against the wind and waves.*

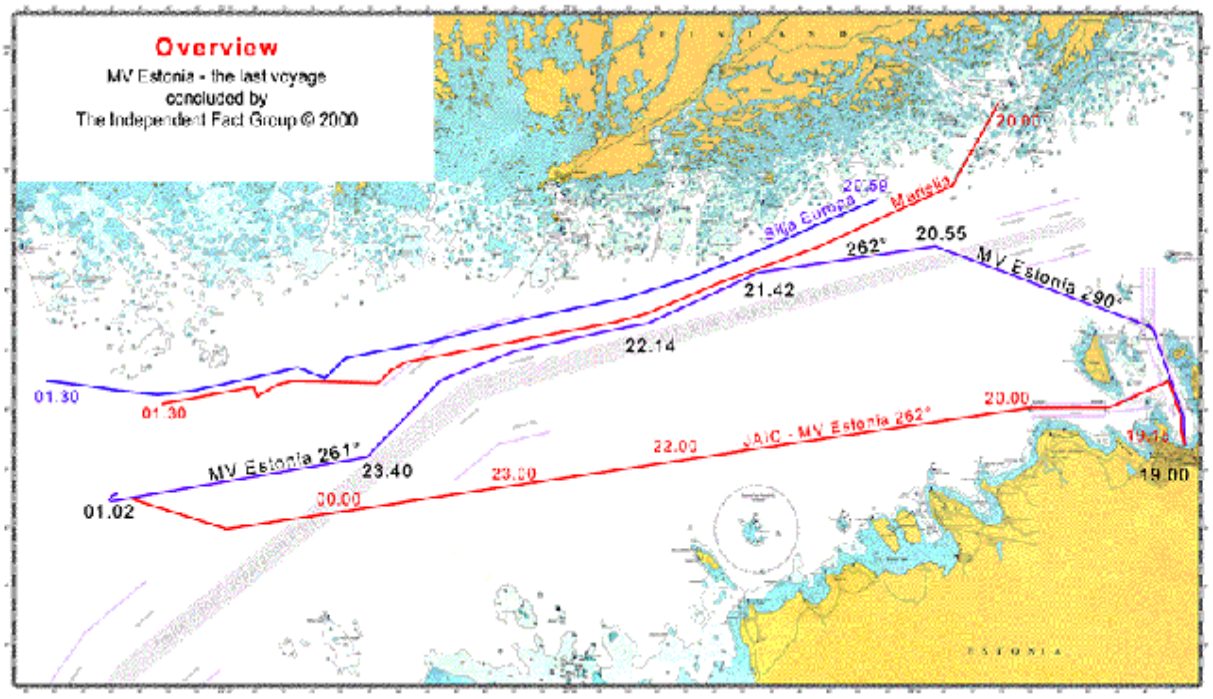

Figure 1.26.1 - The Fact Group suggested course of the 'Estonia' 27-28 September 1994

> *At 19.58 hrs she entered in to the Finnish surveillance information system MEVAT, and she consequently got the identification no. 1758. When she reached the west way bound zone at 20.55 hrs she altered the course to 262° and increased the speed to the maximum around 20 knots.*
>
> *At 21.15 hrs both captains entered the bridge and stayed there for 20 - 30 minutes. At this time they were closing up to Mariella that came down from the northeast just ahead of Estonia. At 21.24 she is plotted by MEVAT from Russarö, identified as M/V Estonia. However there are two other unidentified ships very close to each other just behind Estonia at this time. All three ships are therefore identified being the same, M/V Estonia. The tracking is lost at 21.25, and that position is the only one that we have identified as originated from M/V Estonia. The*

presumed tracking of M/V Estonia continues however, but it is one or both of the unidentified ships that are tracked. They are only keeping a speed of around 13 knots and heading almost the same course as M/V Estonia.

At around 21.30 the passenger Rolf Sörman entered up to the 7 deck with his friends. When he came up from the stairway at deck 7 he passed the hall to the opposite side from the stairway diagonally to the left. He was subsequently heading toward the stern with the starboard side on his left. When they stood there, inside the hall, he saw, and read the illuminated name "MARIELLA" in yellowish colour through the doors on his left side. As it was very dark outside he could not see which way the ships were heading, and he did believe he saw the ship on the port side of Estonia, and it looked as if Mariella was almost still. This can be explained by a slight alternation of the M/V Estonia course toward the south at 21.42 giving that visual effect.

At around 21.45 M/V Estonia was heading almost parallel with Mariella and Silja Europa.

At 22.14 she was in the position to be seen by Ingmar Eklund, mate on Mariella, 30° on her port side in the same time as Silja Europa is a bit further forward on Mariella's starboard side.

At around 22.50 M/V Estonia enters the point where she follows the traffic zone towards the southwest. At around 23.10 she has changed the course to 226° following the zone. This is a necessary change of the course to avoid risk of collision with the fleet coming from Stockholm and heading for the eastbound traffic zone in to the Gulf of Finland. On the way from Stockholm to Helsingfors this night were M/V Isabella and Silja Symphony.

At 23.40, after about 30 minutes on this course the last waypoint was reached, where M/V Estonia changed course to west, or more exactly to 261° heading straight on to Sandhamn and "Revensgrundet". Now she was heading straight in to the waves again and according to Einar Kuuk the stabilizers were activated and the speed decreased with 1 knot.

At 01.02 M/V Estonia suffers from the final damage and shortly thereafter she is lost."

The 'Estonia' should, according to the Fact Group, have departed at the normal time 19.00 hrs (not later as stated by the Commission) - and then crossed the Bay of Finland and turned west using the same courses and speeds of the ferries from Helsinki to Stockholm/Sweden via Söderarm (or Sandhamn).

THE 'MARIELLA' AND THE 'ESTONIA' SAIL CLOSE TOGETHER

Many testimonies support the Fact Group - both from persons on the 'Estonia' and on other ferries, e.g. the 'Mariella'. It means that the 'Estonia' for several hours between 20.00-24.00 hrs sailed the same course as the 'Mariella' and the 'Silja Europa' with a certain time gap (the 'Estonia' slipped in between the two ferries in the westward fairway south of the Finnish coast and slightly south of 'Mariella' and 'Silja Europe', which sailed faster). Then the 'Estonia' turned towards Sandhamn (sic) at about 23.40 hrs to end up at the accident position at about 01.00 hrs. Both the 'Mariella' and the 'Silja Europa' may have turned towards Sandhamn during the night (it was an alternative entry point to Stockholm), but then shortly afterwards changed their minds and continued to sail towards Söderarm. Why the Commission invented a completely different course for the 'Estonia' close to the Estonian north coast 19.00-00.30 hrs and then adding a course change to Söderarm at 00.30 hrs is not clear. The Fact Group shows clearly that there is no supporting evidence at all for the statements of the Commission re courses and speeds.

The 'Estonia' should then have listed to *port* (? - Factgroup probably means starboard) at 01.02 hrs and turned *starboard*, i.e. not to port **1.9** as per the Commission to avoid heading into waves and winds and should then have drifted to the wreck position close by. In these circumstances the 'Estonia' evidently never passed the 'position of the visor' another mile further west, which therefore also is false **1.14**.

The route of the 'Estonia' before the accident is not proven.

THE WEATHER WAS NOT EXTREME

And what about the weather? Why were not the weather during the previous 250 (or 500 if you include the eastbound led) voyages investigated? The Commission suggested that the accident took place when the significant wave height was about 4,0-4,2 meters. The statistics are quite clear.

This wave height occurs about 3 days per year and much higher waves about 3-4 days. The 'Estonia' - and all the other ferries on the same trade, had therefore experienced similar or worse weather before - many times. Evidently the Masters of other ferries testified to this effect.

Furthermore, a significant wave height of 4,1 meters does not correspond to very severe seas. Such waves will hardly impose any severe loads at all on a visor on a ferry type 'Estonia' at all, which is easy to test in full scale. Therefore the Commission had to simply falsify model tests and simulations to the contrary - that a force/load of >1 000 tons had struck the visor on the 'Estonia' **Appendix 2**. There is no possibility that 4,1 meters waves can knock off a visor on a ferry! Any impact on the visor will be heard all over the ferry and you have to slow down before anything happens to the visor.

Significant wave height (m)	Days per year
>5,6	<1
5,1	1
4.6	2
4,1	**3**
3,6	7
3,1	12

Table 1.26.2 Wave statistics N.Baltic (wave period 6-10 seconds)

1.27 NO SAFETY INSTRUCTIONS - CENSORED

The Final report (5) has no information about the personal safety systems aboard, e.g. how passengers and cargo were checked *before* the voyage. Personal safety in Estonia proper 1994 was low and you had to protect yourself. Gun control did not exist. If guns or weapons were carried on board has not been investigated.

The Final report states that there was a *personal* safety system aboard, i.e. in an emergency the 2 000 passengers were supposed to be alerted by the various alarms (bells and public address) and to collect their life jackets and gather at certain mustering points. Crewmembers were supposed to assist, e.g. ensure that all passengers in cabins had left the cabin and reached the mustering points. However, this system was never practiced, as the voyage was just 12 hours, even if it would have taken only 15 minutes to execute. No safety information was given to the passengers on departure. It was the Swedish partner of Estline **Appendix 7**, which had the overall responsibility of the safety to be executed by the crew of the Estonian partner on board.

But neither party was responsible for ensuring that the system actually worked.

They believed that the safety equipment and safety system was in order, as the ship was duly certified, but had nobody verified, if the system *worked*?

Why had they not trained the abandonment of the vessel and then noticed that it was impossible to evacuate 2.166 persons in a dry condition?

The Final report does not analyse the situation. A small Estonian crew shall escort 2 000 passengers to the lifeboats and life rafts. The voyages always take place at night - from 07.00 pm to 09.00 am. About 1 000 passengers must be supposed to sleep in their cabins, so the crew should have been trained to visit *all* 400-500 cabins on four different decks in an emergency to ensure that the passengers were awake and had started to evacuate after an alarm was given.

However - the sad fact is that, even if the Estonian speaking crew could have escorted the 2 000 passengers - a majority non-Estonian speaking - to the embarkation stations for lifeboats and life rafts, there weren't *seats* for all passengers **1.33** in the boats/rafts - the ship was not seaworthy!

And the Swedish NMA knew about it and had done absolutely nothing.

Because the fact is that more than 50% of the persons aboard were assumed to *jump into the sea* from deck 7 about 19 meters above the waterline at this stage of abandoning the ship and to *swim* to the life rafts that were supposed to be *thrown* into the sea from deck 8 1.34.

Nobody at Estline had considered *how* 2 000 passengers would abandon the ship. The whole crew lived well and safely up on decks 8 and 9 and had no problems to reach the lifeboats (for 692 persons). But who in the crew was instructed to run down to deck 1 and escort about 400 passengers there to safety? The reason why proportionally more crew than passengers survived is that the crew lived in safer cabins on deck 8 and had never been trained to save the passengers on deck 1!

Lack of proper safety instructions and crew training of evacuation contributed to the accident. The 'Estonia' was not equipped to evacuate its passengers and was unseaworthy all the time!

1.28 THE 'ESTONIA' AT SEVERAL DIFFERENT PLACES AT THE SAME TIME

The voyage from Tallinn to Stockholm passed through Finnish fishing waters and the accident took place just outside Finnish territorial waters. According to the press release 941017 (7) Finnish shore radar at Utö saw how the 'Estonia' sank at 01.48 hrs **1.12**-5. There is no evidence for the time 01.48 hrs and the statement has been deleted in the Final report (5), as the position, which was indicated, was wrong or falsified or it was not the 'Estonia' that disappeared on the radar screen. The actual hard-copy Utö-plot has conveniently disappeared.

Strangely enough all Finnish observations from Utö of the 'Estonia' itself *before* 01.24 hrs, when the Mayday was sent, have disappeared in spite of the fact that other ships ('Mariella', 'Silja Europa', etc.) were plotted and recorded by Utö as shown in the Final report chapter 13.

No person and no ship observed according the Commission the 'Estonia' between e.g. 00.00 and 01.24 hrs, in spite of the fact that Finnish shore radar allegedly saw the 'Estonia' on its screen at 01.24 hrs and when she sank at 01.48 hrs and that other ships were plotted by Utö before 01.00 hrs.

The 'Anette' plotted the 'Estonia' half a mile *east* of the wreck position at 01.20 hrs **1.20**! The 'Mariella' plotted the 'Estonia' at 01.30 hrs - immobile in the water! The 'Mariella' - allegedly plotted the 'Estonia' but the given position (no evidence exists!) was about 1 800 meters *south* of the position where the *visor* was later found. The Final report does not repeat that information, as it maintains in its final invention of events that the 'Estonia' at that time was heading back to Estonia 1 500 meters north **1.9** and **2.11** at a speed of 2,2 knots!

There is no logic at all in the Final report (5):

- in one part it shows (13.2 in (5)) that the 'Estonia' was heading back, with >90 degrees list, to Estonia proper at 01.30 hrs with > 2,2 knots speed *after* the listing had occurred at 01.15 hrs and *after* the 180° turn at 01.18-01.22 hrs 1.9,

- in another part it shows the 'Estonia' (on figure 17.1 in (5)) *immobile* in the water at 01.30 hrs about 2.700 meters South of the position given in figure 13.2.

The ship cannot evidently be in two or three or four places at the same time, but this is what the Final report of the biggest accident after the Second World War states. Confusing? Figure 13.2 is, as already stated, a falsification **1.9** and the position in figure 17.1 is probably another falsification.

Evidently the 'Estonia' must have stopped closed to the position, where she sank at 01.32/36 hrs.

A water filled ship cannot drift with >2 knots speed - it is immobile (as witnessed by the 'Mariella). The 'Estonia' could therefore not have drifted a longer distance when sinking, but the Commission invents that the 'Estonia' moved >1 200 meters after 01.30 hrs! The reason for this was to support the lie that the visor had fallen off a mile west of the wreck position.

It seems that ***all*** assisting vessels plotted the 'Estonia' immobile in the water at 01.30 hrs (it should be easy to check the positions given!), and that the Commission had to censure all these statements (and the various positions) in the Final report to suit its false course of events. The position at 01.30 hrs (end of the Mayday) must have been close to the true wreck position.

The Commission had at this time of its *'investigation'* announced a false wreck position, which was another 2 100 meters north **1.14** of the true wreck position (announced two months later), i.e. the confusion was total. All these false or censored positions are evidently not mentioned in the Final report (5).

The reason for the false and censored positions was of course that the whole course of events with the visor was invented and that the Commission prepared for its falsification of History.

According to the Commission the 'Estonia' was at at least three different positions at the same time - to suit the various false allegations of different types to cover up the fact that the visor was at the wreck ... all the time!

1.29 NO STABILITY WITH 2 000 TONS OF WATER ON THE CAR DECK - CENSORED

The Final report (5) evidently states that the 'Estonia' heeled as a result of alleged water on the car deck in the *superstructure* (starting at 01.15 hrs). But the Final report does not mention that the 'Estonia', like all ferries under similar circumstances, should have turned turtle and floated upside down on the watertight *hull* after having reached an heel angle of about 34 degrees with 1 500-2 000 tons of water on the car deck, when the righting arm GZ was zero; **1.9**, **1.15** and **2.16**. Water (or any unsymmetrical, lose weight) on a watertight deck *in a superstructure* above the waterline cannot sink a ship - only tip it upside down. The *deck house* cannot prevent it.

The complete course of events, while water allegedly filled the car deck in the *superstructure*, is shamefully falsified in the Final report. Nowhere in the Final report is stated that water *on top of* the car deck in the *superstructure* cannot flow down *into the hull below* the car deck, from where the bilge pumps were taking suction - indicating leakage, as the openings in the watertight car deck in the centre line is always above the water when the ship is heeling (figure 1E in **2.16**).

All stability calculations in the Final report are falsified.

1.30 THE BOW RAMP WAS CLOSED

The Final report states that the bow ramp was *ripped off* from its hooks and locks and was completely open and allowed a lot of water to enter the car deck. As evidence the Commission includes figure 6.1 on page 66 in the Final report (5), which shows a ***closed*** ramp, where water is leaking in at the edges - see below:

The sketch is done by crew member Henrik Sillaste and shows what he allegedly saw two minutes *after* the listing had occurred, when the 'Estonia' had already listed 20 degrees, i.e. the ramp was closed *after* the listing had occurred.

The Final report does not explain why the ramp was *closed* at this time.

The Final report does not even include proper drawings of the ramp and its locks and hooks. The upper two hooks had a breaking strength of 25-40 tons each and the four side locks about 25 tons each. The Final report states that the ramp was ripped open, but there is no evidence at all for this. When the wreck was filmed early October 1994 the ramp was evidently closed. Not one film shows an open ramp.

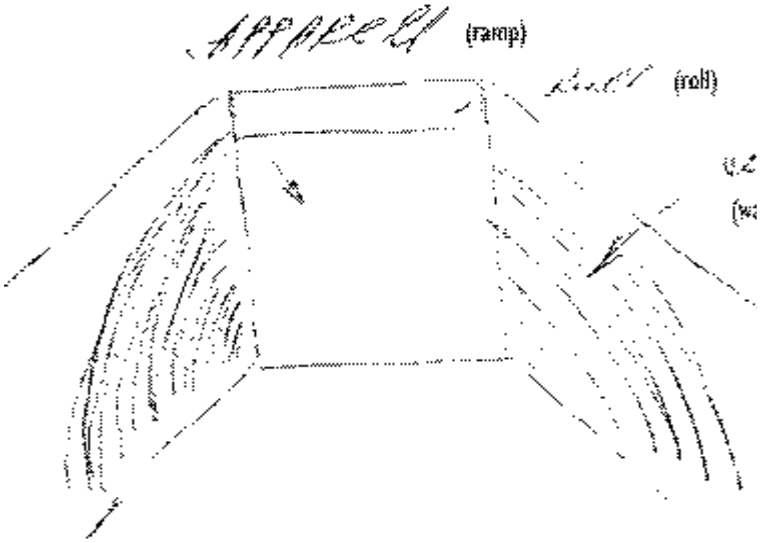

Figure 1.30.1 - Figure 6.1 of (5) - Closed ramp at the forward end of the superstructure after listing

All three witnesses in the ECR testified that the ramp never was open but *closed*, while water was leaking in around the frame - see chapter 6.2 in the Final report (5). Watch keeping AB Linde has stated that the ramp was *closed* at 01.30 hrs, when he was in a raft in the water outside the bow 1.8.

Divers apparently tried to open the ramp later **3.10**.

If you ask Ms Ann-Louise Eksborg, director general of the Swedish SHK, *when* the ramp actually was open, she refuses to answer. Mr Kari Lehtola thinks **4.2** that the ramp closed itself by gravity, when the ship turned upside down, in spite of the fact that a large number of witnesses saw the ramp closed at about 01.30 hrs, when they had jumped into the water and when the list was <90 degrees. It is today (2001) a matter of faith to believe that the ramp was fully open - sometimes during the accident - even if there is no evidence at all for it. The reason is of course that Meister, Forssberg and Lehtola already on 17 October 1994 had stated that the ramp had been open **1.11** - the day before the visor was allegedly found - and that they did not want to change this fundamental lie later. It was an essential part of the falsification of History.

All statements in the Final report, that the ramp was ever pulled open, are false.

1.31 THE WINDOWS IN THE SIDE WERE SMASHED

The Final report does not say it, but members of the Commission stated it, when they appeared to explain their conclusions, that

> *'the Estonia' could not turn upside down, as she floated (sic) on the **watertight** deckhouse decks 4-8.*

The first conclusion of the Part report (16) **1.19** was otherwise that the *superstructure* (the deck house) was flooded and not watertight.

On a profile drawing of the 'Estonia' you see easily that the 'Estonia' had >200 windows of thin glass in the deck house on decks 4-7, which would immediately be broken, when the ship listed and the windows came under water. There were also normal, outer doors into the deckhouse at the forward and aft ends, which were neither weather- nor watertight.

It is obviously totally wrong to suggest that the deckhouse - >10 meters above the waterline - was watertight and provided buoyancy.

According all safety praxis a deckhouse is not watertight, not even weather tight and its contribution to any damage stability at any angle of heel is always zero. If you for any reason want to make a deckhouse weather tight, you have to provide windows with steel covers and doors of steel with six cleats, etc. The windows of the 'Estonia' did not provide any buoyancy. The superstructure - decks 2-3 - was however weather tight as long as the forward and aft ramps were tight. But the deckhouse - decks 4-7-9 - was just a big weight.

The Final report should therefore have stated that the 'Estonia' should have capsized - turned turtle - with about 1.500-2 000 tons of water on the car deck!

When the ferry had 90 degrees list to starboard (stable due to flood water below the car deck), the port side was horizontal high above the water but sloping aft, i.e. those who managed to get out on the horizontal port side from deck 7 could step through the windows and fall down into the water filled deck house - see page 82 in the Final report (5) (the windows on the starboard side was under water and broken). But to be stable in this condition, i.a. the car deck must have been fairly dry (and provided some buoyancy) and water must have flooded the watertight compartments below the car deck **2.16** to balance the weight of the deckhouse.

Later, when the ship started to sink on the stern, the persons on the flat, port, upper side moved forward towards the bow and were then drawn under water, when the bow sank under water, so they all drowned. It is very sad - if a ship is sinking, you should get off as soon as possible, jump into the water and swim away and try to find anything to hold on to, so that you are not sucked down still holding on to the ship, when it finally sinks.

Any statements by the Commission - or the Swedish NMA for that matter - that there is buoyancy in a deckhouse with windows are false.

1.32 THE IMPOSSIBLE SEQUENCE OF THE SINKING MADE POSSIBLE

The Final report (5) page 176 states that water flowed into the *deck house* of the 'Estonia' through the broken starboard windows, first on deck 4 aft and later on deck 5, so that she *sank* **3.12**. In reality there are no openings in the horizontal *deck* 4 aft on the starboard side (except the ventilators to the car deck on the open aft deck and flooding through these opening probably contributed to the 'Estonia' sinking due to hull leakage). Water can therefore not flow down to the car deck 2 in the superstructure *through* deck 4 (see figure 1E in **2.16**). Deck 4 is the roof of the car deck and the superstructure and is of steel and gas tight and fire insulated to highest standard. There are then no openings in the car deck no. 2 - the floor of the garage - so that water can flow down and fill the 14 watertight compartments *below* the car deck in the hull. *There are openings - but they are behind the sliding doors in the stairwell at the centre line and they are always above any water on the car deck, when the ship heels.*

The course of sinking and flooding events of the Final report are therefore not possible.

THE 'ESTONIA' SHOULD HAVE TIPPED UPSIDE DOWN

Professor Anders Ulfvarson of the Chalmers University of Technology concluded the same thing in an article of the Swedish daily Svenska Dagbladet 23 September 1998, which the Commission never commented upon. What would happen with water on the car deck in the *superstructure* and inside the *deck house* is naturally that the ship turns upside down and *floats* on the 18 000 m^3 of air and material inside the 14 *watertight* compartments below the car deck **2.16** in the *hull*. The Final report cannot explain why the 'Estonia' did not turn upside down before she sank. Why did she sink?

A great number of survivors came from deck 1, (21 passengers/crew and 3 crew watch keepers) and probably many more managed to leave deck 1 and reach deck 7 *after* the list occurred but drowned later. The survivors from deck 1 have stated that there was water on deck 1 before 01.00 hrs, *before the listing occurred*, and a fair number has stated that the water flowed up from below. You do not have to be very intelligent to conclude **that the 'Estonia' was leaking**, if water flowed up from below on deck 1, which was just below the waterline. The summaries of testimonies of the Final report (5) (chapter 6) do not copy these statements. Instead the report says that passengers running up from deck 1 saw (a few litres of) water leaking into the stairwell at deck 2 (the car deck). These testimonies are not very clear - apparently created by leading questions or just falsified - and show that the Commission also manipulated the testimonies to suit its alleged conclusions. The Commission is quite clever - there are no names of survivors or references to any questioning reports, when it comes to the alleged survivors, which are supposed to have seen water (a few litres) flowing into the stairwell at deck 2. Anyway - nobody saw any water flowing down the stairs at the centre line. So when and where did the water fill the 14 watertight compartments from above? The Final report has no answer. Of course it leaked in - from below into the hull on deck 0 and spread through open watertight doors.

The statement by the Commission, that the 'Estonia' sank due to water on the car deck in the superstructure above the waterline, is false.

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*'Also the **uselessness of lifeboats** and poor condition of davits, the improvements of which should certainly be recommended, was pointed out. There are also suggestions that the life rafts should be improved in many ways'*

Paragraph 11 of act A208*

'A ship is seaworthy only if it designed, built and maintained so that in respect of its purpose and the trade it sails offers adequate safety against accidents"

Swedish law for safety at sea (SFS 1988:49) 28 January 1988 - Chapter 2, 1§

*'V. **Observations of the Committee with regards to issues falling beyond the scope of the functions of the Investigation Committee.***

…

*It remains to be seen why the JAIC and the criminal proceedings have not paid attention to issues related to the certification of the ship. These questions inter alia include: on what grounds was a certificate confirming **seaworthiness** of the ferry Estonia issued? Did the vessel actually meet all the technical requirements giving the right to sail in deep waters? How can one assess the expert evaluations of the technical state of the vessel produced at that time? The fact that a vessel possessing a coastal navigation right was at a certain point granted the +I 3/3 E, Deep Sea, Ice IA, Car/Passenger Ferry + (AUT) certificate gives rise to questions.*

It is known that the Maritime Safety Administration of Finland granted the ship a passenger ship sea safety certificate which allowed the ship to sail in coastal waters.

Until 14 January 1993 the maritime safety of the ship was monitored by the (Finnish) Maritime Administration. Bureau Veritas was then authorized to monitor the technical condition of the vessel and its compliance with the international requirements. After the date mentioned above the responsibility for the technical condition of the ship was placed upon the Maritime Agency of Estonia which extended the authorization of Bureau Veritas to exercise control over the maritime safety of the vessel in accordance with SOLAS and other international maritime safety conventions.

*The Committee believes that in the light of the last seaworthiness certificate issued the technical compliance of the ferry Estonia requires further clarification: **on what grounds was the ferry Estonia granted seaworthiness certificates?** Did the ferry Estonia meet all the technical requirements to have the right to navigate in the deep sea? What evaluations did the experts then give to the technical condition of the vessel?*

…

*VII **Proposals to the Government of the Republic***

1. Propose to the Government of the Republic to ensure the complete involvement of the Republic of Estonia in current and future investigations of the ferry Estonia. The Government of the Republic must find ways to ensure complete cooperation with the Government and agencies of the Kingdom of Sweden, in order to ensure access to all relevant materials and information.

2. Propose to the Government of the Republic to create necessary legal mechanisms for investigating into catastrophes so that a Catastrophe Committee could be founded, whose members would be able to carry out investigation, when necessary, on temporary full-time basis.

3. Proceeding from the fact that several persons who allegedly survived the catastrophe of the ferry Estonia are still missing, and taking into account the fact that they might have important information concerning the ferry Estonia.'

Riigikogu Committee of Investigation to Ascertain the Circumstances Related to the Export of Military Equipment from the Territory of the Republic of Estonia on the Ferry Estonia in 1994 - FINAL REPORT - (Tallinn, 19 December 2006)

1.33 NO LIFEBOAT ALARM. INCORRECT LIFE SAVING EQUIPMENT. INVALID CERTIFICATES - ALL CENSORED

The Final Report (5) contains many strange things but in chapter 4.4.2 it correctly states that the lifeboat alarm consists of seven short sound signals followed by a long, which is repeatedly given by alarm bells (inside the ship) and/or with the vessel's horn (on open deck). You cannot avoid hearing such an alarm, unless you are

deaf. But the Final report does not clarify, if the passengers or crew (sic) ever understood, what such an alarm meant.

Let's assume that such an alarm - lifeboat alarm - was raised - seven signals - horns or bells - and then a long signal - repeated several times several minutes! It must have made a lot of noise. Did the passengers understand what it was all about? Had anybody told them? Did they know that they were supposed to calmly proceed to the muster stations (with their life jackets, if they had been in a cabin), where the crew would accompany them to lifeboats and life rafts? Did the crew understand that some of them would inspect/check all cabins for passengers and tell them to proceed to the muster stations? Did other crew understand that they should proceed to the lifeboats and life rafts and make them ready for launching? Had this big evacuation of 2 000 passengers by 186 crew ever been trained?

Chapter 1 of the Final report (5)says that three alarms were given - at **01.20** hrs an alarm in Estonian *"Häire, häire …"* over the public address system (loud speakers) (i.e. ALARM, ALARM in Estonian), followed by a spoken crew (fire) alarm (sic) message *'Mr. Skylight …',* also via the public address system.

Then at about **01.22** hrs the lifeboat alarm was sounded by bells and horn which must have lasted several minutes and made a lot of noise without any public address call.

What could a normal passenger, who had been on the ship a couple of hours, make out of all that, when the ship was already listing since five, seven minutes?

That he should collect his life west in his cabin and then proceed to a 'muster' station somewhere? Of course not!

TWO DIFFERENT ALARMS WERE ALLEGEDLY SENT

What would the crew believe after the sudden listing at 01.15 hrs?

First an irregular alarm - *"Häire, häire ... "* and then a fire *alarm* (sic) - *'Mr Skylight ...'* at **01.20** hrs! The latter meant, in fact, that some crew should proceed to the fire stations and to fight a fire, and that some other crew should ensure that affected passengers - in the fire zone - were moved to safety in the adjacent fire zone.

Confusing?

The Commission had - after three years of deliberations - no comment at all that *two* different alarms were sent sending the crew - and passengers - into different directions when the ship was listing >20 degrees. And then a life boat alarm at **01.22** hrs when the ship was listing 35 degrees. Actually, the Commission never interrogated any crew members or passengers about the alarms at all. The fairy tale of the 'life-boat-alarm' was just an invention of the writer of the Final report (5) to make it appear more credible.

On an over-night (12 hours trip) ferry like the 'Estonia', where you apparently do not practice any safety systems with the passengers, you cannot just start ringing bells or blowing horns for several minutes and assume that anybody understands what it is all about. You have to explain - in pure language - over the public address system, what is happening. But nobody on the 'Estonia' explained anything to the passengers over the loud speakers at any time. And anyway - in this case most passengers were already running up to the open decks, when the alleged 'alarms' were raised.

On any passenger aeroplane - even if the flight is only 45 minutes - there is a short safety announcement, what to do in an emergency - a forced landing or loss of air pressure. **On the 'Estonia' there was nothing.** The passengers should only know two things - (A) the *general* alarm (bells + public information call) - and that they then should proceed to the muster stations with their life jackets and (B) what a *life jacket* is - and how to put it on. It should have taken two, three minutes to explain, but it was not done. Many years later the same procedures are used on most Swedish short-sea ferries. **No safety announcements at all.**

In the unlikely event that a fire has started inside a muster station, crew members evidently have to direct the passengers to a safe zone adjacent to the fire/muster zone. Abandonment of the ship is then not urgent - the urgent matter is to extinguish the fire after having protected the passengers.

THE LIFEBOAT ALARM

Chapter 16.3 of the Final report (5) says that the lifeboat/general alarm - bells ringing, horn blowing - was given about **01.22** hrs - *not* followed by any public address information. Then the angle of list was 35 degrees according figure 13.2 in (5) **1.9**. It means of course that the 'alarm' was much too late. At 35 degrees list it was impossible to launch the port side lifeboats resting inboard against the ship and davits - but the starboard boats could in principle be launched. But to launch the lifeboats you must first muster the passengers. And the passengers were never mustered. **They had no idea, what the lifeboat alarm was all about.** And did any crew member prepare any lifeboat for launching? The investigators in the Commission believe that it was a good thing that the lifeboat/general alarm was raised by the crew, but they do not investigate, if the alarm was correctly executed and understood.

WHO HEARD THE LIFEBOAT ALARM?

In chapter 6.2.1 in (5) is not stated, if the *extra second mate* heard it.

In chapter 6.2.2 likewise is not stated, if *fire patrolman* Linde heard the alarm - the protocols, when he was questioned, do not mention any alarms.

In chapter 6.2.3 *3/E* Treu states that the lifeboat alarm was sent over the *public address system* (sic) at **01.22** hrs (probably it was the alarm in the Estonian language) and that the bells were ringing, when he was in the ECR on deck 1. What was 3/E Treu supposed to do when he heard the alarm? He should of course abandon ship and not remain in the ECR!

In chapter 6.2.4 *systems engineer* Sillaste says that he heard the alarm, when he was in the ECR on deck 1 *after* the sudden listing. Later he escaped via the stairs up to open deck 8 and heard the alarm by the horn. What was Sillaste supposed to do when he heard the alarm? Abandon ship but orderly - he probably had a function in the overall plan to abandon ship.

In chapter 6.2.5 *oiler/motorman* Kadak says that *'several lamps flashed'* the lifeboat alarm in the ECR on deck 1 and that he soon after was on deck 8. But these people were *crewmembers* - they should know what a fire and/or life boat alarm is - or? Anyway - they just ignored the alarms and tried to help themselves. Actually - Treu, Sillaste and Kadak have lied about their escape from the ECR so their statements about the alarms cannot be trusted **1.48**. The author believes that the Commission itself had no idea what the life boat/general alarm was, when they interrogated Treu, Sillaste and Kadak, so they just accepted whatever was said and later changed it to suit.

In chapters 6.3.2-9, a summary of testimonies of persons - mostly passengers - on decks 1 and 4-8 and in stairwells and other places inside the ship, it is concluded **that *no passenger* heard any alarm bells *inside* the ship during the evacuation**, i.e. all survivors had reached open deck 7 at **01.22** hrs, when the alarm by bells inside the ship with 35 degrees list was allegedly raised. But would it have mattered? What did the alarm bells mean?

Strangely enough chapter 6.2.10 in the Final report (5) with testimonies from *open* decks has no confirmation of *anybody* hearing the lifeboat alarm at **01.22** hrs onwards - **repeated horn signals.** Passengers on open deck heard the alarm *"Häire, häire … "*, when the list was 30 degrees. But no passenger heard the ship's horn - seven short blasts and one long!

According chapter 7.3.3 a Mayday was sent at **01.22-01.30** hrs per VHF and then the horn signals should have been heard in the background. **But the recording of the Mayday does not include any horn signals.** Either the

Mayday recording is a fake - like most of the information in the Final report (5) or no horn signals were made. But again - did it matter? Did a passenger understand, what the horn signals meant? Did he/she care? The ship was listing and sinking - and the persons on the open decks at **01.22** hrs had already reached the embarkation places for the lifesaving equipment. **They found that the lifesaving equipment could not be used - it was useless.**

In chapter 13.2.7 - Evacuation - the Commission repeats that the lifeboat alarm was raised at **01.22** hrs. In chapter 13.3 - **Action on the bridge** - the Commission regrets that the lifeboat alarm was not raised until five (seven?) minutes *after* the list developed, and that the lifeboat alarm was given simultaneously with the Mayday. The Commission forgets that no public address message was sent - only a Mayday that evidently could not be heard by the passengers.

THE MAYDAY AND THE PUBLIC ADDRESS CALL

As the list actually developed already 01.02-01.05 hrs, the alleged lifeboat alarm was 17 minutes late. In that time no public address information was given from the bridge. But in chapter 16.3 - **Alarms and activities by the bridge** - they say

> *'Some survivors have reported hearing the alarms, but others report not having heard any alarms at all'*.

The alarm that concerned the passengers - the lifeboat alarm - is not particularly mentioned - and an alarm should be followed up by a public address call what is going on. The only survivors hearing the alarms seem to be crewmembers. And they just tried to help themselves!

Assuming that the bells and horn actually were in working order, it is still probable that the lifeboat alarm was never raised. The Commission seems to have deliberated, and then agreed or conspired the statement that the lifeboat alarm was sent - based on super witness 3/E Treu's testimony. It sounded good - a lifeboat alarm was sent. If the passengers did not understand that, they had to blame themselves.

The only reason why the Final report (5) writes about a lifeboat alarm is to create the *appearance* that the crew followed some undefined emergency routines. If the passengers actually understood, what the signals with bells and horns meant, is not investigated by the Commission for 38 months! It is clear evidence that the Commission didn't give a damn about what it was supposed to investigate - *all* causes why so many innocent persons - passengers - died! Instead the Commission only investigated an alleged visor *'design fault'* and concluded that the ship and crew were 100% OK. And the Commission got away with such outright lies. Of course the Swedish government helped a lot.

MISSING LIFESAVING EQUIPMENT

Regardless if the lifeboat alarm was raised, the 'Estonia' had only 10 lifeboats for 692 persons and 12 life rafts under davits/cranes for 300 persons - totally 992 persons, in spite of being certified for 2 188 (sic) persons aboard.

The Final Report incorrectly states that the 'Estonia' fulfilled the international safety rules SOLAS.[75]

The 'Estonia' had also 49 off life rafts SOLAS 60 type, which should be thrown overboard manually or, if it failed, they would automatically release, when the ship came under water *after* having sunk (sic)! To reach these rafts you were supposed to (1) jump into the water before the ship sank (2) swim to the raft, which might *float* up after the ship had sunk, and (3) try to get into the raft.

These rafts and routines did not fulfil any requirements of the SOLAS for passenger ships on international voyages. They were totally useless.

They remained since the ship was certified by Finland for coastal trade between Finland and Sweden. Evidently you could not have life rafts on a passenger ships that were supposed to float up *after* the ship had sunk. Such rafts may be fitted on cargo ships as a last back up in event of sudden sinking. Cargo ships are not built to withstand flooding of a hold and can thus sink quickly, and it is the reason to require SOLAS 60 rafts on such ships.

Cargo ships are crewed by seamen. They may use a SOLAS 60 raft. But can you expect that a 65+ years old passenger on the 'Estonia' shall jump into the water, swim to a raft and try to get into it? The Commission considers that the procedure is correct! Evidently the Commission had no idea about safety at sea and no respect for ferry passengers lives.

Chapter 17.7.1 in (5) says

'the rafts were found very difficult to use in the severe sea conditions',

and nine reasons for this is given - an illegal raft is shown in figure 17.7 of (5). Such a raft was *not* of an approved type for passenger ships, when the 'Estonia' changed her trade over the *open* Baltic in 1993.

The life rafts were arranged aboard the 'Estonia' as shown on figure 1.33.1 right. The picture is of a similar ferry taken year 2002 (the **arrangement is dangerous and useless**). When abandoning the ship, a crew member shall release the 12 rafts, which then drop freely into the sea. The raft opens in the water and drifts away. The passengers shall either jump from the open deck into the sea or climb down two rope ladders on the side and the jump into the water. The passenger shall then swim to the raft and try to get in! They have to watch out not to be hit by falling raft.

A close up of the illegal life rafts is shown in figure 1.33.2 below. Note that the rafts are of type Solas 60 - totally worthless to save lives.

Figure 1.33.1 - Illegal life raft arrangement - year 2002!

It is certain that the 'Estonia' had an identical arrangement - four stations with 12 off rafts each to drop into the water. **The Estonian administration made a serious, criminal error certifying the 'Estonia' with such rafts and arrangements.** Had the accident occurred later, e.g. during the winter, when the water temperature was lower, all persons in the ice-cold water would have died immediately. **That was another reason, why the rafts were not of an approved type.**

SOLAS 1974 chapter III, rule 27 (c)(iii) (page 153 in SOLAS printed 1975) says

'in any ship engaged on short international voyages the number of persons carried shall not exceed the total capacity of the lifeboats provided, unless the Administration considers that this is necessitated by the volume of traffic...'

i.e. in 1975 100% lifeboat capacity was required for short international voyages. But the 'Viking Sally' was only certified for coastal trading with reduced number of lifeboats.

Figure 1.33.2 - Illegal life raft arrangement - year 2002!

When the 'Viking Sally' or 'Wasa King' became the 'Estonia' in 1993, the SOLAS had changed - the existing lifeboats with reduced capacity were in order, but the rules also required about 60 life rafts for 25 persons each, which could be launched by at least 10 cranes. But the 'Estonia' had only 12 such life rafts and four cranes.

ÅKE SJÖBLOM AND GUNNAR ZAHLÉE DISAPPROVE THE RAFTS - AND DO NOTHING

This defect was discovered by chief inspector Åke Sjöblom and inspector Gunnar Zahlée of the Swedish NMA, at Tallinn only ten hours before the accident (31). **They also remarked that the 'Estonia' did not have e.g. an exemption certificate for the irregular (criminal!) life rafts.** The 'Estonia' was according Sjöblom/Zahlée incorrectly equipped and certified with regard to life rafts in September 1994 (page 25 in (31)) since February 1993 - 19 months! In 2002 the boss of Sjöblom/Zahlée - Johan Franson - stated in the Swedish Shipping Gazette (March 2002) that Sjöblom/Zahlée had stated to the Commission that there were no defects whatsoever! This is not correct. This is one of Franson's numerous lies.

Åke Sjöblom and Gunnar Zahlée advised the defects to the Commission on 2 November 1994 (act D6a*). The information that the 'Estonia' was not seaworthy was immediately censured by Olof Forssberg and was of course not mentioned in the Final Report (5).

Mr Sjöblom and Mr Zahlée have later stated that they could not have prevented the 'Estonia' leaving Tallinn in her unseaworthy state because they didn't have the power to do so in Estonia. But this is stupid - they should simply have stated that (A) the ferry would be immediately arrested on arrival at Stockholm or (B) that entry to Sweden would have been forbidden or (C) that it would cost more to make the 'Estonia' seaworthy at Stockholm or (D) that the owners were criminal to allow the 'Estonia' sailing in her present state. As incompetent civil servants they did nothing.

Easiest solution would have been reducing the number of people allowed aboard to be the number in available approved boats and rafts until new life raft cranes and correct rafts were fitted. Strange that the life raft supplier never suggested that!

WET EVACUATION

As the 'Estonia' was equipped 1994, the safety system assumed that 1 196 persons jumped overboard and swam ashore at an evacuation of the ship! And this illegal system had been tested and approved by the national maritime administrations **1.34**!

It was called 'wet evacuation' and was not approved standard, when the 'Estonia' was certified 1993.

It might have been approved for coastal trade during warm summer months by an incompetent national administration - when you carry more passengers - but not during the *winter*, when fewer passengers were carried. Who knows?

But **'wet evacuation'** was used - year-round. The Commission erroneously considers **'wet evacuation'** correct. Then you would expect that the life jackets were at least of an approved type.

The Final Report (5) chapter 17.7.1 says that the life jackets were of an approved type, but does not say who had approved them, when and how, etc. It is very likely that the life jackets were *not* of any approved type at all. Most survivors reported big difficulties with the jackets. They were ripped off, when the persons jumped into the water. Chapter 21 - Conclusions - and 22 - Recommendations - of the Final Report (5) have no suggestions that correct life jackets would have saved say 50-100 persons. The Commission was only interested to hide these facts.[76] It is evidently a big difference between a life jacket that you carry as *extra* precaution, when you enter a lifeboat or a raft during a *dry* evacuation, and a life jacket that shall be effective when you first *jump* into the water from 17 meters above the waterline and then swim to the raft. But could you really expect that an old passenger would jump into the water at all? Or climb down a rope ladder on the side of the ship.

The 'Estonia' 1994 was in many respects a repeat performance of the 'Titanic' in 1912. But this the media could never report - it dutifully reported that the lifesaving equipment was in order. The Swedish director of safety at sea, Johan Franson, has in letters to big Swedish dailies stated that the 'Estonia' life rafts and evacuation procedure were in order.

NO CERTIFICATES

Chapter 3.6.2 of the Final Report (5) (page 45) states that the 'Estonia' was correctly certified:

> *"... the status of the certificates were ... an interim Passenger Ship Safety Certificate issued on **26** June 1994. ... interim Load Line Certificate issued on 9* (or 11?) *September 1994. ... The valid certificates ... are shown in the Supplement."*

However the Supplement does not show the above alleged 'valid' certificates!

THE PASSENGER SHIP SAFETY CERTIFICATE

In the Supplement no. 217 is shown a full term Passenger Ship Safety Certificate issued at Copenhagen on **23** (sic) June 1994, however without the 'Record of Equipment (Form P), which is necessary for a valid certificate. This certificate says that ... 2.3 the life saving equipments ... was ... as per the rules. In the Supplement there is another interim Certificate dated 27 January 1994, valid until 27 June 1994, with a Record of Equipment (Form P) dated 14 June 1993, which states that the 'Estonia' was certified to transport 2 000 passengers and that there was life saving equipment for 2 188 persons. However - this was simply not the case.

THE LOAD LINE CERTIFICATE

There are no Load Line certificates in the Supplement.[77]

Supplement no. 224 shows surveys carried out and certificates issued. It says that a *permanent* Passenger Ship Safety Certificate was issued on 23 June 1994 at Copenhagen with the note (clerical mishandling) and that an *interim* Passenger Ship Safety Certificate was issued at Stockholm on 26 June 1994. It also says that an *interim* Load Line Certificate was issued on 9 September 1994 at Stockholm. However it is a fact that these certificates are not shown in the Final Report or its Supplement and there is no evidence that they existed.

INTACT AND DAMAGE STABILITY INFORMATION

One condition of a Load Line certificate is that there is proper intact and damage stability information on the ship and instructions what to do in an emergency. The Final Report does not say if such information was available **2.17**, where it is stated that the latest stability data was approved 16 September 1994, i.e. a week after the interim Load line certificate was issued.

A ship does not sink due to incorrect or false certificates but it is an indication that something is wrong with the ship or its operator/owner. By hiding this fact the Commission actually supported the owners and neglected the passengers and cargo owners.

The conclusions of this chapter are (A) that no lifeboat alarm was given, but regardless, (B) the passengers would not have known what the 'lifeboat alarm' meant, and (C) that the 'Estonia' lacked proper life saving equipment and (D) that the certificates were manipulated to hide these facts and (E) that the Swedish NMA was fully aware of the 'Estonia' being unseaworthy and (F) could have prevented the 'Estonia' from entering a Swedish port, i.e. leaving Tallinn, and (G) that the Swedish NMA did nothing (except cover up their own mistakes). As the Commission apparently decided to present a false cause of accident, it also decided to falsify the information about the lifeboat alarm and arrangements and the certificates and the Swedish NMA. Actually, the Commission falsified every essential piece of information about the ferry and the accident. Therefore it was so difficult to produce a Final report (5).

MORE PERSONS COULD HAVE BEEN SAVED

A logical question is - would more persons have been saved, if the life saving equipment had been correct?

It is a proven fact that four or five assisting ships of the same type as the 'Estonia' and with correct or maybe incorrect equipment could not launch any own lifeboats or rescue boats to assist the persons from the 'Estonia' in the water **1.20**. But one ship - the 'Mariella' - managed to lower some of its life rafts with cranes. These life rafts obviously bumped against the side of the rolling ship but nobody was hurt. Later they could haul up some of their own rafts into which survivors in the water had managed to get! It is remarkable that no ship even tried to launch e.g. a lifeboat to pick up persons in the water. They did not dare - they said!

But the author thinks that many more would have been saved, if the equipment and systems on the 'Estonia' were correct. As soon as something suspect was detected, you should have given clear instructions over the public address system to the passengers - e.g. go to deck 7 and bring your life jacket, if you were in your cabin. With 60 correct rafts *that you launch by davits/cranes* on deck, a few crewmembers should have been able to activate these rafts on the sloping deck between 01.05 and 01.20 hrs. There would have been 30 rafts on the port side - each could in an emergency have taken 40 persons! These rafts are robust and could have been activated on the side of the ship at 01.30 hrs. Of course you could have saved more people, if the crew had been more alert and if the life rafts had been correct!

The defective life saving equipment and systems and a negligent crew on the 'Estonia' contributed to the very high number of drowned persons. The Commission could not have overlooked these obvious defects during three years of investigations but decided to state the opposite in the Final report (5) - all was in order! The Swedish NMA was aware of the defects *before* the accident and did nothing, or asked Sten Anderson of the NMA to push the Commission to cover up this fact. This is one of the inhuman scams of the investigation/cover-up!

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[74] As the angle of list then was 35 degrees, all engines and pumps had stopped and all different alarms were activated simultaneously - sound and light! The situation in the ECR should have been terrible! So the author thinks that the engine crew had deserted the ECR much earlier **1.48**. However, according 3/E Treu everything was normal in the ECR, while the list increased. Treu tried to start pumps and to ballast the ship upright for about 10 minutes, while the main and auxiliary engines stopped one after another, alarms sounded, etc., until the heel was 70-80 degrees, when Treu left the ECR. The statements of 3/E Treu cannot be true. A Commission that believes the statement of 3/E Treu cannot be competent.

[75] At the 15th meeting of the Commission Tuesday 18 December 1996, i.e. two years and two months after the accident, the Commission concluded:

"Also the uselessness of lifeboats and poor condition of davits, the improvements of which should certainly be recommended, was pointed out. There are also suggestions that the life rafts should be improved in many ways" (point 11 in act A208*).

Thus - the Commission noted that the lifeboats were useless and the davits were in bad condition and that the life rafts should be improved but nothing is mentioned in the Final Report (5). The Commission never noted that there were two different types of life rafts on the ship - 12 off to be launched by cranes, 49 off to be thrown overboard or, if it was not done by the crew, released themselves under water, *after* the ship had sunk!

[76] After the 'Sleipner' accident in November 1999 (the 'Sleipner' was a Norwegian catamaran, which grounded and sank) when 16 persons drowned, the Norwegian NMA disapproved the life jackets, which had type approval first by the Italian NMA 1997 and later by the UK NMA. Norway had first 'approved' the jackets based on the Italian/British approvals. After the Norwegian decision also the UK NMA retracted its approval. Italy has decided to make new tests. All life jackets of that type have been identified. If they have been replaced is not known.

[77] The author has got a copy of the Bureau Veritas inspection report (GTB/93/2I) from the change of flag Finland/Estonia in January 1993 (is not included in the Final Report). Mr Anders Wirstam did the inspection at Tallinn, 930128 **Appendix 7**. The report was issued at Gothenburg 930207. The report is not signed by Mr Wirstam but by Mr H. Olsson, chief of the BV Gothenburg district. There is no information that previous certificates were for *'short international voyage*'. It is possible that Mr Wirstam actually pointed out that the 'Estonia' should have been upgraded at the change of flag, but that his boss decided differently - the start-up of traffic had been delayed. Thus Mr Wirstam did not sign the report or issued any certificate. Wirstam has later never explained anything about his surveys of the 'Estonia'.

'No one left the ship in an orderly fashion. ***Some were forced to jump*** (into the water)*, but most were swept into the sea by waves or slid into the sea inside or outside life rafts'*

The Final report (5) chapter 16.8

1.34 "PLEASE JUMP INTO THE WATER IN CASE OF AN ACCIDENT" - THE IDIOTIC SAFETY INSTRUCTIONS CENSORED

The 'Estonia' should have had an approved evacuation plan for 2 188 persons aboard, which showed how about 1.000 passengers in cabins on four decks and 1 000 passengers in other spaces on several decks and 188 crew members should be mustered on deck 7 by the crew and then escorted to lifeboats and life rafts for a dry abandonment of the ship. That was an *absolute* requirement of the SOLAS 1974 chapter III, rule 4. The 'Estonia' had no such plan since 1993 in spite of statements to the opposite **Appendix 7**. At the last inspection on 27 September 1994 both the safety and the muster plans were missing on board (31). It is also certain that when the 'Estonia' sailed under Finnish flag the same deficiency existed. To evacuate 2 000 passengers is a formidable task - if there were only 10 lifeboats for about 692 persons.

Rule 4 (a) states that all life saving equipment shall be immediately available at an accident.

Rule 4(b) states that the equipment shall be safely and quickly launched and that it shall be possible to embark into lifeboats and *life rafts* quickly and in good order.

It means that *all* 2 000 passengers shall be able to step into the lifeboats and life rafts at the 7 deck - the embarkation deck - where the passengers are mustered. The lifeboats and the life rafts shall then be lowered into the water - it takes only a minute.

EVACUATION TESTS AND TRIALS

The Final Report (5) page 52 says that

> *'The safety organisation was tested during the port state control in February 1993 (see 3.2.10)'*

and 3.2.10 of (5) says

> *'Technical Port State inspections were carried out in February ... 1993. The first inspection was in connection with the start of traffic on the Tallinn route and did not give rise to any remarks'*.

The Swedish NMA at Stockholm (i.a. inspector Tom Evers) inspected the 'Estonia' 1993/4 at least five times without finding any defects. At the inspection at Tallinn 27 September 1994 the safety and muster plans were suddenly missing (31). Evidently the safety and evacuation system was exactly the same between 1980-1993 when the 'Estonia' was named the 'Viking Sally' with Finnish flag. The defective system had been approved by the Finnish NMA 1980 and Swedish Port State Control 1980-1993.

The first Swedish NMA inspection and test of evacuation of the 'Estonia' took place at Tallinn 26 January 1993 and not in February as stated.[78] As there were only 692 seats in the lifeboats and 300 seats in the rafts under davits, **1 196 persons had to jump overboard** and swim ashore, when the ship was abandoned. Why the Swedes made this test on a ship that already had been sailing to Sweden for 13 years is not known - to test the Estonian crew?

The Final report only states that all passengers should be collected by eleven evacuation groups on board - what happened then is not stated. The author met Johan Franson and Sten Anderson of the Swedish NMA at a shipping conference September1998 - The Stockholm Port day! Informally the author asked how the NMA

thought that the passengers on the 'Estonia' should have had to abandon ship with the Solas B80 or 60 throw-over-board rafts. Franson, the Swedish NMA safety director, replied

> *"Simple, you throw the life rafts overboard and the passengers climb down the rope ladders at the sides and then they jump into the water and swim to the rafts".*

Franson has in a letter to the Swedish daily Svenska Dagbladet also stated that the lifesaving equipment on the 'Estonia' was correct (and that the information of the author was incorrect).

The crew and the experts of the Swedish NMA, which tested and approved the system, must have been totally incompetent having approved such a system. Of course the system was wrong since 1980!

It is probable that the Final report (5) does not mention the above defect to protect the crew and the Swedish, Estonian and Finnish NMAs. Instead the Commission blamed the accident on a visor *'design fault'* made 1980 and stated that there were no other, obvious defects on the ship.

The evacuation was made more difficult by the fact that the 'Estonia' was listing and rolling. Plenty of persons were trapped, when stairs and floors tilted and prevented evacuation. The Final report states on the last page 228 that *simple* modifications of the design could have eliminated these deficiencies.[79] But no simple modifications are described.

The survivors have stated that no information about safety equipment, evacuation paths, alarms and similar were given to the passengers just prior to or after departure. It was the same procedure as on coastal trading to Åland, which was given on the 'Estonia', i.e. nothing at all. The crew evidently could not suggest to the passengers to jump overboard, when the ship was abandoned, so they said nothing. The Final report has no comments.

THE BIG INVESTIGATION SCANDAL

The Final report (5) chapter 16.8 has only the following to say about how to abandon a ship:

> *'No one left the ship in an orderly fashion. Some were forced to jump (into the water), but most were swept into the sea by waves or slid into the sea inside or outside life rafts'.*

No analysis follows the conclusion. And no criticism has been voiced. It is quite mad. Johan Franson, Swedish NMA director for safety at sea, has of course told the media that the evacuation plan was 100% correct. And in the Swedish daily FinansTidningen March 1999 he says:

> *The international accident report about the Estonia makes a well considered and professional impression. I have not at my contacts with foreign maritime administrations heard any criticism of the report. ... Representatives of Swedish safety at sea, among them myself, chose to do other things that we consider more useful for the safety at sea, than to discuss with Anders Björkman.*

Swedish and foreign maritime administrations have disqualified themselves - they do not care about the most basic requirement - that you shall be able to safely abandon a ship at sea.

The evacuation plan was defective and contributed to the high number of victims. The Commission was fully aware of these facts but decided to ignore them - in the Final report (5) the evacuation plan was considered to be perfect.

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[78] It is quite sad, according to the author, to note that the 'Estonia' did not have a safety organisation to evacuate all persons aboard and that the Swedish NMA had never pointed out this defect. That the Commission without evidence concludes the opposite is a scandal

Appendix 7. The approval by the Swedish NMA of the evacuation system aboard the 'Estonia' is shown in chapter 6.5.2 annex no 127 in the German Final report. The ship owner and the Swedish NMA made a 'test' on 26 January 1993 at Tallinn. They said that 850 passengers were aboard + an unknowns number of crew.
At 10.37 hrs the lifeboat alarm was raised (how is not specified),
at 10.38 hrs were **850** (sic) passengers at the mustering stations (it took one minute!), 10 lifeboats (for 692 persons) were quickly in place for embarkation and,
at 10.55 hrs the exercise was over, i.e. in 17 minutes the ship was abandoned. It was not said how 850 persons were accommodated in 10 lifeboats for 692 persons.
The Swedish NMA says in the report that the evacuation was done in a *professional manner*! But the 12 life rafts served by four davits/cranes were not tested, or how 1 196 persons in a real situation were supposed to get into the rafts, etc.
The author has never heard of an evacuation test with 850+ persons done in 17 minutes. Just to check that all 400-500 cabins on board were empty of passengers should have taken 10-15 minutes. Anyway, the system had already been approved 1980 for trade between Finland and Sweden and many other Swedish/Finnish ship inspectors and master mariners had approved it.

[79] If you ask the Commission what they mean, you get no answer.

1.35 HOW THE INVESTIGATION WAS ORDERED

The Final Report of the 'Estonia' accident (5) does not fulfil elementary requirements to explain why the accident took place, why the ship sank and why so many died.

The Final Report is an insult to everything about safety at sea, to all survivors and relatives.

How could it come about?

The first interim report about what had happened was issued on 4 October 1994 by the Commission **1.4**. Not a word about why so many died. The alleged cause was confirmed in a second interim report issued on 17 October 1994 **1.12**. But not a word about the loss of lives. The same alleged cause was once again confirmed on 15 December 1995, with a correction - the ramp had been pulled fully open - and in the Part report issued 3 April 1994 **1.19** and in the Final report (5) 7 December 1997 **1.21**.

Correct information about the condition and maintenance of the ship and i.a., its watertight doors **1.23**, bilge pumps system **1.24**, alarms and life saving equipment and certification **1.33** and the evacuation plan **1.34** have never been published. The Commission just stated/lied that all was in order. A simple stability calculation 1994 should have confirmed that water on the car deck could not have sunk the ship, but instead the Commission supported the opposite proposition for 38 months, **1.9** and **1.15**, even if it is today impossible for independent experts to re-make the simulations of the events by the Commission (Huss). No explanation has ever been given why the crew never slowed down the ship in spite of ten minutes of alleged warnings of noises, etc. and the fact that AB Linde was sent down early to investigate. It was full speed all the time. No explanations why the 'alarms' did not work and how the passengers should have known what the alarms meant.

As no information available in 1994 supported the alleged cause of the Commission, the Commission had to (a) make the investigation secret and all evidence confidential and (b) state that it was a very complex investigation, which required a lot of time to carry out. Evidently - why? - all members and experts of the Commission could not discuss anything with outside interested parties. The Commission concluded that all safety systems aboard the ship were perfect, when it was clear to anybody that the crew did not know how to and could not evacuate all passengers in a dry condition and that the passengers had no idea what any alarm meant.

The Swedish NMA had many opportunities to stop the ferry at Stockholm 1993-1994 (and also 1980-1992) before the accident and to demand simple improvements. But the NMA did not do anything. After the accident the NMA participated actively in the cover up! Also the Swedish government 1994-1997 (Ines Uusmann) did nothing. Instead she appointed Mr. Johan Franson as director of safety at sea - to assist covering up the scandal **1.16** and Franson was Uusmann's closest advisor, until Uusmann was forced out of the government.

Did the Commission, supported by Ms Uusmann and Mr. Franson, actually believe in 1994, that it could cover up the truth about the accident and get away with a false report?

The Commission had confirmed the cause of accident only nineteen days after the accident **1.12** with no evidence at all. Ms Ines Uusmann was then the responsible minister and accepted the information - without evidence. The alleged complete (sic) investigation of the accident was then done during 38 months without any proper records kept. The Final Report was delayed to facilitate the cover up, what actually happened. No other cause than the one suggested 4 October 1994 was investigated.

The Final Report could very well have been the result of an early request by Swedish politicians and civil servants to protect Swedish interests. To blame the accident on the visor was suggested very early - the first day.

THE SWEDISH CRISIS GROUP

The Swedish Bildt government formed an ad-hoc crisis group on 28 September morning1994, which met six times - on 28 midday/evening, 29 and 30 September and on 3 and 5 October. Then the Bildt government resigned and handed over to Ingvar Carlson, who appointed Ms Uusmann in charge of the 'Estonia'. There are no records of what the Bildt crisis group actually discussed - but according to (25) the group early discussed the cause of accident - *a design fault* of the visor leading to its loss and subsequent sinking of the ship. Actually the crisis group ordered the Swedish NMA to investigate that cause. And strangely enough it was only that cause that later was examined by the Commission. The crisis group also contacted the Estonian government with a secret diplomatic request that Sweden should chair the investigation.

A summary of politicians and civil servants attending the meetings of the Swedish crisis group is shown below. An x shows attendance:

Name/title	28/9 d/e	29/9	30/9	3/10	5/10
Carl Bildt* - prime minister	(a)/**x**	**x**	**x**	**x**	no
Anders Björck* - minister of defence	x/-	x	x	no	no
Inger Davisson* - minister of civic affairs	x/-	x	no	no	no
Gun Hellsvik* - minister of justice	x/-	x	no	x	no
Bo Könberg* - minister of health	x/-	no	no	no	x
Reidunn Laurén* - deputy minister of justice	**x/x**	**x**	**x**	**x**	**x**
Mats Odell* - minister of transport (chairman of group)	**x/-**	**x**	**x**	**x**	**x**
Alf Svensson* - minister of foreign aid	x/-	no	no	no	no
Margaretha af Ugglas* - minister of foreign affairs	**x/-**	**x**	no	**x**	**x**
Peter Egardt* - secretary of state (government)	x/x	no	no	no	no
Göran Sellvall - head of staff (government)	**x/-**	**x**	**x**	**x**	**x**
Lars Christiansson* - (government)	x/x	x	x	no	no
Krister Thelin* - secretary of state (ministry of justice)	**x/x**	**x**	**x**	**x**	**x**
Severin Blomstrand - head legal dept. (ministry of justice)	**x/-**	**x**	no	**x**	**x**
Per Egon Johansson* - secretary of state (ministry of transport)	**x/x**	**x**	**x**	**x**	**x**
Tomas Norström (ministry of justice)	x/-	x	no	no	no
Anders Iacobaeus - head of legal dept. (ministry of transport)	**x/-**	**x**	**x**	**x**	**x**
Jan-Olof Selén - legal councilor (ministry of transport)	**x/-**	**x**	**x**	**x**	no
Lars-Åke Nilsson	-/x	no	x	no	no
Alf Stenqvist - secretary (ministry of transport)	no	no	x	no	x
Erik Brattgård	no	no	no	x	no
Michael Sahlin	no	no	no	x	x
Ewa Westberg	no	no	no	x	no
Ingvar Paulsson - head of staff/legal dept. (ministry of civic affairs)	no	no	no	x	no
Olof Ehrenkrona	-/x	no	no	no	no
Jonas Hafström* - councilor (government)	-/x	no	no	no	no
Peter Teiler	-/x	no	no	no	no

(a) Bildt was at Turku, (*) politicians and politically appointed civil servants are marked with*

If the above members of the crisis group were aware of the fact, that they were subject to a massive disinformation campaign between 28 September and 5 October 1994, is not clear.

At a PR-dinner arranged by Kinnevik AB at Stockholm the spring 1998 the director Odd Engström, former vice prime minister to Ingvar Carlsson, when the accident was investigated and colleague to Ines Uusmann, stated that the Swedish government had asked the Swedish members of the Commission to agree with Estonians to avoid quarrels, etc. A journalist (AO) asked for an interview with Odd Engström, where he should develop what he meant. Unfortunately the interview never took place - Odd Engström died of a heart attack at the age of 56

on a park bench the week after the dinner - early June 1998. His health was apparently bad and he had a tough job. Mr. Göran Sellvall, who was the government's head of staff and attended all crisis group meetings, died six months later in December 1998. He was 59.

Ines Uusmann, who was responsible minister for 'Estonia' affairs during the investigation, does not reply to correspondence. She has become director general of the Swedish Authority of Accommodation and Housing at Karlskrona.

The false cause of accident and the false course of events of the Commission were supported by the Swedish governments during and after the investigation.

1.36 THE SWEDISH GROUP OF ANALYSIS 1997-1998 - TO COVER UP THE COVER-UP

In September 1997 the Swedish government decided that a group of well-known persons should analyze how Swedish authorities had handled the 'Estonia' disaster - the *Group of Analysis* was appointed. The members were:

Peter Örn, chairman, secretary general Swedish Red Cross,
Leni Björklund, MD of Swedish Peace Research Institute,
Christina Jutterström, former chief editor of various daily newspapers,
Conny Nordin, professor and Royal chaplain, and
Stig Strömholm, former headmaster of the University at Uppsala.

The investigative work of the Commission itself or its quality or reliability should *not* be analysed - the government ordered.

The author tried to contact all the above and sent them by letter 1997-1998 most of the information in this book - no reply. Silence. Of course.

After a review of the various authorities work after the accident the Group of Analysis recommended in November 1998 that the dead bodies should be salvaged. Of course.

It seems that the Group of Analysis limited its review as shown in its first report (25) only to the salvage of bodies. Another very important question was what the authorities had done or not done to, e.g. improve the **safety at sea** after the accident, but the report (25) is silent. This author had made a full presentation by letter on 31 October 1997 to Peter Örn, chairman of the group, about **safety at sea,** where most of the observations in this book were given including the impossible statements about the stability with water in the *superstructure.* The members had, as already stated, been given the same information by letter - nobody acknowledged the information. Of course.

All of them were, of course, aware of the fact that the official investigation was a scam. But the Red Cross chairman, the peace worker, the top journalist, the Royal chaplain and the university headmaster said nothing. In Sweden this is normal. Of course, you cannot expect a Royal chaplain to be an expert of ship stability, but you would expect that he can read a polite letter ... and reply.

The Group of Analysis therefore never reviewed the work about safety at sea of the authorities after the accident. When the author presented his book (1) **'Lies and Truths about the M/V Estonia Accident'** at a meeting arranged by the Swedish daily **FinansTidningen** at Stockholm in February 1998, the Group of Analysis (or its secretary Hanna Bogren) was present. The author later met the civil servants assisting the Group of Analysis and pointed out that safety at sea matters should be reviewed by them. Safety at sea had nothing to do with the work of the Commission to investigate the accident but the fact that the officials lied about it should be considered. The Group of Analysis should have reviewed the work of the Swedish NMA **1.37**, the SHK **1.38** and the ministry of transport/communications **1.39**.

DISINFORMATION AND FALSIFICATIONS BY THE GROUP OF ANALYSIS

But the Group of Analysis carefully avoided all this. The first review was only (sic) about salvage of dead bodies and the Swedish authorities mishandling of it. Even if the Group of Analysis was fully informed that ferries with water on the car deck inside a *superstructure* should capsize within a minute - like the 'Herald-of-Free-Enterprise' - it *falsified* the description of that accident in its part report (25) page 186 **1.1**. The 'Estonia' should have looked liked the ship right if the car deck/superstructure had filled with 1 500 - 2 000 tons of water:

Figure 1.36.1 - Capsized ferry

It is clear evidence that the Group of Analysis, the Royal chaplain and the peace worker, etc., knew that the course of events of the Commission was falsified - and it was maybe therefore that the Group of Analysis asked the government not to review the work of the Commission.

However they said the following about the content in e.g. (1) - page 243 in (25):

> *"Doubts* (sic) *have been raised about the cause of the accident given by the Commission ... The explanations of the Commission in the Final Report are questioned ... the matter is discussed in the media* (sic)*. The explicit limitations of the tasks of this group have been interpreted in such a way that this group shall not carry out its own examinations of the sequence of events* (of the accident)*. The group has not examined the trustworthiness of different analysis and theories, as it was not part of the directives. The group of analysis can only point out for the government that the discussion what caused the 'Estonia' accident is still on* (November 1998)*."*

In the Final Report (26) page 139 **'Lära av Estonia'** ('Learn from the 'Estonia'') the Group of Analysis said the following:

> *"Also the frequent* (sic) *discussions about the cause and responsibility of the accident generate uncertainty, which does not only affect the Swedish society* (April 1999)*."*

One conclusion was:

> *"The uncertainty around the 'Estonia' has created a continuous and sometimes worsened condition among many relatives (of victims), which can be defined as a secondary trauma. To this secondary trauma belongs the uncertainty about the cause and the responsibility of the accident."*

But is spite of the above, e.g. this secondary trauma - the uncertainty about the cause and the responsibility of the accident - **the Analysis group never recommended that new facts should be investigated or that the work of safety at sea at various authorities should be improved by, e.g. a correct investigation of the accident.** The Group of Analysis was simply protecting the Swedish government and its incompetent investigators and the conspirators in their efforts to cover up the true facts of the accident. And all members of the Group were given good jobs by the government!

1.37 THE WORK OF THE SWEDISH NMA 1994-2001 *AGAINST* BETTER SAFETY AT SEA

The Group of Analysis never examined the Sea Safety Inspection department of the Swedish National Maritime Administration (Sjöfartsinspektionen - Sjöfartsverket). It has the main responsibility of safety at sea in Sweden, i.e. the government and the Ministry of Communications have delegated the responsibility there.

The Sea Safety Inspection at Stockholm had regularly inspected the 'Estonia' at least five times 1993-1994 without noticing any defects and many more times 1980-1992, when the ship sailed under Finnish flag **Appendix 7**. After the accident 1994 the head of the Sea Safety Inspection Mr. Bengt Erik Stenmark resigned quickly. Why? What does he do today?[81]

The Group of Analysis should have reviewed what happened at the Sea Safety Inspection department of the NMA. As interim head Mr Roger Sundström was appointed, who apparently did not want or was not permitted to become regular head. Why? After a while -early 1995 - the government appointed the head of the legal department, Mr Johan Franson as head of the Sea Safety Inspection department **1.16**. The Group of Analysis had severely criticized Franson for various investigations about the 'Estonia' and now Franson was head of the Sea Safety Inspection department! Why? Franson knew absolutely nothing about safety at sea. Safety at sea is means, procedures, arrangements and equipment to reduce the probability for accidents at sea and is best handled by seafarers, master mariners, naval architects, safety experts - not a legal mind (who has never been to sea).

One of the first decisions of Franson was to prevent the staff of the Sea Safety Inspection department to publicly discuss the safety and stability of the 'Estonia' particularly that ferries floats on their hulls and that water on the car deck in the *superstructure* above the hull heels the hull until it capsizes and floats upside down.

The Group of Analysis should have examined why the Swedish civil servants responsible for safety at sea in Sweden were ordered not to discuss the matter of buoyancy and stability. It should have been clear to anybody that Swedish Port State Control should have informed the owners of the 'Estonia's already in 1993 (and the previous owners 1980-1992) that she was incorrectly equipped for trading across the Baltic and that she must be upgraded. But the Swedish NMA (Franson) had always stated that the 'Estonia' complied with all safety rules, etc., which the Sea Safety Inspection department at Stockholm had confirmed at least five times at PSCs 1993-1994. There was no reason to criticize the NMA according Franson (sic) - the legal counsel of the NMA. And the Swedish NMA staff was apparently happy - they had naturally made some errors on the job - it happens frequently - and now they had a boss who protected them by lying without shame about it.

What has the NMA done to improve safety at sea since the accident? Has it done anything, which could have prevented the accident? The Group of Analysis should have reviewed the matter.

The Swedish NMA (Franson) has, e.g. voted for new rules at the IMO, 1995 (see also **chapter 5** of the book **Lies and Truths ...**). *None of the rule changes would have prevented the 'Estonia' accident*. Many of the rule changes do not even improve safety. Many rule changes are badly written causing interpretation problems. No rule change was done as per the IMO procedures.

FAST RESCUE BOATS

A new rule is that all ferries of type the 'Estonia' shall have a fast rescue boat.

Could a fast rescue boat on ferries assisting the 'Estonia' have rescued any persons in the water? No - it could not have been launched nor recovered. It is very embarrassing. The IMO states in its new rules that the fast rescue boat on a ferry shall only be able to be launched and recovered in *'severe'* weather. But the IMO defines *'severe'* weather as Beaufort 6 and wave height 3 meters (which is not very severe), while the 'Estonia' accident took place at Beaufort 7+ and wave heights >4 meters. It would of course have been better to specify that existing lifesaving equipment on any ship can be launched (but not recovered) in Beaufort 7.

Another rule the NMA has voted for is that all ferries of the 'Estonia' type (but no other types of ships) shall have means to rescue survivors in the water.

What the means shall consist of is not clear. Cargo ships, tankers, passenger ships shall not have any means to rescue survivors in the water - only ferries. Has the Swedish NMA developed any ideas how to fulfil the rules? No! Yes - maybe - a net at the side of the ferry - the survivor shall jump into the ice cold water and swim to the net and climb up 20 meters on the side of the assisting ferry. Marvellous!

Actually the Swedish NMA has not done any serious contribution to safety at sea since 1994. It has only been interested to cover up past sins - particularly about the 'Estonia'.

THE STOCKHOLM AGREEMENT

The Swedish NMA worked hard for the so-called **Stockholm agreement** (Res. 14, annex 5, page 535 SOLAS 97 edition) but it was rejected by the IMO. It was instead made a local rule in North Europe by bi-lateral treaties. The Stockholm agreement **3.21** requires installation of doors on the car deck of a ferry to improve stability with a theoretical amount of water on the car deck in the *superstructure* (albeit *after* a collision (sic) and *after* two compartments flooding of the hull (sic) and when all this occurs in *'severe'* weather (sic) - a very low probability - and with the further assumption that no preventive measures are taken, e.g. listing the damaged vessel on the undamaged side). The ship is then assumed to roll with the damaged side towards the waves. Water is then assumed to flow up into the superstructure according to some theoretical rules - which causes the ship to capsize. To prevent this transverse doors must be fitted inside the superstructure. The alternative is to do model tests (under similar assumptions) to see what happens. Model tests showed that the theoretical assumptions in the Stockholm agreement rules were wrong - model tests showed that much less water entered, when the damage ferry was helplessly rolling with a hole in the side (sic) and that often no doors were required on the car deck. Model tests also showed that with little seamanship of the crew - heeling the ferry so that the damaged side came higher above the water, or turning the ferry with the damaged side in the lee - would prevent any inflow at all. Systematic model tests have later shown that the scientific background of the Stockholm agreement is totally wrong. Those ship owners - mostly Norwegian - which invested hundreds of millions to fit doors on their car decks made a stupid error - the doors do not improve safety. It is easy to show with FSA.

The Stockholm agreement - and the theoretical rules - were just a ploy by the Swedish NMA to cover up the real cause of the 'Estonia' accident. The Stockholm agreement does not improve safety at sea at all.

Enormous amounts of money have been wasted enforcing the Stockholm agreement.

THE NMA DIRECTOR GENERAL RESIGNS

The director general of the NMA, Anders Lindström, resigned or retired after the Final report (5) was published and the Stockholm agreement was adopted.

In 1999 the Swedish government appointed Jan Olof Selén as new director general. He knows very little about safety at sea too - he was legal head at the Ministry of Transport 1994/5 and stopped the salvage of bodies from the 'Estonia' and developed the law preventing diving to the wreck **1.19**.

Mr. Ulf Hobro, the safety superintendent of the 'Estonia' 1994 became head of the Stockholm Sea Safety Inspection department in 1999. Mr. Sjöblom who made the last inspection of the 'Estonia' at Tallinn 27 September became head of the Sea Safety Inspection department at Gothenburg. Dr. Huss **1.9** was made head of the Technical Department of the NMA in April 2001.

The above 'experts' of the Swedish NMA always state that all information in this book does *not* contribute to better safety at sea. Actually it is quite sad - many persons that contributed to the 'Estonia' accident 1994 or assisted in the cover up of the truth and the falsification of History 1994-1997 are now, 2001, working in

leading positions at the Sea Safety Inspection department of the Swedish NMA! Couldn't they have been given jobs elsewhere **Preamble**?

The Swedish NMA has 1994-2001 actively contributed to the cover-up of the 'Estonia' accident and has not made any positive contribution to better safety at sea. On the contrary - as the initiator and author of the Stockholm agreement, which is based on false theoretical rules and assumptions - the Swedish NMA has ensured that enormous amounts of money has been wasted on totally worthless modifications of ferries.

The Group of Analysis never investigated the Swedish NMA involvement of the 'Estonia' cover up.

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[81] He studies at the University at Luleå. He has never replied to any letters from the author to find out what happened at the NMA and to comment upon the observations in this book. Apparently Stenmark was an honest man - he was kicked out to make place for a smoother boss - Franson. But Stenmark has not complained. Instead he wrote a pathetic thesis entitled about "Sjösäkerhet och säkerhetsstyrning: om säkerhetskulturen på ett fartyg och i ett rederi: en kulturpsykologisk fallbeskrivning" (2000-04-26) ISSN 1402-1757 / ISRN LTU-LIC--00/11--SE / NR 2000:11 (Safety at sea and governing safety: about the culture of safety on a ship and in a shipping company: a cultural psychological case description). Stenmark summarizes his thesis:

""Safety Culture" is a concept, which during recent years has been mentioned related to maritime safety as a meta-aspect but without a comprehensive definition. This study aims at finding a workable definition of safety culture within a framework of organisational psychology.

The research method was built upon a base of literature studies. The task was to perform a case study of a shipping company and one of its ships. An important element of the study was to examine how the ISM code complied with the organizational culture of the company during the implementation of the code.

The case study consists of five sub cases, chosen from work situations guided by the perspective of "critical incidents" and "generative themes". The research task was systematised into five subcases.

The research method implied the researcher's presence onboard during a voyage. During the voyage interviews with the crew members were carried out. Sequences of work were documented by video recording and were completed by field observations and walking around observations. Observant participating in meetings and crewmembers' professional and social conversation took place. Relevant correspondence and documentation were also analysed. Daily meetings with the ship management were performed to consolidate the observations made.

The company's head office was visited twice in order to obtain a holistic view of the interaction between shipboard management and central management functions ashore and to follow up findings from the study.

The analytical work was composed of an iterative process of alternating collecting of data writing down field notes listening to recorded interviews, watching video films combined with reflection and talk within the research team. The final synthesis was the integration of the data in an explanatory framework. The conceptual or explanatory framework reflects the cultural psychological view that culture is composed of artefacts, espoused values and basic assumptions, which together are governing the actions of the involved subjects. The analysis of the cases has also included elements of the cultural historical activity theory. Finally, the safety culture is described by eight dimensions. These dimensions express a qualitative estimation of a safety culture. They are dualistic i.e. they can be given "positive" or "negative" values with respect to an overall hypothetical concept of "good safety culture".

This way to describe the safety culture is workable as language in a learning context when presenting and explaining the elements of the safety culture to the members of the organisation.

Starting from the experiences, obtained from the above mentioned interventions in the onboard organisation, learning models are designed to understand and change the safety culture.

As the study was performed in a shipping company, submitted to the culture of today, the question of future validity arises. Organisation has been defined as relations between organisation as members. If these relations are changing to other kinds of relations by information technology, will the cultural conditions of today's learning organisation still remain? This is the question, which is proposed as a task for further research work." As a grave stone on the 'Estonia' it is not too bad. But Stenmark never dared to comment about this author's findings.

1.38 THE SWEDISH BOARD OF ACCIDENT INVESTIGATION - PARTICIPANTS OF THE COVER-UP

The Group of Analysis never examined the Swedish Board of Accident Investigation, SHK. Law regulates its work SHK summarizes its work as follows:

· At in investigation the SHK team always consists of a chairman and a chief of investigation. Often external experts are employed, which with their expert knowledge assist the SHK with collecting facts, analysis and conclusions.

· The SHK shall as far as possible clarify the **course of events** and the **cause** of the event as well as **damages** and **influences**. The SHK shall also judge the work of the rescue services of the society. In need the SHK shall with recommendations give the responsible authority material for decisions about suitable actions.

· The work of the SHK is only to improve safety. The SHK does not decide questions of responsibility or (economic/moral) demands for damages. Such matters must be done by others, e.g. the responsible authority, public prosecutor, insurance companies or lawyers.

· For the person appointed expert by the SHK the following applies. Regardless if the person is employed or has own job expertise, the role as expert is to present own *personal* views. If anybody is assisting the SHK through or on behalf of a responsible authority the same principles apply with addition that the authority shall be kept informed about the investigation by the expert.

· The expert knowledge of the SHK itself does not often suffice with due regard to the wide range of events that may be reviewed. For the most common investigations the SHK has lists of names of suitable experts. At unusual events the SHK must search, sometimes abroad, for experts.

· Any person of an interested party, i.e. looks after the interest of relatives, companies, insurance companies or authorities, may access the material and records of the investigation. *The SHK is grateful to receive detail knowledge, information and views which interested parties wants to give.*

· The SHK has as a rule that representatives of labour unions may follow the work (it is not decided by Swedish law). Personal representatives may often provide detail knowledge about questions of safety, instructions, organisation and technology.

The Group of Analysis should have investigated why the SHK *refused* to provide the public with information about its own 'Estonia' investigation/report and why interested parties had no access to the material and records of the 'Estonia' investigation. In addition as per international law any interested party shall review the preliminary report. The SHK did not follow its own rules at the 'Estonia' accident investigation.

The SHK has informed that the 'Estonia' investigation was an exception (sic) to normal work.

The SHK was only requested to *assist* the Estonian delegation of the investigation team, which is hardly the impression you get from the Final report (5). The members of the SHK headed and/or carried out parts of the whole investigation, e.g. the technical investigations (model tests, strength analysis, stability calculations). The SHK did not chair the investigation naturally should not have prevented the members of the SHK to follow its own rules during the work. It is a fact that the SHK should have reviewed the work done by the Swedish rescue services. The accident occurred in international waters but Swedish rescue services assisted. Now the SHK permitted the Finnish delegation to examine the work of the Swedish rescue services.

PERSONAL OPINIONS - NO SCIENTIFIC EVIDENCE

It may be that the course of events **1.9** is only the *personal* opinions and views of Rosenberg and Huss what happened (as per SHK instructions). It is a fact that neither Rosengren nor Huss later can explain or prove their statements - that the ship continued to float and drift after it should have capsized. One reason is evidently that the Commission later modified the conclusions of Rosengren and Huss to suit another alleged course of events - that the ferry never capsized. That Rosengren and Huss then did not protest is remarkable. Schager protested by resigning **1.20** but it was very late, September 1997. Schager had early 1995 **2.1** handed in two summaries of testimonies where it was clear that the accident - the listing - occurred at **01.02** hrs proceeded by two big bangs, which the Commission later changed in the Final report (5); The Commission said that the initial event lasted 20 minutes - one bang was at 00.55 hrs (one lock was broken?), the other at 01.05 hrs (the hinges?) and that then *'noise'* was heard from the bow for minutes **3.7** and that the accident - the listing occurred at **01.15** hrs. It is quite obvious that the Commission just decided to add 10 minutes of *'noise'* to suit its false course of events. How the SHK: members could accept that the Commission modified the Schager reports (and changed the Huss/Rosengren plots) is unclear. Also the work of Sten Anderson in the investigation is remarkable. Anderson was appointed by the Swedish NMA to *'observe'* the investigation. As per the SHK instructions above

> *"the authority shall be kept informed about the investigation by the expert"*.

Anderson should therefore have informed the NMA that the Commission manipulated the investigation. But it was not possible as the boss of Anderson - Johan Franson - himself participated in the investigation by heading the dive examination **1.16**, the result of which was also manipulated to suit the alleged course of events.

The Group of Analysis should have examined the actions of the SHK *after* the publication of the Final report. Why did not the SHK follow its own rules? And why did the SHK not follow the UN resolution IMO A.849 (20) about international marine accident investigations and cooperation at investigations. And why did the SHK participate in a secret investigation, where the results of its own members were manipulated by the whole Commission.

The Swedish Board of Accident Investigations, SHK, has 1994-2001 actively contributed to the cover-up of the 'Estonia' accident.

And the Group of Analysis avoided pointing out the matter.

1.39 THE SWEDISH MINISTRY OF TRANSPORT - PARTICIPANTS OF THE COVER-UP

The Group of Analysis did not examine the Swedish Ministry of Transport. It is similar to the NMA and the SHK with regard to the 'Estonia' accident investigation. Its civil servants - politically or normally appointed - do not respond to any communications about the 'Estonia' or about improved safety at sea. All is filed - no action is taken. The Ministry appointed 1995 a committee to propose an 'Action Programme for improved Safety at sea'. The result was the report SOU 1996:182 *Handlingsprogram för ökad sjösäkerhet (Action Programme for improved Safety at Sea).* The report/programme was circulated to interested parties for comments and review, including the author, and the author duly made some comments 970826 Dnr 001/97 with some simple proposals - safety at sea should be simple - but the Ministry never replied. No actions were taken as a result of the Action programme.

The Group of Analysis never examined, why the Ministry of Transport refused to review the suggestions made. There are a few civil servants handling safety at sea at the Ministry but they are afraid to touch any proposal for safety at sea, which refers to the 'Estonia' accident'.

1.40 A REVIEW OF THE 'ESTONIA' DISASTER AND ITS CONSEQUENCES (SOU 1998:132 (25)).

The Group of Analysis **1.36** made 1998 a review of the 'Estonia' disaster and its consequences (25) in Swedish - *En granskning av Estoniakatastrofen och dess följder* (A Review of the 'Estonia' Disaster and its Consequences). The report contains many new descriptions and remarkable events during the investigation indicating that *other* parties had an interest to cover up the investigation of the Commission. The Group interviewed *all* the persons involved but avoided asking pertinent questions and following up interesting new leads. Some events are described below:

"PART 2.6 THE PRIME MINISTERS MEET SURVIVORS (PAGE 29 OF (25)).

The Estonian prime minister Mart Laar said that he on 28 September 1994 at Turku talked with three Estonian crewmembers who told about a wave that from below lifted the visor. This statement is remarkable. The three crewmembers were Sillaste, Linde and Treu.

Sillaste was questioned by the Finnish police on the same day **1.3**. Sillaste then said that he saw the inner ramp in place on the car deck *after* the listing had occurred and that there was no big amount of water on the car deck - the ramp was only leaking. The bilge pumps were running. Sillaste thought that the ship was leaking.

Linde was questioned by the Finnish police the following day. He had been on the car deck *just prior* to the accident - the listing. Everything was OK in spite of the fact that he had heard a big bang. The ramp was not leaking. Then he had returned to the bridge, where he was ordered to return down to investigate a problem. Linde was on deck 7, when the listing occurred. When he later was in a life raft at about 01.30 hrs **1.8**, he saw that the visor was missing, but that the ramp was closed, i.e. no water could have entered there.

Treu was questioned by the Finnish police on 28 and 29 September. He said that two heavy bangs/waves had hit the 'Estonia' at about 01.00 or 01.15 hrs and that he had seen on the monitor in the ECR that water came in on the car deck at the sides of the forward ramp, whereby the ship slowly heeled. The ramp was not open. Therefore he stayed on in the ECR until the angle of list was >70°, when he walked (sic) up to the open deck at about 01.30 hrs and then jumped into the water without a life jacket. When he later got onto an upside down life boat, he saw that the visor was missing - he was not asked, if the ramp was open. Treu did not see the ramp fully open on the monitor **1.10**. How Treu could have heard the two bangs inside the sound insulated ECR is difficult to understand - maybe he felt them - or he was told to say something to the effect that the ship had been suddenly hit - by waves? Other persons on deck 1 just forward of the ECR were thrown into the bulkheads due to the bangs but Treu never described such events. How Treu managed to get out from the ECR, when the ship had <70° list is not clear. Probably Treu lied to the Finnish police or his testimonies have been manipulated later.

If Laar had talked to the three crewmembers, Laar should obviously have been told what they told the Finnish police - and the three crewmembers never told about a wave lifting the visor. The visor was regarded at this time only as cosmetics, the function of which was making the ship nice and deflecting waves. The three crewmembers knew that the visor could not have caused the vessel to sink in 35 minutes. The visor could have been lost, when the ship was listing. And Sillaste had told the Finnish police that the 'Estonia' was leaking - why didn't Laar tell his prime minister colleagues this? The information given by Laar to the Group of Analysis seems to be doubtful.

PART 2.6 PRIME MINISTER BILDT WANTS AN EXAMINATION OF PASSENGER FERRY DESIGN (PAGE 29 OF (25)).

The Swedish Prime Minister Bildt said that he then, on the same day, called his minister of transport, Mats Odell, about the information of Mr Laar. Odell was told to contact the Swedish NMA. For a detailed description of what happened then **4.4**.

It is remarkable that the NMA then did not inform Odell and Bildt that the 'Estonia' should have capsized and floated upside down, if it were water on the car deck. Why did not Prime Minister Bildt ask, if the 'Estonia' had sunk due to, e.g. hull leakage?

PART 2.7 THE SWEDISH NMA SEARCHES FOR INFORMATION (PAGE 32 OF (25)).

The Swedish NMA was thus quickly informed that the 'Estonia' had sunk and had direct contacts with the government. But it seems that the NMA only accepted the suggestion 1994-1998 that the ship had sunk due to a lost visor - and a design fault of the visor locks. Why didn't the NMA itself investigate how and why the 'Estonia' had sunk? The stability experts of the NMA knew, or should have known, that water on the car deck was only extra cargo/weight, which listed the ship, until the ship capsized, when it should have floated upside down.

The answer is that the directors of the NMA told their experts to shut up and then censored all information about the stability. It is remarkable that the Group of Analysis, which interviewed the NMA staff several times - Franson, Arvidsson, Anderson, etc. (page 280 of (25)) in March 1998 (after that the author's book (1) had been published in Sweden and had been presented by the Swedish daily Finanstidningen twice at meetings at the Operakällaren (a restaurant) and the ABF end February 1998 at Stockholm, where the Group of Analysis was present), did not ask any questions about the cause of accident. The Group of Analysis should of course have asked the NMA, why it did not investigate leakage as cause of accident. Wasn't the NMA interested in the cause of accident? And why did the NMA censor its experts?

PART 2.9 THE QUESTION OF INCORRECTLY DESIGNED BOW VISORS (PAGE 45 OF (25)).

Prime Minister Bildt said that he concluded already on 28 September that something was wrong with the visor - it was incorrectly designed. How Bildt already on 28 September knew this is very unclear, but the matter was referred to the Swedish NMA, which had certain points of view. Bildt then concluded that it was remarkable that the suspicions about incorrectly designed bow visors originated with the government - on 28 September! - and was not known by the responsible authority.

The authority - the NMA - should evidently at this early time have told Bildt that (a) the visor of 'Estonia' was only cosmetics of the *superstructure* and (b) water on the car deck in the *superstructure* should have caused immediate capsize (compare the 'Jan Heweliusz' and the 'Herald of Free Enterprise'), and (c) water leaking in below the car deck through a hull leakage should have sunk the ship, if the water spread through open watertight doors and if the bilge pumps did not work. Leakage as cause of accident could not have been ignored at this time - 28 September 1994.

PART 2.11 THE SWEDISH BOARD OF ACCIDENT INVESTIGATION (SHK) (PAGE 47 OF (25)).

The SHK said that it appointed naval architect Börje Stenström **1.5** as a Swedish investigator. Stenström should have known that the 'Estonia' should have capsized with about two thousand tons of water on the car deck and then been floating upside down. Stenström had knowledge about stability, and water on the car deck was a simple intact stability problem, which he should have solved in a few minutes. We know now that the SHK director general Forssberg stopped the stability calculations of Stenström on 26 October 1994 **1.15** just a few days before Stenström met the author at the IMO on Monday 31 October 1994, when the author told Stenström the same thing - check the stability. If Stenström could not calculate stability, then the expert, Dr. Michael Huss, could, because he made a correct calculation and gave it to Forssberg on 2 January 1995. Forssberg made the Huss calculations secret. It seems that the Group of Analysis did not dare to investigate these strange manipulations of Forssberg, when it interviewed him. The Group of Analysis carefully avoided interviewing Huss. It is also remarkable that the SHK did not, internally, discuss or investigate leakage as cause of accident. The Group of Analysis should at least have asked the SHK, why it did not investigate leakage as cause of accident.

PART 2.15 THE TASK TO CHART THE REPORTING ROUTINES AT THE SWEDISH NMA (PAGE 55 OF (25)).

The former chief justice Magnus Sjöberg was by the government given the task to investigate the reporting routines at the Swedish NMA.

In spite of the fact that the 'Estonia' accident was a clear example how a ship had lost its stability, Mr Sjöberg did not investigate how the NMA checks and validates ships stability. Sjöberg apparently did not notice that Mr Franson had told his staff to shut up about the 'Estonia' stability with water on the car deck.

Sjöberg *only* charted some routines about surveys of visors and found some deficiencies. That Sjöberg did not chart the routines to check stability, evacuation, life saving equipment, fire protection, etc. is remarkable - he was either fooled by the NMA or participated in the cover up. The Group of Analysis did not dare to ask Sjöberg why he made an inferior and limited job.

PART 2.16 THE SWEDISH BOARD OF ACCIDENT INVESTIGATION *(SHK)* (PAGE 57 IN (25)).

Olof Forssberg told the Group of Analysis that he emphasized already on 3 October 1994 the importance to quickly investigate the cause of accident - what else should he do? In spite of this Olof Forssberg then, e.g. stopped all attempts to check the stability of the 'Estonia' with water on the car deck **1.15** and in-depth interviews of survivors by expert Schager, etc. Forssberg was at this time well known for having prevented his assistants to investigate particular aspects of the accident, but the Group of Analysis never followed up. The author had in fact made the relevant stability calculations in a letter dated 3 April 1995, which the SHK recorded in act F69. The SHK never replied. The Group of Analysis should of course have asked Olof Forssberg, why he did not reply to letters from the public about the 'Estonia' stability.

PART 2.20 THE DISCUSSION ABOUT THE CAUSE OF ACCIDENT (PAGE 66 OF (25)).

The Group of Analysis notes that, at the end of the first week after the accident, the media was only reporting what could have caused the *visor* to fall off. But the Group does not pursue this matter - that the visor had nothing to do with the actual sinking.

It is interesting to note that the authorities did not interfere in the discussion of the media and clarified matters like intact stability and that ships float on their hulls, stability with water on the car deck in the superstructure above the hull and that water on the car deck makes vessels capsize and float upside down on the hull, that water on the car deck cannot sink ships, etc.

The authorities should have told the public and the media that ships often sink due to leakage in the hull and when watertight doors are open in the hull and bilge pumps in the hull are not working, etc. and that regulatory damage stability criteria means that passenger ships can float with two watertight compartments flooded in the hull, etc. But in the 'Estonia' case the Swedish NMA observer in the Commission, master mariner and director, Sten Anderson, directly and indirectly gave completely misleading information, e.g. that water on the car deck in the superstructure sinks ships! The Group of Analysis interviewed Anderson but did not dare to ask him about the matter.

PART 2.22 THE REPORT OF THE NMA IS HANDED OVER TO THE MINISTRY OF TRANSPORTATION (PAGE 70 OF (25)).

On 11 October 1994 the NMA (Franson) handed over a report about salvaging the dead bodies to the responsible minister - Ms Uusmann. At that time the Norwegian salvage company Stolt-Comex had already made an offer to salvage all victims at cost - no profit, while Franson advised that it was not possible.

Apart from the above it is remarkable that the NMA did not report to Ms Uusmann about the stability of the 'Estonia' etc. Franson had at this time already censored his experts and told them not to talk about the stability. Now Franson kept the minister herself in the dark. The Group of Analysis did not pursue the matter either. The objective of the Group of Analysis was to describe how Swedish authorities had handled the disaster. Here was a clear example of authority giving misleading information to the government - and the Group of Analysis didn't notice.

PART 2.30 ROCKWATER IS APPOINTED TO DIVE (PAGE 91 OF (25)).

In the report (25) is said that the Swedish delegation of the Commission wished that the divers should examine i.a. *damages on the ramp and its locking appliances.* According to the Finnish member Karppinen **1.10** he gave the divers a *written* order to examine whether the ramp had actually been open (which the Commission had already stated without evidence), as the ramp was closed down at the wreck. The divers could then, according to the Final report (5) not enter the car deck, as the ramp was closed, and they could then *not* examine, if the ramp had been open and if the locks were damaged **1.16**. The Final report (5) therefore does not include any details about the ramp locks and their damages. Regardless, the Commission stated (a) the ramp had been locked, (b) the locks were damaged, (c) the ramp had been fully open during the accident and (d) the ramp had later closed itself. The Group of Analysis did not bother to investigate these unproven statements, but it actually later recommended that divers should salvage all dead bodies (see below). This recommendation meant that divers must check the car deck for dead bodies and it should then have been possible to really check the ramp locks, if they were broken and if the ramp hand been locked, opened and closed.

It was probably one of the main reasons why the Swedish government later did not follow the recommendation of the Group of Analysis. If the bodies were to be saved, it would be very easy to confirm the condition of the ramp.

PART 2.31 **THE FIRST MEETING OF THE ETHICAL ADVICE BOARD - PRESENTATION OF THE ANALYSIS OF CONSEQUENCES** **1.16** (PAGE 93 OF (25)).

An Ethical Advice Board was formed by the government. It consisted of laymen to decide what to do with the dead bodies. The Group of Analysis interviewed many members of this ethical board 1998. Johan Franson, the legal head of the NMA, was the first to be invited to the Ethical Advice Board to make a presentation of his Analysis of Consequences mid-December 1994.

Franson only reported that it was difficult to salvage the dead bodies and that he did not recommend it. Neither the Ethical Advice Board 1994 nor the Group of Analysis then knew that Franson had just participated to salvage luggage from the 'Estonia' and destroyed evidence from the 'Estonia' at the dive examination a week earlier. They did not know that Franson lied to them to protect the NMA and to assist in the cover-up of the Truth. Franson could evidently not tell the Ethical Advice Board that the 'Estonia' should have capsized and floated upside down on its hull with water inside the superstructure above the hull and that the official cause of accident was not true. He had to manipulate the Ethical Advice Board with fairy tales.

PART 2.31 A THOROUGH REVIEW AND PICTURE SHOW (PAGE 93 OF (25)).

The presentation of Franson was, according to the Group of Analysis, thorough. He showed how the ship was resting on the bottom.

But Franson did not explain why the 'Estonia' had ended on the sea floor. There was not one word about intact and initial stability, stability with water on the car deck in the superstructure and how water in the superstructure heels the ship until capsize, that water in the superstructure does not sink ships, that ships sink because leak of the hull and that watertight doors are open, bilge pumps do not work, and that people drown if there is not lifesaving equipment for all onboard. The opposite - Franson told the Ethical board that water in the superstructure sank the 'Estonia'.

When the Group of Analysis interviewed Franson in 1998, it evidently never asked him why he misled the Ethical Advice Board in 1994.

PART 2.36 THE OPINION OF THE SHK REGARDING THE DEMAND FOR SALVAGE (PAGE 108 OF (25)).

Forssberg told the Group of Analysis 1998 that he in December 1995 had informed Minister Ines Uusmann (at her request) that it was *not* necessary to salvage the wreck to investigate the cause of accident.

From the Forssberg point of view salvage was not required to find the cause of accident, as Forssberg had already at various times October-December announced the cause of accident - badly designed visor locks 1980 and not, e.g. hull leakage 1994 **1.11**. When the Group of Analysis interviewed Forssberg 1998, it was of course known that the alleged cause of accident was not proven in the Final report (5) **1.22**, which of course Forssberg had not signed.

Neither Forssberg nor Franson could explain **how and why the 'Estonia' had sunk**. The relationship between (A) allegedly bad visor locks 1980 and (B) the sinking 1994 was still completely unclear 1998 and the Group of Analysis knew this. It should have been clear that the Forssberg recommendation to Uusmann in 1994 not to salvage the wreck was only to protect himself and the persons who had told him only to pursue the investigation of the visor locks. But the Group of Analysis did not ask any relevant questions about this matter.

The statement of Forssberg contributed to the government decision not to salvage the 'Estonia' (part 2.40 of (25)).

PART 2.43 RELATIVES REPORT THE MASTER OF THE 'ALE' FOR NEGLIGENCE AT SEA (PART 124 OF (25)).

Some persons tried to secure evidence from the 'Estonia' and their ship was anchored above the wreck. A dive flag was shown requesting other ships to stay away. The Swedish ship 'Ale' tried to sink the ship by ramming it. It was a crystal clear fault of the international traffic regulations at sea. There are no exemptions. The persons reported the incident to the authorities - the Swedish NMA. The interesting thing is that the ship 'Ale' belonged to the Swedish NMA (sic) and it was apparently the NMA, which ordered the master of the 'Ale' to ram the ship. But the Group of Analysis found the whole thing in order. No criticism of neither the master of the 'Ale' nor the NMA.

PART 2.54 THE WORK OF THE INTERNATIONAL COMMISSION (PAGE 144-5 OF (25)).

The Group of Analysis was told by the government not to study the work of the Commission. However the Group of Analysis concluded (page 245 of (25)) that the discussion, what actually caused the sinking of the 'Estonia', was still, 1998, going on. The Group of Analysis did not expand on the subject. It should have said that all Swedish authorities refused to participate in the public discussions.

PART 2.57 DIFFERENT EXPLANATIONS OF THE CAUSE OF ACCIDENT (PAGE 152 ON (25)).

Chief prosecutor Tomas Lindstrand, Stockholm, told the Group of Analysis that there were different explanations about the cause of accident. Lindstrand was hence aware of the possibility that the crew lied about what had happened aboard. The German group of Experts **3.13** stated clearly that the crew lied (and it could probably prove it), when it presented its cause of accident **3.15**.

One of the reasons for chief prosecutor Tomas Lindstrand not to carry out any of his own investigations was that no crime like negligence of the ship owner, negligence of the crew, negligence of the responsible authority, collusion of any party, etc. behind the accident could be visualized (sic). Lindstrand was not curious

why and how the ship sank, even if he was aware of the fact that the 'Estonia' would have capsized with water on the car deck in the superstructure. Lindstrand had read (1) and had thanked the author for the free copy.

The decision of Lindstrand was criticized in the media, but the Group of Analysis considered the decision of Lindstrand to be correct.

PART 2.52 **REQUEST OF APPEAL** (PAGE 152 OF (25)).

The senior chief prosecutor Uno Hagelberg refused to change the decision of Lindstrand. Even if the crew lied about what happened, he suspected no crime behind the sinking, i.e. Hagelberg assumed that the ship was seaworthy, the ship owner not negligent, etc. The Group of Analysis had no further comments about the Hagelberg decision.

PART 5.3 **THE RECOMMENDATION** (PAGES 258-261 OF (25)).

The job of the Group of Analysis was to look at how the various Swedish authorities had handled the disaster. The analysis was about the actions and decisions of Swedish authorities. But on page 258 of (25) the Group of Analysis suddenly states that its prime objective was to restore the public's confidence in the authorities.

SALVAGE THE BODIES

The only recommendation of the Group of Analysis was to salvage the dead bodies!

Why salvaging the bodies would restore the public's confidence in the Swedish authorities is not clear.

It is quite sad that the Group of Analysis had no other recommendations based on what they presented. The part report (25) of the Group of Analysis confirmed what most critics of the Final report (5) suggested - **that the investigators lied about the cause of accident and what had happened** and that, e.g. other authorities and civil servants supported the investigators like Forssberg and Franson by not taking any action (e.g. Lindstrand, Hagelberg) or producing a misleading report (Magnus Sjöberg).

LEARN FROM THE 'ESTONIA'

On 21 April 1999 the Group of Analysis presented its final report *'Lära av Estonia'* (Learn from the 'Estonia)(26). It does not contain any further clarifications or comments about the strange behaviour of the Swedish establishment outlined above (and it is only a small fraction of all strange events).

NO RECOMMENDATIONS TO IMPROVE SAFETY AT SEA

The Group of Analysis did not make any recommendations how the authorities can improve safety at sea or improve the investigation of accidents, i.e. Sweden was not going to learn anything from the 'Estonia'. The group only recommends better handling of the victims of any crisis or disaster.

SWEDISH POLICE ACTIONS NEVER INVESTIGATED

In that respect it is interesting to note that the Group of Analysis never 1997-1999 investigated the actions of the Swedish police after the accident 1994! It is clear (see pages 47 and 53 in (25)) that Swedish police assisted the Finnish authorities in Finland itself (three persons) to identify the victims there and (see page 56 in (25)) and that one Swedish policeman was sent to Tallinn on 5 October 1994 to check the passenger lists - that was officially all the Swedish police did. Swedish police then should have been able to confirm the number of survivors, the number of recovered dead bodies and the number of persons, which had disappeared, which

would have been interesting to see being reviewed. There is still confusion about how many were rescued; **1.41** and **1.46**. But Swedish police was present both at Finland and Estonia (Tallinn) with full insight of the work to identify survivors and how they were salvaged, but the Group of Analysis never bothered to examine that work. Nor did the Group of Analysis study what e.g. the assisting ships like the 'Mariella' did to look after the rescued persons and why the rescued persons apparently were locked up on board.

FILMS TAKEN ONBOARD DISAPPEAR. PRIVATE PROPERTY CONFISCATED

Another (?) Swedish police Lars Jonsson was at Tallinn on 13 October, when the question arose what to do with the property found belonging to a victim of the accident. The victim was the Swedish press photographer Håkan Isefjord from Oskarshamn and the property, which was at the Swedish embassy, was a camera and two rolls of films found in lifeboat no. 9 (the aftermost lifeboat starboard side, which would have come under water first when the ship sank, which had been swept up on the Estonian coast). A decision was made on 17 October by prosecutor Ola Brogren and chief prosecutor Britta Cronier, Stockholm, that the property should be confiscated. What happened then with the films is not clear (the relatives of Mr Isefjord only received the camera). The Group of Analysis was obviously not told that private property was confiscated by the Swedish state/police and could not ask the bosses of Brogren/Cronier, i.e. chief prosecutor Thomas Lindstrand and supreme prosecutor Uno Hagelberg (who had been promoted in the meantime), when they were interviewed on 30 March 1998.

The film rolls were in fact developed and have since disappeared. There is a possibility that Mr Isefjord actually was on deck 7 before and after the listing occurred and then, evidently took pictures of the course of events, e.g. that no. 1 MoB boat was launched, and then saved himself up into lifeboat no. 9, where he secured the camera and the film rolls.

As the Group of Analysis did not investigate how the number of rescued was decided and how the rescued persons was treated, there is reason to look at that in the next chapter.

1.41 HOW MANY PERSONS WERE RESCUDED BY THE 'MARIELLA' AND BY HELICOPTER Y 64?

According to the Final report (5) total 137 persons survived the 'Estonia' accident. According to the Jörle-Hellberg book (20), page 231, 140 persons were saved, i.a. **41** persons by assisting ships. According the Final report chapter 7.5.2 ships rescued only **34** persons so where did the **extra seven** persons from the sea come from? There is confusion about how many dead and alive were picked up and this is only due to the simple fact that the Final report does not tell the Truth. Actually - the Commission never investigated who were rescued! Nobody in the Commission studied the matter. There is no information in the archives of the SHK or anywhere that the question should be or was ever investigated. It would appear that the Commission was initially ordered not to study the rescue at all. All information in the Final report (5) about the rescue is therefore based on information without any evidence what so ever.

HELICOPTER Y 64 RESCUES NINE PERSONS

An introductory example is from Swedish daily **Aftonbladet** 28 and 29 September 1994 (before media censorship started) how **eight** (or nine) persons were rescued by helicopter Y 64:

Kenneth - one of the many Heroes of the Night *… **Kenneth Svensson** 27 years old. One of the many heroes in connection with the ferry disaster. Kenneth Svensson ... is a rescue man. ... Kenneth Svensson, who was first on site of the rescue men, was lowered under dramatic conditions down to the persons in danger. ... The first rescue attempt failed and he was hauled up again to the helicopter. ... people called for help ... -After only just half a minute I made a new attempt and it went better.* *-On a capsized raft sat three frozen and apathic men.* *Kenneth Svensson could hardly fit the rescue harness around them. ... **Eight** humans Kenneth Svensson managed to pick up from the sea.* *Then he almost drowned himself.*	*When the last rescued person was going to be lifted, the rescue line got stuck in a rail and the rescue man Kenneth got hanging below the helicopter and he was close to being smashed against the underside of the helicopter in the strong wind. The helicopter crew understood the situation and quickly cut the wire to Kenneth Svensson. With a big splash he fell back into the water and hurt his face and one side of the body. Meanwhile his own helicopter was forced to return to **Huddinge** hospital with the injured persons and he must be rescued by another helicopter.* *From that helicopter Olle Moberg, also 27 years old, was lowered. He managed to secure a new wire around the hero Kenneth Svensson, who was close to lose his own life in the battle to rescue survivors from the Estonia. ...* (Aftonbladet Wednesday 28 September 1994 ; by Sven-Anders Eriksson)

The next day the same story was repeated ... but it was only **six** survivors but still **nine** (including one dead) were brought to Huddinge:

Sailor Kenneth rescues six - and waited himself in the Water *... Kenneth Svensson assisted as rescue man in one of the first three Vertol-helicopters that left from Berga naval base outside Stockholm. The time was then **just after two o'clock** in the night. After an hour they arrived. ... The crew discovered immediately life rafts ... in some were humans. ... Kenneth Svensson was lowered down to one raft with **three men**. ... After about twenty minutes hard work he had managed to lift all **three** to the helicopter. ... On another capsized raft there were **three** more persons, frozen and apathic. Kenneth Svensson could hardly secure the rescue harness around them.*	*... When Kenneth Svensson was on his way up with the third person, the rescue line got stuck in the undercarriage of the helicopter. The crew managed to get onboard the injured person, but Kenneth Svensson remained hanging below the helicopter. To prevent him from being smashed against the aircraft the line was cut and he fell back into the ... sea. The helicopter was forced to leave Kenneth Svensson alone in the water in order to fly to **Huddinge** hospital with the injured. In the helicopter were **nine** persons, one of whom was dead. Kenneth Svensson ... was rescued ... by another helicopter.* (Aftonbladet Thursday 29 September 1994; by Sven-Anders Eriksson)

Kenneth Svensson who rescued 6 or 8 persons

According early media information the **nine** rescued survivors, one of whom were dead, arrived at the **Huddinge** hospital already before 04.30 hours! **There is no information who they were!** Rescue man Kenneth Svensson in helicopter Y 64 later got a medal for his heroic work by Swedish supreme commander Ove Wictorin and was requested not to discuss the matter. Because in the Final report (5) pp 111-112 a completely different story is presented:

Y 64

> *"Y 64 took off from Berga at 0445 hrs, picked up a physician and a nurse from Huddinge Hospital and arrived at the scene of the accident at 0552 hrs".*

According Aftonbladet Kenneth was however in the air much earlier ... ***just after two o'clock***. Further:

> *"Y 64 began to rescue three people ... The helicopter winched down its rescue man* (Kenneth Svensson) *... Although the winch wire failed, the rescue man managed to raise him* (the first survivor)*. The next to be lifted ... was not wearing a lifejacket. He fell into the water just before gaining the helicopter. The rescue man jumped after him and succeeded in grasping him. The winch now failed totally and another helicopter, Y 74, was called upon to rescue them".*

According the Final report Kenneth only rescued **one** person before he fell in the water and could not be winched up. According the Final report (5) now Y 74 with rescue man Olle Moberg came to assist. What does (5) have to say about Y 74?

Y 74

> *"Y 74 took off from Berga at 0546 hrs. Carrying a physician and a nurse from Huddinge hospital, Y 74 reached the scene of the accident at 0642 hrs. Dawn had already broken. At the beginning of the operation Y74 found a raft ... At the same time the helicopter received a radio message that Y 64 had had to leave its rescue man in the sea. Y 74 went to assist Y 64.*
>
> *Y 74 had difficulties in locating Y 64 ... The Y 64 rescue man* (Kenneth Svensson) *was holding onto **a body**, which was winched up to Y 74 with the assistance of Y 74's own rescue man* (Olle Moberg)*. When the body had been recovered, the Y 74's rescue man fell about one meter, receiving a heavy blow from the harness to the lower part of his body. Nonetheless, he requested that he be lowered to bring up **one more body**. ... Finally a spare harness was lowered to the Y 64's rescue man (*Kenneth Svensson)*, and used to winch him up to the helicopter. The injury to the Y 74 rescue man proved so serious ... The work was continued by the Y 64's rescue man* (Kenneth Svensson)*.*
>
> *At 0715 hrs Y 74 found a raft with three survivors, who were winched up into the helicopter".*

It was a raft that is not described in the Final report (5) pp 84-89 life rafts "**A**"-"**V**", with two women and one man; Gullbritt von Payr, Swedish passenger, b.1946, Krista Kööp, Estonian crew member, born 751220 and the Latvian passenger Igor Gritsious, born 700116. These three survivors have never been properly questioned by the commission and there is no information about them at the SHK (act G42) or that they were rescued by Kenneth Svensson, but they reportedly arrived at Huddinge hospital at 08.22 hrs. Thus at 07.15 hrs two 'bodies' (rescued by Moberg) and three (known) survivors (rescued by Svensson) had been picked up by Y 74. But Y 74 was going to rescue three more people + a rescue man. Further according (5):

> *"At 0740 hrs Y 69 reported that it, too, had had to leave its rescue man in the water because of malfunction of the winch. ... Y 74 went to Y 69's assistance. A hook and harness were dropped to the rescue man and he was able ... to get up to the helicopter.*

Three survivors were hanging on to the keel of an upside-down lifeboat. Y 64's rescue man (Kenneth Svensson) *was lowered down, and all three survivors were winched up".*

Y 69

"Y 69 took off from Ronneby at 0430 hrs ... reaching the scene of accident at 0645 hrs. Immediately ... an upside-down lifeboat came into view with three persons ... When the rescue man was lowered into the water, a strong wave washed him against the boat, injuring him in the head. When the helicopter tried to winch him up, the winch malfunctioned. Y 69 had to ask Y 74 for assistance. Y 74 was able to bring up the rescue man and the three survivors."

The three survivors from lifeboat **"B"** , pp 89 in (5) where the time of rescue is about 0400 hrs (sic) were one woman and two men; the Swedish passenger Ulla Marianne Tenman, born 640327, the Estonian passenger Rait Pöllendik, born 730814, and the Estonian crewmember Helve Blumfeldt, born 511019. None of these three survivors have been properly questioned by the commission and there is no information from them at the SHK (act G42), but they arrived at Huddinge hospital at 08.22 hrs with the other above mentioned persons - total six survivors. **If they were actually saved by Kenneth Svensson is unclear.** Further according (5) about Y 74 rescue of lifeboat **"B"**:

Y 74

"In connection with the rescue of the last of the three, a strong wave threw the rescue man (Kenneth Svensson) *against the lifeboat, injuring him. Since Y 74 now had three injured rescue men, it had to interrupt its rescue operations. ... The six survivors, the injured rescue men and **the body** were taken to Huddinge hospital ... arrived at 0930 hrs".*

Thus **two** rescue men were injured when salvaging three persons from lifeboat **"B"**. But Tenman has testified that there was only one helicopter and has not mentioned two injured and one uninjured rescue men. And even if Moberg rescued two 'bodies' it became only one later! What did they do with the other 'body'? Drop it into the sea?

According Swedish daily Aftonbladet 28-29 September 1994 Kenneth Svensson and Y64 rescued first **nine** and later **six men** from rafts before Kenneth fell into the water and then Y64 brought **nine** persons, one of whom were dead, to the Huddinge hospital very early the morning of 28 September. Kenneth was later rescued by another helicopter.

According to the Final report Kenneth Svensson fell into the water after having saved one person and later he assisted bringing up two 'bodies' and saving **three women** (sic) and three men from a raft at 07.15 hrs and a lifeboat **"B"** at 08.00 hrs.

CONFUSING?

Not at all - Kenneth rescued 8 or 9 persons and Y 64 brought them to Huddinge hospital early in the morning at 04.30 hrs. The hospital today cannot inform how and when injured people arrive and are registered. It was duly reported by the media. The next day the number of rescued people had to be reduced ... to the number brought in by another helicopter, Y74.

The above descriptions from the Final report (5) are thus pure misinformation by the Swedish Navy to hide that helicopter Y64 made an early flight ***before*** the official one, and saved a large number of people, including the twins Veide **1.46**.

But this the authorities managed to censor by giving Kenneth Svensson a medal.

Captain Piht and store assistant Kahlev Vahtras were probably rescued by Y 64 and arrived at Huddinge but were soon after flown by Y 64 to Mariehamn and Utö (Y 64 was there) and then on to Turku, Finland to assist in the inquiry. Six men and the twin girls at Huddinge became later only six men ... which later became three other women and three other men ... who were saved by another helicopter coming much later to Huddinge and who could never be questioned by anybody.

The stories of the malfunctioning winches and rescue men falling into the water and getting injured against a lifeboat was an invention, so it appeared that Kenneth Svensson rescued people - not from Y 64 but from Y 74. The Swedish Navy naturally refuses to comment upon the above allegations.

But still errors were made - three extra survivors were still reported.

OFFICIALLY 15 PERSONS WERE RESCUED FROM THE SEA BY THE 'MARIELLA'

The error is clearly with the 'Mariella'. The Final report (5) chapter 7.5.3 states the following:

> *"**Four** open life rafts were winched down into the sea from the 'Mariella' … In this way **13** persons were brought up from the 'Estonia' rafts. … (two) persons … found after 05.00 hrs were so exhausted that they could no longer move … Two crew members of the 'Mariella' volunteered … they managed to pull two persons … they were winched up … All in all, the 'Mariella' rescued **15** persons from the 'Estonia's life rafts.*
>
> *A report of any raft sighted was made to the helicopters … . In this way **11** more persons were rescued, and brought by the OH-HVG helicopter to the 'Mariella' at 0657 hrs. … One of the survivors was transferred by helicopter to Hanko … for a broken leg. … The vessel arrived in Stockholm at 2355 hrs with the **25** survivors".*

Note the statement that *'four open life rafts were winched down'* to rescue people. The 'Mariella' should officially have rescued 13 persons from the sea by winching down *four* rafts. Then two Mariella crewmembers went down in a fifth raft and rescued two other persons. Finally the 'Mariella' received 11 persons by helicopter and one person was later sent to Finland. Can we believe that?

In the Swedish daily Expressen of 29 September 1994 the Master of the 'Mariella', Captain Thörnroos (interviewed by Eva Gussarsson) states that **17** persons were rescued from the sea and that 9 were put aboard by a helicopter. Mr Altti Hakanpää is also interviewed in Expressen and states that he was one of the 9 in the helicopter.

THE 'MARIELLA' SAVED AT LEAST 24 PERSONS FROM RAFTS IN THE SEA!

From what 'Estonia' life rafts did the 'Mariella' rescue people in the water? We have been told that the 'Mariella' winched down *four* open life rafts to haul up survivors. The Final report (5) chapter 6.3.12 states the following:

"LIFE RAFT "N"

> *… The Swedish woman* (a passenger) *… swam to a raft* (raft "N") *and was helped on board by a man inside. Once on board she helped the (female) croupier up, and the two women then pulled up four more persons. … they struggled to drag on board a female Estonian shop assistant … and pulled her onboard. In addition to these three women this raft* (raft "N") *contained a male and female Russian, an Estonian waitress, another Estonian shop assistant and an Estonian, a Swedish and a German passenger. The latter was pulled onboard after about half an hour in the water …*
>
> *The raft* (raft "N") *floated near the ferry, which lowered a raft … the crew called … to the people in the 'Estonia' raft* (raft "N") *to move over to theirs. The raft was then lifted … aboard the 'Mariella' and **nine** (sic) people were rescued* (**Note** - 10 persons are listed above but only nine were rescued).

LIFE RAFT "O"

> *One Swedish passenger … an Estonian crewmember … The **two** men were transferred to a raft lowered by a ferry* (the 'Mariella') *and were hauled aboard at about 0500 hrs.*

LIFE RAFT "P"

> *… Another witness jumped from the funnel … and gained an empty raft. … he managed to pull inside a Lithuanian man. They helped others into the raft* (raft "P") *and after some time they were about 15 people. These included several crewmembers, a motorman, a store keeper, one able-bodied seaman and his wife, the welder, one cabin attendant, the hotel purser and one Estonian and four Swedish passengers. … two people moved over to another raft. Those that remained* **(13 persons)** *drifted towards the 'Mariella', which launched a raft. The people climbed over to this raft and the 'Mariella' crew hauled them on board."*

This is all in the Final report (5) how survivors in rafts jumped into the *three* 'Mariella' rafts winched down and were saved? Assuming that **13** people were rescued from raft **"P"** by **one** raft lowered from the 'Mariella', **2** from raft **"O"** in a *second* raft lowered by the 'Mariella' and **nine** from raft **"N"** in a *third* raft lowered by the 'Mariella', the 'Mariella should have rescued **24** persons from the water by lowering *three* rafts and not 15 as stated in the Final report (5) chapter 7.5.3.

THE HELICOPTER OH-HVG AND LIFE RAFT "Q"

The Final report (5) chapter 6.3.12 states the following:

*"**Life raft "Q"***

> *"In this raft* (raft "Q") *there were about 15 people, many of them Estonian crewmembers …. **All** in this raft were rescued by a Finnish helicopter* (helicopter OH-HVG)*, which put them on board the 'Mariella'."*

Thus 15 people from raft **"Q"** should have been put onboard the 'Mariella' by helicopter OH-HVG. The Final report (5) chapter 7.5.5 states the following:

*"**OH-HVG (Super Puma)***

> *... first rescue flight OH-HVG rescued four persons, who were taken to the 'Silja Symphony'. … During the second flight … Forty survivors were rescued. Of the survivors **11*** (sic) *were flown to the 'Mariella', 16 to the Silja Symphony' and 13 to Nauvo.*
>
> *… the number of survivors rescued by OH-HVG has been given as 37. This number has also been reported by the crew. On reality the helicopter rescued 44 people. This has been verified from the vessels* (i.e. the 'Mariella' and the 'Silja Symphony') *and the Nauvo assembly point log books."*

According to the Final report (5) the 'Mariella' log book should confirm that **11** persons and not 15 people from life raft **"Q"** were put aboard the 'Mariella'. Evidently there exist no 'Mariella' logbook extracts in the SHK archive confirming the numbers of survivors on the 'Mariella.

The author has repeatedly contacted the owners and the Master of the 'Mariella' to clarify matters, but they do not reply.

WHAT REALLY HAPPENED ON THE 'MARIELLA' 01.57-07.10 HRS

The author believes the 'Mariella' rescued 18 persons from the sea (and that nine or eleven persons came aboard by helicopter OH-HVG).

Finnish commanders Jaakko Smolander and Heikki Hyyryläinen at the Helsinki HQ of the Bay of Finland Coast Guard section has in its **report** of the rescue informed:- The 'Mariella' rescued **18** persons from the sea. M/S 'Ministar' rescued one person from the sea. As stated above the Master of the 'Mariella' said it was **17**. It should be recalled that 'Mariella' arrived at the rafts already at 01.57 hrs but waited for more than an hour before rescuing persons in distress!

LIFE RAFT "Z" - FOUR PERSONS RESCUED BY THE 'MARIELLA' AT 03.10 HRS

It would appear that the following four persons shared life raft **"Z"** (not mentioned in the Final report) and were rescued by the 'Mariella' at **03.10** hrs by jumping into a raft lowered by the 'Mariella': Eckard Klug, Swedish passenger, b 1954, Ture Palmgren, Swedish passenger, b 311213, Veljo Juuse, Swedish passenger, b 1970 and Daniel Svensson, Swedish passenger, b 1974. These are four Swedish passengers that the Final report (5) erroneously puts with other people into life raft **"P"**. They say they were the first aboard the 'Mariella' - at 03.10 hrs!

RAFT "N" - SEVEN PERSONS RESCUED BY THE 'MARIELLA AT 03.45-04.25 HRS

The author believes, based on media reports 29 September 1994 and records of the Swedish Board of Social Affairs (35) that only seven persons (five *women* and two men) - not nine or ten - were rescued by the 'Mariella' from raft **"N"** and that the following happened and should have been reported in the Final report (5):

> *"… The Swedish woman* **(Karin Bergquist)** *… swam to a raft* (raft "N") *and was helped on board by a man* **(Gunnadi Pärson)** *inside. Once on board she helped the* (female) *croupier* **(Paula Liikamaa)** *up, and the two women then pulled up four more persons* **(Vöösu, Mötus, Mölder and Kozareva)**. *… they struggled to drag on board a female Estonian shop assistant* **(Hele Mötus)***… and pulled her onboard. In addition to these three women* **(Bergquist, Liikamaa and Mötus)** *this raft contained a female Russian* **(Kozareva)***, an Estonian waitress* **(Tiina Mölder)***, another Estonian shop assistant* **(Timmo Vöösu)** *and an Estonian* **(Gunnadi Pärson)** *passenger.*
>
> *The raft* (raft "N") *floated near the ferry, which lowered a raft … the crew called … to the people in the 'Estonia' raft* (raft "N") *to move over to theirs. The raft was then lifted … aboard the 'Mariella' and* ***seven*** *people were rescued.*

Thus only seven persons, **Bergquist, Pärson, Liikamaa, Vöösu, Mötus, Mölder and Kozareva** - not nine or ten - were rescued from raft **"N"** by the 'Mariella' at **03.45-04.25** hrs. The women were quite heroic.

THE 'MARIELLA' REPORTS TO THE 'SILJA EUROPA' AT 04.24 HRS THAT IT HAS SAVED 14 PERSONS

At **04.24** hrs the 'Mariella' however reported to the 'Silja Europa' that it had rescued **14** persons. It was the 11 above reported persons and three unknown ones (sic). The Final report (5) 6.3.12 says that: *'a Russian man ..., a Swedish and a German passenger' ...,* i.e. three unknown persons should have been rescued from raft **"N"** by the 'Mariella', but who they were is not stated. This author believes the 'Mariella' rescued three other persons - **probably Estonian crewmembers** - from a raft that were later not reported. See below.

LIFE RAFT "V" - TWO PERSONS RESCUED BY THE 'MARIELLA' AT 05.15 HRS

Another two persons were rescued by the 'Mariella' crew at **05.15** hrs from raft **"V"**: Urban Lambertsson and Arturas Tamachauskas. They were totally exhausted and had to be saved by 'Mariella' crewmembers lowering themselves to the raft. Lambertsson was working for Estline ashore and responsible for booking cargoes. He had a past in the Swedish Navy. He found protective clothing (!) in the raft that enabled him to survive. In view of the fact that 'Estonia' sometimes carried military cargo on behalf of the Swedish Defence forces, Lambertsson is an interesting survivor that has not fully explained his being aboard.

LIFE RAFT "O" - TWO PERSONS RESCUED BY THE MARIELLA AT 05.35 HRS

'Mariella' then finally rescued two persons from the sea - raft **"O"** at **05.35** hrs - the Swede Ronnie Bergqvist and the Estonian crew member Erwin Roden. They jumped into a 'Mariella' raft and were hauled aboard.

At **05.35** hrs the 'Mariella' had saved 18 persons from the sea. And no more persons were saved that way. But only 15 persons have been identified by this author!

LIFE RAFT "P" - ELEVEN PERSONS PUT ABOARD THE 'MARIELLA' AT 07.10 HRS BY A HELICOPTER

On raft **"P"** were 15 persons: Aarne Koppel, b 570224, Andres Vihmar, b 650121, Holger Wachtmeister, passenger, Larissa Skorohodova, b 491030, Tanel Moosaar, b 710429, Vassili Märtson, b 511222, Peter Järvinen, b 631018, Aulis Lee, b 660611, Paul Siht, passenger, b 1965, Altti Hakanpää, passenger, b 510216, Tomas Grunde, passenger, b 510520, Aino Lee, wife of Aulis, Maiga Järvi, b 440114, Lars Torsten Österberg, passenger, b 460812 and Mats Hillerström, passenger, b 680714.

11 (or 9) persons in raft **"P"** were rescued by helicopter OH-HVG and put aboard the 'Mariella' at **07.05** hrs. Eight were recorded in the OH-HVG log book: Aarne Koppel, Andres Vihmar, Holger Wachtmeister, Larissa Skorohodova, Vassili Märtson, Peter Järvinen, Aulis Lee, Paul Siht. Altti Hakanpää says he was with eight persons in raft **"P"** but his name is not in the log book. Apparently also Tanel Moosaar and Tomas Grunde were put aboard the 'Mariella'. The others in raft **"P"** were rescued by helicopter OH-HVD and put aboard the 'Silja Europa'.

At 08.10 hrs one survivor, Märtson, was flown away from the 'Mariella' to Finland.

According to the author **28** persons should therefore have been aboard the 'Mariella' at about 09.00 hrs on the morning of 28 September 1994 - 18 rescued from the sea and 10 (11 with Märtson) brought aboard by a helicopter (OH-HVG). The 'Mariella' no doubt informed the On-Scene Commander (OSC) - the 'Silja Europe' and the Maritime Rescue Co-ordination Centre (MRCC) at Turku the names of all these survivors - **28** and that Märtsson had been flown away.

THE 'SILJA EUROPE' - RAFTS "R" AND "J" - THREE EXTRA SURVIVORS?

The 'Silja Europa' - the On-Scene Commander - received allegedly first four persons in raft **"R"** by one helicopter (see table 1.41.3 below) and later received another person (Mr Tillgren in raft **"J"**) + one helicopter crewmember by another helicopter. Later one Estonian crewmember swam to the pilot ladder and crawled aboard. Disregarding the helicopter crewmember there should have been six survivors on the 'Silja Europa'. Strangely enough Swedish radio announced already around **03.45** hrs that there were seven (sic) survivors on the Silja Europe. This must have been at the time the first helicopter had landed on the 'Silja Europe' and it seems therefore that another three persons might have been put aboard earlier. The 'Silja Europa' however arrived at Stockholm on 29 September morning with only six survivors. No police landed on the 'Silja Europa' to protect them.

THE 'MARIELLA' LEAVES THE SCENE OF THE ACCIDENT

The 'Mariella' left the scene of the accident at **13.20** hrs on 28 September and arrived at Stockholm 23.55 hrs with, reportedly only **25** (sic) survivors aboard in lieu of **28** as assumed from above description! According (28, 20) two Swedish helicopters (see below) landed on the 'Mariella' in the archipelago of Stockholm and four policemen joined the ship to protect the survivors. The explanation seems strange - the policemen could better have joined the ship at Stockholm. And two helicopters? It is possible that **three** persons were flown away from the 'Mariella' prior to its arrival at Stockholm. The three persons were probably flown to Huddinge hospital in the evening of 28 September.

On 29 September the BNS (Baltic News Service) informed that total only **20** (sic) survivors were on the 'Mariella' at Stockholm - six Swedes (S) 13 Estonians (E) and one Latvian (L). The author assumes that the BNS got the names when the twenty persons disembarked at Stockholm in the evening.[86] The names* of 18 of the survivors had already been published by the BSN on a list timed at **16.25** hrs on 28 September (Mr Koppel and Mr Siht were not on the list). Why not **25** or **28** names were announced is a mystery. The 20/18* were:

Table 1.41.1 - Names of 20 survivors on the 'Mariella' at Stockholm 940928 according BSN

No.	BSN No	Nat.	Name	Type	Last questioned	Raft when rescued
1	9	S	Karin Bergquist*	Pass.	-	**N**
2	10	S	Ronnie Bergqvist*	Pass.	-	**O**
3	15	S	Eckhard Klug*	Pass.	1.42	**Z**
4		E	Veljo Juuse*	Pass.	-	**Z**
5	61	E	Aarne Koppel	Store man	940929	**P+heli**
6	63	E	Leili Kozarjeva*	Pass.	-	**N**
7	70	S	Urban Lambertsson*	Pass.	-	**V**
8	77	E	Aulis Lee*	AB	940929	**P+heli**
9	83	E	Tanel Moosaar*	Motorman	**951228**	**P+heli**
10	88	E	Tiina Mölder*	Waitress	940929	**N**
11	89	E	Hele Möttus*	Taxfree	941001	**N**
12	95	S	Thure Palmgren*	Pass.	-	**Z**
13	96	E	Gennadi Pärson*	Pass.	-	**N**
14	109	E	Ervin Roden*	Guard	**960122**	**O**
15	119	E	Paul Siht	Pass.	-	**P+heli**
16	121	E	Larissa Skorohodva*	Hotell	**951206**	**P+heli**
17	126	S	Daniel Svensson*	Pass.	-	**Z**
18	130	L	Arturus Tamusauskas*	Pass.	-	**V**
19	148	E	**Andres Vihmare***	**Purser**	940929	**P+heli**
20	149	E	Timmo Vöösa*	Taxfree	**960214**	**N**

Thus five persons were missing on the BSN list. These persons have later been identified:

Table 1.41.2 - Names of 5 survivors on the 'Mariella' at Stockholm 940928 not mentioned by the BSN

No.	BSN No	Nat.	Name	Type	Last questioned	Raft when rescued
21	48	S	Peter Järvinen	Croupier	1.42	**P+heli**
22	154	S	Holger Wachtmeister	Pass.	-	**P+heli**
23	75	S	Paula Liikama*	Croupier	1.42	**N**
24	32	S	Tomas Grunde	Pass.	-	**P+heli**
25	33	S	Alti Hakanpää	Pass.	-	**P +heli**

Thus we know the names of 25 rescued persons on the 'Mariella' arriving at Stockholm: eight Estonian crewmembers, two Swedish croupiers and 15 passengers. The problem is that three extra survivors were reported on the 'Mariella' at **04.24** hrs.

Purser Andres Vihmare has informed that he met the 'Estonia's ship doctor **Viktor Bogdanov** on the 'Mariella'! It is recommended to ask the other eight Estonian crewmembers saved by the 'Mariella', if they met other (**un-dead**) Estonian crewmembers on the 'Mariella'!

The 25 rescued persons on the 'Mariella' were brought to the Söder hospital at Stockholm.

THE 'SILJA EUROPE' AT STOCKHOLM

According another list published by the BNS on 29 September there were 27 survivors on the 'Silja Europa' - in spite of the fact that there should only have been six according to (20). According to the BNS it was 24 persons in the above lists (thus persons who definitely were on the 'Mariella' - no. 130 Arturus Tamusauskas was not mentioned on the BNS 'Silja Europa' list). The other 6/1* are as per table 1.14.3. Only Aino Lee* had already been reported on the BSN list of 16.25 hrs on 28 September:

Table 1.41.3 - Names of six survivors on the 'Silja Europa' at Stockholm 940929

No.	BSN No	Nat.	Name	Type	Last questioned	Raft when rescued
1	47	E	Maiga Järvi	taxfree	940929	**P**
2	35	S	Tage Hellgren	Pass.	-	**J**
3	36	S	Mats Hillerström	Pass.	-	**P**
4	78	E	Aino Lee*	wife of Aulis	-	**P**
5	159	S	Lars Torsten Österberg	Pass.	-	**P**
6	49	E	Marek Kaasik	Pass.	**961203**	-

Tage Hellgren was alone in raft **"J"**. Marek Kaasik swam to the pilot door of the 'Silja Europe' and saved himself. If there were three extra rescued persons on the 'Silja Europe', the names were not published.

THE MISSING THREE PERSONS ON THE 'MARIELLA' AND THREE PERSONS ON THE 'SILJA EUROPE'

Officially the 'Mariella' rescued **15** persons from rafts, received **11** persons by helicopter and sent **one** person to Finland by helicopter. **25** persons arrived at Stockholm and we know their names. **Everything seems in order.** However, from above analysis we know that the Final report (5) is incorrect.

Easiest would be to ask the 'Mariella' the names of those who were rescued from the sea and arrived by helicopter, but strangely the shipping company does not reply. Three persons are not accounted for. There is the possibility that the three persons were flown away with the helicopters that landed later on the 'Mariella'.[87]

How many rescued were actually on the 'Mariella'? In SOU 1999:48 page 55 (26), i.e. the report of the Group of Analysis it is said to have been *about 30* (sic) survivors aboard the 'Mariella'. A curious journalist 2003 should try to find out!

TWO HELICOPTERS LAND ON THE 'MARIELLA'

Regarding the two helicopters landing on the 'Mariella', Jörle-Hellberg describes it as follows; page 239 in (20):

> *"Two Swedish helicopters from the police were later performing a landing on the 'Mariella', when she Thursday evening had entered the Stockholm archipelago. Two Swedish police helicopters put aboard four police men to assist the 18* (sic) *survivors and particularly assist them to escape the journalists waiting in port."*

Note that Jörle-Hellberg put the number of survivors on the 'Mariella' to 18! while they were at least 25 or 31.

The drama (the assistance of the police!) aboard the 'Mariella' and what happened at the port of Värtan at Stockholm is described in (28):

> *"... Swedish police (probably from the SÄPO (secret service)) was flown aboard, when the 'Mariella' entered Swedish territorial waters. The police ordered all 25* (sic) *survivors to be locked up in a separate area of the ship. They were forbidden to communicate with other passengers, even if many survivors wanted to have contact with*

them. The police and guards from the ship maintained strict control of the rooms with the survivors. If they wanted to go to the toilet ... they were escorted by the guards.

The survivors were partly questioned by the police already aboard the 'Mariella'. Some were not permitted to telephone their relatives, when they so wished, they had to ask permission. Some were only granted one telephone call. Before the called they were forced to reveal the name and civic ID number of the person they wanted to call. ...

When later the survivors arrived at the port of Värtan ... they had to wait until the 'Mariella' was emptied of normal travellers. The police wanted to prevent mutual contact using all means. ... Thure Palmgren ... was not permitted to leave the group. Swedish police forced him violently into the bus against his will. He (Palmgren) said to me that he had never been so angry and upset. Some of the survivors considered that the police committed a crime, i.e. illegal arrest.

When all survivors had been transported to the Söder hospital they were all locked up in wards. Police guarded the doors. When one of the survivors wanted to leave the ward, he was forced back in a very unfriendly manner ..."

Evidently there are no records of any Swedish police questionings of survivors on the 'Mariella' in the SHK archive and the purpose of such questionings. More likely is simply that important crewmembers from the 'Estonia' were on the 'Mariella', like chief engineer **Lembit Leiger** and doctor **Victor Bogdanov**, and that they were flown off with the helicopters. As there were extra seats available one extra Estonian crewmember joined them - **Tina Müür**. They were probably flown to Huddinge hospital.

Then there is the mystery with 'Silja Europe' that informed that seven persons had been rescued early in the morning of which only four has been named.

THE SWEDISH HOSPITALS - ESTONIAN PROTEST 1ST OCTOBER 1994

The survivors were brought to two Swedish hospitals - the Söder hospital at Stockholm (from 'Mariella' and 'Silja Europe' and the Huddinge hospital (in a suburb to Stockholm) by helicopters. Evidently many Estonian survivors at these hospitals called their embassy at Stockholm for assistance. When the Estonian embassy staff according to consular principles tried to visit the Estonian survivors at the hospitals, they were turned away and the hospitals refused to name any Estonian in the hospitals! On 1st October the Estonian embassy thus issued a protest to the Swedish Foreign office:

"During the rescue operations many people of also Estonian nationality were brought to the Swedish hospitals. It is the duty of this Embassy to help them ... to provide immediate and exact information ... to the disaster commission formed. ... So far there has been very little assistance on behalf of the Swedish authorities to inform the Embassy about these victims in Sweden ... who might possibly be in Sweden still alive or even dead.".

Probably some of the missing Estonian crewmembers named above immediately called their Embassy for assistance to tell what had really happened. This aspect needs further research.

One reason for the refusal of the Swedish authorities to name the Estonian survivors at the hospitals was that the list of rescued Estonians in Sweden on 1 October 1994 was 'preliminary'. And no definite, proven list was ever produced. The hospitals still, 2004, refer to the Swedish Secrecy Laws that they cannot inform the public of any patient's arrival and departure. Thus many persons suspect that Estonian crewmembers with inside knowledge of the accident simply disappeared from the hospitals and never returned to Estonia.

To rescue persons from a shipwreck is normally a happy moment for all involved. The rescued person is *'born again'* and is often adopted by the ship. The names are published - everybody is happy. But on the 'Mariella' the survivors seem to have had a very bad time. We do not know who the rescued persons were and the ship owner and the master of the 'Mariella' refuse to inform who were rescued. Same for Y 64 operations. The official accounts of the rescue in the Final report (5) are incorrect. One of the mysteries of the 'Estonia' still to be clarified.

How many were rescued by the 'Mariella' - 25, 28, 32? And who were they? And why don't the owners of the Mariella tell us who the lucky survivors on their ship were? And how many were rescued by the 'Silja Europe'? Six or nine? Because there is a big mystery how many actually survived. At least nine Estonian crew members were initially announced to be living - and later were announced to be missing 1.46! In order to end up on a list of survivors they must have been picked up somewhere. Were they later on the 'Mariella' and the 'Silja Europe'? And who were saved by helicopter Y 64?

Additional note - 31 January 2004.

The author of the book **Disaster Investigation** assumes that the Swedish navy helicopter Y 64 and rescue man Kenneth Svensson saved **nine** Estonian crewmembers from the sea very soon after the 'Estonia' casualty and brought them to the Huddinge hospital, which has never been reported in e.g. the Final report. The author assumes further that the 'Mariella' rescued at least **three** Estonian crewmembers that later were also brought by a Swedish police helicopter from the 'Mariella' to the Huddinge hospital, which in addition has not been reported. Twelve Estonian crewmembers, never reported or identified, should therefore have survived the accident **1.46.**

This tragic and horrible conclusion is beside the original purpose of this book to improve safety at sea by proper marine casualty investigations. **It seems that the casualty was a crime, and that further crime was committed to cover up the original crime, and that therefore no proper casualty investigation could be done, as described in this book.** The reason, why the whole official casualty investigation was ... and is ... a scam, was to cover up a crime.

Anders Björkman

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[86] Already on 28 September 1994 at **16.25** hrs the BSN had published the names of a limited number of survivors. These names are marked with an * in the tables in 1.41 and 1.42. Three crewmembers were noted as survivors (with their birth dates) but disappeared later or one was found dead: Avo Piht* (born 1954), Master - disappeared, Tiina Müür* (born 621021) disappeared, Kalev Vahtras* (born 510325) - later found drowned (dropped from a helicopter?). How the BSN on 28 September at **16.25** hrs could publish a list with birth dates of three persons declared as rescued and who later disappeared is another unexplained mystery. Six other crewmembers were reported as survivors but later disappeared: chief engineer Lembit Leiger, ship doctor Viktor Bogdanov, fourth mate Kaimar Kikas (and his wife Merit?), fitter Agur Targama, and entertainers/dancers (twin sisters) Hannely and Hanka-Hannika Veide. The latter six were not noted on the BNS list on 28 September at **16.25** hrs 1.46. On a BSN list of 940930 was also Tiit Meos (b 69), musician, and Ago Tomingas (b 56), shop assistant, reported as survivors. Meos was later found drowned. Tomingas is reported as not found.

[87] The authors has met the Master of the 'Mariella' captain Thörnroos in 1998 but was then unaware of the fact that he might have saved more persons. Later attempts to sort out the matter per correspondence have failed - no replies. Something is strange.

1.42 ALL OILERS, FITTERS, WELDERS AND REPAIR MEN ABOARD THE 'ESTONIA' WERE RESCUED - BUT DO NOT MENTION IT

When checking the previously mentioned lists of survivors the author noted that all *eight engine* crewmembers survived. Seven were already on the BSN list on 28 September 1994 at 16.25 hrs - here marked * below. Mr Sillaste had been called up at about 00.30 hrs and he has said in several testimonies that he thought that the ship was leaking **1.3**. Those statements - and other information - have been manipulated by the Commission.

TWO WELDERS DISAPPEAR BUT SURVIVE

Mr Märtsson and Mr Siljajev were called *welders* in the summary of testimonies, act D21, later changed to *turner* and *fitter* in act G42. Mr Märtsson was rescued aboard the 'Mariella' **1.41** and was apparently flown to a hospital in Finland (Ekernäs). Why the Commission changed the job titles is unclear. Mr Verro was engineer (refrigeration) with Mr Raba as assistant. Kadak was watch keeping motorman (oiler). Mr Siegel and Mr Moosar were the other two motormen (oilers). Mr Moosar was also rescued aboard the 'Mariella' **1.41**. Messr. Verro, Raba and Siegel were according to their own statements in their cabins, when the accident (the sudden listing) occurred, and evacuated immediately. Mr Raba was on deck 1 and ran through a *'curtain'* of water when passing the car deck. It is one of the strange statements that the Commission interprets as evidence that here was water on the car deck - flowing down to deck 1. Where the welders Märtsson and Siljajev and the motorman (oiler) Moosar were, when the listing occurred, is not known to the author. The Final Report (5) has no information about these crewmembers.

Table 1.42.1 - Names of 8 surviving motormen (oilers) and fitters

Name	Title	Date of Birth	Last questioned
Henrik Sillaste*	Systems engineer (aboard for 18 months)	690913	94092
Vassili Märtsson*	*Welder* (D21), turner (G42)	**511222**	**960111**
Ivan Siljajev*	Turner, *welder* (D21), fitter (G42)	**491001**	**960214**
Andres Verro*	Engineer (refrigeration)	590908	940929
Hannes Kadak*	Motorman (aboard only 12 hours)	?	950331
Tavi Raba	Motorman	?	940929
Elmar Siegel*	Motorman	**510306**	**951227**
Tanel Moosar*	Motorman	**712904**	**951228**

The Final Report evidently does not report if *"hot work"* was done by crew or repairmen aboard. It is a common cause of accident - you repair and weld, the environment is not gas free and there is an explosion.

14 months after the accident Messrs. Märtsson, Siljajev, Siegel and Moosar were questioned again by the Commission, together with 22 other Estonians, four of which were aboard the 'Mariella' with Märtsson and Moosar **1.41**.

TESTIMONIES HAVE BEEN CREATED

On 28 February 1996 the Commission wrote in its protocol (act A168*) that ...

> *"An agreed basic document regarding testimonies had now been created"*,

But soon after the Swedish members of the Commission interviewed another three Swedes who had been on the 'Mariella' or the 'Silja Europa' - Eckhard Klug, Peter Järvinen and Paula Liikamaa **1.41**. The protocol (act D29*) was made secret. As late as 25 October 1996 the Swedes interviewed Mr Eckhard Klug and made the record secret (act D30*). Were these late interviews made to ensure that they had not seen Estonian seamen on the 'Mariella' that later disappeared?

THE FLOODING STUDIES WILL SUPPORT ANY CONCLUSIONS OF EVENTS

The Commission met on 4-5 December 1995 (act A153a*) - then they discussed the Roll-Nix system (a passive anti-roll system with >100 tons of water) - was it used? - Estonia (Laur) and Sweden (Stenström) were going to investigate! It was probably not used - it had been replaced by the new stabilizers **2.23**. At the next meeting on 31 January - 1 February 1996 (act A162*) - there was not one word about the Roll-Nix! - instead Rosengren said that

> *"the flooding studies will support any conclusions of the probable sequence and time scale of events"*

(Compare **1.9** where it is shown that the 'sequence of events' are falsified).

On 27-28 February 1996 was the next meeting (act A168*) where

> *... "An agreed basic document regarding testimonies had now been created"!* (see above) *..."Chapter 8 should be expanded to indicate that other causes for the accident like* ***explosions*** *and collisions had been considered but found unlikely". …*

is in the protocol but not in the Final Report.

EXPLOSIONS UNLIKELY

The meeting protocols do not say why suddenly Messrs. Märtsson, Siljajev, Siegel and Moosar were questioned again in December 1995 and January, February 1996 (with 22 others). But then on 23-24 February the Commission had *agreed* on the testimonies and that explosions were unlikely.

It could be as simple that there were explosions aboard caused by the crew (or something else? - leakage - at about 00.30-00.40 hrs). However, the Commission had already agreed to blame the accident on the visor, so the 'investigation' described above was just done to confirm that an *'explosion'* could be hidden.[88]

The large number of surviving engine crew members is not explained in the Final report.

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[88] The author thinks that the welders Märtsson and Siljajev, engineers Varre and Sillaste and the four oilers knew exactly the condition of the ship and what actually happened before the accident. They could very well have been welding aboard (in the middle of the night at sea?) - in the Roll Nix system tank - and there was an explosion due to gas at about 00.40 hrs. The whole ship was shaken and water flowed in. Then they tried to do something and there was a second minor explosion or impact just before 01.00 hrs followed by the sudden loss of initial stability. Later, the crew told the investigators about the *'explosions'* but the Commission decided to blame the accident on the visor - and the engine crew kept silent about what actually happened aboard. Anyway - it is quite strange that the Commission, when writing a completely false Final Report about the visor, started to - secretly - examine the possibility of explosions aboard, when the investigation was already 14 months old.

1.43 PSYCHOLOGICAL ASPECTS OF THE ESTONIA INVESTIGATION. HOW THE COVER-UP CONTINUES

The 'Estonia' investigators (and the experts and observers) worked together 38 months, met 20 times at big meetings followed by a joint dinner party and at over 60 times at smaller meetings. What they actually did is not clear. How did they manipulate the investigation and how did they write the falsified Final report (5)? All was secret. Statements to the media were done through appointed spokesmen, but no real factual presentations were ever done. Questions from the public were of course ignored. The Swedish Board of Accident investigation, SHK, was similarly not interested in any suggestions from the public **1.38**. It was evidently not permitted by individual members or experts of the Commission to answer outside criticism or questions from the public. The Commission and the SHK were as oysters. After the publication of the Final report the investigators have continued to shut up. A teacher like Hans Rosengren has, e.g. refused to explain how the simulator of the Kalmar Maritime Academy could have produced figure13.2 in **1.9**.

The 'Estonia' investigation is thus interesting from a psychological point of view. The author once thought that the investigation went wrong due to psychological errors: that there was a crisis situation, where quick action was required, or that at the beginning the process went in the wrong direction, which could not be corrected later, or that it was a complicated case that had to be simplified, or that the Commission regarded the public as an enemy, or that the Commission was isolated, or that the Commission was so convinced it was right on 4 October 1994 and later only looked for facts to confirm the early false conclusions - one or all of these suggestions should later have explained all actions or confirmed previous actions of the Commission including the false Final report (5).

CAREFUL FALSIFICATIONS

The author does not believe any longer that the investigation went wrong due to some psychological errors. You do not announce false wreck positions 1.3 and you do not falsify e.g. the course of events as demonstrated in 1.9 for some psychological reasons.

All falsifications of the investigation were carefully planned and executed starting from 28 September 1994.

The Commission was later assisted in this task by outsiders like the Ethical Advice Board and the Group of Analysis, which were manipulated to fool the public. It actually worked and still works in a small country like Sweden, where most decision makers of government, universities and industry know each other very well.

PSYCHOLOGICAL PROBLEMS

It in turn actually creates real psychological problems. Many persons sacrificed themselves to cover up the Truth. Most got out without being noticed, e.g. the persons of prime minister Bildt's crisis group **1.35**, which probably initiated the process. Others were more visible. Forssberg jumped ship in May 1997 and is now an appeal court judge at Stockholm. Rosengren is, as stated above, back at Kalmar as a teacher. At the Swedish NMA there was a crisis in 1994 - how to explain (cover-up!) the 'Estonia' accident. The safety director Bengt Erik Stenmark was made a scapegoat and was kicked out. He ended up in north Sweden doing industrial research. The head of the legal department - Johan Franson - was made safety director as a reward for his assistance of the cover up including the dive examination and all false reports he produced to the government. Ulf Hobro, the Estline manager of the 'Estonia', had to disappear after the accident and was out of a job. In 1999 Franson helped him and made Hobro head of the Stockholm NMA ship safety inspection office. Åke Sjöblom, the inspector that failed to stop the 'Estonia' at Tallinn 8 hours before the accident was made head of the Gothenburg NMA ship safety office by Franson. Dr. Michael Huss of the Royal Institute of Technology, who falsified the course of events **1.9**, saw his academic career shattered. Franson made him a director at the NMA in April 2001 by manipulating the employment procedures at the NMA. The director generals (Kaj Janérus, Anders Lindström) of the NMA left one after the other due to the confusion at the NMA - they were not part of the cover up - just victims of the system. The solution was to make Jan-Olof Selén acting director of the NMA in 2000. Selén had already been placed at the NMA as a director of industrial and political relations earlier - to

coordinate the cover up between the government and the industry and the various authorities. Now he was made (acting) director general. There were also other moves at the NMA to silence the staff.

CONTINUED COVER-UP

The author only mentions the above as the work for safety at sea suffers in Sweden. The Swedish NMA **1.37** is not capable to improve any safety at sea due to its internal problems. And the scandal continues. Relatives and survivors and others are still upset in Sweden and, in an attempt to calm them, the government decided on 19 April 2001 to spend SEK 25 millions on safety at sea research. And who will decide where this money shall be spent? Well - the NMA (Franson, Selén and Huss, etc.) has a big say. In principle it is the Swedish innovation board Vinnova that shall distribute the money but the actual money is only paid by the NMA. Strange set-up. No money has so far been paid.

The government also decided that the Swedish NMA should autumn 2001 arrange a seminary to review what had been done to improve safety at sea since the 'Estonia' accident and what to do in the future. The author enquired three times when and where the seminary should take place. No response. Later it was revealed that the seminary was held on 24 October 2001 at Stockholm with 50 invited participants, most of them with no professional interest in safety at sea. The general public and real safety at sea experts were not invited: they were not even informed that the seminary was held. There were only four or five speakers. The main speaker was Johan Franson who gave a general review of rule safety rule changes since 1995 carefully avoiding any criticism and evaluations of these rules. Future work was apparently not mentioned. The other speakers - from the IMO, the EU and Color Line, Norway - apparently just added to the nonsense - everything is fine.

Finally the Swedish government decided that the Swedish Board of Psychological Defence, SPF, should collect a 'fact bank' that would provide all the missing information **1.49** about the 'Estonia'. The SPF director general Björn Körlof was reassigned on 11 November 2001 to a new job and the SPF thus had no boss to supervise the 'fact bank' job. Who was going to be the new SPF-boss? Well, believe or not. It seems that SHK director general Ann-Louise Eksborg shall be the new boss. The circle is complete - Ann-Louise Eksborg signs a Final report (5) with false and missing information 1997. The SPF is appointed to create a 'fact'-bank of the false and missing information 2001 and the SPF director general resigns. Ann-Louise Eksborg is then appointed to create the 'fact'-bank. It is of course a joke. The Swedish government is no longer serious. It just plays stupid games.

All above is actually for the media to tell the public. But will it? It seems to be a psychological problem there too! The Swedes do not seem to want to hear about the Truth about the 'Estonia', as it will show that the whole Swedish system is sick. So Sweden prefers falsification of History. It is **Lyssenko** all over again with Johan Franson being the new Lyssenko (and Swedish prime minister Göran Persson being ... He Who Decides). The result is quite sad. The NMA, SPF and SHK staff is paralyzed everywhere. The 'Estonia' is taboo - cannot be mentioned. New and old accidents and safety rules cannot be checked against the 'Estonia' information. The atmosphere at the NMA, SPF and SHK is thick, the staff suffers and is sick, if you mention the 'Estonia' you get the kick.

The situation at the Swedish National Maritime Administration Safety at Sea department is a particular psychological disaster. Johan "Lyssenko" Franson is the boss at Norrköping. From Stockholm reports the local boss Ulf Hobro, who was (ir)responsible of the 'Estonia' 1994. From Gothenburg reports the local boss Åke Sjöblom, who was the last to inspect the 'Estonia' 1994. And at Norrköping reports technical director Michael Huss, who made the false plot of the 'Estonia' sequence of events. With such a team in charge of the safety at sea in Sweden I can only recommend one thing - do not use Swedish ships.

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*'The commander **must** leverage the potential of the media for successful military operations'.*

"Howdy" Belknap, 1996

1.44 DISINFORMATION ABOUT THE 'ESTONIA' IN SWEDISH MEDIA. ANDERS HELLBERG - DN

This chapter is about the journalistic coverage of the 'Estonia' investigation. All media, newspapers, radio and TV seem to have been seriously affected by the trauma of the accident itself, which resulted into a strange avoidance of critical review of the *investigation* by the Commission. Normal journalistic methods were apparently not to be used.

The media has never clearly reported that from the beginning (a) the investigation was secret and (b) all evidence was confidential. The media has then not made it clear that what they reported was statements and opinions of the Commission without access to the background material - it was secret. All disinformation of the Commission has since been published by the media as *evidence* that something was wrong - particularly the design of the visor. The examples of disinformation are numerous as shown in previous chapters. The biggest Swedish daily newspaper Dagens Nyheter has without any critical review whatsoever published all statements of Forssberg and Stenström and the Commission without asking obvious question - where is the evidence?

NEWS NOT BASED ON EVIDENCE

Very few journalists took time for though and analysis,[90] and critical opinions could not be published. It seems that everybody had to *believe* that the visor caused the 'Estonia' accident. Other risks, e.g. leakage, were unbelievable and it seems still to be the case - six years later. It also seems that when an official lie has been established, even if it completely unrealistic, it cannot be questioned 1.1.

Now a lot of people will disagree and say, but *lately* a lot has been written about the alleged hole in the *superstructure* side, etc. This is correct - but the hole in the side has been described to be 30 or 5 m² large to be able to sink the 'Estonia' and nobody has seen such a big hole. Actually - a hole of 0,2-0,3 m² in the underwater *hull* is sufficient to sink the 'Estonia' - quite difficult to find, and the media has not said so.

The author was not in Sweden in October 1994, when the disinformation process started, but research shows that the media only promoted *one* cause of accident. The 'Estonia' sank due to water *on top of* the car deck in the *superstructure*, basta!, even if it was impossible. The visor was ripped off *before* the listing occurred, basta! The ramp was *ripped* open, etc., etc.

The media could apparently not report that eight waves would have smashed everything on the car deck in pieces and that the 'Estonia' would have capsized and floated upside down on the hull in *one* minute, if the ramp had been ripped *fully* open - like the 'Herald of Free Enterprise'. The media could not publish correct stability information. And it was very easy to misinform about roro-ships. Of course many roro-*cargo* ships had sunk due to water on the car deck, but these ships were completely different from roro-*passenger* ships like the 'Estonia'. A roro-*cargo* ship has minimum freeboard and no subdivision in the hull below the car deck to prevent sinking. A roro-*passenger* ship is exactly like a *passenger* ship with substantial freeboard, subdivision of the hull below the car deck and should comply with strict damage stability criteria - two compartments flooded, etc. So the media mixed up the two types of ships. The authors of the book 'Katastrofkurs' (20) quoted below did the same thing.

The media had to report that the life saving equipment and the safety system were in perfect order on the 'Estonia', because the Commission said so, when it was crystal clear that nothing worked.

FACTS NOT PUBLISHED

Media had to work very hard to promote the Commission and its false cause of accident and false sequence of events, and later it was impossible to turn back. To speak about an independent free press in Sweden is not possible with regard to the 'Estonia'. The bosses of the media concerns did not wish to upset powerful politicians and civil servants, because they needed their support in many other ways, and the normal journalists did what they were told. Opinions and facts that did not tally with the agreed truth had little chance to be heard.[91]

Never during the 'Estonia' investigation 1994-1997 had the media asked the Commission for the evidence of their statements. It seems the journalists could not ask the question - *"On what proven facts are you basing your statement?"*

'KATASTROFKURS'

A classical example of this disinformation is the book '**Katastrofkurs**' (20) published in March 1996 by the Dagens Nyheter reporter Anders Hellberg (together with the Göteborgs Posten reporter Anders Jörle).

The book was a great success, as there was a big demand for correct information about the 'Estonia' 1996. The public was then still suspicious about the Commission and the book was promoted as a fresh, critical review of the work of the Commission at that time.

However, *all essential information* about the cause of the accident itself and the condition of the ship itself is false in the book - it only repeats the false allegations of the Commission. It should be clear that Anders Hellberg had access to confidential material kept by Commission. If he could see all, or if could only see what the Commission wished him to see, is still not clear. The book is, like the Final Report, another clever labyrinth of real - unimportant - facts and pure disinformation.

NO ACCESS TO SECRET MATERIAL

Anders Hellberg has publicly stated that he had not had access to

> *"a lot of secret testimonies and other working material",*

when he wrote the book 1995/6 about the 'Estonia' accident together with Anders Jörle, as his critics suggest. But the book **'Katastrofkurs'** is full of references to secret and confidential material.

ACCESS TO SECRET MATERIAL

On page 63 in the book (20) Hellberg/Jörle quote verbally from a letter from the German group of experts to the Commission of the 27 October 1995. The Commission had then more or less completed its examinations. The letter was recorded on 2 November 1995 in the diary of the Swedish Board of Accident Investigation (SHK) and made secret as per the Swedish secrecy law SL 8:6. It was not made public until the 9 March 1998, 29 months later. The letter was of course top secret, when Hellberg wrote his book.

On page 64 of the book (20) you can read:

> *"... let us now start studying the different opinions of the Commission and the shipyard without prejudice: Both parties agree that the 'Estonia' had an accident and had sunk because great amounts of water had entered the car deck. The reason for this was that the visor had fallen off and thereby pulled the watertight ramp to the open position. Now the car deck was open to the seas. According to the Commission, which is not questioned by the yard, it is enormous amounts of water, which entered in only a few minutes, when the ramp finally is open.*

Michael Huss of the Royal Institute of Technology, estimates that 2 100 tons of water have entered the car deck in six minutes. But there the agreement ends."

The quote from the book is disinformation based on manipulated information.

The calculation of Huss that 2 100 tons of water had flowed into the car deck in six minutes was in a ten pages report (12) dated 4 January 1995 to the Commission, recorded at the SHK on 9 January 1995 **1.9**. The report was immediately made secret and was not made public until 4 December 1997. Huss has said that he has not talked to outside parties (as ordered by Forssberg), which means that Mr Hellberg one way or another must have had access to the secret report in the archive.

And it must be just that report as Huss later - in a report shown in supplement no. 522 of (5), undated but probably from 1996 - changed his mind and stated that it took 28 minutes for 2 000 tons to flow in **1.9**. In the Final Report - figure 13.2 - the Commission decided that it took 8 minutes. Huss refers in supplement no. 522 to a Finnish report - supplement 523 - where on page 9 it is suggested that the water inflow was 1 500-2 000 tons per minute, i.e. the ship should have capsized and floated upside down after maximum1,5 minutes. So the Commission was not sure about any six minutes.

GERMAN STATEMENTS FALSIFIED

But more serious - there is no evidence at all that the shipyard in 1995 had agreed that

" the 'Estonia' had an accident and had sunk because great amounts of water had entered the car deck".

The German opinions were clear from four letters and reports to the Commission **1.22** as follows:

1) Letter (51 pages) dated 14 August 1995,
2) Report (16 pages + 11 pages appendices) handed in to the Commission at a meeting in August 1995,
3) Letter (10 pages) dated 27 October 1995 (mentioned above) and
4) Letter (6 pages) dated 22 January 1996.

All four documents/letter were made secret as per the Swedish secrecy law SL 8:6 by the SHK and were not made public until 9 March 1998.

The shipyard had not sent any other letters and report to the Commission in the time August 1995-January 1996. It is clear from the letters and report that the Germans had no knowledge about the Huss calculations.

Furthermore - the Germans have never *'agreed'* that the visor should have had fallen off and pulled open the ramp. It is a free fantasy of Hellberg - he knew the Germans would not spot the disinformation in a book written in the Swedish language. The Germans in above letters *only* discussed the visor design and maintenance, which the Commission censored in the Final Report (5). Among other things the Germans showed that the wave load could not have broken the locks and hinges of the visor, unless the maintenance was bad. Hellberg quoted these arguments on pages 64-73 in his book (20).

What the Germans thought of the Hellberg/Jörle book was expressed on page 4 in a letter (87 pages + appendices) dated 22 July 1996, recorded the 2 August in the diary and immediately made secret by the SHK (like all German letters), and made public the 6 March 1998. In this letter (page 76) the Germans suggested that the 'Estonia' got a sudden list at **01.02** hrs, but that the visor could not have fallen off until after 01.15 hrs (if the visor pulled open the ramp was not said). Evidently the German conclusion was that the *visor could not have caused the sudden listing*! The letter also contained information to the effect that the 'Estonia' was leaking. But Hellberg/Jörle suggested the opposite in their book!

Hellberg/Jörle quoted then verbally in their book (20) parts from the protocols of testimonies of survivors. All these testimonies were not made public until 4 December 1997 and nobody had access to them, particularly

not the Germans that spent a lot of money themselves to interview all survivors to find out what had actually happened.

Finally - Hellberg-Jörle, with no (sic) access to secret material, referred in their book - in the footnote on page 89 in (20) to the *'The shipyard's own investigation page 5'!!* It was about the German letter in act B125** **1.22** of the SHK archive - one of the German letter made secret by Swedish secrecy law SL 8:6 until March 1998!

Evidently Hellberg - and Jörle - had access to secret material, when they wrote their book - published in March 1996 - and at that time the Germans had not published anything about the 'Estonia'. Hellberg had - apart from the German early letters - access to the Huss report. As the Germans never told anybody that they *'agreed'* with the Commission, Hellberg and Jörle just made it up. A classical example of disinformation.

However, Hellberg also reported another number of survivors than the Commission **1.41**. If it were an accident in the job, or if Hellberg got his numbers from the Commission, which later changed them in the Final Report (5), is still not clear.

Neither Hellberg nor Jörle - or the Commission for that matter - has ever responded to any suggestions of the author. Hellberg is still reporter at DN. Jörle works as press (information) secretary of the Swedish Nuclear Power Inspection agency. It is quite logical that they do no reply - they cannot give a proper answer. They are not like the sick person in a mental hospital who thought he was the emperor Napoleon. One day a doctor thought he could heal the sick person. He said: *"Majesty, did you use cars, when you invaded Russia?" "Of course not"* Napoleon said. The doctor then pointed out through a window to a parking place full of cars outside the hospital and asked: *"What are those?"* And the emperor replied: *"Horses".*

During 1997 media nevertheless published a large number of critical articles about the Commission, which were preparing the Final Report. However - only *minor* details of the investigation were criticised. The essential parts - the cause and the sequence of events - have never been questioned.

WHY?

The ultimate question is: Why was it necessary to misinform about an accident like the 'Estonia'? The answer is maybe in **4.3**, **4.4** and **4.5**? And who ordered the disinformation?

However, the disinformation continues in 2000-2001. The Bemis dive expedition **2.24** was criticised in the press before it had started in August 2000. Then there were daily reports how unprofessional all was done (without having anybody aboard to check). After the expedition the Bemis films were criticised but - hast Du mir gesehen - the public was told that the Bemis films were going to be shown in Estonian and Swedish TV with comments by a panel of 'experts' in November 2000. The divers/filmmakers themselves, who had made the job, were naturally not invited - they had been arrested on the spot as per the graveyard peace law **1.19**.

Strangely enough the two TV companies *never* showed the most interesting parts of the films - the big damage in the starboard collision bulkhead of the superstructure 3.10. Instead they showed a film made by an ROV about a possible damage in the starboard side above the waterline.

The experts naturally agreed that they could not see any damage. It has never been officially clarified why the big damage in the starboard collision bulkhead was not shown and why the 'experts' were not asked how it had come about. Then the media made great news about the Bemis films - they did not show anything new. Quite clever disinformation. Media created the impression that Bemis had made a careful examination of the whole wreck - and did not find any unreported damages, while it was clear that Bemis only could do spot checks at some areas, and e.g. did not examine the starboard hull for a fracture at, e.g. the sauna/pool compartment.

The author has later - February 2001 - offered all big Swedish dailies copies of pictures of the big damage, which the JAIC denies exist, with explanations. No paper replied. The author had an opportunity to talk to the managing director, Thorbjörn Larsson, of Swedish TV4, the company that viewed the Bemis film. Larsson of

course said that they - TV4 - always publish all interesting material. But the big damage in the collision bulkhead was apparently *'not interesting'*. Disinformation. Anyway - you can see the big unreported **damage**.

A completely false accident investigation needs apparently the support of the media to be accepted by the public.

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[90] There are many exceptions which are clear from quotations, etc. in this book, but no Swedish journalist or paper except FinansTidningen **Appendix 5** has ever interviewed or asked the author about advice or opinion. Interesting enough - when the Swedish daily Expressen put a link to this web site in connection with an article about the 'Estonia' on 17 March 2001, the web site was put out of order for three days - technical error!

[91] However the author got a chance to publish once on DN Debatt 960815 **2.1**. And the author has published articles in other newspapers - SvD, GP, FTi, Corren, SST, Hbl, etc., but there has never been any follow up. The Commission has never replied - except with abuse.

1.45 THE PROCESS OF LAW - 2 000-3 000 MILLIONS TO SHARE

The 'Estonia' accident investigation Final report (5) has not yet been tested in court in spite of several attempts 1996-2001. At Stockholm one relative has sued the ship owner Nordström & Thulin, Estline and their owners 1996. Another relative tried to sue each board member personally 1996. His lawyer was Henning Sjöström, Stockholm, who thought that all relatives and survivors could obtain another SEK 2 000-3 000 millions in damages. However in the two cases, which were heard together 2000, only minor damages were requested. It was the question of responsibility, which should be decided.

The majority of relatives, which accepted the payments from the P&I Club Skuld and therefore could not sue the shipping company or its owners, has sued the shipyard, the class society Bureau Veritas and the Swedish NMA at Paris. This process is expected to start mid-2002.

On 30 December 1999 the German group of experts **3.13** handed in its report to the court at Stockholm.

The courts at Stockholm and Paris are only requested to decide who is responsible for the accident. When the 'Herald of Free Enterprise' accident was decided by an English court, not only the ship owning company was found guilty but also individual staff on board and ashore. The proximate cause of the accident was that a crewmember had forgotten to close the bow door. It resulted in flooding of the car deck of the ferry and immediate capsize. The court considered that this negligence was due to responsible persons on board *and* ashore.

On 22 February 2000 the court at Stockholm decided that the 'Estonia' relatives had no right to damages as per the Swedish law of the Sea of 1891 and 198 §, i.e. a *relative* cannot obtain damages (only the victim), even if the ship owner can be found responsible for the accident. It took the court four years to reach that decision and in the meantime the process at Paris was pending. The decision at Stockholm has been appealed. No court at either Stockholm or Paris has therefore still looked at the content and evidence of the Final report (5).

At Hamburg interested parties have 2001 asked the prosecutor to investigate whether five Germans on the 'Estonia' were in fact murdered, which is now being investigated. It seems the 'Estonia' accident will be subject to court hearings for many years to come.

'I can very well understand that persons from the 'Estonia' are first declared dead and later are found to have survived, but it is very difficult to understand the opposite event, thus that persons are first, during the first five days, declared to have been rescued (and alive) and thereafter are declared to be dead ***without finding the bodies.***

Sven Anér - 6 June 2001

'U.S. enforced disappearances from Sweden are nothing new, according to Swedish journalist Sven Anér. More than 10 years ago, on Sept. 28, 1994, nine Estonian survivors from the Estonia ferry disaster "disappeared" in a similar manner. The day after the sinking, 9 crew members were removed from the lists of 146 reported survivors as a Gulfstream 4 (Reg. N971L), and a Boeing 727-200 (Reg. VR-CLM), left Stockholm's Arlanda airport carrying 4 and 5 unregistered passengers each. Anér has the documents from the airport's archive that show that the fees for the two airplanes were paid by the U.S. Embassy in Stockholm. Among those who disappeared after having been on the survivor lists from Estonia were one of captains, Avo Piht, and the ship's chief engineer, Lembit Leiger. Piht and Leiger would be key witnesses as to the ship's seaworthiness, its cargo, and causes of its mysterious sinking, which took 852 lives.'

Christopher Bollyn - American Free Press - January 2005

VII ***Proposals to the Government of the Republic***

1. Propose to the Government of the Republic to ensure the complete involvement of the Republic of Estonia in current and future investigations of the ferry Estonia. The Government of the Republic must find ways to ensure complete cooperation with the Government and agencies of the Kingdom of Sweden, in order to ensure access to all relevant materials and information.

2. Propose to the Government of the Republic to create necessary legal mechanisms for investigating into catastrophes so that a Catastrophe Committee could be founded, whose members would be able to carry out investigation, when necessary, on temporary full-time basis.

3. ***Proceeding from the fact that several persons who allegedly survived the catastrophe of the ferry Estonia are still missing, and taking into account the fact that they might have important information concerning the ferry Estonia****.'*

Riigikogu Committee of Investigation to Ascertain the Circumstances Related to the Export of Military Equipment from the Territory of the Republic of Estonia on the Ferry Estonia in 1994 - FINAL REPORT - (Tallinn, 19 December 2006)

1.46 THE UN-DEAD ESTONIANS

One of the more sad and shocking incidents during the investigation of the 'Estonia' accident is that relatives and friends of (at least) twelve lost Estonian crewmembers think that they survived.

The twelve (at least) are:

Name	Function
Avo Piht	master (born 1954)
Tina Müür	tax free sales person (born 621021)
Lembit Leiger	chief engineer
Viktor Bogdanov	ship's doctor
Kaimar Kikas and Merit Kikas	4th officer and wife
Agur Targama	4th engineer, fitter
Hannely (Anne) and Hanka-Hannika Veide	entertainers, dancers
Ago Tomingas	shop assistant
Kahlev Vatras	store keeper
Tiit Meos	

The matter is not mentioned in the Final Report (5), but is public knowledge, discussed and published in Estonia, where the disappeared or missing persons are considered *un-dead*. **This author believes that all twelve above persons were rescued by helicopter Y 64 or by the 'Mariella' or the 'Silja Europe'** **1.41**.

There are a number of *official* lists of passengers dated 28 September with about 80 survivors, 29 September 06.00 hrs am with **146** (sic) survivors, 29 September pm with 1 042 names of presumed dead and survivors and 30 September with 1 023 names of presumed dead and including **146** (sic) survivors and 7 October with **137**

survivors, from the Estonian Ministry of Internal Affairs, where several of above listed persons are shown as having survived.

Also two other crew members, **Kalev Vahtras** (born 510325), store keeper, and **Tiit Meos**, musician, were listed as having survived on some lists but were later announced *'found dead'* earlier (found drowned on 28 September but not identified), as follows:

Name/List	28 September	29 September am	29 September pm	30 September	7 October
Avo Piht	survived+	survived	Ok?	Ok	no
Tina Müür	survived*	survived	Ok?	Ok	no
Lembit Leiger	(note 1)	-	Ok?	Ok	no (note 2)
Viktor Bogdanov	-	-	no	no	no
Kaimar Kikas	-	-	no	no	no
Merit Kikas	-	-	no	no	no
Agur Targama	-	-	no	no	no
Hannely Veide	(note 1)	Survived?	Ok?	Ok	no
Hanka-H Veide	(note 1)	survived?	Ok?	Ok	no
Ago Tomingas	(note 1)	survived	Ok?	Ok	no
Kalev Vahtras	survived*	survived	Ok	Ok	no
Tiit Meos	(note 1)	survived	Ok?	Ok	no

* full date of birth shown in the list, + year of birth shown in the list.

Note 1- reported as survived on 28 September - see list 14 below.
Note 2 - reported as survived on 5 October - see lists 8 and 9 below.

These lists, originating from Estline, Swedish and Finnish police and hospitals, have evidently contributed to the belief that many Estonian crewmembers, declared dead, survived. It seems quite clear that at least 146 (probably more) persons were in fact rescued on 28 September 1994 as recorded 29 and 30 September and **that at least 8 names were deleted for various reasons** (and some real survivors added that had been missed in the confusion), so that the total later became 138 of which one died in hospital - thus officially 137 survived as stated on 7 October.

KALEV VAHTRAS - MURDERED?

The alleged death of Kalev Vahtras is a mystery. He was listed as *alive* with his correct birth date on the first list and was then *confirmed alive* on several lists until 30 September - in October it was announced that he had been found drowned already on 28 September (sic) and that an autopsy had been carried out (drowned) and identified him. But how could he have given his birth date on 28 September and why wasn't he confirmed dead on so many lists (see below)? How could somebody have declared Kalev Vahtras alive - if he was dead?

That store keeper Kalev Vahtras (b. 1951) got out and into a life raft has been confirmed by his friend the galley assistant Peter Palgunov (b. 1946) who survived and shared life raft **"R"** with him. Palgunov was rescued by one helicopter, OH-HVG, and brought to "Silja Symphony". Maybe Vahtras was rescued earlier by helicopter Q91 and brought to Utö? In (28) Vahtra's wife Ruth suggests that Kalev was rescued by the same helicopter as Avo Piht (it must then have been Y 64) ! Kalev knew Piht since a long time. Ruth Vahtras and Kalev's brother were later shown a photo of Kalev taken by the Finnish police - apparently taken *before* the autopsy - and they suggest that there is no evidence of drowning. Ruth has told media that the body returned to her after the autopsy/identification is not her husband - nobody reacts. Is Vahtras really dead?

In an interview of Silver Linde 2001 by German journalist Jutta Rabe Linde stated that he had shared the same room as Kalev Vahtras at the hospital at Turku! Later Vahtras should have been transferred to another hospital - and disappeared! Jutta Rabe has on 22 February 2002 told the Finnish police that she thinks that Kalev Vahtras was murdered! See her home page http://www.balticstorm.com. Jutta Rabe has in fact proposed to the Finnish police in February 2002 that Kalev Vahtras was murdered in Finland 1994 after the accident! The Finnish police is 2002 not interested.

MANY REASONS FOR MORE SURVIVORS

There are other reasons to believe that several crewmembers survived. The final report (5) chapter 7.6.1 states that 138 persons were rescued and brought to hospitals and that one rescued person then died in hospital, but there is no evidence for anything. Furthermore that 94 dead bodies had been identified - 92 were picked up from the sea just after the accident, one body was found on 17.10.1994 and another one on 11.5.1996. This is reiterated in chapter 8.9 - one died in hospital, 92 bodies were found in the water and two bodies were picked up later. But there are no details in the final Report (5) - lists of survivors and victims, who rescued who, etc. because the Commission was apparently told not to investigate the matter.

The 'Silja Europa', the 'Mariella', the 'Isabella' and the 'Tursas' allegedly rescued 34 persons from the sea **1.20** but we know that that figure is incorrect (see below). The Final report chapter 7.5.4 states that helicopters rescued 104 persons and found 92 bodies **1.41**. The final list of the 137 survivors is (act G42) dated 12 September 1995 - 43 crew members and 94 passengers. The final (sic) list of bodies recovered - including the rescued person that died? - is (also act G42) dated 23 May 1996, which is stated to include 37 crew and 58 passengers, total 95 persons, but there are only 57 names of passengers in the list, thus 94 persons. It could in fact be the 92 bodies found 28 September, one body found 17 October and the rescued person that died in hospital: the body picked up on 11 May 1996 may not have been included.

Supplement 604 dated 16 January 1996 states that 93 autopsies were done in Finland - of the 92 bodies found 28 September and the one body found 17 October. It furthermore states that 94 victims were identified - probably the 93 autopsies and the person (a male passenger) that died in the hospital (on which no autopsy was done in Finland as the person died in Sweden). But then it goes on to say that only 56 passengers and 37 crew victims - total 93 victims - were identified. There are no names in Supplement 604.

TWO EXTRA SURVIVORS IN FINLAND

The Final report (5) states clearly that in the morning of 28 September 61 survivors had been brought to various hospitals in Finland, but according to a report of the Swedish Board of Social Affairs (35) there were 63 survivors at Finnish hospitals at that time, i.e. two extra persons - Piht and Vahtras?

Everywhere you look, the numbers do not add up - one, two or more persons are rescued, one, two or more dead victims are found and/or identified, etc. This opens up the awful possibility that certain crew members were in fact made to disappear or were killed - murdered - *after* having been rescued in order to prevent them from telling the Truth. We know **1.9** now that the Final report (5) lies about ***the cause of accident*** and ***sequence of events*** before and after the accident. Can we trust the Final report about the number of survivors? This author does not any longer. That is why this chapter has been added to the book. The original purpose was otherwise to improve safety at sea; not to get involved in a criminal mystery.

AVO PIHT

The wife Sirje Piht of captain Avo Piht was informed about the accident at 05.30 hrs in the morning of 28 September 1994 and was later told via radio Kuku (an Estonian radio station) at 11.30 hrs that her husband had been rescued - and was alive. Several persons called about the good news and the son came home and informed the same thing - he had also heard the radio. Did the radio send false information? All these persons listened to the radio and the radio broadcasted some good news - Avo Piht had survived! From where did the information originate? Probably Huddinge hospital in Sweden! A curious journalist should try to find it out.

At 14.30 hrs captain Erich Moik, an old family friend, called Sirje Piht from Rostock and said that several crew members had seen Avo Piht on German TV in a reportage from Utö (sic - could have been Mariehamn), where Piht and other survivors had landed from helicopters to be sent on to Turku. Another witness, Heinrich Tann, has also stated that he saw the TV reportage with Piht. **The German film of the TV reportage has later disappeared.** A paramedic at Utö has informed that he talked to Piht, who had said that he was the extra

master on the 'Estonia'. The Estonian prime minister Mart Laar later tried to meet with Piht at Turku. A nurse at the hospital at Turku (33) told survivor RS **2.12** that Piht was in the hospital.

For three days Sirje Piht was convinced that her husband had survived. Then the original message changed - that he was *missing.* But Sirje Piht evidently believes that her husband is alive. Who has ever heard about somebody being rescued by name and rank and later being reported as missing?

In September 1996 Sirje Piht inquired at the Swedish government if it had any information about her husband and eight other missing Estonians. Many months later the Swedish government (Ines Uusmann) replied that **'no evidence what so ever has been found that any of these people survived'** in spite of the fact that the Swedish government were sitting on secret lists where they were listed as rescued.

HOW PIHT AND VAHTRAS SURVIVED - AND DISAPPEARED

The author believes that Piht and Vahtras were rescued by helicopter **Y 64** and brought to Huddinge hospital, Sweden, and only later landed at Mariehamn (or Utö), where Piht was seen, on way to Turku. At Turku both men disappeared.

TIINA MÜÜR

Tiina Müür (b. 1962) was shop keeper onboard and was listed several times as a survivor 28-30 September. It is very likely that she was rescued to the 'Mariella' (or the 'Silja Europe'). But then she disappeared completely. Not even her body was recovered. She was finally listed as missing by the Finnish authorities (which were responsible for that matter) but no body has been found.

AGO TOMINGAS AND TIIT MEOS

Ago Tomingas (b. 1956) was shop assistant onboard, worked probably with Tiina Müür, and was also listed several times as a survivor 28-30 September. But later he was announced as 'missing'. Tiit Meos (b. 1969) was similarly listed as a survivor (see e.g. list 14 below right) but later it was announced that his dead body had been found.

LEMBIT LEIGER

Captain Erich Moik is certain that **Piht** and **Leiger** were rescued: (You can read the full interview in Swedish translation from Estonian **here**)

The Owners of the 'Estonia' can hide Captain Piht (Eesti Päevaleht 990917)

Enno Tammer (T) talks to captain Erich Moik (M)

...
(T) You are an experienced seaman - how probable do you consider the three official causes of the accident of the JAIC: design fault, heavy weather and high speed?
(M) ... In what order to consider them ... I cannot say ... but there may have been a fourth ...
(T) Exactly, I am trying to convince the JAIC that there was a fourth cause.
(M) Yes, there may be a fourth. I cannot prove it today, but I recall that also the Germans from the shipyard always have pointed at the technical maintenance of the ship.
(T) Which is the responsibility of the owners. ... in the case of the 'Estonia'?
(M) To be clear it was mainly Nordström & Thulin'. Why do I think about the technical maintenance ... ? You see, the questions start with two persons. They are captain Avo Piht and chief engineer Lembit Leiger. I put the question: For whom was it necessary that these two persons must disappear?
(T) If you put such a question, then you assume that they were rescued.
(M) **I am 101% convinced that Piht was rescued. I am also 101% certain that Leiger was at the Huddinge hospital at**

Stockholm. There are too many indirect signs confirming this conviction. So I am convinced that these two men were rescued.
(T) But it was necessary to remove them, as they knew too much?
(M) There were two pairs - captain Arvo Andresson and chief engineer Harli Moosaar, and captain Piht and chief engineer Lembit Leiger. Chief engineer Moosaar was a very nice person, but when I compare him with the other chief engineers, he was down on the list. He was very humble, did not try to solve the problems and did not try to fight. With him everything was superficial - the main thing was that it looked nice and proper. With captain Andresson you can say he carried a certain style from the Soviet time. Then the master was on the bridge as a representative figure, while the real commanders were the party and security bosses aboard. The Swedes were not afraid of Andresson and Moosaar. But both Leiger and Piht, as actually happened, were in big conflicts with the Swedes.
(T) Due to the ship not being in technical good condition?
(M) Exactly, technical questions. **The owners were not interested in the maintenance!** Yes, Nordström & Thulin stopped the work and the ship could not be maintained as demanded by the top officers. Both Piht and Leiger were very much aware of the actual condition of the ship, how the technical maintenance was done and how demand for maintenance was fulfilled. The owners for certain could have been afraid, as these men could tell things causing big trouble, particularly about the insurance.
(T) And they removed the men?
(M) Yes, they simply removed them.
(T) And this after that they had been rescued and come ashore?
(M) Yes! I have once told Andi Meister that the repair manager at the shipyard at Turku, Eric Mörd, admitted to me that Piht had been rescued. Mörd and I were together on the bridge (on the 'Diana 2' at Rostock the morning of the accident). I knew that Piht was on the list of rescued persons. Mörd told me that his wife was a doctor, that she had been awoken at the night and that she saw that Piht had been rescued, that Piht was put in a car and driven somewhere. She thought it was to Helsinki. Also, not only Mörd told me, but another person. The other person was called to the police at Turku. His wife was working on the 'Estonia' so he thought it concerned identification or so. But immediately when he came to the police at Turku, the police had only one question: from where did you get the information about Piht? The police at Turku was not interested in anything else. **So there were two persons hearing Mr Mörd saying that Piht had been rescued.**
(T) But Mr Mörd?
(M) He came aboard the ship (the 'Diana 2') at Turku three weeks later, he was slimmer and ... looked different. I took him aside and asked: *Where is captain Piht?* He: *I do not know*. I: *But you said ...* He: *No, I have never said anything.* He denied everything.
(T) You were at Rostock the day the 'Estonia' had sunk and your crewmembers saw Piht on (German) TV.
(M) Yes, and I believe them. It is impossible that they saw wrong. They followed the news very carefully as two crew members had their wives on the 'Estonia' and two others had good friends and colleagues on the 'Estonia'. They could not possibly have seen wrong, they knew captain Piht very well.
(T) The responsibility of the owners of the 'Estonia' is anyway a subject, which has ended up in the shadow of other questions.
(M) Correct and it is probably intentional. But I assume that the whole thing is agreed, a compromise.
...
(T) What you know Piht and Leiger quarrelled with the Swedes, as they demanded more attention to the maintenance of the ship?
(M) Yes, as far as I know today, it was technical problems behind the accident. There was a list of outstanding repair work and some work was cancelled.
(T) Due to lack of money?
(M) Due to lack of money, no need and so on.
...
(T) Your accusation of Nordström & Thulin is very severe, that it is they who removed Piht and Leiger and hide ...
(M) It is not an accusation, it is an assumption. It is one of the possible versions. Nobody else had to do it.
(T) What was the purpose of the owners of the 'Estonia' - to collect the insurance?
(M) It is a big amount. If the underwriters had known that the condition of the ship was not good, then the money would not have been paid ...
(T) If your assumption is correct, it is an international crime. And apart from Piht and Leiger there is a suspicion that another six persons were saved.
(M) The others I cannot connect to Piht and Leiger.
(T) Your assumption means a very clever kidnapping.
(M) ... It is very simple to see if Leigar was rescued ... look in his cabin ...
...
(T) You are very angry with the Swedes, you complain all the time about the owners of the 'Estonia'.
(M) Listen; at the morning after the loss of the 'Estonia' I was on the bridge of the 'Diana 2' at Rostock. We were three men. During the night I had heard about the disaster. At the bridge was apart from me, repair manager Mörd from the ship repair yard at Turku and the owners superintendent Ulf Hobro **4.5** from Nordström & Thulin, i.e. the person who was looking after and responsible for the maintenance. There was a mobile phone on the bridge and I called my wife at Tallinn. She read the names of the ten first rescued persons for me. There were three persons I knew - captain Piht, shop manager Tiina Müür

and 2nd engineer Peeter Tüür. My first natural reaction was and which I could not hide was thanks God, at least one master rescued. And you should have seen the reaction of the superintendent ... He went pale and started to repeat, no, no, the master must be isolated from the journalists. He then called somebody direct and explained something in Swedish. I was surprised, it is something about their manner ... what to say ... ?
(T) To hide?
(M) Yes, to hide. To avoid that somebody should know more. So I do not exclude that Nordström & Thulin played a role in the hiding of Piht and Leiger ...
(T) Then the Swedish government must be aware of it?
(M) But the state does not look after private companies.
...
(T) It cannot be excluded that key persons like Piht and Leiger are alive. And then is the question how long will they be kept hidden.
(M) There is a possibility that they are alive. ... **I do not doubt that Piht and Leiger were rescued.**
...

After (or before?) such a frank interview captain Moik was dismissed from Estline.

15 LISTS OF SURVIVORS

Also the Swedish journalist Sven Anér considers that Piht and others, including **Tiina Müür** and **Ago Tomingas**, must have survived:

15 lists with survivors, or ...

The Swedish journalist Sven Anér has found 15 lists with names of survivors - that didn't survive.

List 1. Date 29.9.1994 kl 0600. List received from Baltic News Service, BNS. The attached page names: **Tiina Müür, Avo Piht, Ago Tomingas, Hannely Veide, Hannika Veide**

List 2. The list of Estline, received from Radio Kuku at Tallinn. No certain date. The attached page names: **Avo Piht, Ago Tomingas.**

List 3. Send by the Estonian Ministry of the Interior on 28.9.1994 at 17.22 hrs to Radio Kuku. The attached pages names: **Ulo Kikas, Tiit Meos, Tiina Müür, Avo Piht, Anne Veide.**

List 4. Received from BNS that calls it the 'Final list", date 30.9.1994 at 16.42 hrs. The attached page names: **Lembit Leiger**.

List 5. Received from av BNS. The list of the Estonian Ministry of the Interior dated 29.9.1994 at 17.59 hrs. The attached page names: **Avo Piht**.

List 6. Sent from the Swedish embassy at 28-29.9.1994 to the Swedish Foreign office, UD. The list is based on the reports of the police at Turku, Finland, to the Swedish police; see also lists nos. 14 and 15 below. The attached pages names: **Lembit Leiger, Tiit Meos**.

List 7. Received from BNS. It is the list of the Estonian government crisis commission dated 30.9.1994. The attached pages names: **Lembit Leiger**.

List 8. Received from BNS. Date 5.10.1994. Official Estonian list. The attached pages names **Lembit Leiger**, marked with an "j" = rescued.

List 9. From the Estonian Ministry of the Interior, date 5.10.1994. The attached page names: **Lembit Leiger**, marked with an "j" = rescued.

List 10. This list has been kept by the Swedish national police since 28.9.1994. On it is marked when and how often Estonian citizens were inquired about by the Swedish police. For **Lembit Leiger** 5 marked = yes, found.

List 11. From BNS, one of their first lists, dated 28.9.1994 at 13.25 hrs, with heading: "The first rescued persons known are:" The attached page (only one page) names: **Avo Piht, Tiina Müür, Kalev Vahtras.**

List 12. Possibly the absolute earliest list, dated 28.9.94 at 11.50 hrs. Sent from the Finnish embassy at Tallinn to the Port Authority at Tallinn and then to Radio Kuku at Tallinn. Handwritten are twelve names, among them: **Tiina Müür, Kalev Vahtras, Avo Piht**.

List 13. From the Finnish police to the Estonian crisis commission, probably a very early list. One page - none of the above 11 supposed

survivors are listed.

List 14. This list, 3 pages, has been made by the police at Turku, Finland; date/reference "28.9.1994, kello 22.00", which sent it by fax to the Swedish national police, which in turn sent it to the Swedish embassy at Tallinn, which received the list with additional names had written on it. There are eight names hand written on the page: **Lembit Leiger, Tiit Meos, Tiina Müür, Avo Piht, Ago Tomingas, Kalev Vahtras, Hannely Veide, Hanka Veide**.

List 15. Page 3 of the previous document, list 14. The handwritten, difficult to read, names that can be read in a mirror, are not fully identical with the handwritten names on the right page of list 14. However the name **"Piht, Avo"** is very clear. The page is stamped by of official stamp of the Turku police and counter signed Veikko Koiranen, rikoskomisurie.

Comments: There are 11 persons on the 14 above lists registered as having survived: **Bogdanov, Kikas, Leiger, Meos, Müür, Piht, Targama, Tomingas, Vahtras, Hannely Veide, Hanka Veide**. Only on the Finnish police list, no. 13, are these names not listed.

Meos and Vahtras have been reported to be found dead, but I have no official confirmations.

According to the official list of the Helsinki police of March 1995 all eleven are listed as dead. According to all 15 above lists, except no. 13, all eleven were rescued.

All pages of all lists are total about 300, and I have copies of about 100 pages. Further research is necessary to check all pages for a complete picture.

List 14 above was sent as found from the police at Turku to the Swedish national police HQ at Stockholm (or possibly to the local Stockholm police authority). Thereafter the list was sent from Stockholm to the Swedish embassy at Tallinn, which in turn added names in hand writing to the right of the typed list to the left. The result is a fairly complete list, which later was filed at the Swedish Foreign office at Stockholm. It contains eight of the eleven names! But this list was totally unknown for Swedish media and public until May, 2001, when PALME-nytt (the newsletter of Sven Anér) after four weeks of requests got it from the archive!

Correspondence 6 June 2001

Embassy of Finland, Stockholm.

Polis Authority at Turku. Commissaire Veikko Koiranen (or deputy)

The following documents are referred to:

A (List 12 above). According my info this list of survivors from the Estonia, dated 28.9 94 at 11.50 hrs, has been handed over by Mr. Eino Selirand of the Finnish embassy at Tallinn to the Port Authority of Tallinn.

B (List 11 above). According notes on the document this list has before 13.25 hrs on 28.9 94 been handed over by Mr Tönu Karu of the Tallinn City Hall to the Baltic News Service at Tallinn. The list names "The first rescued persons known are:"

Two names are on both lists:

Tiina Müür and **Avo Piht.**

Checking the Turku police lists of survivors of the same day at 20.00 hrs, stamped and signed by Veikko Koiranen, these two names are missing.

My question is: **How come that both names disappear during the day of the 28 September 1994, from the lists of the Turku police, in spite of the fact that they are listed on two earlier, official lists originating from the port of Tallinn, the Finnish embassy at Tallinn, the Tallin City Hall and the Baltic News Service?**

These two persons, **Müür** and **Piht**, have not been found dead or drowned. What evidence that they had *not* survived did the Turku police receive on the 28 September 1994? Did the Turku police check with the port of Tallinn, the Finnish embassy at Tallinn, the Tallinn City Hall and the Baltic News Service and did you find that all four were mistaken?

I can very well understand that persons from the Estonia are first declared dead and later are found to have survived, but it is very difficult to understand the opposite event, **thus that persons are first declared to have been rescued and thereafter are declared to be dead, without finding the bodies.**

I look forward to a reply, friendly regards

Sven Anér

Anér never got a reply from Finland. Other relatives had similar experiences as Sirje Piht and Moik.

VIKTOR BOGDANOV

Illu Erma, wife of Viktor Bogdanov, got a telephone call after the accident, where one survivor, the purser Andres Vihmare, said that Viktor had survived with him on the 'Mariella' **1.41**. Erma and her daughters are certain that Viktor survived. Later Viktor Bogdanov was named as a survivor in a Swedish newspaper. He was finally listed as *'missing'.* Victor Bogdanov apparently arrived at Huddinge hospital and met ...

HANNELY AND HANKA VEIDE

Ulo and Aino Veide, parents of the twins, are also convinced that the children survived. Aino has informed that one daughter phoned her after the accident (from the Huddinge hospital?) and that the call was interrupted. There were two more calls, which were interrupted. And on one list it is written that Anne Veide survived, i.e. the nickname few knew about. Other lists said that both were rescued. The sisters had only been aboard half a day and few knew the nickname. The variety show was just over, when the accident occurred - the sudden listing - so all artists were awake and ready to get out. Two artists survived, two were found drowned, and three, including the sisters Veide, are missing. Did helicopter Y 64 save them together with captain Piht?

KAIMAR KIKAS

The Independent Fact group has reported that the Fourth Officer Kaimar Kikas was also marked on some early lists of persons rescued and that he had had to state his name to get on the list. On 28.09.94 at 11.30 a.m. a news program of Estonian Radio 2 announced that the crewmember Kaimar Kikas was rescued. On 30.09.94 during the night arrived a fax from "Estline" to the Estonian Social Ministry with information that *'IV Navigation Officer Kaimar Kikas'* was rescued. On 30.09.94 at 8.30 a.m. in the list of the Estonian Social Ministry Kaimar Kikas was marked being OK (not on the list this author has a copy of). But Kikas never returned to Estonia. Was Kikas on the 'Silja Europe'? Or at Huddinge hospital? Rescued by Y 64?

On 30 October 1994, i.e. a month after the accident somebody phoned the Kikas family - the mother Viive Kikas and father Ülo Kikas - and told Viive that *'they are coming home'*, i.e. the son and his wife Merit.

Kikas was starting his watch at 01.00 hrs, but he was maybe called to the bridge earlier - there must have been some problems before the sudden listing - and maybe some crewmembers were alarmed to muster on the bridge *before* the listing occurred. As he was staying with the wife in the cabin, it is possible that he took her with him to the bridge. And maybe they were saved by the MoB-boat located just outside the bridge on the starboard side, which apparently was launched.

THE MAN OVER BOARD BOAT

It is a fact that the starboard MoB-boat may have been launched, but the Commission has never bothered to examine the matter. The Commission was only interested to cover up all essential information. Persons in the water saw the lifeboat with the engine running. Maybe later a helicopter, Y 64?, rescued the persons in the boat. And they knew exactly what had happened on the bridge just before the accident. So they might have been told to keep a low profile for a while, until the investigation was over. Andi Meister thought that a complete Final Report could be issued in one or two months. The Finnish vessel MS Hylje picked up the empty MoB-boat 36 hours later about 35 miles straight east of the wreck. It was undamaged with some fuel in the tank for the engine. No helicopter is reported having sighted and/or inspected the MoB-boat during 28 September 1994; **2.25** and **3.18**.

It is possible that the Commission informally has advised the above relatives that they were mistaken, etc. But today, 2001, when it is a fact that *all* the members of the Commission cannot be trusted after having written a completely false Final report (5), the author believes above information should be reviewed.

It is very possible that some of the missing persons, e.g. Bogdanov and Leiger were in fact rescued and brought to the 'Mariella' 1.41. And probably they were given new identities and made to disappear! It is of course unbelievable - but what should a normal person believe?

A common held theory is, as related by Captain Moik above, that captain **Piht** and chief engineer **Leiger** survived and were alive, and that the other missing crew members were aware of this fact and/or knew that the ship sank for other reason than the visor, e.g. that a crew alarm about leakage of the hull was given long before the alleged story of the visor problems started.

Note that only Estonian *crewmembers* are assumed to be un-dead. And note that the Estonia star witnesses of the accident, **Linde, Treu, Sillaste** and **Kadak**, lied about what happened onboard **1.48**. This combination - missing (murdered?) and lying crewmembers - is extremely disturbing. You get the impression that some crewmembers were forced to lie - and that, if they did not lie - they disappeared or were going to be killed.

And is there any evidence that the Master Arvo Andresson really drowned? The Master Andresson should have been one of the first to be informed about an alarm long before 01.00 hrs. Perhaps also Andresson was rescued and was the first to be hidden and later murdered - and then it was thought that a false accident investigation could be presented. But then nine or ten other surviving crewmembers appeared who knew that Andresson had been rescued. And they too must disappear (be murdered)!

SURVIVORS - RAFTS - FERRIES - HELICOPTERS

137 named survivors (they were 138 but one man died at hospital and was never questioned) and 12 Estonians that are assumed to also have survived are listed in **Table 1**. After the accident there were several lists where these 149 persons are named in different locations and you have to assume that they were actually rescued. The 149 persons managed in most cases to reach different rafts and lifeboats as per **Table 2**. More rafts than stated by the Commission were used. Various ferries and helicopters later rescued the survivors as per **Table 3** and **Table 4**.

The 12 survivors that later disappeared are assumed to have been salvaged by the **'Mariella'** (3 persons in raft "X") and by the Swedish helicopter **Y 64** (9 persons in two rafts, "X1" och "X2") at around three o'clock in the morning.

THREE UN-DEAD ESTONIANS ON THE 'MARIELLA'

The Commission/Final report (5) p 104 states that the **'Mariella'** winched down four rafts, so that survivors in 'Estonia' rafts could jump into these and be hauled up and that 13 persons were rescued in this way. Three 'Estonia' rafts have been identified, **"N"**, **"O"** och **"Z"** with 7 + 2 + 4 =13 persons being winched up in three 'Mariella' rafts. You should however assume that a fourth raft was in fact lowered by the 'Mariella', exactly as stated in the Final report, and that three persons from raft **"X"** were salvaged. Later 'Mariella' crewmembers managed to rescue two more weak persons from a fifth raft. The Final report (5) states that 'Mariella' rescued 15 persons from rafts in the sea, but Jörle-Hellberg (20 p 231) reported already 1996 that they were 18 (and that totally 140 were rescued). The three extra persons on the **'Mariella'** are assumed to have been evacuated later to Huddinge hospital by police helicopter.

EIGHT UN-DEAD ESTONIANS RESCUED BY Y 64

The Commission/Final report (5) pp 111-112 states that Swedish helicopter **Y 64** started at 04.45 hrs and reached the accident area at 05.52 hrs and rescued one person. According to the media however **Y 64** was already in the air at two o'clock and rescued 9 persons (one of whom should have died) from two rafts and that

these survivors were brought to Huddinge hospital (outside Stockholm) already at 04.40 hrs. Captain Piht is supposed to have arrived at Huddinge and was later flown Mariehamn and Utö to Turku to assist in the accident investigation.

The information in tables 1-4 is collected by persons in Estonia, Finland, Germany and Sweden that are not satisfied with the contradictory descriptions and conclusions of the Commission and is published here for public knowledge.

WERE THEY MURDERED?

It is quite amazing that the citizens of Estonia have allowed above to happen without further investigations. Evidently in 1994 Estonia was still suffering from 50 years of Soviet occupation and police state rule, but now we are in the year 2001, when Estonia has won the European popular television song contest and some normality has returned. To solve the mystery of the un-dead Estonians (probably murdered by Swedish and Finnish secret agents) young Estonians should really ask their government to re-open the full investigation of the Estonia sinking. It will really make Estonia part of Europe.

In Sweden (and Finland) the information about the un-dead Estonians are conveniently just swept under the carpet as - *rumours*. But the alleged rumours were spread long before the Final report (5) was published, when the story about the visor and the water on the car deck in the *superstructure* was still believable by a majority of concerned parties due to a clever disinformation campaign. Then the un-dead Estonians could be considered as *'rumours'*. But now - when the Final report (5) is proven to be 100% disinformation and when it is a fact that the Swedish Royal Navy removed the visor from the 'Estonia' at the bottom of the sea ***after*** the accident - can we still consider the un-dead Estonians as *'rumours'*? Evidently not!

1.47 VARIOUS POINTS OF VIEW ABOUT THE SPEED OF THE 'ESTONIA' BEFORE THE ACCIDENT.

The Final report (5) states that the speed of the 'Estonia' was 14.5-15.0 knots until one or two minutes *after* the listing had occurred; see figure 13.2 **1.9**. 3/E Treu has stated that the main engines were running normally and that no orders were given or carried out to reduce the speed, before or after the accident - the listing - occurred at 01.15 hrs.

On the other hand there are statements that the speed was reduced as early as one hour before the listing occurred **1.4** based on assumed observations of the lost Utö plot. The only evidence that the speed was unchanged seems to be the statement of Treu and we know today that Treu has lied **1.48**. The Commission evidently had to suggest and maintain that the speed was unchanged in the severe weather and that the accident - *the listing* - came as a total surprise for the crew.

The Final report does not study what happens at the stern in heavy weather. The Commission has made model tests in June 1995 **Appendix 2** to see what happened at the fore ship. Apparently very big wave impacts were recorded at the bow every minute, when the bow pitched into the waves. You would then expect that the propellers at the stern came out of the water and that the speed was automatically reduced.

The relative motion (movement up down relative the moving surface of the sea) seems to have been >five meters at the bow. By experience you know that the relative motion is about half at the stern, which means that the propellers should in fact have come out of the water in the model tests. However, the report of the model tests does not include any information what happened at the stern.

This author believes that, *before* big impacts would occur at the bow (in any weather), the relative motion at the stern was so great that the propellers come above water and that the speed must have been automatically reduced, and that therefore big impacts at the bow could never have developed or occurred!

"In every investigation I've taken part in, the key has been to establish a timeline. And the timeline is established by witness accounts, by information from alarm systems, by any video that you might have of the event, and then by calculations. And you try to put all of this together. And if your calculations are consistent with some of these hard facts, then perhaps you can have some comfort in the results of your calculations. I have not seen a timeline placed in the NIST report."

James Quintiere, Ph.D., former Chief of the Fire Science Division of the National Institute of Standards and Technology (NIST)

1.48 PROVEN UNTRUE TESTIMONIES BY ESTONIAN CREWMEMBERS TREU, SILLASTE AND KADAK

First a short recapitulation of the accident.

According to the Final Report (5) **the *'accident'* - the heeling - occurred at 01.15 hrs** - caused by

(a) **the loss of the visor** (after 10-20 minutes of noise and destruction of structure and badly designed outfittings/locks by a German shipyard allegedly heard by various unknown persons aboard) **that ripped open the ramp** - and

(b) **water that entered the *superstructure*** 2.5 meters above waterline (when the bow pitched below water) and ended up in the side of the superstructure (the car deck) and suddenly (sic) listed the ship,

At 01.16 hrs the angle of list was 15 degrees (you need about 500 tonnes of water in the *superstructure* for that) and the vessel turned 180° east 500 meters west of the lost visor,

Update 08/2007 - According to **model tests** the heel was 25° after one minute and nobody could evacuate then!

at 01.20 hrs 30 degrees list with the bow in lee after the turn (you need > 1 500 tons of water for that, and **that water should now flow out according basic laws of physics**),

Update 08/2007 - According to **model tests** the heel was 46-47° then and the stable condition was only possible by some magic!

at 01.24 hrs the lifeboat alarm was raised on and inside the ship (**a little late to say the least**!) and **the list was (about) 40 degrees** (you need > 2 000 tons in the *superstructure* for it and you wonder how it came in through the bow in lee?) - the ship was stable (physically impossible),

at 01.30 hrs the angle of list was 60-70 degrees (or more) - but the ferry was still stable (physically impossible).

At 01.52 hrs the ship allegedly finally sank 1.9 1 560 meters east of the lost visor after having drifted sideways for 22 minutes with the astonishing speed >2,2 knots!

There is no evidence for any of these events or the time line - e.g. 70 degrees stable listing at 01.30 hrs 15 minutes after the *'accident'* - or then 22 minutes 'sinking' while drifting >1 200 meters (final sinking after 01.52 hrs). No capsize is ever recorded. But this is the official story. It is a 100% invention of the Commission.

THE REAL EVENTS - WATER IN THE ENGINE ROOM - THE LIFEBOAT ALARM - THE CREW ESCAPE

No civilian survivor has provided evidence for above fairy tale. According to the majority of all survivors, crew and passengers, **there were an impact followed by another longer loud sound and then a sudden listing, >30 degrees, the latter at 01.02 hrs,** i.e.13 minutes earlier than officially stated, i.e. all times/angles of heel are not proven. **The ferry then became stable at a smaller angle of list, so that persons could escape during 5-10 minutes and it would appear that the vessel was stopped in the water.** The lifeboat alarm was raised, if it were raised, **1.33** first nine or 22 minutes after the *'accident'* and when most survivors had escaped to the open and when it was impossible to get out. Actually very few survivors have mentioned the lifeboat alarm.

What caused the sudden listing, i.e. what was the real cause of the accident in lieu of the allegedly defective visor locks? The Commission suggested that water loaded on the car deck inside the *superstructure* very soon after the accident caused the listing, but there is no evidence of any kind for that. A critical amount of water (1 800 tons) on the car deck in the *superstructure* would have caused immediate capsize and floating upside down. But how could so much water get in? Why didn't the water flow out, when the ferry stopped? A collision followed by hull leakage and loss of stability has not been investigated.

Figure 1.48.1 - Soon after being rescued 3/M Treu (left) and Ass/M Sillaste (right) told the media that *'In the engine room there was water to the knees'*.

The engine room crew was questioned the same day and later about the *'accident'* - they mentioned water in the engine rooms and starting bilge pumps - and three engine crewmembers are quoted below - verbally from the Final Report (5) - about what happened in the Engine Control Room, ECR, on deck 1 *after* the sudden listing and how they escaped to the open - and survived. These testimonies are a mix of several early and late testimonies - the Commission puts a fairy tale together to suit its dark purposes and censors all information about water in the engine room or starting bilge pumps. The three crewmembers evidently didn't cause the accident! They are 100% innocent. But for strange reasons their statements are used to support an impossible cause of accident. And - sadly - they have never retracted their statements. Why? Simple. They were, and still are, threatened by evil people to shut up! This is very disturbing. To say the least.

FALSIFIED TESTIMONIES

The objective of this chapter is to demonstrate that the three *testimonies* below are not correct - **they are 100% falsifications.** The *persons* behind the testimonies are a different matter. It is very probable that

(a) the Estonian crewmembers, shocked after being rescued, were asked, or forced, or kindly convinced to say something that never happened, and

(b) that, whatever the Estonian crewmembers said, it was edited, particularly the times, in the Final report (5) to suit the Commission's false sequences of events.

There are in fact two false but official sequences of the *'accident'*: In the first attempt of the Commission - September/October 1994 - it was only a ***leaking*** bow ramp that caused the *'accident'*; the Estonian crewmembers were told to say that they saw that the closed bow ramp was leaking a little so that water came into the superstructure.

Later, in the second round/attempt, - December 1994 - the Commission concluded that it was a *fully opened* ramp that caused the sudden water inflow/listing and that the ramp then suddenly closed itself (?) so that the

sinking took so long a time. But the Estonian crewmembers had never seen an open ramp, even if the Commission and the media said the opposite. They had seen water in the engine room and they had started bilge pumps - all censored.

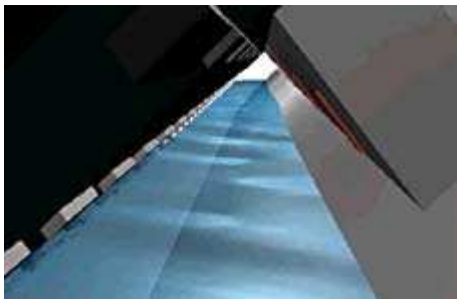
The job to modify - read falsify - the testimonies of the Estonian crewmembers was not very well done by the Commission. Actually - the Commission soon realised that either invented scenario would have led to immediate capsize - floating upside down. So the Commission convinced some *'experts'* to announce that a ferry does not capsize with water in the *superstructure* but floats in stable condition on the *deck house,* while these spaces were being filled (sic) with water, and that the ferry drifts, at high uniform speed, and suddenly - PLOFF - sinks with all buoyancy lost!

MARGUS TREU - HIS UNBELIEVABLE STORY

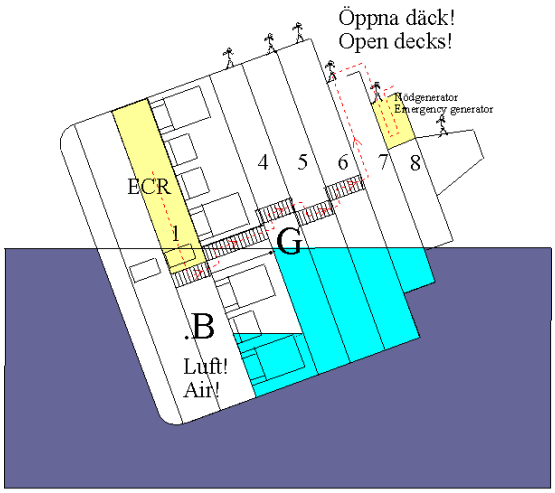
Third engineer Treu was allegedly in the ECR on deck 1 before and *after* the *'accident'* - the listing - occurred at 01.15 hrs. Treu never experienced the sudden listing like all other survivors at 01.02 hrs. According Treu the ferry just started to list slowly - nothing to worry about. Treu therefore stayed for about 10 minutes (!) down inside the hull and called the bridge by telephone several times about saving the ship, while there was full panic everywhere else, finally saying (sic) that he was leaving deck 1 to go up to deck 8. Chapter 6.2.3 in (5) describes his experiences *after* the listing and his escape 10 minutes later - in seven interviews 1994-1996:[92]

"... the starboard list became permanent. Lose objects started to move. At this time (i.e. a few minutes after the sudden listing) *(Sillaste) and (Kadak) entered the control room ... Approximately one minute after the alarm "Mr Skylight to number one and two" the (life)boat alarm went out over the public address system* (i.e. at **01.22-01.24** hrs - but Treu ignored it) *and the alarm bells started to ring ... the port main engines tripped ... With the help of railings (Treu) crawled to the control panel and tried to restart the engines ... (Kadak) was in a state of panic ... (Treu) felt there was nothing (Treu) could do in the control room anymore and (Treu)* ***told the bridge*** *that (Treu) was going up on deck to check the function of the emergency diesel generator. ...* ***all watertight doors were closed****.*
In a ... testimony (Treu) said he left at about 01.30 hrs and that the list was at this time 70-75 degrees. (Treu) has also said that he left about **01.25** *hrs, not earlier ... . (Treu) took the engine staff's own staircase* (sic) *to deck 8 to the emergency diesel generator. ... (Treu) checked the emergency diesel generator, which was still running. The ship was at this time lying on her side ... the list was 90 degrees ... the emergency generator shut down ... (Treu) ... moved aft along the hull ... When the emergency diesel generator stopped ... the hard plastic flooring on the deck was falling on him ... (Treu) saw that some passengers had opened life raft containers ..."*

Thus, our hero Treu on deck 1 tried to re-start the main engines *after* the lifeboat alarm at 01.22 hrs (the Commission does not explain why), then he telephoned the bridge that he was going (sic) up and then, a few minutes later (!), he attended the emergency generator on deck 8 before jumping overboard.



"With >2 000 tons of water on the car deck at 01.24 hrs..."



'Estonia' med 70 graders krängning kl. 01.30.
'Estonia' with 70 degrees heel at 01.30 hrs.

Figure 1.48.1 - The 'Estonia' with 70 degrees heel - escape from the ECR - unstable condition

Now, how do you take a staircase seven decks up in a few minutes, when the list is 70-75 degrees? How do you walk (sic) to the emergency generator room? How do you check an emergency generator, when the list is 90 degrees - see figure left? The generator is sitting like a painting on the wall! At this time all other survivors were already at the port, upper outside of the vessel.

NO PANIC - TREU WALKED UP!

But our hero Treu never *panicked* before he decided to escape - he ignored the lifeboat alarm at 01.22 hrs and stayed on for another 3-6 minutes down in the ECR on deck 1 trying to save the ship (starting pumps, engines, telephoning the bridge several times, etc.), while the 'Estonia' heeled from 0 to > 60-70 degrees. Treu was never afraid that the ship would turn upside down and that he was going to be trapped inside the hull. Treu was questioned the last time on 28 February 1996 as a witness by the Estonian Transport Investigation Bureau (the story had changed a little - no starting pumps or main engines, no telephone calls, no visit to the emergency generator):

> *"... When he (Treu) was in the ECR he heard the "Mr Skylight to number one and two" and the (life)boat alarms* (i.e. at **01.22-01.24** hrs)*. The angle of list was >20 degrees. When the auxiliary engines (generators) tripped, when the angle of list was 40 - 45 degrees, he decided to leave the ECR via the chimney* (sic)*. Sillaste and Kadak had left before him. He crept* (sic) *out from the ECR at about* **01.25** *hrs, not before, as it was the last time he looked at the watch. His escape took 2 - 3 minutes* (sic) *and when he reached open deck, the angle of list was 70 - 75 degrees."*

OK, according to the Final report (5) 1994/5 testimonies Treu took a staircase, in 1996 the escape was via the chimney - say via vertical ladders as there is no staircase in the chimney (read engine room uptake). And when he got out on deck 9, he went down to the emergency generator on deck 8. How do you get to the emergency generator from the chimney, when the angle of list is 70-75 degrees? There is no factual truth in Treu's statements - it is 100% fairy tale! Nobody could do what Treu did! Treu later refuses to comment about his obvious lies.

HENRIK SILLASTE - REPAIRING THE TOILET SYSTEM - WALKS TO MEET TREU

System engineer Sillaste, another hero, was allegedly on deck 0 below and forward of the ECR urgently repairing the toilet system, when the *'accident'* - the listing - occurred and went to the ECR through one or two watertight doors and up one ladder - it took one or two minutes. This was while all the other passengers immediately tried to reach deck 7; **2.1** and **2.12**, and there was panic among the passengers on decks 1, 4, 5 and 6. But Sillaste on deck 0 did not panic!

He decided to go and see his boss Treu in the ECR. To discuss what was going on! No panic! Let's first discuss in peace and quiet! No risk that the ship sinks! Can we believe that?

Chapter 6.2.4 in (5) describes his incredible experiences in five interviews 1994-1996. He thus, after the listing, moved to the engine control room:[93]

"Shortly after (Sillaste's) arrival in the control room, ***the watertight doors were closed*** *... After the engines had stopped (Sillaste) heard the alarm "Mr Skylight to number one and two" over the public address system ... and the* (life)*boat alarm sounded* (i.e. at **01.22-01.24** hrs)*. ... When the list was about 45-50 degrees (Sillaste) and (Kadak) left the control room. ... In a later testimony (Sillaste) said that they left when the list was about 60 degrees ... . (Sillaste), together with (Kadak), gained the outer deck 8 amidships, quite near the emergency generator, which worked. ... Their climb (Sillaste) stated took one minute or two. ... Out on deck 8 (Sillaste) saw crew members preparing life rafts ... (Sillaste) ... saw the second and third officers leave the bridge ...".*

Figure 1.48.2 - *"When the list was about 45-50 degrees ..."*

Sillaste was thus with Treu in the ECR when the main engines tripped and when Treu tried to re-start them. Then Sillaste walked/climbed quickly up to deck 8, where he could see the second and third officer leave the bridge, when the list was 90 degrees - see figure below? But how could anybody leave the bridge (or the ECR for that matter) when the list was 90 degrees - the door of the bridge was then 80 cms high (the width) and you stepped out into open air (the deck was the wall)! Sillaste was questioned the last time on 13 January 1996 as a witness by the Estonian Transport Investigation Bureau:

> *"... When he was in the engine room he heard the 'Häire, häire' alarm from the information and the "Mr Skylight to number one and two" alarm. The angle of list was 20 - 30 degrees. Treu told him and Kadak to escape from the ECR after the main engines had tripped, when the angle of list was 60 - 80 degrees (very difficult to estimate).* ***Treu remained in the ECR****. He (Sillaste) decided to leave the ECR via the boiler room* (sic) *to deck 8. His escape took 1 - 2 minutes and when he reached open deck, the angle of list was 60 - 80 degrees. At 01.27 hrs he was in a life raft together with, e.g.* ***Kadak, Linde****, Sirje Juhanson, Mats Finanger, Alexandr Voronin (total 16 persons)."*

Sillaste and Kadak thus climbed seven decks up in a very short time - via the 'boiler room' - maybe he meant engine - room. The watertight doors were closed, but to get to the engine room one watertight door must be opened again. **If the list was >60 degrees, it must have been very difficult to walk on the decks ... .** This is another fairy tale that is similar to Treu's. Who told Sillaste to make it up? Sillaste has later, bravely, stated that he is misquoted, i.e. it is not correct what the Commission says he said. So what happened really?

HANNES KADAK - IN THE WORKSHOP - NOTICES A 'STRANGE' LISTING

Motorman Kadak, another little hero, was allegedly in the workshop on deck 1 on starboard side of the control room, when the listing to starboard occurred and he walked to the control room. It was his first night aboard the ship. He must have walked upwards against the list. Chapter 6.2.5 in (5) describes his experiences in three interviews 1994-1995:

"While (Kadak) was working in the workshop, the ship suddenly developed a list, which he found strange. He went to the control room ... several lamps started to flash "boat alarm" ... At this time (Sillaste) arrived and ***the watertight doors had been closed*** *... pumps were turned on ... from the bridge they received orders to do something with the pumps. ...* ***it was no longer possible to stand upright.*** *At a certain point the main engines tripped* (at **01.20** hrs)*. ... Then (Kadak) and (Sillaste) left the control room* ***through the emergency exit.*** *The list at this time was about 50 degrees. ... the emergency generator started automatically. The list was about 90 degrees, when they reached deck 8 ... the emergency generator stopped ... (Kadak) put on a life jacket and slid into the water..."*

Figure 1.48.3 - ***"The list was about 90 degrees when they reached deck 8 ..."***

OK - our little hero Kadak, who could not stand up, left the ECR with Sillaste via the *emergency* exit. Where was it? When Kadak quickly reached deck 8, the list was 90 degrees and the deck was vertical like a wall with the now horizontal deckhouse side 12 meters above him. But Kadak states that he was up on the horizontal ship's side 12 meters higher up at abt. 01.30 hrs! How did he get there? Where do you get the life jacket? According to other witnesses Kadak ended up inside a life raft.

Kadak was interviewed at 11.00 hrs on 29 September 1994 at Turku hospital by Mr. T. Laan. The language used was Estonian. The protocol was later translated by the interpreter Ms. H. Laan:

> *"... The main engines stopped ... at this moment it was clear to everybody that the ship was sinking* (sic) *... I, together with Henric (Sillaste) left the ECR via the emergency exit* ***and opened a watertight door****. ... On the way up the generators stopped and the emergency generator started automatically. When we came up/out the angle of list was 90 degrees and the emergency generator stopped. I put on a life jacket and slid into the water".*

Interestingly enough Kadak believed that the ship was sinking due to the listing, when the main engines stopped. Evidently an emergency escape does not contain a watertight door. Hannes Kadak (HK) was interviewed a last time by the Commission on 31 March 1995. The protocol was made by *'expert'* Bengt Schager (BS):

> BS: What happened when you saved yourself?
>
> HK: *When the main engine stopped,* ***I went up from the engine room in the chimney*** *and then I got out and then I was in the water. ... When I got out of the chimney ... I walked to the side guard rail ... the ship was lying on the right (starboard) side ... and I got out on the left (port) side ... I walked toward the bow, to the right. And when I fell into the water I experienced the ship as a black wall. There were many persons and you had to survive so it wasn't much time to think how the ship was lying. ...*
>
> BS: Were you standing on the ship hull side or the superstructure?
>
> HK: *When I came out of the chimney from this special stairwell system from the engine room, you exit on deck 8. Then I pulled myself via the ladder from deck 8 to deck 7. ... and then to the guard rail (on deck 7).*
>
> BS: When you were on the side, did you see the bilge keel?
>
> HK: *I didn't make any such observations.*

It is clear that Kadak claims that he *'walked'* from the chimney (sic) at the centreline to the upper port side of the ship (deckhouse) 12 metres above him, when the list was 90 degrees.

But how did he manage to do that?

He could not stand up in the control room. The chimney port side was 12 meters *below* the upper, port *side* of the ship. The decks 7 and 8 were vertical walls! Evidently Kadak must have got out much earlier - because you cannot walk - or pull yourself - up to the port ship's side unless the angle of list is <30 degrees! Expert Schager and the Commission believe that you can walk up a vertical wall! So this is another fairy tale that sounds like Sillaste's and Treu's. Who told them to make it up?

SILVER LINDE - ANOTHER FAIRY STORY FROM THE DECK HOUSE - DECKS 5-8

Silver Linde, the Estonian seaman who did the hourly fire watches on the 'Estonia' and who joined Sillaste and Kadak on the port upper side of the 'Estonia' and shared the same life raft S, was questioned the last time on 25 January 1996 as a witness by the Estonian Transport Investigation Bureau. This author believes a lot of what Linde is saying except the times given. From early newspaper interviews it is clear that Linde experienced the sudden listing already at 01.02 hrs. Linde had been on the car deck as part of his fire patrol round and had not seen any water there and not heard any noise. Then he had returned to the bridge - when probably the big bangs occurred around 00.55-58 hrs. And then he had, allegedly, been ordered down to investigate strange sounds on the car deck or leakage on deck 1 reported by phone to the bridge (of which there is no evidence):

> *"He (Linde) was at the information* (deck 5)*, when the ship suddenly listed. He (and a Swede) fell. He (Linde) ran down to deck 4 and met escaping passengers from deck 1. He (Linde) then escaped via the central stairwell from deck 4 to deck 7, it took one minute, and reached open deck. The angle of list was 30 degrees or a little more. When he was on deck 7, he heard the 'Häire, häire' alarm from the information and the "Mr Skylight to number one and two" alarm* (which alarms Sillaste and Kadak heard in the ECR at **01.22-01.24** hrs)*. Tormi Ainsalu was announcing the alarm. He (Linde) was then standing on the wall to deck 8 below a lifeboat, the angle of list was 70 - 75 degrees or 80 - 90 degrees, the ship was rolling. The time was* **01.24** *hrs. He was in a life raft together with, e.g.* ***Kadak, Sillaste****, Sirje Juhanson, Marge Rull, Raivo Tõnisson (total 16 persons). "*

This story is clear and simple - no heroic work. There was a sudden list - Linde tried to save himself immediately - no 5-10 minutes wait like his colleagues in the ECR - but he was in the same raft at Kadak and Sillaste. Strange?

Linde had been interviewed eight times earlier by the Commission and the police - from 6.2.2 in the Final report:

> *"(Linde) ... on the bridge before being ordered down ... He ran to the information desk on deck 5 to ask them to unlock the car deck doors ... when he arrived at the information desk ... (Linde) had to wait for a couple of minutes. While he was waiting, the ship heeled over so much that all objects fell. He continued down to deck 4 ... he realized that the situation had become serious. The list was now around 25-30 degrees. He ran to deck 7 ... he reported ... that the people said "deck 1 is under water". ... he managed to save himself by getting to a life raft on the ship's side ... he was in the life raft at 0124 hrs ...*

The people Linde met on deck 4 came from deck 1 and the passenger compartments just forward of the Engine Control Room, where Treu, Silllaste och Kadak were starting pumps, etc. Many of these passengers had noticed water on deck 1 and started evacuation ***before*** the sudden listing occurred and thought the ship was leaking and sinking. The Commission conveniently ignored what these passengers reported. It is quite possible that Linde met Treu, Sillaste and Kadak on their way up! They stayed together! In some strange testimonies Treu says that he saw Linde on the car deck (via a TV-monitor) just before the accident.

THE EMERGENCY EXIT - THE ESCAPE ROUTE - MIRACULOUS EVACUATION

As seen from above first three Estonian testimonies (edited of course by the Commission based on several questionings) the **watertight doors** of the ferry were open, when the listing occurred. If they were closed later is uncertain, even if the three crewmembers say so, as there is no indication panel for the 20 watertight doors in the ECR. Kadak/Sillaste must later have opened a watertight door to get out as the ECR was located inside a watertight compartment with watertight doors forward and aft. Treu must also have passed a watertight door to get out!

You could not *remotely* close the watertight doors from the ECR. It was only possible from the bridge **1.23**. If a watertight door was open it could only be closed manually at the door itself (apart remotely from the bridge). If a watertight door were closed, it could be opened manually - it took about 15 seconds. **Alarm bells would ring when the door closed.**

To reach the ECR Sillaste had had to go through one or two open watertight doors on deck 0. They must then have been open or were being opened.

Sillaste and Kadak allegedly left the ECR on deck 1 *after* the lifeboat alarm at 01.22 hrs, say at 01.23 hrs when Linde was already on deck 7 standing on the wall to deck 8. They took the *emergency exit*. The angle of list was 45-50-60 degrees (difficult to estimate - but they could not have been standing on the floor/deck 1 of the ECR at that time and how and where they stood in the ECR is not described - on the starboard wall?). The emergency diesel generator started, i.e. there was a black-out. After one, two or three minutes they were on open deck 8 at the chimney port side adjacent to the emergency diesel generator, which stopped. Now there was a problem - deck 7 port side was 12 meters above them!

The miraculous escape from deck 1 to deck 8 - a 20 meters inclined climb on ladders in the chimney/engine uptake or on horizontal ladders and vertical platforms, with regard to the angle of list - thus took only a few minutes.

It is of course impossible to climb up through a tilting engine room uptake but **Sillaste and Kadak kept together and *got into the same life raft as Silver Linde* (33).** According Linde the raft was on the port (uppermost), flat side of the ferry, before it got into the water, i.e. **Sillaste** and **Kadak** had therefore managed to climb *up* another 12 meters from the chimney/funnel on deck 8 at the centreline, which was 10 meters below the port side high above, then flat outside side of the ship to get into the raft.

How Sillaste and Kadak managed to climb up to the port (upper) side from the exit of the emergency exit (that does not exist) near the centreline of the ship, when the listing was 90 degrees and when they had just reached deck 8, is a mystery - see figures 1.48.1/2 below. They had to climb 12 meters straight up!

Survivor RS **2.12** has told the author that he and a friend (Y) were on deck 8 port side, when the normal lights and also the emergency lights went out. Then RS and Y climbed a ladder up to the helicopter deck 9 aft of the funnel. At this time lose items on the port deck guard rail dropped down on the persons below. The angle of list was then about 70-80 degrees, so they almost walked on the side of the deck house.

When RS was on the edge of the helicopter deck (deck 9, which sloped straight into the water) he observed two persons, one tall and one short at the funnel. The short shouted *"water is coming in on car deck"*, but was silenced by the other with a fist in the face. Then the angle of list was about 90 degrees and the two persons could only move on the flat side of the funnel.

These two persons could hardly have been **Sillaste** and **Kadak**, who were then already on the port, upper side of the deck house 12 meters *above* the horizontal funnel, where RS was standing. Maybe RS imagined the whole thing?

When the funnel (pointing south) came under water there was a big, white cloud. RS estimates/guesses that the time was then about **01.20-01.25** hrs (they had started their escape from the Admiral's pub at **01.02** hrs **2.12**). RS and Y felt that they could not stay on the ship. RS felt as if the 'Estonia' started to roll upside down, so they decided to jump into the water - into the waves and the wind, i.e. towards the stern with the funnel to the left. RS was never up and out on the upper port side, which was behind and above him. RS dived into the waves and went deep down. RS is/was a dive instructor with about 1 000 dives - RS had to release lung pressure 5 times when he was below water. RS swam against the waves - in a southward direction - and found a lifeboat - where he met Treu! The ship sank maybe 15 minutes later. Y drowned.

If Sillaste and Kadak had escaped through the engine casing/chimney they should have to abandon ship like RS and Treu - jump into the water and swim into the wind. But they ended up in a life raft that was launched from the port upper side in the north direction. How was it possible?

THE MYSTERY - HOW DID TREU, SILLASTE AND KADAK ESCAPE TO DECK 8?

The big mystery is of course, how Sillaste and Kadak got out of the ECR on deck 1 port side to deck port side 8 in the first place after having stayed down in the ECR for >8 minutes. And it is strange that the Commission never asked them how they really got out. In above testimonies three different escape routes are stated - crew stairwell, emergency escape, chimney. It is not easy to falsify testimonies. The Commission knew that Treu, Sillaste and Kadak lied!

Treu left the ECR later, say at **01.25-01.27** hrs, when the list was 70-75 degrees, i.e. he must then have stood on the starboard, lower wall of the ECR, which then had become the floor - the watertight doors were closed - and he took *the engine staff's own staircase to deck 8,* where the emergency generator was still running - soon to stop.

But there is no engine staff's own staircase from the ECR on deck 1 in the hull! The ECR was located between two watertight bulkheads and the 'normal' access was through watertight doors (that should have been closed at sea). Then there was the 'emergency exit' - a vertical ladder straight up to deck 2 the car deck three meters above him. It was of course useless, when the list was 70-75 degrees! But Treu managed to escape. He could in principle only reach deck 2 via the emergency escape.

But, a few minutes later, **Treu** was allegedly *inside* the emergency generator room deck 8 (on the port, upper side) and soon after out on open deck 8 again (which was like a vertical wall!). **It seems as if Treu overtook Sillaste and Kadak after the escape from the ECR, as he arrived at the emergency generator before it stopped.** Soon afterwards Treu was swept into the water on the South starboard side, even if the location on deck 8 port side at that time was about 10 meters above water - see figures below. Treu must have been

standing on the wall between decks 8 and 9 well away from any water at that time - 01.30 hrs - if we believe the Commission. The ship should have sunk 22 minutes later after having drifted >1 200 meters. Treu swam out to a lifeboat on the South starboard side of the ferry (it had been ripped off the ferry) and watched the sinking, i.e. Treu's lifeboat had drifted with exactly the same speed as 'Estonia' for 22 minutes. Can we believe that?

FACTS ABOUT THE EMERGENCY EXIT FROM THE ECR ON DECK 1

The emergency exit from the ECR on deck 1 is, as stated, a *vertical* ladder to deck 2 - the car deck (*it is the only way out of the ECR, **when the watertight doors are closed***).

But how did **Sillaste** and **Kadak** *then* get up to open deck 8 in a few minutes, when all decks and stairs were sloping >40-60 degrees?

From the exit of the emergency ladder on deck 2 (the car deck) there was a 10 meters walk to the stairwell on deck 2 and then another 17 meter straight up to pass five or six deck levels! And when they reached deck 8, how did they get up and out on the port, flat ship's side - it was another 12 meters straight up - on a 90 degrees/vertical sloping deck?

HOW DO YOU CLIMB A WALL?

The author has tested to escape from ECRs on deck 0 or 1 to an upper deck 8 on various ferries, when they were upright. A typical escape is out from the ECR (inside the engine room) - up a stairway (to the car deck) - then a walk on the deck - then up two stairs to deck 4 - then a walk on that deck in a corridor and turning to reach the next stairs - then up the final four stairs. It can be done in two minutes - but the ship must be upright. When the ship is listing more than 20 degrees, it is no longer possible.

UNTRUE TESTIMONIES = FAIRY TALES

The testimonies or fairy tales of Sillaste and Kadak in the Final Report (5) as quoted above cannot be correct about their escapes from the ECR. Actually the testimonies clearly show that the three persons are not telling the truth - it is just invented stories. It is very likely that it is was the Commission that made up the three testimonies of the engine crew - because a normal engine crew member would never have stayed down in the engine room for 10 minutes. They would have - like Linde - escaped immediately to the open.

A repetition: Treu remained alone in the ECR after Sillaste and Kadak had left and then he took *"the engine staff's own staircase to deck 8",* when the list was 70-75 degrees.

This testimony cannot be correct. An obvious lie.

First of all there is no staircase from the ECR and, second, you cannot walk in stairs, when the list is 70-75 degrees. So how did **Treu**, **Sillaste** and **Kadak** get out?

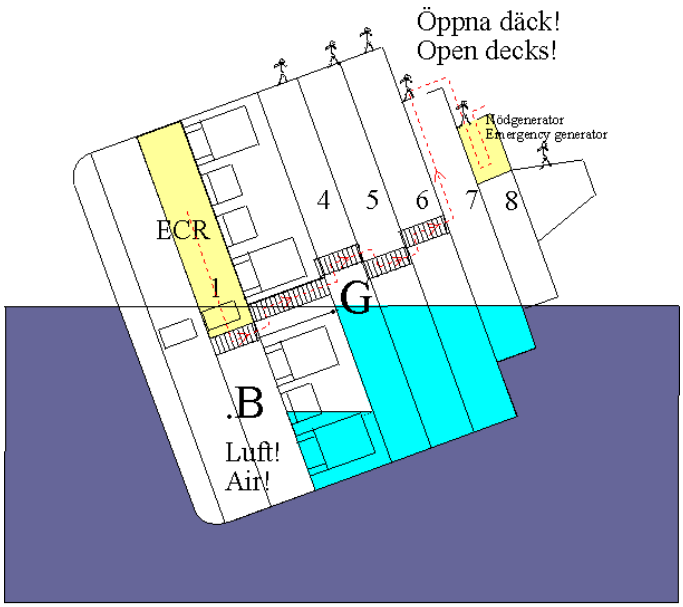
THE WAY OUT - AND AN UNSTABLE SHIP - AS PER THE COMMISSION

A plot of the ship's course, speed, angle of list, amounts of water inside the ship is shown in **1.9**. **This plot is another falsification.**

However - the situation according to the Commission, when the list was 70 degrees at **01.25 -01.30** hrs with 4 000 tons of water on the car deck and 14 000 tons of water in the deck house above and with 300 persons on the open decks and when **Treu** was still in the ECR, is shown in figure 1.48.4 right of a transverse section of the ship at about amidships. South is right, north is left. The wind blows from S to N. The waves are coming from south.

The 'Estonia' floats high above the waterline, as all watertight compartments on deck 0 and 1 below the car deck are dry - it is only water on the car deck and in the deckhouse.

The condition is completely unstable - the centre of gravity of the ship G (no consideration is given to the water in the deckhouse) is 8 meters to the side of the centre of buoyancy B (the air in the *hull* and the superstructure) and the ship should have capsized, turned upside down immediately.



'Estonia' med 70 graders krängning kl. 01.30.
'Estonia' with 70 degrees heel at 01.30 hrs.

Figure 1.48.4 - The 'Estonia' with 70 degrees heel - escape from the ECR - unstable condition

This is something the investigators always refuse to admit - they maintain that the ship was stable at this time floating on the deck house (but cannot prove it) and sank 20 minutes later! The Swedish NMA (safety at sea director Franson and director general Selén) has stated to the Swedish government (Minister Mona Sahlin) several times that the 'Estonia' was floating on the *deck house* at this time and this is also the official story - not clearly stated - in the Final report (5). **But the Final report is here based on a totally false stability calculation 3.12 where the *deck house* is 100% watertight on the submerged side, while survivors had just left that 'watertight' deck house on the opposite non-watertight side. How ironic - the deck house was watertight on the side *under* water but open on the other side, where passengers climbed out.**

This is one of the obvious stupid errors of the Final report (5). The lee side below water of the deck house is watertight - as the whole ship floats on it - while the windward, upper side is open - persons are escaping through doors and windows. Only an ignorant child believes such fairy tales.

THE ESCAPE ROUTE - ONLY TO DECK 2, THE CAR DECK

The escape route via the emergency exit from the ECR on deck 1 and stairs in the deckhouse is shown in red in the figures. It is a simplification - the vertical escape ladder from the ECR on deck 1 ends on the car deck 2 and the stairs are10-15 meters apart on decks 2 or 4. Note the last bit to the emergency generator - out on deck 7 and then up to deck 8.

How did Treu reach the emergency generator? And how did all three get up to the port, upper side of the ship, when they reached decks 6, 7 or 8 at the centreline of the ship - the port flat, upper side of the ship was >10 meters above them? How do you climb a wall?

Actually - the investigators of the Commission are and were fully aware of the fact that the Final Report as quoted above is wrong or misleading - informally they[93] have later suggested that the escape from the ECR was not as stated (via the *'emergency exit'* or a *'crew stairwell'*) but via another route - via seven vertical ladders in the *engine casing* starting in the engine room (aft of the ECR) up to the funnel at deck 9 (via the exhaust boiler room on deck 8)!

THE ENGINE CASING

To reach the *engine casing* from the ECR you have to pass one watertight door (between the ECR and the engine room) and then reach the first ladder in the casing via a grating in the engine room. But it is in fact impossible to get from the ECR to the engine casing uptake, when the list is >40 degrees.

The vertical ladders in the engine casing are then no escape route - in a fire in the engine room the casing will be full of smoke. The easiest escape from the engine room is of course the emergency escape ladder to the car deck via a fire door. Then you are safe (when the ship is upright). The car (no. 2) deck in the *superstructure* is the emergency station with a fire in the Engine room (the *hull* below). There is A-60 fire insulation between the Engine room and the car deck and the CO_2 fire extinguishing control is located on the car deck.

The normally vertical ladders in the casing are 40 cms wide with rungs every 30 cms. You cannot climb them, when the list is >25 degrees. It is evidently impossible to even use a ladder when it is tilted 60 degrees. The ladders in the engine casing are furthermore not lined up between the deck platforms - you cannot get from one ladder to another, when the ship is listing. The only purpose of the ladders is to allow maintenance of exhaust pipes and cleaning, etc. And when you reach the funnel at amidships on deck 9 - how do you climb up to the port side of the ship 10 meters higher up? **How do you climb a wall?**

Sillaste and Kadak were in a life raft at 01.27 hrs together with Linde (33), who had launched it himself on the upper, port side, which was then flat but sloping towards the stern. How did Sillaste and Kadak get to and into the life raft, if they escaped via the engine casing ladders and the funnel and arrived there - at the funnel - when the list was 80 degrees?

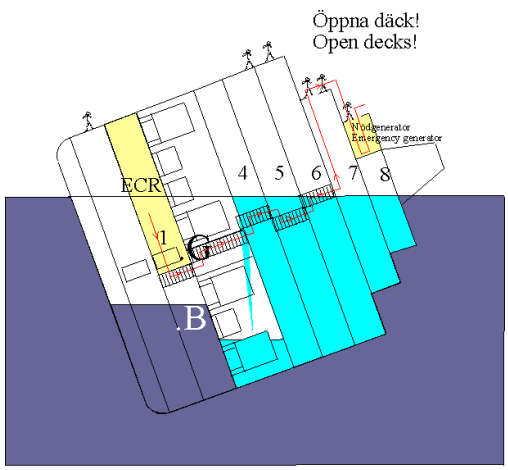
Tests on ships similar the 'Estonia' show that there is no possibility at all to get out of the ECR on deck 1 to deck 8, when the angle of list is >20 degrees. Therefore the Final Report above about the engine crew escape from the ECR is pure falsified disinformation.

STABLE CONDITION AT 01.30 HRS

A stable condition with water in the engine room and the work shop and other compartments on decks 0 and 1 below the car deck, when the listing is 70 degrees at 01.30 hrs (28 minutes after the listing at 01.02 hrs - the ship sinks completely below water after another few minutes) is shown in the figure 1.48.5 below.

It has been developed by the author assuming that the underwater hull was leaking and that several compartments on decks 0/1 were flooded as reported by the passengers escaping from deck 1. 300 person have escaped to open decks, >600 persons are according to the Commission trapped inside the ship and **Treu** is still in the ECR on deck 1 port (yellow, upper) side. Survivor RS is on the wall between decks 7 and 8 but further aft of the Emergency Generator room. The ship is trimming on the stern, so RS is closer to the water. When the ship heels another 30 degrees, the funnel, pointing South (right in picture), is under water and RS can dive into the waves that are coming in on the funnel side. The wind is blowing from south (right) to north (left in picture.

Several compartments on decks 0 and 1 are flooded and the centre of gravity **G** (reduced to car deck level due the water in the hull) is just above the centre of buoyancy **B**, i.e. there is balance - stable condition.



'Estonia' med 70 graders krängning kl. 01.30.
'Estonia' with 70 degrees heel at 01.30 hrs.

Figure 1.48.5 - The 'Estonia' with 70 degrees heel - escape from the ECR - stable condition

The ship floats much lower in the water (on the remaining air in the *hull* and *superstructure*) but the staircase in the deckhouse decks 4-6 is below and filled with water. The ship is not rolling any more - it is quite stiff with all water in the bottom of hull. The ship's aft end is under water, the bow is maybe 20 meters above water - the above figure shows the section amidships. The ship is going to sink after another two minutes - at **01.32-01.36** hrs. Because the deck house is filling up much faster than the hull compartments, the ship will roll over >110 degrees at this time just before sinking. It is quite easy to simulate.

Any statements to the effect that the ship would float another 16-20 minutes in this condition - floating on the deck house (and drift >1 200 meters at a speed of >2,2 knots) - is just propaganda formulated by the Swedish Board of Psychological Defence - see next chapter - and repeated by the Swedish National Maritime Administration and Johan Franson, director of safety at sea.

IMPOSSIBLE TO LEAVE THE ECR

It is of course impossible to leave the ECR at this stage. The stairs in the *longitudinal* direction are almost *horizontal*, i.e. the steps and the landings are *vertical* - there is no possibility to get from the landing at, e.g. deck 7 to the open, port, upper side 12 meters above!

The 40 cms wide vertical ladders in engine casing with steps every 30 cms are at this time also almost horizontal and you cannot climb on them. Water in the deckhouse has started to flood the car deck from deck 4. *If* **Treu** *had tried to leave the ECR at this time, he must have swam up through water filled staircases! As it was not possible, Treu should have been trapped inside the ECR. But* **Treu** *survived in good health - how and when did he get out? And who told him to tell the untruthful testimony?*

The reason, why the Commission delayed the sinking - or disappearance - of the ship until after 01.50 hrs, was partly to enable the engine crew to escape at 01.30 hrs. **On paper - the Commission never understood, when it falsified all the testimonies, that escape from the ECR was then impossible.** The Commission invented the testimonies from the ECR. Nobody could have remained there for 8-10 minutes after the sudden 'listing', whenever it took place. The inventions were necessary to present 'witnesses' that had seen water on the car deck - on a TV monitor. But - as will be shown below - the engine crew probably escaped immediately at **01.02** hrs - like all the passengers. They never witnessed anything in the ECR.

The above quoted testimonies from the Final report are fantasies, fairy tales, and inventions - to cover up the real cause of the accident. Because the three crew in the Engine room - Treu, Kadak and Sillaste - know exactly what happened - two big bangs, hull leakage, water in the hull on decks 0 and 1, open watertight doors, etc. That the plotted sequence of events is false has already been shown in 1.9. It is clear that we are encountering a quite clever manipulation here - false statements from the engine crew about their escapes *and* a false plot created by Dr. Huss. One falsification supporting another.

PROBABLE ESCAPE ROUTE FROM THE ECR

The three persons in the ECR must have left the ECR much earlier - ***if they ever were there***, when the sudden listing occurred at **01.02** hrs due to leakage and water inside the hull on deck 0 - in order to survive.

There are two possibilities. In **Figure 1.48.3 Escape routes from the ECR on deck 1** the ECR is situated on deck 1 left. Right is the passenger cabin spaces. Just outside the ECR forward outside a watertight door is a stairwell leading up to deck 4 and then to deck 7. Inside the ECR adjacent to the watertight door is a trunk with an emergency ladder to deck 2.

Either they used the passenger staircase - i.e. the first staircase forward outside the ECR from passenger spaces on deck 1 reachable via a watertight door at the *forward* bulkhead of the ECR - and then they started evacuation immediately at 01.02 hrs, as all the other passengers on deck 1. *There was no time for seven or ten minutes of heroic work or hearing alarms in the ECR*. They would then arrive on open deck 7 a few minutes

later (like many other, young strong survivors from deck 1 and Linde) and had then to climb up to deck 8 to reach the emergency generator (if they ever were there). It is possible.

But no surviving passengers on deck 1 noted any engine crew member from the ECR escape up the stairways to deck 4, but maybe they escaped before the passengers started to leave. All surviving passengers describes great difficulties to reach the open deck 7 port from the stairwell at centreline due to the list - the landing between the stairs and the deck house side door (to open deck 7 port) was sloping against them.

Alternatively they could have escaped through the engine casing using the vertical ladders there. It would have taken longer time, but it was still possible, as long as the angle of list was <20 degrees. They of course had to pass a watertight (but open) door from the ECR into the engine room. Then, after climbing eight ladders they would arrive to the funnel on deck 9 and some other survivors say they saw two of the engine crew there. And it was still time to get out on the port side and jump into the life raft with Linde.

(Addendum December 2008 - **Drawings of the ladder arrangement** in the engine casing have become available in 2008.

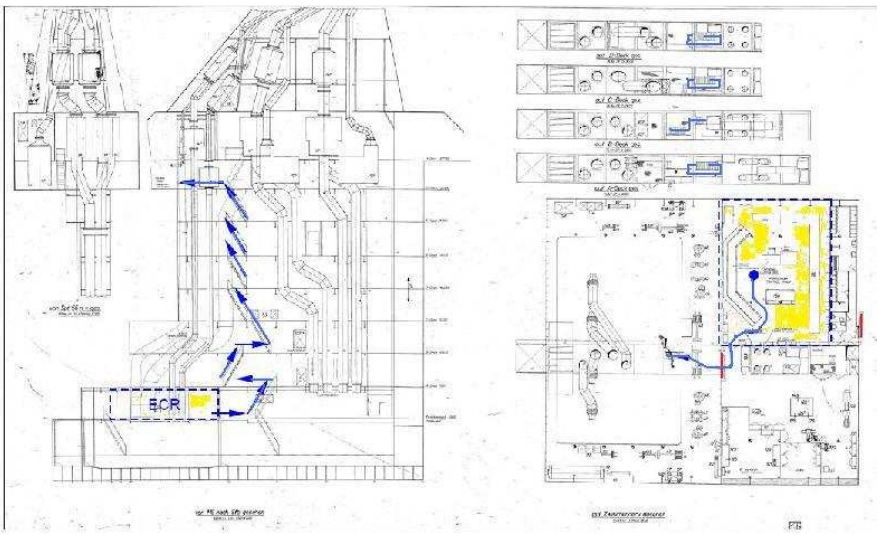


Fig. 63 Extracts from the Jos. L. Meyer drawing No. MA500 showing also the egress route out of the ECR. The detail in the middle showing the exhaust pipes in the funnel is seen from the port side of the vessel looking to the starboard side.

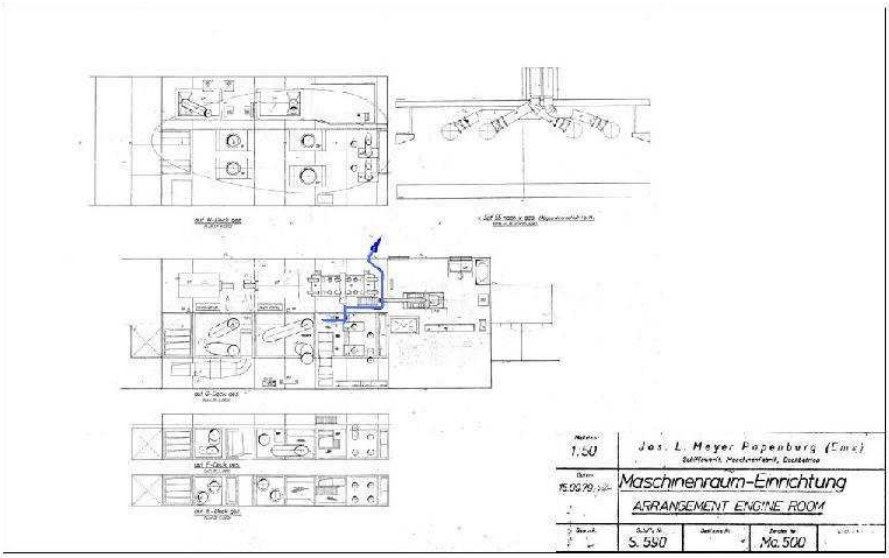


Fig. 64 Extracts from the Jos. L. Meyer drawing No. MA500 showing also the upper parts of the egress route out of the ECR in detail.

Figure 1.48.6 – Escape route in engine casing

The ladders are sloping 60° in the longitudinal direction and there are open areas between some. At >20° heel it is not possible to use them; you slide off the steps and open areas and regardless, at deck 7 you are at the centre line and cannot reach the port side open deck that is high above you. It is probable that the Treu, Sillaste and Kadak escaped via these ladders, but it must have been done very early when the heel was <15°. The ladders are censored in the Final report, i.e. not shown on any drawings).

This author believes that it does not matter *how* they escaped, but that that it is clear that Treu, Sillaste and Kadak could only have escaped, *if* they started the escape *at once*, like Linde, where ever they were, before or after the two big bangs before the 'Estonia' lost its initial stability - but remained stable, albeit with a list. To reach the upper, port side and get into a life raft at 01.30 hrs, they must have been on the deck 7 port side already at, say 01.10 hrs, and then climbed up on the outer ship side like all other passengers and Linde, which started to evacuate at 01.02 hrs. They probably escaped together - on open deck 7. Sillaste, Kadak and Treu got out on the port side.

Treu may have gone to the emergency generator and could *later* not reach the port side 10 meters above him, so he jumped into the water on the starboard side. They could thus never have heard any alarms at 01.20 hrs in the ECR.

It is very possible that the three engine crew members were not in the ECR at all. They might very well have been alarmed *before* the sudden listing (at 01.02 hrs) and was mustering with the crew on deck 7. Thus they easily escaped and survived. The false story about repairs (by Sillaste) and then their gathering in the ECR *after* the sudden listing for seven minutes must have been made up by somebody and then Treu, Sillaste and Kadak were forced to repeat that story to the media and the Commission.

In the confusion that false story gained acceptance and it is one of the corner stones of the false Final report (5). No doubt professional disinformation experts assisted to spread the false story.

MIRACULOUS ESCAPE - A WELL CONSTRUCTED EMERGENCY ESCAPE TRUNK - THE GERMANS COME TO THE HELP OF THE COMMISSION!

OR, if the three engine crew actually were in the engine room or the ECR on deck 1 at 01.25-01.30 hrs, when the angle of heel was 45-50-60-70-75 degrees, and if they were on open deck 8 a few minutes later and later on the flat, open port side of the deck house/superstructure, they should of course tell us, how this miraculous escape was possible. Estonian journalists should ask them.

The Germans have reported (chapter 2.5.2 their Final report) that *"The centre casing* (in the superstructure) *contained staircases from the spaces below the car deck, lift trunks and various utility spaces for machinery and catering functions. ... **Emergency escape trunks** from the engine room area were arranged inside the casing"*... The Commission has never mentioned these emergency escape trunks from the engine rooms. And there was no staircase from the ECR! It was one of the major design faults of the ship. There was only a vertical ladder to deck 2.

NEW INFORMATION BY SILLASTE 1998

In May 1998 the British journalist Phillip Wearne actually asked **Sillaste** how he got out and what happened, when **Sillaste** was in one of the engine rooms on deck 0 (as reported in the German Final report 21.2.4). The estimated times of the Commission of the events are then shown and then more realistic times based on, e.g. **2.2**, i.e., in order to get out on the port outer side together with Linde **Sillaste** must have been out at 01.10 hrs. There is little time for **Sillaste** in the official sequence to be in the ECR and then to get out and save himself:[93]

Sillaste thus explains to P. Wearne:	Time (5)	Real time
- there were 3 strong blows, following one after the other but ***<u>much quicker than wave blows</u>*** *do and* ***<u>which were different to wave blows</u>****;* **(there were 3 bangs, most of the others forget the first one, which was the weakest one, there were about 30 seconds between them, and the 3rd one was the strongest);**	**01.13**	**00.55-01.00**
- he (i.e. Sillaste) *assumes that the vessel righted up again after the 1st and 2nd bangs (he calls the "bangs" "beats" or "blows") and associates each "bang" with a heeling movement, the bangs came from forward;*		
- after the 3rd most heavy bang the vessel heeled excessively to starboard and the plastic containers slid down to the starboard side and he (i.e. Sillaste) *rushed to the ECR;*	**01.15**	**01.02**
- after the 3rd blow the ship heeled quite heavily and he (i.e. Sillaste) *knew that something must be wrong;*	**01.15**	**01.02**
- ran (after the heel) through the auxiliary engine room, the storage room, main engine room and in these 4 rooms there was no water,	**01.15- 01.17**	
- rushed towards the ECR;	.	**01.03-01.05**
- looked at the monitor and saw water rushing in at both sides of the bow ramp, the first thought was that something was wrong with visor and bow ramp;	**01.17**	
- then 2 of the 4 main engines had already stopped, then there was an attempt to pump the ballast but this was a failure;	**01.20**	**01.16**
- the heel increased continuously clicking like the second hand of a wrist watch;	.	**01.10-01.30**
- next also the other 2 main engines stopped, while the auxiliaries continued to run;	**01.24**	.
- tried to contact the chief engineer but telephone had fallen down;	.	.
- just before the auxiliaries shut off, there was the "Mr. Skylight to No. 1 and 2" message followed by the general alarm;	**01.22-01.24**	**01.10-01.12**
- he (i.e. Sillaste) *refers to what he said right after the accident, he might mix up things now, e.g. 4 October 1994 he told the Estonia police:* **(- heel was 45° and the engines stopped, the coded fire alarm "Mr. Skylight to No. 1 and 2" was sounded, the watertight doors were closed and boat alarm given;**	**01.22-01.24**	
- upon instructions of Treu I (i.e. Sillaste) **left via the engine casing (sic) and on deck 6 level the auxiliaries stopped and the emergency generator started; at a heel of 45°-50° he** (i.e. Sillaste) **went up with Kadak via the emergency exit inside the engine casing (sic);**	**01.24-01.26**	**01.06-01.10***
- came up to deck 8, when the heel was 80°)	**01.26**	**01.10***
- when they (i.e. Sillaste and Kadak) *were between the 4th/6th deck, the electricity went off and 2-3 seconds later the emergency generator started to work and they continued to deck 8,* ***had problems opening the door at the port side because the heel was already some 70° and it was above their heads****, managed finally to open the door by pressing their backs against it;*	**01.25** **01.26**	.
- the emergency exit was well constructed by the yard, it was quite narrow, thus they could lean with their backs against the left wall and climb all the way up, if it had been wider, they would have just fallen down;		
- in life raft with Kadak, Linde, etc.	**01.27**	**01.27**
- ship sinks	**01.52**	**01.36**

* Sillaste must have left the ECR early and reached open deck at 01.10 hrs. Sillaste must then have heard all alarms on the open deck - not in the ECR. Sillaste's alleged 'stay' in the ECR was probably invented to support Treu's alleged doings there. The heel was probably 80 degrees at 01.24 hrs, i.e. Sillaste spent 15 minutes on the side of the 'Estonia', before she sank.

They managed to open the door - it was above their heads (the heel was 70 degrees) - by pressing their backs against it! How?

The last statement is also interesting - *the emergency exit was well constructed by the yard*! But did it really exist? From the ECR on deck 1 to deck 8 (the boiler room)? It is not shown on any drawings?

Why would you fit an emergency exit from an ECR located *outside* the engine room to exit seven decks higher up to be used by engineers? What about the passengers on the same deck? How were they supposed to get out?

A square vertical tube shaft 20 meters high that would fill with smoke, if it were a fire in the engine room! The easiest way to escape from the ECR was to move to the passenger space forward (see fig. 1.48.3 above) or to the engine room aft - through a watertight door and use a normal stairwell to get up/out. Or to take the

vertical emergency ladder inside the ECR to deck 2 - the car deck - the official emergency exit shown on the drawings (see fig.**1.48.3** above)!

The author has asked the German expert captain Werner Hummel (several times) to provide the drawings and an explanation for the alleged *'emergency exit well constructed by the yard'* to be used only by engineers. Where did it start and end? How was it protected at the bottom? No reply! Because the emergency exists do not exist! Werner is a humbug of Hamburg.

Could Sillaste really mix up the *engine casing* with a well constructed emergency exit? And why was there no normal exit - a staircase to deck 2 - from the ECR inside two watertight bulkheads?

Actually well constructed, protected emergency exits are fitted only on single deck *cargo* ships with a *single* open engine room with no protected escape from deck 0. It is a trunk that starts at deck 0, protected by a fire door at the bottom, and ends on the weather deck, protected by a weather tight hatch. If the normal escape from the engine room - a sloping ladder to the upper deck - is blocked by smoke, you go down to deck 0 and take the protected emergency exit vertical ladder to get out.

Why does the German group of experts make us believe that there existed on the 'Estonia' one or two 20-25 meters long vertical escape trunks for the engine crew from the engine rooms on deck 0 through a superstructure (two decks) and through a deck house (four or five decks) ending on deck 8 or 9, when the escape route from deck 1 to deck 2 is clearly shown on all drawings? What was the logic behind such trunks? To escape? But if there were a fire in the engine room, the engine crew should only escape to deck 2 - the car deck - and fight the fire from there. The CO_2 room with controls was located on deck 2. And there is an escape trunk for that.

Actually - in 1997 the German expert captain Hummel/Humbug flew down to see the author at his office and tried to convince the author for a whole day that his observations about stability - immediate capsize - and engine crew escape - not possible from deck 1 at >30 degrees list - were wrong. Hummel made a very strange impression - and convinced the author that he was not a serious accident investigator either. He was just playing his game - whatever it was. After this stupid attempt to intimidate the author, Hummel has never replied to any questions of the author.

RE-ASSESS ALL SHIPS WITH REGARD TO EVACUATION

The Final Report (5) (page 228) concludes with:

> *"A significant factor in the ESTONIA-accident was the very quick increase in the list to an angle exceeding 30 degrees, leading to ... difficulties* (sic) *in getting out from inside the vessel ... Therefore all existing vessels should be re-assessed with regard to evacuation ...."*

Exactly - the author had done it with his own ships. The result is that evacuation from an ECR on deck 1 to open deck 7 or 8 is impossible, when the list exceeds 20 degrees, so the crew shall evacuate immediately and not play heroes. There are no tube shafts up the engine casing to the funnel. The result is as shown in the above analysis - the 'Estonia' engine crew evacuation as described in the Final Report cannot be correct - it must be a falsification. And another question:

Why hasn't the Swedish NMA re-assessed all existing Swedish ships with regard to evacuation? Why does the Swedish NMA sleep? Actually no Swedish or Finnish ferries were ever re-assessed as recommended by the Commission.

Evidently it is not possible to escape from the ECR or engine room of any Swedish ferry, when the list is >30 degrees. It is apparently better not even to discuss the matter.

STRANGE INTERROGATIONS - THE SAME LIES IN 15 INTERROGATIONS

It is interesting to note that the Final Report (5) clearly states that the information about the engine crew escape originates from 15 different interrogations over several months - some of them by Finnish and Estonian police - but also by the Commission itself.

Treu was, e.g. interviewed three times by the Commission and three times he apparently stated that he escaped *after* 01.25 hrs via an *engine crew staircase from the ECR* (in later interviews he crept through the tube shaft?). It is of course a clear evidence of the incompetence of the Commission that it never questioned that statement of Treu (how could he really use the escape route?), particularly in view of what the Commission later says about escapes in general - chapter 16.7 in (5):

> *"... the possibilities for escape ... to open decks ceased, when the list was between 45 and 50 degrees. ... The time span for the evacuation to the open decks, from the time people started to the 45-to50-degree list, was thus between 15 and 20* (**sic**) *minutes. For the majority, who were not alarmed until the first heel, the time span was about 10 minutes."*

This is a very strange comment (apart from being total nonsense - **you cannot get out on e.g. the ship's open port side from inside the ship, when the list is 45-50 degrees**, or the Commission states that the possibility to escape ceased, when the list was 45 degrees in spite of the fact that 3/E Treu escaped in two minutes, when the list was >70 degrees).

WERE TREU, SILLASTE AND KADAK ALARMED AND DID THEY ESCAPE *BEFORE* THE LIST?

What was the *'alarm'* that a majority aboard was not aware of *before* the sudden listing? Ten minutes of noise? The Final report (5) states that the various alarms were raised about seven minutes *after* the listing (at 01.15 hrs (sic)), when escape was impossible. But the Final report indicates that some people were alarmed *before* the list - due to noise - or a crew-only alarm? And is it true that the possibility of escape ceased, when the list was 45 to 50 degrees? The author thinks that it was impossible for most passengers to escape, when the list was >20 degrees. Surviving passengers reported a sudden list >30 degrees and then a stable phase, when the list was less - say 15 degrees - and it was then that they managed to get out.

According to the recapitulation above of the Commission the accident took place at **01.15** hrs and the angle of list was 40 degrees at **01.24** hrs, when the lifeboat alarm was raised. **The lifeboat alarm was thus raised, when escape was not longer possible!**

The Commission has no comments to this amazing fact.

Regardless - escape was according to the Commission possible during maximum nine minutes. But the Commission suggests that people escaped during **20 minutes,** e.g. between the sudden list at 01.15 hrs and 01.35 hrs, when the list was >80 degrees ??, which is not possible, so some people were apparently alarmed *before* the first heel! *Who* were they? **What kind of alarm was it?** Only one *passenger* is known to have started evacuation 5-10 minutes before the 'accident'. She stayed in a cabin on deck 1 and became worried for various reasons and walked up to deck 7 starboard side before the listing occurred.

Is it possible that only the crewmembers were alarmed, *before* the first heel and long *before* the passengers? The miraculous escape of the engine crew and many other crew members 1.42 could very well be explained with the simple theory that the crew actually escaped *before* the list took place - at 01.02 hrs! The Germans indicate this **3.18**. The Germans suggest that some lifeboats were made ready before the listing occurred. Of course the ECR must have been informed from the bridge - or vice versa - that something was wrong, e.g. the ship was leaking and deck 0 was flooded.

Maybe Treu, Sillaste and Kadak told the Commission that they noticed the leakage long before 01.00 hrs and actually tried to stop the leakage but escaped *before* the list occurred and the Commission told them to

make up completely different testimonies. That something was wrong on board before the listing occurred - at 01.02 hrs - is clear. Sillaste had been called upon to assist with something. He says it was a problem with the toilet system (one section of a limited number of cabins didn't work), but who fixes the **toilet system** in the middle of the night? There was no panic - they could easily fix the toilets in port.

STATE PROSECUTOR MARGUS KURM INTERVIEWS TREU, SILLASTE AND KADAK

State Prosecutor Kurm interviewed Treu, Sillaste and Kadak 2005-2006. Kurm reported 11 May 2007 at Glasgow:

> *1) there is no reason to doubt about the survivors' statements; and*
>
> *2) there are no contradictions of principle in the statements of key-witnesses.*
>
> *The much talked about contradictions arise on the one hand due to inaccurate quoting and on the other hand due to the non-professionalism of interviewers. When out of three men in the engine room, one saw water on the floor of the car deck and two others did not, it would be logical to ask who looked at what and when. For some reason or another, this has not been done. Instead people began to speculate who was lying and who was not.*
>
> *Now I will try to explain two widely talked about contradictions. Both of these relate to the three crew members who were in the engine room.*
>
> ***Treu looking at the clock***
>
> *Most of the survivors define the beginning of the accident by two or three successive blows (hits, thrusts, bangs), after which the ship remained in the list. Most of the survivors remember that it happened at about one o'clock or a little bit after that. In the Final Report, the list started to develop at 1:15, after the visor had fallen into the sea. The time has been determined largely relying on the statements of Margus Treu, who had looked at the clock on the wall of the engine room, when it showed 1:15. And many people have asked who to believe: whether the seaman who was looking at the clock or other survivors who remember that everything began earlier.*
>
> *Apparently, the reality is that everything started earlier, also for Treu. Treu has said:*
>
> ***He was sitting on a bench in the engine room.***
>
> *He felt three thrusts with an interval of less than a minute.*
>
> ***After some time he felt that the ship remained in the list.***
>
> ***He stood up and went to the control board*** (sic - probably control room)**.**
>
> *He looked at the monitor and saw water coming in.*
>
> *Then he looked at the clock, which showed 1:13 or 1:14.*
>
> *It was a wall clock, which he saw at an angle.*
>
> *Thus, Treu did not look at the clock when he felt the first thrust, but some time later on. How much later on, we will never know exactly, because no-one can estimate afterwards the exact interval between the events. Neither will we ever know whether the clock in the engine room was on time and whether looking at the clock at an angle could affect what he saw. However, the important thing here is that* ***the events began for Treu earlier than the looking at the clock****, which he remembers precisely.*

(**Heiwa Co comments:** Treu was in the **engine room** (deck 0) when the rolling and listing occurred - say 01.0-01.05 hrs - and then he went to the control room (deck 1) and the time was 01.13-01.14! The survivors and great difficulties to get out to open decks and it would be interesting to know how Treu went from the engine room to the control room).

KADAK SEEING WATER ON THE CAR DECK

Another widely talked about contradiction related to the three key-witnesses in the engine room is the seeing of water on the floor of the car deck. All three men have said that they saw on the monitor how water was pressing in from the sides of the ramp. One of them, Hannes Kadak, had said that he had seen water also on the floor of the car deck: "He saw that there were big waves on the car deck and that the water surface was level with the cars," as it is referred to in the Final Report. Treu and Sillaste have confirmed that they did not see any water on the car deck. Someone must be lying or not telling the truth, was also my first reaction, when I read it. And therefore I decided to talk to all three of them separately. What came out?

First, Kadak did not see water in the camera viewing the ramp, but in the camera, which was looking over the starboard from the centre of the ship. It was a camera below the ceiling directed at the pilot door; and the floor could only be seen in the narrow passage that had been left between the cars so that the pilot could pass through. It was not possible to see the floor in the camera looking at the ramp, which Treu and Sillaste were looking at. All three men confirmed this.

Second, Kadak has never talked about the waves of water reaching up to the cars. He saw that ***"water had gathered at the side of the deck, reaching up to the lights of cars in the outermost row … and as the ship was rolling, it was flowing from one end to another."*** *Thus, there was about 40 to 50 cm of water on the starboard side. But the ship was already in the list; he remembers that; and how else water could have gathered on the starboard side of the ship.*

Why this is not recorded anywhere? Whether the question was not precise enough or whether the answer was not precisely quoted or whether it was translated incorrectly - in any case it is not the fault of witness.

(**Heiwa Co comments:** Kadak sees 40-50 cm of water on the starboard side at the pilot door, when the angle of list has stabilized at say 15° after the noise, rolling and stable condition with 15° list between 01.02-01.05 hrs. Kadak has just walked from the starboard side work shop to the port side control room on deck 1 and the time must be about 01.08 hrs. Kadak uses the same monitor as Treu and Sillaste and has shifted to the pilot door camera. Then - with 15° list - about 900 tons of water should have been loaded on the car deck and the height of water at starboard side should have been several meters, **2.16**, It is thus unlikely that Kadak only sees 40-50 cm of water on the car deck at that time. Actually - the vessel had stopped completely at that time with the bow away from the waves and all water on the car deck would have flowed out through the open ramp, due to pitching. But the ramp was closed at 01.08 hrs! So where did the 900 tons of water on the car deck come from? Through a leaking ramp? This is evidently not possible. JAIC suggests without evidence that the ramp was first pulled fully open when the visor was lost, so that 900 tons of water were loaded on the car deck, and that then the ramp closed itself - how? - so the water was trapped, etc.)

In summary

So I would like to repeat that ***there are no contradictions in the statements of these men****. On the contrary, they have told repeatedly and to different interviewers something which in my opinion is very important and cannot be just cast aside:*

1) First, when they saw on the monitor (**Heiwa Co comment:** The time is several minutes after a stable list 15° has developed) *that water was pressing in from the sides of the ramp,* ***the ramp was in the closed position****. Treu looked at this monitor picture once. Sillaste did several times. Kadak was watching and clicking the monitor practically all the time when he was in the engine room* (sic - control room!) . ***Not once did anyone see that the ramp had opened****.*

2) Secondly, when they saw on the monitor that water was pressing in from the sides of the ramp, the ship was in the list. The ship was in the list already when Treu was alone and looking at the monitor. Because the list was the reason why he stood up and went to the control board (sic room)*. The list was also the reason why Sillaste left the sewage room and Kadak left the workshop. And the list was gradually increasing. When Sillaste and Kadak left, the list was about 30 degrees; when Treu left, it was more than that.*

OPENING OF THE RAMP

Another significant problem pointed out by the committee in its report of 2006 dealt with the question: ***what was the basis for the statement of JAIC that the ramp had opened completely?***

As we know, according to the Final Report, the cause that brought about the shipwreck was that the bow visor locks broke, the visor fell into water and the ramp opened completely. Water started to come in through the ramp opening at a speed of 300 to 600 tons per minute. This caused the ship quickly to heel. When about 2000 tons of water had entered the ship, a list of 40 degrees had developed. From that moment the waves started to break the windows and doors on deck four and five, creating

new openings for water inflow. Later on waves forced the ramp into the closed position again, and therefore it is in the closed position on the bottom of the sea.

This scenario can only be valid if we consider the above testimony of the three crew members to be wrong. I claim that the contradiction between the JAIC scenario and the witnesses' statements cannot be eliminated otherwise.

*In Uno Laur's memorandum last year t**he members of JAIC have explained that in their opinion the men in the engine room could have been looking on the monitor at the time when the visor attachments were about to break, but before the visor fell off.** This period can be estimated to have lasted for 5 minutes. At that time the ship could develop a small list and the crew members could also have overestimated the list due to rolling, the waves and the wind.*

In the opinion of our committee, this explanation is not satisfactory, because:

1) First, Sillaste was looking at the monitor several times and Kadak was standing in front of the monitor all the time when he was in the engine room.

2) Second, the reason why Treu stood up and others gathered in the engine room (sic control room) *was that they felt the list. Sillaste felt it in the sewage room and Kadak in the workshop.*

3) Third, the crew members did not estimate the list, but Treu was standing in front of the control board and was reading the figures on the control board.

*4) Fourth, **the extent of the list and the time they spent in the engine room can be estimated by other events.** Sillaste and Kadak left the room after the engines had stopped, because oil had flown out of them. It means that the list must have been 30 degrees or more. When Sillaste and Kadak were in the chimney passage, power failed. Everybody remembers it and it happened in the middle of the commotion of escaping from the ship* (sic - escaping from control room deck 1 port side to chimney deck 9 centreline). *The list at that moment has been estimated to be 45 degrees or more. In addition, they remember that someone on the bridge asked how water could be pumped to the portside ballast tank and they remember that Sillaste fell with the table in the middle of the room, which broke loose as the welds of the table failed. It could not have happened with a small list, which was overestimated by the seamen.*

*Thus, **the scenario of JAIC is possible only if we consider the testimony of the three crew members to be wrong.** I do not say that we cannot do that. We can - but in that case there should be other evidence, stronger evidence that outweigh their statements.*

My question is, do we have such evidence? The only explanation given for the immediate opening of the ramp is the fact that the upper part of the ramp extended into the visor. Consequently, when the visor fell right down, it had to pull the ramp open. It is not evidence, it is argumentation. The argumentation is logical in itself. Yet another argumentation, which is as logical, is that the visor, which had broken free of locks, was so to say "raised" over the edge of the ramp by the effect of waves and the rocking ship. The protruding edge of the ramp was not attached to the visor in any way. And the fact that the waves had moved the loose visor up and down has been stated by JAIC, too.

In my profession, in a court trial, evidence cannot be refuted by argumentation, especially in a situation where additional evidence could have been gathered to establish the truth.

Here we might discuss which evidence there could be to refute the stories of the three men.

*1) **First, a witness who saw that the ramp was fully open or swaying between the open and closed position due to waves? But nobody has seen anything like that.** On the contrary, **there are two witnesses who saw closely and even touched the ramp in the closed position when the ship was fully on her side** and the stern was about to sink under the water. These witnesses have not been contacted and interviewed additionally.*

(**Heiwa Co comments:** It would be very interesting to know what two survivors were touching the ramp when the ship was on the side - 90° list!)

2) Second, the behaviour of the visor and the ramp could have been tested by experiments. As far as I know, no such tests have been made.

*3) Third, of course, **it could have, and should have been established that the hull was intact.** To show that there were simply no other possibilities for the water to come in. But, there is no film, log or other source of information that indicates that the bottom part of the hull has been investigated and filmed in the full possible extent. Neither has anybody confirmed to me that this has been done. Consequently, **the hull is never thoroughly investigated, which is a problem, a great problem.**"*

It is a pity that chief prosecutor Kurm didn't ask Treu, Sillaste and Kadak about leakage into the engine room and why they started the bilge pumps. And how the chief witnesses managed to escape from the control room on deck port up to the chimney on deck 9 centreline and how then Sillaste and Kadak, when the list was say 60°, managed to climb up to the port open side of the ferry from the chimney at centreline! And how Treu managed to climb to the emergency generator room on deck 8 port side from the chimney on deck 9. Kurm believes the lies of Treu, Sillaste and Kadak as they have been repeated so many times.

LIES, LIES, LIES

The complete Final Report is full of lies - or manipulations and disinformation - and chief prosecutor Kurm does not notice it. The above edited testimonies are just a few examples. We know that the official sequence of events **1.9** is 100% false. The above testimonies have just been edited to support the false sequence of events. The four crew members are still alive and can be questioned again. They were evidently threatened after the accident to provide the false information. All will be revealed if a new, correct accident investigation is done. **And therefore no new accident investigation will ever be done.** The subject is taboo in Swedish media. The Swedish government will never permit a new investigation to be done, because all lies will be revealed. It is the *only* reason why the Swedish minister Mona Sahlin refuses to appoint a new investigation. Ms Sahlin is not interested in safety at sea. She seems to be more interested in protecting lying young Estonian seamen. And respectable Swedish civil servants **Preamble** covering up the real events. This is a political, dirty game.

WHO ORDERED THE LIES?

More serious. It is clear that three Estonian engine crewmembers lied about the *same* fantastic story - if you are to believe the Final report. Who asked them to lie? Who made up the false story, which the three crewmembers were asked to repeat over several months? And note - they lied already on the day of the accident! That question is further developed in 4.4.

ASK THEM AGAIN!

It is never too late to ask Mr. **Treu, Sillaste** and **Kadak** - and **Linde** - again how (and when) they escaped and how three of them met on the port side. And at the same time to ask who told them to lie. Because they lie in the Final report and they will live with these lies until they die. And they are still quite young men. The German group of Experts knows of course that the three Estonians were lying - but still the Germans used all the false information in their Final report to blame the accident on bad maintenance of the visor - otherwise the scenario was correct - the visor had fallen off, etc.

Evidently the three Estonia engine crew members did not cause the accident, they were only subordinate crew members, who must have been forced to lie to protect the real culprits. They were fooled by the authorities ... and refuse to admit it. It is quite interesting how first the Commission twists their stories and then how the Germans make another twist of the story - either story as false as a two dollar bill!

The questions without answers - stability, sinking, escapes, etc. - shall in the future be handled by the Swedish Board of Psychological Defence and the Swedish Ministry of Defence - next chapter. Many persons believe it was the Swedish Board of Psychological Defence that made up the false story in the first place and ordered to fuck the crewmembers. The reason should have been to cover up embarrassing facts about the accident, including frequent transports of ex-USSR military equipment and weapons, and to protect the culprits. It is always good to be protected by a state when you have committed a crime. Unless you know too much ... and are kidnapped and made to disappear.

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[92] According to an interview 29 September 1994 at Turku hospital (act D24) Treu did not hear any alarms in the ECR. Treu remained in the ECR for some time after Sillaste and Kadak had left and was then in telephone contact with the bridge and Treu told the bridge that he was leaving the ECR. He used the engine crew stairwell. When he left all doors were closed. On the open deck Treu checked the emergency

generator and saw various persons opening some life rafts. He did not mention any alarm - siren. Then he was swept into the water. In the water he found a life jacket and put it on. Then he swam to a lifeboat, which was upside down, with four persons on its keel. He got up on the lifeboat. He saw, from 80 meters distance, the ship sinking.

[93] According to the first interview 28 September 1994 at Turku hospital (act D23) Sillaste did not mention (a) that the watertight doors were closed and (b) that there was an alarm heard in the ECR and (c) on what deck he came out. When he was outside (on deck 8) he heard the ship's siren, i.e. the boat/general alarm. Time between *'accident'* and when he was in the water - 15-20 minutes. According to the second interview 29 September 1994 still at Turku (act D9) Sillaste did not mention (a) that the watertight doors were closed and (b) that there was an alarm heard in the ECR. Sillaste left the ECR and walked through a watertight door to the engine room and via the boiler room (sic) got out on deck 8. No mention of any special emergency exit. Sillaste stated that he saw two officers leave the bridge and that **these two persons (sic) joined Sillaste on the open deck/ship's side to open life rafts**. These two persons should have left the bridge on deck 9 either through the port side door or window and they might have been walking on the sidewall between decks 8 and 9. However - to reach the ship's port side below deck 7 they then had to climb six meters up to the side wall between decks 7 and 8 and later another four meters straight up to the side below deck 7. In a third interview summary (act D13 or B13) on 4 October 1994 there is no mention that watertight doors were closed or that an alarm was heard in the ECR. The escape route is not mentioned - only that Sillaste left when the listing was 45-50 degrees. Time between 'accident' and sinking 15-20 minutes.

*'**We cannot establish the truth;** instead we can establish clarifications, better structure of the available information. The truth of past times is always difficult to establish and it requires that you have complete background information about all matters and such complete information does not exist'.*

Björn Körlof, director general of the Swedish Board of Psychological Defence, 010423 (in Swedish Radio) after having been ordered by the Swedish government to create a 'fact bank' of 'Estonia' information not included in the Final report (5)

1.49 SWEDISH BOARD OF PSYCHOLOGICAL DEFENCE - ADMIRAL FRANK ROSENIUS - CONTINUED COVER-UP

The official disinformation campaign of the 'Estonia' accident investigation took a new turn on 21 October 1996, when the Swedish government decided that the (Swedish) Board of Psychological Defence* - Styrelsen för Psykologiskt Försvar - (SPF) should handle the contacts of (all?) the authorities with the (Swedish) relatives of the victims. One year later the job was extended also to include contacts with the (Swedish) survivors. Otherwise the SPF apparently is the government authority to prepare and train Swedish authorities on public communications, spotting disinformation and revealing rumours *in war*, etc. Maybe a better name of the SPF should be the 'Board of Free Information Defence' or the 'Board of Media and Authority Communication Defence'. It is unfortunate that the government authority specialized in disinformation and rumours was chosen to handle the correct transmission - communication - of information between the authorities and the public concerning the 'Estonia' accident, when later it was clear, that *every* essential, technical information about the accident itself, was proven wrong. What does a government information agency do, when it discovers that it has been dragged into a conspiracy to prepare a false accident investigation report, where pure disinformation is an important part?

DEFENCE OF DEMOCRACY

To uphold the population's confidence in the democratic society in a crisis is one main task of the Board of Psychological Defence. To manage this task the Board must have knowledge about manipulations of information system. The Board of Psychological Defence is a civilian authority under the Ministry of Defence and a part of the total defence of Sweden. It supports other authorities with information planning in the event of a crisis (or war). About 25 to 30 researchers are associated with the activities.

RESEARCH ABOUT HUMAN BEHAVIOUR

The Board of Psychological Defence, SPF was created in 1954 as a result of experiences of psychological warfare during the Second World War and the following 'cold war'.

The SPF is responsible to support the free exchange of opinions, so that it works during a crisis (or in a war).

The SPF does research about human behaviour and questions of information during times of hardship. The 'Estonia' disaster is one example of careful studies **http://www.mil.se/fmforum/498/reportage4.html**.

TO COMMUNICATE WITH SUFFERING PEOPLE

The SPF has in March 2001 issued a small (A5 format) 47 pages report - **'To communicate with suffering People'** ('Att kommunicera med drabbade människor') (34), where the project - 'Estonia-information' - is described. The booklet starts - after five empty pages - on page 5 with a confusing excuse:

> *"There are certainly relatives ... and survivors ... who have not understood various matters and things the way the SPF has interpreted them. It does not mean ... that they* (the relatives and the survivors) *are wrong ... Every human*

being ... naturally has one, personal story to tell and an own view on the questions surrounding a disaster like the 'Estonia' foundering".

Therefore:

> *"It is however also of importance that the SPF gives its view on the matter - that there is a possibility to be self-critical and to explain that certain things could not have been done in another way"* (page 5 of (34)).

It must be clear to the reader that the SPF is still today (August 2001) in charge of coordinating the 'Estonia-information'. Thus the SPF has transmitted 'Estonia-information' to relatives and survivors for almost five years. The SPF Estonia team - Johanna Enberg, Björn Körlof, **Vendela Dobson-Andersson**, Carina Carlson and Disa Byman - state in (34) that the background information has been collected from the government, departments, authorities and *'experts'* and from relatives and survivors. They state further that the objective was to transmit correct information in as good time as possible. The SPF states (page 8 of (34)) that the information is about, i.a. the national memorial monument, the official Final report (5) **1.21**, the safety at sea work after the 'Estonia' accident **1.37**, various legal processes **1.45**, the work to cover the wreck, the government decision not to salvage and identify the dead **1.19**, the work of the Group of Analysis **1.36**, the work of Mr Peter Nobel, the surveillance of the M/S Estonia's accident location and the associations of relatives and survivors. Is not mentioned in (34) that the German Group of Experts arranged two exhibitions 1997 at Stockholm, *before* the publication of the Final report (5), demonstrating that *all* technical information of the Commission at that time was misleading. It is also a fact that the SPF 1996-2001 has never clarified or corrected any information of this author.

The SPF shall also transmit information from relatives and survivors to the government, the government staff council and authorities concerned:

> *"The ambition has been to demonstrate the good will of the state (government) to provide full information to the relatives and the survivors and to stimulate an active dialogue between relatives/survivors and the authorities"* (page 9 of (34)).

GOOD WILL? FULL INFORMATION?

However - another confusing excuse:

> *"The SPF has not commented upon what has been published in the media. It was primarily not possible due to available resources. Secondly it was principally against the free flow of opinion that we have in Swedish society. It should be wrong by the state (government) to comment upon the reporting around a question, unless clear factual errors need be corrected. Furthermore an authority cannot comment upon or refer to the large amounts of letters to editors or articles of debating nature, that relatives, survivors or the public have published in various newspapers"* (page 10 of (34)).

It is a fact that large amounts of serious, factual - and critical - articles have been published in Swedish newspapers 1998-2000 about the 'Estonia' investigations and its findings, e.g. **Appendix 5**, and that *all* authorities have never replied, probably because every authority could conveniently refer after 1996 to the SPF to handle the contacts - and not reply. Actually the major difficulty after the publication of the Final report (5) in December 1997 was to get any authority to clarify any statements about, e.g. completely false, allegedly factual, technical information, etc. It now seems that it was the SPF that formulated this unusual and unfortunate government policy: *an authority cannot comment upon the factual content of an article in, e.g. the media*, etc.

This is of course the opposite to free flow of opinion, when the relevant authority has censored or manipulated the actual facts in the first place. A very sophisticated form a dictatorship is at work - you completely ignore the free flow of opinion - and it works well in a small country like Sweden (and Finland

and Estonia). It would have cost very little for the SPF to ask the relevant authority to reply to any simple question of the public.

> ***Why didn't the 'Estonia' capsize in two minutes with >1 500~2 000 tons of water on the car deck?***

or

> ***How is the official sequence of events 1.9 possible, when the positions of the 'Estonia' at every minute between 00.14 and 01.52 hrs are physically impossible and when the original, false fabrications of Huss/Rosengren of the original plot are further manipulated by the Commission in the Final report (5)?***

or

> ***Was the lifesaving equipment in order 1.33?***

or

> ***Was the watertight integrity - the bulkheads - and watertight doors in order 1.23?***

or

> ***Did the illegal watertight arrangement on deck 0 play any role in the sinking?***

etc.

MEDIA ANALYSIS

The SPF naturally is fully informed about all questions without answers.

> "**Media Analysis**
> *It has been necessary to continuously following the media coverage of the developments of events. In such a way the SPF has found out what question is 'on the order of the day'. ... During the years when the SPF worked with 'Estonia'-information, the authority has filled about 40 files with press clippings and 5 files with written records of voice media programs"* (page 22 of (34)).

In spite of being fully informed the SPF decided to ignore all criticism in the media. The SPF communications became supervision only to control the questions - and the SPF apparently decided to put the lid on by silence. This was not sensible.

RUMOURS ABOUT THE 'ESTONIA'

The SPF (Ms Disa Byman) has interviewed, i.a. the following persons about the problems of information and communication (pages 25-37 of (34)): Johan Franson, director of Safety at Sea, National Maritime Administration, who manipulated the dive examination 1.16 and several reports to the government, Ann-Louise Eksborg, director-general of the Board of Accident Investigation (SHK), who signed the Final report (5) and Gunnel Göransson, secretary of the SHK, who, e.g. recorded the films of the visor in the SHK archive *before* the visor was found 1.14. **Naturally the SPF did not interview Mr Olof Forssberg, the past SHK director-general, who 'investigated' the accident for two and a half years and told the media stories, what had allegedly happened, before he resigned or was dismissed from the Commission in May 1997.** Nobody from the Group of Analysis was interviewed. The Group of Analysis 1.36 must have been aware of all the disinformation. Some conclusions are:

> *"When a disaster occurs, chaos develops during shorter or longer time. It is totally impossible in the beginning to have a total view of what has happened. Therefore it is difficult, not to say impossible, quickly to give full and relevant information in the beginning"* (page 26 of (34)).

The public is not stupid and knows the problem to investigate an accident. The public is not interested in quick solutions. The public wants true information - even if it might take time. The SPF has never researched the simple fact that all 'information' of pure technical matters actually given during the first week after the accident was pure disinformation - backed up by false facts - as described in this book.

The simple solution should have been for responsible authorities to state that relevant information about e.g. the technical condition of the 'Estonia' or the cause of accident was **not** available at the beginning (the first week) and to ensure that any information published later was correct, truthful and fully proven. The SPF has never commented upon Mr Lehtola first lying about the real position of the 'Estonia' wreck and announcing a false position **1.4** and later lying about the damage in the side **Appendix 5** (Lehtola denies the existence of the damage in spite of the fact that it was discussed in the Commission and mentioned in the media). The SPF has never commented upon the fact that the official position of the visor was that of a red buoy taken on 9 December 1994, allegedly anchored on the visor position, long *after* the visor had been salvaged. The SPF has never commented the unusual situation that unproven information given very early later became *'facts'* based on what is today clear disinformation. **It seems that the SPF has never considered the possibility that various civil servants, e.g. Forssberg, for unknown reasons early, shamefully lied about what they were supposed to handle in a correct manner.** Furthermore:

> *"A big problem afterwards has been spreading of rumours about the 'Estonia'. It is probably due to the fact that a final point of the tragedy has not been made. The information about and the description of the complete sequence of events and its causes has not been acceptable to all"* (page 27 of (34)).

THE IMPOSSIBLE, OFFICIAL SEQUENCE OF EVENTS

The impossible, official sequence of events 1.9 is today a proven fact. It is not a rumour. This author does not spread rumours. The Fact Group does not spread rumours.

The SPF does not describe the alleged *'rumours'*, etc. Are they the unproven statements of civil servants? *'Rumours'* about, e.g. explosives, did not start until 1998/9. The SPF in its report (34) never states that probably 80% of the non-acceptance of the official *'information'* is based on *factual* information 1998-2000, like the ones in this book, proving the official *'information'* wrong. It is not *'rumours'*. A new investigation commission can easily prove any *'rumours'* wrong - all rumours the author has heard of are physically impossible. Explosive devices, e.g. between the visor and ramp do not sink the ship, etc. However, an explosive device can be used under water to remove, e.g. a visor or to try to open a ramp. Such a suggestion is not a rumour - it is an idea based on photos of damages not available until January 2001 **3.10**. Why the Commission suppressed the information 1994 is unclear. Evidently the SPF was not aware of such information 1996. A new investigator should concentrate the investigation and examination on the *new*, proven, technical facts and information. That the surviving key witnesses in the Engine Control Room are lying about their escapes **1.48** - is self-evident. Why were they lying? And if they lied about this critical item - to save their lives - did they lie about other matters? Evidently the government lied about the impossibility to salvage the bodies in order to prevent proper identification.

UN/IMO RESOLUTIONS WERE NOT APPLIED

There are UN/IMO resolutions to this effect - but - more excuses:

> *"The work in the Commission was not done without problems. Three countries should work together. It was three countries with different legal systems and different organisations of marine accident investigations. The three different countries also have completely different traditions concerning investigations of this type"* (page 28 of (34)).

The SPF thus avoids 2001, like *all* other Swedish authorities 1994-2001, to mention that there existed an international UN/IMO resolution 1994 about the *procedure* how to handle the 'Estonia' accident investigation - UN/IMO Resolution A.637 (16).

It was replaced in November 1997 by **Resolution A.849 (20)**, which in principle says exactly the same things in a **'Code of marine accident investigations'**, i.a. that the public evidently shall have full access to and insight into the investigation, while it is being done. The governments of Sweden, Finland and Estonia have adopted both resolutions **Foreword**. The three countries therefore had in theory exactly the same systems, organisations and traditions to investigate a marine casualty, if they had followed the UN-IMO resolutions. If, for any reasons they had different approaches, the Estonia investigation was evidently a good opportunity to apply the IMO resolutions.

The resolutions are crystal clear and logical, e.g. *all* investigative meetings and information shall be public, *all* facts shall be proven, new facts presented *after* the publication of any first investigation report demonstrating that the first *'facts'* are wrong shall be reviewed and examined again later, etc., etc. Why cannot the SPF support these simple principles?

Information shall not be agreed at secret meetings and then filtered to the public via another agency. Lying crewmembers would have been easily spotted already in 1994, if all information had been accessible. Now the Commission made the statements of the lying crewmembers *secret* for 38 months 1994 to 1997, in fact the Commission protected the lying witnesses - the SPF had not access to the original information - and used the lies as *'evidence'* of the alleged sequence of events, and then, when the statements became public, refused to discuss the matter.

In September 2001 the German journalist Jutta Rabe stated that the Estonian key witnesses had been forced by the Estonian secret police to modify their testimonies 1996-1997. Rabe had interviewed the witnesses. Ministers like Ms Mona Sahlin cannot disregard international United Nations decisions in various resolutions, etc., but the SPF, being a government agency, evidently does not dare even to inform the minister - and the Parliament - this basic fact. It leads to other authorities disregarding the same resolutions and also the international rules for safety at sea. The Swedish National Maritime Administration is a prime example of the latter - it disregards the IMO/SOLAS rules to suit its particular interests and encourage its safety inspectors to lie about and to ignore basic facts. Safety at sea suffers and becomes worse!

According to the SPF - another excuse:

> *"The working language* (of the Commission) *was English. At the same time the English language knowledge of the investigators was highly variable. Thus the work became difficult in the Commission"* (page 28 of (34)).

It is interesting to note that the SPF suggests language as *the* reason for the difficulties of the Commission to investigate the accident 1994-1997. Nowhere in the at least 20 protocols of main meetings of the full Commission is language a problem. Everybody spoke good English. **The real *'problem'* was evidently to agree a false sequence of events and to falsify testimonies and 'scientific reports, etc. to this effect and to write the false Final report (5).** So the Finns wrote some of their reports in Finnish and Dr. Huss wrote some of his reports in Swedish, etc. Language problems? The problem was to maintain the secrecy, so that information could be manipulated to suit.

FREEDOM OF INFORMATION

Furthermore according to the SPF:

> *"Another problem* (sic) *was that Sweden is rather unique with regard to the principle of public access of information* (freedom of information). *The members of the other countries were sometimes very upset (hot blooded), when questions being handled by the Commission were reported in Swedish media"* (pages 28/29 of (34)).

The SPF does not expand:

Why was it wrong when questions handled by the Commission were reported in the Swedish media? Isn't that the purpose also of Finnish and Estonian media?

Actually the problem was another one: as all essential information of the accident was false, it needed to be coordinated. But various members of the Commission told different, contradictory stories to the media. The result was in the end that the members accused one another of lying, etc., which was also reported in the media.

The SPF does not mention anywhere in its report (34) that it was the *Swedish* delegation that made (falsified) *all* technical information and evidence of the accident investigation secret 1994 onwards **1.22** and that only selected pieces of technical information were leaked to the Swedish media 1994-1997 **1.44**. It was Sweden that first ignored the UN/IMO resolutions about freedom of information of marine casualties. When the author wrote (1) 1996-1997 all Swedish authorities refused any information. It is particularly disturbing that *all* information (in English) by the German shipyard to the Commission 1996, when the SPF was appointed to handle the communications between relatives and, e.g. the Board of Accident Investigation, was made secret by the Swedes and was not made public until March 1998, i.e. it was withheld from this author. It seems that the SPF was not even aware of the German information, i.e. one government agency, the Board of Accident Investigation, SHK, kept another government agency responsible for information and communication, the SPF, in the dark! The SPF never complained about the SHK secret procedures.

How could SPF inform the relatives and the survivors 1996-1997 about the 'Estonia' accident, when the Board of Accident Investigation kept the German information secret until 8 March 1998 (and then tried to hide it in an archive)?

It is another fact that the SPF had, and has, excellent connections with the Swedish media. In retrospect - as described in this book and based on the German information - you can conclude that *all* essential technical information of the Commission was disinformation and that this cannot have been possible without good media contacts **1.44**. As a logical consequence the SPF and the Swedish media have carefully, after 1996, avoided to handle any information produced by, e.g. this author in his books and on the Internet and other parties. One reason seems to be that the author is not a survivor or relative (sic). However, the SPF was one of several authorities, which were asked by the Swedish government in the autumn 2000 to comment upon the information in the Swedish version of this **book.** The SPF director-general Björn Körlof then replied to the government (Ms Mona Sahlin) that

> *"the SPF cannot judge the truthfulness or the reasonableness of the factual statements"* but recommends *"that a review of the material is done and that forms are created to replying as soon as possible."*

Apart from the observation that it is strange that the SPF - the agency in charge of 'Estonia-information' - was not able to judge the truthfulness of factual statement, it would have been very simple for Björn Körlof to contact the author and others about the truthfulness and reasonableness of his statements. **Why would this author and others spend time to produce untrue and unreasonable statements?** But no such attempt was made. It should have been obvious to the SPF that the purpose of the author was to honestly promote better safety at sea. Instead the SPF is silent when Swedish and Finnish civil servants accuse the author of being a *'conspiracy theorist'.* The conclusion of Ms Sahlin was as expected - on 19 April 2001 - that

> ***"no new circumstances have been presented, which indicate that the course of events of the accident differs in any essential way from the description of the Final report ..."***.

The SPF never complained about this false conclusion. It is a very illogical statement/conclusion. **On the one hand no new circumstances have been presented; on the other hand the SPF shall collect a 'fact bank' and explain why and how the ship sank.** Regardless - whatever SPF collects, it will contain numerous new circumstances, which indicate that the official course of events differs completely from the real one. The SPF must then again recommend that IMO resolution A.849 (20) is applied.

The SPF states:

> *"In Sweden we are by tradition used to openness from the authorities. It is a guarded tradition of Swedish society. Therefore it is no coincidence that the Swedish law (about government work) clearly states that the authority is required to give information, advice and help in relevant questions of the activities of the authorities (SFS 1986:223)"* (page 37 of (34)).

However, the SPF has never criticised the fact that Swedish authorities as the Board of Accident Investigation and National Maritime Administration have *systematically* kept vital information secret and refused to reply to inquiries or have transmitted pure disinformation about technical matters of the seaworthiness of the 'Estonia' and proposals to improve safety at sea. This author has grave doubts about any 'openness' from the authorities. When the author managed to publish his early conclusions in the biggest Swedish daily Dagens Nyheter on 15 August 1996, the *only* reply from the authorities was that he was *unintelligent, unscientific and unreasonable* **2.1**, etc. A few months later the SPF was appointed to handle all communications between the public and the authorities - and from then on no authority replied to anything.

The SPF in its report (34) evidently does not mention incidents like when Commission expert Bengt Schager in Swedish daily Svenska Dagbladet 970922 stated:

> *"I do not believe any longer in the Commission. - it has not acted correctly ... I do not think that the quality is good of the Final report ... there were actually many defects on board. There are items that should have been mentioned in the Final report, which are not there ... It should have been more detailed and have better analysis".*

Such statement of an *insider* of the Commission naturally totally destroys the trustworthiness of all parties involved with information and communication of the 'Estonia - the government, the Commission and the SPF.

TRUSTWORTHINESS

The SPF states about trustworthiness - a final excuse:

> *"It is impossible to create a trustworthy relationship between an authority and media/relatives unless the responsible party for information* (i.e. the SPF - author's note) *has access to all information of the Commission. … The image, which the large part of the public receives of a serious accident, is a picture transmitted by the media. It does not matter if the image of the media is correct or not* (sic)*. The large number of persons - the public - only gets the picture produced by the media - the cause and what actions that are taken, etc. - and it is this image that is remembered. It is easy and it goes fast to get a bad reputation. On the other hand it is long and hard work to correct such a reputation"* (page 41 of (34)).

The Fact Bank - an Explanation how the 'Estonia' was filled with Water

The Swedish government (Ms Mona Sahlin) is fully aware of the above. The handling of the old 'Estonia-information' by e.g. the Board of Accident Investigation and the National Maritime Authority is highly suspect and probably illegal. Ms Sahlin has therefore decided on 19 April 2001 that the SPF shall:

> *'collect information about the M/S 'Estonia' sinking - a 'fact bank' - that shall provide information to the public and answer questions about the accident',*

and

> *the fact bank shall contain* ***'an explanation that, based on the sequence of events of the Final report*** *(sic),* ***describes how the 'Estonia' was filled with water at the end of accident'.***

The latter is not possible. Ms Sahlin has shot herself in the foot. The Commission could never explain 1994-1997 how the 'Estonia' was filled with water to **sink** - and - **2.1** and **2.12** - ignored all surviving passengers

statements of the accident and has later - with the help of Huss/Rosengren/Franson - **1.9** and **1.16** - **falsified** the alleged sequence of events based on further false calculations and *'scientific'* reports and the manipulated dive examination, etc. It is simply impossible to explain the filling of water of the *hull* and the sinking of the ferry based on the falsified sequence of events of the Commission. The SPF must point this out to Ms Sahlin, the government and the Parliament. Or Members of Parliament should point this out to Ms Sahlin directly in the Parliament - that her foot is bleeding and soiling the floor. It will help Sweden to clean up this mess.

The SPF concludes:

> *"The information shall as far as possible give a complete and clear picture of what has happened, what decisions that were taken and what the consequences are"* (page 41 of (34)).

The SPF has appointed Ms Disa Byman for this project. The information manager Göran Lindmark of the SPF in a letter of 13 August 2001 (dnr SPF E 11/01) to *'relevant authorities and organizations'* (it is not clear to whom the letter was actually sent) summarizes the preparatory work:

> *"I hope that she* (Disa Byman) *will be given the possibility - and if necessary receive support - to review the material that is available in your offices and which later may* (sic) *be included in the 'information' bank … The objective of the SPF is that the 'information' bank shall be available in a beginning during 2002."*

The hidden information in various archives of Swedish authorities and organizations can only support the findings in this book **'Disaster Investigation'**. The basic, *technical* information about the 'Estonia' accident given by, e.g. the **Swedish government** and the Swedish members of the Commission between 28 September and 18 October 1994 was wrong. Most errors then produced by other authorities were a result of the original, false information. Later the experts of the Commission produced a range of false, *technical* reports to support the Commission. Ms Disa Byman need not worry about whether the reports in the 'fact' bank are true or false as long as correct cross-references are made, e.g. to **Vendela**. The false reports are easy to spot - read this book - and any cross-reference to a false report explains the false conclusions of an otherwise correct report by a manipulated authority. The SPF *'fact bank'* shall therefore be used as another argument for a completely new, technical accident investigation, which regardless must take place, as proven new facts have already been presented, to resolve all outstanding technical questions and finally clarify why the 'Estonia' sank. The SPF *'fact bank'* will only produce more such new facts.

The SPF *'fact bank'* should include i.a.:

- **full report(s) of Dr. Nuorteva 30 September - 2 October 1994 about analysis of *four* sonar pictures taken 30 September 1994 showing a big object at the bow of the 'Estonia' 1.4,**

- **all testimonies of 2nd mate Ingemar Eklund of the 'Mariella', who witnessed the sinking 1.9,**
- **log book of the 'Mariella' between 00.00 and 24.00 hrs of 28 September 1994 with, i.a. times, positions and observations recorded by Ingemar Eklund,**
- **names and numbers of survivors on board the 'Mariella' at 13.20 hrs and 23.55 hrs of 28 September 1994 1.41 and how they were treated,**
- **why only 61 survivors were brought to and registered at hospitals in Finland according to the Final report (5), when 63 survivors were actually rescued and brought to Finland according to (35),**
- **names of four Swedish policemen embarking the 'Mariella' from two helicopters and their reports,**
- **all reports about *'fragments'* from the 'Estonia' found after the accident - times, positions, types, finders 1.14,**

- **reasons why the ROV films (seabed survey 1 October and mud line survey 2 December) were edited not to show the complete superstructure, e.g. the starboard pilot door 1.1, 1.4, 1.16 and 2.24,**
- **log book of the HMS Furusund stating *positions of the ship*, when it (a) visited the wreck end September/early October and when it (b) filmed the visor on the sea floor at various times mid-November 1994,**

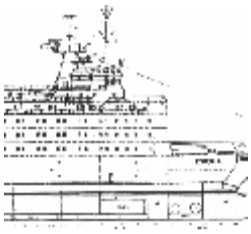

Figure 1.49.1

- **log book of the M/S 'Nordica' stating *position of the ship*, when it salvaged the visor on 18 November 1994,**
- **supporting scientific material behind the Huss/Rosengren/JAIC plot of sequence of events 1.9 done on the simulator of the Kalmar Maritime Academy,**
- **all background material of the big damage opening/hole in the starboard front bulkhead never reported by the Commission 3.10,**
- **written report from diving 2-4 December 1994 and discussed by the Commission 15 December 1994 to the effect that the ramp had been closed *before* the accident and then had been ripped *fully* open and then closed itself 1.16 and 1.17,**
- **evidence that the ramp locks and hooks are damaged as stated by the Commission,**
- **details of any reason for salvaging luggage from cabins on deck 6 on 3 December 1994 by diver 'John' 1.16),**
- **evidence that lifesaving equipment was in order 1.33,**
- **an explanation how dry evacuation of 2 188 persons onboard the 'Estonia' should have taken place,**
- **evidence that watertight subdivision/watertight doors were in order 1.23,**
- **why the principle of Archimedes from 252 BC does not apply,**
- **the original manuscript of the Final report agreed in March 1997 (so that it can be compared with the printed report (5) of December 1997),**

etc. In 2005 it was noted that no answers to above questions are provided by the SPF!

THE SILENCE GAME

The SPF report **'To communicate with suffering People'** ('Att kommunicera med drabbade människor') (34) is a very disturbing document. It describes between the lines the **'Silence Game'** of the government about the 'Estonia' 1994-2001. Nowhere is mentioned that the public - relatives, survivors and interested parties - not only are entitled to *'information'* but have the constitutional right to *full* insight into the investigations and the decision making procedures, when they are done - and not in a *'fact bank'* presented later.

Every stated event must have a proven cause; physical causes should produce real events. An official report cannot be a fairy tale!

Secrecy of any kind is not permitted with marine casualty investigations. By coincidence a Swedish journalist, **Knut Carlqvist**, published a book about the 'Estonia' two months later (11 May 2001) - titled the **'Silence Game'** (**Tysta leken**) (33). One player of the **'Silence Game'** is Ms Mona Sahlin. The winner of the Game is the one who shuts up.

IN THE SWEDISH PARLIAMENT 13 DECEMBER, 2001 - MS MONA SAHLIN

In the Swedish parliament on 13 December, 2001, the deputy Swedish minister of industry and trade, Ms Mona Sahlin, in charge of the Estonia affaire, stated with regard to all outstanding questions, e.g. the above:

"It is also about making it more clearer, not only informing the public what actions have been taken to prevent future accidents, but also to point to the facts and information that exist, so that more persons can search for an answer and can research all what is still unclear.

I will mention some areas. Among them is, as stated earlier, the fact bank of the Estonia or the national memory bank of the Estonia, which the Board of Psychological Defence (SPF) has been given the task to compile. It is not only a question to give relevant information about what exists, knowledge and facts in the hands of many different authorities and places, which shall be available simply and clearly. It is also a question of the possibility maybe to find an answer to several of the questions which are asked."

THE ACTUAL FINAL EVENTS OF THE SEQUENCE OF THE SINKING ... SHALL BE READY NEXT AUTUMN 2002

Mona Sahlin:

"For example there are many questions about the actual final events of the sequence of the sinking, which I will also return to later. Therefore the SPF fact bank shall contain material about them.

The information I have indicates that the fact bank shall be ready next autumn 2002. *It will not be a short sighted work but something that I am convinced will exist as long as I live and breathe.* ***The memory bank of the Estonia is something that the whole*** (Swedish) ***nation needs to have access to and needs to learn from and by".***

The above statement is not a good contribution to the **'Silence Game'**. What has the SPF to say about it?

ADMIRAL FRANK ROSENIUS - THE AUTHOR MEETS WITH THE SPF

The author has actually met with the SPF on 24 April 2002.

The purpose of the meeting was to discuss the final events of the sequence of sinking/water filling of the 'Estonia' and to get copies of relevant plans of the ship.

The author saw the new director general Mats Ekdahl, a journalist (Swedish daily Arbetet, Vi, Läkartidningen, etc.) and his information secretary Göran Lindmark (since 1999/2000). They had little knowledge about the 'Estonia'-affaire 1994-1999. At the meeting was also admiral Frank Rosenius (retired), former commander of the Royal Swedish navy submarine flotilla and the Swedish navy (1998) and former deputy supreme armed forces commander (1999) and a board member and supervisor of the SPF! All three happily informed that their interpretation of the government decision of the 19 April 2001 was; ***first a 'fact bank' - it can take a couple of years - and then to explain the water filling and the sinking based on information in the 'fact bank'.*** The SPF had done nothing about the 'Estonia' for a year.

The SPF had not asked any expert to explain how the 'Estonia' could have been water filled and sunk according to the events outlined in the Final report (5) and could not present any lines plans, watertight subdivisions plans, stability or hydrostatic data of the 'Estonia', etc., as requested by the author. In principle the SPF had done absolutely nothing since the 19 April 2001 about the 'Estonia' except asking some government bodies to produce documents not available in the JAIC archives. The author, Heiwa Co, proposed that it could help with the task.

Figure 1.49.2 - Admiral Frank Rosenius

The SPF had however created a 'reference group' that should check the documents being stored in the 'fact bank'. The reference group consists of admiral Frank Rosenius (see left and above), Magnus Faxén (a retired ambassador), Hans Landberg (a retired professor of history), Disa Bystedt (the outside consultant collecting the material) and Mr Lasse Jonsén. In the reference group are also 'interested' parties, mainly relatives to victims of the accident; Ms Anna-Karin Wallenstein, Mr Odd Lundqvist, Ms Monica Köpsén and Mr Björn Stenberg. The first meeting of the reference group was planned for 29 May 2002.

When the SPF 'fact bank' is ready (by 29 May 2002 the SPF could not even produce a layout or a preliminary inventory of the fact bank) and when, i.a. the above listed items have been clarified, then we will have a better, final understanding why the 'Estonia' sank - how the deadly event took place and its real cause - or why we will not find out - as the 'fact bank' may be empty.

The SPF was very friendly with the author, and why shouldn't they? (The author has served in the Swedish navy!). The job of the SPF is clear - to demonstrate that, e.g. the facts in this book can never be proven and that they can only be used as a distraction for curious people and an excuse to avoid real analysis. The SPF is a part of the Ministry of Defence and cannot possibly criticize its headmaster.

But it is good that admiral Rosenius[+] is part of the *'fact bank'* team. He should be able to clarify the involvement of the Swedish Fleet and the 'Estonia', e.g. the whereabouts of HMS 'Furusund' or HMS 'Urd' in September/October/November 1994 and the crew aboard, the alleged removal of the visor under water after the accident by the Swedish navy and the alleged diving of Mr Håkan Bergmark, tel. 08-618 90 60, 0736 43 49 92, Helsingforsgatan 65, 3 tr., SE 164 78 Kista, Sweden on the 'Estonia'. Officially no Swede has ever dived on the 'Estonia', but Mr Bergmark maintains that he has dived with four colleagues ... and seen a big hole in the side! If admiral Rosenius cannot clarify these matters, then something is ... strange.

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* The SPF board members are: Sam Nilsson, chairperson, Laila Bäck, MP, Lars Christiansson, information consult, Rutger Lindahl, professor, Bo Riddarström, Överstyrelsen för civil beredskap, **Frank Rosenius**[+], Department of defence, Yrsa Stenius and the SPF director general Björn Körlöf.

The SPF media advisory board members are:

Anders Lignell, TT, Bengt Frykman, SR, Bertil Karlefors, TV4, Christer Jungeryd, Radioutgivareföreningen, Göran Zackari, SvT, Svante Mossbrant, Teracom, Jan-Erik Berg, Teracom, Peo Wärring, Tidningsutgivarna, Mats Oscarsson, Räddningsverket, Åke Wideström, Post- och telestyrelsen, Kurt Hedman, Presstödsnämnden and Ingegerd Hedin, Pliktverket.

[+] Vice Admiral **Frank Rosenius** (ret) was Deputy Supreme Commander at the Swedish Armed Forces Head Quarter 1998 - 2000. He graduated from the Royal Naval Academy 1962 and spent his first years in submarines and was the captain of RSwN Submarine Sea Serpent 1969-70. He graduated from the Swedish NDC 1974 and US Naval War College 1981. He has been Commanding Officer, 4th surface flotilla 85-88, Chief of Fleet Staff 88-89, Assistant Chief of Defence Staff (Operations) 89-92, **Deputy Head of department of International and Security Affairs in Ministry of Defence 93-94, C in C Swedish Fleet 94-98**. He is a fellow of the Royal Swedish Society of Naval Sciences and the Royal Swedish Academy of War Sciences. Rosenius was in charge of International and Security Affairs when the 'Estonia' sank and when the Swedish Fleet assisted with the work on the visor.

1.50 THE SWEDISH BOARD OF PSYCHOLOGICAL DEFENCE - APRIL-DECEMBER 2002

The SPF *'reference group'* met on 29 May 2002 to review developments (SPF dnr. SPF E 26/02). Present were Katrin Berggren, Disa Byman, Mats Ekdahl, Göran Stütz, Göran Lindmark, all SPF, Magnus Faxén, Lasse Johnsen, Hans Landberg, Odd Lundkvist and Anna Carin Wallenstein.

All the above persons have been informed about the findings in this book and the request that these new facts shall be considered but nobody has had the courtesy to reply.

The author evidently had met the SPF on 24 April 2002 (see the previous chapter).

The SPF director general Mats Ekdahl informed that the printed material of the *'fact bank'* consisted of about 75-100 shelf meters of documents. The cost to digitalize these documents (for presentation on the Internet) was estimated at SEK 1-2 millions.

Ambassador Magnus Faxén informed that he had made an inventory of the material of the Swedish Foreign Office (Utrikesdepartementet) together with Disa, the Swedish Board of Accident Investigation (Statens haverikommission) together with Disa, the Swedish Radio, the Swedish Television and the Swedish Board of Sound and Picture (Statens arkiv för ljud och bild).

Disa Byman informed that she had completed the inventory of material from the Swedish Board of Accident Investigation (Statens haverikommission), the Swedish Maritime Administration (Sjöfartsverket), the Board of National Police (Rikspolisstyrelsen), the Swedish Foreign Office (Utrikesdepartementet), the Ministry of Transport (Kommunikationsdepartementet) and that she was still completing the inventory at the AgnEf, the Ministry of Trade (Näringsdepartementet) and the Secretariat of the Government (Statsrådsberedningen). Inventories of material remain to be done of the SEA and other associations of relatives, the Ministry of Justice (Justitiedepartementet), the Ministry of Social Affairs (Socialdepartementet), the Stockholm Police, the Office of the Stockholm Public Prosecutor, the Ersta hospital, the material of the Group of Analysis (at the National archives), the National archives, the Board of Social Affairs (Socialstyrelsen), the Board of Promotion of the Arts (Konstfrämjandet), the National Maritime Museum (Sjöhistoriska museet) and the Swedish Church.

SECRET MATERIAL - NO MATERIAL FROM THE MINISTRY OF DEFENCE

The reference group was told that material subject to the Swedish laws of secrecy, SL 8:6 and similar, still not made public should be listed in the inventory with an explanation why it was still secret. Why any material about the 'Estonia' sinking was still secret was not given.

The SPF had not asked for an inventory of any information or material from the Swedish Ministry of Defence or the Coast Guard (unless it was kept by the Maritime Administration). No inventory of material from shipping companies assisting at the accident was considered. However, it was discussed what to do with any material from Estonia, Finland and Germany.

All associations of relatives and survivors had been given information about the *'fact bank'* and asked to suggest material for the future web site. Nobody suggested that all essential information of the Commission about the accident itself was 100% false. The show must go on.

THE FACT BANK SHALL BE READY SEPTEMBER 2004

The SPF advised that the whole work of the *'fact bank'* must be objective and open so that the *'fact bank'* should be trustworthy. The SPF thought that the *'structure'* of the *'fact bank'* could be finalized during 2003 and that a working, but not complete (all material contradicting the official course of events shall be censored?), web site could be ready in September 2004 - 10 years after the accident. The work to complete the web site will then continue. Later somebody only has to run the web site - the *'fact bank'.*

WHO SHALL PAY?

The SPF shall discuss with the Ministry of Trade about the cost of and payment for the development of the '*fact bank'* during 2003 and 2004. The Ministry of Trade has evidently 1998-2002 received all information in this book and filed it somewhere ... and later told the public that no new facts have been presented contradicting the Commission.

HOW WAS THE 'ESTONIA' FILLED WITH WATER AT THE END OF THE ACCIDENT?

On 29 May 2002 the reference group also discussed the task given to the SPF on 19 April 2001, i.e. 13 months earlier, that "*the fact bank shall contain* ***'one example that, based on the sequence of events of the Final report*** (sic)***, describes how the 'Estonia' was filled with water at the end of accident'.***

The SPF informed that it could not formulate how the task should be defined and added that it could not advise who was going to carry out the study.

This is stupid. The government ordered the SPF 19 April 2001 to provide *'one example that, based on the sequence of events of the Final report* (sic)*, describes how the 'Estonia' was filled with water at the end of accident'.* If the SPF cannot do it, it should advise the government.

The SPF added that its job was only to transmit information.

Isn't providing*'one example that, based on the sequence of events of the Final report* (sic)***, describes how the 'Estonia' was filled with water at the end of accident'* transmitting information? But for 18 months the SPF didn't ask anybody to do the job.**

Admiral Frank Rosenius (sic - where did he come from?), now consultant to the SPF, proposed that somebody makes a pre-study before anybody (who?) takes on the real job. The reference group then agreed that the SPF must split the two tasks, *'fact bank'* and *'water filling'*, to be carried out simultaneously. And in order to increase the objective judgement of how the 'Estonia' was filled with water, the reference group suggested the possibility that the *'water filling'* task was carried out abroad!

It must be recalled that the deputy minister of trade, Ms Mona Sahlin had stated the following in the Swedish Parliament on 13 December 2001:

> *"... e.g. many questions are raised about the actual sinking at end of the accident* (the final part of the sinking sequence)*. Therefore the SPF fact bank will contain material about this matter.*
>
> *The information I have indicates that the fact bank shall be completed next autumn* (autumn 2002)*. It will not be a short-sighted work but something that I am convinced about will exist as long as I live and breath. The fact bank of the 'Estonia' is something the whole nation needs to have access to and to learn from and about."*

Ms Mona Sahlin was badly informed and lied to the Parliament - the fact bank is delayed and the SPF cannot explain how the 'Estonia' sank. The SPF only 'transmits' information. The SPF had also forgotten the following statement of Ms Mona Sahlin in the Parliament on 13 December 2001

> *"... On the contrary there are many thoughts about the actual sequence of the sinking, how the water got in, when, through what doors, through what windows and through which valves (portholes).*
>
> ***There are thousands of variations of the sequence of sinking, which we, through research - the government now give money for that - want to learn more about."***

As a matter of fact the Swedish government gave 2000 the Swedish research board **Vinnova** SEK 25 millions to find out some variations why the 'Estonia' sank and that money was spent 2002, when the government gave

another SEK 20 millions (sic) to Vinnova for further research (sic). But there are no results whatsoever of these SEK 45 millions in research grants. All the money went into the pockets of various people involved with the 'Estonia' cover-up or scam 1994-1999. Ms Mona Sahlin says there are thousands of variations of the sinking - the last 20 minutes of untold horror - based on the initial 15 minutes of events that are the official Truth; the *superstructure* filling up with 4 000 tons and the *deck house* with 14 000 tons of water.

The SPF should only present one example how the 'Estonia' sank! One example why the 'Estonia' didn't capsize and float upside down.

THE SILENCE GAME CONTINUES

On Thursday, August 22, 2002 the SPF announced (Dnr SPF E 45/02):

> ***The inventory of the fact/information bank is not completed.*** *One objective of the* ***inventory*** *was to get an overview of the amount and the character of the material.*
>
> *It was clear early this spring that the information bank was not going to be ready during the year 2002, but first at a later date. An exact time is difficult to state at present. The purpose of the information bank is to contribute getting answers to different questions raised. The work continues in dialogue with the government and the group of reference.*

On Monday, August 26, 2002 the SPF announced (same reference Dnr SPF E 45/02):

> *The work of the inventory has given an insight how large and complex the Estonia material is.*
>
> *The question to provide* ***'an explanation that, based on the sequence of events of the Final report, describes how the 'Estonia' was filled with water at the end of accident'*** *has not been dealt with.*
>
> *Other questions should be put directly to the concerned party outside the SPF.*

This was a strange announcement - the water filling question had been discussed on 29 May but on 26 August it had not been dealt with?

On Friday, August 30, 2002 the SPF announced (Dnr SPF E 45/02):

> *We at the SPF estimate that the Estonia material, excluding media material from news papers, radio and TV, comprises about 75-100 meters of book shelves. Each shelf meter is roughly estimated to contain about 5 000 "papers". No electronic inventory exists. The work of inventory is not yet completed. The complexity of the material is due to its heterogeneous character; formal investigations, PMs, letters, films, pictures, sound recordings, etc.*
>
> *In the project description of the government there is no specific date when the work shall be completed.*
>
> *The question how* ***the plot of Dr. Huss*** *shall be handled cannot be answered at present.*
>
> *The SPF has no documentation how other maritime administrations regard the Final report. It is possible that such information may be included in the future information bank.*

It is good to know that the falsified plot of Dr. Huss is discussed by the SPF. When, how, by whom? It is an interesting task - shall the 'fact bank' contain false information?

THE SPF MEETING 10 OCTOBER 2002

The SPF reference group met again on 10 October 2002 with the following persons attending (ref. SPF E49/02): Mats Ekdahl, Göran Lindmark, Katrin Berggren, Vendela Dobson-Andersson, all SPF, the SPF's "experts" Magnus Faxén, Hans Landberg, Frank Rosenius and Disa Byman, Mr Odd Lundkvist, AgnEf, Mr Lasse Johnsen, SEA, Ms Anna Carin Wallenstein, FAE and Mr Michael Öun, Neptunus,. Mr Keith Wijkander and Ms Jenny Rosenius, Sjöhistoriska Muséet, participated during the question where to put the bow visor.

The following points were discussed:

1. The SPF follows recent 'Estonia' questions

2. Inventory of historic material

3. Inventory of historic material of relatives' associations (AgnEf, SEA, FAE, Neptunus, etc)

4. Appointment of an archivist

5. Technical solutions of the fact bank

6. Time schedule

7. Study of the sequence of the sinking

8. Where to put the visor

9. The next meeting

THE SPF FOLLOWS RECENT 'ESTONIA' QUESTIONS

The first question was (10 October 2002) how the SPF followed recent 'Estonia' questions. Göran Lindmark, director general of the SPF, advised that the SPF tried to follow the various questions. Even if most time is used for the fact bank, the SPF tries to be a´jour with what happens and is written about the 'Estonia', Mr Lindmark stated. The SPF uses media watch services and its contacts with associations of relatives, authorities and interested private persons. The SPF welcomes tips about articles and other information about the 'Estonia' to be made available for the fact bank. The SPF has started to write an introduction to the various parts of the fact bank and to develop the structure of the fact bank, Lindmark concluded.

THE SPF UNAWARE OF RECENT DEVELOPMENTS

However, the SPF was totally unaware of the fact that on the 10 June, 2002, the **Estonia Litigation Association, ELA,** had been established at Gränna, Sweden and had asked the Swedish prime minister Göran Persson by letter of 12 June to decide the establishment of a **Truth Commission** to simply find out the real reasons what caused the sinking of the 'Estonia'. These events were totally censured in Swedish media and the government office never recorded the receipt of the official letter. Thus, by 10 October, 2002, the government had never replied to the ELA letter. As a consequence the ELA was not invited to the SPF 'Estonia' meeting.

THE INVENTORY OF HISTORIC MATERIAL OF THE SINKING OF THE M/S ESTONIA

The SPF informed that it had a good idea about the material from, e.g. the Board of Accident Investigation (Statens Haverikommission), the Maritime Administration (Sjöfartsverket), the police, the Foreign Office

(Utrikesdepartementet) and partly from other media. The inventory of some material remains. However it was clear that all the complex material should be available in the 'fact bank' on the Internet.

THE INVENTORY OF HISTORIC MATERIAL OF RELATIVES' ASSOCIATIONS (AGNEF, SEA, FAE, NEPTUNUS, ETC)

Also the relatives' associations have collected a large material that the SPF shall present. The FAE has already handed over its material to the SPF. Recently Ms Disa Byman, who works for the SPF, has looked at the archive of the AgnEf. Mr Lasse Johnsen said that the SEA had appointed a group to collect its material to be given to the SPF.

APPOINTMENT OF AN ARCHIVIST

The SPF has appointed an archivist to direct the work to systemize, register and digitalize the material of the fact bank. He starts in November, 2002.

TECHNICAL SOLUTIONS OF THE FACT BANK

The SPF cooperates with the Swedish National Archives (Riksarkivet) that has good competence to handle large amount of information (1000 times bigger than the 'fact bank'). Available systems and software will be used, e.g. the so-called ARKIS 2 system that is used since long.

TIME SCHEDULE

The SPF estimates that it can present a prototype (sic) of the future fact bank during 2003. The objective is to have a working, but not complete, fact bank by September 2004 (the 10th anniversary of the sinking). As advised in May the work to complete the fact bank will take several years.

THE STUDY OF THE SEQUENCE OF THE SINKING - THE PRE-STUDY HOW THE 'ESTONIA' WAS FILLED WITH WATER AT THE END OF THE ACCIDENT

The SPF announced that the consultant to the reference group, admiral **Frank Rosenius**, had been appointed to make a pre-study about how the 'Estonia' hull was filled with water at the end.

The purpose of the pre-study is to clarify the conditions how a possible principal study shall be carried out. The simple question is: how could a ship with 4 000 tons of water in the *superstructure* and with 14 000 tons of water in the *deckhouse* at **01.32** hrs *sink* at **01.52** hrs without capsizing/floating upside down. The pre-study is estimated to be ready around the New Year 2003. A few days earlier - end September - the **'Le Joola'** suffered an Estonia-like accident - and floated upside down (right). The naval architect Staffan Sjöling, M.Sc, who works with ship stability calculations at the Swedish Defence Equipment Agency (Försvarets materielverk) will assist with the pre-study.

Figure 1.50.1 – Ferry floating after capsize without 'watertight' deckhouse

Neither admiral Rosenius nor Mr Sjöling has previously participated in any investigation about the sinking of the 'Estonia'.

"WE WILL REPORT ANYTHING THAT DOES NOT TALLY WITH THE OFFICIAL REPORT!"

"We will report anything that does not tally with the official report", Rosenius said at the meeting 10 October 2002. Mr Michael Öun pointed out that it was an important matter of trustworthiness.

In the pre-study they will also review and compare the results of earlier calculations and proposals, e.g. the proposals of the sinking presented at the AgnEf seminary 2001. One of these proposals is illustrated above, i.e. that the 'Estonia' should have floated upside down two, three minutes after losing the visor*. Therefore the 'Estonia' could not perform the events described in **Figure 13.2** in (5).

The question what to do with the false plot of Dr. Huss was apparently not discussed. Why can't the reference group discuss what to do with false, official information?

WHERE TO PUT THE VISOR?

The Swedish Defence Forces (Försvarsmaken) advised that it was not suitable to keep the visor at the island of Älvsnabben (military area). Other locations were suggested; Öja (Landsort) or Bogesundslandet. Representatives of relatives and survivors (sic) shall revert with suggestions latest 15 November 2002.

The next meeting of the reference group - the only way to find out what happens at the SPF - is foreseen at 13.00 hrs on 30 January 2003 when the pre-study shall be ready. The Swedish media does not publish any information at all about the new facts of the 'Estonia' today - at the request of the SPF. Strange country - Sweden.

THE SPF AND THE MINISTRY OF DEFENCE

On 30 October 2002 the SPF announced that it will also make an inventory of the archives of the Swedish Ministry of Defence and the Armed Forces Headquarters about 'Estonia' matters. If this material will be included in the fact bank is not clear.

THE SPF ANNOUNCEMENT 20 DECEMBER 2000

On 20 December 2002 the SPF announced (ref. E 80/02) that no regular inventory of any 'Estonia' material from the Swedish police and the public prosecutor's office had been done.

Furthermore it was stated that the result of the pre-study about how the 'Estonia' hull was filled with water at the end of the accident by Admiral **Frank Rosenius** and Staffan Sjöling was not going to be ready by 30 January 2003. The reason being that further handling was required. The exact date when the pre-study will be ready cannot be stated.

***

*'**We cannot establish the truth**, instead we can establish clarifications, better structure of the available information. The truth of past times is always difficult to establish and it requires that you have complete background information about all matters and such complete information does not exist'.*

Björn Körlof, director general of the Swedish **Board of Psychological Defence**, SPF, 23 April 2001 (in Swedish Radio) after having been ordered by the Swedish government to create a 'fact bank' of 'Estonia' information not included in the Final report (5). Mr Körlof retired from the SPF 11 November 2001

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[*] It is an impossible task to show how the 'Estonia' sank according to the Commission, but the author will give a tip to admiral Frank Rosenius and Mr Staffan Sjöling for their pre-study.

QUESTION: How to explain the sinking of the 'Estonia' at 01.52 hrs based on the following official data - 4 000 tons of water have leaked into in the superstructure, 14 000 tons of water have flowed into the deck house, angle of list >70° and no water has entered into the *hull* compartments at 01.32 hrs because the ship is floating The reason why the ship has not capsized at this time - 01.32 hrs - is that capsize is prevented by *watertight* compartments in the deckhouse (sic) according to the Swedish Maritime Administration - director of safety Johan Franson. The 'Estonia' was thus floating both on the hull at 01.32 hrs and the watertight deck house prevented capsize at 01.32 hrs.

TASK: Explain how the *hull* compartments were filled with water through a watertight deck, and, how the *'watertight deckhouse'* was completely flooded between 01.32 and 01.52.

Watertight* deckhouse*?

Did the 'Estonia' have a *watertight* deckhouse as suggested by the Swedish Maritime Administration/Franson? Maybe Franson is wrong? Admiral Rosenius/Sjöling/SPF can easily check this by calling any real expert of ship stability and ask: *Are there watertight compartments in a ferry deckhouse preventing capsize?* Or check yourself.

The author remembers discussing exactly the pre-study task with Frank Rosenius and the SPF on 24 April 2002 - the SPF lacked detailed drawings and stability particulars of the ship. Get the drawings! Can you see any watertight compartments in the deckhouse? But Frank - you have to remember that Franson is the government expert since 1994 - can Franson be wrong? Of course Franson is wrong - he is a key player of the 'Estonia' scam.

Actually - Franson is a totally incompetent, maybe mentally ill and unemployable in private enterprise? He is famous for harassing his staff to produce false information. He is one of the reasons why the 'Estonia' scam is still rolling on.

So Frank Rosenius/Sjöling/SPF - my tip is - demonstrate that Franson is wrong in your pre-study. And by the way - let SPF make a press release about it. SPF knows how to deliver information.

'Other scenarios regarding how water can reach the lower decks are of course possible. If by us used drawings do not reflect the actual status of the vessel, evidently the conclusions are not valid. '

Frank Rosenius, Staffan Sjöling - 28 March 2003

'The question how the Estonia could sink so fast has not been explained in the investigation by the JAIC. In an attempt to remove this deficiency the Swedish Agency for Psychological Defense, SPF, was appointed to develop a study, based on the JAIC report, to show how the Estonia was filled with water and sank during the final part of the accident. With these limitations a pre-study was made, which can be seen more as a dialectic exercise than a clarification of the sequence of sinking events. In the computer model used the software has been manipulated to work with assumed but not verified conditions of design and loadings far above what is permitted in reality'.

AgnEf - Arbetsgruppen för utredningav M/S Estonias förlisning - B. Calamnius, ord

FAE - Föreningen Anhöriga Estonia - G. Claesson, ordf.

SEA - Stiftelsen Estoniaoffren och Anhöriga - L. Berglund, ordf. - Stockholm den 9 februari 2005

1.51 SWEDISH AGENCY FOR PSYCHOLOGICAL DEFENCE, SPF, - SINKING STUDY MARCH 2003

This chapter is dedicated to my friends **Spiro Pahos** - *"its up to every one's insight to believe what he reads"* and **Kenneth Rasmusson** - free editor at Lund, Sweden - *"Men vem vet? Snart kanske det blir ett uppknytningskalas i gamla Svedala :) Man ska ju som bekant aldrig vara för säker".*

On 28 March 2003 the SPF made public the **Pre-study** how to explain the sinking of the Estonia 1994 based on the alleged facts of the Commission. The government had ordered the original task on 19 April 2001.and the SPF had appointed Staffan Sjöling on 30 September 2002 ***to carry out the study in 60 hrs*** (sic), assisted by vice admiral Frank Rosenius. The study should have been ready by 31 December 2002.

The author has met Rosenius and been in e-mail contact with Sjöling. The message was that it is/was impossible to explain the sinking of the Estonia on 28 September1994 without concluding that the *'lost visor'* and the '*water on the car deck'* story invented 1994-1997 is false. The author naively thought that he could convince Rosenius/Sjöling to state that their task was hopeless.

The Estonia **Pre-study** report was thus filed with the SPF on 28 March 2003 by Sjöling/Rosenius. On 1 April 2003 admiral Rosenius was then appointed head of the office of His Majesty the King (chef för HM Konungens stab).

THE PRE-STUDY CONFIRMS PREVIOUS ERRORS BY THE COMMISSION

The **Pre-study** report is very interesting as it demonstrates clearly how the Commission 1994-1997 falsified the stability and floatability calculations of the Estonia accident investigation, as already pointed out in **1.9**.

The **Pre-study** can be read below in its entirety in Swedish and English. The very poor Swedish language (syntax and grammar) used by Sjöling/Rosenius is fairly well reflected in the author's English translation. Sjöling/Rosenius complain in several places of their limited resources. Nevertheless they produce a sensational document - not one essential piece of information can be underwritten by serious stability experts. You can also down-load the Pre-study (in Swedish) from **http://www.psycdef.se/extrafiler/estoniastudie2003.pdf** .

According to the written SPF instructions, the actual sequence of sinking was not going to be explained in the **Pre-study**, only the *preconditions* how to make such a presentation of the last 22 minutes, i.e. between say 01.30 (80 degrees list) and about 01.50-01.54 hrs (the vessel finally sinks), which had not been explained. The author thought it was usual delaying action by the SPF. But Sjöling/Rosenius actually explain - or make an attempt to describe - the whole sequence of sinking in their Pre-study - from 01.15 hrs until, say 01.54 hrs. To do so, they have to repeat a lot of past disinformation.

HOW TO EXPLAIN THE SINKING OF A FERRY WITH AN UNDAMAGED HULL?

Sjöling/Rosenius split the task to explain the sequence of sinking into three separate parts -

(a) ***the flooding of the superstructure with 0-12.000 tons of water on the car deck*** - (decks 2 and 3) (no sinking and no capsize as the ferry floats 22 minutes on the deck house (sic) preventing capsize while no water flows out through the wide open bow due to trim), and

(b) ***the flooding of the watertight deck house through some damaged openings; a door, some windows*** (decks 4 - 9 above the car deck) (still no sinking or capsize as the ferry floats stably on the hull and on undamaged parts of the deck house) and

(c) ***the flooding of some watertight hull (engine) compartments*** (decks 0 and 1 below the car deck), the latter so that the vessel actually sinks - suddenly.

Maritime experts concerned with the Estonia sinking has wondered about

(a) ***how the ferry could load 0-12.000 tons of water in the superstructure without immediate capsize with only 2 000 tons of water in the side*** and

(b) ***why wasn't the deckhouse above the superstructure immediately filled with water, when it was submerged and how could it be considered watertight?*** and

(c) ***how could the intact, watertight hull compartments below the car deck be flooded with water?*** and

(d) ***why didn't the water in the superstructure flow out, when the ship stopped after a few minutes?***

WATER FILLING OF THE SUPERSTRUCTURE ABOVE THE WATER LINE - NO WATER FLOWS OUT

Sjöling/Rosenius apparently assume - **Attachment 1** of the **Pre-study** - that first the *superstructure (the car deck space)* was water filled at a rate of 300-1 800 tons/min based on info in the Final report (5) 12.6.2. However, 12.6.2 does not say so. It assumes 300-600 t/min inflow the first few minutes - until 20° list is developed. It further assumes that totally only 1 800 tons have flowed in when the list is 35° after 8 minutes, i.e. average inflow was only 225 tons/min. and that the ship then had stopped. The figure 1 800 tons/min seems to come from this author in **Appendix 4** - the ship capsizes after one minute. So here the **Pre-study** does not follow the Final report.

And neither Final report nor **Pre-study** asks the question - why didn't the water flow out, when the ship had turned after 5 minutes and the bow was away from the waves? At that time you would expect all water inside the superstructure to flow out!

Furthermore, JAIC/Huss suggested elsewhere that the water inflow into the superstructure was only 38,5 - 55,6 ton/min *after* the accident **Table 1.9.2**. How can a ship sink if the inflow - into a superstructure *above* waterline! - is so small? Why doesn't the water flow out through the opening in the bow, when the vessel has turned east and the opening is away from oncoming waves? The journalist Anders Hellberg of the biggest Swedish daily Dagens Nyheter reported that **2 100 tons entered in six minutes**. It is 350 tons/minute. Sjöling/Rosenius do not consider any information given by the Commission in the Final report chapter 12.6 about simulations of the water filling **1.21**.

The JAIC scenario is simply the following events, **fig 13.2** in Final report (5). That figure is a 100% falsification - there is no evidence for anything positions, speeds, courses, angles of list, etc. Everything is just invented as described below:

1. **At 01.14 hrs the weather tight bow ramp in the *superstructure* is fully open (the visor has fallen off and pulled out the ramp). Speed >14 knots straight into the waves**. The opening is about 5,4 m wide and 6 m

high and the ramp is down to the waterline. Water enters only into the ***superstructure*** onto deck 2, when the bow dips into the waves and the ramp assists the water to flow up into the superstructure, where it collects in the side of the ***superstructure***. Course 281°. The ship is of course still floating on the hull and starts to list slowly due to water inside the superstructure. There is no evidence that this happened. Testimonies of the crew suggest that the ramp was still closed two minutes after the first heeling over to starboard.

2. **At 01.15 hrs - while slowing down - the list becomes 15° due to a certain amount of water in the *superstructure* on deck 2 - no water flows down in the stairwells down into the hull**. The stairwells are far away from the water in the side. Course 281°. Distance sailed since event 1 is 0.25 NM. Ship is still floating. As stated above crew testimonies reported the superstructure dry at this time.
3. **At 01.16 hrs - speed 9 knots - the list is still 15°** (the water inflow had temporarily stopped (sic)). Course 261°. The ship starts a 180° turn. Distance since event 2 is 0.17 NM. A lot of *'fragments'* fall off the ferry, which should prove the turn according to JAIC. Why these *'fragments'* fell off is not clear.
4. **At 01.20 hrs - speed 6 knots - list is now 30° due to 1 000 tons of alleged water in the *superstructure* on the bulkhead deck** (see suppl. 522 of Final report (5)) - **thus the inflow into the superstructure was only about 167 ton/minute during 6 minutes**. No water is seen flowing down into the stairwells. Course 122°. The port turn is ended. Distance sailed since event 3 is 0.48 NM. **At this stage of events you would expect that all water flowed out! The course is 122°, i.e. bow opening does not face any oncoming waves.**
5. **At 01.22 hrs - speed 4.5 knots - list 35°.** Course 140°. Distance since event 4 is 0.2 NM. Ship is still floating. Alarm is raised onboard. **As the speed is almost nil and the bow points away from the waves, you would expect that all water flows out of the superstructure, i.e. that the water inflow is negative = water outflow = the vessel list should be reduced, etc. Without any evidence the JAIC suggests the opposite - more water comes in! - and Rosenius/Sjöling just accept that as fact. They suggest that inflow is 300-1 800 tons/minute into the superstructure at this time, which is nonsense.**
6. **At 01.24 hrs - speed 2.1 knots - list 40°**. Course 160°. Distance since event 5 is 0.12 NM. ***Windows are smashed in deckhouse deck 4***. The *deck house* starts to fill with water (**and the new Sjöling/Rosenius assumption is that the engine rooms start to be flooded by 400 tons/min through open ventilation ducts in the side ending just below the deck house - otherwise the ferry will never sink!**).
7. **At 01.30 hrs - speed 1.7 knots - list 60-70°**. Course 154°. Distance since event 6 - 0.30 NM.
8. **At 01.33 hrs there is 1 500 tons of water in the *superstructure* on deck 2** (see suppl. 522 of Final report (5)) - **thus the inflow into the superstructure was only about 38,5 ton/minute during 13 minutes since 01.20 hrs. With 1 500 tons of water loaded in the superstructure the angle of list should only be 32°. Speed is nil! All water should no flow out! The vessel drifts sideways**. The list is 75° because there is also water in the deck house: according to the Final report (page 183)"*18.000 tons of water onboard distributed between the car deck and decks 4 and 5 would have given a heel angle of 75°*", but ***the <u>intact, watertight</u> deckhouse deck 6 and 7 prevents capsize - the ship floats on the watertight deck house.*** (**Assuming like Sjöling/Rosenius that the engine rooms had been flooded since 01.24 hrs with 400 tons/minute there should now also be 2 800 tons of water in the hull, which would have sunk like a stone, i.e. the sinking stops at 01.33 hrs**). But ...
9. **At 01.35 hrs the list is 80°** (figure 13.3 of Final report) - no sinking. The ship still floats on some dry and empty hull compartments somewhere and drifts sideways with 2,2 knots speed.
10. **At 01.40 hrs the list is 115°** (figure 13.3 of Final report) - the vessel is still floating, i.e. the hull is still not fully flooded.
11. **At 01.42 hrs there is 2 000 tons of water in the *superstructure* on deck 2** (see suppl. 522 of Final report) - still no sinking - **thus the inflow into the superstructure was only about 55,6 ton/minute during 9 minutes since 01.33 hrs**. There is no evidence for any of the inflow figures given above. All figures are invented!
12. **At 01.52 hrs the ship (suddenly) sinks/disappears.** Distance from event 7 - 0.88 NM (average speed from events 7 to 12 is 2.4 knots, i.e. the speed increased after event 7).

The sinking position of event 12 is 1 570 m due east of the start position 1. The sudden sinking after 38 minutes is not explained.

The basic question for Sjöling/Rosenius to answer is thus: How did the watertight hull, decks 0 and 1, with 14 watertight compartments, >18 000 m^3, fill with water during 28 minutes between, say 01.24 and 01.52 hrs (so the

ship sank without capsizing/floating upside down)? **Sjöling/Rosenius suggest it was through illegal or incorrectly installed ventilation ducts in the side of the superstructure leading to the hull compartments but no evidence is given!**

Another question is - how could the Estonia drift the way she did - so long, so fast and with constant speed - while being water filled via the ventilation ducts?

Another question is: who made figure 13.3 in (5)?

And why didn't the water inside the superstructure flow out at 01.24 hrs, when the opening in the superstructure was not facing the waves and the speed was zero? Why did only water flow in/up into the superstructure >2 meters above waterline? According to the law of gravity the water should have flowed out.

SENSATIONAL DISCOVERY - VENTILATION DUCTS IN THE SUPERSTRUCTURE SIDE 8 METERS ABOVE THE WATER LINE

Sjöling/Rosenius come up with a sensational discovery - they state they have located - on three different ship's **drawings** ([4] **Drawing 590 02/21 - Safety and Firefighting equipment**, [5] **Drawing 590 64/1 - Ventilation plan, Blatt 1** and [6] **Drawing 590 24/1 - Wagendeckausrüstung**) never heard of before - *ten* ventilation ducts in the ship's side leading down into watertight hull engine compartments from the deck house.

They obviously make **reservations** in the Pre-study about the existence of the alleged ducts and the whole Pre-study is nonsense without the ducts; nobody including the Finnish, Swedish and Estonian maritime administrations and the JAIC 1994-1997 has ever heard about the ducts before, they are not shown on the General Arrangement plan of the ship or any drawings officially kept by the Finnish or Estonian administrations or the BV Class society, normally the hull engine compartments are ventilated via the funnel and the engine casing/uptake with the fans/fire dampers located in the funnel, normally you do not fit A-60 insulated ventilation ducts to hull spaces in the side of the superstructure, etc.

INCORRECT VENTILATION DUCTS

The origin of the newly found drawings by the SPF is apparently the Finnish Maritime Administration. If the drawings are correct and they are not, they prove that the 'Estonia' was incorrectly built 1979-1980 by the Meyer shipyard at Papenburg, Germany, and badly approved and certified by the Finnish Maritime Administration, 1980, and incompetently checked at Port State Controls by the Swedish Maritime Administration, 1980-1994 and, again, incorrectly surveyed and certified by the Estonian Maritime Administration and Bureau Veritas, 1993-1994. **The reason is simply that the ventilation ducts and openings are 100% in contradiction with the 1966 Load Line Convention.** You cannot fit ventilation ducts to compartments below the freeboard deck, e.g. engine rooms with openings without watertight closing appliances *in the side of a ship superstructure*. Any ventilators must be fitted at least on top of the superstructure *deck*, with a high coaming and with external means to be closed in case of fire, etc.

Normal practice is that ventilation of machinery spaces and emergency generator room, in order to satisfactorily ensure, in all weather conditions (i) the continuous ventilation of machinery spaces, and (ii), when necessary, the immediate ventilation of the emergency generator room, that the ventilators serving such spaces have openings so located that they do not require closing appliances except fire dampers, i.e. that they are installed at the centerline with the coamings extend for more than 4,5 m above the deck in position 1 (0.25L forward part of deck 4) or 2,3 m above the deck in position 2 (0.75L aft part above the superstructure; deck 4 in the case of the Estonia). The safe location of any ventilation openings is at deck 6 - not *below* deck 4 in the side.

Figure 1.51.1 – External vent duct openings below top of superstructure

Evidently no ventilation ducts were originally fitted in the side of the Estonia to ventilate the *engine rooms*, as it was done via the casing and the funnel.

However, by examining photos of the Estonia taken before the accident there seems to be openings - total 12 or 14 - in the superstructure side (dark) below deck 4 and the deck house (white)! See the photo above right. What is the purpose of such openings? Probably only to allow venting of the car deck space, i.e. the ducts in the sides are air inlets, while the air is extracted by fans on deck 4 aft. No water can flood the hull spaces below the car deck via such ducts?

THE ORIGIN OF THE STRANGE DRAWINGS

The reader should now be very curious about these drawings; [4] **Drawing 590 02/21 - Safety and Firefighting equipment**, [5] **Drawing 590 64/1 - Ventilation plan, Blatt 1** and [6] **Drawing 590 24/1 - Wagendeckausrüstung suggesting ducts in the side down to the engine rooms.**

Where do they come from as the shipyard evidently has not produced them?

It is very easy to prove that the alleged drawings are false - just ask for the originals from the Meyer shipyard! The shipyard (Mr. Hummel) has informed that no such ducts exist. However, there is a possibility that the original ventilation of some hull compartments were found deficient and that the ventilation outlets were modified later. The drawings may be a 'proposal' of one type of modifications but later some other modifications were done. Regardless - the modified arrangement was illegal.

Figure 1.51.2 – Internal vent trunks/openings

It would appear on the other hand that some openings in the side were used to ventilate the superstructure/car deck space outlined above and as seen on the photo right of the interior of the 'Estonia' car deck; you see the duct (beside the pilot door) with opening grids at deck 2 and 3 levels.

It seems that the ventilation idea was to extract air via fans on deck 4 aft and allow air inlet through ducts in side - as shown - with an external opening below deck 4 - without any closing devices. It is a stupid arrangement - in case of fire in the superstructure, it cannot be sealed off. The closing arrangement of the inlets in the side must be fitted on deck 4 outside the car deck space.

If other, modified (?) ducts in the side did not ventilate the car deck but went down into the hull is not clear at present. However, it is very unlikely.

SJÖLING AND ROSENIUS AND THE STRANGE DRAWINGS

Sjöling/Rosenius assume that the drawings are true and correct and that ventilation ducts exist in the side between deck 4 and the hull compartments (they ignore the ducts between the outside and the car deck!) - and that the watertight hull compartments were conveniently flooded through them - and that is why the Estonia sank. The hull on which she floated was flooded through ventilation ducts in the side! Finally we are told why the Estonia sank without capsizing. Because Sjöling/Rosenius confirm that otherwise, with water in the superstructure, **the Estonia would have capsized**

There are allegedly according Sjöling/Rosenius at least ten ventilation ducts in the sides leading down to six watertight hull compartments **Attachment 3** of the Pre-study and below table (and none to the car deck):

Number	Frame	Space
V21	26	Store room
V22	37	Store room

V23	46	Store room
V24	49	Store
V25	64	Main engine room
V26	65	Main engine room
V27	55	Main engine room
V28	80	Engine workshop
V29	A	Engine workshop
V210	94	Sewage tank room

Table 1.51.1 Alleged 10 off vent ducts in side from below deck 2 to just below deck 4.

These ducts of small cross areas must be fitted with external A60 fire insulation and in addition be fitted with weather tight (sic) fire dampers at deck 2 or at deck 4 level. In the latter case the duct must be of substantial thickness. If such ducts existed they were stupid and illegal - ***how to maintain and overhaul a weather tight fire damper inside a fire insulated duct?*** It was much easier to ventilate the store rooms, workshop and sewage tank room from the central casing and the engine room from the funnel/engine casing/uptake and **this is how it should have been done**. Why retrofit ventilation exhaust ducts from store rooms, workshops and sewage tank rooms in the side through the superstructure and car deck space?

We should however not worry too much about these new ducts, which will not be submerged until the list is >40° when there are substantial amounts of water on the car deck according to the Commission. The Pre-study is very descriptive about the water in the **superstructure** on the car deck - and confirms that the Final report is false! **Because a ferry does not float upright with water loaded in the *superstructure* on the car deck - deck 2! The Estonia evidently capsizes *before* water starts to flow down into the hull compartments through any small cross area ventilation exhaust ducts in the side unless he water flows out of the superstructure. However, more realistically the Estonia should never have capsized in the given scenario with very little water inflow - all water should have flowed out, when the vessel stopped, before capsize could have occurred.**

WATER ON THE CAR DECK - CAPSIZE

Attachment 5 - Loading condition with water on the car deck, C0-C31, - of the Pre-study clearly demonstrates the original falsifications about water on the car deck. Sjöling/Rosenius suggest that the Estonia would *only* list 0-55 degrees sideways with 0-12 000 tons of water on the car deck and that the moving water - up to 12.000 tons - ***will not trim, capsize or sink the vessel - or flow out***!

This is not possible! It is impossible to load 12 000 tons of water in the superstructure of a ship with deadweight about 3 300 tons or probably only 3 000 tons of which 2 200 tons is already used.

Furthermore any free water on the car deck moves to the lowest point and ***trims*** (rotates longitudinally!) the ship; e.g. 10.000 tons (sic - an enormous free moving weight = to the original weight of the ferry!) forward trims the ship 10 meters on the bow; the ship will fall/roll over forward (actually all water in the superstructure would flow out, but realistically the ship would have capsized sideways and floated upside down before that with only 1 900 tons inside the *superstructure = the absolute limit*) and turns like a turtle and floats upside down after one minute. Alternatively the ferry trims on the stern and then the bow opening becomes 5-10 meters above waterline. And then - how would water enter through the bow? Therefore the JAIC decided (**it is an essential part of the falsifications of all events**) that the Estonia didn't trim a centimeter due to the continuous inflow of water (no outflow) on the car deck into the superstructure and the bow ramp was always a little above water (sic! - **Attachment 7.2** and **Attachment 10** and starboard inflow point WOS of the bow opening and all conditions C0-C31) and Sjöling/Rosenius do not contradict them in their 60 hours of Pre-study.

LIMITED DEADWEIGHT, LIMITED FLOATING BUOYANCY

Everybody concerned with ferry stability/loading/floatability knows that any roro-passenger ferry type Estonia has a certain limiting, intact load carrying capacity - **the dead weight** - say 3 345 tons. The ferry cannot load more

cargo, as it will then not survive the risk of two compartments collision damage/flooding of the hull. Two compartments collision damage of the hull and flooding of two watertight compartments of the hull corresponds to the loading of about - maximum 2 000 tons - *extra* cargo on the car deck of an intact ship. After that, i.e. flooding of more than two compartments of the hull, the watertight hull becomes submerged below water - and sinks. **Therefore the loading conditions C8-C31 in Attachment 5 of the Pre-study with 0-12.000 tons loaded in the superstructure are an incorrect assumption or a plain invention**.

The Estonia will never survive any of the conditions C8-C31 for the simple reason that she cannot load 2.000 - 12.000 ton water on the car deck as assumed by the JAIC 1994-1997 and Sjöling/Rosenius in 2003. In reality the 'Estonia' would have capsized sideways and upside down long before that with only 1.900 tons of water on the car deck. To use conditions C8-C31 in a Pre-study to demonstrate the sinking of the Estonia is incorrect. It is unscientific!

THOUSANDS OF TONS OF WATER ON THE CAR DECK DO NOT TRIM THE ESTONIA

And it is here that the scam becomes revealing. In order to hide the fact that the water on the car deck trims, capsizes and sinks the vessel, the originators of loading conditions C8-C31 manipulates the calculation;

(a) the water in the *superstructure* becomes fixed (like ice!) and does not move or flow out, it is just added as a fixed weight to confuse the computer software,

(b) there is no trim whatsoever (the ice does not move) unless the trim changes a little on the stern (**how is not explained**).

(c) in addition - to avoid that the ship then sinks with 12.000 ton extra weight loaded in the open *superstructure* - the originators of loading conditions C8-C31 suggest that ***the vessel floats on the watertight deck house***!

MAGIC - THE FERRY FLOATS ON THE DECKHOUSE FOR 11-17 MINUTES

Everybody concerned with ferry stability/loading/floatability knows that any roro-passenger ferry type Estonia does not float on the deck house. The deck house, > 9 meters above the waterline, presents no water- or weather tightness whatsoever to provide *buoyancy* or a righting moment to prevent capsizing. The deck house is an open structure without any watertight or even weather tight means. Sjöling/Rosenius apparently know these simple facts, which explain their confused explanations of GZ-curves associated with the loading condition, L2, used in the report and confusingly described in **Attachment 4** (they try to explain the real facts but then ignore them and simply conclude that the deckhouse is 100% watertight).

FALSIFIED GZ-CURVES

Any ship has only one basic GZ-curve, which may be reduced in extent if a part originally considered providing buoyancy, e.g. a superstructure, is being open to the sea, e.g. the bow ramp is open. The open deck house is not considered in the GZ-curve. GZ is the righting arm at different angles of list of the ship.

And this is the second part of the original Estonia falsifications (see chapter 12.6.1 of the Final Report (5)) repeated in the Pre-study. Sjöling/Rosenius not only suggest that the superstructure (open at the bow) and deck house decks 4-8 are 100% watertight, they propose that the only way for the ship to sink is that the deckhouse is flooded through some defined inflow openings, e.g. the doors aft used by passengers to walk in and out and, reluctantly, the windows in the sides **Attachment 3**, even if the difference is small.

Finally they suggest that it takes 11-17 minutes to actually flood the 100% watertight deckhouse - 17 minutes via the doors or 11 minutes via windows+doors.

All this is of course fantasy without factual foundation.

The deckhouses of the **Herald of Free Enterprise**, the **Jan Heweliusz** and **Le Joola** contained no buoyancy and were instantaneously flooded when the ships capsized (and floated upside down) and the Estonia was no different. In the Pre-study calculations Sjöling/Rosenius play God and allow water to flow into the deckhouse (and the hull compartments below) so that the Estonia sinks slowly without capsizing during 11 to 17 minutes.

BLAME THE NAPA COMPUTER SOFTWARE

In order to play God (or Devil) - and invent (falsify) scenarios how the Estonia sank - Sjöling/Rosenius make reference to Finnish Napa computer software, which they allege can compute the stability and floatability of a ferry during the sinking process. The Napa software is only applicable to **floating, generally intact** ships with some underwater hull compartments flooded and in communication with the sea after damage - **damage stability**.

The ship is initially floating on a *hull* with watertight subdivision and with a weather tight *superstructure* with certain subdivision (including watertight buoyancy tanks) contributing buoyancy when submerged while, the ship heels. Then certain underwater hull compartments are assumed flooded and the software computes the new floating position, etc. Nothing more, nothing less. A Napa computer cannot be used to show how a ship sinks.

Sjöling/Rosenius modify the Napa program, as Huss, Karppinen and Junnila previously, 1.9 and 3.12, and make initially the whole deckhouse 10 meters above the waterline *watertight* (sic) *hull* compartments on which the ship is alleged to float when submerged. This innocent (sic) mistake is the basis of the falsifications.

The Napa program could of course handle 'water loaded on the car deck' in the *superstructure* - water = <1 000 tons - and would compute a large trim and heel and risk of capsize, which would occur with 1 500 - 2 000 tons. The Napa program could evidently not handle 2 000 - 10 000 tons of water 'loaded' on the car deck. **The software would just compute that the ship was lost, had capsized, as it could not load so much!**

It is very easy to verify this! Check it on any Napa computer fitted to a Sweden/Finland roro-passenger ferry, e.g. when visiting Stockholm!

The Estonia could not float with 5.000 - 10.000 extra tons of water in the *superstructure* as the extra buoyancy in the hull to survive two-compartments flooding was only 2 000 tons. This the Estonia conspirators detected already 1995. In order to *'cheat'* the software they (a) made the deckhouse watertight and (b) the 'water on the car deck' a solid weight - no trim - balanced by the invented (non-existing) buoyancy in the deckhouse. **Rosenius/ Sjöling inherited this stupid and dishonest set-up from the JAIC. And they accepted it. And tried to improve on it! It is quite dishonest. Any scientific model test basin will discover this manipulation.**

To slowly fill the Estonia with water Sjöling/Rosenius then opened selected *'inflow openings'* to the deckhouse, so it was slowly flooded - and they discovered that the ship would capsize and float upside down. In order to prevent capsize they suggest that decks 7 and 8 are not fully flooded at all and that deck 5 floods before deck 4 (?) and/or then they find ventilation ducts at deck 4 to some *hull* (sic) compartments and then they allow these hull compartments to flood - so that the ship fills with water. **All this is 100% unscientific and 100% dishonest and has nothing to do with naval architecture or seamanship.**

TOTAL TIME FOR SINKING - THE ESTONIA SINKS 1 000 METERS SHORT OF THE OFFICIAL POSITION

Officially - according to the JAIC - the Estonia lost the visor at **01.15** hrs and had about 80 degrees list at **01.30** hrs and later the ship sank at **01.50-01.54** hrs. All the time - regardless of increased enclosed weights - the wreck was drifting at a speed of >2.2 knots. The official task given to the SPF by the government was to clarify the sequence of water filling between **01.30** and **01.50/54** hrs - the last 20-24 minutes (the end of the accident). Sjöling/Rosenius in their Pre-study (attachments 12-15) do not make any attempt to set actual times to their invented events. The attachments 12-15 do not and cannot make any sense.

Regardless, it seems that Sjöling/Rosenius - when they start flooding the deckhouse, which happens at about

01.24 hrs according to the JAIC, cannot stop the ship sinking in longer than 11-17 minutes, i.e. the Estonia sinks already at 01.35 hrs (as suggested by this author due to hull leakage and visor in place) or 01.41 hrs (suggested by Sjöling/Rosenius). In neither case the wreck will sink at the official position of the wreck relative the visor at 01.50/54 hrs. So how could the visor be lost 1 560 meters west of the wreck? We are back to the simple conclusion that the official visor position is false, that the visor never detached from the ferry, and that the visor was blown off using explosives by Swedish Navy divers under water *after* the accident.

The Pre-study written by vice admiral Frank Rosenius and Mr. Staffan Sjöling of the Defense Equipment Board (Försvarets Materialverk, FMV) seems to be another tragic - misleading - document in the row of false reports about the Estonia. **How can the staff at the Swedish Board of Psychological Defense accept such a report?**

E-brev till SPF	**E-mail to the SPF**
Beausoleil 6 April 2003 - Er ref SPF Dnr E19/03	Beausoleil 6 April 2003 - Your ref SPF Dnr E19/03
Mats Ekdahl - Generaldirektör SPF	Mats Ekdahl - Generaldirektör SPF
Vendela Dobson - informatör, SPF	Vendela Dobson - informatör, SPF
Hjärtligt tack för Förstudien av sjunkförloppet + Bilagor 1-15 sända 2003-03-31.	Many thanks for the Pre-study of the Sequence of Sinking and Attachments 1-15 sent 2003-03-31.
Analys av förstudien visar att metoden att simulera sjunkförloppet är fel. Utgångspunkten - **Bilaga 5** - lastfall med 0-12.000 ton vatten i överbyggnaden är omöjlig - Estonia kapsejsar och flyter upp/ned redan vid lastfall C7 och kan inte lasta mera vatten, lastfall C8-C31, utan att sjunka direkt. Anledningen tycks vara att output från Napa-datorn beträffande *trim* helt enkelt har manipulerats. Därför blir alla följande slutsatser i Förstudien och bilagor 6-15 missvisande (förutom att många referenser i Förstudien ej finns redovisade i Bilagorna). Mera uppgifter om brister i Förstudien finns på min hemsida - http://heiwaco.tripod.com/epunkt151.htm .	Analysis of the Pre-study shows that the method to simulate the sequence of sinking is wrong. The starting point - **Attachment 5** - load conditions with 0-12.000 tons of water in the superstructure is impossible - the Estonia capsizes and floats upside down already in load condition C7 and cannot load more water, conditions C8-C31, without immediate sinking. One reason is that output from the Napa computer re *trim* simply seems to be manipulated. Therefore all following conclusions of the Pre-study and Attachments 6-15 are misleading (in addition many references in the Pre-study are not shown in the attachments). More errors of the Pre-study are shown at - http://heiwaco.tripod.com/epunkt151.htm.
SPF ombedes göra om Förstudien med bättre kvalifierade experter.	SPF is kindly requested to re-make the Pre-study by better qualified experts.
Vänliga hälsningar	Kind regards
Anders Björkman, Heiwa Co	Anders Björkman, Heiwa Co

No reply has been received (18 April 2003)

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In January 2004 the **SPF** (http://www.psycdef.se/estonia/tasks_ongoing.asp) decided to make a computer animation of the sinking based on the below Pre-study to be presented 1st September 2004 - 10 years after the actual sinking. The SPF and the authors of the Pre-study have ignored all comments by Heiwa Co that the Pre-study is wrong and that therefore evidently also any computer animation will be wrong. Anyway, the sinking in the Pre-study goes to fast so that the 'Estonia' sinks 1 000 meters west of the actual wreck position. Heiwa Co has 17 March 2004 sent below e-mail to SPF:

E-brev till SPF 17 mars 2004

Vendela Dobson, Göran Lindmark, Mats Ekdahl - SPF

Hej,

för er kännedom meddelas att min hemsida finns på Internet igen http://heiwaco.tripod.com sedan söndags. Redan på màndag kom ett e-brev fràn birgitta.heijer@economy.ministry.se laddat med ett nytt virus (W38blage.p). Naturligtvis var e-avsändaraddressen falsk. Barnsligt försök att sabotera min dator.

Ni ombedes läsa hur Sverige fuskar bort SEK 28 millioner på sjösäkerhetsforskning 2001-2004 **http://heiwaco.tripod.com/vinnova.htm** och hur Heiwa Cos ansökningar smusslas bort.

Ni ombedes läsa hur Heiwa Cos bevisade uppgifter 2000 om Estonias sjöovärdighet smusslas bort i ett märkligt remissförfarande **http://heiwaco.tripod.com/remiss.htm** (när ovan Birgitta Heijer tydligen var statssekreteraren som beordrade remissen).

Och naturligtvis skall ni läsa om SPFs, er egen, märkliga vattenfyllnadsstudie (för SEK 40,000:-) av Staffan Sjöling på http://heiwaco.tripod.com/punkt151.htm och jämföra med Heiwa Cos analys http://heiwaco.tripod.com/punkt19.htm .

Själv har jag inget med Estoniaolyckan att göra än att jag och mitt företag Heiwa Co analyserar uppgifterna med uppgift att förbättra sjösäkerhet, vilket ni naturligtvis är medvetna om.

Nu tycker jag att Sveriges förföljelse av Heiwa Co gàr för làngt. Era uppdragsgivare vet inte skillnad på sanning och lögn längre eller hur man skall uppföra sig anständigt eller moraliskt i t.ex. sjösäkerhetssammanhang.

Vad tycker ni själva? Är det roligt att spela med i den här sörjan längre? Har ni inte eget omdöme? Säg NEJ. Säg att ni inte har lust att arbeta med uppdragen (minnesbank, vattenfyllnad) längre. Säg att ni inte längre tror på uppdragsgivarnas uttalade, uppriktiga vilja (vad den nu kan vara?). Säg att de kan hitta andra personer (t.ex. HM Konungens stabschef) för att reda upp i sophögen.

Läs gärna mitt nya förord http://heiwaco.tripod.com/forord.htm varför jag fortsätter att arbeta med denna märkliga historia. Jag är en lycklig och fri människa men jag tycker inte om att en massa amatörerer med höga titlar i lilla Sveige förlöjligar mitt företag och vad jag uppnàtt i sjösäkerhetssammanhang i IMO och Europa och världen. Ni ombedes därför vänligen att avsäga er fortsatt inblandning med Estonia.

Bästa hälsningar

Anders Björkman

E-mail to the SPF 17 March 2004

Vendela Dobson, Göran Lindmark, Mats Ekdahl - SPF

Greetings,

please be advised that my home page http://heiwaco.tripod.com is on the Internet again since last Sunday. On Monday arrived an e-mail from birgitta.heijer@economy.ministry.se loaded with a new virus (W38blage.p). Naturally the address of the sender was false. A childish attempt to sabotage my computer.

Your are requested to read how Sweden wastes SEK 28 millions on safety at sea research 2001-2004 http://heiwaco.tripod.com/vinnova.htm and how the Heiwa Co applications are swept under the carpet.

You are requested to read how the Heiwa Co proven information 2000 about the Estonia un-seaworthiness was swept under the carpet in a strange internal inquiry http://heiwaco.tripod.com/remiss.htm (when above mentioned Ms Birgitta Heijer was head at the ministry which ordered the inquiry).

And naturally shall you read about SPF's, your own, strange water filling study (that cost SEK 40,000:-) by Staffan Sjöling Sjöling at http://heiwaco.tripod.com/punkt151.htm and compare with the Heiwa Co analysis http://heiwaco.tripod.com/punkt19.htm.

I have myself nothing to do with the Estonia accident except that my company Heiwa Co analyses the information with objective to improve safety at sea, which you evidently are fully aware of.

Now I think that the persecution of Heiwa Co goes too far. Your employers do not know the difference between truths and lies any longer and how to behave correctly or morally with, e.g. safety at sea matters.

What do you think yourselves? Is it funny to play along in this mess any longer? Do you not have your own judgment? Inform them that you do not want to continue working with the job (memory bank, water filling). Tell that you do not believe in their wishes (whatever they can be?). Suggest that they can find other persons to clean up this garbage heap (e.g. the head of the office of HM the King).

Read my new Foreword **http://heiwaco.tripod.com/forord.htm** why I continue to work with this strange story. I am a happy and free person but I do not like that a number of amateurs with high titles in little Sweden ridicule my company and what I have achieved concerning safety at sea at the IMO and in Europe and in the world. You are kindly asked to resign from further involvement with the Estonia.

Best regards

Anders Björkman

Heiwa Co	Heiwa Co
European Agency for Safety at Sea	European Agency for Safety at Sea

No reply has been received (10 April 2004).

THE COMPUTER ANIMATION IS STOPPED (SPF REF. 2004-04-26 DNR SPF E 28/04) REQUEST FOR AN INDEPENDENT INVESTIGATION

Pro Memoria made at meeting with the Estonia project reference group 26 April 2004	**Minnesanteckningar förda vid sammanträde med Estoniaprojektets referensgrupp 26 april 2004**
Present: Mats Ekdahl, chairman, Vendela Dobson Andersson, Göran Lindmark, Disa Byman, Michael Öun, Allan Sooman, Frank Rosenius, Brett Hardman, Birger Stensköld, Magnus Faxén, Anna Carin Wallenstein, Lasse Johnsen, Odd Lundkvist, Hans Landberg och Daniel Westman	Närvarande: Mats Ekdahl, ordförande, Vendela Dobson Andersson, Göran Lindmark, Disa Byman, Michael Öun, Allan Sooman, Frank Rosenius, Brett Hardman, Birger Stensköld, Magnus Faxén, Anna Carin Wallenstein, Lasse Johnsen, Odd Lundkvist, Hans Landberg och Daniel Westman
...	...
Letter from SEA, AgnEf, FAE and Vilhelminagruppen	**Skrivelse från SEA, AgnEf, FAE och Vilhelminagruppen**
Above mentioned associations of relatives have in a letter to SPF of 30 March 2004 among other matters demanded that the so called Pre-study, how to explain the sinking of the Estonia 1994, which the SPF has carried out, shall be completed by an independent investigation and that it shall not include delegates and experts from Estonia, Finland and Sweden. Furthermore it is demanded that the computer animation of the SPF Pre-study shall not be done before an independent investigation has been completed and that the Estonia Fact Bank is continuously up-dated until the truth of the sinking of the M/S Estonia has dawned.	Rubricerade anhörigföreningar har i skrivelse till SPF den 30 mars 2004 bland annat begärt den så kallade sjunkförloppsstudie som SPF låtit utföra fullföljs med en oberoende utredning och att denna inte ska innefatta ledamöter och specialister från Estland, Finland eller Sverige. Vidare kräver man att den föreslagna dataanimationen av studien inte genomförs innan en oberoende utredning har slutförts samt att Estoniasamlingen löpande kompletteras fram till dess sanningen om M/S Estonias förlisning kommer i dagen.
Mats Ekdahl pointed out that the SPF cannot decide about all these demands. After thorough discussion it was decided that the question shall be further handled and be on the agenda at meeting with the reference group during the autumn.	Mats Ekdahl pekade på att SPF inte kan fatta beslut om samtliga dessa krav. Efter ingående diskussion beslöts att frågan ska beredas vidare och tas upp vid sammanträde med referensgruppen under hösten.
Next meeting	**Nästa sammanträde**
Next meeting with the reference group takes place Wednesday 15 September, 13.00 - abt. 16.00 hrs at the SPF	Nästa sammanträde med referensgruppen äger rum onsdag den 15 september, 13.00 -ca 16.00 på SPF.

This amazing request has not been mentioned in any Swedish media.

(written 7 May 2004)

THE SPF PRE-STUDY EXPLAINING THE ESTONIA SINKING

Sjunkförloppsstudie	**The SPF Pre-study explaining the Estonia sinking**
Ag Sjunkförloppsstudie	Re Sinking Pre-Study
2003-03-28	2003-03-28

Vam Frank Rosenius

Civ.ing. Staffan Sjöling

Styrelsen för Psykologiskt Försvar

Estonia. Sjunkförloppsstudie. Rapport förstudie. 15 bilagor

1. Bakgrund

Regeringen har gett SPF i uppdrag att i den faktabank som upprättas inom myndigheten, bör det finnas ett material som åskådliggör hur Estonia kan ha vattenfyllts i haveriets slutskede (Regeringsbeslut 2001-04-19, N2001/4125/TP). SPF bereder denna del av regeringsuppdraget genom att till sig knyta ett par experter. Experterna är Vam (pens) Frank Rosenius samt civ.ing. (skeppsbyggnad) Staffan Sjöling.

SPF har uppdragit åt experterna att genomföra en förstudie. Syftet med förstudien är att med utgångspunkt i haveriutredningens rapport översiktligt analysera möjliga vägar för vatteninströmning i fartyget och konsekvenser av detta för sjunkförloppet. Förstudien skall skapa underlag för den vidare beredningen av regeringens uppdrag. Denna förstudie avrapporteras härmed.

2. Överväganden och inriktning

Arbetsgruppen har som allmän utgångspunkt utnyttjat de slutsatser och övriga uppgifter av relevans för sjunkförloppet som finns redovisade i JAIC's slutrapport [1]. Vissa av dessa uppgifter finns sammanställda i **bilaga 1.**

Arbetsgruppen har haft begränsade resurser vilket endast medgivit översiktliga beräkningar och att ett begränsat antal exempel kunnat studeras. För att trots detta erhålla så stor bredd som möjligt i redovisade exempel har vi valt att utnyttja de ytterligheter på inströmningsförlopp som slutrapporten ger underlag för.

Beträffande den första delen i haverifasen - när bogvisiret bröts loss från fartyget och därmed förorsakad vatteninströmning på bildäck- har vi utnyttjat i haverirapporten redovisade min- respektive maxvärden på vatteninströmning - 300 ton/min resp. 1 800 ton/min.

Anmärkning av Björkman: Det är oklart vad som menas med *'den första delen i haverifasen'* och vatteninströmning i *överbyggnaden*. Det tar 40 resp. 6 minuter 40 sekunder att fylla överbyggnaden med 12 000 ton vatten vid de givna inflödena, men enbart 1 800 ton vatten behövs för att Estonia kapsejsar och flyter upp och ner - efter sex resp. en minut. Den första delen i haverifasen leder till blixtsnabb kapsejsning.

För det fortsatta sjunkförloppet finns det två dimensionerande parametrar, nämligen (1) hur snabbt däcken ovanför bildäck

Vice admiral Frank Rosenius

Civ.ing. Staffan Sjöling

Styrelsen för Psykologiskt Försvar

Estonia. Sequence of Sinking Study. Report Pre-study. 15 attachments

1. Background

The government has given the SPF the task, within the MV Estonia Fact Bank being established by the authority, **to include an information package that shows how the Estonia could have been flooded with water during the final events of the accident** (Government Decision 2001-04-19, N2001/4125/TP). The SPF prepares this part of the government order by attaching to it two experts. The experts are vice admiral (retired) Frank Rosenius and Staffan Sjöling, M.Sc (Naval architecture).

The SPF has requested the experts to make a pre-study. **The objective of the pre-study is, based on the official accident report, to superficially analyse different ways of water inflow into the ship and the resulting consequences of inflow with regard to the sequence of sinking. The pre-study shall create a base for further treatment of the government order.** This pre-study is hereby reported.

2. Considerations and objectives

The work group has as a general starting point used the conclusions and other relevant information of the sequence of sinking as reported in the Final JAIC report [1]. Some of the information is collected in **attachment 1**.

The work group has had limited resources, which have only allowed superficial calculations and that **a limited number of example could be studied**. Regardless, in order to achieve as large width as possible in the shown examples, we have chosen to use the extremes of sequences of inflow as the Final report is supporting.

Regarding the first phase of the accident - when the visor was ripped away from the ferry and thereby caused the water inflow onto the car deck - we have used the minimum respective maximum values of inflow of the Final report - 300 tons/min respectively 1 800 tons/min.

Remark by Björkman: It is not clear what is meant with the *'first phase of the accident'* and inflow into the *superstructure* at various rates. It takes 40 minutes resp. 6 minutes 40 seconds to fill 12 000 tons water into the superstructure at the given rates, but only 1 800 tons is required to capsize the Estonia upside down - after six resp. one minutes. The first phase of the accident should cause immediate capsize.

For the subsequent sequence of the sinking there are two limiting parameters, thus (1) how fast the decks above the

vattenfylls i samband med fartygets ökande slagsida samt (2) hur vatten når däcken under bildäck och när så sker, hur fort detta förlopp går. Denna sist nämnda parameter är avgörande för att beräkna fartygets successivt reducerade flytförmåga som leder till att fartyget sjunker.

car deck are filled with water due to increasing angle of list, and (2) how water reaches the decks below the car deck and when it happens, how fast this event takes. **The latter parameter is decisive to calculate the gradually reduced buoyancy capacity that results in the sinking of the vessel.**

Beträffande vatteninströmning på däcken ovanför bildäck anger haverirapporten att detta sker genom att bordvarts liggande fönster på SB-sidan slås sönder av vågorna samt genom dörrarna på akterkant av däckshusbyggnaden. Dessa dörrar är klenare till konstruktionen än fönstren. Vi har därför valt att studera två huvudexempel - **ett** där vatteninströmning endast sker genom dörrarna och **ett** där det sker genom både dörrar och 10 av de stora fönstren på resp. däck 4 - 6 (d.v.s. 100 % av dessa fönster är helt intryckta av vågorna). För däck 7 och 8 räknas vatteninströmningen endast genom de dörrar som där finns. Inom resp. exempel har tidsförloppet beräknats utifrån **två** variationer på vatteninströmningen på bildäck - 300 ton/min resp. 1 800 ton/min. Detta leder till att vi redovisar fyra tidsförlopp, två för resp. studerat huvudexempel.

Regarding water inflow on the decks above the car deck the Final report states that it occurs when the lee side windows on the starboard side are broken by the waves and through the aft side doors of the deckhouse. **These doors are of weaker design than the windows.** We have therefore chosen to study two principal examples - **one** where water inflow is only through the doors and **one** where it takes place through both the doors and 10 of the big windows on respective decks 4 - 6 (i.e. 100% of these windows are totally pushed in by the waves). For decks 7 and 8 the water inflow only through the existing doors is considered. Within respective example has the time sequence been calculated with regard to **two** different water inflows on the car deck - 300 tons/min respectively 1 800 tons/min. It means that we present four time sequences, two for respective studied main example.

Avseende vatteninströmning på däcken under bildäck utgör detta sjunkförloppets "kärnfråga". Genom konstruktionen med en s.k. centercasing mitt i fartyget för all förbindelse - trappor, avgaser, ventilation mm - mellan de övre däcken och däck 1 och 0 så skall inget vatten kunna tränga in i de undre däcken förrän vatten når branddörrarna i centercasingen på bildäck och/eller när vatten når luftintagen i området vid skorstenen på däck 8. Detta sker först vid ca 90 graders slagsida.

Regarding water inflow on the decks below the car deck, it constitutes **the "central question" of the sequence of the sinking.** By design with a so called centre casing in the centre line of the vessel for all communications - stairs, exhaust, ventilation, etc., - between the upper decks and decks 1 and 0, no water shall penetrate down to the lower decks until water reaches the fire doors in the centre casing on the car deck and/or **when water reaches the air inlets at the funnel on deck 8**. The latter only happens at 90 degrees list.

Arbetsgruppen har dock funnit i byggnadsvarvets ritningar [4] [5] [6], som beskriver ventilationssystemen ombord, att det bordvarts finns 6 ventilationskanaler på SB- resp. BB-sida vilka leder luft till/från maskinområdet från utsidan av fartyget (underkant däck 4). Vatten kan via dessa kanaler snabbt och i större mängd nå de undre däcken redan vid ca 40 graders slagsida. Dessa ventilationskanaler har endast brandavstängningsventiler som hanteras manuellt från bildäck vilket talar för att de ej stängdes under olycksförloppet. Arbetsgruppen har därför antagit att dessa ventilationskanaler var öppna.

The work group has however found shipyard drawings [4] [5] [6] of the ventilation system, which describe the existence of 6 ventilation ducts on starboard respective port side, which directs air to/from the engine spaces from the outside of the ship (just below deck 4 level). Water can via these ducts fast and in larger amounts reach the lower decks already at about 40 degrees list. The vent ducts are only fitted with manual fire dampers on the car deck, which suggest that they were not closed during the sequence of the accident. **The work group has therefore assumed that these ventilation ducts were open.**

3. Redovisning av exempel på sjunkförlopp

3. Description of examples of sinking

3.1 Beräkningsmodell

3.1 Calculation model

För beräkning av fyllnadsförloppet har det skeppsbyggnadstekniska mjukvaruprogrammet NAPA använts. Mjukvarumodellen av Estonia beskriver fartygets skrovform samt indelning i tankar och rum. Modellen är densamma som före olyckan använts vid beräkning av fartygets stabilitet samt samma modell som använts av haverikommissionen.

To calculate the flooding sequence the naval architecture software program NAPA is used. The software model of the Estonia describes the ship's hull form and partitions into tanks and compartments. **The model is the same, which was used before the accident to calculate the ship's stability and the one that was used by the accident investigation commission.**

Modellen har kompletterats. Den modell SPF erhållit sträckte sig endast upp till däck 4, 13.4 m över baslinjen. Utifrån generalarrangemangsritningar har modellen kompletterats för att inkludera hela fartyget. Detta har gjorts för att på ett så korrekt sätt som möjligt kunna beräkna fyllnadsförloppet. Fartygsmodellens utsträckning återges i **bilaga 2**.

The model has been added to. The model SPF was given had an extension only up to deck 4, 13.4 m above base line. Based on general arrangement drawings the model has been enlarged to include the whole ship. It has been done in as correct manner as possible in order to calculate the flooding sequence. The extension of the ship model is

shown in **attachment 2**.

Modellen har även kompletterats med de mest väsentliga flödesöppningarna. Flödesöppningarna återges i **bilaga 3**.

The model has also been fitted with the essential inflow openings. The inflow openings are shown in **attachment 3.**

I **bilaga 2**, över beräkningsmodellens utsträckning, kan man se att däcken ovan bildäck är indelade i avdelningar. Denna indelning valdes för att få möjlighet att studera ett successivt inflöde av vatten på varje däck. Beräkningar är genomförda både för däck indelade i flera delar samt för varje däck som en helhet.

In attachment 2 of the extension of the model you can see that the decks above the car deck are divided into compartments. This interior division was selected in order to study the successive inflow of water on every deck. The calculations are done both for decks divided into several parts and for each deck as a complete unit.

3.2 Avgränsningar

3.2 Limitations

Att göra en detaljerad studie av fyllnadsförloppet är mycket svårt. Speciellt gäller detta de olika vägar vattnet kan ha trängt in i fartyget. Att säga att ett sätt som fartyget vattenfylldes på är det riktiga är i praktiken omöjligt. Att i detalj rekonstruera vilka vägar vattnet tog, hur mycket vatten som trängde in i de olika tidsskedena och hur detta minut för minut påverkade sjunkförloppet har arbetsgruppen ej kunnat göra utan vi redovisar exemplen översiktligt.

To make a detailed study of the flooding sequence is very difficult. This concerns in particular the various ways water can have penetrated into the vessel. To say that one way the ship was flooded is the correct one is in practice impossible. **To simulate in detail what ways the water took, how much water that entered at different times and how this, minute by minute, affected the sequence of sinking has not been possible for the work group.** Instead we show the examples superficially.

Tidsförloppen för vatteninströmningen i olika delar av fartyget är, som angivits ovan, svåra att exakt beräkna med det underlag och de verktyg som arbetsgruppen haft tillgång till. Angivna tider är därför approximativa.

The time sequences of water inflow in different parts of the ship are, as stated above, difficult to calculate exactly with the input and tools available to the work group. Given times are therefore approximate.

JAIC´s slutsatser angående att vattentäta avdelningar samt att branddörrar till bildäck stängdes tidigt har legat till grund för beräkningsexemplen utom avseende det som berör de bordvarts placerade ventilationstrummorna till maskinområdet.

The conclusions of the JAIC regarding the early closing of the watertight compartments and the fire doors on the car deck are the base of the calculated examples except what concerns the side vent ducts to the engine spaces.

Studien har genomförts med ett antal övriga begränsningar enligt nedan:

The study has been done with a number of additional limitations as follows:

· Studien är genomförd helt statisk. Ingen hänsyn har tagits till inverkan av fartygets rörelser.

· **The study is made fully static. No consideration is given to vessel movements.**

· Flödesöppningarna har inte kunnat modelleras fullständigt. I ett fartyg finns ett stort antal öppningar genom vilka vatten kan ta sig in i fartyget samt genom vilka vatten kan ta sig från ett utrymme till ett annat. Att fullständigt beskriva dessa samt att ta dem i beaktande är nästan ogörligt.

· The inflow openings have not could be modelled correctly. **In a vessel there are a large number of openings through which water can enter into the ship and through which water can move from one compartment to another. To describe all these and to consider them is almost impossible.**

· Beräkningarna för inflöde av vatten in i fartygets olika utrymmen är av enkel karaktär. Inga dynamiska effekter eller strömningsförluster har beaktats.

· The inflow calculations into the different compartments of the ship are of simple character. No dynamic effects or flow losses are considered.

· Beräkningarna har genomförts för stora krängningsvinklar och med stora mängder vatten ombord. Liknande beräkningar förekommer inte särskilt ofta i daglig skeppsbyggnadsteknik. I en del fall har datorprogrammet varnat för att beräkningsnoggrannheten närmat sig gränserna för det tillåtna. Det är ett fenomen som uppträder just vid stora trim och stora krängningsvinklar även vid vanlig läckstabilitetsberäkning.

· The calculations have been done for large angles of heel and with large amounts of water onboard. **Similar calculations are rarely done in daily naval architecture work**. In some cases the computer soft ware has warned that the calculation accuracy is close to allowable limits. It is a phenomenon that appears at large trim and large angle of heel also at usual damage (leak) stability calculations.

· Ingen effekt av en eventuell lastförskjutning har beaktats.

· No effects of shifting cargo have been considered.

· Vid stabilitesberäkningarna med vatten på bildäck har beräkningsmodellen tvingats till att kränga åt SB. Detta eftersom datorprogrammet känner av att bildäcket är asymmetriskt. Då

· **At the stability calculations with water on the car deck the model has been forced to list to starboard.** This is due

centercasingen på bildäck ligger om SB väljer programmet automatiskt att kränga fartyget åt BB. Detta kan förhindras genom att välja beräkning för SB krängningsvinklar.

· I och med att datorprogrammet räknar med lost bouyancy-method blir beräkningarna i en del fall missvisande. Ett exempel på detta kan iakttagas vid vattenfyllnaden av bogtrusterrummet, T210. När rummet ligger under lugnvattenytan fylls det med vatten. När fartyget får ett stort akterligt trim och rummet lyfts över vattenytan försvinner den mängd vatten som fyllt rummet i ett tidigare skede. Så var med säkerhet inte fallet i verkligheten.

3.3 Lastkondition

Den lastkondition som använts i dessa beräkningar är hämtad från [2], Loading Condition K.0, Departure from Tallinn. Lastkonditionen är korrigerad för visirets vikt om -59 ton x=138.3 z=10.62. Uppgifter för visirets vikt och tyngdpunkt är hämtade från [3]. Lastkonditionen, kallad L2, finns presenterad mer i detalj i bilaga 4.

3.4 Vatten på bildäck

Utifrån lastkondition L2 har fartygets stabilitet beräknats för en ökande mängd vatten på bildäck. Lastfall L2 har beräknats med en vattenmängd från 0 till 12 000 ton på bildäck. Dessa lastfall kallas C0-C31 och finns presenterade i bilaga 5.

Anmärkning/tillägg av Björkman: Lastkonditionerna i bilaga 5 har enligt uppgift beräknats av en Napa-dator. Emellertid är lastkonditionerna C8-C31 helt, 100%, ostabila och ej möjliga - Estonia skulle ha kapsejsat och flutit upp och ned ned redan i lastkondition C7. Uppgifterna i Bilaga 5 är därför felaktiga. Se även boken Katastrofutredning - 1.9.

3.5 Beräkningsmetodik

I den här studien har två alternativa beräkningsmetoder använts. Dels har de olika utrymmena i fartyget steg för steg fyllts med vatten för att försöka efterlikna ett troligt fyllnadsförlopp så bra som möjligt. Dels har fartyget utifrån ett initialt lastfall med vatten på bildäck beräknats med successivt minskande deplacerande volym.

Den beräkningsmetod som visade sig fungera bäst och som gav bäst överblick över händelseförloppet var den senare. Beräkningarna kunde inte genomföras på ett traditionellt sätt. Normalt utgår man från ett lastfall utan inträngt vatten och beräknar steg för steg vad som händer när fartyget successivt fylls med vatten. I dessa beräkningar var man dock tvungen att utgå från lastfall med vatten på bildäck.

Mängden vatten på bildäck har i beräkningarna ökats. När vattenmängden ökat har fartygets slagsida ökat. Med ökande

to the program feeling that that the car deck is asymmetric. As the centre casing is located to starboard, the program chooses automatically to list the vessel to port. Choosing calculation of starboard angles of list can prevent it.

· **As the computer programme calculates with 'lost buoyancy method', the calculations become in some cases misleading.** One example of this can be seen when the bow thruster compartment T210 is flooded. When the compartment is below the still water line it fills with water. When the ship trims a lot on the stern and the compartment is lifted above the water surface, a large amount of water disappears, which was previously inside the compartment. In reality the case was certainly different.

3.3 The Loading Condition

The loading condition used in these calculations is taken from [2], Loading Condition K.0, Departure from Tallinn. The loading condition is corrected for the weight of the visor of -59 ton x=138.3 z=10.62. The info of the visor weight and location is taken from [3]. The loading condition, called L2, is described in more detail in attachment 4.

3.4 Water on the car deck

In load condition L2 the vessel stability has been calculated with increasing amounts of water on the car deck. Load condition L2 has been calculated with a water amount from 0 to 12 000 tons. These load conditions are called C0-C31 and shown in attachment 5.

Remark/addition by the Björkman: The loading conditions in attachment 5 are allegedly computed by a Napa computer. However conditions C8-C31 are, completely, 100% unstable and not possible - the Estonia would have capsized and floated upside down at condition C7. The data in attachment 5 is thus incorrect. See also the book Disaster investigation - 1.9.

3.5 Methods of calculation

In this study two alternative methods of calculation have been used. **On the one hand the various compartments are filled step by step with water in order to simulate a probable sinking sequence as well as possible. On the other hand an initial loading case with water on the car deck is used and the condition is calculated for step-by-step reduced displacing volume (buoyancy) of the ship.**

The best method of calculation was the latter and it gave also a clear view of what happened. **The calculations could not be done in a traditional manner.** Normally you start from a loading condition without inflow of water and calculate step by step what happens when the ship is gradually filled with water. **In these calculations we were however forced to start with loading condition with water on the car deck.**

The amount of water on the car deck has in the calculations been increased (stepwise). When the amount of water has

slagsida har fartygets flödesöppningar successivt kommit under vatten. När flödesöppningarna kommit under vatten har de utrymmen öppningarna leder till flödats med vatten. Fyllnadsförloppet är beräknat stegvis. De olika utrymmena i fartyget har ansatts fyllas i diskreta steg. I verkligheten var nog förloppet mer regelbundet.

increased, then the ship's angle of list has increased. With increasing angle of list the inflow openings of the ship comes below water one after the other. When the inflow openings are submerged, the associated/connected compartments are flooded with water. The sequence of flooding is computed stepwise. The various compartments are assumed to be flooded in discrete steps. In reality the sequence was probably more continuous.

I den här studien har inte eventuell vattenfyllnad av fartygets tankar beaktats. Det är möjligt att vatten trängt in även i dessa. Men omfattningen av en sådan vatteninträngning är svår att efterlikna. Många tankar var förmodligen ventilerade med svanhalsar vilka oftast har ett fyllnadsskydd. Det enda undantaget från detta är den aktra ballasttanken T58. Den aktra ballasttanken förväxlades tyvärr med styrmaskinrummet, T1500. Detta upptäckte vi i ett allt för sent skede. Styrmaskinrummet har en något större volym än tank T58 men är placerad längre föröver.

In this study final water filling of the ship's tanks is not considered. It is possible that water has also flooded the tanks. But the extent of such inflow is difficult to simulate. Many tanks were probably ventilated with swan necks, which are fitted with non-return closing appliances. The only exception is the aft ballast tank T58. The aft ballast tank was mixed up with the steering gear room, T1500. We discovered this too late in the study. The steering gear room has a slightly larger volume than tank T58 but is located further forward.

För att på ett så noggrant sätt som möjligt försöka beskriva sjunkförloppet har beräkningarna genomförts för fartygets hela volym. Den enda del av fartyget som inte tagits med som bidragande till flytbarheten är fartygets skorsten.

In order to try, as carefully as possible, describing the sequence of sinking, the calculations have been carried out for the complete volume of the vessel. **The only part that has not been considered contributing to the buoyancy is the ship's funnel.**

3.6 Fyllnadsförlopp

3.6 Sequences of water filling

Utifrån haverikommissionens beskrivning och vittnesmålens uppgifter har två tänkbara exempel på fyllnadsförlopp studerats närmare. I deras beskrivning av fyllnadsförloppet har fartygets slagsida och dess akterliga trim tilltagit. I ett slutskede, strax innan fartyget försvann från ytan, har det från att ha haft en kraftig SB slagsida roterat runt helt och slutligen sjunkit.

Based on the description of the accident commission and the observations of the testimonies two possible examples of sequences of water filling have been studied closer. In their descriptions of sequence of water filling the ship lists and the stern trim increases. In one final stage, just before the ship disappeared from the surface, it has from having a severe starboard list rotated completely and finally sunk.

I det först studerade fyllnadsförloppet, *Exempel 1*, har vattnets inträngning i fartyget enbart antagits kunna ske genom fartygets rampöppning, dörrar och ventilationskanaler.

In the first studied sequence of water filling, *Example 1*, water inflow into the vessel is assumed only through the ship's ramp opening, doors and ventilation ducts.

I det andra studerade fyllnadsförloppet, *Exempel 2*, har vattnets väg in i fartyget antagits kunnat ske genom att fönsterrutor på däck 4-6 krossats av vattnets tryck och vågornas kraft samt genom fartygets rampöppning, dörrar och ventilationskanaler.

In the other studied sequence of water filling, *Example 2*, it is assumed that water inflow through the broken windows on deck 4-6 is possible and that water flows in through ramp opening, doors and ventilation ducts.

3.6.1 Exempel 1

3.6.1 Example 1

Utifrån lastfall L2 har försök gjorts för att rekonstruera fyllnadsförloppet. Lastfall L2 har beräknats med olika mängd vatten på bildäck, lastfall C0-C31. Utgående från dessa lastfall har fartyget beräknats för successiv vattenfyllnad i hela fartygets struktur. Fyllnadsförloppet finns beskrivet i **bilaga 6** och flytläge i de olika skedena finns beskrivet i **bilaga 7**. GZ-kurvor för fyllnadsförloppet i Exempel 1 återfinns i **bilaga 8**.

In load condition L2 **attempts have been made to simulate the sequence of water filling**. Load condition 2 has been computed with various amounts of water on the car deck, load cases C0-C31. Starting from these load cases, the complete water filling of all ship structure has been computed. The sequence of water filling is described in **attachment 6** and the floating positions at the various stages are described in **attachment 7**. GZ curves for the sequence of water filling in Example 1 are shown in **attachment 8**.

När fartyget förlorade sitt visir tränger stora mängder vatten in på bildäck. Med 600 ton inträngt vatten på bildäck har fartyget en slagsida på ca 16 grader, C3. Då mer vatten tränger in i fartyget ökar slagsidan samtidigt som det akterliga trimmet minskar något. Med 1 300 ton vatten på bildäck är slagsidan ca 28 grader.

When the vessel lost its visor large amounts of water flows onto the car deck. **With 600 tons water inflow the ship has an angle of list of about 16 degrees,** C3. When more water flow into the ship, the angle of list increases while at the same time the stern trim is slightly reduced. With 1 300 tons on the car deck the angle of list is about 28 degrees.

Då 1 900 ton vatten trängt in på fartygets bildäck kommer de första flödesöppningarna under vatten. Det är ventilationsöppningarna för tilluft till huvudmaskinrum, separatorrum, KaMeWa-rum och maskinverkstad (T1010, T1110,

When 1 900 tons of water has flowed onto the car deck, the first inflow openings come below water. They are the vent duct openings for supply air to the main engine room, the separator room, the KaMeWa-room and the

T1210, T1310). Dessa börjar vattenfyllas. Slagsidan är nu ca 38 grader. (C8/DX7F 2 EQ) På ritning [4] [5] och [6] kan man se var dessa ventilationskanaler är placerade. Under resten av fyllnadsförloppet ökar fartygets trim på aktern.

engine workshop (T1010, T1110, T1210, T1310). **These start to fill.** The angle of list is now about 38 degrees. (C8/DX7F 2 EQ) **On drawings [4] [5] and [6] you can see where these ventilation ducts are located.** During the remaining sequence of water filling the stern trim increases.

Anmärkning av Björkman: Här börjar den förfalskade sjunkförloppsstudien med hypotesen att skrovutrymmen vattenfylls genom antagna öppningar i överbyggnadens utsida under deck 4.

Remark by Björkman: Here starts the falsified pre-study of the sinking with the suggestion that hull compartments are flooded through assumed openings in the outer side of the superstructure below deck 4.

Därefter kommer de stora SB-ventilationsöppningarna till bildäck under vatten. Detta sker vid ca 40 grader slagsida. 4 cirkulära ventilationsschakt i fören och 4 i aktern, med ca 1m diameter, leder ner till bildäck. När dessa ventilationsschakt når vattenytan ökar vatteninträngningen till bildäck ytterligare utöver inträngningen genom bogrampsöppningen. Bograpens nedre hörn ligger fortfarande över vattenytan.

(**C10/DX7F 2 EQ**)

Thereafter the big starboard vent openings to car deck come under water. It happens at about 40 degrees list. 4 circular vent shafts at the bow and 4 at the stern, with about 1 m diameter, lead down to the car deck. **When these vent shafts reach the water surface, the water inflow onto the car deck increases in addition to the flow through the bow ramp opening.** The lower corner of the bow ramp lies still above the water surface.

(**C10/DX7F 2 EQ**)

När vattenmängden på bildäck är ca 3 900 ton och slagsidan är ca 51 grader når vattenytan den akterliga dörren på SB sida till däck 5. Denna dörr nås tidigare av den omgivande vattennivån än den akterliga dörren på däck 4 som är placerad mer in mot fartygets centerlinje. Ungefär samtidigt som däck 5 börjar vattenfyllas akterifrån kommer ventilationen till styrmaskinrummet(T58) under vatten. Ventilationen av styrmaskinrummet framgår av ritning [5]. (C15 DX7F 3 EQ)

When the water on the car deck amounts to about 3.900 tons and the list is about 51 degrees the water surface reaches the aft door on starboard side deck 5. This door is reached by outside water level before the aft door on deck 4, which is located more to the ship's centreline. About the same time as deck 5 starts filling from aft, the vent openings to the steering gear room (T58) comes below water. The steering gear vent system is seen on drawing [5]. (C15 DX7F 3 EQ)

När hela däck 5 och hela maskinrum T1010-T1310 vattenfyllts samt med en vattenmängd om ca 5 500 ton på bildäck och en slagsida på ca 56 grader återstår ca 0.5 m till den aktre SB dörren på däck 4. I beräkningarna har inte slagsidan och fartygets sättning blivit så stor att denna dörr kommit under vattenytan i detta skede. Men eftersom fartyget rullade och hävde är det inte osannolikt att vatten kunde ta sig in på däck 4 genom denna dörr. (C21/DX7F 6 EQ)

When the whole deck 5 and all the engine rooms T1010-T1310 are water filled and with about 5 500 tons of water on the car deck and at an angle of list of 56 degrees, 0.5 m remains to the aft starboard door on deck 4. In the calculations the angle of list and the trim of the ship have not become large enough to submerge this door. But as the ship was rolling and heaving, it is not unlikely that water could enter onto deck 4 through this door. (C21/DX7F 6 EQ)

När bildäck fyllts med ca 5 500 ton vatten är vattennivån så hög inne på bildäck att den når dörrarna från centercasingen till bildäck. Vatteninträngning genom dessa är dock inte beräknad i det här skedet, utan antas inträffa senare.

When the car deck is flooded with about 5 500 ton water, the level of water is so high on the car deck that it reaches the doors of the centre casing to the car deck. Water inflow through these are not calculated at this stage but is assumed to occur later.

Med vattenfyllning akterifrån på däck 4 och med en vattenmängd om ca 7 000 ton på bildäck är slagsidan ca 65 grader. I det skedet kommer den aktra SB dörren på däck 6, dörren vid spant #49 på däck 7 samt SB bryggvinge under vatten. Rummen på däck 6 och 7 börjar fyllas med vatten. (**C21/DX7F 11 EQ**)

With water flooding in aft on deck 4 and with about 7.000 tons of water on the car deck the angle of list is about 65 degrees. At that stage the aft starboard door on deck 6, the door at frame #49 on deck 7 and the starboard bridge wing are submerged. The rooms on deck 6 and 7 start to fill with water. (**C21/DX7F 11 EQ**)

Strax därefter når vattenytan de aktra SB dörrarna på däck 8 och däck 7. Slagsidan är då ca 75 grader.

Soon after the water level reaches the aft starboard doors on deck 8 and deck 7. The angle of list is then about 75 degrees.

I dessa beräkningar har det antagits att förrådsutrymmen, T1120-T1420 kan ha börjat vattenfyllas i detta skede. (C21/DX7F 13 EQ)

It is assumed in these calculations that the storeroom, T1120-T1420 may have started to be water filled at this stage. (C21/DX7F 13 EQ)

När slagsidan är ca 83 grader och vattennivån är i höjd med ventilationsutrymmena på däck 8 ökar förmodligen vatteninträngningen i fartygets olika delar genom det komplexa ventilationssystemet.

When the angle of list is about 83 degrees and the water level is at the height of the ventilation spaces on deck 8, the water inflow probably increases into the ships different parts through the complex

ventilation system.

Fartygets slagsida, trim och sättning ökar varefter de olika utrymmena vattenfylls. Med 9 000 ton vatten på bildäck är slagsidan ca 83 grader och fartygets skorsten når vattenytan. Under förloppet har även de olika däckens akterliga BB dörrar kommit under vatten.

The list, the trim and the draft increase when the various compartments are water filled. With 9 000 tons of water on the car deck the angle of list is about 83 degrees and the ship's funnel reaches the water surface. At this stage the aft port doors on the various decks have come below water.

Med en vattenmängd om ca 10 000 ton på bildäck och när slagsidan är ca 88 grader har i denna beräkning även hjälpmaskinrummet och maskincentralen vattenfyllts, T910 och T920. Hjälpmaskinrummet saknade ventilationstillopp som mynnade i fartygssidan och har troligtvis vattenfyllts via ventilationsaggregaten på däck 8. I det här skedet ligger nästan hela aktern under vatten och slagsidan är ca 90 grader. (C27/DX7F 21 EQ)

With about 10 000 tons of water on the car deck and when the angle of list is about 88 degrees in this calculation the auxiliary engine room and the engine control room are flooded, T910 and T920. The auxiliary engine room lacked ventilation entries that ended at the ship's side and has probably been water filled via the ventilation unit on deck 8. At this stage the whole aft part is below water and the angle of list is about 90 degrees. (C27/DX7F 21 EQ)

Med 12 000 ton vatten på bildäck och när de sista utrymmena på däcksnivå 8 och 9 vattenfyllts slår fartyget runt med botten upp samt med ett stort trim. I denna studie har de förliga förläggningarna för om maskinrummen inte antagits börja fyllas förrän i detta skede. Det är dock troligt att detta inträffat i ett tidigare skede, baserat på vittnesuppgifter samt att vattennivån når dörrar och hissar i centercasingen redan med ca 5.500 ton vatten på bildäck.

With 12 000 tons water on the car deck and when the last compartments on deck levels 8 and 9 are flooded, the ferry turns upside down with the bottom up and a large trim. In this study the passenger rooms forward of the engine room are not assumed to be flooded until this stage is reached. It is however probable that it has happened earlier based on testimonies and the fact that the water level reaches doors and elevators in the centre casing already with about 5 500 tons of water on the car deck.

I dessa beräkningar sjunker inte fartyget helt och hållet. Det beror bland annat på att inga beräkningar kunde genomföras med större mängd vatten på bildäck än 12.000 ton. 12 000 ton är ungefär 2/3 av hela bildäckets volym. Vid försök med större mängd vatten på bildäck har datorprogrammet låst sig. Eftersom beräkningar med mer än 12 000 ton vatten på bildäck inte kan genomföras innebär det, både för Exempel 1 och Exempel 2, att slutfasen av sjunkförloppet inte kan beskrivas i datormodellen. Efter steg **C10/DX7F 2 EQ** låg dock de stora ventilationskanalerna från akterkant av däck 4 till bildäck under vatten hela tiden. Genom dessa fylldes bildäck på kontinuerligt och fartyget sjönk.

In these calculations the vessel does not sink completely. It is among other reasons due to no calculations being done with more than 12 000 tons on the car deck. 12 000 tons is about 2/3 of the total car deck volume. At attempts with larger amounts of water on the car deck the computer programme locks itself. As calculations with more than 12 000 tons water on the car deck cannot be done, this means that the computer model cannot describe the final phases of the sequences of sinking for both Example 1 and Example 2. After step **C10/DX7F 2 EQ** the big ventilation ducts from aft edge of deck 4 to the car deck were submerged all the time. Through these the car deck was continuously filled and the ship sank.

Just slutfasen i sjunkförloppet är svår att försöka efterlikna. När bildäck slutligen fyllts helt med vatten gick nog slutfasen i sjunkförloppet väldigt snabbt. Detta kan ha skett tidigare än beskrivet i denna beräkning. Bogrampens öppning ligger dock över lugnvattenytan under hela förloppet. Fram till steg C18/DX7F 7 EQ kommer den allt närmare vattenytan för att efter detta steg åter höja sig över lugnvattenytan.

Particularly the final phase of the sequence of sinking is difficult to simulate. When the car deck was finally wholly filled with water, the final phase of the sequence of sinking went very fast. It may have occurred earlier than described in this calculation. The opening of the bow ramp is however above the still waterline during the whole sequence. Up until step C18/DX7F 7 EQ it comes closer to the water but after this step it rises again above the still water surface.

I sidovyn av fartyget kan man se att fartyget i steg 23 flyter upp och ned med skorstenen i riktning föröver. I det efterföljande steget, steg 24, flyter fartyget i det närmaste vertikalt och med skorstenen pekande akteröver. Detta beror på beräkningsprogrammets svårighet att tolka och presentera beräkningsresultatet vid ett sådant extremt flytläge.

In the side view of the vessel you can see that the vessel in step 23 floats upside down with the funnel in the forward direction. In the following step, step 24, the ship floats almost vertically and with the funnel pointing aft. It is due to difficulty of the computer programme to interpret and describe the computation results of such an extreme floating position.

3.6.2 Exempel 2

3.6.2 Example 2

I detta exempel har det antagits att vattnets tryck och vågornas kraft krossat de stora fönsterrutorna i fartygets sida.

It is assumed in this example that the pressure of the water and the forces of the waves have destroyed the large

Fyllnadsförloppet finns beskrivet i bilaga 9 och flytläge i de olika skedena finns beskrivet i bilaga 10. GZ-kurvor för fyllnadsförloppet i Exempel 2 återfinns i bilaga 11.

windowpanes in the ship's side. The sequence of water filling is described in attachment 9 and the floating positions of the various stages are described in attachment 10. GZ-curves of the sequence of water filling of Example 2 are shown in attachment 11.

Som i det tidigare exemplet når flödesöppningarna till de aktra maskinrummen (T1010, T1110, T1210, T1310) vattenytan då 1 900 ton vatten strömmat in på bildäck och slagsidan är ca 37 grader.

Exactly as in the earlier example the inflow openings to the aft engine rooms (T1010, T1110, T1210, T1310) are submerged when 1 900 tons of water has flooded the car deck and the angle of list is about 37 degrees.

I detta exempel kommer vatten att kunna tränga in på däck 4 i ett tidigare skede än i det tidigare exemplet. Med 2 400 ton vatten på bildäck och 45 graders slagsida antas vatten ha strömmat in på däck 4.

In this example water will enter deck 4 at an earlier stage than in the previous example. With 2 400 tons of water on the car deck and 45 degrees list it is assumed that water has flooded deck 4.

Vatteninströmningen på däck 4-6 antas ha skett akterifrån och stegvis föröver.

The water inflow on decks 4-6 is assumed to have taken place aft and stepwise forward.

Med 3 900 ton vatten på bildäck har slagsidan ökat till ca 56 grader och däck 5 börjar vattenfyllas akterifrån. Samtidigt fylls däck 4 förut, styrmaskinrummet (T58) och bogpropellerrummet. (C15/DX7W 4 EQ)

With 3 900 tons of water on the car deck the angle of list has increased to about 56 degrees and deck 5 starts to be water filled from aft. At the same time deck 4 forward, the steering gear room (T58) and the bow thrusters room. (C15/DX7W 4 EQ)

Med 3 900 ton vatten på bildäck har slagsidan ökat till ca 56 grader och däck 5 börjar vattenfyllas akterifrån. Samtidigt fylls däck 4 förut, styrmaskinrummet (T58) och bogpropellerrummet. (C15/DX7W 4 EQ)

With 3 900 tons of water on the car deck the angle of list has increased to about 56 degrees and deck 5 starts to be water filled from aft. At the same time deck 4 forward, the steering gear room (T58) and the bow thrusters room. (C15/DX7W 4 EQ)

När 5 500 ton vatten strömmat in på bildäck och slagsidan är ca 62 grader antas däck 6 ha flödats med vatten samtidigt som vatteninträngningen fortsätter föröver på däck 4 och 5. (C18/DX7W 6 EQ)

When 5 500 tons water has flooded the car deck and the list is about 62 degrees, deck 6 is assumed to be flooded with water, while simultaneously water inflow forward on decks 4 and 5 continues. (C18/DX7W 6 EQ)

Då vattenmängden på bildäck är 7 000 ton och slagsidan 76 grader börjar däck 7 vattenfyllas. (C21/DX7W 7 EQ) Efter det antas maskinrummen T1010-T1310 ha fyllts helt. SB bryggvinge når vattenytan och börjar vattenfyllas. Vid ca 85 graders krängning når vattenytan däck 8, (C21/DX7W 9 EQ)

With 7 000 tons of water on the car deck and angle of list about 76 degrees, deck 7 aft starts to fill with water. (C21/DX7W 7 EQ) After that it is assumed that engine rooms T1010-T1310 have been totally filled. Starboard bridge wing reaches the water surface and starts to be flooded. At about 85 degrees list the water level reaches deck 8, (C21/DX7W 9 EQ)

I det här läget har de övre förrådsrummen (T1120-T1420) antagits vattenfyllas på liknande sätt som i Exempel 1. (C21/DX7W 12 EQ)

In this position the upper storerooms (T1120-T1420) are assumed to fill with water similar to Example 1. (C21/DX7W 12 EQ)

När 10 000 ton vatten trängt in på bildäck ändrar fartyget flytläge från att ligga med 85 graders slagsida till 117 grader i samband med att utrymmen på däck 9, däck 8 samt hjälpmaskinrum och kontrollrum vattenfylls. (C27/DX7W 13 EQ)

When 10 000 tons of water has forced itself into the car deck, the vessel changes floating position from 85 degrees to 117 degrees list in connection with the flooding of compartments on deck 9, deck 8 and the auxiliary engine room and the control room. (C27/DX7W 13 EQ)

Med 11 000 ton vatten på bildäck samtidigt som då de sista rummen på däck 8 och 9 vattenfylls roterar fartyget runt med kölen uppåt och ett stort akterligt trim. (C29/DX7W 13 EQ)

With 11 000 tons of water on the car deck and when simultaneously the last compartments on deck 8 and 9 are water filled, the ship rotates with the keel upwards and with a big stern trim. (C29/DX7W 13 EQ)

Precis som i Exempel 1 är inte vattenfyllnad av de förliga förläggningsutrymmena beaktad förrän i detta sena skede. När dessa utrymmen vattenfylls intar fartyget ungefär samma flytläge som i Exempel 1, ett i det närmaste vertikalt stående flytläge. Fartyget kan inte heller i detta exempel beräknas med mer än 12 000 ton vatten på bildäck.

Exactly as in Example 1 the water filling of the forward passenger compartments are not considered until this late stage. When these compartments are flooded, the ship

reaches about the same floating position as in Example 1, an almost vertical floating position. Also in this example the ship's position cannot be calculated when there is more than 12 000 tons of water on the car deck.

I Exempel 1 erhåller inte fartyget en slagsida över 90. I Exempel 2 C27/DX7W 13 EQ kan dock en sådan slagsida iakttagas. Detta beror på att de förliga rummen på däck 8 och 9 inte flödats med vatten i det skedet. Vittnesuppgifter talar om att fartyget under en tid hade just en slagsida överstigande 90 grader innan det vände och sjönk. En sådan slagsida kan alltså ha varit resultatet av att förliga rum i de övre däcksregionerna inte vattenfylldes förrän i ett sent skede.

In Example 1 the ship never reaches an angle of list exceeding 90. In Example 2 C27/DX7W 13 EQ can however such list be observed. It is due to the forward compartments on deck 8 and 9 not being flooded with water at this stage. Testimonials report that the ship for a while had a list exceeding 90 degrees before it turned and sank. Such listing can therefore have been the result of forward rooms in the upper deck regions not being flooded until a very late stage.

I flytlägestabellerna över fyllnadsförloppen, **bilaga 7** och **bilaga 10** kan man se att slagsidan inte ökar kontinuerligt. Både de aktra maskinrummen T1010-T1310 och förrådsutrymmena T1120-T1420, fylls på successivt i steg. Vatteninträngning i dessa rum motverkar ökningen av slagsida. I dessa beräkningar antas de ha fyllts med vatten i diskreta steg. I verkligheten måste de dock ha fyllts kontinuerligt och samtidigt som övriga delar av fartyget.

In the tables of floating positions of the sequences of water filling, **attachment 7** and **attachment10**, you can see that the list does not increase continuously. Both the aft engine rooms T1010-T1310 and storerooms T1120-T1420 are filled in steps. The water inflow into these compartments counteracts the increase in list. In these calculations they are assumed to have been filled with water in discrete steps. In reality they must have been flooded continuously at the same time as other parts of the ship.

3.6.3 Enbart vatten på däck på och över bildäck

En enklare studie har även genomförts där utrymmen under bildäck inte fyllts med vatten. I ett fall där däck 4 till däck 9 successivt fylls med vatten ökar fartygets sättning och slagsida tills dess att det kapsejsar och finner ett stabilt jämviktsläge med botten uppåt. Fartyget sjunker dock aldrig.

3.6.3 Water only on the car deck and decks above the car deck

A simpler study has also been carried out where the compartments below the car deck are not filled with water. In one case where decks 4 to 9 are successively filled with water, the draft/**trim** and heel increases until **the ship capsizes and finds a stable equilibrium with the bottom up. The ship however never sinks.**

3.7 Tidsstudie

För de två beräknade fyllnadsförloppen har enkla tidsuppskattningar genomförts. Dessa har genomförts för två fyllnadshastigheter av vattnets inträngning på bildäck. I haverikommissionens rapport anges att vatteninträngningen på bildäck då rampen slets upp var 300-600 ton per minut samt att vatteninträngningen var 2-3 gånger större då slagsidan var 35 grader. Vatteninträngning om 300 ton per minut och 1 800 ton per minut har använts i denna studie. Inga mer detaljerade uppgifter om vatteninträngning på bildäck beroende av fart, kurs, slagsida och rörelser som de som finns presenterade i [7] och [8] har använts.

3.7 Time study

For the two computed sequences of water filling simple time estimates have been carried out. These have been done for two filling velocities of water inflow on the car deck. In the Final report of the accident commission is stated that the water inflow on the car deck when the ramp was ripped open was 300-600 tons per minute and that the water inflow was 2-3 times bigger when the angle of list was 35 degrees. **Water inflow rates of 300 tons per minute and 1 800 tons per minute have been used in this study.** No more detailed information of water inflow rates on the car deck due to speed, heading, list and movements than the one shown in [7] and [8] have been used.

En enkel uppskattning av hur mycket vatten som kan tränga in i de olika flödesöppningarna baserad på Bernoullis ekvation är genomförd. Denna uppskattning är baserad på flödesöppningarna 1 m under vattenytan, helt öppna, utan strömningsförluster.

A simple estimate is done how much water that can flow into the various openings based on the Bernoulli's equation. This estimate is based on inflow openings 1 m below surface, wholly open without flow losses.

I varje steg av fyllnadsförloppet har inströmmad mängd vatten i de olika utrymmena beräknats. Den tid det tagit för vattnet att fylla utrymmena har sedan uppskattats. Tiden för fyllnadsförloppet gäller från det att vatten börjar tränga in i fartyget till det att

In every step of the sequence of filling the amount of water inflow of the various compartments have been calculated. The time taken for filling the compartment has then been estimated. The time for the sequence of filling is valid from when water starts to enter the ship until the ship turns turtle. After that the volume of inflow water cannot be

fartyget slår runt. Efter det kan inte volymen av inträngt vatten beräknas.

calculated.

För Exempel 1 har inträngd vattenmängd enbart beaktats för de flödesöppningar som ligger under vattenytan. När fler flödesöppningar till samma utrymme kommit under vatten har vatteninflödet ökat. För däck 4-6 har bara de aktra dörrarna vid spant #4 beaktats. På däck 7 har även de förligare dörrarna beaktats. I Exempel 1 slår fartyget runt efter steg C31/DX7F 21 EQ. Vattenmängden på bildäck är då 12 000 ton.

In Example 1 the amount of inflow water has only been considered for inflow openings below waterline. When several inflow openings to the same compartment come below water, the water inflow rate has increased. For decks 4-6 only the aft doors at #4 are considered. On deck 7 also the forward doors are considered. In Example 1 the ship turns turtle after step C31/DX7F 21 EQ. The amount of water on the car deck is then 12.000 tons.

För Exempel 2 antas vatteninströmningen ha skett via fartygets fönsterrutor. 10 av de större fönsterrutorna per däck på däck 4-6 antas ha gått sönder då lugnvattenytan nått dem. För däck 7 och 8 som saknar stora rutor antas vatteninströmningen ha skett via flödesöppningarna på samma sätt som i exemplet vatten genom flödesöppningar. I Exempel 2 slår fartyget runt efter steg C27/DX7W 13 EQ. Vattenmängden på bildäck är då 10 000 ton.

In Example 2 it is assumed that water inflow also takes place via the windows. 10 of the larger windows on each deck of deck 4-6 are assumed to be broken when they are reached by the still waterline. On decks 7 and 8, which lack large windows, water inflow is assumed to be via inflow openings exactly as in the example water through inflow openings. In example 2 the ship turns turtle after step C27/DX7W 13 EQ. The amount of water on the car deck is then 10 000 tons.

Följande tider är uppskattade för de två exemplen:

Exempel 1, DX7F:

300 T/min 54 min (17 min**)

1 800 T/min 21 min (17 min**)

Exempel 2, DX7W:

300 T/min 37 min* (11 min**)

1 800 T/min 14 min (11 min**)

The following times are estimated for the two examples:

Example 1, DX7F:

300 T/min 54 min (17 min**)

1 800 T/min 21 min (17 min**)

Example 2, DX7W:

300 T/min 37 min* (11 min**)

1 800 T/min 14 min (11 min**)

Beräkningar av dessa tidsuppskattningar återfinns i **bilaga 12**, **bilaga 13**, **bilaga 14** och **bilaga 15**.

The calculations of these time estimates are shown in **attachments 12**, **attachment 13**, **attachment 14** and **attachment 15**.

*I Exempel 2-300 T/min är tiden för vatteninträngning på bildäck mycket dominerande. Att enbart fylla bildäcket med 10 000 ton med en vatteninträngningshastighet om 300 T/min tar 33 min.

**Tid för att fylla utrymmen utöver bildäck presenteras inom parentes

*In Example 2-300 T/min is the time for water inflow on the car deck very dominating. To only fill the car deck with 10 000 tons with an inflow rate of 300 T/min takes 33 min.

**Time to fill the compartments apart from the car deck are shown in brackets

Dessa enkla uppskattningar av tiden för vattenfyllning kan enbart användas för att ungefärligen uppskatta om det är möjligt att fartyget kan ha fyllts med vatten på den tid som haverikommissionens slutrapport anger.

These simple estimates of times of water filling cannot only be used to approximately estimate if it is possible that the ship was filled with water with the time given by the Final report of the accident commission.

Troligt är också att vatten tagit sig in på fler ställen än vad som kunnat kartläggas i den här studien. Fartyg har ofta fler möjliga flödesöppningar än vad som framgår av ritningar. Särskilt gäller detta ventilationsanläggningar, som det delvis finns ritningsunderlag på, men som det är mycket svårt att beräkna vatteninflöde för.

Probably water has also entered at more locations than pinpointed in this study. Ships often have more possible inflow openings than shown on drawings. Particularly this is valid for the ventilation systems where drawings partly exist but for which it is very difficult to calculate water flow rates.

4. Slutsatser

4. Conclusions

Resultatet av de två beskrivna fyllnadsförloppen skiljer sig inte särskilt mycket åt. Under arbetet med dessa fyllnadsförlopp har

The result of the two described sequences of filling does not differ particularly much. During the work with these

dock ett flertal varianter beräknats. Resultatet mellan dessa olika varianter har i stort liknat varandra. Ett fyllnadsförlopp där de förliga förläggningsutrymmena på däck 0 och 1 vattenfylls i ett tidigare skede kan ge ett mer avvikande resultat. Det är också möjligt att vattenfyllnaden av maskinrummen i dessa beräkningar har antagits ske i en för stor omfattning i de tidiga stegen.

sequences of filling a number of variations has however been computed. The result between these different variations has generally been similar. A sequence of filling where the forward passenger compartments on decks 0 and 1 are water filled at an early stage may result in a more dissimilar result. It is also possible that the flooding of the engine compartments in these calculations have been assumed to take place with too big emphasis on the early stages.

Vid jämförelse mellan här redovisade exempel och JAIC's slutrapport beträffande slagsida, trim och tidsförlopp kan konstateras både samstämmighet och vissa avvikelser. Beträffande tidsförloppen har förstudien ej sådan precision att exakta tidsförlopp kan anges. Förstudien har dessutom bara redovisat ett fåtal exempel.

Comparing the here presented examples with the JAIC Final report regarding angles of list, trims and times it can be concluded that there are both agreement and certain differences. Regarding the time sequences the pre-study does not have the precision so that exact times can be given. In addition the pre-study has only presented a few examples.

Beträffande tidsförloppen i de fyra exemplen redovisas tider från det att vatteninträngningen börjar på bildäck till det att fartyget roterar runt på ca 54 min, ca 37 min, ca 21 min resp. ca 14 min. Tiderna är översiktligt beräknade och bör endast användas som en indikation på tidsförloppet i stort. I JAIC's rapport anges som sammanfattande slutsats 35 min för detta förlopp. Där finns även vittnesuppgifter som indikerar kortare tid resp. längre tid.

Regarding the time sequences in the four examples times are given from water inflow starts on the car deck until the ship turns turtle after about 54 minutes, about 37 minutes, about 21 minutes respectively about 14 minutes. The times are superficially calculated and should only be used as an indication of the time sequence in general. In the JAIC Final report is given as concluding conclusion 35 minutes of this sequence. There are also testimonies indicating a shorter time respectively a longer time.

Beträffande sjunkförloppets utveckling avseende fartygets successivt ökande slagsida och trim uppvisas icke obetydlig samstämmighet. Bland annat visas i exempel 2 slagsida överstigande 90 grader i sjunkförloppets slutskede.

Regarding the development of the events of sinking concerning the gradual increasing list and trim of the vessel, a not unimportant agreement is shown. Among other things is shown in Example 2 angle of list in excess of 90 degrees in the final of the sequence of sinking.

Gruppen konstaterar att i redovisade exempel utvecklas Estonia sjunkförlopp i stort på det sätt som beskrivs i JAIC's slutrapport. Den avgörande skillnaden mellan JAIC's rapport och denna rapport ligger i att arbetsgruppen har visat på en naturlig väg för vattnet att nå däck 1 och 0 (maskinområdet mm) via bordvarts liggande ventilationskanaler när slagsidan överstiger ca 40 gr. Detta ger en rimlig förklaring till att Estonia kunde sjunka såsom det redovisats i haverirapporten. För vissa utrymmen kan vi dock inte i detalj redovisa hur vatten trängt in vilket vore önskvärt eftersom det påverkar sjunkförloppet.

The group concludes that in the shown examples the sequence of the sinking of the Estonia is developed generally in the manner as described in the Final report of the JAIC. **The decisive difference between the JAIC report and this report is that the working group has shown a natural way for water to reach decks 1 and 0 (the engine compartments) through ventilation ducts located in the ship's sides, when the angle of list exceeds about 40 degrees. It gives a reasonable explanation why the Estonia could sink as described in the Final report.** For certain compartments we cannot in detail describe how water entered, which would be wished for as it affects the sequence of sinking.

I haverirapporten finns också vittnesmål om vatteninträngning i olika utrymmen, slagsida mm som både stämmer med och avviker från vad som kan utläsas av redovisade exempel. Arbetsgruppen har inte haft möjlighet att i detalj studera alla sådana uppgifter och ställa dessa i relation till vad som framkommit i redovisade exempel. Precisionen i våra beräkningar är inte av sådan art. Vi är naturligtvis beredda att delta i ett kunskapsutbyte syftande till att finna förklaringar till ev. avvikelser mellan här redovisade förlopp och av vittnen upplevda händelser.

In the Final report there are also testimonies about water ingress in different compartments, angle of list, etc., which both agree and disagree with what can be found in the given examples. The work group has not had the possibility to study in detail all such information and put these in relation to the findings of the given examples. The precision of our calculations is not of such kind. We are of course prepared to participate in an exchange of knowledge in order to explain the differences between here shown sequences and of events experienced by witnesses.

Andra scenarios avseende hur vatten kan nå de undre däcken är naturligtvis möjliga. <u>Om av oss nyttjat ritningsunderlag inte återspeglar fartygets aktuella status gäller naturligtvis inte heller slutsatserna.</u>

Other scenarios regarding how water can reach the lower decks are of course possible. <u>If by us used drawings do not reflect the actual status of the vessel, evidently the</u>

conclusions are not valid.

5. Rekommendationer

Vill man fördjupa sjunkförloppsstudien utöver vad som här presenterats är det gruppens uppfattning att det erfordras ytterligare underlag för att få erforderlig precision i en sådan studie. Förutom tillgång till ett komplett ritningsunderlag bör också kontrolleras bordvarts liggande ventilationstrummorna, status på vattentäta avdelningarna under bildäck, branddörrarna på bildäck samt fönster/ventiler och dörrar till däck 4-8 på styrbordssidan. Det är gruppens uppfattning att det är först efter att detta klarlagts som man kan uppnå en högre säkerhet i studieutfallet jämfört med vad som här presenterats.

Om man skall göra en mer detaljerad studie av MV Estonias sjunkförlopp följer här ett par förslag på intressanta områden:

· De fyllnadsförlopp som använts i den här studien kan vidareutvecklas. Ett sätt att göra detta är att bättre beskriva de vägar vattnet kan tänkas ha fyllt fartyget. För detta behövs dock väsentligt bättre ritningsunderlag. Fler alternativa sjunkförlopp bör i en fortsatt studie studeras närmare. Särskilt bör vattenfyllnad av de förliga förläggningsutrymmena i ett tidigare skede beaktas.

· Fartygets dynamiska uppträdande då det fylls med vatten bör studeras närmare.

· Beräkningen av fyllnadstiden kan förbättras väsentligt. Både vattenfyllnad av bildäck samt vattenfyllnad genom flödesöppningar bör beräknas mer noggrant och baseras på fartygets kurs, fart och rörelser.

· Ett prov eller en beräkning av rutornas hållfasthet skulle öka kunskapen om vatteninträngningen i fartyget.

· Mot bakgrund av ventilationssystemets betydelse för sjunkförloppet och att vissa ventilationskanaler terminerar i skrovsidan bör denna säkerhetsaspekt analyseras. Gruppen har dock inte analyserat huruvida detta är förekommande på de färjor som idag är i bruk.

Därutöver bör sjunkförloppet visualiseras i en animerad videosekvens.

Frank Rosenius

Staffan Sjöling

5. Recommendations

If you want to enlarge the study of the sequence of sinking as presented here, it is the opinion of the group that more basic information is required to achieve required precision of such study. Apart from access to a complete set of drawings, you should check the ventilation ducts in the ship's side, the status of the watertight compartments below the car deck, the fire doors on the car deck and the windows/portholes and doors on decks 4-8 starboard side. It is the opinion of the group that it is first after all this has been clarified that you can achieve a higher reliability of the result of the study compared with what has been shown here.

If you shall do a more detailed study of the sequence of sinking of the MV Estonia below follows some proposals of interesting areas:

· The sequences of filling used in this study can be further developed. One way to do so is to better describe the ways water may have filled the ship. However for this better drawings are required. More alternative sequences of sinking should be studied in a continued study. In particular the flooding of forward passenger compartments at an early stage should be considered.

· The dynamic performance of the ship being filled with water should be studied more closely.

· The calculation of filling times can be improved considerably. Both flooding of the car deck and water inflow through inflow openings should be computed more carefully based on ship's heading, speed and movements.

· A test or a calculation of the strength of the windowpanes should increase the knowledge of water inflow into the ship.

· With regard to the importance of the ventilation system on the sequence of sinking and that certain vent ducts end at the hull side this safety aspect should be analysed. The group has however not analysed if it is common practice on ferries used today.

In addition the sequence of sinking should be visualized in an animated video sequence.

Frank Rosenius

Staffan Sjöling

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4. Ritning 590 02/21 Safety and Fire fighting equipment	4. Drawing 590 02/21 Safety and Fire fighting equipment
5. Ritning 590 64/1 Ventilationplan, Blatt 1	5. Drawing 590 64/1 Ventilationplan, Blatt 1
6. Ritning 590 24/1 Wagendeckausrüstung	6. Drawing 590 24/1 Wagendeckausrüstung
7. MV ESTONIA accident investigation, Numerical prediction of the water inflow to the car deck, Technical report VALC 174, February 1996	7. MV ESTONIA accident investigation, Numerical prediction of the water inflow to the car deck, Technical report VALC 174, February 1996
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Bilaga 1 Händelser och tider som har koppling till sjunkförloppet enl. haverirapporten.	**Attachment 1** Events and times relevant to the sequence of sinking as per the Final report.
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Vam Frank Rosenius Civ.ing. Staffan Sjöling	Vam Frank Rosenius Civ.ing. Staffan Sjöling

SPF/Refgrp Estonia 2003-03-28 Bilaga 1

Händelser och tider som har koppling till sjunkförloppet enl. haverirapporten.

Nedan redovisade händelser är en sammanställning av haverirapportens slutsatser och utgör arbetsgruppens referenser mot vilka förstudiens resultat avseende sjunkförloppet kommer att bedömas.

Aktiviteterna redovisas i kronologisk ordning och med källhänvisning till [1].

- - - Vatten in längs rampens sidor. 13.2.6

0115 Bogvisiret lossnar. 13.2.5

0110-0115 Vattentäta dörrar* stängs. 13.2.6

0115+ ngr min Krängningen om 15 gr stabiliseras tillfälligt 13.2.6

0116-0120 Estonia ändrar kurs. Farten reduceras. Fig. 13.2

0120 Huvudmotorer stannar. 13.2.6

0124 40 gr slagsida Fig. 13.2/13.2.6

0125 Huvudgenerator stannar 13.2.6

0125 (ca) Fönstren på däck 4 krossas av vågorna 13.6

0130 (ca) 80 gr slagsida 13.2.6

0131-0132 Bryggan vattenfylld 13.2.6

0150 Ftg under vattenytan 13.2.6

Kommentar av Björkman: Andra intressanta uppgifter i haverirapporten men som av kommissionen ej tagits med i slutsatserna:

2235 Vatten på bildäck in genom ventilationstrumma. Normalt. Ref 6.2.2

0110-0114 Slag i skrovet. 6.2.3

0110-0115 Vatten in längs rampens sidor 13.2.6

0115 Vatten in från bogen i väldig mängd (3.M) 6.2.3

0115 Farten reduceras. Vattentäta dörrar* stängs. 15 gr slagsida. 6.2.4

SPF/Refgrp Estonia 2003-03-28 Attachment 1

Events and times, which have connections to the sequence of sinking according to the Final report.

Below reported events is a summary of the conclusions of the Final report and constitutes the references against which the result of the pre-study of the sequence of sinking will be judged.

The activities are listed in chronological order with reference to [1].

- - - Water along the sides of the ramp. 13.2.6

0115 The bow visor falls off. 13.2.5

0110-0115 Watertight doors* are closed. 13.2.6

0115+ some minutes. List to 15 degrees temporarily stabilized 13.2.6

0116-0120 Estonia changes course. Speed is reduced. Fig. 13.2

0120 Main engines stops. 13.2.6

0124 40 degrees list. Fig. 13.2/13.2.6

0125 Main generators stop 13.2.6

0125 (about) Windows on deck 4 are smashed by the waves 13.6

0130 (about) 80 degrees list 13.2.6

0131-0132 The bridge is flooded 13.2.6

0150 Ship below water surface 13.2.6

AB note: there is evidently no *evidence* in the Final report for any of the above events!

Remark by Björkman: Other interesting information of the Final report, which the commission has not included in the conclusions:

2235 Water enters into the car deck through ventilation duct. Normal. Ref 6.2.2

0110-0114 Impacts on the hull. 6.2.3

0110-0115 Water enters along the sides of the ramp 13.2.6

0115 Water inflow from bow in large amount (3rd Eng) 6.2.3

0115 Speed is reduced. Watertight doors* are closed. 15 degrees list. 6.2.4

0117-0118 10-15 gr slagsida (3.M) 6.2.3	0117-0118 10-15 degrees list (3rd Eng) 6.2.3
0115-0120 Däck 4, SB förliga trappa. Vatten ovanifrån. Tiden osäker. 6.3.3	0115-0120 Deck 4, starboard forward stairwell. Water from above. Time uncertain. 6.3.3
0115-0120 Däck 1, centralt belägen hytt. Vatten ovanifrån. Tiden osäker. 6.3.2	0115-0120 Deck 1, centrally located cabin. Water from above. Time uncertain. 6.3.2
0116-0120 Krängningen stabiliseras tillfälligt 20 - 30 gr 13.2.6	0116-0120 The list was temporarily stabilized 20-30 degrees. 13.2.6
0121 Första Mayday 7.3.2	0121 First Mayday 7.3.2
0124 Vakthavande matros i flotte. 90 gr slagsida 6.2.2	0124 Watch keeping AB in raft. 90 degrees list 6.2.2
0125 20- 30 gr slagsida (radio-meddelande) 7.3.2	0125 20-30 degrees list (radio message) 7.3.2
0125 Vakthavande matros: Botten upp, ftg sjönk 6.2.2	0125 Watch keeping AB: Bottom up, ship sank 6.2.2
0125 Lasten förskjuts 1 m åt SB 6.2.4	0125 Cargo shift 1 m to starboard 6.2.4
0130(ca) 40-45 gr slagsida / 3.M 6.2.3	0130 (about) 40-45 degree list /3rd Eng 6.2.3
0130(ca) Alla vattentäta dörrar* stängda 6.2.3	0130 (about) All watertight doors* closed 6.2.3
0130(ca) Aktern under vattnet upp till stab.fenan. 90 gr slagsida. 6.2.1	0130 (about) Stern below water until the stabilizer fin. 90 degrees list. 6.2.1
(*Notera hur vattentäta dörrar stängs 0115 dels före slagsidan, dels efter slagsidan och de skulle vara stängda 0130)	*Note that watertight doors are closed twice!
	That Sillaste saw a closed ramp at about 01.17 hrs is not mentioned above. There is evidently no evidence in the Final report for most of the above events!
I haverirapporten övriga angivna data/värden som har betydelse för sjunkförloppet.	In the Final report other given information/values relevant to the sequence of sinking.
Inflöde på bildäck efter att visiret lossnat: 300 - 1800 ton/min 12.6.2	Inflow on car deck after loss of visor: 300-1800 ton/min 12.6.2
Efter några få minuter ger detta 20 gr slagsida 12.6.2	After a few minutes this results in 20 degrees list 12.6.2
Tid till att vatten når fönster på däck 4: 5 - 15 min 12.6.2	Time until water reaches windows on deck 4: 5 -15 minutes 12.6.
400 ton ger 10 gr slagsida 12.6.1	400 tons makes 10 degrees list 12.6.1
1 000 ton ger 20 gr slagsida 12.6.1	1 000 tons makes 20 degrees list 12.6.1
Gir ökar slagsidan med ca 3 gr 12.6.1	Turning increases list with about 3 degrees 12.6.1
2 000 ton på bildäck ger 35 gr slagsida 12.6.1	2 000 tons on car deck makes 35 degrees list 12.6.1
Vatten från bildäck via branddörrar (noteras vid utrymning, ej tidigare) 13.2.6	Water from car deck via fire doors (observed during evacuation, not before) 13.2.6
När 2 000 ton vatten kommit in på bildäck når vågorna aktra fönstren på däck 4 12.6.1 /fig 12.14	When 2 000 tons of water has entered the car deck, the waves reach aft windows on deck 4. 12.6.1/fig 12.14

Däck 5´s fönster under vatten vid 50 gr slagsida 13.6

Med 18 000 ton vatten på bildäck + däck 4 - 5, ger 75 gr slagsida 13.6

Deck 5 windows below water at 50 degrees list 13.6

With 18 000 ton water on the car deck + decks 4-5, result is 75 degrees list 13.6

AB note: that the Estonia capsizes and floats upside down with 2 000 tons of water on the car deck at about 01.27 hrs is not mentioned above. There is evidently no evidence in the Final report for most of the above events!

Bilaga 4
Lastkondition L2

Den lastkondition som använts i dessa beräkningar är hämtad från [1], Loading Condition K.0, Departure from Tallinn. Lastkonditionen är korrigerad för visirets vikt om -59 ton x=138.3 x=138.3 z=10.62. Uppgifter för visirets vikt och tyngdpunkt är hämtade från [2]. Lastfall K.0 har inte kunnat återskapas helt enligt tidigare beräkningar. Medeldjupgåendet skiljer -4 mm, trimmet -8 mm och metacenterhöjden + 20 mm. Skillnaden kan delvis bero på att modellens beräkningssektioner för olika rum skapas på nytt varje gång ett fartyg modelleras samt att olika metoder för att räkna inverkan av fria vätskeytor kan ha använts. Denna skillnad bedöms dock ha relativt liten inverkan på resultatet av beräkningarna med beaktande av de stora vattenvolymer som används i beräkningarna för fyllnadsförloppet. Den lastkondition fartyget hade då visiret lossnade kallas L2.

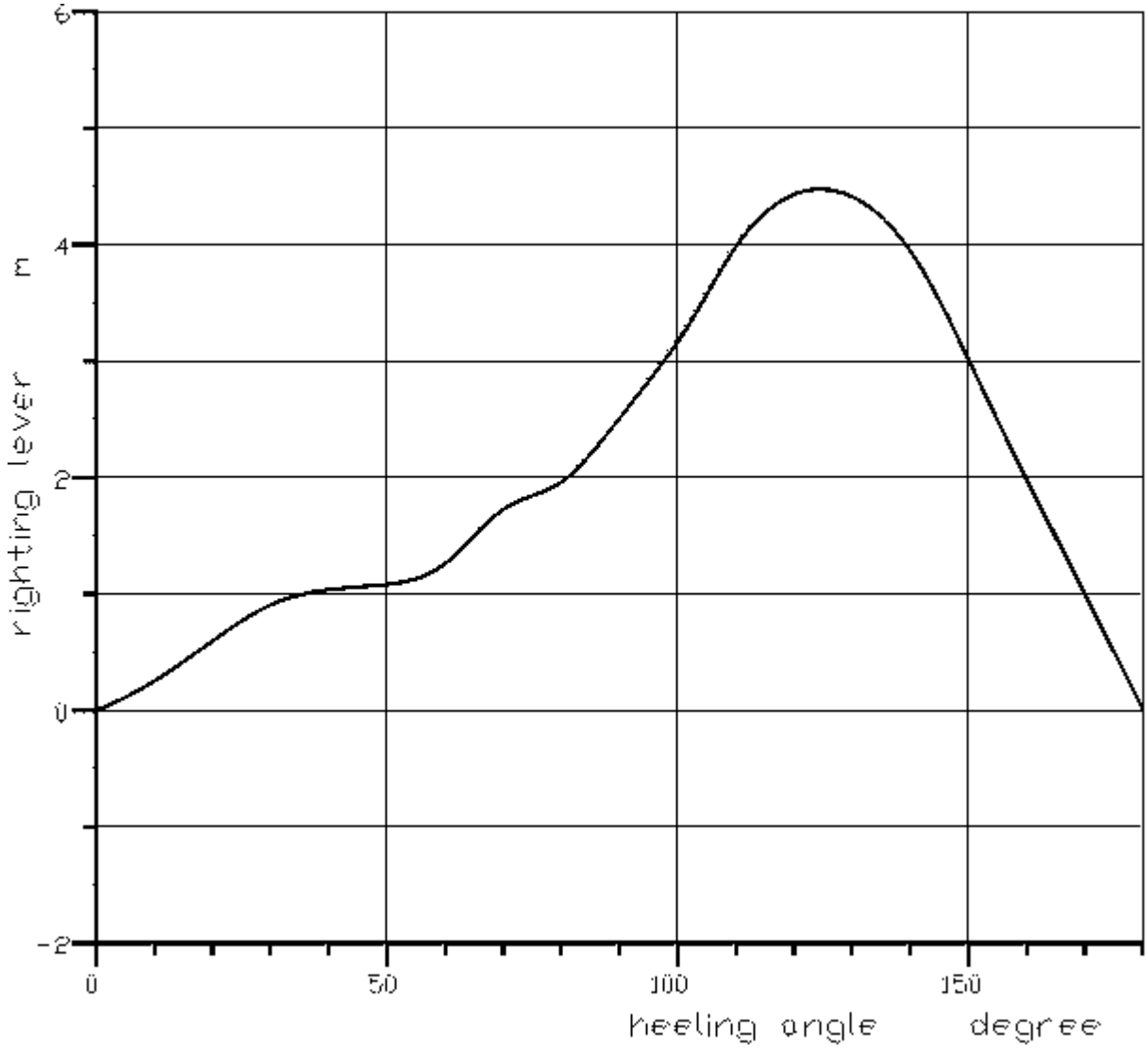
Huvuddata för lastkondition L2 är:

Attachement 4
Loading condition L2

The load condition used in these calculations are taken from [1], Loading Condition K.0, Departure from Tallinn. The load condition is corrected for the visor weight of -59 ton x=138.3 z=10.62. The information of visor weight and position is taken from [2]. Loading condition K.0 has not been re-created completely according earlier calculations. Mean draft differs -4 mm, trim -8 mm and meta centre height + 20 mm. The differences may partly be due to the calculation sections of the models being renewed at every time the ship is modeled and that different methods to calculate influence of free water surfaces may have been used. This difference is judged to have a fairly small influence of the result of the calculations in view of the large water volumes being used for the sequence of filling. The loading condition the ship had when the visor fell off is called L2.

Main data for load condition L2 is:

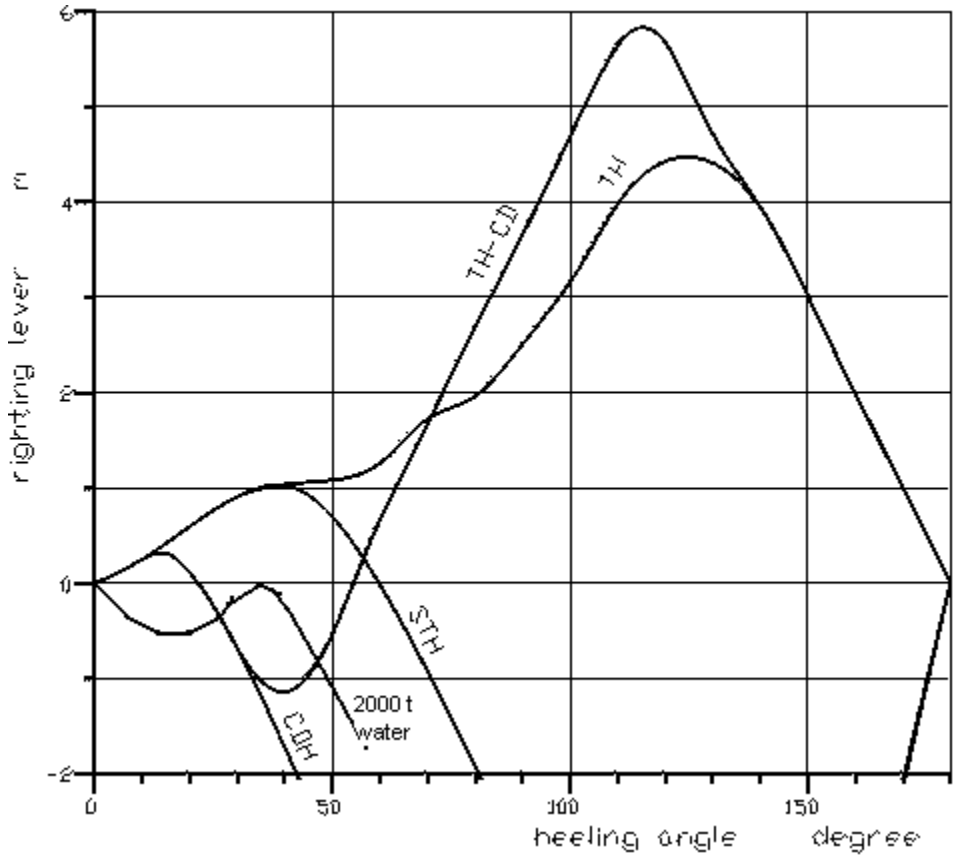
Deplacement/Displacement	11 902.4 ton
LCG	63.43 m fr. AP
TCG	-0.01 m BB
Medeldjupg./Mean draft	5.318 m
Djupg.akter/Draft aft	5.648 m
Djupg.för/Draft fwd	4.988 m
Trim	-0.660 m
KM	11.97 m
KG	10.65 m
GM0	1.32 m
GMcorr.	-0.07 m
GM	1.25 m
Slagsida SB/List	0.2 grader/degrees



Figur 1. GZ-kurva för lastfall L2 - Figure 1. GZ-curve for loading condition L2

Anmärkning av Björkman om Figur 1. GZ-kurvan ovan är ej korrekt - den förutsätter att bl.a. hela däckshuset är 100% vattentätt, vilket inte är troligt. Beräkningarna följer ej normala förutsättningar - kurvan är 100% fel. Riktig GZ-kurva är markerad STH nedan, dvs den kurva som gäller för ett oskadat fartyg innan vatten lastas i överbyggnaden.

Remark by Björkman about Figure 1. The GZ-curve above is not correct - it is assumed that, e.g. the whole deckhouse is 100% watertight, which is not probable or normal practice when doing said calculations. The curve is 100% wrong. The correct GZ-curve for the intact vessel prior loading water in the superstructure is marked STH below.



Figur 2. Lastkondition L2 med olika skrovutsträckning - Figure 2. Loading condition L2 with different hull extensions

Figur 2 visar MV Estonias GZ-kurva beräknad för ett och samma lastfall, L2, men för olika skrovutsträckning. Kurvan märkt STH är den GZ-kurva som fartyget får då det beräknas enligt de regler som gäller då man skall beräkna fartygets intaktstabilitetsegenskaper. Den kurvan är beräknad med en deplacerande kropp som sträcker sig i höjdled upp till överkant av bildäcket. Med ett deplacerande skrov med en utsträckning som STH ger beräkningarna en GZ-kurva för lastfall L2 med ett GZmax på ca 1 m och en stabilitetsvidd om ca 60 grader.

Anmärkning av Björkman: Ovan är korrekt - och med ca 2.000 ton lastat i överbyggnadens sida reduceras stabilitetsvidden till noll grader när kapsejsning sker vid ca 37° slagsida. Det saknas en GZ-kurva med 2 000 ton vatten lastat i överbyggnaden, som visar detta!

Kurvan märkt TH är den GZ-kurva som erhålls då man räknar in hela fartygets inneslutna volym (ovan bildäck) som deplacerande. Men i och med att de delar av fartyget som ligger över bildäck inte är vädertätt tillslutna får man inte räkna in en så stor del som bidragande till fartyget stabilitet. Med ett deplacerande skrov med en utsträckning som TH ger beräkningarna en GZ-kurva för lastfall L2 med ett GZmax på 4.43 m och en stabilitetsvidd om 180 grader.

Anmärkning av Björkman: Kurvan TH är helt ointressant eftersom däckshus däck 4-9 inte är deplacerande.

Figure 2 shows the MV Estonia GZ-curve for one and the same loading condition, L2, but for different extents (sic) of the hull. **The curve marked STH is the GZ-curve obtained, when it is calculated according to the rules valid, when you calculate the intact stability particulars of the ship.** That curve is computed using a displacing body with a vertical extent up to the upper edge of the car deck. With a displacing hull with an extent as STH the calculations gives a GZ-curve for loading condition L2 with a Gzmax of about 1 m and a stability range of about 60 degrees.

Remark by Björkman: Above is correct - and with about 2 000 tons loaded in the side of the superstructure the stability range is reduced to zero degrees when capsize takes place at 37° list. A GZ-curve when the ship has loaded 2 000 ton water in the superstructure is not shown.

The curve marked TH is the GZ-curve obtained when you include the whole enveloped volume of the ship (above the superstructure) as displacing. But in view of the fact that those parts located above the car deck are not locked weather tight, you are not allowed to calculate with such a large part as contributing to the ship's stability. With a displacing hull with an extent as TH the calculations produce a GZ-curve for loading condition L2 with a Gzmax of 4.43 m and a stability range of 180 degrees.

Remark by Björkman: The curve marked TH is totally of no interest as deckhouses decks 4-9 do not provide any

Kurvan märkt CDH är den GZ-kurva som erhålls då endast de delar av skrovet som ligger under bildäck räknas som deplacerande. Det är de delar som är tillåtna att räkna med som deplacerande då fartygets läckstabilitet skall beräknas. Denna del sträcker sig inte längre än till bildäck eftersom skrovet över bildäck saknar vattentät indelning. Med ett deplacerande skrov med en utsträckning som CDH ger beräkningarna en GZ-kurva för lastfall L2 med ett GZmax på 0.32 m och en stabilitetsvidd om ca 22 grader.

Anmärkning av Björkman: Delvis korrekt - överbyggnaden kan ha vattentäta, oskadade utrymmen efter läckage däck 0 och 1. Men i Estonias fall var överbyggnaden vidöppen förut och bidrar bara till krängstabilitet när öppningen är ovan vatten.

Den sista kurvan märkt TH-CD är den GZ-kurva som erhålls då man räknar hela fartygets skrov förutom bildäck- däck 2 och däck 3- som deplacerande. Denna kurva har samma utseende som den märkt CDH fram till en krängningsvinkel om ca 30 grader. *Efter denna krängningsvinkel kommer de delar av fartyget som ligger över bildäck att bidraga till det rätande momentet och förhindra den kapsejsning fartyget skulle erfarit om det krängdes till en vinkel över 22 grader med enbart skrov CDH som deplacerande.* Med ett deplacerande skrov med en utsträckning som TH-CD ger beräkningarna en GZ-kurva för lastfall L2 med ett GZmax på 5.67 m och en stabilitetsvidd där fartyget är stabilt fram till en krängningsvinkel på ca 22 grader. Efter 22 graders krängningsvinkel kränger fartyget ytterligare fram till 55 grader där däckshuset över bildäck motverkar ytterligare krängning.

Anmärkning av Björkman: Kurva TH-CD är helt missvisande eftersom *de delar av fartyget som ligger över bildäck och som antas att bidraga till det rätande momentet och att förhindra den kapsejsning fartyget skulle erfarit om det krängdes till en vinkel över 22 grader med enbart skrov CDH som deplacerande, inte är deplacerande (vattentäta).*

Den sista kurvan representerar ett fall där hela bildäck står i öppen kommunikation med havsvattnet. Fartyget skulle ha ett stabilt upprätt läge, men efter ett initialt krängande moment som får fartyget att kränga förbi 22 grader skulle det finna ett nytt stabilt jämviktsläge vid 55 graders krängning. Fartyget skulle förbli flytande i detta läge så länge vatten inte kunde ta sig in i övriga delar av fartyget.

Detta fall kan liknas vid, men inte representera, det som hände under Estonias sista resa.

Anmärkning av Björkman: Estonia har aldrig ett stabilit *upprätt* läge med vatten överbyggnaden - ett gram vatten eller 1 000 ton vatten rinner alltid till en lägsta punkt och trimmar och kränger färjan och minskar GZ. Med cirka 1 800 ton är GZ=0 vid krängvinkel 37°och Estonia flyter upp och ned. Estonia kan aldrig flyta med >2 000 ton vatten i överbyggnaden. Detta enkla faktum har totalcensurerats av Estoniautredarna 1994-2003.

Anmärkning av Björkman om Figur 2 ovan. Hydrostatiska och

buoyancy.

The curve marked CDH is the GZ curve resulting when only the parts of the hull located below the car deck are assumed to be displacing. It is the parts, which are permitted to be included in the calculations when the ship's damage stability shall be computed. With a displacing hull with an extent as CDH the calculations make a GZ-curve for loading condition L2 with a Gamax of 0.32 m and a stability range of about 22 degrees.

Remark by Björkman: Partly correct - the superstructure may contain watertight, undamaged spaces after leakage on decks 0 and 1. But in this case the superstructure was wide open forward and it only contributed to heeling stability as long as the opening was above water.

The last curve TH-CD is the GZ-curve obtained when you calculate the whole ship's hull except the car deck- deck 2 and deck 3- as displacing. This curve has the same form as the one marked CDH up to an angle of list of about 30 degrees. ***Above this angle the parts of the ship above the car deck contribute to the righting moment and prevent the capsizing the ship should suffer if it was heeled to an angle above 22 degrees with only hull CDH as displacing***. With a displacing hull with an extent as TH-CD the calculations make a GZ-curve for loading condition L2 with a Gzmax of 5.67 m and a stability range where the ship is stable up to an angle of list of about 22 degrees. After 22 degrees angle of list the ship lists more up to 55 degrees, where the deckhouse above the car deck prevents further heeling.

Remark by Björkman: Curve TH-CD is totally misleading as *the parts of the ship above the car deck, which are assumed to contributing to the righting moment and to preventing the capsizing the ship should suffer, if it was heeled to an angle above 22 degrees with only hull CDH as displacing, are not displacing (watertight).*

The last curve represents a case where the whole car deck is in open communication with the seawater. The ship should have a stable upright condition, but after an initial heeling moment that makes the ship lists more than 22 degrees, there should be a new stable equilibrium at 55 degrees list. **The ship should remain floating in this condition as long as water could not enter other parts of the ship.**

This case can be similar with but cannot represent, what happened during the last voyage of the Estonia.

Remark by Björkman: The Estonia has never a stable *upright* condition with water in the superstructure - one gram (0,000 001 ton) water or 1 000 tons of water always flows to the lowest point and trims and heels the ferry and reduces GZ. With about 1 800 tons and GZ=0 for an angle of list >37°, the Estonia floats upside down. The Estonia cannot float with >2 000 tons of water in the superstructure. This simple fact has been totally censored by the Estonia investigators 1994-2003.

Comment by Björkman on Figure 2 above: Hydrostatic and

stabilitets (GZ) kurvor skall normalt göras baserade på konstruktionstrim. Beräkningarna skall inkludera volumen upp till översta ytan på däcksbeläggningen.

stability (GZ) curves should normally be prepared on a designed trim basis. The calculations should take into account the volume to the upper surface of the deck sheathing.

Instängda (täta) överbyggnader (däck 2 och 3 på Estonia) som uppfyller Lastlinjekonventionens (1966) bestämmelser (för vädertäthet) kan inkluderas i GZ-kurvan så länge som förliga rampen på däck 2 kan anses vara vädertät. Om rampen är uppriven - vilket JAIC har meddelat - och tillåter vatteninflöde, är det tveksamt om den vattenfyllda överbyggnaden kan anses vara instängd (tät) och bidragande till stabiliteten (men se nedan). *Däckshus* på fribordsdäck (däck 4 på Estonia) kan också inkluderas i GZ-kurvan om det uppfyller lastlinjekonventionens (1966) bestämmelser för *instängda (täta) överbyggnader*. Det är inte fallet för Estonia vars däckshus på däck 4 har stora fönster i sidan (men se nedan) och fönster kan inte installeras i gavlar och sidor på instängda överbyggnader och däckshus i första planet som skall anses bidraga med flytkraft i stabilitetsberäkningar (enligt internationella regler). Fönster definieras som rektangulära öppningar med, ofta, rundade hörn enligt nationell eller internationell standard, och runda eller ovala öppningar med en yta överstigande 0.16 m^2. Alla Estonias fönster i sidan hade en yta överstigande 0.24 m^2.

Enclosed superstructures (i.e. decks 2 and 3 for the Estonia) complying with the 1966 Load Line Convention may be taken into account for the GZ-curve as long as the forward ramp/door on deck 2 is considered weather tight. If the bow ramp/door is open - as suggested by the JAIC - permitting water to enter, it is doubtful, if the flooded superstructure can be considered enclosed and if it contributes to the stability (but see below). *Deckhouses* on the freeboard deck (deck 4 for the Estonia) may be taken into account, provided that they comply with the conditions for *enclosed superstructures* laid down in the 1966 Load Line Convention. This is not the case for the Estonia as the deckhouse on deck 4 has large windows in the side (but see below) and *windows cannot be fitted in ends and sides of enclosed superstructures* and in first tier deckhouses that are considered buoyant in the stability calculations (as per international safety rules). Windows are defined as being rectangular openings generally, having a radius at each corner relative to the window size in accordance with recognized national or international standards, and round or oval openings with an area exceeding 0.16 m^2. All windows in the side of the Estonia had an area at least > 0.24 m^2.

Däckshus på däck ovan fribordsdäcket (däck 5, 6, 7 och 8) får ej tas med i beräkningarna, även om öppningar i dem anses vara stängda. Metoder att stänga och upprätthålla vädertäthet skall vara enligt Myndighetens bedömning. Metoderna skall försäkra att täthet kan upprätthållas i alla väderfall, och i detta syfte skall täthetsprov utföras vid första besikting och kan krävas vid periodisk besiktning och årlig besiktning eller mera frekvent. *Vad beträffar Estonia kan ingen öppning över däck 3 anses vara vädertät.*

Deckhouses on decks above the freeboard deck (i.e. decks 5, 6, 7 and 8) should not be taken into account, even if openings within them may be regarded as closed. The means for securing and maintaining weather tightness shall be to the satisfaction of the Administration. The arrangements shall ensure that the tightness can be maintained in any sea conditions, and for this purpose tests for tightness shall be required at the initial survey, and may be required at periodical surveys and at annual inspections or at more frequent intervals. *For the Estonia no openings above deck 3 can be considered weather tight.*

Om överbyggnaden (däck 2 och 3) och däckshuset på däck 4 inte kan anses vara instängda (täta) kan emellertid de tas med i beräkningarna av stabilitet (GZ kurva) upp till den vinkel då dess öppningar kommer under vatten - den öppna bogrampen för överbyggnaden (däck 2 och 3) och sidofönsterna för däckshuset på däck 4. Vid denna vinkel skall den statiska stabilitetskruvan uppvisa ett eller flera steg, och vid beräkning av stabilitet vid högre vinklar skall de vattenfyllda utrymmena (överbyggnad och däckshus däck 4) anses icke existera. *I fall då fartyget sjunker eller kapsejsar när inflöde sker enom en öppning, skall stabilitetskurvan sluta vid den krängvinkeln och fartyget skall anses ha förlorat sin stabilitet (kapsejsat).* Helt klart kapsejsar Estonia efter inflöde genom förrampsöppningen redan vid en krängvinkel vid cirka 40 grader (omkring 2 000 ton vatten inne i överbyggnaden).

The superstructure (decks 2 and 3) and the deckhouse on deck 4 not regarded as enclosed can, however, be taken into account in stability (GZ-curve) calculations up to the angle at which their openings are flooded - the open bow door for the superstructure (decks 2 and 3) and the windows for the deck 4 deckhouse. At this angle, the static stability curve should show one or more steps, and in subsequent computations the flooded space should be considered non-existent. *In cases where the ship would sink or capsize due to flooding through any openings, the stability curve should be cut short at the corresponding angle of flooding and the ship should be considered to have entirely lost her stability (capsized).* Evidently the Estonia capsizes after having been flooded through the bow opening at an angle of heel of about 40 degrees (about 2 000 tons water inside the superstructure).

Enligt ovan bör det vara helt klart att däck 4-8 aldrig kan inkluderas i några GZ-kurvor för Estonia. GZ-kurvorna i Förstudien är inte alls representativa. Amiral Rosenius och experten Sjöling kan inte vara okunniga om ovan grundläggande uppgifter hur man beräknar GZ-kurvor och stabilitet.

From above it should be clear that decks 4-8 could never be included in any GZ-curves for the Estonia. The GZ-curves used in the Pre-study are not representative at all. Admiral Rosenius and expert Sjöling cannot be ignorant about above basic facts to compute GZ-curves and stability.

Bilaga 5
Lastfall med vatten på bildäck, C0-C31

Utifrån lastkondition L2 har fartygets stabilitet beräknats för en ökande mängd vatten på bildäck. Lastfall L2 har beräknats med en vattenmängd från 0 till 12 000 ton på bildäck. Dessa lastfall kallas C0-C31. I dessa beräkningar har hela fartygsvolymen ansatts som bidragande till det rätande momentet. Inget inflöde av vatten i fartygets övriga struktur har beaktats. Fartygets slagsida ökar markant med vatten på bildäck upp till en mängd av ca 3 000 ton. Vid ca 5 000 ton stagnerar slagsidan för att sedan minska vid större mängd vatten än 8 000 ton på bildäck. Denna minskning av slagsida har inte analyserats närmare men kan bero på att förskjutningen av sidotyngdpunkten avstannar. Med en vattenmängd av ca 5 500 ton på bildäck når vattenytan dörrarna på bildäckets centercasing.

Attachment 5
Loading condition with water on the car deck, C0-C31

Starting with loading condition L2 the ship's stability has been computed with different amounts of water on the car deck. Loading condition L2 is computed with an amount of water from 0 to 12 000 tons on the car deck. These loading conditions are called C0-C31. In these calculations the total volume of the ship as considered contributing to the righting moment. No inflow of water into the other ship's structure has been considered. The heel of the ship increases considerably with water on the car deck up to an amount of about 3 000 tons. At 5 000 tons the angle of lists stagnate to be reduced with amounts exceeding 8 000 tons on the car deck. This reduction has not been analyzed closer but may be the result of the shift of the transverse centre of gravity being arrested. With an amount of water of about 5 500 tons on the car deck, the water surface reaches the doors in the car deck centre casing.

Loading condition Lastfall	Water on car deck/ Vatten på bildäck (ton)	T - mean draft medel-djupg. (m)	Trim (m)	Heel (degree) slagsida (grader)	TA - aft draft djupg. akter (m)	TF - fwd draft djupg. för (m)	KG (m)	GM (m)**	GMc (m)**
C0	0	5.318	-0.66	-0.2	5.648	4.988	10.65	**1.25**	**-0.07**
C1	200	5.295	-0.619*	-6.7	5.605	4.986	10.6	-10.71	-12.12
C2	400	5.207	-0.395*	-11.7	5.404	5.009	10.56	-10.45	-11.93
C3	600	5.086	-0.118*	-16	5.144	5.027	10.51	-10.19	-11.75
C4	800	4.95	-0.124*	-19.7	5.013	4.888	10.47	-9.93	-11.57
C5	**1000**	4.786	0.071*	**-23.2**	4.75	4.821	10.43	-9.67	-11.4
C6	1300	4.515	0.115*	-28	4.458	4.572	10.38	-9.31	-11.15
C7	1600	4.138	0.24*	-32.6	4.018	4.258	10.3	-8.97	-10.91
C8	1900	3.71	0.287*	-37	3.567	3.853	10.28	-8.67	-10.68
C9	2100	3.406	0.312	**-40.3**	3.25	3.562	10.25	-8.48	-10.54
C10	2400	2.861	0.33	**-44.5**	2.696	3.026	10.21	-8.21	-10.32
C11	2700	2.525	0.326	**-47.4**	2.362	2.688	10.18	-7.95	-10.12
C12	3000	2.279	0.313	**-49.6**	2.133	2.435	10.15	-7.67	-9.88
C13	3300	2.115	0.299	**-51.1**	1.965	2.264	10.12	-7.45	-9.7
C14	3600	2.058	0.275	**-51.8**	1.921	2.196	10.09	-7.23	-9.52
C15	3900	2.065	0.245	**-52.3**	1.942	2.187	10.07	-7.04	-9.34
C16	4500	2.022	0.194	**-53.5**	1.925	2.119	10.03	-6.69	-9.02
C17	5000	2.065	0.145	**-54**	1.992	2.137	10.01	-6.43	-8.76
C18	5500	2.177	0.089	**-54.2**	2.132	2.222	9.99	-6.19	-8.52
C19	6000	2.307	0.033	**-54.3**	2.291	2.323	9.98	-5.89	-8.3
C21	7000	2.579	-0.08	**-54.4**	2.619	2.253	9.97	-5.62	-7.88
C23	8000	3.018	-0.205	**-53.6**	3.121	2.915	9.98	-5.45	-7.51
C25	9000	3.65	-0.315	**-51.8**	3.808	3.492	10	-5.45	-7.32
C27	10000	4.313	-0.413	**-49.8**	4.52	4.107	10.04	-5.31	-7.02
C29	11000	4.97	-0.494	**-47.3**	5.217	4.723	10.09	-5.18	-6.74
C31	12000	5.7	-0.573	**-44.4**	5.987	5.414	10.15	-5.07	-6.49

Anmärkningar av Björkman

*** 200-1 900 ton vatten på bildäck trimmar fartyget >en meter på fören. 1 900 tons leder till kapsejsning och flytning upp och ned!**

**** Vatten på bildäck minskar inte GM 11-12 meter - vattnet bildar en kil i sidan - GM ändras ej - men vikten av vattnet i sidan tippar Estonia upp och ned = kapsejsning! Sedan flyter**

Remarks by Björkman

*** 200-1 900 tons of water on the car deck trims the ship >one meter on the bow. 1 900 tons causes capsize and the ship floating upside down.**

**** Water on the car deck does not reduce GM 11-12 meters - the water forms a wedge at the side - GM does not change - but the weight of water tips the Estonia upside down =**

fartyget med kölen upp!

Lastfall C9-C31 med krängvinkel >40° är ostabila och leder till omedelbar kapsejsning eftersom däck 4-8 (däckshuset) inte är vatten/vädertäta.

Anmärkning: I resultatutskrifter från flytlägen i krängt tillstånd kan framförallt djupgåendet, T, få märkliga värden. Det beror på att medeldjupgåendet är medelvärdet av djupgående i för och djupgående i akter. Djupgåendet i för och akter räknas till en yta parallell med lugnvattenytan som går genom baslinjen, BL. Vid stora krängningsvinklar kan medeldjupgåendet till och med presenteras som negativa värden.

Bilaga 6. Fyllnadsförlopp Exempel 1, DX7F

Attachment 6. Sequence of filling Example1, DX7F

DAMA, DX7F

STA, 1

PHA, 2

ROO, DUMMY

STA, 2

PHA, 2

ROO, T1010, T1110, T1210, T1310, FILL=0.3

STA, 3

PHA, 2

ROO, R51 t58

STA, 4

PHA, 2

ROO, R52

STA, 5

PHA, 2

ROO, T1010, T1110, T1210, T1310, FILL=0.4

STA, 6

PHA, 2

ROO, R53 T210

STA, 7

capsize! But the ship still floats upside down!

Loading conditions C9-C31 with angle of heel >40° are unstable and lead to capsize as decks 4-8 (the deck house) are neither water- nor weather tight.

Remark: In the printouts of floating positions in a heeled condition particularly the mean draft T may get strange values. It is due to the fact that the mean draft is the average of the draft forward and the draft aft. The drafts at fore and aft are calculated relative to a surface parallel with the still water surface that passes through the base line, BL. At large angle of heel the mean draft can even be shown having negative values.

Bilaga 7:2 Flytlägen - Attachment 7:2 - Floating positions

c0-1.pdf

c8-1.pdf

c8-2.pdf

c10-2.pdf

c15-2.pdf

c15-3.pdf

c15-4.pdf

c15-5.pdf

c15-6.pdf

c18-6.pdf

c18-7.pdf

c18-8.pdf

c18-9.pdf

c-21-9.pdf

c21-10.pdf

c21-11.pdf

c21-12.pdf

c21-13.pdf

c21-14.pdf

c21-15.pdf

c21-16.pdf

PHA, 2	c21-17.pdf
ROO, R54	c25-17.pdf
STA, 8	c25-18.pdf
PHA, 2	c25-19.pdf
ROO, T1010, T1110, T1210, T1310	c27-19.pdf
STA, 9	c27-20.pdf
PHA, 2	c27-21.pdf
ROO, R41	c29-21.pdf
STA, 10	c31-21.pdf
PHA, 2	c31-22-1.pdf
ROO, R42	c31-22-2.pdf
STA, 11	c31-23.pdf
PHA, 2	c31-24.pdf
ROO, R61 R43 R71	c31-25.pdf
STA, 12	c31-26.pdf
PHA, 2	c31-27.pdf
ROO, R62 R73 R74	
STA, 13	**Bilaga 8, Attachment 8 - GZ-curves**
PHA, 2	**Anmärkning av Björkman - Alla GZ-kurvor type TH är falska. Se Bilaga 4 ovan.** **Remark by Björkman - All GZ-curves are false. See Attachment 4 above.**
ROO, T1120, T1220, T1320, T1420, FILL=0.2	
STA, 14	C0-DX7F-1-EQ.pdf
PHA, 2	C10-DX7F-2-EQ.pdf
ROO, R81 R72	C21-DX7F-10-EQ.pdf
STA, 15	C25-DX7F-17-EQ.pdf
PHA, 2	C25-DX7F-19-EQ.pdf
ROO, R44	C31-DX7F-21-EQ.pdf
STA, 16	C31-DX7F-22-EQ.pdf

PHA, 2

ROO, R63

STA, 17

PHA, 2

ROO, T1120, T1220, T1320, T1420

STA, 18

PHA, 2

ROO, R82

STA, 19

PHA, 2

ROO, R64 R95

STA, 20

PHA, 2

ROO, R83

STA, 21

PHA, 2

ROO, R84 T910 T920

STA, 22

PHA, 2

ROO, R91 R92 R93, R85, R86, R87, R88

STA, 23

PHA, 2

ROO, R94, R96

STA 24

PHA 2

ROO T820 T720

STA 25

PHA 2

ROO T620 T520

STA 26

PHA 2

ROO T610 T510

STA 27

PHA 2

ROO T420 T320 T410

OK

STA Stage- steg i beräkningen

PHA Phase- delsteg i beräkningen

ROO

Bilaga 9. Fyllnadsförlopp Exempel 1, DX7W	Bilaga 10, Attachment 10
Attachment 9. Sequence of filling Example1, DX7W	c0w-1.pdf
DAMA, DX7W	c8w-1.pdf
STA, 1	c8w-2.pdf
PHA, 2	c10w-2.pdf
ROO, DUMMY	c10w-3.pdf
STA, 2	c15w-3.pdf
PHA, 2	c15w-4.pdf
ROO, T1010, T1110, T1210, T1310, FILL=0.3	c18w-4.pdf
STA, 3	c18w-5.pdf
PHA, 2	c18w-6.pdf
ROO, R41	c-21w-6.pdf
STA, 4	c21w-8.pdf
PHA, 2	c21w-9.pdf
ROO, R51 R42 T210 T58	c21w-10.pdf

STA, 5

PHA, 2

ROO, T1010, T1110, T1210, T1310, FILL=0.4

STA, 6

PHA, 2

ROO, R61 R52 R43

STA, 7

PHA, 2

ROO, R71 R53 R62 R44

STA, 8

PHA, 2

ROO, T1010, T1110, T1210, T1310 r95

STA, 9

PHA, 2

ROO, R81 R72 R54 R63

STA, 10

PHA, 2

ROO, T1120, T1220, T1320, T1420, FILL=0.2

STA 11

PHA 2

ROO, R82 R73 R64

STA, 12

PHA, 2

ROO, T1120, T1220, T1320, T1420

STA 13

PHA 2

ROO, R91 R92 R93 R83 R84 R74 T910 T920

c21w-11.pdf

c21w-12.pdf

c25w-12.pdf

c27w-12.pdf

c27w-13.pdf

c29w-13-1.pdf

c29w-13-2.pdf

c31w-13.pdf

c31w-14.pdf

c31w-15.pdf

c31w-16.pdf

c31w-17.pdf

c31w-18.pdf

Bilaga 11, Attachment 11 - GZ curves

Anmärkning av Björkman - Alla GZ-kurvor typ TH är falska. Se Bilaga 4 ovan.

Remark by Björkman - All GZ-curves type TH are false. See Attachment 4 above

C0-DX7W-1-EQ.pdf

C10-DX7W-2-EQ.pdf

C18-DX7W-6-EQ.pdf

C21-DX7W-9-EQ.pdf

C25-DX7W-12-EQ.pdf

C27-DX7W-13-EQ.pdf

C29-DX7W-13-EQ.pdf

C31-DX7W-14-EQ.pdf

Bilaga 12, Attachment 12

Bilaga 13, Attachment 13

Bilaga 14, Attachment 14

STA, 14 Bilaga 15, Attachment 15

PHA, 2

ROO, R94 R96 R85 R86 R87 R88

STA, 15

PHA, 2

ROO, T820 T720

STA, 16

PHA, 2

ROO, T620 T520

STA, 17

PHA, 2

ROO, T610 T510

STA, 18

PHA, 2

ROO, T420 T320 T410

OK

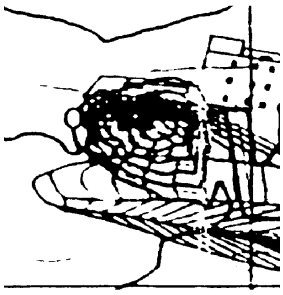
STA Stage- steg i beräkningen

PHA Phase- delsteg i beräkningen

ROO Room- öppet utrymme

SUMMARY OF PART 1 - DISINFORMATION REVEALED

- **A passenger ferry like the 'Estonia' floats in the water on its partly submerged *hull* as per the principle of Archimedes established 252 BC. The *hull* is subdivided to prevent sinking due to leakage, i.e. the *hull* floats, even if it is damaged. Increasing amounts of water inside a *superstructure* on top of the *hull* makes the hull (and the superstructure) list, until the hull (and the superstructure) capsizes, i.e. the hull (and the superstructure) turns upside down - and floats on the *hull*.**
- **Leakage of the hull as cause of accident was never investigated. It was covered up.**
- **The investigation was manipulated from the beginning with a false cause of accident - the visor.**
- **Secrecy during an accident investigation is not permitted but necessary for a cover-up.**
- **False information was immediately fed to the public as part of a planned disinformation campaign.**
- **A false wreck position was necessary to establish the false cause of accident.**
- **All false facts - lies - about the 'Estonia' accident were already established prior to the appointment of the Commission.**
- **New evidence changing the cause of accident and the sequence of events must be reviewed according to IMO resolutions and international law by a new investigation.**
- **None of the Estonian members of the Commission - the co-conspirators - were qualified to investigate the accident.**
- **A person with inside information about the accident was brought into the Commission to assist the cover-up!**
- **All members of the Commission had particular interests that the true accident cause was not made public, which is why they participated in the cover-up!**
- **The accident did not take place as reported in the media!**



- **The underwater picture (right) with the visor at the bow has never been explained. The analysis of Dr. Nuorteva of sonar pictures taken 30 September 1994 should be re-done in 2001!**
- **The decision not to salvage the dead victims was only done to prevent outside experts to examine the wreck and to prevent identification of the bodies.**
- **There were serious conflicts of interest inside the Commission.**
- **It is very probable that the visor was not lost *'under way'* and that the statement 17 October was false.**
- **The video films - the only evidence that the ramp at the forward end of the superstructure had been open - do not show that the ramp was open.**
- **The 'Estonia' should have capsized in one minute with 2 000 tons of water on the car deck in the superstructure. The Commission stated the opposite.**
- **The Commission falsified the sequence of events in figure 13.2 in the Final Report (5).**
- **Crew negligence as cause of accident has not been investigated.**
- **On 17 October the Commission thought that only partial opening of the ramp in the superstructure was sufficient to sink the ship - a mistake in the cover-up.**
- **All information given on 17 October 1994 was pure *disinformation.***
- **There is no evidence that the visor was found in the alleged position 1 560 meters west of the wreck.**
- **Many experts attached to the Commission were fully aware in November 1994 that the official cause of accident and the alleged course of events were manipulations.**
- **All results of the dive expedition were manipulations.**
- **An accident must have a proximate cause - and the Commission chose the visor locks made 1979 - fifteen years before the accident. To suit this false allegation the Commission also decided that the ramp had been fully open during the accident.**
- **The whole Final report must be considered a purposeful manipulation.**
- **The'Estonia' was not seaworthy on the Baltic with incorrect certificates.**
- **The life saving equipment was incorrect.**

- **The safety plan was incorrect.**
- **The watertight subdivision of the hull was incorrect.**
- **No life boat alarm was given.**
- **Olof Forssberg stopped all efforts to make any proper stability calculations.**
- **Olof Forssberg made all German information secret and did not include any German information in the Final Report.**
- **Johan Franson prevented the Swedish NMA staff to discuss the stability of the 'Estonia'.**
- **There is no evidence for the course and speed of the 'Estonia' prior to the accident.**
- **The security routines for cargo and passengers are unclear.**
- **The Swedish expert Bengt Schanger was paid more than SEK 4 000 000:- by the Swedish government to 'edit' the testimonies, so they suited the 'cause of accident ' of the Commission.**
- **The Estonian NMA accepted lifesaving equipment, which was originally used for coastal trade Sweden-Finland. That equipment assumed that persons should jump into the water and swim to the life saving equipment or ashore. Such procedures were illegal at open seas.**
- **There were no valid or correct safety and load-line certificates.**
- **The life jackets did not work correctly. They were ripped off, when persons jumped into the water.**
- **The evacuation plan to abandon the 'Estonia' did not work. It was not realistic.**
- **Johan Franson gave misleading information to the government and the Ethical Advice group.**
- **Swedish Port State Control made many faults never stopping the 'Estonia' already 1993.**
- **The Analysis group did not make any recommendations 1999 how Swedish authorities could have prevented the accident with better safety at sea from the beginning.**
- **Welding work on the 'Estonia' during the night of accident has never been investigated, even if it was possible and probable.**
- **The cause of accident could have been an explosion due to welding work on a tank with explosive atmosphere. It has not been investigated.**
- **The whole engine crew survived. It might have been a coincidence but should have been investigated by the Commission. Only three engine crew members were interviewed. They have given untrue testimonies.**
- **The media has not reported correctly about the investigation.**
- **The Final report (5) is a shameful falsification.**
- **The Swedish Board of Psychological Defence, SPF, 1996-2001, prevented an open discussion of the accident by proposing to all authorities to ignore the public debate.**
- **The SPF 'fact bank' 2002 should produce the final clarifications why the 'Estonia' sank.**
- **The 2003 SPF pre-study of how to explain the sinking is a falsification.**

'every stone must be turned'

Carl Bildt (m), Swedish prime minister, 940928

***'We knew that several persons in the crew lied** ...'*.

Bengt Schager, expert in the Commission, Swedish daily Hallands Nyheter 990217

PART 2. WHAT SURVIVORS AND RELATIVES SHOULD KNOW 2001

Particulars of the M/S Estonia (from Lloyd's Register 1994):

Loa 155.43 meters, Lpp 137.42 meters, Breadth 24.21 meters, Draught 5.50 meters

Depth 7.62 meters, GT 15566, NT 8372, Dwt 3345 tons

Forward bow ramp length 7.3 meters, breadth 5.4 meters

2.1 A SEQUENCE OF EVENTS BASED ON PASSENGER TESTIMONIES. SUDDEN LISTING AT 01.02 HRS.

In the summer 1996 the **author** reconstructed an alternative cause of accident and sequence of events based on basic stability principles in undamaged and damaged (under the waterline) conditions of the ship, calculations of periodic and impact hydrodynamic loads on the fore ship *above* the waterline, how ferries behave with water on the car deck *above* the waterline and with water in damaged (flooded) compartments *below* the waterline, information in the press in October 1994, the fact that the visor was allegedly found a mile west of the wreck, information in books written by survivors, etc.

The theory was simple: the 'Estonia' had started to leak *below* the waterline, water had flooded several compartments *below* the waterline, the ship had lost its initial stability due to free water surfaces and had suddenly listed, and had turned up against the wind (towards Southwest) to try to reduce the list. What caused the leak was not known! A collision?

The visor had been struck off sideways, when the fore ship side of the heeling ship hit flatly against the waves. The author then, 1996, believed that the visor had been lost prior to the sinking, but it would appear today, 2001, that it was still hanging on to the superstructure when the ferry sank. Thus, the visor could hardly have caused the accident.

The author was not aware of the systematic disinformation of the Commission as described in Part 1 but tried to do the best with the available information.

The result was an article in the biggest Swedish morning daily Dagens Nyheter (DN Debatt) published on 15 August 1996. The same day the Commission (Forssberg and Schager) told Swedish news agency TT (22) that the article was

> *"unintelligent gibberish based on unscientific methods by an unreasonable person"*.

This remarkable and brutal rhetoric (which no paper published verbally) surprised the author at first but it confirmed that the Commission was not doing a serious investigation of the Truth of the 'Estonia' tragedy.

ALL EVIDENCE WAS SECRET 1996

At the time of the DN Debatt article all reports and evidence of the Commission were secret and confidential. The Commission had also refused to discuss its investigation and conclusions until then. Ann-Louise Eksborg, who took over the job of Forssberg in May 1997 **1.20**, has however, in January 1998, verbally confirmed (23) that the SHK could not positively exclude the possibility of leakage in e.g. the starboard side *below* the waterline, because the examination of the wreck was not complete. The assumptions and suggestions of the DN article, and also of the Germans **1.22** from 1996, had thus been confirmed.

The work to improve the analysis continued and another summary was published in Lloyd's List in London on 8 November 1996 (Dagens Nyheter has since August 1996 refused to publish anything by the author). The result was a lot of new information and other documents sent to the author. The result was i.a. (**1**) 1998 and this book 2001. The Swedish Ministry of Transport (Ines Uusmann) was informed by letters 1996/7 but advised that the letters had been filed and no action was taken **1.39**. Nobody reacted.

To establish what happened aboard the 'Estonia' you must evidently study the testimonies of *all* the survivors - passengers and crew - and also other observers, e.g. the crews of assisting ships.

The sequence of events and times in **2.2** is partly based on the German scenario published in July 1996 (19), which the **Germans** had established after interviewing 123 of 137 survivors and many other persons who knew the ship.

THE VISOR MUST HAVE BEEN LOST *AFTER* THE LISTING

*The German scenario proposed that the visor was lost **after** the sudden listing occurred,* which the author thought already 1994. The Germans however illogically proposed that water had leaked into the *superstructure* at the ramp and caused the listing. It was not possible, because then first >2 000 000 litres (sic) of water must *'leak into'* the car deck via a badly maintained visor and an even worse maintained bow ramp, without nobody noticing. *Half* that amount of water had caused a heel >20 degrees and 2 000 000 litres of water on the car deck had caused immediate capsize and floating upside down, and it never happened. Only small amounts of water could have leaked in at the ramp and it could perhaps have caused a small listing - but never the sinking!

Thus the ship must have been leaking below the waterline. The Germans have much later concluded the same thing 3.18. But what caused the leak below waterline?

The German scenario and its evidence material were presented to the Commission in July 1996 and you would have expected a reaction. However *all German information was also made secret* and filed (19) without any action and was not more discussed by the Commission. The Final Report (5) does not mention the matter.

The Germans did not react - they should have protested strongly - but continued their work.

Several survivors have confirmed directly or indirectly the times and events shown in **2.2**. Other events are a logical consequence of confirmed events, e.g. the assumed angle of heel, speed, course, etc.

No observations of any survivor from the 'Estonia' or from persons on assisting ships confirm the alleged events of the Commission: that the visor fell off *before* the listing, that the ramp was pulled *fully* open, that water entered the car deck of the superstructure, when the speed was not reduced, etc.

In retrospect it is quite simple to show that these 'official' events were made up as part of the disinformation process, which started immediately after the accident by the Swedish authorities.

For some strange reason the Commission had announced the cause of accident **1.4**, *before* they had even examined and analysed, what all survivors had to say and had experienced. Several survivors had, e.g. noticed water on deck 1 starboard side after having heard a big 'bang' but before the sudden listing, and the time for

the sudden listing was put at **01.02** hrs - at least 13 minutes *before* the official, alleged time of the 'accident' - the listing - **01.15** hrs. The reason of the Commission for delaying the 'accident' 13 minutes is further discussed in chapter **4.4**. See also below for a summary of survivors' testimonies - later amended or edited by the Commission - to support the time **01.02** hrs for the 'accident' - the sudden listing.

WATER ON DECK 1

The question was thus - what was the origin of the water seen on deck 1 at, say 00.54 hrs?

The interpretation here is that this water had leaked in below the waterline and that *it* caused the sudden listing starting at 01.02 hrs after a serious mishap with the watertight doors. Sillaste had no doubt been called down to assist isolating the leakage and starting bilge pumps.

The crew must have been aware of the leakage, but it is a proven fact that they did not alert the passengers. In retrospect it is obvious that the crew covered up this fact by blaming the accident on the visor. The visor was probably in bad condition - damaged or defective before the accident. The Germans have shoved that the ramp was probably leaking. The Germans then made the incorrect deduction that water on the car deck in the **superstructure** sank the ship. A simple stability calculation should have demonstrated that this was impossible.

The time for passengers to react was short. Passengers in cabins had little possibility to survive unless they evacuated the cabins immediately and reached a staircase. No alarm was raised **1.33**. What the crew was actually doing is not yet established - probably saving themselves. Some officers sent a Mayday at 01.22/30 hrs.

The reason, why nobody saw or heard, when the visor was detached, was that it happened *after* the listing.

VISOR LOST AFTER THE LISTING

There are two possibilities regarding the visor. The author thought first 1996 - when he still believed that the position of the visor 1 570 meters west of the wreck was correct - that it had been struck off sideway, when the ferry had a list of > 30 degrees, which could have been around 01.16 hrs. The author believes today 2001 that the visor position is false and that the visor was not stricken off at all but was attached to the ship, when it sank (and was removed under water!). Both possibilities will be examined later.

Regardless which possibility is correct, the sequence of events in the Final Report **1.9** is shameless disinformation based on manipulated evidence and falsified *'scientific'* reports.

It is thus very probable that the surviving crew did not tell the truth - but - some information of the crew was true.

Sillaste was probably called up at about **00.30** hrs to fix a defect **1.3**. He says innocently that it was the toilet system, but it was probably some other, more serious problem - probably associated with the leakage.

Watch keeping AB Silver Linde, in an interview in DN **1.4**, said that there was a big impact - bang - at about **00.40** hrs. Some passengers experienced the same thing but later - at about 00.58 hrs (see below).

But 3/E Treu in the ECR or in the engine room, Sillaste in the pump room on deck 0 and motorman Kadak in the workshop beside the ECR have never testified about an impact - bang - at 00.40 hrs. It is remarkable **1.48**. Sillaste says the impact was just before the listing.

Let us assume that there was a problem in one of the engine rooms (the sewage tanks room or the stabilizer space) or the swimming pool compartment on deck 0 causing the impact - bang - and that Treu, Sillaste and Kadak, just because they knew about it, did *not* testify about *that* impact, because it would implicate them. That impact could hardly have been associated with the visor.

Linde told DN about an impact at 00.40 hrs, because he experienced an impact but didn't know what caused it. If it was at 00.40 hrs is another question.

The Commission used two groups of observers to confirm its scenario in the Final Report. The first group was the three persons in the engine room - Treu, Sillaste and Kadak - and they said, or were told to say, that there was nothing wrong at all in the engine rooms or the ship prior to **01.15** hrs, when the listing started - and then they saw a closed but leaking ramp **1.3** at the forward end of the *superstructure after* the listing. Then they told what happened seven minutes later - the *'escape'* **1.48** and that story does not ring true.

It is very difficult to make up a false story, but the problem here was, that the story of the first group must tally with the story of the second group.

The second group was only one man - Linde. Linde was on the car deck, deck 2, in the *superstructure* before the 'accident/listing' - in one version reported in the Swedish daily Dagens Nyheter Linde experienced an impact at 00.40 hrs, in a later version, when the Commission changed the times, it was at 00.55 hrs, and it concerned the visor. Linde was ordered by the bridge to check the visor (sic) for five minutes (there is no evidence for it), but the bridge did not contact the ECR or slowed down the ship. Linde did not find any faults. In the first version Linde continued his patrol round down to decks 1 and 0, but we do not know what he saw there. In the second version there is no time at all for Linde to examine decks 0 and 1, so he returns straight up to the bridge on deck 9 to witness the events from there. Actually he was immediately ordered down again to examine *'strange noise',* but was delayed at the reception on deck 5. That story does not ring true. It is obvious that Linde does not tell the truth.

PASSENGER OBSERVATIONS IGNORED

The Commission ignored the third group of observers - *the surviving passengers*. And a majority of the passengers noticed a sudden listing - around **01.02-01.05** hrs. This time has been determined by independent researchers, e.g. the German group of experts. The Final report (5) chapter 6 mainly quotes a minority of survivors stating another time as follows:

> **6.3.2 - Deck 1** - *"he estimated the time to 0115-0120 hrs ... the ship ... heeled to starboard immediately after."*
>
> **6.3.3 - Deck 4** - *"At about 0115 hrs one witness noticed objects started to move to starboard"*
>
> **6.3.4 - Deck 5** - *"one witness estimated the time to be around 0115 hrs."*
>
> **6.3.5 - Deck 6** - *"He looked at his watch at 0105 hrs. According to his estimation, 20 minutes after, the ship suddenly listed without any forewarning."*
>
> **6.3.6 - Deck 7** - *"The time for this second heel, as stated by two crew members, was around 0120 hrs".*
>
> **6.3.7 - Deck 8** - *"a cabin attendant was awakened, another at 0110-0115 hrs by a cupboard falling."*

The Final report (5) is quite dishonest here. The Schager reports (see below) clearly state that the sudden listing occurred much earlier.

Let us assume that **the list developed at 01.02-01.05 hrs a few minutes after the big 'bangs'.** It can *only* have been caused by free water on deck 0 in the bottom of the *hull*, which had leaked in *earlier* and flooded three or four compartments below the car deck *later*. The ship was rolling in the seas - roll plus list together were noticed by many - the heel was suddenly >30 degrees and the ship then straightened up and stabilised itself with 15 degree list (when the ship did not seem to roll). Then the main engines, the generators, etc. were running, which indicates that it was not too much water in the engine rooms. It is one reason why the Germans believe that three compartments around the sauna/swimming pool room *forward* of the engine rooms were

flooded and that Linde probably had noticed it. Passengers on deck 1 above the sauna noticed water and one person apparently went up and complained. Why Linde did not rise an alarm is a mystery. Or maybe he did? But maybe he only informed the bridge (and/or the ECR?), and the bridge decided not to raise the alarm of the passengers. Why?

One reason was maybe that the crew awaited the master. Or, the crew and the master did not consider the problem serious enough to raise the alarm. It could very well be that the ship was in fact leaking, but that the situation was under control. The leak had been isolated. The bilge pumps had been started. Some - but not all - watertight doors had been closed to prevent the water to spread.

Sillaste let the cat out of the bag, when **1.3** he told the Finnish and Estonian police that the *bilge pumps* were running (and that therefore the 'Estonia' was leaking) just after the list had occurred. The bilge pumps must have been started *before* the list - there was no time to start them after the list. The Commission has censored all information in the Final Report (5) about the bilge pumps - not one word **1.24**. Thus the following may have happened.

SEQUENCE OF EVENTS - TWO BIG BANGS

About 00.55 hrs: Two *'bangs'*, scraping sounds and leakage. The first bang may have been a collision causing the big indent in the visor 5-6 meters above waterline. The second bang caused the hull leakage. Maybe it was the starboard stabiliser fin that broke its foundation in the hull **2.23**. Sillaste was called up to assist, e.g. start the bilge pumps. At this time the engine crew and the bridge were fully informed about the problem, but there was no need to alarm the passengers. Linde was on his patrol round and was not yet aware of the problem.

Linde experienced the *'bang'*, when he was on the (car) deck 2 and was quickly informed what was happening. He could himself quickly run down to the ECR one deck below and check for himself. Thus Treu, Sillaste, Kadak, Linde and the persons on the bridge all knew that the ship was leaking. They may also have believed that the watertight doors on deck 0 were closed **1.23**, even if the persons in the ECR had no control panel to verify it.

No alarm was allegedly raised immediately, but the crew should have alarmed the passengers on deck 1, who were below the waterline. The crew was apparently not aware of the fact that deck 1 was arranged with openings, so that water on deck 1 would flow down to deck 0, in case there was a leak in the side above deck 1. Evidently, if water fills up deck 0, it will be pushed up to deck 1. These openings are called 'down-flooding hatches' and allow water on deck 1 to flow down to deck 0 and stabilize the ship and to be pumped out by the bilge pumps. If it was water pressed up through these openings, that persons on deck 1 saw before the sudden listing is not clear - it could also have flowed up through the staircase. But before 01.00 hrs persons on deck 1 saw water on deck 1 starboard side and in the centre corridor.

There are evidently no down flooding hatches on the car deck in the superstructure 2,5 meters *above* the waterline. That deck is very strong and completely watertight. Water on the car deck (from the fire extinguishing system if a car is on fire) is evacuated overboard via normal scuppers. Also the car deck must be fire proof, e.g. if petrol flows out from a car, etc.

It is possible that all ship's officers were alerted at this time and gathered on the bridge, some bringing their wives and girlfriends along. It is also possible that some lifeboats were made ready to abandon ship. But it is clear that no alarm was given to the passengers.

00.56 hrs: Linde returned to bridge at the same time the Master arrives. The Master wonders what is going on. Second mate Kannussar informs that the 'Estonia' is leaking and maybe that they have collided with something, that the bilge pumps are on, that the watertight doors on deck 0 are closed, and that the situation is under control. The speed has evidently been lowered. Maybe Linde is ordered down again to the ECR and to see what is going on (even if there are telephones, walkie-talkies, etc).

00.57 hrs: Passengers on deck 1 notice water on deck 1.

00.58 hrs: The Master now manipulates the remote controls of the watertight doors - he may have believed that he closed the doors on e.g. deck 1, but he opens now (all?) doors on deck 0 **1.23**. The water then spread quickly in two, three adjacent compartments, and if two compartments were previously full; now five compartments are partly flooded. What happens?

The ship loses its initial stability due to free water surfaces on deck 0 2.17 - and there is a sudden list at 01.02 hrs.

01.02 hrs: The ship loses its initial stability due to righting arm GZ<0and heels. A few minutes later it finds a new equilibrium at about 15 degrees list to starboard. Linde loses his balance on deck 7. After the sudden listing the water cannot spread on deck 0 for a while, as the watertight doors are in the centre line. But when more water flows in, the compartments fill up progressively, the list increases and the ship sinks. When deck 4 aft open deck is under water, the car deck fills from above through the ventilators; this happens at say 01.20 hrs and at 01.32 hrs the ship's stern hits the bottom. The bow sinks under water at 01.35 hrs.

But after 01.02 hrs everything is panic. No Mayday could be sent in the confusion, it was not sent until **01.22 hrs**, when it was sent via VHF.

Treu was maybe in contact with the bridge/Master before the sudden list with instructions to ballast the ship for stability, but it was not possible. The only method to prevent loss of initial stability was (a) to close the watertight doors and (b) to pump dry the undamaged compartments with the bilge pumps.

Treu, Sillaste and Kadak probably immediately after the sudden list left the ECR in order to survive 1.48.

SECRET SUMMARIES OF SURVIVING PASSENGERS' TESTIMONIES

Already on 24 January 1995 the expert and psychologist Bengt Schager **1.5** summarised the events for the Commission according to police interviews of the survivors (act A93d* - three pages - it was kept secret until 4 December 1997). The information was based on 144 interviews of 122 survivors, including the four crew members Linde, Treu, Sillaste and Kadak, but the latter testimonies are not considered (sic). Schager has later informed that he considered that several persons of the crew lied, which was not mentioned in the below summaries.

The Final Report (5) states in chapter 6.1 that its sequence of events 1.9 is based upon 258 testimonies from 134 survivors and that the summaries in the Final Report (5) follow the witnesses' statements as closely as possible. However - the original statements of the survivors/witnesses are not supplemented to the Final Report, so the reader has no possibility to check the Final Report. Schager summarised the survivors' testimonies completely different than shown in the Final Report. And Schager's summaries tally rather well with the German private interviews of survivors.

THE SCHAGER SEQUENCE OF EVENTS

Schager put the observations of the survivors in time intervals:

> **00.00 - 00.30 hrs** *"Heavy seas. Many passengers are sea sick, some are worried about the noises, others are afraid and some try to persuade themselves that all is in order - as it shall be. On decks 1 and 4 many passengers cannot sleep due to the noise level. Passengers discuss among one another about the noises. Persons, moving around, are forced to find support. The waves are hitting hard against the ship. There are strange sounds in the ship, making some worried. The bar staff starts removing bottles from the shelves. At about **00.15 hrs** the 'Estonia' changes course and **the stabilizers are activated** (pulled out). Some passengers awake in their cabins due to hard bangs against the ship. **One bang is particularly hard**: "As if the whole construction of the ship was shaken". A strong noise heard on the car deck, where a car alarm is activated. Silver Linde, who sometimes have difficulties to keep his balance due to the motions of the sea, returns to the bridge after his patrol round and informs that all is in order".*

In an up-dated summary of 21 March 1995 (act C18* - eight pages - also secret until 4 December 1997) Schager informed about the same observations. The Final Report (5) states however that the 'Estonia' turned at **00.30 hrs**, i.e. 15 minutes later than Schager states in his two reports. It is possible that the ship turned towards Sandhamn (sic) at that time **1.26** and later. The statement that the stabilizers were activated is not proven - the ship was rolling so much that the orchestra stopped playing later - see below - which suggests that the stabilizers were not in use. They were found in their pockets on the wreck. The statement that Linde returned from his patrol round must refer to the patrol round, which started at 23.30 hrs. He may then have returned just before 00.00 hrs.

> **00.30 - 00.45 hrs** (According act A93a*) *"**Several passengers hear a very strong bang.** Somebody reports about strange bangs, as metal against metal, coming from the bow. Severe motions of the sea and passengers have fallen to the floor in the karaoke bar, where also glasses and bottles have fallen to the floor".*

In the up-dated summary 950321 (act C18*) Schager had more to report:

> **00.30-00.45 hrs** *"The orchestra stops playing in advance (at 00.30 hrs) due to the heavy motions of the sea. Severe motions of the sea. Passengers have difficulties to keep balance. Belongings slide down on the floor of the cabins. The blows cause noticeable shakings, which really make the ship shake. In cabins and in corridors you can hear persons vomiting. **A strong bang is heard on deck 2**, the car deck. **Several passengers report that they hear a very strong bang**. One passenger reports about several strange bangs, metal to metal, coming from the bow. The sea motion is severe and several retired (old) persons have fallen in the karaoke bar, where also glasses and bottles on the bar counter fall to the floor ".*

There should have been no doubt that there was ***a very strong bang*** aboard the 'Estonia' at 00.30-00.45 hrs, i.e. 15-30 minutes before the list at 01.02-01.05 hrs. But in the Final Report (5) the very strong bang is not mentioned. Only *'one passenger'* or *'somebody'* noted several bangs from the bow before 00.45 hrs, and watchman Linde should then have been there - he is not mentioned above. And how did *'one passenger'* know that it was from the bow?

TWO BIG BANGS

Schager continued

> **00.45 - 01.00 hrs** (According act A93a*) *"**Two bangs are heard over most parts of the ship**, strong, rapid noises and at the same time the ship is shaken a little. The bow rises strongly for the waves. Silver Linde, who is on the car deck, hears a bang behind the ramp, a very hard metallic sound. He informs the bridge and is ordered to check for five minutes. The signal lamps light green. In the engine room* (sic) *is seen on the monitor at 00.46 hrs that there is a water sprinkle at the ramp starboard edge. In several cabins passengers vomit. Captain Arvo Andresson arrives to the bridge".*

In the up-dated summary 950321 (act C18*) Schager had more to report:

> **00.45-01.00:** *"**An un-natural bump was heard** 15 minutes before the accident. **Two dull bangs, rather rapid, short noises, were heard.** At the same time the ship shakes a little (about 00.45 hrs). The ship rolls severely sideways. Silver Linde, who is on the car deck, hears at 00.45 hrs a strong crash behind the ramp, a very hard metallic bang. He informs the bridge and is ordered to check for five minutes. The signal lamps light green. He did not hear anything more during these five minutes. In the engine room* (sic) *Hannes Kadak sees at 00.46 hrs on the monitor that there is a water sprinkle at the ramp starboard edge. Additional passengers awake and are afraid (10-15 minutes before the accident). Strange bumps are heard and something which hits. The bar staff removes bottles from the shelves. The bow rises strongly for the waves. Worried passengers wake one another. The ship starts to swing (pitch) longitudinally, not from side to side, 3-4 times. One passenger hears a familiar (for him) hydraulic sound, "such as is heard when you close and open the bow visor"."*

There should be no doubt that there were ***'two (dull) bangs'*** heard aboard the 'Estonia' before the list (the accident) according to Schager. But in the Final Report (5) these two bangs at 00.45-01.00 are not mentioned either. Linde has not mentioned the two bangs - he is said (or was told) to have heard a crash behind the ramp. What caused the bangs? A collision! The Commission has never mentioned the possibility.

OFFICIAL TESTIMONIES IGNORED/CENSORED IN THE PART REPORT

In the Part Report (16) page 10 the Commission summarised what happened **00.30-01.15 hrs 1.19**:

> *'At about 00.45 hrs several witnesses noted signs of something un-normal in the ship. Metallic noises were heard in the ship'.*

That was all the Commission told the public in April 1995 about the last 45 minutes of the voyage, in spite of the fact that Schager in two reports of January and March 1995 had advised a completely different scenario!

The author considers the above indication that the Part Report (16) 1.19 was a conscious attempt to misinform the public. Three very strong bangs at two different times are reduced to *'metallic noises'* in the Part Report (16).

At 01.00-01.05 the severe list develops according to Schager, in spite of the fact that the Commission already in October 1994, **1.12**-1, said that it was not until 01.15 hrs.

Schager thus (act 93a*) reported in January 1995:

> **01.00 - 01.05 hrs** *"On deck 1 passengers hear a sprinkling sound from the car deck. Worried passengers wake one another. The watch man Silver Linde is ordered to go down and investigate reports about noise. The ship raised the fore strongly 3-4 times and then sank back. After the second or third pitching it behaved differently. One passenger hears a familiar (for him) hydraulic sound, "such as is heard when you close and open the bow visor" Another hears at the same time three "klonks" and that there is a hissing sound below his cabin (nr 4314).* ***Two strong bangs awake the sleeping aboard. At the same time a scraping sound and something slipping and sliding against the hull.*** *Many heard this sound. Many passengers understand that something is not what it should be. The motions of the ship are changed and now it heels (rolls) strongly from side to side 3-4 times, so that passengers must hold on to fixed objects. Belongings fall to the floor (at 01.02 hrs). The ship moves in a different and dumber manner. After the fourth roll the ship stops with starboard list and does not straighten up. Water sprinkle in the staircase between decks 5 and 6 (in the forward staircase at the side).* ***Several persons testify that the visor is still attached.***[95] *Many passengers, particularly on decks 1 and 4 are now on way out of their cabins. The angle of list is stated to be 5-10 degrees."*

TOTAL DISORDER ONBOARD

The summary of Schager in March 1995, act C18*, states in principle the same for the time **01.00 - 01.05 hrs** with the following additions and corrections - it is clear that the sudden list has occurred:

> **01.00 - 01.05 hrs** *"immediately after the list there is a new roll, which contribute to the shifting of cabin outfit. The bar counter in the karaoke bar turns over and passengers fly away against the starboard bulkhead. Glasses and bottles fall over the bar staff. People fall to the floors, some does not seem to understand, others panic and scream. After the fourth roll the ship stops with starboard list 15-20 degrees and does not straighten up. A lot of bottles fall on the bartender. They scream to one another to try to get out. Several passengers say that the engines stop or silence. Passengers say that the engines were heard differently, as if the ship slowed down.* ***The corridors on deck 1 are filled with people.*** *There are a small number of injured passengers lying in different areas of the ship.* ***On deck 1 there is water in the corridor.*** *Escaping passengers scream to the crew* (about water on deck 1)*, which rushes down to investigate. Silver Linde, who has fallen on deck 7, informs lying down to the bridge that there is water on deck 1. … The watertight doors are being closed."*

That a *'severe list'* developed **01.00/01.05 hrs** should be clear from the Schager summaries, also **2.12**, - *the bar counter turns over and passengers fly against the starboard bulkhead* - and you wonder why the Final Report (5) does not mention it. The Final report mainly quotes survivors stating the sudden list occurred 01.15-01.20 hrs. Unfortunately Schager also minimises this event - the sudden list - to be

> *"Many passengers understand that something is not what it should be. The motions of the ship are changed and now it heels (rolls) strongly from side to side 3-4 times, so that passengers must hold on to fixed objects."*

In the Final Report (5) the sudden listing at 01.02 hrs is not mentioned at all. The Final Report instead suggests that the ship listed slowly 20 degrees between 01.15-01.20 hrs, i.e. 4 degrees per minute, due to increasing amounts of water on the car deck. Naturally Schager never mentioned that in his summaries - according Schager the list was 30 degrees at 01.10-01.15 hrs, when the speed had been reduced to 6 knots, etc.

According Schager Linde had fallen on deck 7 at **01.05 hrs** - in the Final Report Linde waits then at the information desk on deck 5 - and there is still ten minutes to go to the sudden listing.

Isn't it strange?

METALLIC NOISES - THE RAMP APPEARED TO BE CLOSED

In the Part Report (16) the Commission says that only the following - nothing else is reported except *'metallic noises'* - happened before the accident - the listing - at about **01.15 hrs**:

> *"The engineer in the engine control room has stated that he later - at about 01.15 hrs - on a TV-monitor saw water coming in along the sides of the forward bow ramp. The ramp appeared to be in a closed position. Further on stronger metallic noises were heard and soon after the ship started to roll heavier and got starboard list".*

Schager evidently did not report this testimony of Treu in his summaries 1.48. It is quite interesting to note that the Part Report (16) April 1995 only includes one testimony - Treu's - to support its sequence of events. The Commission apparently decided to ignore all what Schager reported above. Schager never complained, he was well paid and stayed on in the Commission until September 1997, when he resigned - the Estonian's were lying, Schager told the press.

Then happened the following in the Part Report (16):

> *"Later the bow visor was detached from the ship and fell forward over the stem. The ramp was pulled open ... and was fully open ... the ship ... listed ... . As the angle of heel increased the passengers started to ...* (evacuate, i.e. several minutes after 01.15 hrs)*."*

There is of course not one witness that the visor got detached or the ramp was pulled open *after* 01.15 hrs - it is the ultimate lie to get the ship to list in the false sequence of events.

Who wrote the Part Report? It was hardly the Commission as a group. It was probably Forssberg and Stenström alone, and first they censured all the statements of Schager above, and second they convinced the others in the Commission that they very well could write the Final Report based on the false Part Report.

According Schager there was no lifeboat alarm at 01.22 hrs, which the Final Report makes a big issue of **1.33**. The Part Report (16) does not mention any lifeboat alarm.

The Estonian delegation in the Commission wrote their own sequences of events **Appendix 8** but they are only based on crew testimonies.

There were 137 survivors, 94 passengers and 43 crew. About 127 knew where they were when the sudden listing occurred:

Deck	Cabins	Public/crew spaces	Open deck
0	none	1 (Sillaste, sewage room)	n.a.
1	19	2 (Treu & Kadak, ECR)	n.a.
2 and 3	none	none	n.a.
4	25	4	none
5	4	27	none
6	11	4	1
7 (embarkation deck)	22	3	1
8	2	1	none
9	none	none	none
Total	**83**	**42**	**2**

Thus a majority, 65%, was in a cabin, mostly ready to go asleep. 33% was in public rooms. At least another 100 persons managed to get out and drowned. The three crew in the ECR on deck 1 never rushed into the passenger accommodation a few meters forward to raise an alarm. Instead they tried to save the ship before escaping **1.48** - not via the passenger escape - the public stairwells. About 35% was in the vicinity of the embarkation deck 7.

TREU'S FALSIFIED TESTIMONY

One survivor (AE) has particularly studied Treu's testimonies, as Treu's times do not tally with AE's observations aboard. AE was in his cabin on deck 4, when he heard two bangs and went out in the corridor to investigate. The time was around 01.00 hrs. Soon after the ship listed. AE has informed, i.a. the following:-

> *"Furthermore I have established that the two copies of testimonies we have show that there are two versions of the testimony/interview of Treu on 28 September (made by T Laan), where the date has been changed to 29 (September) in the Swedish translation. The interesting thing is that in the earlier version* ***Treu has said that he heard*** (the two) ***bangs at 01.00 hrs!*** *In the later version he has changed the time to* ***01.10-01.15 hrs*** *and this he has also told the Finnish police at the same day on 29 September! Furthermore, Kadak says, also in an interview on 28 September by T Laan, that Treu made a round trip sometime between 00.00 hrs and 00.46 hrs, when Kadak saw that water leaked in at the right side/edge of the ramp. He then says that when Treu came back, then he (Kadak) went to the workshop to work. At that time the ship listed suddenly to starboard and True said that 'the situation is serious ...'. Was Treu actually in the engine room, when the bangs occurred and when the sudden listing developed soon after?* **4.4**. *It is also interesting to note that when B. Schager refers to the testimony of Kadak at the interviews at Landvetter 31 March 1995* (just before the Part Report (16) was issued) *and points out these different translations, a quarrel develops between him, Kari Lehtola and Enn Neidre, as Kari Lehtola does not know who the interviewer T Laan is. He declares that it should have been a Swedish police. Lehtola has as you know already 17 October 1994 in a preliminary statement from the Commission said that one testimony says that water came in at the edge of the ramp at* ***01.15 hrs*** **1.12**-1. *At that time all testimonies were neither reviewed, nor translated!"*

The observations of AE indicates clearly that Lehtola, in order to hide the false statement of 17 October, later in the Final Report was forced to censure all testimonies to the effect that the list occurred at **01.02** hrs just after two big bangs. Treu was probably out in the engine room - together with Sillaste? - even if Sillaste does not say so - when the list occurred at 01.02 hrs. What were they doing there? What AE experienced is given in **2.12**.

It is worth noting that Treu heard the two bangs in his testimony of 28 September 1994. Treu could hardly have been *inside* the *sound insulated* ECR, with the *noisy* engine rooms below and aft, at that time.

We know that Treu lied **1.48** about the evacuation from the ECR - it would be interesting to know *where* Treu heard the bangs. The TV-company CNN sent reportage soon after the accident with an interview of a crewmember (Treu or Sillaste?) stating that he was standing to his knees in water (in the engine room or aft of the ramp?) just before the sudden list. What happened to that information?

Based on above it should be clear that the two bangs were before, say **01.00 hrs** and that the list plus rolls occurred at **01.02-01.05 hrs.** How the list then developed is important to establish the sinking. The ship remained with 15 degrees list and rolling several minutes after **01.05 hrs**, so that persons could get out.

At **01.30 hrs** the ships port side was even, i.e. the list was 90 degrees. Testimonies say that the list had developed jerkily. It may have been caused by gradual filling of hull compartments through open watertight doors after the first list.

Evidently the ship could not have sunk at 01.52 hrs, if it were on the side at 01.30 hrs. This author believes that the stern hit bottom already at 01.32-01.33 hrs and that the bow was under water at 01.36 hrs. The clock on the bridge stopped at 01.35 hrs.

The Commission suggests in the Final report that the ship floated and drifted another 20 minutes. It cannot be possible - a many survivors that were on the ship's upper port side when it was horizontal have stated they were in the life rafts/water before 01.30 hrs.

The above is thus mainly a summary of what 'expert' Bengt Schager of the Commission has compiled from the survivors about the sequence of events. More information about the 'bangs' prior to the sudden listing is today available in (33) in Swedish, the book **'Tysta leken'** by Knut Carlqvist and describes even more information supporting the allegations of this author. Carlqvist believes the 'bangs' were caused by a collision with something. It is possible. It is also crystal clear that the Commission never investigated the possibility. The reason why the Commission never investigated that possibility is evidently that it already on 4 October 1994 had stated another cause of the accident - *the visor* - as described in Part 1.

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[95] Note the statement of Schager that the visor was still attached to the ship after the sudden listing! But how could survivors know it?

2.2 THE EVENTS DURING THE ACCIDENT 28 SEPTEMBER 1994

No.	Time	Event	Interpretation and notes
1.	about 00.55 hrs	**Speed 15 knots. Westerly course between Estonia and Sweden. Wind SW Beaufort 7. Permanent heel 1 degree to starboard and slight stern trim**. The weather was **not** very bad. **Waves average 4 meters high. Several passengers noted and/or were awoken by two severe bangs** with 30-60 seconds interval and some passengers started to leave their cabins on deck 1. The speed may have been reduced. Maybe the bridge alarmed the crew and all officers mustered on the bridge. ***Ship started to trim on the bow.***	The cause of the sudden 'bangs' has never been explained. **The vessel could have collided with something in the water or something was damaged below the waterline causing a serious leak**. One compartment on deck 0 started to be flooded, which was probably noted by Linde, if it were the sauna/poop compartment, or by 3/E Treu, f it were in the engine rooms. **Sillaste was called down** to assist stopping the leak. The inflow may have been 1.0-1.5 m^3/s. The statements by Linde that **the car deck was dry at this time** and that **the inner ramp was tight are not correct**. There was a small leak at the ramp of little importance. **The Commission has never examined the hull deck 0 for any hull damages, e.g. a fracture i.w.o. the sauna/pool compartment or at the starboard stabilizer.**
			No alarm is given to passengers!
2.	00.56 hrs	Several passengers noted that **the ferry moved differently** - slower rolling.	***The water on deck 0 had reduced G_0M***, which increased the period of roll 2.16.
3.	00.57 hrs	Several passengers saw **water on deck 1** centre corridor and on the starboard side and started to evacuate deck 1. ***One passenger from deck 1 may have alerted the information desk*** on deck 5, which in turn called the **bridge**, which **ordered the matter to be investigated.**	***The compartment on deck 0 was now almost full and water spilled out on deck 1, when the ship was rolling.*** The bridge must have ordered the engine control room (3/E Treu) to start the bilge pumps. The bridge thought that all watertight doors were closed as the indication was green.
			No alarm is given to passengers!
4.	01.00 hrs	**The watertight doors on deck 1 were open.** Some passengers thought that the starboard heel had increased a little. Water on deck 0 flowed aft. ***The trim became even.*** Many passengers on deck 1 rushed upwards in the stairwells, when ...	The bridge may have opened two watertight doors by mistake, or the damage in the hull developed forward/aft due to internal pressure on the bulkheads of the sauna compartment. ***The water spread now into a least three compartments on deck 0 and the initial stability - G_0M - was quickly reduced to nil.*** Note that the Commission has not examined the compartments on deck 0, 1.16 (xii), where the leak and damages are supposed to be.
			Still no alarm is given to passengers!
5.	01.02-05 hrs	Suddenly **the ferry heeled >30 degrees to starboard** but up righted and was stable again at about 15 degrees list - later the permanent list increased jerkily. Most survivors noted this. **Passengers and crew** escaped to open deck 7 but **had great difficulties to walk on the sloping decks** in corridors and inside stairwells to reach the stairs. **But passengers from deck 1** were already inside the stairwell at deck 4 and **informed e.g. Linde that it was water on deck 1.**	***Panic on board. Water inside the ship on deck 0 had now reduced the G_0M to < 0*** and it caused the sudden listing (maybe the empty starboard heeling tank had also been flooded) and it caused the sudden listing. Then the ferry found a new equilibrium at 15 degrees angle of list. The inflow of water continued causing progressive flooding and increased list. At >15 degrees list it was very difficult to walk on the decks, but as the ship was rolling slowly, passengers could escape, when the ship rolled to port. ***The watertight doors were open***.
			No alarm is given to passengers!
6.	01.03 hrs	The crew on the bridge may have hung on to the consoles ***and turned the ferry to port into the wind,*** but did not slow	The lost Utö plot should be able to tell what actually happened.

		down.	
7.	**01.05 hrs**	***The bridge must have been aware that the 'Estonia' was leaking and had started the bilge pumps*** **1.3.**	Sillaste has stated several times that the bilge pumps were on. Passengers started to reach deck 7 port side.
8.	**01.10 hrs**	***Water started to enter on deck 4 starboard side*** – the windows there were broken when they came under water***. The port propeller and rudder was above waterline and the port engines stopped automatically.***	The angle of list was still 15-20 degrees and ***it was still possible to get out, when the ship rolled to port.*** Maybe 100-150 or more persons had reached deck 7 port side. The vessel was at this time apparently heading east (!) because the starboard side (underwater) was facing the waves coming from south-west, i.e. it seems the vessel had turned 180° to east assuming that it had a westerly course prior to the accident. It is possible that the ship had stopped and turned earlier since 00.55 hrs. **Maybe the 'häire, häire' alarm is given to passengers at this time over the public address system! But no life boat alarm is ever given.**
9.	**01.16 hrs**	***Starboard engines stopped*** when the lub.oil pumps sucked air. ***Water started to enter on deck 5 starboard side,*** when the windows there became under water. ***The visor was ripped away,*** when its flat starboard side hit the waves. The visor may have fallen off at the official position (unlikely), but it may also have been hanging on the starboard side (more likely). The ship was un-steerable. The ship was 1,5 mile off course. Speed was reduced.	The angle of list was about 30 degrees. More than 1.500 tons of water had leaked in but the ***car deck/superstructure was still virtually dry.*** The sloping side of the visor was parallel with the sea, the speed was about 6 knots, and the course was about 135° with waves on the starboard bow. The visor starboard side was subject to an impact load, when it hit the sea. The port side lock visor plate sheared off **2.8** and **2.15** sideway. The port hinge may have been broken, but the visor was still attached to the ship by the starboard hinge and ropes attached at port. Maybe 300-400 persons had got out on deck 7.
10.	**01.20 hrs**	Deck 4 aft was under water on starboard side when the ship rolled into the on-coming waves (this part was heading into waves and winds) and water started to flood the car deck from above via the ventilators on deck 4. Vessel started to trim on the stern!	The angle of list was about 45 degrees. The speed had been reduced to 1,5 knots. It was no longer possible to escape from inside the ship.
11.	**01.22-24-30 hrs**	***Deck 7 starboard side was starting to come under water*** and persons there jumped into the water. On port side some life rafts were inflated by the crew on the ship's side. **Mayday was sent.** A position was given via VHF **figure 2.26**. **The speed was virtually nil - the ship was drifting.** ***Trim on the stern increased.***	The angle of list was 65-70 degrees increasing to 90 degrees at 01.30 hrs. Persons on deck 7 climb out on the ship's port side. The position was wrong! Sillaste and Kadak stated that they left the ECR at this time **1.48**, but it is not a true statement. They must have left much earlier - say 01.05 hrs - when they realized that the water in the engine rooms could not be pumped out by the bilge pumps ... and that the vessel was doomed.
12.	**01.30 hrs**	**The ferry drifted slowly, <0,5 knots. The Mayday was terminated abruptly. Water was entering the bridge. Linde was in a life raft together with Sillaste and Kadak and saw the bow ramp closed. The stern was under water.**	3/E Treu states he left the ECR at this time, which is not possible as the ship sank a few minutes later. Passengers on port side started to jump into the water. Some passengers rushed forward - afraid of jumping into the water.
13.	**01.32 hrs**	**The stern hits bottom at 75 meters depth - the ship could not drift any longer.**	Fore ship sticking up above the water. Angle of list >90 degrees. The visor could have slipped over the ramp without touching it, but ...
14.	**01.35 hrs**	**The clock on the bridge stopped.**	... the visor was still attached to the bow superstructure starboard side.

15.	**01.36 hrs**	**The ferry sank. The mate on the 'Mariella' saw the 'Estonia' radar echo disappear.**	The mate on the 'Mariella' had seen 'Estonia' on his radar since 22.00 hrs slightly ahead of 'Mariella' - same speed, same course to Sweden.

2.3 THE CAUSE OF LOST STABILITY. LEAK IN THE SEWAGE TANK ROOM. DANGEROUS ROUTINES ON THE BRIDGE

The proximate cause of the sudden loss of stability at **01.02** hrs was certainly a hull plate leak in the swimming pool compartment bilge structure on deck 0 forward or another similar compartment further aft, e.g. the stabilizer compartment or the sewage tank room four meters below the waterline -see figure 2.3.1 in this **window**.

(Fig. 2.3.1 - Swimming pool and stabilizer spaces on deck 0)

The pool compartment was a 'wet' space, where water always spilled out from the pool and ended up in the bilges. The pool itself was probably recessed into the double bottom, i.e. the regular height of the double bottom was reduced below the pool. The space between the outer shell and the swimming pool bottom was probably a cofferdam and you wonder about the condition of this very strange arrangement.

Flooding of the pool/sauna space had occurred previously, e.g. May 1994 - 20 centimetres of water in the sauna! - and been reported to the Commission (act F10) 7 October 1994.

It was evidently never investigated. The Commission investigated nothing but just blamed the accident on the visor.

The leak may alternatively have started in the sewage tank room aft of the pool room or at the stabilizers. A fracture may have occurred in the hull shell bilge plates. The two big bangs and the scraping noise heard by passengers prior to the listing indicate that the 'Estonia' may have collided with something.

The shell plate and the lose shell frames then deformed elastically inboard - like a ripped paper - due to the big pressure difference and a big opening >0,3 m² (say the fracture is 6 meters long and the plate was pushed in 5 centimetres and you have a very big opening 0,3 m²) developed and water started to fill the compartment - >50-100 tons/minute. Maybe the many surviving crewmembers **1.42** were called upon to stop the leakage and failed? Suspect areas with possible corroded hull plates have been observed on the ROV-video taken in December 1994 **1.16** - see photos right and below. The German group of experts **3.13** believes the engine crew had been called upon to try to secure the visor or the leaking ramp, but there is no evidence that the visor was lose at this time. The water on deck 0 started to spill out in the centreline corridor on deck 1 above at about **00.56** hrs - it had risen up through the staircase - where several passengers observed it. The watertight doors to the flooded compartment on deck 0 must then have been closed.

Fig. 2.3.2

The water inflow had then been reduced due to pressure balance outside/inside, but the compartment was almost full to deck 1 level and spilled out when the ship rolled. Then the fracture in the bilge plate suddenly developed further - if the bilge plate and frame structure were corroded, so were the forward and aft bulkheads in the sauna compartment, and these were now under pressure - the compartment was filled with water. It is assumed that the fracture first developed aft into the conference room/sewage tank room at **00.57** hrs - and the room was flooded and filled up quickly - the water level in the other compartment may have dropped.

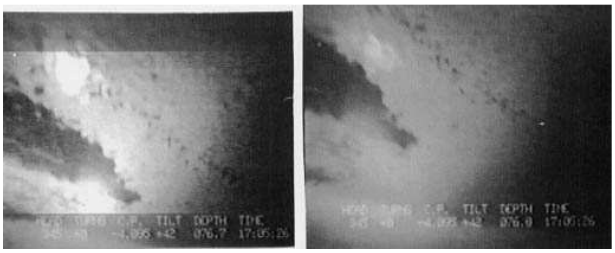

Fig. 2.3.3+4

Then the fracture developed aft into the empty starboard heeling tank - the bulkhead split with another bang at **01.00** hrs - and the heeling tank filled. This resulted in the sudden listing at **01.02** hrs! Then more water flowed in and spread everywhere through open watertight doors. Many passengers heard the 'bangs' - they thought that there was grounding or collision - but splitting plates also makes big noise - the ship hull is like a violin box.

The leakage mentioned above caused the ship to temporarily trim on the bow! Any water leaking in at the forward ramp on the car deck would then collect inside the ramp! The visor was also dipping deeper into the waves due to the bow trim! If, as the Germans suggest, the visor was never properly secured prior to departure, it could very well have been partly broken lose at this time - as a consequence of the major leakage in the sauna/pool compartment.

That the 'Estonia' would sink due to a major leakage in combination with open watertight doors is clear. That the visor may have been partly detached at the same time was a coincidence that the Commission used to cover up the real cause - the leakage.

OPEN WATERTIGHT DOORS

The 'Estonia' always sailed with many open watertight doors **1.23** in contradiction to SOLAS safety requirements. The five doors on deck 1 forward were always open. The many doors between the engine room compartments were also open. The doors to the leaking compartment were apparently closed (so that the compartment filled up and water spilled out on deck 1 above).

If a hull leak developed, the crew, as per Instruction 5.81.1 in the 'Estonia' safety manual (see Supplement no. 226 in the Final report (5)), on the bridge should close (sic) the watertight doors, which was a totally unsafe procedure. The doors should have been closed all the time! The correct instruction should have been to *verify*, if all watertight doors were closed, when a leak alarm was received.

There is no evidence that the watertight doors on the 'Estonia' were closed after the listing. In one sentence in a testimony is stated that the doors may have been closed *after* the listing, but then it was too late. The testimony confirms on the other hand, which all surviving passengers on deck 1 agree to, that the doors were open *before* the accident. No passenger has testified that the watertight doors were closed later.

LEAKAGE DETECTED. BILGE PUMPS RUNNING

The crew (Linde or Treu/Sillaste) probably discovered the leak in the compartment prior to the sudden listing and started the bilge pumps. We know that *the bilge pumps were running* **1.3**, so the ship was certainly leaking and sinking had begun. Bilge pumps are only started, when there is water in the bilges. The car deck was six *meters* above the bilges and above the waterline and was drained by gravity.

When only one hull compartment was leaking, the initial stability was still positive. When the adjacent compartment filled up, the initial stability was still positive, but reduced. The ship should survive with *two* hull compartments flooded. But when the leak developed aft and flooded the empty heeling tank, the initial stability was not only very small - you suddenly had 183 tons of water in the starboard heeling tank **2.17**.

It caused the sudden rolling >30-40 degrees at **01.02** hrs and a stable condition at 15 degrees list at **01.05** hrs. Persons not holding on to fixed structure and lose objects were thrown down into the lee, persons broke arms and legs, and panic developed. Due to the small initial stability (at 15 degrees list) and small righting arm, the ship rolled deeply 20 degrees port and starboard, so when the ship rolled to port, it was almost upright, and persons could evacuate over rather flat decks and reach deck 7, **2.12** and **3.21**. When the ship rolled to starboard the heel angle was >35 degrees.

It is remarkable that the divers have not examined the normally unmanned spaces on deck 0 of the ferry from inside to locate the hull damage in the shell plate and examine the suggestion that there was a leak. Some 'experts' have later commented upon the proposal that the 'Estonia' was leaking.

These 'experts' suggest that shell plate must be ripped off - 5 or 20 m² - to sink the ship and that it would be easy to spot the hole from outside. They talk nonsense. It is sufficient with a thin fracture damage splitting the plate and that the watertight doors on deck 0 are open. An opening 0.3 m² between split plates allows 100-200 m^3/minute inflow!

The fracture opening has probably closed itself due to the elastic behaviour of the fractured plate. Only by very close examination of the hull plates from outside will the fracture be seen, but an experienced diver can probably find it in a few hours. At the only official dive inspection taking place the divers were not asked to inspect the hull.

The 'experts' have not commented upon the splitting of the shell plate and that one edge deforms elastically sideways to produce the required opening - only 0,2-0,3 m² - or about the alleged holes due to corrosion seen on the ROV-film above.

2.4 THE ACCIDENT COULD HAVE BEEN PREVENTED!

It is not unusual that ships spring leaks in the *hull shell plates* below the water line. The hull corrodes from both outside and inside. Pipe connections (inlets/outlets) to the hull are also weak points, e.g. from sewage tanks. Collisions may rip open the shell below waterline. Water inflow into unmanned compartments below the water line can be detected by leak water alarm with remote indication on the bridge and in the ECR.

The SOLAS does not require such alarms on passenger/roro-ferries or passenger ships or cargo ships as all spaces shall be regularly inspected. The remote alarm can easily be arranged to automatically *start bilge pumps* and to *close watertight door*, if/when water is detected inside the ship hull[96] and even the general alarm can automatically be given, if a leak is detected. Had the crew (and the passengers!) been forewarned about water inflow of the hull already at **00.55** hrs, the accident may have been prevented. It is likely that the crew knew that the ship/hull was leaking - they started the bilge pumps - but did not manage the situation. The leak developed quickly into three or more compartments - otherwise the ship would never have sunk. But if the watertight doors had been closed, the sinking would have been delayed or may have never occurred, or you would have had time to evacuate the persons aboard. It is possible that the loss of 852 lives never would have occurred!

The author assumes that the leak developed through a fracture, which developed in the shell plate due to corrosion or collision. The water spread through open watertight doors. Let's take a look at them. The Final report (5) does not contain any information about these doors.

The watertight doors on deck 0 are located about 0,6 -1,2 meters above the inner bottom/tank top (it varies in engine rooms and e.g. the sauna/swimming pool/conference rooms), in line with a false floor above pipes, etc. The space between the false floor and the inner bottom is the **bilge**, which is where leak water shall end up. If the bilge fills up to the level of the sill of the watertight door, progressive flooding occurs, when the doors are open. But engines, generators installed one or two metres above the bilges continue to run for a while.

It the bilge had 150- 250 m^3 volume and the inflow was 50 m^3/min., it takes 3-5 minutes to fill the bilges in the first compartment and then progressive flooding can start through open watertight doors. After 10 minutes there is 500 m^3 of water in the ship and the free surface effects of the water reduces the initial stability to zero - then the ship may list <30 degrees, when rolling, and end up with 15 degrees permanent list 2.17.

If the watertight doors are closed and the water is trapped in one compartment only, the water rises to deck 1. Then all electric equipment in the compartment fails, which you would expect should be noted by the crew.

The three persons in the ECR could not have been ignorant about the leakage at **00.55** hrs - 3/E Treu, motorman Kadak and fitter Sillaste 1.48. These persons have never mentioned any leakage directly.

Finnish police interviewed Sillaste on 28 September 1994 1.3. Sillaste stated in the protocol (2) that he thought the 'Estonia' was leaking, as the bilge pumps were running. Sillaste experienced the sudden list, when he was on deck 0 doing some repairs. Evidently a ship does not suddenly list <30 degrees, 2.12 and 3.16, unless something has happened *before*. Sillaste then went to the ECR, where he observed on the monitor of the car deck in the superstructure, that the forward ramp was still closed! But the Commission never pursued the inquiry about the possibility of a leakage and that the water spread through open watertight doors. The Commission states that the visor fell off first and pulled open the ramp and water entered the car deck and that *then* the list occurred. But Sillaste was clear in all his statements - the ramp was closed several minutes after the sudden listing.

It is not useful to speculate what watertight doors were open or what doors were closed in the hull. It is a fact that the ship could only sink unless some watertight doors were open or there was a very long damage (fracture) in the side (so that flooding of several compartments could take place with closed watertight doors). Expert Bengt Schager wrote in his reports that somebody stated that the watertight doors were closed *after* the listing (the accident) occurred at 01.00-01.05 hrs 2.1, thus the *doors were open*, when the leak occurred. If the doors were closed afterwards is not known - the divers did not check 1.19.

The leakage should have been detected latest 2-3 minutes after it started - electric short circuit in the flooded compartment. It was apparently not possible to close any watertight doors locally **1.23**.

According to the Final report one crewmember (3/E Treu) saw water entering at the ramp at 01.15 hrs. According Cable News Network (CNN) on 28 September 1994 one crewmember was standing in water to his knees somewhere *prior* to the listing of the 'Estonia'. That information was too good (it contradicted the false sequence of events of the Commission), so it is not repeated in the Final report. It shows that the crew lied about what happened or that the testimonies were manipulated in the Final report only to deal with the ramp at the forward end of the superstructure.

The ramp is interesting. It probably leaked a little all the time and water flowed into the superstructure. *It was not a problem*. The ship trimmed on the stern and listed slightly to starboard and the water on the car deck in the superstructure >2 meters above waterline flowed out through the scuppers at the side. It was normal practice. When the ship started to leak and therefore t*rimmed on the bow*, the *water started to collect inside the ramp*. It was probably there that somebody was standing to his knees in water wondering what was going on. Why had the ship started to trim on the bow? When the ship started to trim on the bow - say that the sauna and the conference room and the space forward of the conference room were flooded already at 00.50 hrs - the visor came in the waterline and, as it was not weather tight, it filled up with more water than before. This may have resulted in continuous inflow of water on the car deck through the leaking ramp, which collected inside the ramp. As crew apparently were working at the ramp (33), panic broke out among the crew.

WHY DID THE CREW LIE?

It was apparently easier to blame the whole accident on the ramp than on a severe leakage in the starboard hull side. The crew director of the Estline, Enn Neidre, managed to be appointed to the Commission **1.6** and he probably made up the story about the ramp and the lost visor, etc. They could not state that the ship hull had started to leak through fractured shell plate in the sauna or at the stabilizer. The safety director at the Swedish NMA, Bengt Erik Stenmark, blamed the accident on the Classification societies, which did not do a proper job surveying visors. What he probably meant was that the Class should have ensured that all class items like shell plating and regulatory items like *watertight doors* were in order. Then Stenmark resigned (or was dismissed) and replaced by Franson.

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[96] The author has made the proposal to the Swedish NMA without any response.

2.5 COULD MORE PASSENGERS HAVE SURVIVED?

Clearly sudden heel/roll followed by increasing list made it very difficult for most passengers in *cabins* to evacuate them after the list. No alarm was raised, and even if an alarm had been raised, it is not certain that the passengers knew, what it meant **1.33**. It is impossible to walk on a deck sloping more than 18-25 degrees. The only way to survive was to react immediately. The ship was rolling while sinking and, when the ship rolled to port, the decks were flat for a time. Then you could get up. *The crew could not do anything to save passengers remaining in the cabins.* Probably passengers started to drown already at **01.15** hrs in starboard outside cabins on decks 1 and 4. The persons who started to evacuate early managed to get up to open deck 7, where many were blocked on the port side, while the 'Estonia' sank **3.21**.

The port outer side was for a short while flat but trimming on the stern at **01.30** hrs, when the 'Estonia' sank on the stern. When the angle of list was less than 90 degrees, the port side bilge *amidships* was about 10 meters above the waterline **2.16**. It seems that one or two rafts - with many crewmembers onboard - managed to be launched at this time - 01.25-01.30 hrs - probably at the aft end, where the port side was in the waterline. But other passengers, 50-100, moved forward - away from the water - and were later sucked down, when the bow sank.

When the list increased to more than 90 degrees, the ship was sinking after a few minutes. The persons remaining on the port side had little chance to survive.

A few survivors[98] got out on the starboard side of deck 7, which was under water already at 01.25 hrs, when the list was 70 degrees. Then the starboard rafts came under water and was released and the starboard lifeboats were ripped off the davits. Some persons managed to reach them.

The Final report (5) states that heroic crewmembers released the 30 port rafts, so that passengers could save themselves. The report says that 250 persons were on the open decks. The truth is probably different. Very few rafts were released on the port side by the crew and the crew used them themselves. Not one person managed to enter a life raft in a dry condition. When the persons were thrown or jumped into the water, badly applied life jackets were ripped off and they drowned **3.21**. The crew actions before and after the accident and the relevant safety systems are badly described and analysed in the Final report.

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[98] One of them was Risto Ojassaar, who was reading a paper in the bed of his cabin, when the sudden listing occurred and he was thrown on his back. The cabin door was on the starboards side and he had to pull himself out into the corridor. With a friend he reached the forward starboard side stairwell and got up to deck 7. The stairwell was filling with water from below, i.e. the deckhouse was being flooded. Risto Ojassaar was immediately swept overboard and first reached a raft, later got into a lifeboat. The friend drowned.

2.6 COULD THE CREW HAVE SAVED THE FERRY?

Evidently the crew could have saved the ship, if there were a hull leakage, which was observed already at 00.55 hrs or earlier, and if they had *closed* the watertight doors. The ship should then have floated on undamaged watertight compartments in spite of the damage. A leaking passenger ferry - water leaks only into one watertight compartment - cannot sink when the watertight doors are closed.

But if the watertight doors were open or opened (!) by mistake, the situation was different - every seaman knows that then that the water spreads to adjacent compartments and the ship loses stability and sinks.

43 crewmembers survived but only six were interviewed in any depth as shown in chapter 6 of (5). None of these crewmembers mentions leakage, except Sillaste who stated that the bilge pumps were running, etc 1.3 - a clear indication that the ship was in fact leaking. Of the six only three were actually watch keepers - Linde, Treu and Kadak. The remaining surviving crew - 37 persons - were apparently not interviewed in any depth about their roles in the ship's safety system - what they were supposed to do and why they did not do it. According the Final report (5) the alarms were not sent until 01.20 hrs, while the accident (the listing) took place at 01.02 hrs - or 01.15 hrs according to the Commission in (5).

There were apparently two junior officers on the bridge, but if they were aware of the leakage from say 00.55 hrs is not clear. However - they must have noted the sudden listing at 01.02/5 hrs, but what action they then did is also not clear. They must have hung on to the consoles on the bridge or they could have been thrown down into starboard lee. It has been said many times that the bridge extended over the whole breadth with little to hang on to. The Commission has no comments or recommendations. But the bridge was narrow and with many objects to hang on to. No alarms were raised and no Mayday was sent until 20 minutes later.

Interesting enough the Commission suggests that the officers on the bridge closed the watertight doors *after* the listing. There is no evidence for that - the allegation is probably an invention by the Commission. Had the doors been closed in the first place, the ship might never have listed - or sunk 1.23. The terrible possibility, that the crew opened one or more watertight doors when the ship was already leaking, has not been investigated.

It is remarkable that the Commission never verified if the watertight doors actually were closed. We know that the bilge pumps were started - probably from the ECR 1.3, but the Commission has no comments. You do not start bilge pumps, if there is water on the car deck!

We are told in (5) that the Chief Officer managed to get to the bridge later assisting in sending a Mayday at 01.24-01.30 hrs per VHF, channel 16, i.e. 20 minutes after the sudden listing occurred! The VHF was located at the steering console port side. The radiotelephone was located on the aft bulkhead on the starboard bridge wing. At 01.24 hrs you could not reach the radiotelephone - it was inaccessible due to the list. The very long time between the sudden listing at 01.02-01.04 hrs and the Mayday at 01.24 hrs has never been explained.

From available information the crew on the bridge did very little before and after the accident - the listing - at 01.02 hrs. The bridge is the central control station of the ship. But there is no evidence that the bridge was actually manned at say 00.45-01.15 hrs, except that Linde says so.

LIFEBOATS MADE READY

There are many possibilities. One is that the crew on the bridge was aware of the leaking at 00.55 hrs and mustered the Master and all officers to the bridge at that time to discuss what to do. In (33) are testimonies quoted to the effect that some lifeboats were made ready *before* 01.02 hrs. It seems that at least no. 1 MOB boat starboard side was made ready. No survivor is reported to having been rescued from no.1 MOB boat and it was found drifting intact 33 miles due east of the wreck the following day. As the lifeboats were made ready indicates that the crew took some action *before* the accident. However, as the Commission decided to blame the whole accident on the visor and that it occurred as a big surprise to the crew (13 minutes later than actual),

and that you could not blame the crew. The Commission could therefore not mention any actions *before* the accident - the listing - and never bothered to find out what actually happened on the bridge, e.g. why the Mayday was sent so late.

What did the remainder of the crew do? Chapter 16.4 in (5) summarizes its activity during the evacuation - actually the Commission states there that crew training and preparation were - or seemed to be - insufficient (sic). That statement is not repeated in Chapter 20 - Results -, Chapter 21 - Conclusions and in Chapter 22 of (5) - Recommendations.

In Chapter 16.8 the Commission states that the crew was seen to methodically opening life rafts on the port open deck. 200-300 persons were on the open deck and the side then. At 01.30 hrs the Commission's chief witnesses Linde, Kadak and Sillaste were sitting in a life raft (33), while 50-100 persons were still on the side. It seems that the crew were the first in the life rafts.

2.7 BAD SAFETY CULTURE - NOT SEAWORTHY! DR. MICHAEL HUSS (2)

The Nordic Transport workers Federation (NTF) arranged a meeting at Arlanda on 18 November 1998, where the NTF and the Swedish Ship Masters' Association completely disapproved of the Final report (5) and demanded a new investigation 1.21. Members of the Commission *for the first time*, after having published the Final report 11 months earlier, appeared to explain the obvious defects and impossible conclusions in the Final report (5). It was then shown that the Commission lacked elementary knowledge about ships seaworthiness and why ships float and sink.

SEEWORTHINESS EXPLAINED - CERTIFICATES

The Commission chairman Uno Laur and the Swedish head of delegation, the SHK general director Ann-Louise Eksborg 4.5 thought that a ship was seaworthy, if it had valid certificates, and that it then was no reason to investigate further - that the certificates could be wrong or falsified they had never considered 1.33. Ann-Louise Eksborg had of course never participated in the investigation - she joined the Commission after the Final report (5) was agreed and only signed it.

Seaworthiness is defined in the Swedish ship safety law (SFS 1988:49) of 28 January 1988 - 2 kap 1§:

> *"A ship is seaworthy only if it is designed, built, equipped and maintained so that with regard to its purpose and trade provides sufficient safety against accidents at sea".*

Evidently a ship is not seaworthy because it has, in the 'Estonia' case temporary, certificates. Naturally the 'Estonia' was not seaworthy as, i.a. the watertight subdivision was incorrect 1.23 and the life saving equipment was not complete 1.33 and the maintenance was deficient and all safety procedures were incorrect.

The Finnish member and stability expert Tuomo Karppinen could then not explain how alleged water *on the car deck*, which first apparently should have heeled the 'Estonia' by collecting in the side of the superstructure, then would have sunk the ship.

Why didn't the ship capsize and float upside down?

NO CAPSIZE EXPLAINED - WATER FLOWS THROUGH WATERTIGHT DIVISIONS

Karppinen stated that the water always, one way or another (?) should have passed through watertight divisions, decks and bulkheads, and had therefore sunk the ship. The meeting was quite amazed of this unscientific explanation.

The Final report (5) had never explained how the 'Estonia' sank and then, four years after the accident, the Commission could not explain how and why the 'Estonia' had sunk 1.9!

Swedish NMA safety director Franson had just earlier stated that the Final report was complete (sic) and reliable.

INDEPENDENT INVESTIGATION WHY THE SHIP SANK

However Karppinen and Huss decided then - on 22 February 1999 (TT-telegram) - to make an independent investigation why the ship sank so fast (or slow), which was also confirmed in the Swedish daily Svenska Dagbladet the following day. It confirmed that the Final report (5) was not complete. But no results were ever published by Huss/Karppinen. The Swedish minister Mona Sahlin has since used Dr. Huss as expert when meeting the parliamentary parties, etc. Dr. Huss later assisted the SHK to state that this book does not contain

any information affecting the alleged course of events, etc. On 17 April 2001 Dr. Huss was appointed a director at the Swedish NMA. The appointment was only made public at a notice board inside the NMA building and was not announced to the public until the 9 May 2001. The 8 May 2001 was the last day to appeal the appointment.

The official position of Dr. Huss and the Swedish NMA today seems to be the following: ships like the 'Estonia' do not capsize due to water on the car deck in the *superstructure* (as stated by the Commission): they list but float then on the *deck house* for a while, which contains large, totally watertight compartments (sic): however, the big watertight compartments in the deck house apparently fill with water after a further while, so that the list increases: at the same time the water on the car deck in the *superstructure* - actually on the inside starboard side of the car deck compartment of the *superstructure* - starts to flow down through the watertight car deck and floods all 14 watertight compartments below the car deck in the *hull*: therefore the ship is stable all the time, albeit with a big angle of list: the watertight divisions below the car deck in the *hull* cannot prevent the ship from sinking.

It is quite interesting to note that nobody at the Swedish NMA staff criticises such unscientific reasoning. But it may be due to the fact that the subject is totally censored by the top management and the government. Safety at sea matters cannot be discussed openly at the Swedish Maritime administration - Sjöfartsverket. It is enough that a certificate is issued - then the ship is seaworthy - and floats on the *deck house*.

'The vessel was on the starboard side, i.e. the heel was about 90°, at about 01.30 hours (several witnesses) and continued to heel to starboard until she was, probably at about 01.40 hours, completely upside down with the stern deep down and the bow rising higher and higher. It has to be assumed that the visor fell off by gravity once the vessel had turned far enough, probably to 130°/140°, when the forepeak deck sticking in the visor bottom and also the bow ramp did not support the visor anymore. It has to be assumed that the foundation of the fully extended starboard actuator broke when becoming exposed to the full weight of the visor.'

UPDATE to the INVESTIGATION REPORT ON THE CAPSIZING ON 28 SEPTEMBER 1994 IN THE BALTIC SEA OF THE RO-RO PASSENGER VESSEL MV E S T O N I A by the German 'Group of Experts' dated May 2000 and available in the Internet under www.estoniaferrydisaster.net since that time. THIS UPDATE COVERS THE TIME FROM JUNE 2000 - DECEMBER 2006

2.8 THE VISOR WAS LOST AFTER THE LISTING

It is not possible that the visor fell off *before* the list occurred at 01.02/5 hrs and it is *not* probable that 1 000 tons of water had leaked into the superstructure at the ramp at that time or that the ramp (or visor) caused the accident.

Söderarm, the alleged destination of the ship, is at bearing 289° from the visor. The position of the wreck seems too far south of a normal course from Tallinn to Söderarm **2.25**. If the position of the visor a mile west of the wreck is correct is not proven **1.14**, but let's assume it is correct.

In order for the position of the visor 1 560 m west of the wreck at **xx.xx** hrs and the ship's position at **01.24** hrs, when the Mayday was sent, and the wreck position at **01.36** (or 01.53) hrs shall connect (probably the visor position is false), then the visor must have fallen off *after* the list occurred at **01.02/5** hrs and after the ship allegedly turned to port (or starboard) at **01.03** hrs and before the Mayday was sent at **01.24** hrs.

A reasonable time seems to be **01.16** hrs, when the ferry had >30 degrees list to starboard, >2 000 tons of water had leaked in on deck 0 and spread through open watertight doors, that the course of the ship was 135° with the waves on the starboard side and that the plane side of the visor was then parallel to the water line. When the 'Estonia' then pitched into the waves, the visor side hit the water surface and the impact force was 6-10 times greater than a normal wave load in upright condition. The port engines had stopped at 01.06/8 hrs, when the port propeller was above water, starboard engines stop a little later and the ship continued South/east, where it stopped. The impact force acted high on the visor side and twisted it to port - the locks could not resist sideway forces - and lifted it above the ramp without damaging the fore peak deck, while the lifting hydraulics were simply pulled out. The visor then hit against the port underwater hull side - there are white scrape marks there - tipped forward and hit the bulbous bow. The visor may have touched the ramp, but it seems that it may have 'jumped' over the ramp.

The visor may have been ripped off later - when the ship sank - but then the visor position cannot be correct. Probably the visor was never ripped off at all but simply removed under water after the accident.

Photos of the damaged visor parts in (5) indicate that the list was 40-50 degrees, when certain vital parts of the visor where broken and bent sideway, first by the impact load and later by the visors own weight. The Atlantic lock was definitely broken by a sideway force (it may have been broken before the accident and was not in use). It is also probable that the deck hinges sheared off sideway, but see also **3.10** how the visor could have turned/tipped off, when the list was >90 degrees, when the ship sank and was still hanging from the starboard side. Scrape marks (or the lack of them) on the hydraulic lifting lugs under the hinge arms indicate that they did not cut open the weather deck, when the ship was upright. That the visor was lost after the listing is clear - how it actually fell off need still to be clarified.

Regardless - the ramp could never be ripped open by the visor, if the latter fell off sideway.

2.9 CAR DECK SAFETY RULES ABOARD THE 'ESTONIA' WAS WORKING

The car deck/*superstructure* space of the 'Estonia' was arranged according SOLAS II-1, rule 23-2, 1 - (open-closed hull door indication), 2 - (TV supervision and or leak alarms) and 3 - (manual patrol every hour) to alert about water on the car deck in the superstructure which could cause list. *It* is not pointed out in the Final Report (5). The Commission instead tried to show that all three existing safety means to detect water in the superstructure of the 'Estonia' did not function.

There is no evidence that the existing safety means on the car deck in the superstructure of the 'Estonia' *did not* comply with the SOLAS.[99]

But on the other hand the opposite cannot be proven. Did the side and end door indications work? Did the TV-monitor work? And did they have manual patrol each hour? The Commission never described the existing rule requirements.

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[99] The author is quite surprised how many maritime administrations have concluded that the *existing* SOLAS rules did not contribute to the safety of the 'Estonia' and that the only solution is another requirement - to survive with 0,5 meters of water on top of the car deck in the superstructure several meters above (!) the waterline, etc. Probably it was due to bad information about the 'Estonia' accident.

2.10 THE RESPONSIBILITY OF THE VISOR LOCKS

The Commission has concluded that the deficient strength of the visor locks was the main cause of the accident - the locks were incorrectly manufactured in 1979/1980.

According the SOLAS and the Load Line Convention responsibility for the strength of doors and locks in the superstructure belong to the *maritime administration,* in this case the Estonian administration. The Class is not responsible for visor lock designs!

This is not mentioned in the Final Report (5).

Johan Franson states in the Swedish daily Göteborgs Posten on 28 February 2001 that

> *'the 'Estonia' sank after her bow visor had been ripped off and pulled open the ramp. The weaknesses of construction, which together with severe weather, caused this can never be detected by training of Port State Control, by a Port State Control done in Sweden or at a periodic inspection by any maritime administration. It is something which must be detected at the new building inspection'.*

The statement by the Swedish NMA director of safety at sea Johan Franson that a weakness in ship construction cannot be detected at a later examination has no foundation in reality and is an insult to all ship surveyors and inspectors. Everybody knows that Franson is politically appointed by the Swedish government to cover up the 'Estonia' accident investigation.

The author has 1966-2001 surveyed 100's of ships and has noted both weaknesses and actual defects and errors. The possibility is fairly large that some defects are not discovered at the new building survey (and testing) - they are noted later, when the ship is used in its normal environment - hopefully during the guarantee period - but naturally also later. Everybody knows the famous U-curve? Most defects develop the first year - and at the end of the ship's life. Therefore surveys become more detailed with time. A design weakness develops by fatigue in the material and details, which cannot be detected at a new building survey (the material/detail has not been subject to fatigue) or testing.

The Franson statement is very revealing. Franson knows that the bow visor was fitted with hinges on top of the *superstructure* (on deck 4) and that the visor only protected the weather tight ramp at the forward end of the *superstructure*. Neither the visor nor the ramp is part of the ship's hull. Water loaded inside the *superstructure* of any ship above the waterline does not sink it. That water will only capsize the ship. This simple fact could not be told 1994 and the sad thing is that the Swedish NMA must maintain that lie six years after the 'Estonia' accident. And not only that - the Swedish NMA states that it is not even responsible for the strength and weather tightness of doors leading into the *superstructure* of a ship.

2.11 THE POSITIONS OF THE VISOR AND THE 'MAYDAY' AND THE WRECK

With regard to the position of the visor relative to the positions of the 'Mayday' and the wreck - see figure in **2.26** - the Commission has not satisfactory explained how the 'Estonia' moved between these positions from 01.15 to 01.52 hrs **1.9**. The plot of the sequence of events - figure 13.2 in the Final report is false - it shows the movements of a completely undamaged ship.

The Mayday position is strange (a mile south of the visor position). The ship could never have been there at 01.24 hrs and then drift to the wreck position.

The visor position is probably, 99%, false.

There is no evidence that the visor was actually found or salvaged at a position 1 570 meters west of the wreck. Why the Commission on 18 October 1994 had announced a false visor position is not known. It may have been to support some imaginary course of events at the time, which later was too easy to prove wrong.

Was it because the visor was in fact found attached to the ship at the bottom of the sea?

However, the Commission announced a visor position 'one mile west of the wreck' and it is confirmed in the Final Report (5). At that position (and time) the ramp had also been pulled fully open according to the Commission. The speed was >14 knots. The time was 01.15 hrs. Water started to enter the superstructure. There was a list. And the passengers were alerted - not by the crew - but by the list. Testimonies from the passengers should of course confirm all this. But the Commission decided not to interview any surviving passenger. So below follows some testimonies from passengers.

2.12 TESTIMONIES OF SURVIVORS SHOW THAT THE COMMISSION IS WRONG!

There were officially 137 survivors from the 'Estonia'. 134 immediately tried to escape to open decks when the ship started to roll and got a stable list about 12-15° to starboard. They had 5-10 minutes time to escape before the list got worse. Only three survivors didn't escape at first. They were 3rd Engineer Treu, Assistant pipe/pumping engineer Sillaste and motorman Kadak. Instead they collected in the Engine Control Room, ECR, on deck 1 and heroically tried to save the vessel, **1.48**, before they escaped to deck 8. The 134 other survivors generally testified that that there was a big impact or bang or two impacts and then calm. The time is before 01.00 hrs. A few got worried and escaped to open deck then. Soon after some survivors from deck 1 saw water on the deck that came from below. Then suddenly the ship started to roll >30° port and starboard and the 134 survivors got very worried. They had to escape where ever they were. The ship got 12-15° stable list to starboard and the 134 got out. Probably another 100+ persons also got out and drowned. Only three persons didn't escape at first and went to the ECR. They are the star witnesses of the Commission! They have provided many different stories about the accident to suit what the Commission concluded.

The Commission states in the Final Report (5) that water first flooded the car deck in the *superstructure* and that this water flowed down to deck 1 and alerted passengers - before the heeling developed. The water must then have flowed through locked and closed fire doors with 25 cms high sills. These doors are at the centreline on car deck 2. These doors are not watertight, but should prevent smoke to enter the staircase in event of fire in the garage. These doors are always locked from the stairwell to prevent passengers to enter the car deck at sea. Very little or no water can pass a gastight fire door.

The water on the open car deck in the superstructure causes the ship to trim and list and the water ends up at the lowest point - one of the four corners of the car deck. It means that the fire doors in the centreline are always in a dry position relative the water on the car deck (assuming a calm, steady position). The ship is evidently moving - mainly pitching and rolling - and the water moves - sloshes - around from one corner to another. It makes a lot of noise. But still no water is flowing down to deck 1 through the fire doors.

The Commission has informally suggested that the ship's stabilizers **2.23** managed to keep the ship upright, i.e. the heeling moment of the water on the car deck in the superstructure >2 meters above waterline was compensated by the righting moment of the stabilizers.

However, any water on the car deck in the superstructure trims the ship either on the bow or on the stern. There are no transverse divisions in the superstructure to prevent the water from flowing from forward to aft. As the ship was pitching it is possible that water on the car deck moved forward/aft on the deck below the cars and trucks. Such water motion would produce a lot of noise. The trucks/cars undersides and tyres would act as wave breakers. Let's thus assume that the stabilizers kept the ship upright in spite of the water on the car deck. And let's assume that the water inflow was only 400 tons/minute the first minute as per expert Huss of the Commission **1.9**. Then 400 tons of water was going to slosh forward and aft on the car deck under the cars and trucks - it is about 12 cms of water - well below any sills of the fire doors in the centreline, and it is difficult to visualize how 12 cms of water could produce waves on the car deck. You would expect all the 400 tons to flow aft and trim the ship on the stern and to collect against the inside of the aft ramp with a big noise. 400 tons of water sloshing around on the car deck would have caused a very big noise. 400 tons is a very big, live weight.

Actually, as the ship pitched up/down about 8-10 times a minute while scooping up water according to Huss, you would expect about 40 tons to be scooped up every pitching and that then this water would flow aft. These 400 tons must have made a lot of noise.

As soon as the ship stops in the water, the water on the car deck would flow out the same way it got in. The water was 2.5 meter above waterline.

A SURVIVOR FROM DECK 1 REPORTS

In the book **'Sänktes Estonia?'** (27) by Henning Witte the story of Carl Övberg is presented. Övberg awoke in his cabin on deck 1 below the car deck. The cabin is about 30 meters forward of the ECR, where 3/E Treu was keeping watch, and just above the space, where systems engineer Sillaste was repairing a vacuum pump (see **1.3**):

> *"Just before 01.00 hrs Övberg heard a strong bang or crash and the whole ship vibrated. It was a strong metallic sound. The bang was so severe that Övberg compared it to a severe grounding. He became more alert as he did not recognize the sound and was not able to locate it. About one half to two minutes later he heard another bang, which was even harder, and the ship pitched, up so that Övberg was thrown back against the cabin wall. Now he understood that something serious had happened. He dressed quickly (trousers, shirt and jacket) and left the cabin to run to the staircase … Just when he came out in the corridor, he felt the ship pitching on the stern and immediately afterwards rolling to a starboard list.*
>
> *Several persons were running around in the corridor and he thought panic had already broken out and persons were looking for the stairs up. Övberg knew the ship well and knew exactly where the staircase was so he got there at once. …*
>
> *On his way up in the staircase somewhere between decks 1 and 2 (car deck) the jacket got stuck in the handrail so he turned around. He saw water flowing on deck 1. Large amounts of water flowed out of the bent air pipes* (compare interview KC/WH in **3.18**) *that were in the corridors on deck 1. At the same time he saw water flow out in the corridor from below the cabin doors on deck 1. The time was one or two minutes from Övberg leaving his cabin when seeing the water. I asked directly, if he had stepped in the water, when he left the cabin, but it was not the case.*
>
> (Nobody from the police or later the Commission has asked Carl Övberg about his observations of water on deck 1. On the contrary the Swedish chairman of the SHK, Olof Forssberg, has denied the Commission expert Bengt Schager to interview the surviving witnesses. Forssberg thought that the police protocol was enough.)
>
> *After the second big bang the ship started to list to starboard. When Övberg on his way up was between decks 2 and 5 the ship straightened up for a short while.* (This observation has also not interested the Commission - no questions - even if Övberg has a clear recollection of the temporary recovered stability). *Thereafter, i.e. when Övberg was at deck 5, the ship listed again to starboard. The list increased ... When Övberg was on his way up in the staircase there was full panic, children and adults had fallen and were screaming."*

The sudden impact sounds like a collision! Another survivor (MÖ) is quite sure that the list occurred at 01.02 hrs, when his alarm clock fell to the floor due the list and stopped (the batteries fell out). MÖ had then great difficulties first to open the cabin door blocked by luggage, then to get from the corridor to the stairs over the large floor area in the staircase enclosure.

Many survivors came from the six watertight compartments with cabins on deck 1 and some have said that there was water on the floor before 01.00 hrs but after the bangs. It seems as if water were observed in the foremost compartment and in another compartment 50 meters aft at about the same time. The watertight doors on deck 1 in the hull were open, so that the passengers could visit the public toilets in the second and fifth watertight compartment.

Two passengers on deck 1 left their cabins early, as they suspected a serious fault and got to deck 5 and complained about the water on deck 1 - not water that flowed down from the car deck inside the stair case to deck 1. One passenger from deck 1 went all the way to open deck 7, before the list occurred. An un-proportional large number of survivors had cabins on deck no 1 (33% - 46 of 137) even if half of them were not in the cabin on deck 1, when the list occurred.

TWO STRONG BANGS

Another testimony has been received via email from AE; see also end of **2.1**:-

*"I heard around 1 o'clock **two strong bangs** and I almost fell out of the bed in my cabin on deck 4 port side almost forward. I felt that something was wrong, so I dressed to find somebody who could tell me what had happened. I thought that cars were lose in the garage and rolled on the deck and hit the ship. I looked out in the corridor where everything was calm. Nobody could be seen. I went into the transverse corridor to find the door to the car deck but could not find it. Instead I took the centre corridor aft towards the entrance hall. Before I got there I felt a vibration and the 'Estonia' heeled and got a few degrees list. I stopped a moment and continued toward the entrance hall. I started to walk up the stairs. **Just when I am in the last stairs to deck 6 the ship started to heel and move more strongly and there was more list to starboard. I stopped and hold on to the fence. I heard glass smashing in the shops on deck 5. Suddenly a soda automate got loose from the bulkhead and slid to the other side, from port to starboard.** Then I realized it was serious. I had to get out at all cost! I continued to deck 7. And suddenly behind me the stairs filled with people. It was the people from the restaurant on deck 6. I was one of the first to reach deck 7. But more and more persons arrived. We helped one another to open the door to the port side deck. I reached a locker with life jackets and handed out them to persons around me. Now the ship listed ~30 degrees. "This is serious", I recall I thought at the same time it seemed unreal. After a while I felt there were too many persons around me, I felt entrapped. I took a life jacket and moved forward and finally I was below the support of the life rafts just behind the bridge. With the list I experienced that the ship had slowed down and that it in principle was listing and 'rolling' in the waves. I recall that I felt that the ship would soon be on the side, and that happened later. I estimate the time from I got out until the ship was on the side to ~25-30 minutes."*

In a later mail AE states:

"I told my story to the media on Friday 30 September 1994 and that is why I am so certain about it. It was most local media present but I do not think that many survivors told their stories officially so close to the accident. Maybe Kent Härstedt and Sara Hedrenius who became very well known nationally. My police interview was made on 4 October and I did not say anything else there - just more details. Today I have separately checked all recordings of the local media: Carlskoga-TV, Tvärsnytt and TV4 Värmland and my statements of times and sequence of events are very clear. I consider these recordings as evidence. They were broadcast the same day they were recorded (30 September), but I do not believe anybody in the Commission ever saw them. According my understanding many survivors experienced the first listing somewhat differently. I myself was then in the centre corridor and I did not think it was extreme. But it could be that I was in a position like the centre of a sea saw. A few degrees in that position are not so noticeable as at the side of the ship. When I then was in the stairs to deck 6 the listing became so severe that the soda machine slid across the floor. It was then the big chaos started, which has been described differently depending where you were on board."

Thus - AE is quite certain about the **two unexplained bangs just before 01.00 hrs** and that soon after **a sudden list** developed, exactly as CÖ above and most other surviving passengers **2.1**. At the same time persons on deck 1 below the car deck noticed water on the floor (deck). A collision can hardly be excluded from these testimonies.

AE was not interviewed by the police until 4 October 1994. But on that day - 4 October 1994 - the Commission had already told the public what had happened and the cause of the accident **1.4 -** the visor. Evidently the Commission was not interested in what the passengers had experienced and what really happened. A collision?

DRAMA IN THE PUB

Another survivor - RS - has informed that he heard or felt the **two bangs** before the sudden list, when he was in the aft part of the Admirals Pub (on deck 5), opposite the stage. It was just before 23.55 hrs (Swedish time), i.e. 00.55 hrs Estonian time. Soon afterwards RS moved to the opposite, forward end at the exit of the pub. That area was almost empty. The pub was divided by a flower arrangement. At 23.55 hrs Swedish time RS sits down in a chair, and a colleague says good night. RS looked at the clock on the wall and said she should stay until midnight Swedish time, i.e. 01.00 hrs Estonian time. At that time RS thought that the 'Estonia' changed course. Before the movements were longitudinal. The ship then - sometimes between 01.00-01.05 hrs, probably closer to 01.05 hrs, started to move - roll - to starboard. This is the RS interpretation of the course change. First severe seas longitudinally, then sideways. RS thought that the first roll/list was not serious.

The ship straightened up, and it was, when the ship did not roll to port, when RS got afraid. Instead of rolling to port, after a short stop at level, the 'Estonia' rolled to starboard. It was a severe roll, so that RS during the movement to starboard, asked his colleagues to jump on the fixed sofa that was opposite the table.

So they did, while lose furniture and other objects fell to starboard. RS said loudly that the ship had collided with something.

> *"Hold on, we must get out, run, as soon as she is upright, towards the door. Then is it only up to the open deck, do not look back",*

is what RS may have called.

RS judges that the first list was at about 01.05 hrs. The angle of roll was difficult to estimate inside a room, it was maybe 20-25 degrees, all objects except the glasses remained in place at first. The roll was an even movement during 90-120 seconds. The second roll, the one that ended with a permanent list, was greater than the first. Everything lose fell to starboard. *Tables, chairs, in principle everything that was not fixed fell to starboard lee.* The ship up-righted so it was possible to get to the exit door and to the staircase. It took say 2-3 minutes. RS recalls that it was water up to the window during the roll, where he had sat previously - white foam, but mainly water. RS estimated the angle of heel that the waterline was not far away. RS feared that the ferry was already flooded. (The list must be >35 degrees for the water to reach the windows at the side). Most visitors of the pub and the furniture were in a heap against the starboard bulkhead/side of the ship. More details of RS testimony are found in (33).

RS ran towards the exit in a steep uphill and his friends came after. At the exit door the 'Estonia' rolled again, so that they held on to another and the doorframe. The condition stabilized, so that they could rush from the door to the fence at the stairs leading up. They then had to climb with help of the fence to get out. RS believes it may have taken 3-4 minutes to get out.

The Commission has never contacted RS.

ANXIETY, EXHAUSTION AND STRESS

The Commission and the Final Report (5) chapter 13.2.1 are an insult:

> *"The Commission is aware that none of the survivors is a witness proper, in the sense of an observer. All the witnesses are victims of the accident, involved in it and part of a chain of events.* ***Their observations and recollections are thus influenced by prolonged anxiety, exhaustion and stress.*** *All statements (of survivors) are restricted to individual experience ...no witness had any possibility ... (of) an overall view".*

As already shown in **2.1** the Commission completely ignored the police protocols of the interviews with the surviving passengers. The Commission based the whole Final Report on one witness report - Treu's - who apparently was not influenced by anxiety, exhaustion and stress **1.48**. Survivor/witness AE above does not seem influenced by anxiety, exhaustion or stress. Two days after the accident he tells his story to the media and then on 4 October the same story to the police. But the same day the Commission told the public another story.

All the above witnesses report a sudden list just after 01.00 hrs and the big bangs. But the Commission makes up another story - at 01.00 hrs the Master comes to the bridge, there was a change of watch, there was a telephone call, Linde was sent down to check, Linde waited for five minutes at the reception on deck 5. And in the ECR Treu was happily looking after the engines 4.4.

It might be added that Carl Övberg, MÖ, AE and RS were all fairly young, well-trained strong men, which assisted their escapes.

2.13 NOBODY SAW THE LIGHT IN THE GARAGE FROM OUTSIDE!

The Commission has stated that the ramp was pulled fully open at 01.15 hrs and that the generators stopped at 01.25 hrs. The lights were on in the garage well after 01.15 hrs (otherwise Treu and Co. could not have seen anything) and this light should have illuminated the sea outside the bow. Nobody saw it from outside.

You would have expected the persons on the bridge to see the light spilling out through the open ramp before hitting the first wave. It may be that the first wave smashed all light fittings in the garage, but the three persons in the ECR saw the ramp two minutes after the listing on the monitor and for that you need light. The three witnesses saw the light on in the garage after the listing, so you would expect the light to spill out on the ocean. But nobody saw the light from outside. The conclusion is that the ramp was never open.

2.14 NOBODY HEARD WHEN THE VISOR LOCKS AND OTHER EQUIPMENT WERE RIPPED APART

The Commission states that - *before* the listing occurred - many steel parts were broken - visor locks, hinges, weather deck plates, a big deck beam, the visor bottom (hitting on the fore peak deck), the inside of the visor against the ramp, six ramp locks/hook, etc.

Any of these damages - steel being ripped apart or torn away - would have caused a lot of sharp noises, but all that was heard was two sudden 'bangs' just before the listing occurred at 01.02 hrs.

The Commission naturally maintains that several person heard *'noise'*, from the bow during ten minutes 01.02-01.12 hrs - suggesting that it was the visor hitting the fore peak deck. The Commission does not make a big issue of the two distinct bangs that were heard - even by 3/E Treu in the sound insulated ECR - and locates these bangs to 01.13-01.15 hrs. So why did not anybody hear the noise of the steel damages? And when could the steel damages have taken place? The Commission has no answer - to fit other Commission statements in e.g. **1.9** and **3.7**. That nobody heard steel being ripped apart before the listing is clear from the summaries of testimonies by expert Schager **2.1**.

2.15 IMPACT LOADS ON THE FORE SHIP ABOVE THE WATERLINE

In 1971 the author worked for Lloyd's Register of Shipping and was asked to investigate a number of damages to bow structure above waterline on tankers and bulk carriers - plastic deformation of plates and stiffeners. It was found that transient and random impact forces on structure above waterline, similar to slamming forces on the bottom of the ship, were to blame. These impact forces increased in number and amplitude, when the angle between the bow shell and waterline (flare angle) was reduced and when the shell plate was flatter (less rounded). The impact pressure, the impact was produced by compressed air that was trapped between the water and the hull, could be ten times bigger than a periodic and hydrodynamic external wave load but of much shorter duration and over a much smaller area. The high pressure could cause local plastic deformation of shell plates and stiffeners. When 'Estonia' listed >34 degrees to starboard the effective flair angle was almost zero degree and therefore an impact load could develop sideways, when that side hit the water surface. The Commission has never considered that the visor was struck off sideways in such way.

Actually - in retrospect - the following could have happened. The visor on the 'Estonia' was not well maintained. The bottom lock was probably not locked **3.7** - it may have been damaged earlier. Only the side locks were in use.

After the sudden listing at 01.02 hrs the visor was still attached, but when the angle of list increased, the side locks and the port deck hinge were damaged, when the visor was subject to an impact load - high pressure - sideways at say 01.16 hrs.

However, the starboard deck hinge held and the visor was still attached to the ship by it, when it sank. The visor was apparently later removed from the wreck under water using explosives!

2.16 THE STABILITY OF THE ESTONIA' AND HOW THE LISTING DEVELOPED

Chapter 3.7.3 of the Final Report (5) states that a new trim and stability booklet was developed and approved by the Bureau Veritas in connection with the change of flag (January 93) (it is not included in the supplement of the Final Report). However chapter 3.6.2 of the Final report states that only temporary certificates PSSC and LL were issued in June and September 1994, as another (sic) new trim and stability booklet was developed. No correct stability book is included in the Final report.

Nevertheless - to load a ferry is not difficult and the stability is seldom critical in part loaded conditions (and the ship was not fully loaded on September 27, 1994). Assume that there were 500 tons of fuel aboard in various tanks of the hull, a couple of hundred tons of fresh water, 1 000 tons of cargo (cars, lorries, trailers) on deck 2 (the car deck) inside the *superstructure* and 100 tons of passengers and luggage and port trim tank full, 185 tonnes, to balance (?) heavy cargo on starboard side. Then the deadweight (dwt) is about 2 200 tonnes and the draft (d) is about 5.1-5.2 meter. Deck 1 below the car deck (deck 2) is then *below* the waterline. The car deck, the bottom of the *superstructure*, is 2,5 meters *above* the waterline: **2.17** for a detailed loading condition. There was also a stern trim. Full deadweight was >3 000 tons, so you could have loaded another 800 tons (of fixed cargo) on the ship (e.g. on the car deck) without overloading it. Extra fixed cargo on the car deck would in fact be loaded *below* the ship's centre of gravity, **G**, and would have increased the stability.

Let's assume that the bow ramp of the superstructure is open and that water flows into the *superstructure* due to forward speed of the ship and pitching up/down of the bow and that the water does not flow out through the opening. Evidently as soon the ship stops all water flows out again when the ship pitches and trims on the bow. Note that the hull is undamaged and that the ship floats normally. The inflowing water is only extra weight being 'loaded' on

Why do *new* passenger ships suddenly lose stability and roll over?

(This article is published here 2006 as many Internet users searching about the subject ends up in chapter 2.16 of my book about the 'Estonia' stability left).

Recently (2006) a ***newly*** built passenger ship suddenly - in a few seconds without warning - rolled over >20° in fine weather and many passengers were hurt losing balance and being thrown into walls and on decks. All water in the deck swimming pool flowed out. There was panic. Then the vessel stabilized itself at abt 15° angle of list … and slowly the vessel became upright again. Why did this happen?

It has of course happened before! A couple of years ago (1999) it happened to another ***newly*** built passenger ship at breakfast time. The ship suddenly rolled over, the whole breakfast buffet was thrown into the wall and on the deck and passengers lost balance and were thrown around. The ship owners quickly blamed the sudden loll on the rudders (sic)! They had turned too quickly … and the vessel listed. **Do you believe that?** In the latter case the vessel remained at >15° list even after the rudders were put back straight. And slowly the vessel became upright. What actually happened?

The answer why many *newly* built passenger ships suddenly rolls over is that they lack regularly inherent stability or GM. What is GM? It is very simple.

Stability explained

G is the centre of gravity of all weights of the vessel and **M** is a point vertically above G, through which the buoyancy force of the vessel underwater hull acts, when the ship is upright or rolling or listing. Evidently the total weight of the vessel acting down is the same as the buoyancy force acting upward (remember Archimedes 328 BC) and the ship floats upright. *GM is thus the positive distance between G and M and a measure of its intact stability.* M is always above G - otherwise the vessel is not upright. When the vessel rolls a certain angle, the buoyancy is shifted a little sideways and a positive righting lever GZ as a function of GM and the angle of list develops. It ensures that the buoyancy force of the intact vessel always uprights the ship at angles of list up to 50°!

The intact stability represented by GM must be very good in order for the vessel to survive damage and flooding of the hull, i.e. two watertight compartments of the vessel are assumed flooded. Then the vessel loses buoyancy but still floats. There are lose liquids inside the hull and point **M** for various reasons comes down closer to G, i.e. GM (and also GZ) are reduced but are still positive, so that the there is enough stability also in damaged condition. Evidently there must also be enough buoyancy, so that the vessel does not sink.

the ferry.

The vessel heels about 10 degrees with 600 000 litres of water loaded on deck 2 - figure 2.16.1B. The water does not flow down to deck 1 as the door openings are at the centreline and fitted with 20 cms high sills. The water is always trapped on the side of the sloping deck 2 - or with stern trim it ends up at the stern, increasing the trim.

With its large beam (B) 'Estonia' had always good, built in stability. You need about 1 200 tons of water 'loaded' on the car deck, (deck 2) 7.62 meter above the keel to list the vessel about 20 degrees to starboard. This free water, 1 200 tons, forms a 2,8 meter high wedge with its base against the starboard side and with a lever about 7,22 meter from centreline, which lists the ship (a fair number of trucks and trailers were parked on the starboard side - water filled the space below and beside the trucks and the centre of gravity of the water wedge was pushed inboard) - see figure 2.16.1C above. The top of the wedge is many metres from the ship's centreline and almost a meter below the sills of the fire doors, when the ship lists. Some water flows out from the car deck via the existing scuppers. **All water should of course flow out through the bow opening, when the ship stops! But we assume that the water does not flow out!**

The more water that is loaded on the car deck, the more the 'Estonia' lists as all water is in the side, and at a certain angle of heel, with a certain amount of water on the car deck, she tips upside down - CAPSIZE! Then she floats upside down.

The reason for capsize is that the *righting arm*, GZ, becomes 0 at about 34 degrees heel, figure 2.16.1D, and the vessel then is *unstable*. The vessel cannot float on the undamaged hull with a list 90 degrees, see figure 2.16.1E above, which is an *unstable* position. The vessel then capsizes - turns up side down ... and floats upside down.

However, if the ship stops prior CAPSIZE, all water flows out again by itself = NO CAPSIZE. Let's assume capsize takes place.

Why *newly* built passenger ships lose stability!

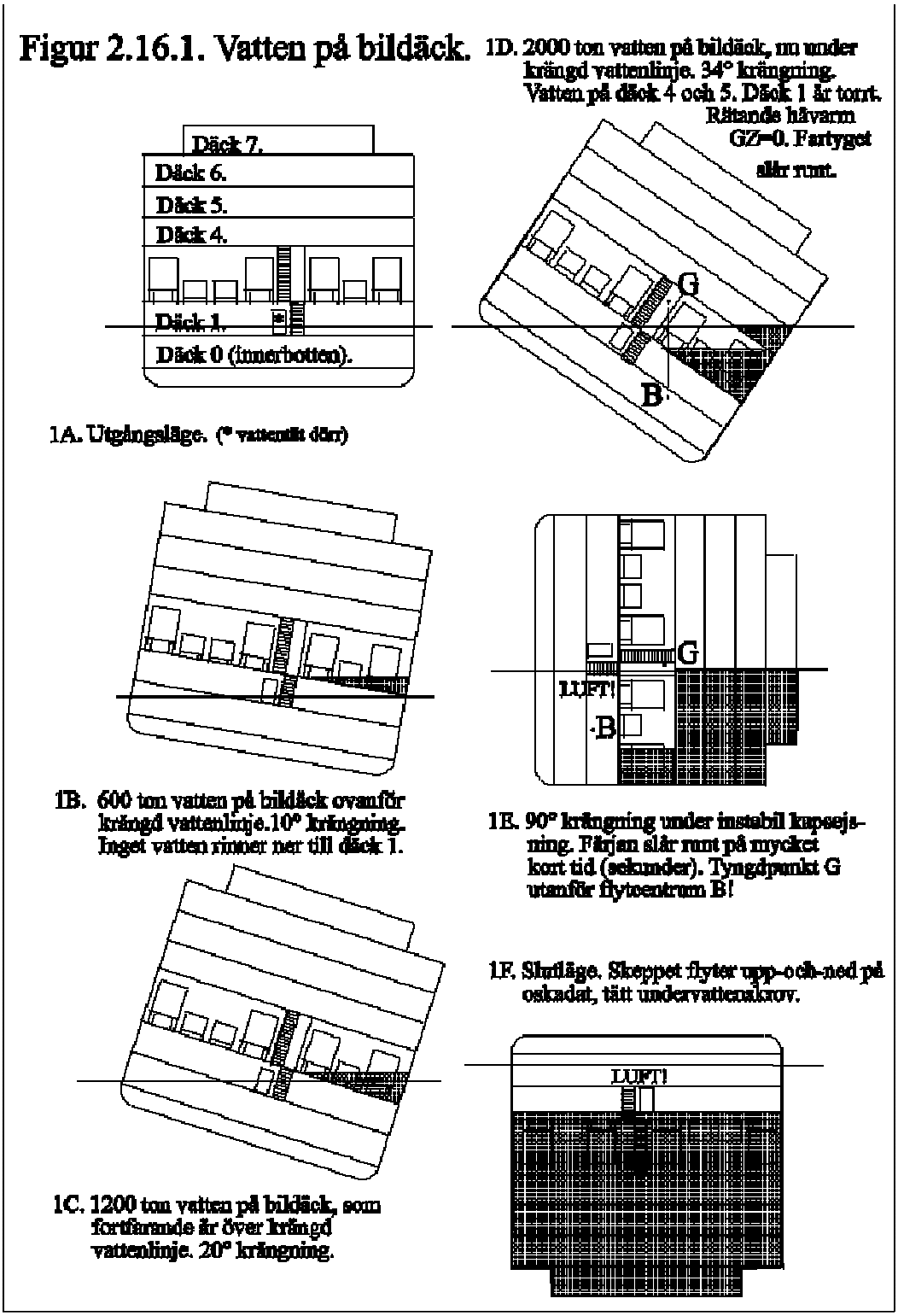
The reason is simply that the actual intact GM is too small! And the reason for that is commercial! The ship owner has simply added extra cabins and facilities high up in the new vessel to earn more money. **G** becomes situated higher up in the vessel closer to **M** and GM is reduced. But GM is still positive and the vessel is stable … and on the outside all appears OK. Evidently the vessel will not survive the damage condition (GM then becomes <0) but this is such an unlikely event so the risk is taken by the immoral ship owner.

Evidently the ship owner must demonstrate to its maritime administration that the vessel complies with the damage stability criteria but it is very simple to fool the administration with a false report of G (very few people need, e.g. be bribed). So on paper all looks OK - vessel's official G is falsified so that the official GM provides regular damage and intact stability, even if the actual GM may only be half the official one!

So what goes wrong then?

G is evidently not constant - it varies as bunkers and water are consumed or transferred and when ballast is taken on, etc. Simply speaking the consumption and transfer of liquids aboard (often done early in the morning) is similar to a small damage to the vessel. Liquids are moving around inside the hull and when this happens M is affected - it moves down during the transfer of liquids - and GM and GZ are temporarily reduced. If the officers in charge of the transfer of liquids are not informed about the actual G and bases their calculations on the official, false G (shown in all official papers), actual GM and GZ may become <0 during such routine transfers. And then the lose liquids flow to one side, the ship loses its upright stability condition and rolls over … to a new equilibrium at a certain angle of list. **This is what happened to the newly built passenger ships quoted above**. When you stop or finish the transfer of liquids, M moves up again … and the vessel becomes more stable and uprights. It evidently only happens to ***newly*** built passenger vessels, where all officers are not informed about the false G. After the first incident routines are changed to avoid mishaps, etc, but the false G remains. The only serious solution is to remove the extra top weight to bring the vessel into compliance with the rules … but this never happens - the owner will lose plenty money and the officers aboard will lose their jobs. Easier to bribe a few civil servants (and some officers aboard).

Many new passenger ships do not comply with all the rules anyway. If you are a passenger on such ships, have a look yourself in the lower decks. You may find watertight doors there … and they are open. But they should not be there at all. The passenger ferry 'Estonia' is another sad example. She didn't comply with any essential safety rules at all ... and sank like a stone due to a small hull leakage. Read the full story **Disaster investigation**! But there are many other examples!



(Translation of Swedish text in figure 2.16.1 above - Water on car deck.

1A. Initial position.

1B. 600 tons of water on the car deck above the heeled waterline. No water flows down to deck 1.

1C. 1 200 tons of water on the car deck, which is still above the heeled waterline. 20 degrees list.

1D. 2 000 tons of water on the car deck, now below the heeled waterline. 34 degrees list. Water on decks 4 and 5. Righting lever GZ=0. The ship turns upside down.

1E. 90 degrees list at instable capsize. The ship turns upside down in seconds. Centre of gravity G outside centre of buoyancy B!

1F. Final condition. Ship floats upside down on the undamaged, tight hull).

Then the vessel is on its way of turning turtle with the whole *deckhouse* flooded, figure 2.16.1F.

When the 'Estonia' was turning upside down, she should have floated with the centreline and the openings on the car deck down to deck 1 three, four metres above the waterline, figures 2.16.1E and 2.16.3C. Very little water could during that time flow down to hull spaces below the garage. One minute later she floats upside down - figures 2.16.1F above and 2.16.3D right below. Strathclyde University has simulated the above and produced some video pictures shown right. Figure 2.16.3A right shows what the water *inside* the *superstructure* would have looked like seen from the bow. There are >2 000 tons of water on the car deck, the list is >40 degrees and the water reaches the underside of deck 4. Figure 2.16.3B shows the outside situation. Nobody can walk on any decks and the condition is completely unstable. A few moments later the list is 90 degrees - figure 2.16.3C - and soon after - when the deck house is flooded - the ship floats upside down - figure 2.16.3D. The whole sequence would take a few minutes. But it never happened to the 'Estonia'.

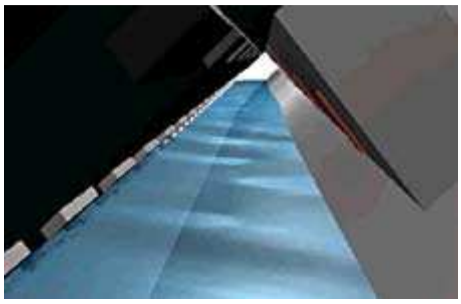


Fig. 2.16.3A - Water on the car deck

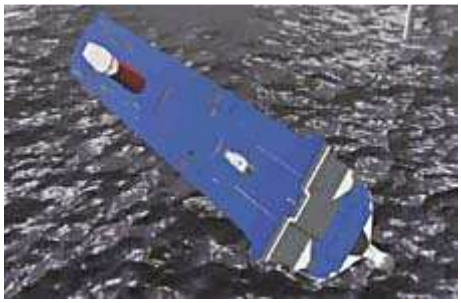


Fig. 2.16.3B - >40 degrees list

Fig. 2.16.3C - On the side

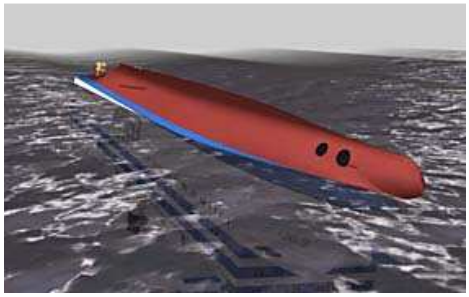


Fig. 2.16.3D - Floating upside down

The 'Estonia' floats on the Deck House and the Water does not flow out through the Bow Opening

The Swedish NMA (director general Jan-Olof Selén and director of safety at sea Johan Franson) has commented upon the above in a letter dated 2000-12-15 reference 0799-0036172 to the Swedish ministry of Economy (and Transport) - minister Ms Mona Sahlin:

''The (Swedish) NMA will underline that, when calculating damage stability, you are not permitted to allow for the buoyancy in a deckhouse unless it is watertight. On ferries the ***deckhouse*** *is not watertight because there are doors which are easy to open and windows that cannot resist water pressure. The situation that you from safety point of view are not permitted to assume and to calculate with the buoyancy of a deckhouse, does not exclude that such buoyancy actually exists. It exists and therefore the sequence of events as described by the Commission is very likely'.*

The Commission however clearly showed that the deck house (decks 4-7) was not watertight, because the Commission stated that the deck house was flooded with 7 000 ton/min of water in two minutes, nineteen minutes *after* the loss of the visor but twenty minutes *before* the ship finally sank, but that this sudden inflow then stopped - how is not explained - so that the ship floated for another twenty minutes on a *watertight part* of the deck house, and the Swedish NMA (Franson/Selén) also thinks that there is an *unaccounted buoyancy force* in the deck house, which prevented the 'Estonia' to capsize. **The 'Estonia' was from stability point of view not really damaged - the water on the car deck was just 'extra', un-fixed cargo being 'loaded' - or loading itself on the lowest point on the deck 2 inside the superstructure! Why the un-fixed, lose, extra water didn't flow out through the bow opening, when the ship stopped, is a mystery.**

THE 'ESTONIA' FLOATS UPRIGHT OR UPSIDE DOWN ON THE HULL

The volume of the hull *below* the car deck is about 18 000 m^3 in 14 water/airtight compartments and that air cannot leak out, when the ship is upside down. As the lightship was only 9 000 tonnes and the dead-weight 2 200 tonnes, there was plenty of buoyancy left *inside* the ship (about 13 000 m^3 of slightly compressed air and >4 000 m^3 of buoyant material in hull, superstructure and deckhouse), so that the 'Estonia' should in the end have floated upside down, if she had capsized with water in the superstructure on deck 2 - figures 2.16.1F and 2.16.3D, the latter made by University of Strathclyde. But she did not do that. She sank at once!

It does not matter if there are errors in the weight assumptions, i.e. if the ship and the cargo, etc. were lighter or heavier, or if the stability was better or worse or the heeling/righting levers were longer or shorter, because **the principal result is always the same**. You need substantial amounts of water on the car deck in the *superstructure* to heel the ship 18 degrees, and you need about 2 000 tonnes of water on the car deck to heel the ship about 34 degrees, where it turns turtle in a very short time and floats upside down. There are many examples of this. Of course, if there is not sufficient air left inside the hull and the remaining buoyancy is less than the weight, it sinks at once with pockets of air inside the hull.

WHY DIDN'T THE 'ESTONIA' TRIM?

Water in the superstructure does not only heel the ferry. The water also trims the vessel either on the bow or on the stern. 1 200 - 2000 tons of water inside a superstructure is a very big, moving weight.

The water always collects at the lowest point on the car deck, which shifts position, when the ship heels and trims due to the water.

With 1 200 tonnes of water on deck 2 in the superstructure (a very large moving weight - as stated!) the ship trims about one meter either on the stern (1 200 tonnes water aft - the opening in the superstructure bow moves up several metres above the waterline and makes further water entry more difficult - or on the bow (1 200 tonnes forward) - which means that the deck 2 is almost below the waterline forward and facilitates water entry with speed forward - **BUT - all water flows out, when the ship stops!**

In both cases (assuming no water flows out) you would expect that the 'Estonia' had turned turtle in a very short time - as 'Herald of Free Enterprise' outside Zeebrügge 1987.

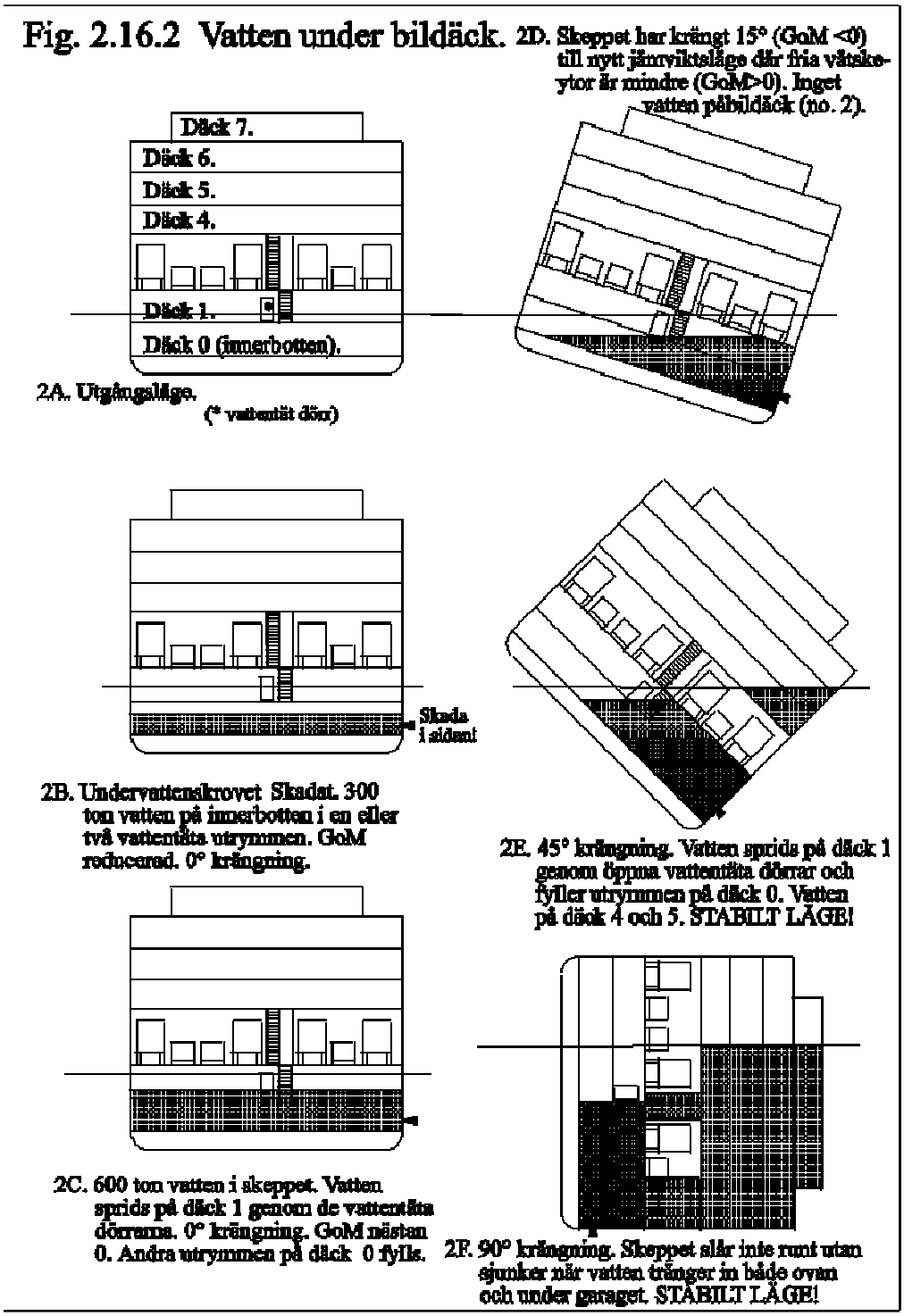
The 'Herald of Free Enterprise' however only ended up on the side, as the water depth was 12-13 metres where she capsized, i.e. she never sank below the water surface but rested on the bottom with the side above water. It went very fast - all passengers inside cabins of the port side drowned immediately, all passengers in cabins on the starboard side - above water - were thrown into the wall, that became a floor and where they could await beings rescued. Passengers in the full breadth saloons ended up in water between the floor and ceiling, where the former starboard side bulkhead with windows and doors became a new roof high above. They were caught in a 'swimming pool' with 10 meters high sides! In the garage all vehicles were pushed to port and smashed to pieces. There was no - zero - time for evacuation. Evidently the 'Estonia' did not capsize like the 'Herald of Free Enterprise'.

According to the Final Report (5) it took about 20 minutes for the 'Estonia' to list 90 degrees (at 01.35 hrs) after a sudden list 15 degrees at 01.15 hrs **1.9**. Then it took another 19 minutes to sink at 01.54 hrs. We know that this scenario is a falsification based on manipulated calculations of (a) inflow of water through the bow opening, (b) stability, angles of heel and amount of trim and (c) that the water does not flow out when the ship stops. We also know that the Commission has never explained how the hull below deck 2 was water filled, so that the ship would have sunk. The Swedish government desperately asked its Board of Psychological Defence, SPF, on 19 April 2001 to prepare one example how the 'Estonia' could have sunk, without capsizing **1.49** due to 2 000 tons of water inside the superstructure but the SPF has not been able to do it. The task is of course impossible. As soon as the ship stops and has not capsized, all water flows out and the ship is safe!

We know that if the inner ramp was completely open and if there was 15 knots speed forward, that the vessel would have turned turtle in a few minutes due to a very large inflow of water **Appendix 4**. We know that that scenario of the Commission is 100% false, because it never happened. So let's study how a ship normally sinks.

NORMAL SINKING

If a watertight compartment below deck 1 below the car deck of the 'Estonia' is flooded (figure 2.16.2) with water, i.e. the ship hull is leaking, the stability, the metacentric height GoM, is reduced due to free water surfaces (loss of inertia to prevent the vessel to list). If two compartments are flooded (figure 2.16.2B), the metacentric height is further reduced and there remains only minimal inherent stability. It means that the ship is still stable, but that she rolls slower. This is the rule requirement. Passenger ships, but not cargo ships, shall survive with two flooded compartments due to leakage. Passenger ships shall not sink due to leakage!



(Translation of Swedish text in figure 2.16.2 above - Water below car deck.

2A. Initial position.

2B. Underwater hull damaged. 300 tons of water in one or two compartments. GoM reduced. 0 degree heel.

2C. 600 tons of water in the ship. Water spreads through open watertight doors. GoM almost 0. Other compartments on deck 0 flooded.

2D. Ship has heeled (GoM<0) 15 degrees to a new equilibrium (GoM>0), where free water surface effects are smaller. No water on the car deck.

2E. 45 degrees list. Water spreads through open watertight doors and fills compartments on deck 0. Water on deck 4 and 5. Stable condition!

2F. 90 degrees list. The ship does not capsize, when water enters both below and above the car deck. STABLE CONDITION!).

SUDDEN LISTING

If three compartments are partly flooded on deck 0, the initial stability becomes negative and the passenger ship may suddenly list 50 degrees assisted by rolling. Because it is only a certain, small amount of water on deck 0, the ship will become stable again, when it has listed a certain angle - figure 2.16.2D, because the free water surfaces are reduced by the heeling, when the water is pushed up against e.g. a watertight car deck (deck 2) *from below* - the case of the 'Estonia. Open watertight doors are temporarily 'on the dry' and no water spreads. Also the righting lever (GZ) is positive at larger angles of heel: **2.17** for detailed calculations. When more water flows in, she sinks.

That three or more spaces could be flooded on 'Estonia' during the night of the accident is clear. The watertight doors between all six watertight compartments on deck 1 forward of the engine room were open. The following probably happened.

First (at about 00.55 hrs) one or two compartments (including maybe the swimming pool (11)) on deck 0 were flooded due to a shell damage caused by, e.g. a collision, and the vessel was still stable - figure 2.16.2B. Sillaste was called to assist unless he was already in the engine room - start the bilge pumps **2.1**.

When the water reached deck 1 (at about 00.57 hrs), it spilled out there (figure 2.16.2C) on the starboard side (the ship had a small permanent starboard list), which was observed by many passengers on deck 1, who had just heard the big crashes due to the collision. The bridge was alerted. Silver Linde was sent to check! While a large number of passengers on deck 1 started to evacuate their cabins and climb to deck 7, some watertight doors on deck 0 were opened by the crew checking what was going on and the water spread on deck 0. The engine crew was standing in water to the knees.

The result was that the initial stability (GoM and GZ) became zero and that the ship listed suddenly to starboard at 01.02 hrs (figure 2.16.2D). This was noted by all survivors onboard

Then the ship again became temporarily stable (**GZ>0**), when the water could not spread through the watertight doors temporarily in a dry position at the centreline and when the free surfaces were reduced.

But water continued to flow in - figure 2.16.2E. This water made the ship temporarily more stable, it up righted a little, but the water could soon after spread through the open watertight doors at centre line and the angle of list increased.

Then the deck house was flooded, so that the ship heeled more and more - 70 degrees at **01.25** hrs, when the car deck started to flood aft from above via the ventilators on deck 4 - and sank **01.32-01.36** hrs. There is a possibility that the starboard pilot door of the superstructure **1.16** was open and that water started to flood the superstructure (decks 2-3) already at 15 degrees list - see figure 2.16.2D above through this opening in the side of the superstructure that then was below water.

THE CAUSE OF SINKING - NORMAL HULL LEAKAGE

That the ship finally sank (**01.36** hrs) and did not, e.g. tip over upside down, was due to the fact that there was a damage of the hull below waterline - figure 2.16.2F - and plenty of water (weight) in the hull *below* the car deck, which stabilised the ship during the 30 minutes of sinking. All air in the ship below the car deck and forward of the engine room escaped through the ventilation system and *open watertight doors*, while the angle of heel was less than 90 degrees and the buoyancy was reduced to <12 000 tons. The engine room was also flooded, so 'Estonia' could not float on that. Thus she sank with the stern first.

2.17 SERIOUS FAULTS IN THE 'ESTONIA' STABILITY

Both the Commission and the German group of experts believe that the 'Estonia' first capsized and then sank due only to large amounts of water *on* deck 2 in the *superstructure* above the hull. But water on deck 2 in the *superstructure* is only extra lose weight *loaded* high up on an undamaged ship 2.16, which tips -capsizes - the ship upside down, while the ferry always floats on the *hull - first upright, then upside down*. The Commission has never explained how the ship could have *sunk* due to water in the *superstructure*, i.e. how the hull buoyancy was lost.

Below follows a review of the 'Estonia' stability based on info in (5). In all cases the 'Estonia' floats on its *hull* as per the principle of Archimedes established circa 252 BC. When the hull is damaged and compartments in the *hull* actually start to flood with water, i.e. sinking starts, it will be shown how negative initial stability (GoM) and sudden loss of initial stability and list develops.

THE VERTICAL CENTRE OF GRAVITY - THE *'DUCK TAIL'* IN THE FUNNEL

When the 'Estonia' ('Viking Sally') was stability tested 21 June 1980 at delivery, the lightship weight was **9 420** tons with the Vertical Centre of Gravity, VCG, 11,31 meters above the keel (base line). The Longitudinal Centre of Gravity, LCG, was -7,934 m from $L_{PP}/2$, i.e. aft of mid ship.

When the stability was tested 11 January 1991 (ship's name then 'Wasa King') the lightship weight was **9 733** tons, i.e. the ship was **313** tons heavier. New VCG was 11,564 meter, new LCG was -7,02 m from $L_{PP}/2$. The modified, increased lightship weight, which evidently reduces the deadweight, is not discussed in the Final Report (5). As seen in 2.1 the deadweight had been **3 345** tons, in 1991 it was **3 006** tons (or there about).

As the VCG has increased 0,254 meter, a layman realises that the extra weight **313** tons has been installed at 19,21 meters above the keel (sic).

As the LCG has moved 0,914 meter forward, a layman realises that the extra weight **313** tons has been installed at +20,49 meters forward.

At the test 11 January 1991 the administration (Finland) concluded that the extra weight was a *'duck tail'* installed aft between waterline and car deck, i.e. about 6,5 meters above the keel and 70 meters aft of $L_{PP}/2$, but it is not possible based on above analysis - **the 'duck tail' would have been located in the funnel**! The aft body was modified during dry-docking in 1985 by a *'duck tail'* extension giving increased buoyancy in the aft body and a better hydrodynamic flow condition, preventing the stern from setting down at high speed. This was a problem in the original configuration unless forward ballast tanks were filled. Either the original test 1980 or the test 1991 was badly done. You should conclude that the stability of the 'Estonia' is based on very flimsy, basic information.

THE LAST STABILITY TEST

The last stability test is described in Supplement 220 in (5) - **'Wasa King' - Ship Consulting Ltd OY, Kressunkatu 31, FIN 20460 Åbo (Turku, Finland). The test was done by Mr. Veli-Matti Junnila** (see also 3.12 and 3.17 where Mr. Junnila falsified stability calculations for the Commission).

The displacement was then 11 132 tons, draught was 5,091 meter and there was 1 399 tons of various weights aboard: 1 331.52 tons liquids in 38 different tanks - free surface moment FSM 1 436 m^4, i.e. 32 tanks were partly filled. It reduced the metacentric height GM with 0,129 m (FS).

A summary of the weights aboard at the stability (and lightship weight) check is table 2.17.1 below:-

Table 2.17.1 - Condition 910111 - Stability and lightship check - upright condition - intact hull

Tank	Type	Weight (ton)	VCG (meter)	Free surface moment (m^4) FS	Comments
TK 8	DB-Tank 8 (FW ?)	53.55	0.55	236	.
TK10	**H-tank 10**	**42.75**	**1.30**	**150**	.
TK 11	**H-tank 11**	**27.55**	**1.28**	**150**	.
TK 36	**Day tank H**	**17.29**	**2.20**	**8**	.
TK 38	**Settling tk H**	**21.38**	**2.30**	**10**	.
TK 18	**MDO**	**0**	**-**	**0**	.
TK 41	**MDO**	**11.56**	**?**	**4**	.
TK 20	**DB-tank 20 -GO**	**8.33**	**0.25**	**27**	.
TK 5	Tank 5 (FW ?)	0	2.70	138	.
TK 4 A4	Sludge oil	5.50	0.11	123	.
TK 1	**Fore peak SWB**	**175.98**	**4.45**	**0**	.
TK 2	**Trim tk ballast**	**303.06**	**4.69**	**0**	.
TK 13	**Heeling tk port**	**28.60**	**0.52**	**193**	.
TK 14	**Heeling tk starboard**	**129.90**	**1.91**	**73**	**NB – 100 tons more starboard**
?	**FW**	**0.00**	**?**	**?**	.
24 other tanks	**Miscellaneous**	**377.59**	-	**324**	.
Total liquids	-	**1 331.52**	**2.73**	**1436**	.
Other weights	**-**	67.00	12.22	-	.
Deadweight	**-**	**1 398.52**	**3.185**	**1436**	**.**
Light ship	-	**9 733.00**	**11.564**	**-**	.
Displacement	-	**11 132.00**	**10.511**	**1436**	.

The deadweight was 1 399 tons and the draught was 5,09 meters

To check the stability 16,7 tons water were pumped from starboard to port heeling tank, then 45,9 tons water from port to starboard heeling tank, and last 28,5 tons from starboard to port heeling tank.

Note that +100 tons water was required in ***starboard*** heeling tank to keep the ship upright! When the 'Estonia' departed Tallinn on its last voyage the ***port*** heeling tank was allegedly full (184 tons) to keep the ship upright. The Commission has the following to say about this - chapter 3.7.3 page 48 in (5):-

> *"The Commission has noted that at the inclination test the ship's centre of gravity was positioned to starboard to such an extent that the port-side* (sic) *heeling tank was filled with about 115 t more* (sic) *water than the starboard tank in upright condition."*

The statement in (5) is not correct. It was 100 tons more water in the **starboard** tank at the inclination test! Thus - if, which is unlikely - the ***port*** heeling tank was full at the last voyage, there must have been >280 tons extra weight on the ***starboard*** side to balance the full port tank (see below)!

UNPROFESSIONAL STABILITY CHECK

The above stability check was very unprofessional. You cannot make a stability test with 32 partly filled tanks and a free surface moment of 1 436 m^4. And are the free surface moments correct? The partly filled

heeling tanks port and starboard, e.g., should have had the same shape and therefore identical free surface moments. But they are recorded as 193 and 73 m^4 respectively - cannot be correct!

The result seems however mathematically correct - with KM 11,690 m, GoM 1,050 m, GM 1,179 m, FS 0,129 m the lightship VCG becomes 11,564 meters above baseline. *Note that the ship's centre of gravity is 3,944 meters above the car deck in the superstructure.* Any water on the car deck, deck 2, thus enters *below* the centre of gravity of the ship. This should in principle make any ship more stable! - but - as that water is free to move - to the side - it will heel the ship until it capsizes (compare chapter 5.5 in (1)).

As stated above the ship was found 313 tons heavier in 1991 than in 1980. The explanation - that a 'duck tail' had been installed seems strange. The Owners did not seem to care that the ship could carry 313 tons less cargo.

THE ALLEGED LOADING CONDITION AT THE ACCIDENT

The loading condition at the accident 27/8 September 1994 was as per the Final Report (5) chapter 5.3 - (Table 5.1 with draught 5,39 meter and total deadweight 2 300 tons) as per table 2.17.2 below.

Table 2.17.2 - Condition 940927 - Estimated condition at the accident - intact hull

Tank	Type	Weight (ton)	VCG (meter)	Free surface moment (m^4) FS	Comments
TK8	DB-Tank 8 (FW ?)	0	-	-	.
TK10	**H-tank 10**	**103.44**	**?**	**150**	.
TK 11	**H-tank 11**	**103.44**	**?**	**150**	.
TK 36	**Day tank H**	**23.95**	**2.82**	**8**	.
TK 38	**Settling tk H**	**19.17**	**2.30**	**10**	.
TK 18	**MDO**	**26.86**	**?**	**0**	.
TK 41	**MDO**	**8.14**	**2.85**	**4**	.
TK 20	**DB-tank 20 –GO**	**10.00**	**0.25**	**27**	.
TK 5	Tank 5 (FW ?)	0	-	-	.
TK 4A4	Sludge oil	0	?	123	.
TK 1	**Fore peak ballast**	**175.98**	**4.45**	**0**	.
TK 2	**Trim tk ballast**	**???**	-	**0**	Should be full!
TK 13	**Heel tk port**	**184.02**	**1.91**	**0**	**Full !**
TK 14	**Heel tk starboard**	**0**	-	-	**empty - ?!**
?	**FW**	**300.00**	**?**	**?**	.
24 other tanks	**Various**	**50.00**	**?**	**?**	.
Liquids total	-	**1 005.00**	**2.73(?)**	**1 200**	.
Other weights	-	1 295.00	9.35	-	.
Deadweight	-	2 300.00	7.148	-	.
Lightship	-	**9 733.00**	**11.564**	**-**	.
Displacement	-	**12 033.00**	**10.720**	**1 200**	.

All information in table 2.17.2 seems mathematically correct but with a KM 11,87 meter and VCG 10,72 meter, the GM should be only 1,15 meter, and with FS 0,10 m the GoM should be 1.05 meter.

It is worthwhile to note that now the ***port*** heeling tank was full - 184.02 ton - to allegedly keep the ship upright. There is no evidence for that except statements of crew members that have been demonstrated to be lying **1.48**. Note also that the deadweight was only 2 300 tons (draught 5,39 meters), which meant that the 'Estonia' was only 77% loaded. You could load another 700 tons (to reach maximum draught 5,56 meters).

THE SWIMMING POOL

It is interesting to note that the 'Estonia' had a *swimming pool* (!) on deck 0 with capacity 40 tons in the sauna/pool compartment. The vertical centre of gravity of these 40 tons is recorded to be 2,0 meter! As the double bottom height was about 1,6 meter, it is likely that the swimming pool was recessed into the double bottom! How this swimming pool was emptied is not described in the Final Report - it had to be pumped dry. The swimming pool was apparently in use at the last voyage - passengers used it. But it is not included in the loading condition above. If the ship was rolling and pitching as described by the Commission, the water in the swimming pool must have been all over the compartment on deck 0.

The Commission has in fact censored all information concerning the swimming pool in the Final report.

Passengers have also reported that the sauna forward of the pool had been flooded on a previous voyage - 20 cms of water on the inner bottom was reported. The author has no idea how the pool and sauna compartments below the waterline were built, but insulation and panelling must have been fitted in the sides. In the winter the outside water was below 0°C and would have cooled down these public rooms so they must have been insulated.

If they then were flooded from inside evidently the water would soak the insulation, etc. and the whole side structure would become a rust trap. Who has ever heard about a swimming pool room located on the inner bottom, deck 0, of a ferry?

The stated metacentric height GoM in the Final report 1,17 meter is not confirmed - as shown above the lightship weight/VCG is ?? - it could have been 1,05 meter, but it doesn't matter too much for the below discussion.

THE MINIMUM G_oM

The Final Report (5.3 in (5)) says *"The minimum GoM was 0,63 meter according valid stability manual"*. Extracts from a stability manual are in Supplement No. 220 in the Final Report (5): it is a 'Trim and Stability Booklet' in English language for the Finnish ferry 'Wasa King' (sic) written by **Mr. Veli-Matti Junnila** of **Ship Consulting Ltd, Åbo**, 20 January 1991. Pages 3-24 with loading conditions nos. 1-7 are not copied. Pages 24-26 show load condition no. 8 with GoM = 0,85 meter and 47 trailers aboard with draught 5,47 meter. On page 26 is stated that *"the minimum GM = 0,63 meter with 20 trailers aboard".*

The Commission has the following to say about this - chapter 3.7.3 page 48 in (5):-

> *"The new manual was approved by the Finnish Maritime Administration. It was subsequently approved by Bureau Veritas in conjunction with the change of flag".*

The Estonian Maritime Administration clearly did not approve any stability manuals and there are no manuals for the 'Estonia' in the Final report or its supplements. The ship did not only change flag (in January 1993), it changed trade! From coastal trading to short international. You would have expected that a completely new stability booklet was then done, but as shown above - the same stability booklet from 1991 (costal trading) was allegedly endorsed 1993 as valid for short international trading. This is a serious fault.

Furthermore, minimum GoM 0,63 meters provided only *minimum* damage stability for *coastal* trading , as per the very old stability manual supplemented to (5). That stability manual had apparently been superseded by a new one.

DID THE 'ESTONIA' COMPLY WITH THE SOLAS DAMAGE STABILITY REQUIREMENTS?

The safety rules SOLAS had been amended with new rules called SOLAS 90, adopted in April 1992 and entering into force 1 October 1994, i.e. three days after the accident.

The 'Estonia' must of course have fulfilled the SOLAS 90 requirements already in January 1993 and the Final Report (5) hints that there was a new stability booklet being developed (sic) and approved (16 September 1994 according to 3.7.3 in (5), but it is not in the supplement), etc. **1.33**. As the temporary safety and passenger certificates had allegedly been issued in June and September valid for six months, the new stability booklet should have been available then. Otherwise the certificates should have ceased being valid on 30 September 1994.

The Commission has the following to say about this - chapter 3.7.3 page 48 in (5):-

> *"Damage stability was checked by Bureau Veritas for compliance ... (SOLAS 90) ... and it was concluded that the vessel ... complied ... . These additional damage* (sic) *cases were intended to be incorporated in the trim and stability manual and were approved separately on 16 September 1994"*

This is a strange statement - *'damage cases'* are not included in a stability manual. *'Damage cases'* are used to establish the minimum GoM (or maximum KGo) of the ship as per SOLAS 90 for intact stability cases - to survive damage cases. It is very likely that the previous minimum GoM (0,63 meter) as per SOLAS 74 was not sufficient - then of course *all* the intact loading conditions shown in the manual for guidance must be up-dated. The *'damage cases'* should have been included in a guidance booklet for just that - *damage* - so that the Master and crew would know, what would happen to the ship when damaged. Another mystery of the 'Estonia' investigation is thus the disappearance of the *new* stability book for intact and damage stability and what the actual minimum GoM was as per SOLAS 92! And that the *'damage cases'* approved on 16 September 1994 are not included in the Final Report (5).

THE 'ESTONIA' SAILED WITHOUT STABILITY DOCUMENTATION

It is possible that the 'Estonia' sailed January 1993 - September 1994 with invalid stability documentations. It should have been detected by a proper Port State Control at Stockholm but until today nobody has questioned the 'Estonia' stability data. As shown in 2.16 the 'Estonia' would have capsized and floated upside down with 2 000 tons of water loaded on top of the car deck in the *superstructure*. It is an intact stability case. Elementary.

How the stability is reduced and how and why the 'Estonia' would have heeled and developed a list, due to leakage into the *hull* with open watertight doors and several compartments flooded - a damage case, without capsizing are explained below.

DAMAGE STABILITY

The Final Report (5) Supplement No. 505 shows what happens if two or three compartments (comp) in the *hull* below the car deck are flooded with 0-1 300 tons of water according to the Commission with original GoM 1,15 meter. In below table 2.17.3 (based on Supplement No. 505) is shown in columns 1-5 what happens, if only 0-200-500 tons flows in and when two compartments (2 comps) are flooded simultaneously at the beginning and then a third compartment (3 comp) is flooded. And then will be shown in columns 6-7 what happens, when the original GoM is 0.63 meter and two compartments only are flooded.

Table 2.17.3 - Conditions with flood water in two or three compartments in the hull below the car deck

1.	2.	3.	4.	5.	6.	7.
Case 505	**Undamaged with GM 1.15 meter**	**2 comp 200 tons free water**	**2 comp 400 tons free water**	**3 comp 500 tons free water**	**Undamaged with minimum GM 0.63 m**	**2 comp + minimum GM + 200 tons free water**
Orig. Dwt.	**2 228.40**	2 228.40	2 228.40	2 228.40	2 228.40	2 228.40
Dwt FSm (m^4)	796.10	796.10	796.10	796.10	796.10	796.10
T610 (m^3)	0	**100.00**	**200.00**	**200.00**	0	**100.00**
T610 cgz (m)	0	1.43	1.66	1.66	0	1.43
T610 FSm (m^4)	0	8 258.50	7 783.20	7 783.20	0	8 258.50
T510 (m^3)	0	**100.00**	**200.00**	**200.00**	0	**100.00**
T510 cgz (m)	0	1.49	1.78	1.78	0	1.49
T510 FSm (m^4)	0	5 066.50	5 632.40	5 632.40	0	5 066.50
T410 (m^3)	0	0	0	**100.00**	0	0
T410 cgz (m)	0	0	0	1.52	0	0
T410 Fsm (m^4)	0	0	0	2 140.80	0	0
Water inflow (m^3)	**0** ▶	**200.0** ▶	**400.0** ▶	**500.0**	**0** ▶	**200.00**
Displacement (m^3)	**11 961.40**	**12 161.40**	**12 361.40**	**12 461.40**	**11 961.40**	**12 161.40**
Draught (m)	5.36	5.44	5.53	5.57	5.36	5.44
KM (m)	11.87	11.81	11.74	11.70	11.87	11.81
KG (m)	10.65	10.50	10.36	10.29	11.17	11.01
GM (m)	1.22	1.31	1.38	1.41	0.70	0.80
Total FSMom (m^4)	**796.10**	**14 121.10**	**14 211.70**	**16 352.50**	**796.10**	**14 121.10**
Ggo (m)	-0.07	-1.16	-1.15	-1.31	-0.07	-1.16
GoM (m)	**1.15**	**0.15**	**0.23**	**0.10**	**0.63**	**-0.36**

Undamaged the 'Estonia' is assumed to have deadweight 2 228,4 tons and GoM 1,15 meter at departure Tallinn. This is slightly less than the official departure condition in table 2.17.2 above - 1,17 meter. The supplement suggests that the original free surface moment FS is only 796,1 m^4 in lieu of 1 200 m^4, but it does not affect the result. If two compartments (T610 and T510 - the sauna and the conference space on deck 0) were flooded with 200-400 tons of water, the GoM is reduced to 0,15-0,23 meter due to free water surfaces on deck 0 and in partly filled tanks (GGo = Total FSMom (m^4)/ Displ. (m^3)). If then a third compartment (T410 - a small space forward) is flooded with 100 tons, the GoM is further reduced to 0,10 meter. Were the original GoM 1,05 meter, damage GoM would have been 0.

With this example the Commission indicates (only in a supplement - the Final report itself does not mention the supplement) that the 'Estonia' should have been stable, if the sauna was flooded, as GoM > 0 during the flooding. No sudden list would have developed due to leakage.

However, things are not so simple. The Commission assumes, e.g. that the original GoM was 1,15 meter.

The Final Report (5) chapter 5.3, page 56, states that minimum GoM according the valid stability booklet was only 0,63 meter.

As shown in columns 6-7 in the table 2.17.3 above the 'Estonia' would have lost its initial stability, i.e. GoM<0, with only two compartments of the hull flooded with 200 tons of water, *if the original GoM had been 0.63 m*.

When more water would have entered into the two damaged compartments, the hull would have stabilised itself and straightened up. According SOLAS 74 the ship should then float on its damaged hull with a minimum GoM > 0.05 meter, after having heeled less than 12 degrees *during* the time of flooding. When you do the calculation of *'damage cases'* you assume calm weather and not severe weather Beaufort 7 with 4,2 meters waves, as when the 'Estonia' sank. In severe weather and with a leakage and free water inside the hull, the ship evidently lists and rolls more. This was observed at the accident of the 'Estonia'.

It is basic knowledge that an old passenger ship *heels* with two partly filled watertight compartments and minimum original GoM.

This was permitted according to SOLAS 74 damage stability criteria, which apparently was applied to the 'Viking Sally' for coastal trading 1980 and for 'Wasa King' 1991. But when the ship was re-named the 'Estonia' in January 1993 and changed trade, the stricter requirements of SOLAS 90 were known and should have been applied. The matter is not examined in the Final Report (5) - a serious defect.

Supplement No. 505 was handed in to the Commission 27 November 1997 (sic), i.e. six days before the Final Report was published. Supplement No. 505 therefore can never have been discussed by the Commission - the last official meeting of the Commission was in March 1997 **4.5**.

Supplement No. 505 is strange, apart from being dated six days before the Final Report was issued. The authors of the report are said to be Tuomo Karppinen and Sakari Rintala, but the report is signed by Matti K. Hakala, Research Manager, and Sakari Rintala, Research Scientist, VTT, and Karppinen has only *'controlled'* the content with his initials TK.

On page 3(5) of the said report it is then stated that all stability calculations have been done by **Mr. Veli-Matti Junnila** of Ship Consulting Ltd., Åbo, the same person/company that wrote the stability book for 'Wasa King'. The actual stability calculations in Supplement No. 505 are made 29 November 1996, i.e. one year earlier! The only thing the above Research-Managers/Scientists have done are to conclude that the 'Estonia' should be stable, if there were water on deck 0 under certain assumptions, e.g. original GoM = 1,15 meter. The author thinks that the stability calculations of November 1996 were ordered by Karppinen as a result of the author's article in the largest Swedish daily Dagens Nyheter August 1996 **2.1**, to see what would have happened, if the 'Estonia' was leaking. The report was then edited to show that the 'Estonia' would remain stable, GoM>0, when leaking (sinking).

It is remarkable that the Commission used the same person/company that wrote the 'Wasa King' stability book 1991 to verify 1996/7 that the 'Estonia' should not list, if she was leaking. There was evidently a conflict of interest in using **Mr. Veli-Matti Junnila**/Ship Consulting Ltd to verify the stability of the 'Estonia' after the accident. That company had provided the original stability information.

A serious error in the stability calculations of Supplement No. 505 is that the Commission, the Ship Consulting Ltd. and the three scientists at VTT consider that the whole deckhouse (decks 4-7) is watertight! Regardless of any results of 'damage cases' the 'Estonia' neither capsizes, nor sinks due to any damage - she is always floating on the *deck house* 3.12.

(There is another error in Supplement no. 505 shown in above table 2.17.3 - line 6 - T610 FSm shall increase with increasing amounts of water. The error is corrected in the next table below. The error has no influence on the final result - GoM is reduced, while deck 0 is flooded and can be negative, i.e. there is a sudden list).

NEGATIVE INITIAL STABILITY

In spite of above errors, which are easy to spot, Supplement No. 505 shows exactly what is stated so many times in this book. If another compartment is flooded, e.g. because the watertight doors were left open - then GoM is evidently further reduced and becomes negative. This is shown in below table (line 5 T610FSm is adjusted) with 600 tons of water in four compartments.

Table 2.17.4 - Conditions with flood water in two, three and four compartments in the hull below the car deck

-	1.	2.	3.	4.	5.	6.
-	-	**Undamaged with GM 1.15 meter**	**2 comp with 200 tons water**	**2 comp with 400 tons water**	**3 comp with 500 tons water**	**4 comp with 600 tons water**
1	**Orig. Dwt.**	**2 228.40**	**2 228.40**	**2 228.40**	**2 228.40**	**2 228.40**
2	Dwt FSm (m^4)	796.10	796.10	796.10	796.10	796.10
3	**T610** (m^3)	0	**100.00**	**200.00**	**200.00**	**200.00**
4	T610 cgz (m)	0	1.43	1.66	1.66	1.66
5	T610 FSm (m^4)	0	7 783.20	8 258.30	8 258.30	8 258.30
6	**T510** (m^3)	0	**100.00**	**200.00**	**200.00**	**200.00**
7	T510 cgz	0	1.49	1.78	1.78	1.78
8	T510 FSm (m^4)	0	5 066.50	5 632.40	5 632.40	5 632.40
9	**T410** (m^3)	0	0	0	**100.00**	**100.00**
10	T410 cgz (m)	0	0	0	1.52	1.52
11	T410 FSm (m^4)	0	0	0	2 140.80	2 140.80
12	**Stab.rum** (m^3)	0	0	0	0	**100.00**
13	Stab.rum. cgz (m)	0	0	0	0	1.50
14	Stab.rum FSm (m^4)	0	0	0	0	6 000.00
15	**Total water inflow** (m^3)	**0** ▶	**200.00** ▶	**400.00** ▶	**500.00** ▶	**600.00**
16	**Displacement** (m^3)	**11 961.40**	**12 161.40**	**12 361.40**	**12 461.40**	**12 561.40**
17	Draught (m)	5.355	5.44	5.53	5.57	5.61
18	KM (m)	11.87	11.81	11.74	11.70	11.67
19	VCG/KG (m)	10.65 (?)	10.50	10.36	10.29	10.22
20	GM (m)	1.22	1.31	1.38	1.41	1.45
21	**Total FSMom (m^4)**	**796.10**	**13 645.80**	**14 686.80**	**16 827.60**	**22 827.60**
22	GGo (m)	-0.07	-1.12	-1.19	-1.35	-1.82
23	**GoM (m)**	**1.15**	**0.19**	**0.19**	**0.06**	**-0.37**

Original GoM is 1,15 meter (VCG/KG 10,65 meter ? - should be 10,72 meter - see above). When two compartments (T610 and T510 - sauna and conference room) are flooded the GoM is reduced to 0,19 meter. If only these two compartments were flooded, the GoM will increase, when they fill up completely. However, if the adjacent compartment T410 is flooded (through an open watertight door) the GoM = 0,06 meter, i.e. GoM is further reduced and if a fourth compartment, the stabilizer room is flooded (also through an open watertight door) GoM= -0,37 meter, i.e. GoM<0, and then the 'Estonia' (with original GoM=1,15 m as assumed by the Commission) has no inherent stability and lists to a new equilibrium. The dynamic stability - stopping further rolling - is then small.

If the equilibrium is at say 15 degrees list, a heeling moment of say 2 500 ton-meter will roll the 'Estonia' another 20 degrees, i.e. the 'Estonia' could very well have rolled >35 degrees, when she lost her stability during severe weather the night of 28 September 1994. When the four flooded compartments are filling up (not computed in above table) it is possible that the vessel will regain some stability (more weight at the bottom) and temporarily reduce the list, but the ship is doomed to sink as all reserve buoyancy is consumed. When progressive flooding starts into other spaces (e.g. the car deck above), the list and sinking will increase rapidly.

THE 'ESTONIA' SINKS IN 30 MINUTES AFTER THE SUDDEN LISTING

Thus only 600 tons of water on deck 0 in *four* compartments would make the 'Estonia' lose its initial stability. We know that there were two 'bangs' a few minutes before 01.00 hrs and that the ship suddenly listed at 01.02 hrs. The 600 tons could have leaked into only one hull compartment starting at say 00.40 hrs, and was permitted to spread into another three compartments, when watertight doors were opened just before 01.00 hrs. Alternatively the watertight doors were already open (and could not be closed) and 600 tons leaked in and spread into four compartments.

Regardless, later you needed only about 3 000-4 000 tons of water in the hull to make it sink completely - it would take another 25-30 minutes to flow in, thus the ship would sink at about 01.32 hrs.

THE ENGINE ROOM WAS FLOODED

It is interesting to note that four out of five Swedish 'year books' describing the big events of 1994 state that the *engine room* was flooded at a very early stage of the accident. The relevant information can be read in **1.18**.

THE STARBOARD PILOT DOOR

As already stated the first inflow of water (600-1 200 tons) below the car (bulkhead) deck should have made the 'Estonia' unstable, so she would list (maximum about 20 degrees), but more water would on deck 0 (1 200-3 000 tons) would make her more stable, so she would have up-righted, while she sank. It is therefore unclear, why she actually listed >20 degrees later, when she sank. This author assumes that water also flooded the car deck superstructure from above via the ventilator opening on deck 4 aft, but it is not submerged until the list is >40 degrees.

A possibility is that water entered the superstructure via the starboard pilot door! It is submerged, when the list is >15 degrees. It has been suggested that this door was actually open just before the 'accident' (the listing) - the crew was throwing cargo overboard via this door - and when the listing occurred they never had a chance to close it. The door is about 1,5 m² large and large amounts of water could have flowed in there. The contribution of the superstructure to the residual stability would be nil.

THE STARBOARD PORT HOLES

There are other openings in the superstructure - port holes! They are much smaller - say 0.07 m² each, so if three of them were open on the starboard side you would have an opening of 0.21 m², where say 50-100 tons/minute could flow in - enough to flood the superstructure, so that the ship sank with a large heel. It is very easy to check if the port holes were open - check the port (upper) side port holes on the ROV-films. If the port side port holes are open, then you can be certain that the starboard side port holes were open, too.

The disastrous cause for the above sinking was of course the leakage of the hull in combination with open watertight doors in the bulkheads - they should not have been there in the first place 1.23.

A final note - the compartments on deck 0 were generally un-attended on the 'Estonia'. One watchman (Linde) checked only the passenger compartments on deck 0 forward every hour and another watch keeping engineer (Treu or Kadak) checked the 7-8 engine compartments amidships and aft on deck 0 - also every hour. But 600 tons can flow in very quickly and it does not appear to be a lot, when seen on the tank top. However - in this case - the author thinks that two compartments were initially flooded (and that Sillaste was called down to start bilge pumps), and as shown above, nothing should have happened, if the watertight doors were closed. But the author is convinced that the watertight doors were opened **2.1** and that water spread to four compartments. The result was a shown above - GoM<0 - and immediate list to a new equilibrium.

The author has previously demonstrated the above at two Safety at Sea conferences - at Brighton 1998 and at Glasgow 1999. At Brighton Karppinen invited himself and then told the audience that the above calculations were wrong - he was going to produce correct calculations (which was not done). At Glasgow Karppinen produced some calculations - the ship would not list, i.e. GoM could not have been negative, but again the assumptions were wrong. Actually - the above can be verified on any ferry with a modern intact/damage stability calculator/computer (e.g. Napa onboard) aboard. All ferries behave identically with three or four compartments partly flooded - they list with GoM<0 and sink.

Conclusions of this chapter:-

The Commission never verified the 'Estonia' intact and damage stability correctly - the latest calculations of Karppinen are not included in the Final Report (5), which also contains much misleading information.

It is not confirmed if and how the 'Estonia' complied with SOLAS 90.

Supplement No. 505 confirms the incompetence of the Commission. The Commission assumed that the *deckhouse* (decks 4-7), where thousands of passengers move around, is hermetically watertight (how can the passengers breath?) **3.12**. Regardless - the data of Supplement no. 505 shows - of course - that the initial stability of the 'Estonia' becomes negative, when two, three or four *hull* compartments are flooded. Then there is a sudden list to a new equilibrium. And this is what the survivors of the 'Estonia' experienced.

The Commission has not properly investigated, if the 'Estonia' were leaking.

2.18 EXPLOSION?

The ferry suffered according to Linde and others, 1.4 and 2.1, from a heavy bang at about 00.55 hrs and later there was water on deck 1 at 00.58 hrs. Water had probably leaked in on deck 0 earlier and started to spill out on deck 1 later. The author has no idea what the 'causa proxima' for the leakage was - an explosion? Or a collision?

The German group of experts believes that an explosive device **3.18** between visor and ramp contributed to, but did not cause (?), the accident. The Germans state that they have seen typical damages due to explosive devices *inside* of the ramp, on the *outside* of the ramp and elsewhere at the bow **3.10**.

Evidently an explosion *between* visor and ramp of the *superstructure* could not cause the ship to sink. It is more likely that the explosive damages were caused after the accident, when the visor was removed using explosives (!) to support the false cause of accident - defective visor locks.

Linde told DN that it was a severe bang, when he was on the car deck already at about 00.55 hrs. The Commission avoided carefully to mentioning that time and to examining the 'Estonia' for other damages than at the visor.

An explosion is however possible.

Dangerous cargo may have leaked out on the car deck and may have flowed to the scuppers. On some ferries the scuppers are connected to collection tanks port and starboard, e.g. the heeling tanks, so that, e.g. oil shall not leak out in the sea and cause pollution. The actual arrangement of the 'Estonia' is not described in the Final report (5). The collection tanks are (should be) arranged with alarms, if they fill up. It is possible that an explosive mix developed in a collection tank and exploded causing the leakage. The matter has not been investigated.

The crew may have done repair work using welding and that may have tripped an explosion in a tank with hydrocarbon gas.

They may also have been in the pool or sewage tanks compartment trying to stop a leak. The whole engine crew except some engineers survived the accident **1.42**. Survivors have testified that many of the engine crew were dressed in boiler suites, when they were rescued - were they doing repair work, when the ship sank? The Commission has not investigated that matter either.

Some assume that the starboard stabilizer foundation may have broken and caused the leakage on deck 0 **2.23**. The Commission suggested that the stabilizers were activated at 00.15 or 00.30 hrs but later examination (see below) of the wreck shows that the stabilizers are inside their pockets.

The Final report of the German expert's group **3.13** has a strange Note in its chapter 6.5.2 of **http://www.estoniaferrydisaster.net/estonia/index.html**: It is in connection with the certification of the ship and the missing collision bulkhead behind the ramp and what the Swedish NMA had done to assist the Class Bureau Veritas (B.V.) in this respect:

Note: *When the co-operation between B.V. and Sjöfartsverket in connection with the flag change procedure was discussed with* ***Ulf Beijner*** *- the head of the Sjöfartsverket Inspection office Stockholm at that time and in this capacity in charge of the ESTONIA matter - he fully agreed to the developments and sequence-of-events explained on the previous pages, but when it came to the causative connection between the missing "partial collision door" and the catastrophe, he strongly rejected this connection with reference to the* ***explosion hole in the starboard side in way of the 0-deck****, which in his opinion was the cause of the sinking.*

It seems the German experts discussed an explosion hole in the starboard side in way of the deck 0 with a Swedish NMA ship safety inspector Ulf Beijner and that Beijner thought this hole caused the sinking - but this explosion hole is never further mentioned by the Germans. And it has not been seen on any video films of the wreck or by independent divers (see below).

THE SUDDEN LIST

We know what happened at 01.02/5 hrs. There was a sudden, violent list. Passengers were thrown out of their beds, tables and chairs fell down to starboard lee, people lost balance and were thrown into walls, the soda automate slid from port to starboard, glass fell in the shops, in the casino cards and chips flow away, bottles and a bar counter fell over, etc.

It can only have been caused by sudden loss of *initial* stability caused by free water on deck 0 as shown in 2.16 and 2.17. And that water must be given time to enter the ship. Thus the leakage must have occurred earlier.

We know that Sillaste **1.3** was called up to repair something 30 minutes before the sudden list. He says it was the toilet system, but it does not ring true. It could have been fixed in the morning. Sillaste has repeatedly stated that the bilge pumps were running. Bilge pumps are only used, when a ship is leaking and sinking! We also know that many survivors heard two big 'bangs' one or two minutes before the sudden listing **2.12**. Were they explosions? Probably not. It is possible that the watertight doors under full water pressure were opened by mistake after one or two compartments were flooded **2.1** and that it caused the bangs. But what caused the leakage that flooded the hull, we do not know. And what caused the water to spread, we do not know. It was probably open watertight doors. But we know that the ship a few minutes later reached a stable position - albeit with a 15 degrees list - which enabled many passengers to escape to open deck. This can only have been caused by water in the starboard bilges on deck 0 in the hull. Leaking, sinking ships with water in the hull often lose their initial, upright stable position and reach a stable position at an angle of heel before final sinking.

GREGG BEMIS FINDS EXPLOSIVE DAMAGES

The divers of Gregg Bemis in August 2000, **1.16** and **2.24**, made a very simple hull examination and found the stabilizers inside their pockets. It was news. We had earlier been told that the fins had been outside, when the ship sank. The divers Bemis could not examine the inside of the pockets. The hull damage causing the leak is probably not big - only 0,2 m². To find it in the dark at 80 metres depth is not an easy task. If the leak is a long shell fracture that only opened up elastically by water pressure during the sinking and later closed itself, it is even more difficult to see.

We now know that the Commission for unknown reasons blamed the accident on the visor. We know that that cause is not possible. We know that the Commission manipulated the investigation and wrote a manipulated Final Report (5). And we now know that the Commission has hidden damages caused by explosives!

The divers of Gregg Bemis found a big damage in the starboard collision (front) bulkhead of the superstructure which the Commission has failed to record, examine and photograph. The damage is fully described in 3.10 and can be seen in this window.

The damage cannot have been caused by an explosive device between visor and ramp, because when the visor is closed it is, say, only 5-10 centimetres in front of the relevant bulkhead. There is no space to fit an explosive device.

The explosive device seems instead to have been positioned behind the bulkhead, i.e. inside the ship superstructure in a small space/room with the hydraulics of the visor and ramp about 6-7 meters above the waterline - at deck 3 level.

The Commission has stated that the starboard superstructure front bulkhead is only torn open at the top - in way of the focsle deck - at deck 4 level. It has stated that that damage is smaller than on the port side.

The damage in the middle of the starboard collision bulkhead at deck 3 level is apparently not connected to the damage at the top at deck 4 level. The damage at the top is about 9 meters above the waterline. The damage in the middle of the bulkhead is 6-7 meters above the waterline.

Evidently neither damage caused the *hull leakage* that sank the 'Estonia'.

There is the strong possibility (99%) that the damage in the collision bulkhead was caused under water, i.e. the visor was detached under water using explosives.

The Commission has, as repeatedly been said in this book, never advised the media or public that there is a major damage in the middle of the starboard collision bulkhead outside the ramp frame and just above the visor side lock. Karppinen in his fax to Stenström on 10 October 1994 1.14 stated that the collision bulkhead was undamaged as per figure 2.18.1 right - the starboard collision bulkhead was only torn out a little at the top. The relevant damage is just above letter A - starboard side lock - on the left side. The A area was filmed at 22.45 hrs on 9 October 1994. But strangely enough there are no video films made by the Commission of the area just above the lock - where the big hole is located. The Commission censored the hole, which is evidence of damages due to explosions on the 'Estonia'.

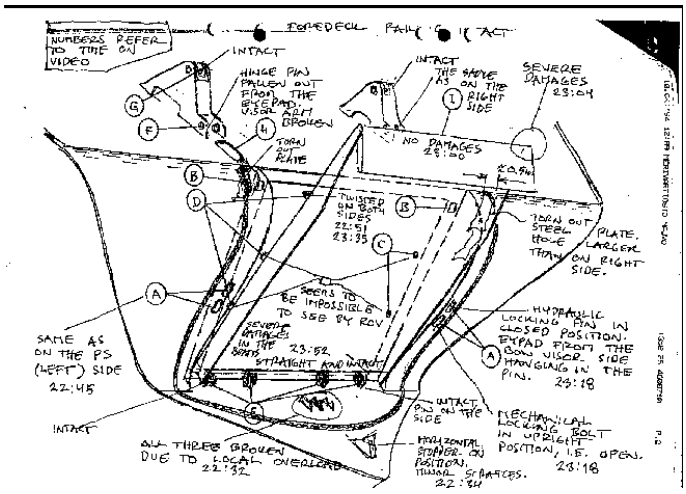


Figure 2.18.1 - Appendix to fax 10 October 1994 - Summary of damages at the bow (act I16)

The question remains when the explosions took place - did they take place after the accident under water? If so, why?

The author believes that explosive devices were used under water in a successful attempt to remove the visor from the bow (the visor was still hanging on to the bow under water) and in an unsuccessful attempt to open the ramp 4.4.

Why would anybody remove a visor from a sunk vessel? The only reason seems to be that you then could blame the accident on the lost visor! But if the visor was not lost before the accident, what caused the two bangs heard just before the sudden listing? A collision?

2.19 NO WATER ON THE CAR DECK CAUSED THE ACCIDENT

The inner bow ramp was allegedly found on the wreck superstructure partly open or, *rather,* almost closed.

After the Final report (5) was issued, it has been reported (33) that there were in fact great problems with the ramp prior the departure. The ramp was deformed - twisted - and could not be locked (which the Commission ignored to report - they concluded the contrary). The ramp was apparently leaking a little, but as it was located more than 2,5 meters above the waterline, water could only flow in, when the bow pitched into a wave every 6-7 seconds at the time prior to the accident. This water then flowed aft due to stern trim on the starboard side due to slight list and flowed out through the existing scuppers on the car deck. The water could be heard sloshing around by the passengers on deck 1 below. But it is assumed that less than 100 litres/min flowed in through this defect and that less than 3 000 litres of water ever sloshed around on the car deck due to the leaking ramp. This could never have sunk the 'Estonia'. But 3 000 litres of water makes a lot of noise, when it moves around.

The Commission had first announced in October 1994 that the ramp had only been *part* open *throughout* the whole accident. Assume then that the ramp was part open 60-70 cms at the top and 30-35 cms halfway up about 2,5 meters above the car deck. The area of the wedge shaped openings is about 0,82 m^2, where water flows in, when the car deck pitches 2,5 meters below a wave. We ignore the fact that the ramp was inside a 'tunnel', which blocked the openings. As stated the car deck is 2,5 meter over the waterline. Assume the pitch period was about 8 seconds and the relative motion about 4,5 meters. Then the two openings at the ramp sides were below water two seconds every eighth second - the remaining time the ramp was out of the water. Say that the inflow velocity was 3 meters/second. Then 4-5 m^3 would have flowed in every eighth second, i.e. the inflow was 36-37 m^3 per minute!

It would therefore have taken at least 15 minutes to fill the car deck with 600 tons, so that the ship would list 10-15 degrees! Such an event must have been detected by the crew! And the survivors reported a sudden, deep listing >30 degrees!

Then we have to assume that the ramp was suddenly pulled *fully* open - the Commission in December 1994 concluded just that and that it happened suddenly after 01.15 hrs, say 01.16 hrs as proposed in **1.17**. But if the ramp was down and fully open, the open area in the fore of the superstructure, where water came in, was then about 15 m^2. With a speed of 7 m/s, and pitching as assumed above, **1 575 m^3/minute would have flowed in**! 2 000 m^3 would have flowed in during 75 seconds.

Dr. Huss states that it would have taken 28 minutes **1.9** but compare with **Appendix 4** for more detailed calculations. With a fully open ramp in the fore of the superstructure the ship would have listed 34 degrees in 75 seconds, the windows would have broken in the deckhouse side and the ferry should have capsized like the 'Herald of Free Enterprise' in less than a minute after that. The 'Estonia' would have ended up floating upside down if 2000 tons of water had been loaded in the superstructure car deck space.

But the 'Estonia' stopped listing and returned to equilibrium at 15 degrees list! After the initial loss of stability and equilibrium at 15 degrees list everything went very slowly. And the ship was rolling 15 degrees port and starboard around the equilibrium, so that 100's of passengers and many crew could escape during 5-10 minutes, when the roll was to port and the ship was almost upright. Then you would expect that all water on the car deck simply flowed out again.

According the Commission only 1 000 tons of water suddenly entered the car deck at 01.15 hrs - the ship listed 15 degrees - and then the inflow stopped - the ramp closed itself or the ship stopped or turned.

The Commission states this, 1.9 and 1.17. But nowadays we know that the ramp was never fully open - it was not open at all! - and there was no water on the car deck that could have caused the accident 3.10. Only a little leak water was on the car deck at 01.00 hrs. And it could hardly have flowed down to deck 0 or deck 1 - and there, on deck 1, some passengers saw water on the deck! This water came from below! And it was in all probability caused by a collision and hull leakage.

2.20 WATER ON DECK 1!

Many survivors saw water on deck 1 before 01.00 hrs (33) after the bangs but before the sudden listing and that the watertight doors were open.

Deck 1 forward consists of six watertight compartments with passenger cabins without private facilities. The watertight bulkheads are about 10 meters apart. Every bulkhead has one (illegal) watertight door. The public toilets are in the second and fifth compartment, i.e. 75% of all passengers on deck 1 must pass a watertight door to visit the toilet. It is clear **1.23**) that these doors were always open in contradiction to SOLAS II-1, reg. 15.7.1.2.3 and reg. 15.9.2, but maybe the exemption regulation 15.9.3 had been applied earlier for protected coastal trading.

It is very possible that sea water flowed into the ship on deck 0 four meters below the water line, e.g. between frames nos. 85-98 and/or 98-110, i.e. the pool and the conference/sewage tank rooms, long before 01.00 hrs. The pool area was a rust trap, impossible to inspect the hull plates behind linings and decorations and and it is possible that the rusty bilge plate fractured and was pushed in, etc. But deck 0 is three meters *below* deck 1. If a compartment on deck 0 were flooded, the water would naturally rise up to deck 1 through the stairwell and then spill out on deck 1 centre corridor. Actually the water would spill out before due to rolling and then flow to the starboard side due to the list. The pool compartment had a volume of about 750 m^3. The conference compartment was slightly smaller. It may have taken 5-10 minutes to fill up these compartments to deck 1 level, longer, if the bilge pumps were running full blast.

Fig. 2.20.1 – Swimming pool on 'Estonia deck 0 recessed into double bottom

If compartments on deck 0 forward were flooded, the ship would start to trim on the bow. The little water that leaked in on the car deck at the bow ramp **2.19** would then collect inside the ramp. It could not flow aft.

The Commission has made great efforts to produce evidence that the passengers on deck 1 saw water flowing down the stairwell from the car deck (deck 2). Any water on the car deck must then pass over a 25 cms sill and through a closed fire door at the centre line of the ship. If the ship was still upright, you need plenty of water on the car deck to reach the sill - the water would collect forward, behind the ramp, and increase the bow trim. The water level would be 1-2 metres deep at the bow to be 25 cms deep at the first fire door! But any water on the car deck would heel the ship and the doors at the centre line would be far away from any water.

Very little water was in fact seen on deck 1. It must have come from below. Before the passengers on deck 1 noted some big bangs - maybe the water on deck 0 spread quickly, so the water on deck 1 flowed back again to deck 0 into several compartments - and the sudden list occurred due to free water surfaces on deck 0. The loss of stability was described in 2.17.

2.21 SINKING ON THE STERN. WATER IN THE ENGINE ROOM

One of the few correct statements of the Commission is that the ship sank with the stern first. Why did the ship sink on the stern, if it were the compartments on deck 0 forward that was leaking as per the author's assumptions? 3/E Treu has stated that the main engine room amidships was dry, when he left at **01.30** hrs (8), even if it is more probable that he had left the ECR 28 minutes earlier **1.48** and lied about everything. So we do not know, if the engine room was dry at, say 01.20 hrs.

Note that Treu was in the ECR located on the *port* side between two *watertight* bulkheads on deck 1. To check, if it were water in the engine room, Treu had to open a watertight door to look (it was probably already opened by Kadak, when he left earlier). As the ship was listing, all the water must have been on the starboard side - easy to spot. But we do not know, how Treu escaped from the ECR. In the Final report chapter 6 Treu in a few minutes at 01.25-01.30 hrs *walks (sic)* up (the list is 70 degrees) in the crew stairwell, the existence and location of which is not known. In (33) Treu escapes via the engine room and up the engine casing to the funnel. However - the easiest escape was to take the passenger stairwell from deck 1 just outside the ECR up to deck 4 and then up the main stairwell. This author believes Treu took that way (after consulting with own crews how to escape from ECRs on other ships).

If we ignore the statement of Treu that the engine rooms were dry, it is possible that the water in the sauna/pool/conference compartments on deck 0 spread aft into the engine rooms after one (or more) watertight doors were opened amidships. The ship would then trim even and list more to starboard, until deck 4 aft was under water at about 01.20 hrs. It is then likely that more water flowed down into the car deck via the *ventilators* to the car deck on deck 4 aft, i.e. water flowed into the ship from another location after 01.20 hrs. Now the sinking accelerated. This water trimmed the ship on the stern and the combination of water in five, six compartments on deck 0 below the car deck *and* water on the 2 car deck aft sank the ship. The stern thus hit bottom at about 01.32 hrs, the starboard bridge wing (deck 9) came under water at 01.35 hrs (when the clock stopped) and the bow was under water soon after **2.26**. That was the end!

2.22 MORE INCOMPETENT INVESTIGATORS. STRANGE CHANGES OF THE SOLAS RULES

Based on the statements of the Commission in October 1994 several national maritime administrations reported to the IMO that the 'Estonia' sank due to water on the car deck in the *superstructure* (even if the alleged proximate causes of accident of the Commission were defective visor lock design and manufacture).

The IMO reacted immediately. Its Secretary General, W.A. O'Neill, or the Marine Safety Committee, MSC, December 1994 appointed a special panel to *"review everything involved in ro-ro/passenger ferry operations"*, which was done in three months (sic) spring 1995.

QUICK WORK. INCOMPETENT WORK.

The panel then proposed several SOLAS rule changes to the MSC in May 1995, which were adopted by the MSC in December 1995. The expert panel evidently had no access to any *'official'* findings of the 'Estonia' accident. No real experts were permitted to attend the meetings of the 'special' panel..

The procedure was evidently not as per the IMO procedures, how the rules shall be changed in several ways. Normally a proposal, supported by *proven* facts and *good* arguments, is made to the MSC, which in turn refers the proposal to its subcommittees for formal safety analysis, FSA, etc. before the next MSC meeting. The subcommittees verify and discuss the proposal and report back to the MSC six months later. Then further discussions and verifications are made before approval by a later MSC meeting. Even after approval there is a long time before implementation, when unclear items can be sorted out.

In this case an arbitrary *'special panel'* proposed rule changes directly to the MSC, which approved them without FSA or any discussion in December 1995, two years *before* the Final report of the Commission was available for scrutiny. No discussions in sub-committees, where the technical experts were, were permitted. For a detailed review of the rule changes see **chapter 5** in (1).

None of the members of the 'special panel' knew anything about ferries, stability and ferry safety rules. And they got incorrect information from the 'Estonia' Commission:

http://www.nmsc.gov.au/Fastcraft/18_concl.pdf

"IMO started its work in December 1994, but had little concrete information on the Estonia casualty to guide its work. The preliminary report of the Joint Accident Investigation Commission (JAIC) of Estonia, Finland and Sweden1 was not available until April 1995, by which time many of the Panel's recommendations has been finalised and were in the process of being submitted to the MSC. The final report was not published until December 1997 - five months after some of the new SOLAS regulations had entered into force.

Some years later the report of the JAIC has been held to be self-contradictory and alleged correspondence with one of the commissioners is quoted as supporting a sequence of events that is inconsistent with the information that was available to the IMO."

RULE CHANGES WITHOUT FOUNDATION

All the rule changes were based on unproven *'information'* from the Commission. Most of this *'information'* has since been proven to be disinformation. The IMO never verified the statements of the Commission! Many of the rule changes are plainly stupid: only two examples here: the walls of escape routes (corridors with passenger cabins) shall be constructed so that you can walk on them! The ship is assumed to be listing 90 degrees - the wall is the floor!

But no ship is stable with a 90 degrees list!

Nobody will ever walk on a corridor wall after an accident. So why build a corridor wall like that? Another example: all roro-passenger ferries shall have a fast rescue boat that can be launched and recovered in severe weather. The only result so far, year 2001, is that seamen have been killed and injured when trying to launch and recover the rescue boat is severe weather and that the IMO has recommended that the rule is not applied.

The IMO distorted views from 1997 on the 'Estonia' accident can be seen on the **IMO web page** and document page 17 onwards. The IMO believes that *"the 'Estonia' capsized* (sic) *in a severe storm in the north Baltic Sea and sank with the loss of more than 900 lives."* The IMO still doesn't know that the 'Estonia' never capsized at all, but sank slowly during 30 minutes after a sudden listing and re-established stability at less heel. 852 dead is the official number of losses. The 'Estonia' never capsized.

The IMO states 1997 that *"Preliminary inquiries showed that the outer bow door of the ship had been ripped off during the storm, allowing water to accumulate on the car deck to such an extent that the ship quickly listed and then rolled over and sank ... to the bottom* ***several hundred meters*** (sic) *below"*.

The IMO never bothered sooner or later to verify these *'preliminary'* inquiries. It would have been very easy 1994 to verify that the 'Estonia' only sank at 70-80 meters depth (look at a chart) but it would also have been very simple to have refuted the suggestion that *'allowing water to accumulate on the car deck'* inside a *superstructure* would have caused sinking.

This event is the biggest mistake of the IMO in its history. And it is quietly covered up by the IMO Secretary General William O'Neill.

THE IMO DID NOT CALCULATE THE STABILITY WITH WATER IN THE SUPERSTRUCTURE

Unfortunately neither the IMO *'special panel'* 1995 under Danish chairmanship (Funder) nor the MSC made a simple stability calculation of a roro-passenger ferry floating on its intact *hull* with water loaded on the car deck in the *superstructure* above the hull to establish that the ship then turns turtle in a very short time - and floats upside down - on the hull. The IMO experts - to review the Estonia information and *'everything involved in ro-ro/passenger ferry operations'* and propose SOLAS amendments - were as incompetent as the Commission.

It is quite embarrassing that the IMO (Mr Funder of the Danish Maritime administration was in charge of the 'special panel') never checked what would happen with water on the 'Estonia' car deck in the superstructure or *how* the 'Estonia' would have sunk due to the alleged cause of the Commission without turning upside down and floating upside down *before* any sinking could have taken place. Funder was later given a medal by the IMO for his work - personality of the year. What a stupid circus.

The IMO *'experts'* did not verify anything - they changed SOLAS rules without listening to any real experts at all. A real scandal and tragedy in the history of the IMO.

Interestingly the IMO/MSC refused to accept the proposal of the expert panel about a 'no-water-on-the-car-deck-in the superstructure' rule as international standard for ferries type the 'Estonia'. Actually the majority of the IMO members were fed up with the comedy and stopped the most stupid proposal.

Only some Northwest European countries accepted this so called **Stockholm agreement** (Resolution 14) by bilateral agreements. No intelligent discussion amongst stability experts was permitted - no tests were done to verify, if the rules were realistic. According to the Greek professor of naval architecture A. Papanikolaou, Athens, the scientific base of the Stockholm agreement is questionable (stated year1999) to say the least. Resolution 14 predicts theoretical water inflows on the bulkhead deck of a *superstructure* through a hole in the side (sic), while the ferry is rolling (sic) helplessly in very *severe* weather (*after a collision* (sic) and that *two compartments in the hull below the car deck are flooded*). This 'theory' and the assumptions had been made with the same methods of the 'Estonia' scientific reports, i.e. they could not be questioned or discussed and were not based on any scientific logic. The theoretical rules suggest that large amounts of water accumulate on the roro-deck *above* water.

The alternative was luckily model tests (with two compartments flooded due to collision (sic)) in *severe* weather. Model tests have later shown that much less water flows in than predicted by the theoretical rules, so you hardly have to make any modifications at all to existing ferries based on model tests.

WATER ON THE CAR DECK DOES NOT SINK THE SHIP, EVEN IF IT IS DAMAGED

What happens when a damaged ferry (two compartments are flooded!) rolls in *severe* weather? First of all - the ferry is still stable as per SOLAS 60 or 90 damage stability criteria and the bulkhead deck is above water. Initially there is no water on the car deck , but the ship is assumed to roll in the severe weather and it is alleged that water flows in, when the bulkhead deck *due to roll* is below water for a short time. Say that the opening is in the side amidships - water flows in when the opening is under water (actually it flows up through the hole in the bulkhead deck from the flooded compartment below) - and when the ship rolls to the other side, the water end up on the other side (unless it flows out through the hole in the damaged deck). The ship then evidently lists on the undamaged side (very good) and it is not so easy to roll back and submerge the deck on the damaged side again.

Note that the water on the car deck is just extra weight - cargo - *loaded* on the car deck of the damaged but floating ship below its centre of gravity. *The ferry is still floating on the undamaged compartments of the hull as per the SOLAS damage criteria and there is no risk of sinking - the only risk is capsizing and floating upside down*. If the ferry rolls back again to the damaged side, the water on the bulkhead deck of course flows over to that side and blocks the opening, so that no more water can flow in.

Say that the opening is at one of the ends. The ship then trims on that end and, when it rolls, water can of course flow in on top of the bulkhead deck. But due to the trim the water cannot accumulate on the bulkhead deck - it is sloping towards the opening and flows out. Etc., etc. Many model tanks have observed the above, which of course demonstrates that the theoretical rules of the Stockholm agreement are false, but they do not complain and are silent. All northern European maritime administrations have been informed about the same observed results - and they are also silent. Nobody wants the state that the Stockholm agreement is incorrect and does not contribute to safety at sea.

NORWAY IN THE LEAD

Norway adopted Resolution 14 (the Stockholm agreement) very fast and thought that model tests would give the same results. Norwegian owners were then forced to fit watertight doors on the car decks of all their ferries, even if their contribution to safety is nil. The scandal has been covered up by common silence.

The requirements of the Stockholm agreement do not contribute to better safety at sea, 3.21 and **1.37**. But it was a good publicity stunt - everybody in Northern Europe initially praised the Stockholm agreement and now they are quiet. Large amounts of money have been wasted.

All rules and regulations about safety at sea are based on earlier accident investigations starting with Plimsoll and the Titanic, Torrey Canyon, etc. You cannot develop better and more correct rules without proper accident investigations and damage analysis as per IMO resolutions A.440 (XI), A.637 (16) and A.849 (20). Sweden, Finland and Estonia ignored completely these resolutions and produced a false accident investigation report instead.

The IMO SOLAS rule changes 1995 as a result of the 'Estonia' accident 1994 were not done as per the regular procedures of the IMO. The IMO accepted unverified statements by the Commission without evidence. No FSA was done to substantiate the new rules. Most of the new rules do not contribute to safety. And nobody at the IMO dares to investigate the matter today - 2001.

Actually - most staff of the IMO seems to be happy to cover up the 'Estonia' accident. Quite sad.

2.23 SECRET MODIFICATION WORKS IN JANUARY 1994!

Between the 10 and 14 January 1994 the 'Estonia' was taken out of traffic and put in dry-dock at Nantali, Finland, when i.a. a pair of folding stabilizer fins were installed. The stabilizers were manufactured by Brown Brothers & Co Ltd, at Edinburgh, Scotland. One stabilizer unit is shown in the picture right. The fin folds out aft, i.e. the forward of the ship is to the left in the picture. The length of the fin was about 4,0-4,5 metres and the weight of one unit was about 15-25 tons. In order to install the stabilizers two big openings were cut in the bilge strakes of the ship hull. Actually - the openings cut in the bilge plate on each side was about 6,0-6,5 meters long and 1,5-2,0 meters high and a lot of internal structure must have been removed. Then the prefabricated boxes with the stabilizers were welded in place to internal brackets and reinforcements.

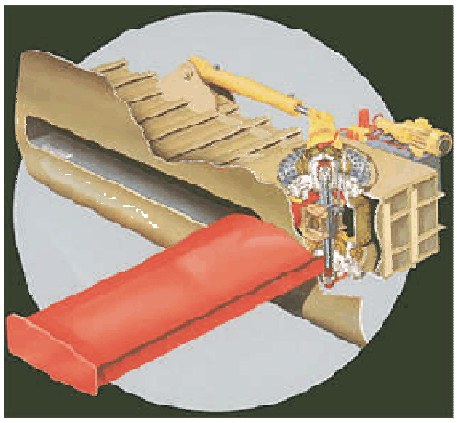


Figure 2.23.1

Unfortunately the stabilizers are not shown on the drawings of the ship in the Final Report (5). There is no information, if the drawings of the new installation, its reinforcements and the installation work were approved and supervised by the administrations and the class. If the work was done by *qualified* welders and platers under proper conditions is also unclear. This is quite amazing.

Less than nine months before the accident the 'Estonia' was modified in record time during *four* days in the middle of the darkest and coldest winter in an open dry-dock, and the matter is not described in any detail in the Final Report (5). The 'Erika' accident 12 December 1999 took place after major hull steel repairs had taken place and in that case the accident investigators blamed the accident on deficient repair works - in dry-dock! They actually stated that all old corroded steel was not removed and that the new steel was incorrectly welded to old steel.

Thus in January 1994 big holes were cut in the highest stressed parts of the underwater body of the 'Estonia', but the Commission never investigated, if the job was properly done.

Did the Class (BV) in fact approve the work? Where are the reports? Did they in fact weld the new insert plate with the stabilizer box to good, old steel? By not even mentioning the matter interested parties become curious.

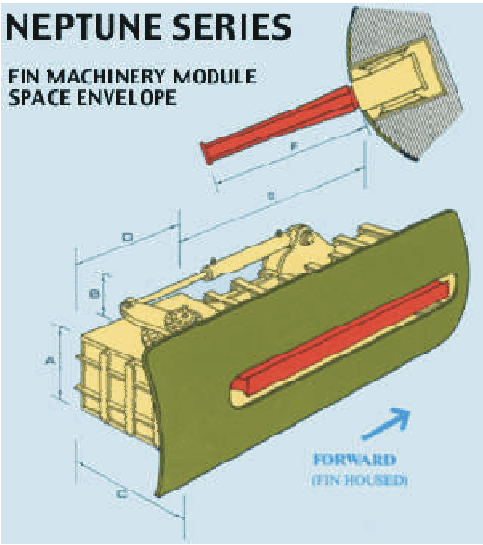


Figure 2.23.2

NO ACCESS TO THE STABILIZERS - EXCEPT VIA A WATERTIGHT DOOR!

The stabilizers were installed inside a watertight compartment on deck 0 forward of the generator room. The only access to this watertight compartment was via a watertight door in the aft bulkhead or two watertight doors in the forward bulkhead. There was no direct access from deck 1 or 2. If there were a leakage inside the stabilizer compartment, you could only notice it by opening a watertight door. This arrangement was incorrect and dangerous. The reason for the new stabilizers was that the 'Estonia' had changed trade 1993 - from protected coastal traffic between Sweden and Finland to trade on the open Baltic. In the former trade fin stabilizers were not required. On the open Baltic the 'Estonia' was rolling and the passengers became seasick.

Thus Estline decided to install the new stabilizers. The Final Report (5) does not contain any information, what was actually done at the last shipyard visit 1994. However, it is clear that the installation was not ready on departure 14 January 1994. Electrical and hydraulic works of the stabilizers were completed at sea. The German group of experts has tried to find out what happened at Nantali in January 1994. It seems that a fire broke out in way of the stabilizer installation works, which delayed the work. The work was later completed at sea, e.g. the electrical and hydraulic works. The Estline master Erich Moik has told the author that he believes the accident was caused by a leakage in way of the stabilizers. At the night of the accident the stabilizers were activated - folded out - at 00.15-00.30 hrs. Soon after Sillaste **1.3** was called down to solve some *'problems'*. From 21.2.3 of the German Final report:

> *"It is not stated what was done to rectify the problem, but Margus Treu told the English journalist Phillip Wearne in May 1998 that there had been a "stabiliser alarm" at about 00.30 hours, when the bridge tried to activate the stabilisers. It concerned the starboard fin, which did not move out and it took him and Sillaste ca. 5 minutes to activate this fin.*
>
> *Andi Meister told Phillip Wearne subsequently that Henrik Sillaste did not confirm the above and has refused to talk about it. Sillaste told the journalist, however, that there had been major problems with the starboard stabiliser during the installation, when the vessel had been in dry-dock at Naantali the last time, among other things; there had been a fire. The damage caused had to be repaired during the already very short time available and the vessel sailed as planned, however,* ***without*** *everything in way of the starboard stabiliser installation being carried out in accordance with good workmanship as it should have been.*
>
> *In this connection two remarks have to be made:*
>
> *1.) At the time of the casualty DIANA II was in the process of being taken over by N&T/ESCO in Rostock. Some Estonian crew members were already on board, also Captain Erich Moik as well as the representative of the Turku Repair Yard responsible for the installation of the stabilisers on the ESTONIA. This man had become very stressed upon hearing about the ESTONIA casualty, but then became very relaxed, when it was reported that the visor had broken off* **1.46**.
>
> *2.) One of the divers spoke to a member of SEA and indicated that it is known why the casualty really happened, viz. something relevant had been only "spot welded" instead of fully welded and the element could thus not withstand the forces acting on it.*
>
> *During the analysis of the statements of the survivors from deck 1 the possibility that the starboard stabiliser fin broke off and tore open the empty starboard heeling tank and/or the auxiliary engine room compartment will have to be borne in mind, in particular since* ***recent reports from Tallinn state that there had been a lot of water in the engine room,*** *which they had been unable to pump out.*

It is thus possible that, e.g. the starboard stabilizer foundation broke and ripped open the bilge strake a short distance - say 2 metres - and a 100 mm wide opening developed. Then about 100 m^3/min of water could easily flow in! As the stabilizer box was installed just aft of the heeling tank, it is possible that the shell damage extended into the empty heeling tank, which thus was flooded. Result? Sudden listing!

It is possible that corrosion in the bilge strake was detected at Nantali extending forward of the stabilizer works - into the heeling tank and the sauna/pool compartment. To repair 20-30 metres of bilge strake - in addition to the stabilizer works - would have delayed the repairs by another week (and that Estline had to cancel 7-8 trips). It may be that this corrosion was made a secret condition of class - to be repaired next time (or kept under supervision)? There are no class records in the Final report (5) about the works in February 1994. The possibility of a leak in the sauna/pool compartment bilge strake is described in **2.3**.

In conclusion - the 'Estonia' was subject to big underwater hull modifications work shortly before the accident, exactly like the 'Erika' 1999, but the Commission did not bother to investigate the matter. In addition - the hull modifications work was done inside a watertight compartment that could not be inspected without opening watertight doors. In retrospect we know that the Commission had already decided - or been told - to blame the accident 1994 on visor *'design faults'*, which was the reason not to investigate any other possible cause. Evidently the Commission had no idea on 4 October 1994, when it first announced the false cause of accident,

that the 'Estonia' had been in dry-dock 9 months earlier for major surgery in a watertight compartment that could not be accessed properly.

2.24 MAKE A NEW INVESTIGATION ACCORDING TO THE IMO RULES. THE DIVING OF GREGG BEMIS AUGUST 2000

The Final report (5) is not only wrong from A to Z, it is a well written document part of a cleverly planned disinformation program. A passenger ship evidently does not sink in less than one hour or a half hour due to water on the car deck in the *superstructure*. It capsizes in one minute as the 'Herald of Free Enterprise' and floats upside down on the watertight hull as the 'Jan Heweliusz'.

It is very difficult to sink a leaking passenger ship with its built in intact watertight subdivision in the hull.

All leaking passenger ships sink, if the watertight doors are open and the bilge pump system do not work in the hull.

It is self-evident. But it was not investigated by the Commission.

The Commission spent over three years to *'investigate'* only one cause of accident - the visor - and to plant misleading information with the media about it.

None of the *'scientific'* reports supporting that cause, done by various institutions like the Royal Institute of Technology, Stockholm, **SSPA Marine AB**, Gothenburg, or VTT, Helsinki, can be re-done by independent scientists obtaining the same result.

FALSE MODEL TESTS

The results of the SSPA Marine AB model tests are false, and the result is allegedly backed up similarly false 'simulations' of the VTT, Helsinki, as shown elsewhere in this book. It is very serious. These institutions have produced numerous false, scientific reports to hide the true behaviour of the 'Estonia' with water in the superstructure. But even worse - the Final report lies about the most basic facts.

THE 'ESTONIA' LACKED LIFESAVING EQUIPMENT AND A CORRECT EVACUATION PLAN

Elderly passengers had no chance at evacuation and abandoning of the ship. That more than 50% of the persons aboard had *to jump overboard and swim to life rafts or ashore* is illegal and immoral. But the Commission managed to cover up these facts. Not a word about these evident defects in the Final report (5).

It should today be clear to anybody today that the visor was detached from the ship *after* the accident - the listing - and that the ramp protecting the *superstructure* was never open at all.

However, the Commission 1994 boldly blamed the whole accident on the *visor* - in particular badly designed and manufactured visor locks (sic) made 1980. The Commission was so certain in its manipulations, that it was not until 14 months after the accident **1.22**, when it officially contacted the shipyard about how the locks had been made, designed and manufactured (informal contacts had been established earlier). The replies from the yard (17), (18) from 1996 were then made secret by the Swedes and were not included in the Final Report (5) in December 1997 (the German letters did not become public until 1998 - three months *after* the publication of the Final Report). But strangely enough the Germans did not protest too loudly about it in their own Final report **3.18**.

The German yard arranged two exhibitions about its findings at Stockholm 1997. There was a fair attendance - a couple of thousands people - but the media did not report a lot about it. The Commission never visited the exhibitions.

Survivors and relatives to victims have evidently not got a satisfactory explanation of the accident. Most associations of relatives have bitterly complained but were and still are ignored by the authorities. The Swedish government is 100% responsible for this. All statements from various government agencies, that the Final Report not only is complete, but that the suggested sequence of events is correct and that the cause of accident is realistic, have no foundation. There is no evidence for any alleged official facts. Again victims and witnesses of casualties at sea are not given a fair treatment.

The Swedish daily Dagens Nyheter, in its editorial 16 November 1998 with the heading *'Saving lives is most important'*, emphasised that new disasters can be avoided and that serious analysis and discussions are important to reduce the risks for new accidents. The editorial was written for the ITF/NTF conference on 18 November 1998, where the Commission for the first time agreed to reply to any questions about its investigations **2.7**.

But the Commission would or could not clarify anything. Ann-Louise Eksborg, the SHK boss, later announced that she had no intention to discuss the Final Report with anybody **3.19**. The Swedish government gave 1998-2001 similar information. The best strategy when you have started a disinformation campaign is silence - more lies only complicate matters.

SAVING LIVES IS NOT THE MOST IMPORTANT

It is probably more important to save the careers of the incompetent investigators and the persons who instructed or assisted the investigators to cover up the crime. It is quite sad actually.

The Swedish Analysis group **1.36** surprisingly recommended 1998 that all victims should be salvaged and that a new examination of the wreck should be done. It was probably not a serious recommendation. It was part of the Swedish government's tactic to confuse the relatives, and the Swedish government naturally later ignored the recommendation. And neither salvage of victims nor an examination of the wreck was and is necessary to clarify the 'Estonia' accident to find answers to all outstanding questions. It is only to appoint a new Commission as per the IMO resolution A.849 (20) and ask it to review all new facts that have been presented, which are not examined or mentioned in the Final Report (5). Not one essential alleged fact in the Final report is true. The Swedish government has not since 1997 once informed the public that an agreed procedure already exists to resolve the outstanding questions of safety at sea after the 'Estonia' disaster. The public need facts and clear analysis. But Sweden, Finland and Estonia do not follow the international resolutions and laws for marine accident investigations. The Swedish government - Mona Sahlin in particular - always tries to show empathy with the relatives - yes, the outstanding questions must be clarified, but the Finnish and Estonian governments do not want to appoint a new investigation Commission. So what?

· We cannot compromise about safety at sea, as all of us want the highest safety at sea.

· Means for improved safety at sea shall be realistic, safe and economical.

· Extreme interests of particular groups do not help anybody and do not contribute to safety at sea.

The work of the Commission evidently supported the *extreme* interests of particular groups *not* interested in the Truth about the accident or safety at sea. The Commission must have known that they just played the music of the disinformation campaign.

It is not necessary to make a new dive examination to investigate the new facts of the accident. Just examine the facts! Until then the wreck will attract all sorts of attention to find out what actually happened.

THE GREGG BEMIS DIVE EXPEDITION

The Gregg Bemis dive expedition in August 2000 was one such attempt. The films then made clearly show that the Commission did not present all facts

The expedition started from Cuxhafen in Germany with participants from several countries, which had not signed the law preventing diving on the 'Estonia' 1.19. After having passed the Kiel Canal they stopped at Kiel to embark three German journalists. Swedish authorities had been invited to participate as observers but the Swedish government never replied. The expedition was supervised by Swedish and Finnish coastguards (airplanes and ships) and the Estonian navy. A number of boats with media representatives supervised both the Bemis ship and the coastguard boats.

The Swedish and Finnish coastguard boats contravened international sea traffic rules to prevent Bemis to anchor on top of the wreck, but as the media followed the drama, the attempt failed. The Swedish and Finnish coastguard then visited the Bemis ship and announced that diving was against their law. They also wanted to know the names of the persons aboard. The Master on the Bemis ship only replied that the unilateral law did not concern anybody aboard. The first stage of the expedition was to check the wreck with sonar. Then diving started. A buoy was positioned over the bow of the wreck and was secured to the top of damaged port collision bulkhead, 1.16 and 3.10. This line was then used for getting up and down. Two diving teams then filmed various parts of the wreck.

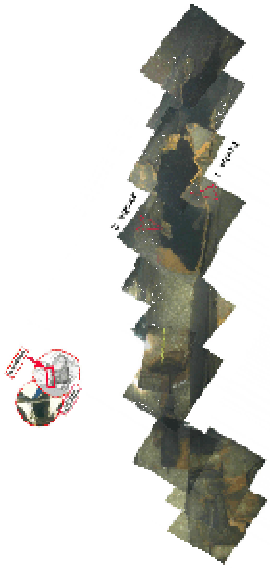


Figure 2.24.1 - The big damage in the superstructure

The most interesting part of the examination is of course the big opening in the starboard collision bulkhead, which is discussed in other chapters of this book and which is shown to the right. The damage opening is just above the visor side lock two meters below the top of the bulkhead. The Commission denies that the damage exists.

The last day they also filmed the wreck by an ROV, when a sand heap was noticed on the superstructure side, which might have hidden an opening in the starboard superstructure side (>2 meters above the waterline). This sand heap might in fact hide the starboard pilot door leading into the car deck space 1.16.

When the ROV filmed the sea floor it collided with an object covered by a thin layer of mud. The object was the body a dead man - no doubt about it.

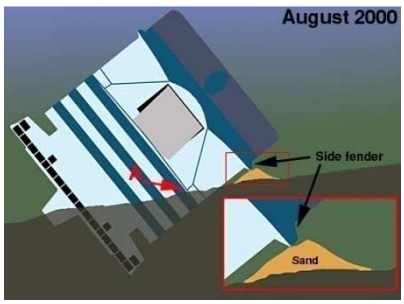


Figure 2.24.2 - Sand heap at the side

It must be pointed out that the Bemis expedition lacked facilities to examine the whole wreck or *hull* by divers in detail for damages. They could only examine a few locations and a very small area at every location. The effective dive time per team was only 20 minutes and a lot of time was used just to have a look around. Unfortunately the divers did not examine particularly interesting areas, e.g. the deck beam at fr. 159 on the fore castle deck (the Commission suggests that the beam is cut off by the visor hydraulics, but it is not possible) or the starboard side just above the bilge, i.w.o. the sauna/pool compartment and the heeling tank (where this author believes there is a long fracture).

Both these areas are *not* shown on the edited films made by the Commission and available to the public. There are other areas in the fore ship structure, where the Germans have spotted damages apparently due to 'explosives', which were not examined by the Bemis divers. One Bemis diver however managed to get inside the ramp and have a look. As the ship was resting on the side, the port bulkhead inside the ramp was like a ceiling above the diver. It was thus easy to inspect that bulkhead. It appeared to be intact, i.e. *there were no*

damages caused by, e.g. explosive devices as suggested by the Germans. The starboard bulkhead inside the ramp was like a floor and it was covered by a layer of silt and could not be examined in detail. Strangely enough various objects were resting on the starboard bulkhead. How these objects could have ended up there is not known.

TEST PIECES FROM THE EXPLOSIVE DAMAGE

Divers went down to cut off two test pieces from the edges of the opening found in the starboard collision bulkhead: **3.10** for the exact position of these pieces. Four different material test laboratories have later been asked to analyse the pieces - if the material e.g. has been subject to an explosion. Various laboratory results have been published. Interestingly enough the above pictures of the damage in the forward bulkhead has *never* been shown in Swedish and Estonian TV or media. The opinion of this author is simple as usual. The opening cannot have been torn open by e.g. the visor lifting hydraulics. Then the edges of the hole should consist of bent steel plate.

Figure 2.24.3 Diver prepares cutting off test pieces from the damage

Now there is an opening with some edges cut off and some bent outwards and *a lot of material missing*. It is probable that an explosive device fitted on the *inside* of the collision bulkhead caused the damage, probably in an attempt to remove the visor *under* water!

It is an established fact that the damage opening in the collision bulkhead, where the test pieces were cut out, has never been announced or explained by the Commission to the media and public. *The Commission made great efforts to hide the opening during the investigation* - films taken on 2 and 9 October and 2-4 December 1994 have been edited not to show the relevant area. The Commission has stated that the area is intact 1.4. However - the Commission overlooked one thing - the visor itself! Figure 8.20 in the Final Report shows the aft starboard bulkhead of the visor, which rested about 5-10 centimetres in front of the collision bulkhead. The picture is taken just after the visor was salvaged. You can see that the white paint is full of black soot *below* the side lock and that the plate is slightly buckled. Thus - the opening in the collision bulkhead is *not in line* with the buckled area with soot below the side lock on the visor, when the visor is closed. If the two damages - one in the collision bulkhead and the other on the visor itself - are connected, the visor must have shifted place, i.e. the visor must have shifted upwards when e.g. the hole in the bulkhead was blown open and caused the soot and the buckle in the visor. It is possible that this shifting of the visor had occurred under water, when the ship sank and that the visor was in fact attached to the wreck. There are many indications that the visor was detached from the wreck under water.

However - the only result in Sweden of the Bemis dive expedition was that Mr. Bemis himself and a German journalist were arrested in their absence for alleged crimes of graveyard peace. But as one of the Czech divers told the author, when he first saw the above picture in January 2001:

> *"Bigamy is evidently forbidden in my country, but we do not arrest Muslim visitors with several wives coming on a visit. To dive on the 'Estonia' is not forbidden according to Czech laws and to threaten Czech citizens with prison in Sweden is disturbing. It reminds a lot about the condition in the ex-CSSR, where the people with power manipulated the media and public with unfair laws 1945-1990".*

Germany has in January 2001 definitively refused Swedish pressure to make the graveyard peace law also German law. One reason is that the 'Estonia' accident is part of an alleged murder investigation in Germany. That the Czech Republic is going to adopt the graveyard peace law is unlikely.

It must be repeated. The Bemis films were shown in Swedish TV-4 during the autumn 2000 and a number of so called *'experts'* were invited to discuss the so called *'hole'* in the starboard side - it did not exist. But the picture of the big hole in the forward collision bulkhead was not shown on TV or discussed by the experts in spite of being clearly visible on all films (in February 2001 by the author). The author finds this very disturbing.

The German journalist is Ms Jutta Rabe. She presents her findings at **http://www.balticstorm.com** and in a **book** published 2002.

2.25 WHERE AND WHEN DID THE 'ESTONIA' TURN? RECONSTRUCTION OF THE SEQUENCE OF ACCIDENT

The figure in **2.26** was an attempt made by the author 1996-1999 to reconstruct the last 60 minutes of the 'Estonia'. One assumption was that the original course was 287° at 00.50 hrs and that the speed was 15 knots and that the 'Estonia' then actually was under way to Söderarm in Sweden. Information, which has been published later, suggests that the ferry had another course Southwest (towards Sandhamn?) before the accident and/or manoeuvred around the accident position, but you cannot reconstruct the accident on such statements.

LAST ROUTE NOT ESTABLISHED

The Commission never correctly established the last route of the 'Estonia'. One reason was that the other crew (there were two crews working 14 days each) of the 'Estonia' has never been interviewed by the investigators. And strangely enough the members of the other crew have never commented on the findings of the Commission. Even stranger - the crews on all the other ferries on the virtually similar route Helsinki-Stockholm have kept silent about the 'Estonia' route.

The 'Estonia' had sailed about 300 times between Tallinn-Stockholm, old logbooks were of course available ashore, but the Commission never studied these. Who has ever heard about an accident commission not studying old log books and questioning the relief crew about the normal route taken? The old log books would also have shown that certain equipment was not working and that regular safety exercises had never taken place, etc.

The normal route seems in fact to have been crossing the Bay of Finland after leaving Tallinn and then following the other Swedish bound ferries in the starboard fairway south of the Finnish coast.

The Commission suggested instead in the Final Report (5) that the 'Estonia' sailed course 262° along the Estonian coast and then at 00.15 or 00.25-00.30 hrs changed course, only once, to 287° at a position N59°20', E22°00' towards Söderarm. There is no evidence in (5) for any of this. And the information does not tally with, e.g. the information given by the mate and master of the 'Mariella' shown in **1.9** and footnote no. 25 in **1.4**.

SUDDEN LIST AT 01.02 HRS

When the 'Estonia' got a sudden list at 01.02-01.05 hrs due to 300-600 tons of sea water in three or four watertight compartments on deck 0 (the inner bottom) (not at 01.15 hrs as suggested by the Commission), and let us assume that the speed then was 15 knots, it is reasonable to assume that the crew on the bridge initiated a turn to port, South, into the wind, even if there is no evidence for that either (probably the crew was aware of the leakage before 01.00 hrs and had slowed down). That was the last controlled action. Soon after the port rudder and propeller were above the water,[106] the main engines stopped and the ship was left to the powers of nature, i.e. it stopped and drifted with wind and current while sinking - probably at **01.32-01.36** hrs. Mayday was sent at **01.24-01.30** hrs, when the ship must have been close to the sinking/wreck position **1.14**. At 0**1.26** hrs the 'Mariella' heard the Mayday. The 'Mariella' was then in N59.30,4, E 21.48,7, i.e. only 8.4 miles from the 'as found' wreck position, and saw the 'Estonia' both on three radars and visually - the lights of 'Estonia' were still on. According to the Master of the 'Mariella' the 'Estonia' was almost stopped in the water - ten minutes later - at **01.36** hrs - she had disappeared (sunk). The position of the 'Estonia' (see the figure in 2.26) at **01.26-01.30** hrs cannot be correct. The 'Mariella' arrived at the wreck position already at **01.58** hrs noticing rafts and lifeboats in the water.

THE POSITION AT 01.30 HRS

Calculating backwards the 'Estonia' should have been only about 150 meters from the wreck 'as found' position already at **01.30** hrs, when the Mayday was interrupted and not 1 700 meters, which the Commission proposes

in figure 13.2 in (5) 1.9, while slowly drifting sideways with maximum 0,5 knots northeast (and not >2,2 knots as suggested by the Commission). The visor could therefore not have been lost 1 560 meters west.

VISOR ATTACHED TO THE SHIP

It is likely that the announced 'official' position of the visor is false and that the visor was attached to the ship, when it sank. The Commission evidently could not state that the visor was found at the wreck: their whole story about the accident would then collapse.

THE PORT TURN 2 500 METERS WEST OF THE WRECK

Then there are the strange statements of *'fragments'* found on 5 October 1994, which should have confirmed the trajectory including the turn 2 500 meters west of the wreck 1.14, but as the Final Report does not report the positions of these *'fragments'*, they are not considered. The fragments were probably also pure disinformation (to support a false visor position?)

Assuming that the visor actually fell off at the official visor position, but *after* the listing occurred, the course could at that time have been to southeast (135°), the speed had dropped to 5-6 knots and the time was about **01.16** hrs. Then the 'Estonia' continued 1 420 meters east during 14 minutes, when she stopped and started drifting, until she sank at the 'as found' position announced in December 1994. Very little water, say 1 200-1 800 tons, had actually leaked into the *hull* until then at about **01.20** hrs, when deck 4 aft (the *deck house*) came under water (the angle of list was >40 degrees). Until then the 'Estonia' was in a 'fairly light' condition. But then water started to flow into the *deckhouse* and down into the *superstructure* and its car deck space through the *ventilators* on open deck 4 aft, the weight increased quickly and naturally the ship slowed down and sank quickly - the stern hit bottom at **01.32** hrs, the bow sank below water at **01.36** hrs. The Commission stated in December 1997, e.g. that the 'Estonia' should have drifted filled with >20 000 tons of water >1 700 meters with an average speed of > 2.2 knots the last 20 minutes **01.35-01.55** hrs. As already shown in 1.9**, it is not possible.**

The 'Mariella' turned at once - **01.30** hrs - towards the 'Estonia' - new course 208° - but lost the 'Estonia' rather quickly on its three radars - at **01.36** hrs - and arrived at 01.58 hrs at the wreck position, where they found life rafts 1.20. The 'Silja Europa' arrived 50 minutes later, very carefully, as its master, captain Esa Mäkelä assumed that he was going to find the 'Estonia' floating upside down after having capsized with water on the car deck in the *superstructure*.

FALSE ALARM

Captain Erik Nordlund on the 'Anette' was 35 miles west of the 'Estonia', when the Mayday was heard at **01.20** hrs (sic) on VHF channel 16. The 'Anette' plotted the 'Estonia' in position N59°23, E21°42 at that time, i.e. 0.5 mile east (!) of the 'as found' wreck position. After the Mayday the 'Anette' contacted the 'Silja Europa' per VHF. The 'Silja Europa' asked the 'Anette' to be stand-by on Channel 16. Then there was no more communications on Channel 16 and the 'Anette' continued the voyage to Sweden assuming it was a false alarm.

According chapter 8.10 in the Final Report (5) the 'Estonia' lifeboats, rafts and life jackets drifted in an eastsoutheasterly direction towards the Estonian coast, where they were later picked up - probably a few days after the accident. In the above reconstruction from 1996-1999 it was assumed that the lifeboats, etc drifted to northeast for some hours.

NO. 1 LIFEBOAT

There is a strange exception and that is the no. 1 lifeboat - the Man-Over-Board-boat, i.e. the forward most starboard lifeboat just outside the bridge. According to the Final Report (5) it was found drifting outside Hanko on the Finnish coast. It means that that boat should have drifted in a 55 degrees more northerly course than

the other boats, rafts, etc. In October 1999 the Finnish delegation of the Commission told the author that it was the Finnish vessel 'Hylje' that found the MOB-boat at 14.30 hrs on 29 September 1994 in position N59°16.40', E22°52.12', i.e. 35 miles almost straight east of the *'as found'* wreck position. The 'Hylje' did not see any other floating objects from the 'Estonia' (all other floating objects from the 'Estonia' ended up on the Estonian coast). The MOB-boat thus should thus have drifted with only 1 knot to have ended up, where it was found, while the 'Estonia' itself, according to the Commission, had drifted with >2,2 knots the last 20 minutes (which is of course false). In spite of the severe weather at the time the 'Hylje' stopped and picked up the boat. The boat was undamaged. The fuel tank was half full! It is thus possible that it was launched before or after the sudden list at 01.02 hrs and that its engine was used for several hours, because you would have expected that the fuel tank was full, when the MOB was hanging in its davits. The Commission has, of course, never commented upon the fact that the fuel tank was half full.

THE VISOR POSITION IS FALSE

The author believes today - 2001 - that the first official visor position *'a mile west of the wreck'* is false. The visor had probably been found already 30 September to 4 October, but the Commission did not announce the finding of the visor until 18 October 1994 - at the false position - to support the likewise false statement that the visor had fallen off *before* the sudden list and caused the whole casualty. The reason for the false information was to hide the true cause of accident - hull leakage due to a collision.

Stenström thought he could copy the 'Herald of Free Enterprise' accident, which he had not fully understood. The visor was probably attached to the 'Estonia', when she sank. That was why the salvage operation of the visor was kept top secret by the Swedish navy and that the salvage vessels could not announce their actual positions. One suggestion is that they were looking for something else, when they 'searched' for the visor - cargo dropped overboard prior to the accident **Appendix 5**. At that time the *false* wreck position was still valid and no real position had been announced for the visor **1.14**.[107] The author also believes that the no. 1 MOB-boat was in fact launched just after the sudden list at 01.02 hrs with several persons aboard and that many of them were rescued **1.46**. And these survivors told the Commission exactly what had happened.

ALL WAS UNDER CONTROL

Maybe all the officers (including the engine crew (!)) and wives and girl friends were gathered on the bridge. Maybe the watertight doors were closed and the bilge pumps were started and the leakage was under control. No passenger alarm was given. All was under control. And then somebody opened the watertight doors from the bridge! The 'Estonia' suddenly listed. It was 01.02 hrs.

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[106] With starboard list and port propeller and rudder over water the starboard propeller thrust may initiate a weak port turn, which can be reinforced by giving port rudders. But the port turning moment is reduced by the list. And strangely enough the rudders were found hard starboard 35° **1.16** on the wreck, i.e. after the port turn the rudders must have been hard starboard, which takes about one minute.

[107] For five years the author believed that the official visor position was correct and that the only explanation for this was that the visor had fallen off after the list and *after* the port turn was initiated. But now it is more logical to assume that the visor position was not correct; **4.3** , **4.4** and **Appendix 5**. The visor surely was attached to the 'Estonia', when she sank.

2.26 RECONSTRUCTION OF THE LAST 46 MINUTES. THE SINKING

In the below plot (basically created in 1996) it was assumed that the official visor position was correct, which it is not the most probable case - the visor apparently hanged on to the bow until sinking and never fell off. It was also assumed that the speed was 15 knots on course 287°, but it is today (year 2001) also uncertain. It could be as simple that the vessel slowed down *before* the sudden listing occurred, i.e. the crew was well aware of a problem onboard, and that the ferry just sank due to leakage, flooding of several watertight hull compartments and open watertight doors. The plot is only included to show an early attempt to reconstruct the last 60 minutes.

The plot opens here **Reconstruction** .

Probably a more realistic 'plot' year 2004 is that the 'Estonia' never turns after the sudden listing but just stops and sinks due to a collision ... with the visor attached. But the below sequence of sinking may still be correct. The visor looks quite close to the waterline in the pictures (from the Final report (5))but it was in fact almost three meters above the waterline at the time of the accident. The mean draft was 5.2 meters, forward draft was 4.95 meters and the car deck was 2.65 meters above waterline forward.

SIX PHASES OF THE SINKING - RAMP ALWAYS LEAKING

1. The General arrangement of the undamaged ship is seen right: The ship was apparently underway, when the accident occurred - it may have slowed down. **The forward ramp on the car deck was always leaking, so water flowed into the superstructure** when the visor dipped into waves (Source - the German Group of Experts)**.** A watchman was checking the ramp. To enable the leaking water to flow out the crew operated the ship with a small, starboard list and stern trim. The small amounts of water that leaked in at the bow ramp in severe weather flowed aft along the starboard side of the car deck due to the stern trim and flowed out through the scuppers in the superstructure. *This was 'normal' practice.*

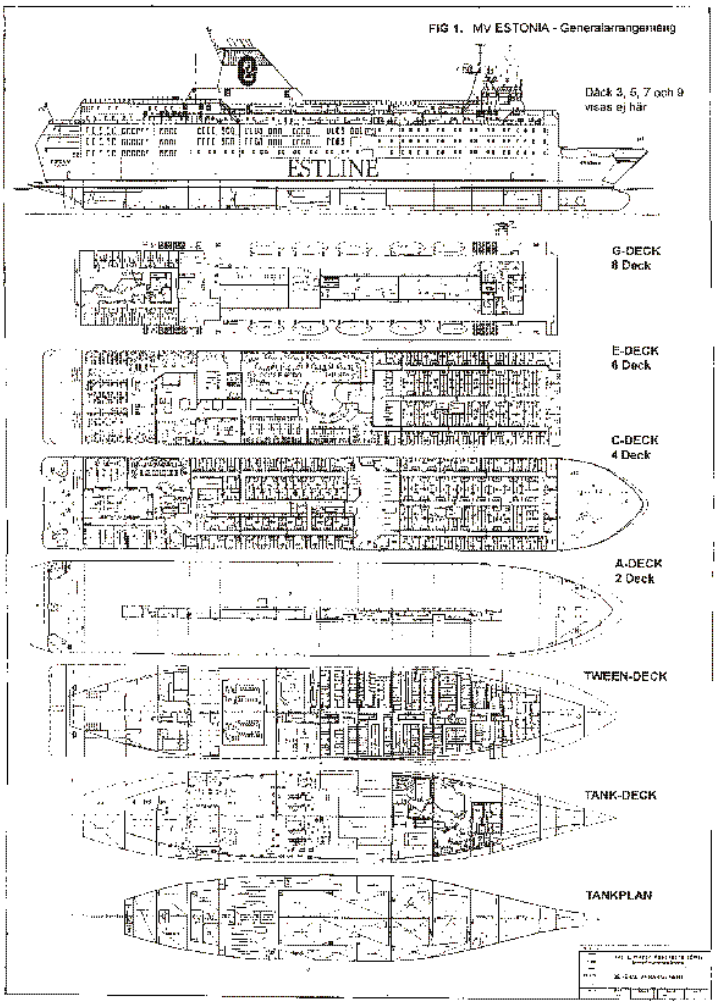


Figure 2.26.1 – Start of sinking before underwater hull leakage occurs

LEAKAGE DEVELOPS

2. At 00.55 hrs the author thinks the ship suffered *hull damage* below waterline - maybe in way of the starboard stabilizer fin box room or the starboard sewage tank compartment and the room was flooded.

The hull damage was probably due to a collision.

Two strong bangs had suddenly been heard all over the ship. The inflow might have been 100-200 ton/minute. The effective open area of the damage was about 0,3-0,5 m². Apparently the watertight doors to the two forward or aft spaces were open - a corridor space - so that three compartments were flooded.

Alternatively (less likely) the starboard shell plating fractured in the bilge strake at the sauna or pool area. It was a rust trap. Water always spilled out from the swimming pool and ended up in the bilges, where the lower frame brackets were rusty (even if the pool is located on the port side). Passengers have reported that they had found the sauna/pool area flooded - 20 centimetres of water on the inner bottom - on earlier trips. **The crew knew that something was wrong from the start and 3/E Treu was probably out of the control room to check.**

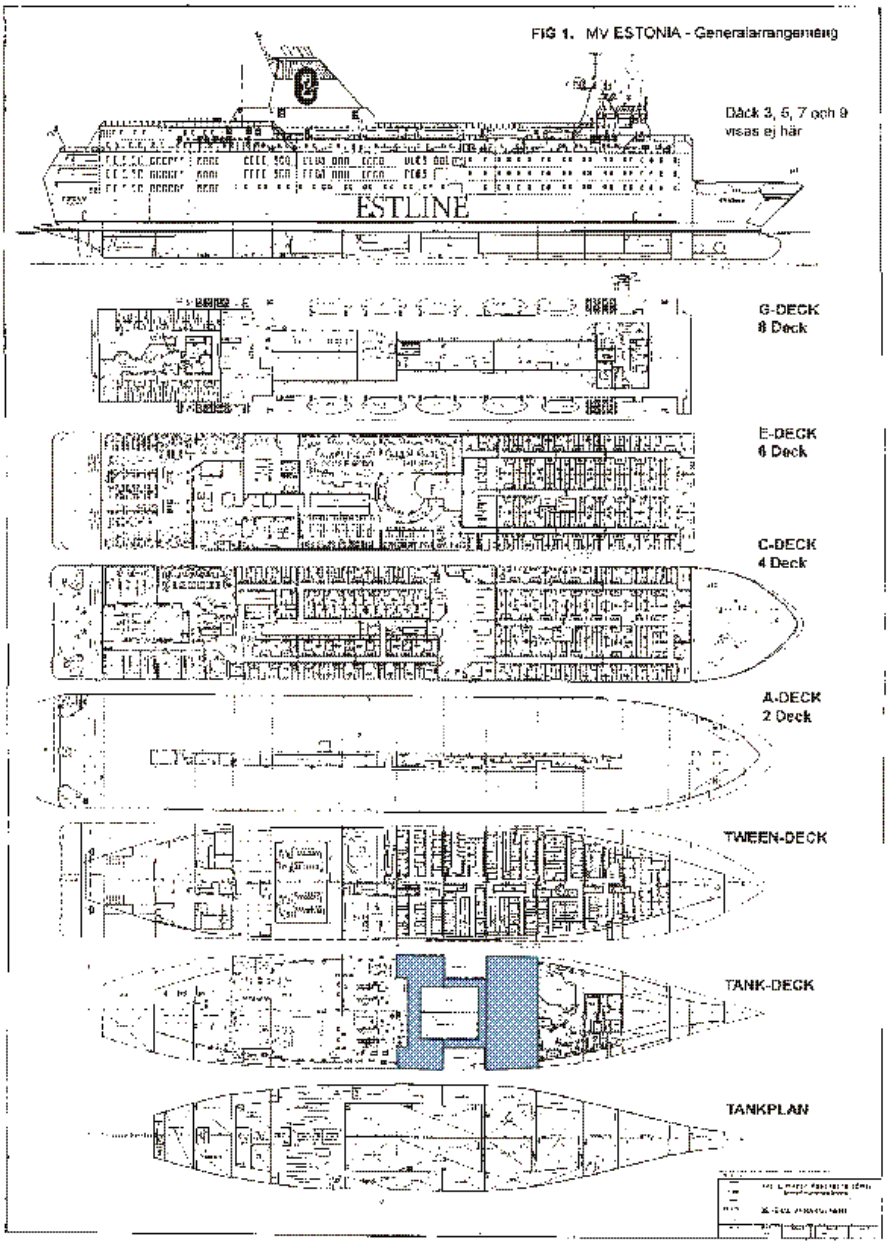


Figure 2.26.2 – Leakage – two, three compartments flooded!

He must have reported to the bridge that the ship was leaking - that several compartments on deck 0 were flooded and it is assumed that the engine crew started the bilge pumps (one crew member said so) and closed some watertight doors. **Water therefore started to rise up on deck 1 at about 00.57 hrs (through the down flooding hatches in deck 1 and the stairwells down to deck 0), where it was noted by some passengers in the passenger compartments on deck 1 - there was water in the centre corridor.** The passengers also noted that the watertight doors on deck 1 were open. The situation was then as seen above - grey colour indicates flooded spaces: The sewage tanks room, the corridors and the stabilizer room are assumed flooded and the watertight doors to the swimming pool room forward and to the generator room aft are closed. Survivor CÖ was in his cabin above the sewage tanks room. CÖ has reported seeing water flowing up from below. The engine crew, Treu, Sillaste and Kadak, were probably in the main engine room or the generator room - both dry - checking the bilge pumps trying to control the leakage.

WATER ON DECK 1 - THE SUDDEN LIST DEVELOPS

3. However - when the passengers on deck 1 informed the bridge (via the information counter on deck 5), that there was water on deck 1, the crew - probably including the Master - on the bridge panicked. The watertight door control panel on the bridge was badly arranged 1.23 - some indication lights had been arranged to be **green**, when the doors were open and some were **red,** when other doors were also open. In addition there was a facility to open, and to keep open, the watertight doors from the bridge (panel).

It is thought that the Master tried to close all watertight doors, but by mistake some doors were instead opened at about 01.00 hrs - to the generator room aft and to the swimming pool room forward of the flooded compartments on deck 0 (tank top) causing two strong bangs. Thus the water - say about 600-1.000 tons - in the flooded three compartments spread to five compartments - 120-200 tons in each. Then the ship lost its initial stability due to too large free water surfaces causing negative GM 2.17 .

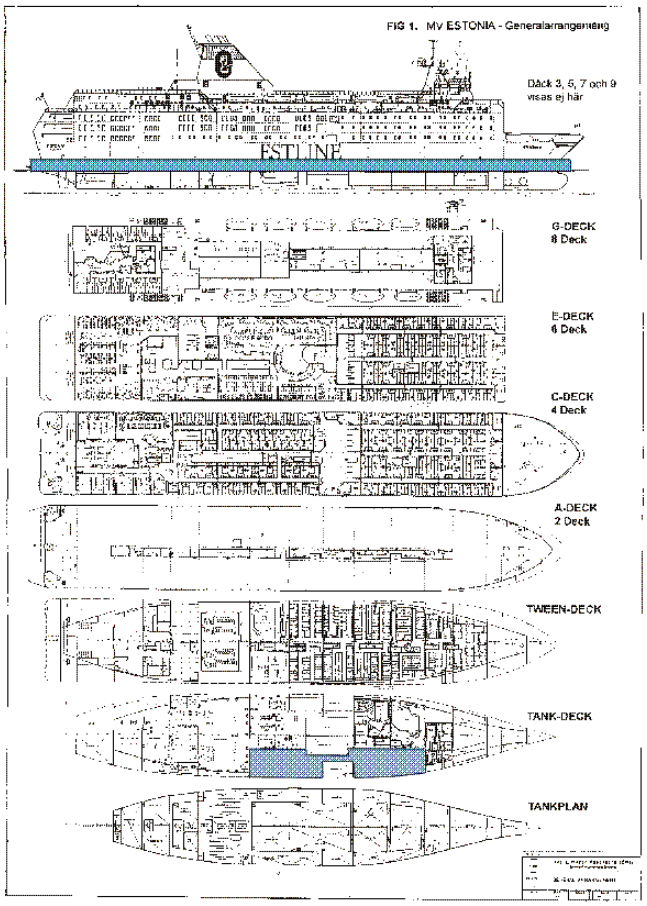


Figure 2.26.4 – Stability lost at 01.02 hrs, vessel listing, water at starboard side on deck 0

The ship suddenly listed at 01.02 hrs and come to rest at about 01.05 hrs with a 15 degrees list. Alternatively it was the fracture in the shell plate that developed forward and aft so that the starboard heeling tank was suddenly flooded causing the sudden list. At this time the engine crew on deck 0 or 1 decided to evacuate to deck 8. All passengers were also evacuating. The ship was rolling strongly around the 15 degrees list position due to small GoM and, when the ship rolled to port, it was possible to walk across decks and climb up in stairs. When the ship rolled to 40 degrees starboard you had to hold on to something. The situation looked like shown above right with floodwater indicated in grey on the tank top. Strathclyde University has kindly pointed out that the ship cannot list more than 21 degrees in this terrible five-compartments flooded condition and this might be so.

The ship would still have been safe, albeit with a list, if the water could have been contained by closing the watertight doors and pumping the undamaged spaces dry. It tallies with survivors observation - the vessel stabilized with a 15-20 degrees list after the first deep rolls, sudden listing to starboard. One engine crew member has also stated - to CNN - that he was suddenly standing to his knees in water - it could very well have been in the generator room.

STABLE CONDITION AFTER THE SUDDEN LIST

4. It is then thought that the watertight door in the centre line on deck 0 between the generator and engine rooms was also open and that water spilled into the main engine room at say about 01.12 hrs - six compartments flooding! The ship listed more and had 30 degrees list - but it was still stable with say 800-1 200 tons of water on deck 0. The ship was now floating with help of the weather tight *superstructure* - the car deck between decks 2 and 4. Ramp and visor were in place. Only little water flowed in at the forward ramp. The situation looked as shown right:

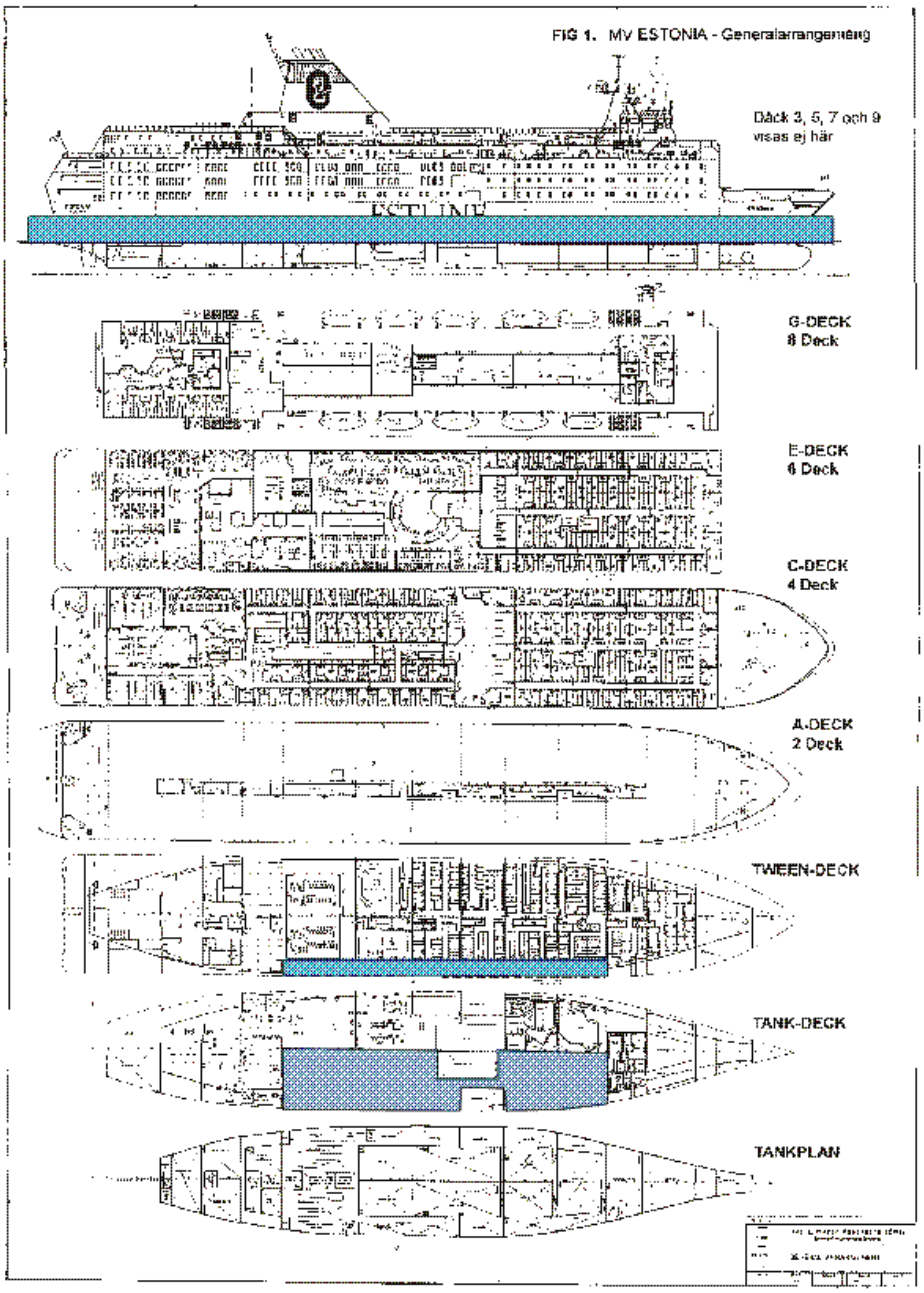


Figure 2.26.5 – Stable condition with water on decks 0 and 1

5. But more water flooded in through the leak and the list increased and deck 4 and above - the deckhouse - was flooded. The deckhouse was of course neither water- nor weather tight. What happened now was the following: as the ship listed the ventilator openings, say open area 0.5 m², on open deck 4 aft on top of the superstructure came under water and water flooded down through them onto the car deck 2 aft - say 200-300 ton/minute. **As a result the ship started to trim on the stern, listed more and started to sink quickly stern first.** Evidently the ship had been sinking since the leak started but now the situation was very serious. The water in the six compartments on deck 0 flowed to the stern. The situation at about **01.25** hrs may have been as seen right:

The starboard pilot door of the superstructure may have been open, enabling water to enter the superstructure that way. The tragedy is that the ship could have still been saved in this condition by finally closing the watertight doors in the hull - and pumping the intact compartments dry.

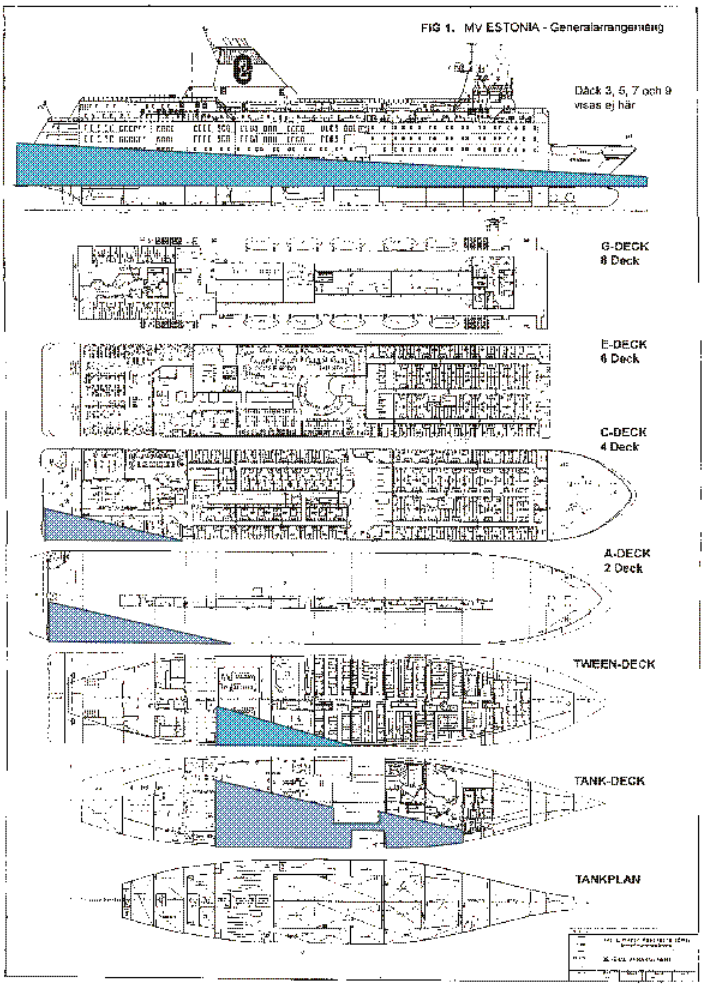


Figure 2.26.6 – Water on deck 2 (car deck) aft and trim on stern

The ship may then have regained stability. But the author thinks that the hydraulic pressure in the watertight door operating system was low due to stupid operations from the bridge and the doors were blocked in the open position.

6. THE FINAL SINKING

Then the ship was doomed. The deck house and car deck were flooded more than as seen on the figure right from the Final report (5). **A ship can evidently not float in that position, but this the Commission suggests - the ship should have sunk 22 minutes later!** The ship probably sank hitting the bottom already at say **01.32** hrs with the stern first, while the bow - probably with the visor in place - was above the water.

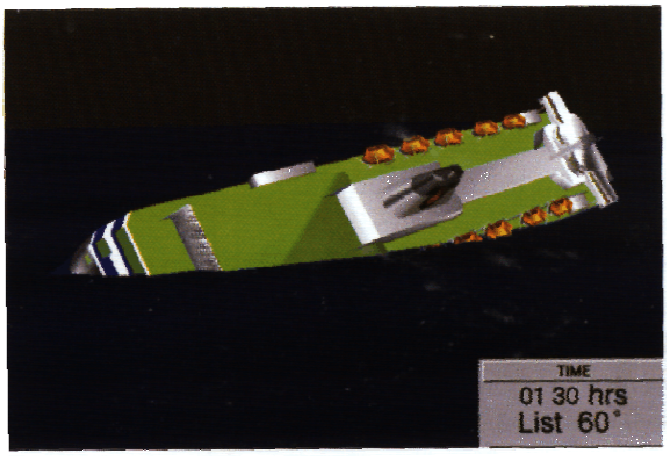


Figure 2.26.7 – From (5): Estonia sinks 20 minutes later!

But the air was forced out very quickly through the open watertight doors and the ventilation system. When the bow came under water - say at **01.36** hrs - the visor was ripped off on port side and hang beside the bow on the starboard side. Evidently no water to sink the ship entered through the bow - in the JAIC **scenario** this would have led to immediate capsize and floating upside down after 2 minutes. The crew members in the ECR could never have remained for long after 01.02 hrs. They left immediately - through the engine casing - and all their statements are lies **1.48**.

In order to verify the above scenario an associate of the author informally inspected in August 2000 a ferry belonging to the owners of the 'Estonia' between Tallinn and Stockholm. All watertight doors below the car deck were open at sea. The Swedish Maritime Administration was duly informed - and decided to do nothing (except that the Director General - Mr. Anders Lindström - shortly afterwards decided to leave his position for other duties). It is sad that all parties do not encourage simple seamanship. Then similar accidents as the 'Estonia' will occur again, and again.

It is quite simple to verify the above scenario. Many modern ferries have sophisticated stability computers that not only calculates intact stability but also damage stability, e.g. the Finnish Napa Onboard range of computers. The latter can be programmed to calculate the stability with flooded compartments. Thus you only have to start with an original, intact condition and then add water to the compartments you assume damage or flooded. The Napa Onboard immediately calculates the relevant new equilibrium and the relevant new particulars, draught, trim, displacement, GoM, GZ and range, list, etc. It will inform when the margin line is submerged and when progressive flooding starts.

The Napa Onboard computer can also be used to show what happens with water in the superstructure - at a certain angle of list the ship capsizes. **Evidently the Napa Onboard computer assumes that the deck house does not contribute with buoyancy to float the ship - only a *weather tight* superstructure provides buoyancy when submerged to extend the range of positive heeling arm GZ. A certain amount of water only inside the superstructure always leads to capsize.**

SUMMARY OF PART 2

- **The survivors' testimonies about the course of events are trustworthier than the alleged sequence of events of the Final Report (5) based on four crewmembers' testimonies.**
- **The reason, why the 'Estonia' first heeled and later sank, is leakage of the hull below the waterline and water spreading through open watertight doors. This cause of leakage has not been investigated. The leakage was probably caused in a collision.**
- **The visor fell off *after* the list occurred. The ramp protecting the superstructure was never open. A big damage in the starboard collision bulkhead is not reported or explained by the Commission.**
- **The crew simply lied about what happened aboard before and after the sudden list. The Final Report (5) does not consider if the crew lied.**
- **The description of the stability of the 'Estonia' with water on the car deck in the superstructure is wrong. No roro-passenger ship sinks slowly due to water in the superstructure. It always capsizes and floats upside down on the hull.**
- **The accident could have been prevented, if the watertight doors in the 'Estonia' hull were always closed at sea, if the bilge pumps were working and if bilge alarms had been fitted. Fewer persons had lost their lives, if the lifesaving equipment had been in order.**
- **Survivors and relatives have never been told the truth. The Swedish government carries a great responsibility for this.**
- **The sequence of events in figure 13.2 in (5) is impossible!**
- **Only a new accident investigation can establish the Truth.**
- **We cannot compromise about safety at sea, as all of us want the highest safety at sea.**
- **Means for improved safety at sea shall be realistic, safe and economical.**
- **Extreme interests of particular groups do not help anybody and do not contribute to the safety at sea.**
- **It is possible to establish an alternative course of events, where the list occurred *before* the visor was detached.**

'In summary the government does not find any reason to work for a new accident investigation'

Mona Sahlin (s), deputy minister of transport , 9 September 1999

*'**No new facts have been shown which require a new accident investigation**'*

Mona Sahlin (s), deputy minister of transport, 4 January 2001

*'The visor movements … are not easy to understand. Damages, however, do exist which are not explainable - definitely not by the JAIC sequence-of-events - unless one is prepared to accept the only other alternative by which the same or similar movements and damages would have been created, namely the **collision** with another vessel. This would explain at least the very severe damage at the starboard side of the visor, created by an abrupt upwards movement and subsequent falling back of the visor and all the damages resulting there from. Time and again respective assumptions and allegations have come up in the course of the investigation either by survivor statements, e.g. **observing a submarine conning tower near the heavily heeled ferry**, or by external sources, but nothing concrete could so far be established, because information concerning submarines is classified.*

As in many other still mysterious circumstances surrounding the sinking of the ESTONIA it remains for the Governments of Sweden, Estonia and Finland authorities to cast light into these dark areas'

German Group of Experts, February 2007

PART 3. TECHNICAL EVALUATION AND SUMMARY

3.1 THE VISOR DESIGN

The public has been fed a lot of disinformation 1994-2001 that the visor of the 'Estonia' was totally incorrectly designed and manufactured and that the shipyards and naval architects of the world had little knowledge about ship visor design in 1980. The reason was to enable the Commission to blame the accident on the visor and indirectly on incompetent engineers and class societies, which were not given a chance to defend themselves. The Commission never explained in detail, what was really wrong with the visor design and, if anybody asked for clarifications, the Commission ignored to reply. Collision as cause of visor damages was never investigated.

It was a clever tactic - accuse shipyards, class societies and engineers and then disregard any attempts on their parts to defend themselves. The Commission states in the Final Report (5) that the visor locks had too weak dimensions or scantlings. But for what? The locks had been designed for the vessel's original trade - protected coastal trading between Mariehamn and Stockholm and it had worked fine for 13 years. No damages were ever noted. Then the ship changed trade and started sailing on the open Baltic. Were the locks designed for that? Without any evidence the Commission suggests that. The Germans group of experts **3.13** has found plenty of evidence that the visor outfit (locks, hinges, etc) immediately was damaged (deformed, excessively worn, etc.) in the new trade due to bad maintenance, but the Commission had to ignore that information to be able to support its suggestion that only the *'faulty design'* of the visor 1979 had caused the accident 1994 due to *'wave loads'.* The Commission could evidently not say that the ship was designed for the North Atlantic, as that was not the case, but it made up that the ship was designed for the Baltic, the North Sea, the English Channel, the Mediterranean, the Red Sea, etc. But it was not the case either. The ship visor was just designed for coastal trading between Sweden and Finland. But the Rules were also applicable to the North Sea and the Channel and the 'Estonia' visor was in fact designed according those rules.

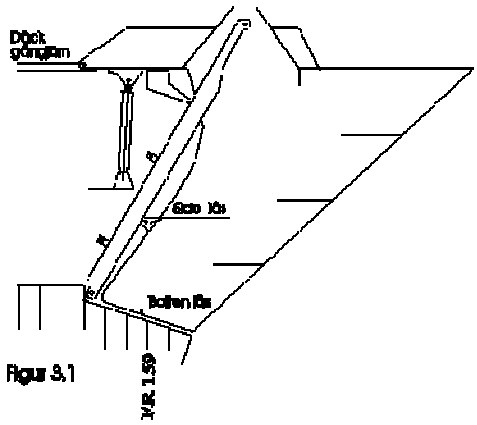
We know that the Commission immediately decided - or was told - that the visor had caused the accident. The reader should by now know that the visor or wave loads did not cause the accident - the visor was still attached to the ferry when it sank. But as the Commission decided to make up a false investigation report based on the visor, it is important in this Part 3 first to describe the visor and its design loads from the point of view of a shipbuilder, then to reveal the false declarations of the Commission how the alleged *'design faults'* caused the accident and finally shortly describe the German findings that the condition (maintenance, wear and tear, etc.) of the visor was quite bad. The Final Report (5) contains a completely incorrect description of the matter.

THE VISOR WAS AT THE FORWARD END OF THE SUPERSTRUCTURE

The visor of the 'Estonia' was a movable part of the *superstructure* protecting the ramp leading into the superstructure 2.5 meters above waterline. The visor was not part of the hull of the 'Estonia'.

The visor was of very simple and basic recognised design - see figure 3.1 below. The visor consisted only of steel plates and stiffeners supported by three tiers of horizontal girders and the upper deck and a bottom horizontal support girder and some vertical web frames. The total weight was about 55 tonnes.

The visor when closed was held in place against the ship by three locks - two side (sido) locks in the *superstructure* and one bottom (botten) - Atlantic - lock on the main deck. The function of the locks was generally to transfer the *vertical* wave/buoyancy load acting upward on the visor to the deck and the superstructure. Without the three locks the visor would otherwise flip up around the deck hinges on deck 4 by the vertical wave/buoyancy load, when pitching into a wave submerging the visor. The locks were of basic design. Each lock consisted of a lug on the visor, which fitted between two bushes of a locking pin assembly on deck 2 and superstructure frame. The two bushes of the locking pin assembly were held in place by lugs welded on the deck or superstructure. A pin held by the bushes would lock the visor lug. The pins were hydraulically operated.



When the pins were engaged, they activated limit switches, which in turn activated the green light on the control panel just aft of the ramp to the effect that the locking pins had been pushed into the locks and the visor was locked. *Evidently the locks could not transmit sideways loads.*

Evidently the locks could not transmit sideways loads.

The visor was therefore also held in place against sideways and longitudinal motion/forces by locating cones (horns) on the deck and the superstructure, which fitted into suitable pockets in the sides and at the bottom of the visor. Longitudinal loads on the visor would of course also be transmitted to the superstructure by the rubber seals and other vertical contact points between visor and superstructure.

It has to be pointed out that there was no arrangement to drain the space between the visor and the ramp about 2.5 meters above the waterline, e.g. a scupper with a non-return valve. The only way to drain out water between a leaking visor and a weather tight ramp was too open the visor (or to open the ramp).

A BETTER SOLUTION

The visor on the 'Estonia' was not a very clever solution how to load and discharge cars and trucks into the *superstructure* through the bow, but it should only be used in coastal trade and look nice.

A simpler, safer and more economic solution would have been to fit the ramp straight on the bow (exactly as the *stern* ramps aft on all ro-ro ferries) and to fit a weather tight or watertight door on the *inside* in the *superstructure* with a proper drainage arrangement between ramp and door. It might not have looked so nice, but it would have worked much better and would have cost less. Many ships are built like that, e.g. military landing crafts but also ferries.

The Final Report (5) chapter 10.3 does not mention this common solution with one word. There the Commission states that:

> *"The outside part of the bow opening - the bow door - can either be arranged with two doors with the hinges at the sides and opening sideways, or as a visor with the hinges on the upper deck, opening upwards".*

It is of course not true and another evidence of the ignorance of the Commission, or its intention to mislead the public.

3.2 EXTERNAL LOADS ON THE VISOR

External loads act on the visor at sea, when the visor on the *superstructure* is submerged into the waves, when the ship pitches and heaves in severe weather.

The Final report (5) has simulated the total load (the Z-force) acting on the Estonia visor. The simulation (blue in Figure 12.7 of (5) right) suggests it takes 800 hrs (!) before the Z-force is >6 MN (600 tonnes) upward in a seaway similar to that at the time of the accident (Beaufort 7 with 4,3 meter waves)! 6 MN is a very big wave load that you would not expect in the given weather. How could the Commission suggest that? It is not easy just to calculate **hydrodynamic forces** on a free floating body of known, uniform shape (a cylinder?) at zero speed in waves and it is even more complex to do the same on a fixed part (a visor) of non-uniform shape (with flare!) attached to a free floating, *moving* body. And that is without considering any **wave impacts** on it. An impact is not a hydrodynamic force.

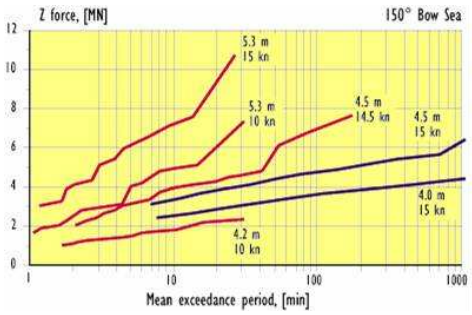


Figure 3.2.1 – Z-force on visor; fig. 12.7 of (5)

The simulated Z force on the visor is according to ((5) - page 157) a combination of

(a) the weight of the visor,

(b) the inertia force of the visor due movement,

(c) the hydrostatic buoyancy force acting on the visor (compare Archimedes),

(d) the *hydrodynamic* force due to added mass and damping of the visor,

(e) the *hydrodynamic* Froude-Krylov forces (the visor affects its surroundings),

(f) the *hydrodynamic* force due to stationary flow around the submerged visor, and

(g) the non-linear vertical impact force (sic), which is applied on a part of the visor during a very short time - when it slams into a wave.

The *weight* (a) of the visor acts *downwards* all the time - say 55 tons for the 'Estonia'. The *inertia* force (b) acts up/down with the pitching, but as the accelerations are small - max 0,2-0.3 g (g=9.81 m/s²) it does not matter too much - it is of the order 10-20 tons. The principal vertical, *upwards* load is (c) *hydrostatic* buoyancy, when the visor is *submerged* by the ship's vertical motion at the bow. It is a function of the volume of the visor (about 165 m^3 to the upper deck eight meters above the waterline for the 'Estonia'). But the visor of the 'Estonia' two meters above waterline was never submerged more than four, five meters and then the buoyancy was maximum 40-50 tons - acting upwards - one or two seconds.

Then there is the upward *hydrodynamic* force (d) due to the velocity/retardation of submerging the visor down into the water. It is also small - say 30% of (c). The Froude-Krylov forces (e) and the force due to stationary flow around the submerged visor (f) are very small. The total gravity, inertia, buoyancy and hydrodynamic forces (a) to (f) are therefore very small, when the visor is submerged for a short while, 2 seconds - the weight and inertia forces are countered by hydrostatic/dynamic forces. **In Beaufort 7 with 4,3 meter waves you would expect that the dynamic upward forces never exceeded the static weight of the visor, i.e. the visor would never move at all.** These forces you do not hear. They are silent! But the Commission suggests that the wave load was >600 MN! How is that possible?

IMPACT LOAD ON THE VISOR

Then there is another vertical load, which may temporarily act on the visor: it is a non-linear impact (slamming) force (g) of transient, very short, nature. It depends a lot on the speed and course of the ship and the shape of the visor and the angle between visor and waterline. The impact load is very noisy and is heard all over the ship. The impact noise - heard as a canon shot followed by vibrations - is generally caused by compressed air caught between the wave and the ship resulting in very high >10 bar local pressure acting on the surface. The Commission believes that this impact load can be of the order 700-1 000 tons acting upwards during some milliseconds - and that it was this load that removed the visor from the *superstructure* Appendix 2. **This assumption is 100% wrong and has no scientific base!**

Figure 3.2.2 'Estonia' in good weather

The impact may cause high pressure but it is only over a very small area <1 m², so the upward force is <100 tons active during a very short time when the visor is just entering water, i.e. the other upward wave forces are still zero and the downward forces - weight and inertia - are maximum. The combined force is probably small. The local energy released in the impact may however cause plastic deformation of local outside plate panels and is thus absorbed by the structure, i.w.o. the impact. ***The impact load can thus not damage locks and other attachment points of a visor remote from the impact as alleged by the Commission.*** And on the 'Estonia' the shape of the visor, i.e. the slope of visor side against water was such that impacts were very rare. Maybe only impacts described above occurred head-on where the visor was flat against the waves in very severe weather. Figure 3.2.1 shows the visor in good weather. The bow wave is quite high but easily pushed aside by the visor. There is no possibility that such a visor can be knocked off by any wave forces.

MODEL TESTS AND SIMULATIONS

The Commission suggests that model tests can be used to calculate the full scale forces and moments acting on a visor in a seaway. **The author is not aware of any method to extrapolate the force and moment acting on visor in a seaway measured at model tests to full scale.** The various components (a), (b), (c), (d), (e), (f) and (g) follow different scaling factors and are difficult to separate. A local pressure load measured on a model can on the other hand be scaled up to full scale.

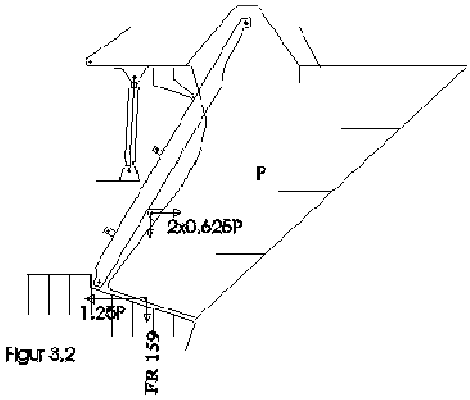
The Commission suggests that the various force components (a), (b), (c), (d), (e), (f) and (g) can be calculated - simulated - theoretically, while the author is not aware of any recognized method to this effect. Surprisingly the Commission suggests in the Final report (5) chapters 12.1 and 12.2 that full scale forces on the 'Estonia' visor obtained from forces measured at model tests compare well with forces obtained from theoretical simulations. This sounds nice, but there is no scientific base of the suggestion. Therefore **the model tests and simulations of wave forces on visors by the Commission are false!**

The Class societies suggests that you shall calculate with, e.g. a vertical force (ton) which is a function of the horizontally projected area of the visor, m², multiplied by a hypothetical outside water pressure, which in the case of the 'Estonia' should be about 8-9 ton/m², minus the weight of the visor. The background of this calculation method is unclear (read unscientific) 3.6 but quite good engineering practice.

EXTERNAL LOAD ON A VISOR TRANSMITTED TO THE SUPERSTRUCTURE

Let's assume that an external, upwards vertical load P (it is the same as the Z-force above) is applied on the visor when it dips into a wave!

The vertical load P on the visor can only be transmitted to the *superstructure* and deck 2 via the three locks and as friction in the vertical packings as the visor is pushed aft into the packings by the locks and external waves. As the vertical buoyancy load is applied on the visor about 2,5 metres forward of the locks and the vertical distance between the side and Atlantic locks is about 2,0 metres - it is assumed that the visor is submerged into a big wave - it is simple to show that a vertical upward load P (generally visor buoyancy minus visor weight and inertia) tonnes on the visor is transferred to the locks as a compressive horizontal force 0,625P via each of the two the side locks and as a tensile horizontal force 1,25P via the Atlantic lock (ignoring friction in the packings). See figure 3.2 right.



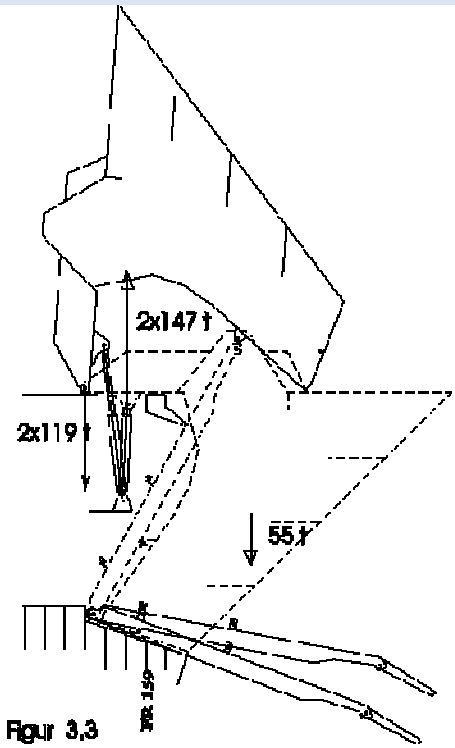
Figur 3.2

A vertical load P pushing up the visor will always push the side lock visor lugs towards the *superstructure* and will always try to pull away the Atlantic lock visor lug from deck 2. **Therefore the side visor lugs were always in *compression* and the Atlantic visor lug was always in *tension* in service at sea.**

Depending on the clearances of the three locks and the clearances of the deck hinges some of the vertical load acting on the visor may be transmitted to the *superstructure* via the deck hinges on deck 4. Then the loads on the various locks are reduced. However, for all practical purposes the only function of the deck hinges was to enable to open/close the visor.

3.3 THE FUNCTION OF THE VISOR

The function of the visor is very simple. The hydraulic locking pins are pulled out by remote control and the visor can be pushed up and be opened by two hydraulic pistons situated on deck 3 acting on the visor lifting arms connected to the deck hinges on deck 4 - see figure 3.3.



Figur 3.3

To push up the visor you need initially a total force of the hydraulic pistons of abt. 293 tonnes (147 tonnes per piston). The force acting on each deck hinge is then about 119 tonnes, even if the hinge was designed to easily handle 350 tonnes. As the visor is lifted up, the required lifting force is reduced (as the bending moment in the lifting arm is reduced) and thus also the force on the hinge is reduced. The maximum force acting on each deck hinge - 119 tonnes - is applied, when the opening *starts* or the closing *ends*.

Closing the visor is evidently the reverse operation. Just before the visor comes to rest on its supports, the maximum force on the deck hinge is again experienced. The load on the hinge becomes zero, when the visor rests on its supports. When the three visor locks are thereafter engaged, the visor should in principle have been pushed against the rubber seals around the visor and there should have been no clearances in the three locks, while there should have been a little clearance at and in the hinges. The entire vertical (upward) load on the visor would then be transmitted *only* via the locks at sea and as friction in the rubber seals.

If, for any reason - a mistake? - you try to lift open the visor, while the side locks are still locked - the lugs held in place by the pins - and the Atlantic lock is open, the lifting hydraulics are strong enough to rip off the visor lugs from the visor aft plate.

You should also note the ramp in the above figure. During the accident we are told that the visor fell off and pulled the ramp fully open, thus the ramp was pushed down all the way against the forepeak deck. The forward speed was 14-15 knots. The forward/top end of the ramp was then in the waterline and the ramp would act like a plough forcing water straight into the superstructure.

Due to pitching the wave top was halfway in the ramp opening when the ship was maximum down under the wave, i.e. three meters above the car deck! Imagine the ship with the ramp down running full speed straight into that wave. The forward part of the 5,4 meter wide ramp is six meters below the water! The open ramp would force the wave/water up into the opening and it would hit the underside of deck 4; **Appendix 4** and **3.11**.**With an open ramp and speed 14, 15 knots and severe weather/pitching the ship should have capsized immediately.**

Or maybe the water below the ramp pushed the ramp up again, so that it closed? But what happened then when the bow was totally above water? Did the ramp fall down again?

The ramp is described in the next chapter.

3.4 THE FUNCTION OF THE INNER BOW RAMP

The bow ramp behind and inside of the visor protecting the opening into the *superstructure* was also of simple basic recognised design. It consisted of a strong plated frame grid with four hinges at the lower end on deck 2. The tyre pressure of the trailers rolling over the ramp decided the scantlings of plates and stiffeners of the ramp. The ramp also acted as the inner, *weather tight* door protected by the visor leading into the enclosed *superstructure* of the no. 2 car deck (the garage) and should be able to withstand a certain water pressure. Note that the ramp was not watertight - only weather tight - and it was accomplished by normal rubber seals.

Note also that the lower end of the ramp is about 2,5 meters above the waterline. According international rules the ramp should be as strong as the hull above the waterline, the *superstructure*, taking into account its position at the fore end of the ship, and the national maritime administration was responsible to check this as per the Load Line Convention 1966. The ramp was designed for carrying heavy trucks, so it was stronger than the *superstructure* (the forecastle).

NO DESCRIPTION OF THE RAMP - ALL DETAILS CENSORED

Chapter 3.3.4 of the Final report (5) contains a **'Detailed technical description of the bow loading ramp'** (sic).

In spite of the fact that the yard on 2 November 1994 sent a full set of drawings of the ramp to the Commission, there are no drawings whatsoever of the ramp and its locks in the Final report (5).

The Commission had of course previously stated that the ramp had been ripped open - for unknown reason - *before* they had any details whatsoever of the ramp design. When they got the details of the locks, etc. they realized that it could not have been ripped open - so all details were censored in the Final report (5).

The ramp was, like the visor, hydraulically operated. When closing the ramp, two hydraulic pistons lifted it up. Then two hooks were moving out of openings in the port and starboard front bulkheads and gripped round steel bars at the two sides of the upper part of the ramp below deck 4 and pulled the ramp against the rubber seals around the ramp opening. Then two locking pins each side moved out of the side frame, one after the other, into mating pockets on the ramp side itself. In fully extended positions the pins activated limit switches connected in series and when all four pins were engaged the green indicator light on the control panel on the car deck was activated - the ramp was closed and weather tight.

Each hook had a tensile strength of 25-40 tons. Each pin/pocket could withstand a load of about 25 tons. The hinges at the lower ramp edge could withstand similar loads. Thus the ramp was kept in place by ten attachment points and the hydraulics. When opening the ramp (the visor must then be in the open, parked position) you evidently open the locks and allow the hydraulics to lower the ramp on the quay. The ramp had 'flaps' in the upper side, which were extended - swung out, when the ramp was lowered, i.e. they made the ramp longer - see figure 3.3.

Guardrails were fitted port and starboard on top of the ramp. As there was no space for the outside end guardrails in the closed position of the ramp, the top parts of these guardrails were folding inboard.

The ramp was resting against a frame attached to two longitudinal bulkheads inside the superstructure ending at the front transverse bulkhead, which in turn was located forward of the ramp. This bulkhead had a rounded top strake attached to the upper deck 4. It meant that the ramp was inside a 'tunnel' - if the ramp were opened, e.g. 1 meter at the top, the lower part of the ramp at deck 2 was still *'inside the tunnel'* between the longitudinal bulkheads. It meant in turn that the openings in the sides - *the wedges* - between a part open ramp and its frame was blocked by the *'tunnel sides'* and that very little water could flow in that way, if the ramp was open and the fore ship pitched down into a wave. When the ramp was part open - **figure 3.11** - the lower part of the ramp was still inside the tunnel.

In chapter 3.3.2 in the Final Report (5) about the visor the Commission states that:

> *"The geometry was such that the ramp must be completely closed, so that it would not come in contact with the visor, when it was opened or closed."*

This is not correct; it suffices to look at the figures. The ramp could be opened at least 1 meter at the top without touching the visor, when it was opened or closed. However, the hydraulics were probably arranged so that you could not open/close the visor, until the ramp was closed/locked. Unfortunately the Final Report (5) does not describe the ramp design, hydraulics or damages in any detail.

To stop the ramp hitting the fore peak deck of the hull (by accident), it was attached to two 'preventer' wires connected to the ramp top beam edges restricting downward motion.

NO DESCRIPTION WHY THE RAMP OPENED

How the ramp was ripped open by the visor is not described in the Final Report (5).

The Commission just invented the story that the visor became lose and pushed *forward* (sic) against the ramp top and - hokus pokus - that the ramp was ripped open, i.e. two hooks, four locking pins/pockets, two preventer wires and the hydraulics were damaged **1.17**. Actually the Commission made its statement, *before* it had verified by divers the condition of the hooks and locks and other outfit, which were all inside the garage and **above/inside** the ramp, and in the end the Commission said that they were never examined **3.10**. Only the bottom hinges could be examined from the outside. Any reader can check the Final Report (5) - there is not one picture of a damaged ramp hook or locking pin pocket and no drawings of these attachments. The reason is that the Commission announced in October 1994 a false course of events including a ripped open ramp, without knowing how the ramp was designed or damaged.

And the visor had never damaged the ramp!

3.5 THE COLLISION BULKHEAD

Behind the ramp there should apparently have been a partial collision bulkhead in the superstructure between decks 2 and 3, which was not there. Most ferries in the Baltic 1994 had no such collision bulkhead on the car deck, a fact which the Commission managed to censor completely.

The collision bulkhead was of course fitted in the *hull below* the car deck - it was aft bulkhead of the fore peak tank, and it could not extend above the car deck for practical reasons.

They (administrations, ship owner, shipyard) instead considered - after the accident, of course - that the ramp was the (extension of the) collision bulkhead (and that the visor was the fender structure to deform in case of a collision). The logic is correct, even if a weather tight ramp cannot ever be a bulkhead. Another structure, a two meters high collision bulkhead on top of the car deck behind the ramp 2,5 meters above the waterline had hardly increased the safety in a *collision* in either protected or open waters. In collision all bow structure is deformed aft and what you are worried about is, if *hull* compartments aft of the fore peak are flooded. In the case of the 'Estonia' the first compartment aft of the fore peak was a very small bow thruster room and further aft were two tanks.

You could say that the 'Estonia' had two or three collision bulkheads below the car deck.

Thus in a collision only very small compartments below the car deck could be flooded and it would hardly change the trim of the ship. A collision bulkhead above the car deck in the *superstructure* would therefore not increase the safety of the ship in collision followed by flooding of the fore peak!

The collision bulkhead in the superstructure is described in chapter 3.6.3 of the Final Report (5) - the collision bulkhead below the car deck in the hull is for strange reasons not shown at all. It is correctly concluded that the collision bulkhead was not required by the Finnish administration for the intended original traffic, i.e. *protected coastal trading* between Stockholm and Mariehamn, where the SOLAS-rules were not applicable (in spite of the fact that it was an international voyage). This is hinted at in chapter 18.1 of (5).

It is then a fact that, when the trade was changed 1993 to short international voyages on open seas between Tallinn and Stockholm, the Estonian administration did not request any modifications, e.g. that the existing collision bulkhead i.e. the aft bulkhead of the fore peak should be extended above the car deck in the same position.

NO CHANGES OR IMPROVEMENTS MADE

The reason was that the Estonian administration did not require any modifications or improvements of the 'Estonia', when the flag and trade were changed, e.g. a collision bulkhead, correct lifesaving equipment, safety and evacuation plans adapted to the new conditions, watertight subdivision in the hull, etc.

These simple facts are not pointed out in the Final report! No simple facts are pointed out in the Final report. The Final report is only a fairy tale about deficient ramp locks manufactured 1979 causing an accident 1994.

The reason was of course that the Estonian accident investigators were the same people who should have had ensured in the first place that the SOLAS-rules were applied at the change of flag **1.7**. The fact, that the collision bulkhead was missing on top of the car deck, was an opportunity, that the Commission used to falsify the course of events, i.e. water had entered into the *superstructure* at the fully ripped open ramp (false statement) and had not been prevented to enter the car deck by the collision bulkhead (at is was not there). That the collision bulkhead was not there, or had been replaced by the ramp, due to the Estonian administration, was not worth pointing out.

3.6 LOADS ON THE VISOR IN HEAVY WEATHER. THE FINNS DISAPPROVE THE CLASS RULES!

The *normal* vertical load P (or Z-force) acting on the visor upward is, as described in **3.2**, a function of the submerged visor volume (hydrostatic/hydrodynamic/Froude-Krylof and flow components) minus the weight and inertia load. If the whole visor was submerged 7-8 meters in a wave (very unlikely), you would expect the maximum load to be about 165 tonnes of buoyancy minus 55 tonnes of weight, i.e. 110 tonnes to which you could add, say 30%, to account for dynamic or inertia effects and the fact that the visor might be submerged below its upper part. The total vertical upwards load on the visor would then be P = 143 tonnes, when the ship puts the bow into a wave up to the top of the focsle.[108] The actual load on the 'Estonia' visor must have been much less because the visor was only submerged 3,5-4 meters to deck 3 level. This load should then be transmitted to the *superstructure* and deck 2 via the three locks - 1,25P = 179 tonnes (horizontally) via the Atlantic lock (tension in the visor lug) and 0,265P = 90 tonnes via each side lock (compression in the visor lugs). In reality the forces in the locks are less, as much external load is also transmitted as friction in the vertical rubber seal packings.

No load should have been transmitted via the deck hinges on deck 4 as there should have been a positive clearance between the visor hinge bush and pin - see figure 3.2.

In this simplified analysis it is assumed that any load acting sideways on the visor is transmitted to the superstructure and deck 2 via the locating cones. It is also assumed that any load acting in the aft direction is either transmitted to the superstructure via the rubber seals or other contact points, or unload any tensile loads in the locks, e.g. the Atlantic lock on deck 2.

Model tests carried out by the JAIC (Supplement no. 410 in (5)) generally confirm the magnitude of the vertical wave load (except wave impact slamming) acting on the visor in regular waves. The upwards loads are very small <100 tons hardly more than the weight of the visor. There are no impacts!

However, transient (shorter life = milliseconds) non-linear loads of much higher magnitude - *impact - slamming* - were also recorded in irregular waves (**Appendix 2** - the model tests are evidently falsified). Slamming is generally a momentaneous overpressure due to compression of air/water at high pressure >10 bar over a small area - <1 m² on the visor surface - when the visor surface suddenly hits the water, i.e. no other hydrostatic or hydrodynamic wave loads apply - and it is unlikely that it causes a load being transmitted to the visor locks. **It is more probable that the energy of the slamming impact is transformed into plastic deformation of the steel plate panels and stiffeners of the visor, i.e. the structure absorbs and dampens the impact.** The slamming/impact pressure is of course always perpendicular to the visor side but it is not evident that the vertical component of the slamming pressure is transmitted as a force via the locks (and the hinges?) being able to destroy these locks. For that you require much more energy. Evidently there exist no recognized methods to translate an impact pressure or force measured in model tests into fullscale. There are no methods to simulate the same effects. The final report is full of falsiified reports to the contrary.

It is suggested by the Commission that impact forces >700 tons on the visor destroyed the locks. **There is no way such impact forces could ever develop under any circumstances.** It is not possible to drive a vessel into waves and suffer such wave wave forces. The alleged impact forces are clever desinformation by the Commission ... and strangely no Classification or expert shipbuilding society disagrees. Only so called freak waves could have damaged the ship ... and freak waves do not occur in the Baltic.

It is interesting to note that the actual breaking strength of the locks were about 210 tons for the Atlantic lock and about 214.5 tons for each side lock (as per full scale tests done by the Finns in January 1996 - act A162 in the SHK archive), i.e. the safety margin was not great for the Atlantic lock, if the whole visor was under water. Then the *visor lug* of the Atlantic lock would burst, as it was the weakest part under tension **3.7**. However, as all lugs were worn and there were unknown clearances between the contact points, the vertical load on the visor was transmitted to the hull via *five attachments* - three locks and two hinges. How the load then was transmitted cannot be calculated.

ATLANTIC LOCK STRONGER THAN EXPECTED

The German group of experts **3.13** had no idea how the visor locks were designed and just suggested that each lock and hinge should transmit about 100 tons, but that e.g. Atlantic lock was designed to transmit 300 tons, i.e. the safety factor was three. The Commission, expert professor Meistaveer from Estonia (act B99*) and member Stenström (act B101*), calculated that the three lugs of the two bushes fitted on the deck 2 of the Atlantic lock could only resist 70 tons (0.70 MN) and told the media just that.

The above was just unscientific gibberish from Commission and German *'experts'*. Nobody tried to do a correct analysis of the Atlantic lock on deck 2 until model tests of the lock were done in the autumn 1996 - two years after (sic) the accident.

It was then an embarrassment for the Germans and the Commission, when model tests - paid for by the Germans - showed that the Atlantic visor lug - the weakest part of the lock - had break strength of 210 tons. The result was that both Germans and the Commission had been wrong. But the Commission was satisfied. The media had published that the Atlantic lock on deck 2 was completely incorrectly designed with break strength of only 70 tons and that statement was never corrected. It is very important in a misinformation campaign to spread the false info early - nobody bothers with correct info two years later.

SIDE LOCKS STRONGER THAN EXPECTED

The side locks in the superstructure were also stronger than expected - 214.5 tons break strength 1996 against only 100 tons estimated by the Commission 1994/5.

However, in the Final report (5) chapter 3.3.3 **Design documentation** the Commission has a strange description of the matter. They refer to calculations by the yard that the total load on the visor was 536 tons and that it meant that each lock and hinge (sic) should transmit 100 tons. The permissible stress was 164 N/mm² and therefore each lock/hinge should have a required minimum cross section of 6 100 mm². It is suggested that the permissible stress was in relation to high tensile steel. Mild steel has a yield stress of about 240-250 N/mm² and high tensile steel say 320-330 N/mm² so regardless of the material, the design tensile stress 164 N/mm² was well below the yield limit. The breaking stress of mild steel may be as high as 440 N/mm², so it seems there were ample margins in the design calculations. But what was the actual 'cross section' of the locks?

The weakest part of the bottom lock was the mild steel lug on the visor 3.7 with a cross section of 5 700 mm². Assuming a breaking stress of 440 N/mm² it should have been ripped apart by a load of 2 500 kN or about 250 tonnes. Model tests later showed that it was in fact the lug, which was ripped off first, when the load was about 210 tonnes corresponding to a breaking stress of 370 N/mm². Stress concentrations in the opening hole probably started the rupture in the material at the lower load.

The second weakest part was the lock pin. Assuming it had a diameter of 85 mm, the cross section was 5 675 mm². But the pin was not subject to any tensile stress - it was subject to shear - and in shear the design stress was much lower. But the load on the pin was distributed over the 60 mm wide visor lug and transmitted both port and starboard, so the cross section could be assumed to be double.

We do not know the appearance of the pin/bolt after the accident - the Commission throw it back into the sea after salvage - not even a photo was taken. This author believes the pin/bolt was dirty and rusty - clear signs that it and the Atlantic lock had not been in use!

The bottom lock pin was held by tube bushes port and starboard welded to three 15 mm thick lugs on the fore peak deck. The available cross section of these lugs was then a function of the welding size between bushes and lugs. The yard suggested that the original welding was 8 mm; the Commission stated it was 3 mm. Assuming that only the two lugs nearest to the visor lug transmitted the load and that the bushes were welded with 3 mm, there was an available cross section of 4 800 mm². With a break stress of say 550 N/mm² (of the welding material) the two lugs should have been ripped apart by a load of 2 640 kN or say 260 tons!

There should be no doubt that the weakest part of the bottom lock was the visor lug!

Similar comments can be made for the side locks. The 60 mm thick lug attached to the visor had a cross section of 6 300 mm² and should have been ripped apart by a load of 2 331 kN. The pin had diameter, say 90 mm, and should have sheared off by a higher load. In fact neither pin nor lug was damaged - the plate the lug was welded to was allegedly torn out, when the load was about 214,5 tons.

Evidently all parts of the locks would have yielded before being ripped apart. Permanent deformation starts when the loads were much lower.

PROBLEMS FOR THE COMMISSION

That the locks were stronger than stated by the Commission in 1994, and that it was not the weakest parts of the locks that were damaged, apparently caused a big problem for the Commission when writing the Final Report. The spin doctors of accident investigation went then into action.

The Final report (5) chapter 3.3.3 is written in such a way that you get the impression that, even if the yard sent a number of drawings to Bureau Veritas for approval, there were irregularities and the yard did not follow the drawings and that no welding instructions (sic) were given. But as shown above, even if the welding instructions were not followed, it was still the bottom visor lug that was the weakest part of the lock - and it was not damaged - it was bent to starboard! It is probably the reason why the Commission (Stenström) decided that it was not the irregular *wave* loads in heavy weather, which had ripped off the visor but *transient, short-term impact loads* - slamming. These loads could allegedly be - 300, 500, 700 yes >1 000 tons vertically upwards according to the Commission (based on falsified model tests **Appendix 2**). If these impact loads actually existed are not certain! Nobody heard them. The 'Estonia' was according to many seamen behaving very well in heavy weather. Impact loads on foreships are normally heard as very big bangs causing a lot of vibrations and you slow down immediatley. They generally do not cause any stryctural damage! 'Estonia' was the first and only vessel in history that lost its visor ... in not very sever weather. And how were these loads then transmitted via the locks to the deck and superstructure?

NEW EXPLANATION - IMPACT LOADS

According to the Final Report (5) model tests carried out by the SSPA Marine AB at Gothenburg should have confirmed the big impact loads on the visor in the severe weather B7 4.2 metres waves. The author doubts about these model tests are described in Appendix 2. In the model tests the visor is hit *every minute* by big impacts >200 tons and every four minutes by impacts >400 tons. It is not possible! It is an obvious falsification.

You should ask the question what happens, if an impact load of >400 tons hits the fore ship superstructure 3-4 meters above waterline every four minutes in Beaufort 7? Isn't there a big bang? Don't you reduce the speed? How much energy is there in each 'bang'? The SSPA report does not say anything. It only reports that big impact loads occurred very regularly, probably because the Commission ordered that! The Final Report (5) does not then analyse the matter further **3.7**, but maintains that the crew was very clever and did not hear any impact bangs from the fore ship indicating that it might have been a good idea to slow down. Mr Linde was five minutes just aft of the ramp/visor 15 minutes before the sudden listing occurred and heard no impacts!

The Commission then suggested that one or more impact loads had first damaged the locks and attachments and then suddenly ripped off the visor. A nice piece of falsification of History!

To back up this amazing piece of desinformation - a lie - the Commission was forced to remove the visor from the wreck under water after the accident using explosives.

CLASS AND VISOR LOADS

The Class societies suggest that the vertical load on the visor is the projected vertical area of the visor multiplied by an outside water pressure, e.g. in the case of the 'Estonia' an area of about 70 m² times a water pressure of about 8-9 meters resulting in a total vertical force of about 536 tons - exactly as the German yard predicted. This force is then assumed being transmitted to the locks evenly by all *five* attachment points, i.e. 108 tons per lock or hinge. You can discuss the accuracy of this method as it does not explain why the total load is evenly distributed or does not describe how to assess the load transfer in the lock/hinge itself. The total load seems very high. However, by experience you know that, if you underestimate the design load, this will cause plastic deformation or fractures in the incorrectly designed (weakest) parts before rupture. Therefore one or more visor locks of the 'Estonia' should have been subject to overload at previous voyages and, as a result, the visor would have got stuck and you could not open the visor. But no such things apparently happened or were reported before the accident. That the Class never considered that visors were allegedly subject to *impact* loads 50-100% greater than the design loads due to wave submersion was not mentioned. The visor was according to the Commission in *perfect* order and condition just before the accident - it was one basic assumption of the false scenario. It was the locks that were too weak. The Germans have another opinion **3.13** - the visor was badly maintained and did not fit. Then the Commission alleges that it was mistakes by the German yard that resulted into weaker locks than expected.

An interesting aspect of the 'Estonia' accident is why the Class societies and the International Association of Classification Societies, IACS, after the accident 1994 did not change their rules of bow visor design.

No existing bow visors have been modified after the accident 1994.

No visors have been damaged before or later by wave loads. It is a fact that the rules of 1980 are valid today 2001 without bigger changes. Actually very few ships with visors have been built since and the visor is just a cosmetic device of minor structural importance. The rules define the loads and what stresses are permitted.

The Final Report includes a long list of alleged visor accidents on other ships, so you get the impression that accidents were a common occurrence, but all accidents were *minor incidents* that could never have sunk the ships and confirmed that suggestion that visor locks and attachments deform long before they are ripped apart, and that visors cannot result into ferries sinking. The long list of alleged visor accidents was pure desinformation.

The IACS therefore saw no reason to change their rules 1994 or later. It seems that the statements of the Commission didn't impress the IACS while the examination was still secret 1994-1997. But the IACS never protested about the false claims of the Commission.

THE FINNS CHANGE THE RULES

To change this situation - that the IACS hardly believed the conclusions of the Commission that the visor of the 'Estonia' was incorrectly designed - the Finnish maritime administration contacted autumn 1999 the IACS and suggested rule changes, i.e. to increase the design loads and to reduce the permissible stresses in the IACS common rules S8 and S16. As background material for the request of rule changes Karppinen, who then had also become the Finnish NMA expert, presented various probability calculations, full scale and model measurements, etc. and referred to the 'Estonia' **1.47**.

The IACS was not very impressed by the information of Karppinen and referred to its own database - several hundreds of visors, several thousands of years of operations and a very limited number of *'incidents'*, which could not cause any serious accident. According to the IACS there were no reasons to change the rules S8 and S16. The IACS also rightly questioned the Finnish (Karppinen's) calculations. Karppinen had measured pressures at some points on the bow and then calculated a total load many times in excess of the Class design loads and the IACS did not agree to the method. Evidenly you cannot apply a peak impact pressure over a small local area and apply it on the whole bow! In spite of the fact that the IACS and the Finnish NMA did not agree, the Finns

called a press conference on 5 October 1999 and announced that Finnish ferries in the future would be provided with operational restrictions due to weather and wind and due to the loads on bow visors and doors, etc.

The Finnish tactic was clear - they told the media that their own (Karppinen's) calculations and conclusions were correct and expected that the IACS would change their rules. The Finnish conclusions were quite sensational. They clearly said that the international rules were not good enough and that Finland - in the name of safety introduced its own rules - Finnish ferries shall slow down in heavy weather in the Baltic.

This change took place five years *after* the 'Estonia' accident. However, no other Nordic country followed the Finnish initiative. Sweden, Norway and Denmark did not agree with Finland.

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[108] In **Appendix 2** is shown model tests by the SSPA Marine AB, where a ship pitches in 4 meters regular waves with a relative motion of about 5 meters every six second. As the visor is 2,5 meters above the waterline, the visor is only submerged about 2,5 meters below water, volume 30-40 m^3, during two seconds every sixth second. An outside load in the upward direction of about max 150 tons was allegedly measured during the submersion (after one second) which seems high - 4 times the volume. After another second, when the visor is out of the water, the outside load is evidently nil. The total load upward load is thus the load 150 tons minus the weight of the visor, 55 tons, i.e. 95 tons. If the visor is water filled with say 30 tons, the total upward load is reduced to 65 ton. *It is interesting to note that the upward load on a leaking visor is less than on a water- or weather tight visor, i.e. the stresses on the visor locks are reduced due to leakage.* Maybe you should ballast the visor (instead of the forepeak) to reduce the stresses on visors in the future?

3.7 THE ACCIDENT ACCORDING TO THE COMMISSION - SEQUENCE OF EVENTS - THE ATLANTIC LOCK

How the visor was detached from the *superstructure* is not clearly described in the Final Report (5) and there is no evidence for any *'events'* proposed by the Commission leading to the ramp being ripped open. Furthermore there is no logic between the various *'events'* and their causes and the times when they occurred. It is therefore very probable that the visor was attached to the ship when it sank. Regardless below follows an analysis of the suggested sequence of events proposed by the Commission.

The commissione has produced a video **MS Windows MediaPlayer v.7** *CIF 352x288, 256 Kbps, 6,9 Mt* of the events below - or a variation of it. There is no evidence for any essential statements in the video. Normal waves do not even lift the visor! That the port side lock failed first is not proven. That the visor can pull open the ramp is not proven - the ramp is locked. But if the visor is lost and the ramp is down and the speed is forward, water evidently enters the superstructure - it is well shown. Then the 'Estonia' should have capsized, turned upside down and floated. Not sink as shown in the video.

TEN MINUTES OF NOISE

In chapter 1 **The Accident** (page 22 of (5)) it is stated that

> *"a metallic bang"*

was heard shortly before **01.00** hrs and that

> *"Further observations of unusal noise, starting at about 01.05 hrs, were made during the following 10 minutes"...*
> *"Shortly afterwards* (i.e. shortly after 01.00 hrs) *(Linde) was sent down to the car deck to find out the cause of the sounds reported by telephone to the bridge"...*
> *"At about 01.15 hrs the visor separated from the bow ... **The ramp was pulled fully open** ... Very rapidly the ship took on a heavy starboard list".*

FIVE MINUTES OF NO NOISE

Chapter 13.2.5, page 175 of the Final report (5) states that at **00.55** hrs a sharp metallic bang was noted from the bow area and that seaman Linde on the car deck in the *superstructure* at that time waited five minutes (sic) behind the ramp and did not note or hear anything unusual - no further noise or impacts or *'bangs'* in spite of the fact that the ship continued at 15 knots speed in the heavy weather and model tests indicated >100-tons impacts every minute. Then Linde maybe quietly continued his patrol round to decks 1 and 0 down into the hull (it is not clear) and returned to the bridge on deck 9 where he arrived at 01.00 hrs (sic), witnessed the change of watch and the reception of a telephone call to the effect that Linde later was sent down to the reception on deck 5 at about 01.05 hrs to investigate noise and water in the ship. Then the Final report states that

> *"Shortly after one o'clock a few wave impacts on the visor caused the visor attachments to fail completely"*,

i.e. the bottom Atlantic lock on deck 2, side locks in the superstructure and the hinges on deck 4 were broken.

According to surviving passengers 2.1 there were two sharp bangs just prior to 01.00 hrs and then the ship suddenly listed at 01.02 hrs but let's assume that only the times are wrong.

Then (according to the Commission)

> *"the visor started cutting openings in the weather deck* (deck 4) *plating and associated structure."*

(which is further discussed in **3.10** and **3.11** - there is no evidence that the visor was completely lose and cut openings in the weather deck). Then

> *"Soon the back wall of the visor housing came into contact with the ramp, hitting its upper edge and thus* (sic) *breaking its locks. The ramp fell forward and remained resting inside the visor. In a few minutes the visor started falling forward."*

There is no evidence that the lose visor ever hit the upper edge of the ramp or that the ramp locks were broken, but let's assume that it happened. Therefore the ramp became fully open -

> *"allowing large amounts of water to enter the car deck ..."*

This should have occurred at about **01.15** hrs when the speed was still 14-15 knots straight into the waves. Then the ship listed slowly (sic) and sank until 01.50-01.55 hrs. You would have expected that the ship with an intact hull would have capsized and floated upside down with 1 900 tons of water 'loaded' in the superstructure, but it never happened. While all surviving passengers testified about a sudden list >30 degrees (at 01.02 hrs), the star witness of the Commission, 3/E Treu, suggested that the vessel slowly listed at 01.15 hrs, when water leaked in at a virtually closed ramp - the ramp was seen in the up/closed position! Linde was either at the reception on deck 5 or somewhere else, when the ship suddenly listed >30 degrees.

In the Part Report (16) the only events between **00.45-01.15** hrs were:

> *'At about 00.45 hrs* (sic) *several unnormal signs were noted in the ship. Metallic noise was heard in the ship'.*

That was all. No other times for the different events were given in the Part report, and in the Final report the starting time is at 00.55 hrs. But according to the Part Report noise was heard 30 minutes (!) before the visor actually fell off.

REPEATED METALLIC NOISE

The Final Report (5) however states that

> *"This sequence of events is supported by witnesses from several areas on board who heard repeated metallic noise from the bow area during a period of about ten minutes starting shortly after one o'clock."* **2.1**.

Now the noise starts at 01.05 hrs. Unfortunately and unexplainable the Final report does not quote any witness hearing ten minutes of noise, because it is an invention by the Commission, but let's listen to the Commission to the end. The Commission thus states in the Final Report (page 175) that

> *"The failure sequence ... is described further in (chapter) 13.5".*

However, in chapter 13.5 (pp 180/1 of (5)) the failure sequence during these 10 minutes is not described in any great detail supported by any evidence.

Initially it is stated in 13.5 that

> *"The attachments* (i.e. three locks and two hinges) *may* (sic) *have failed in one or, possibly a few steps. The partial initial failure may have coincided with a single metallic bang observed by the AB seaman "* (i.e. Linde at 00.55 hrs).

It does not sound very convincing! What failed initially? Was the visor actually locked at this time or was it only secured by ropes as suggested by, e.g. the Germans? The Commission does not give any clear answers. Then it is stated that

> *"The main failure* (what is it? - the author's remark) *is believed* (sic) *to have happened in a subsequent wave impact, shortly after the metallic bang"* (at 00.55 hrs).
> *"... In this main failure the remaining locking* (?) *devices failed completely ...",*

i.e. first the Atlantic lock or the port side lock was broken according to the Commission - the bang at **00.55** hrs or **01.10** hrs - and then the remaining (side) locks (and maybe the hinges - they are not locks) were broken - the main failure? - but in chapter 15.10 (page 194) it is stated that

> *"Most likely* (sic) *the port side lock failed first",*

i.e. before the Atlantic lock, in spite of the fact that the side locks were always under *compressive* loads when the Atlantic lock was closed and could not be pulled apart. The hinges were broken later, because it is stated further down in chapter 13.5 that

> *"Once the visor had lifted off its locating horns* (i.e. all three locks holding the visor down were broken)*, the port side hinge failed under the overload generated by the high twisting and yawing moments and the vertical force"*.

There is no evidence at all for any high twisting and yawing moments acting on the lose visor at this time - it is another invention of the Commission - and that the visor actually fell off, but the hinges must break for it to happen. Then

> *"The starboard side hinge failed as a result of twisting ...".*

No evidence for that either; it is just an unproven statement by the Commission. Because in the Part report (16) the Commission had stated something completely different.

FALSE STATEMENTS IN THE PART REPORT

In the Part report (16) page 24 (published 4 April 1995) the Commission reported that the hinges were broken by forces in the *upward* and *forward* directions resulting from the hinge arms being in contact with the weather deck as follows:

> *"The fracture at the lugs of the hinges occurred* ***in tension****. The fracture surfaces show that failure occured during* ***one short overload****. The hinge lugs and the weldings have been examined by metallurgic and strength of material analysis.* ***The results of the examinations will be published in an addendum to the Final Report.***
>
> *It is considered probable that the forces that broke the hinges occurred, when the hinge arms hit against the weather deck* (deck 4) *as a result of the bottom part of the visor being compressed* (the bottom is not compressed)*. The lever effect which then developed in combination with inertia forces, when the visor hammered on the fore peak deck* (deck 2 - totally undamaged)*, was sufficient to pull apart the hinges".*

The visor bottom part is really not very compressed, and if it *'hammered'* against the fore peak deck 2 - not proven, the fore peak deck 2 is undamaged.

An addendum with a metallurgic and strength of material analysis report dated before the 4 April 1995, that the hinges were broken in tension and during one short overload, does not exist.

NO EVIDENCE HOW THE HINGE ARMS WERE RIPPED APART

In fact there are no reports or supplements in the Final Report (5) at all (e.g. Supplements nos. 510, 511, 516, 517 and 518) to the effect why and how the hinges had been pulled apart, e.g. in tension. Only Supplement no. 518 discusses the fracture surfaces of the hinge lugs - the only conclusion is that available information does not support the conclusion that *previously existing fatigue fractures* should have played a part in the failure.

NO RESULTS OF EXAMINATIONS PUBLISHED

The statement in the Part Report (16) that "***The results of the examinations will be published in an addendum to the Final Report***" is not correct. It was probably intentional lie 1995 - no examinations or analysis had been done! And no reports could later be presented to substantiate the false statement.

Chapter 15.5 in the Final report (page 191) states:

> *"The lower rims of the hinge plates had generally failed under tension and the upper ones under bending ... with clear signs of bending overload. ... The lugs and one recovered hinge bushing have undergone metallurgical and strength investigations as described in 12.7 and in more detail in the Supplement;"*

As the Supplement does **not** describe the surfaces of the fractures in the hinge lugs, we have to look in chapter 12.7 - (page 168) in (5):

> *"The studied failures* (of the hinge fracture surfaces) *were of ductile character and signs of fatigue were not seen"*

Suddenly the existing fatigue fractures had disappeared and no information *how* the fracture occurred is given.

Chapter 15.5 thus states (page 192)

> *"It is most likely* (sic) *that the forces to cause the hinges to fail were generated when the visor, moving upwards around its hinges and having lost support from the locating horns, was exposed to twisting and yawing moments".*

Why the visor was exposed to twisting and yawing moments during the very short time it had lost support from the locating horns is not explained. The visor was only a few meters below water 1-2 seconds every 7-8 seconds, when the ferry pitched down into the waves.

That the Commission does not know what it is talking about is shown in the next sentence:

> *"... it is also possible* (sic) *that the initial failure of the port hinge was caused by high reaction* (sic) *forces before* (sic) *all locking devices failed."*

Now suddenly the *'initial failure'* was in the port hinge *before* all locks failed - caused by a reaction (?) force. But it could have been the port side lock ... or the bottom lock that failed first.

Actually, with all three locks locked, there were no loads/forces at all acting on the hinges!

As shown in the previous chapters the hinges were not transmitting any loads at all from the visor to the superstructure under any conditions as long as the locks were applied. The hinges were only used to lift the visor in port.

FRACTURES IN THE HINGE LUG BEFORE THE ACCIDENT

Fractures had been observed in the hinge lugs before the accident -

> *"... the cracks generated during normal service ..."*

are noted in the next sentence but are never analysed. Cracks during normal (sic) operation reduce strength and are due to either fatigue, overload or design/manufacturing fault **1.18**. These must be repaired and/or be reported to the Class. But of course - the only time the hinges were under tensile load was when the visor was

lifted up/down ... in port - by the hydraulics. If waves tried to lift the visor the force in the hinge was compressive!

In the Final Report (5) chapter 8.12 the Commission stated that cracks had been seen in the hinges *before* the accident *without being repaired* and the Commission had no comment, except that the crack were in an area not visible, when the visor was closed. The Commission had stated that the 'Estonia' was in good shape and seaworthy and considers that cracks in the visor hinges are *'normal service'*. And not to forget one theory - *"the initial failure of the port hinge was caused before all locking devices failed"*! The question whether the accident was caused by the port visor hinge fractures is hanging in the air.

But how could wave loads on a locked visor (two side locks and the Atlantic lock) damage a hinge that did not transmit any loads at all?

CONSTRUCTIVE WEAKNESSES CANNOT BE DETECTED

The Swedish NMA boss - Johan Franson **1.16** has an interesting comment to the above (in the Swedish daily Göteborgs Posten/Debatt on 28 February 2001):

> *'The constructive weaknesses which together with severe weather caused (the accident) **cannot be detected** by ... a periodic inspection ... . It is something that must be detected in connection with a newbuilding inspection'.*

Thus - professional Swedish inspectors of ships at inspections cannot detect cracks and deformations due to overload or fatigue after 15 years of normal operations!

However - there are several theories *how* (and *when*?) the hinges broke - either they were bent sideway or pushed up and pulled forward **3.9** but the Final Report (5) has no definitive conclusion. Maybe the port visor hinge was finally pulled apart under water, when the ship sank, and the starboard hinge was ripped apart even later - when the visor was finally removed by explosives under water and pulled away from the ship?

But let's assume like the Commission that the hinges broke first and the locks later. According chapter 13.5 the visor was then

> *"constrained in the longitudinal direction"*

by the hydraulics, but in spite of this ...

> *"Impact marks indicate violent transverse movements"*

No photos of impact marks due to transverse movements are shown in the Final report (5). Actually there are no such marks! Then the visor cut the weather deck (deck 4) plate and structure (a deck beam) and the collision bulkhead of the superstructure and - the visor pulled open the ramp, when the visor fell off. However

> *"The exact timing of this development cannot be determined* (sic) *..."*

and

> *"The many uncertainties involved make detailed calculations of this development meaningless* (sic)*"* (page 181 in (5)).

It was thus meaningless - after three years of investigations - to show how the ramp protecting the superstructure was pulled open and caused the flooding of the deck 2 in the superstructure. Note from the above that it is not clear at all when any locking device of the visor ruptured and then we are not told why, how and when the ramp was ripped open.

Actually the Commission has presented at least three versions/proposals/hypotheisis how the visor became lose by the waves:

1. the port hinge could have broken first (at 00.55 hrs), or

2. the port side lock (in compression!) could have broken first (at 00.55 hrs), or

3. the bottom-Atlantic lock could have broken first (at 00.55 hrs).

None of the three proposals are followed up by what happened then, e.g. if the port hinge broke, why would the locks fails between 01.05 and 01.15 hrs, etc.

Finally the Commission states that

> *"the course of events described is fully possible.",*

i.e. as no course of events is really described at all, it is clear that there is no evidence for any events including the allegation that the visor actually fell off! Not even the times are established - the Commission stated that

> *"The time for the full failure sequence ... may have been 10-20 minutes"*,

i.e. as the *'full failure sequence'* ended at **01.15** hrs, it must have started **00.55** hrs or **01.05** hrs during a period when the crew did not do anything other than to ask Linde to go down and have a look. Full speed was maintained during the complete *'full failure sequence'*.

PASSENGER OBSERVATIONS IGNORED

It is at this time **00.55** hrs that passengers observed water on deck 1, before the sudden listing, and when the sudden list occurred **2.1** at **01.02** hrs, which the Commission conveniently decided to ignore.

The author thinks the above course of events of the Commission is fascinating fantasies. Not one word of it is true - but it is interesting to study the disinformation. Read on! How did the Atlantic lock fail? Was it an impact on the visor? Or was the lock damaged long before the accident?

MODEL TESTS OF WAVE FORCES ON THE VISOR

In chapter 13.5 of (5) the Commission states:

> *"... the maximum resultant force* (on the visor was) *between 4 and 9 MN,"*

in the severe weather. They refer to chapter 12.1-12.3, where this should be shown and to chapter 15.2, where it is summarised.

1 000 TONS FORCE HITS THE VESSEL

In chapter 12.1.3 is stated that *once* during ***model*** tests a force on the visor was measured which was 7.7 MN in x-direction, 7.4 MN in z-direction and 2.2 MN in y-direction, i.e. the total resultant force was 10.9 MN, i.e. say about 1 090 tons, which is more than stated in chapter 13.5. If such a force actually hit the ***real*** ship 'Estonia' is not selfevident. It should have been noticed aboard - a 1 000 tons impact hitting the visor/ship during less than 0.5 seconds would result in enormous noise and structural damage and the vessel would have stopped immediately and everybody standing aboard would have fallen to the deck! **Actually, there is no way that such**

big impacts could have hit the little visor. The model tests cannot be re-done by an independet model test basin!

In Figure 12.3 in (5), reproduced below, is shown that only the vertical force (in z-direction) was >4MN (>400 tons) six times during 1 000 seconds of model test, i.e. every third minute the visor experienced a vertical (z-direction) impact force >400 tons. These big impacts apparently occur when the ship encounters big waves >6 meters (not very big actually) - the normal waves are about four meters high but seven, eight times in 1 000 seconds the waves are more than seven meters high - and every time there is an impact. The author has serious doubts about these model tests **Appendix 2** and considers the written report of the test as pure falsifications (the forces have been enlarged 5-10 times or did not exist at all).

There exists no method to extrapolate full scale forces from forces measured in model tests. The full scale Z force in figure 12.3 from (5) below is not proven (and as stated before - the model tests and the extrapolation to full size cannot be re-done by any independent scientist!)

In chapter 12.2.3 (pp 157/8) it is stated that

> *"There is a chance of about 1/20 that, during 30 minutes of exposure, the extreme load was larger than the the value corresponding to 10 hours mean exceedance period".*[109]

The extreme loads in z-(vertical) direction on the visor, with 30 minutes respectively 10 hours mean exceedance period are, according table 12.3 (in 150° heading, 15 knots speed, 1 meter bow wave and 4.0 meters significant wave height) in (5) only 2.95 respectively 4.20 MN, i.e. much less than was measured in the model tests. In chapter 12.3 the Commission summarises above (table 12.5) that the most probable vertical (z-direction) load was 3.6 MN (about 360 ton) during 30 minutes. In chapter 15.2 - the summary - The Commission repeats that *the maximum resultant force* (on the visor was) *between 4 and 9 MN*, but adds that the maximum vertical load was only between 3 and 6 MN, in spite of a load of >4MN every third minute in model tests. No corrections were made for the weight of the visor or water inside the visor.

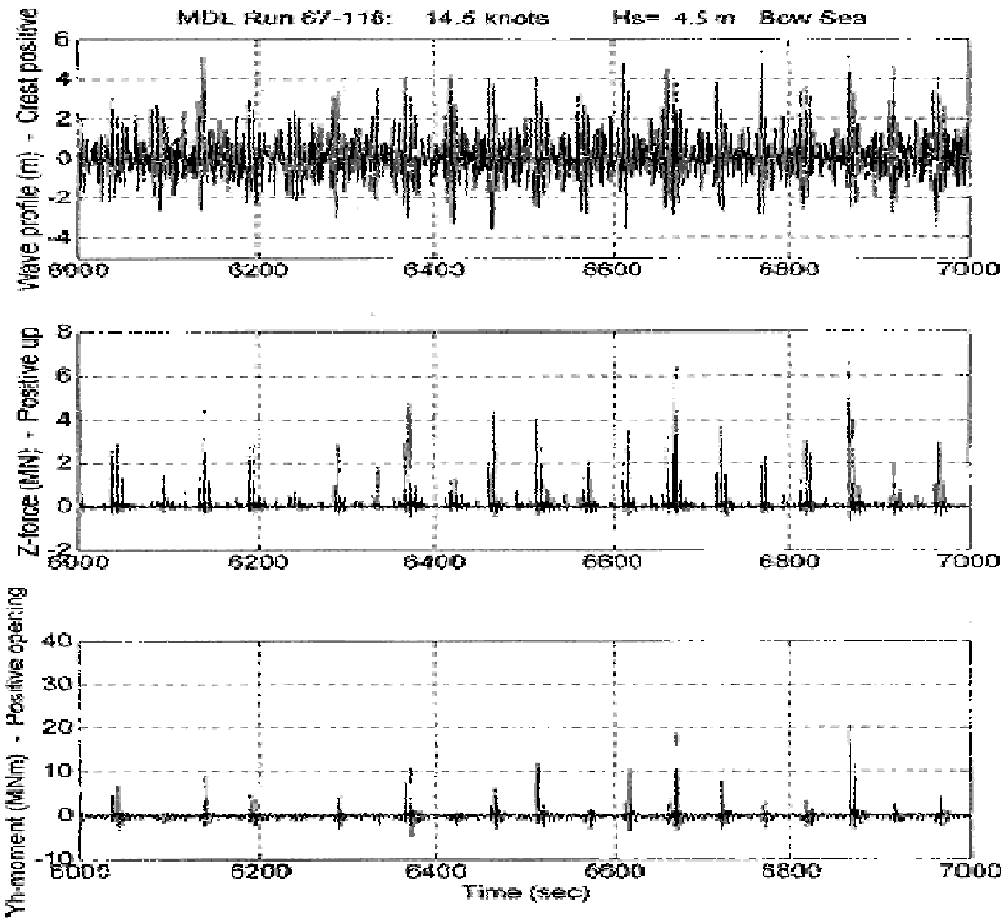

Figure 3.7.1 - Figure 12.3 in (5) - Example of time series from model tests

The Commission thus suggests that a vertical impact force (P - figure 3.2) of 360 tons (3.6 MN) pulled open the Atlantic lock at about 00.55 - 01.05 hrs - it might also have been the port hinge or a side lock that broke first even it the former did not carry any load, when the Atlantic lock was intact, and the latter was in compression, when the Atlantic lock was intact.

FREQUENT IMPACT LOADS - BUT WITH LITTLE ENERGY

There is evidently no evidence for a sudden impact load on the visor causing a force breaking the Atlantic lock. The model tests above show that there were impacts on the visor causing a vertical Z-force >400 tons every third minute and >300 tons every minute. But AB Linde had heard only one big 'bang' - the 360 tons impact? - sometime before 01.00 hrs and then it was quiet for five minutes. Most passengers only heard two big, sharp bangs and then there was a sudden listing. But the model tests show clearly that there were wave impacts of >300 tons every minute! What shall we believe? The evaluation of the model tests is apparently manipulated, i.e. when extrapolating the full scale Z and X forces from the model tests.

How the impact load was transmitted via the locks and hinges to the hull is not known and never explained. There were unknown wear and tear in all attachments but the five attachment points should however, in the author's opinion, have easily transmitted impact loads to the supporting structure because of their short duration.

There was never enough energy in the impacts to damage the locks.

And evidently, if there were not enough energy in the impacts to damage the locks, there was not enough energy to lift the visor itself up from the supports. If there were enough energy to lift the visor up from its

supports, the same energy would ensure that the visor came crashing down on its lower supports, resulting in a lot of damage to the hull: but the forepeak deck 2 on the wreck below the visor is completely undamaged.The Commission suggested, as one *possibility*, that it was the Atlantic lock that was pulled apart in tension first. The Commission assumed that the Atlantic lock was in perfect and undamaged condition *before* the accident, even if there is no evidence for that.

Actually there is no evidence at all that the Atlantic lock was *undamaged* before the accident or **that it was in use.** There is of course the possibility that the Atlantic lock had been damaged *before* the accident and was not in use. The Commission never examined these possibilities.

The Atlantic lock looks as follows (figure 15.2 in (5)) right:

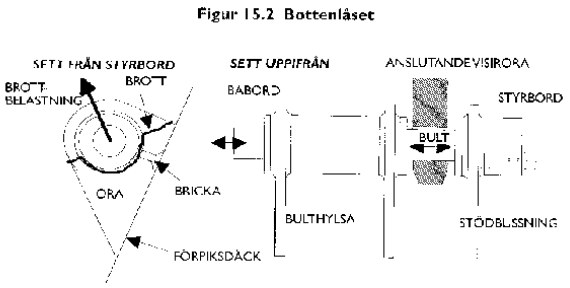

Figure 3.7.2 - Figure 15.2 in (5) Bottom locking device

THE DAMAGES OF THE ATLANTIC LOCK

All three lugs holding the two bolt bushes had been torn apart in the 8 and 2 o'clock positions. The starboard bush had been torn off the transverse lug and had disappeared. The port bushing, welded to two lugs, had also disappeared, in spite of the fact that it should have been attached to the locking bolt. The locking bolt itself was seen attached to its hydraulics in the pushed open, i.e. locked position. The bolt was salvaged and later thrown back into the water without being photographed.

The lug on the visor itself can been seen on figure 10.5 in the Part Report (16) reproduced right:

it was bent to starboard and its welded connections to the visor lower stringer were damaged - the horizontal stringer web plate and the face flat were buckled (!) on the starboard sided and were fractured on the port side of the lug.

Figure 3.7.3 - Figure 10.5 in (16) Visor lug of the bottom locking device. Starboard is right in the photo

Such damages rarely occur, if you *pull* in the lug - the damages are clearly due to a force from starboard to port on the visor!

The Commission has never explained the damages. If the visor had been subject to an impact force, whose vertical component exceeded the design load, it should result in a tensile force *pulling* apart the Atlantic lock lug in the longitudinal direction - not sideway.**The Atlantic lock visor lug does not look damaged at all due to such force!** The pulling force would cause the following damages (32):-

(A) The lug of the visor (or its welded connection to the visor stringer) should have been pulled apart first, as it was the weakest part of the lock - see fig. 3.7.3 above. Now the lug was bent and the connection to the visor buckled and fractured.

A longitudinal pulling force can hardly bend the lug sideway and buckle/fracture the visor stringer.

On the other hand if the visor were stricken off sideway *after* the sudden list, the lug would bend and the connection buckle/fracture (see also the German ideas about the bending of the lug in 1.22). However, it is also possible that the visor had been stricken sideway *before* the accident and that the lock was damaged before the accident - see below.

Below figures 3.7.4-5 show how the visor lug is pulled apart in model tests paid for by the Germans, where the lock bolt bushings are connected with 3 mm welding to the lugs. The lugs are welded to the fore peak deck 2. The longitudinal pulling force is about 210 tons, when the visor lug is broken! The force is easily transmitted to the forepeak deck via the bolt, bushings and their lugs.

The visor lug is the weakest part in this condition!

The Final report (5) page 167 states that the visor lug (original hole diameter 85 mm) was found to be plastically deformed >6 mm and that you need a pulling load of 150-180 tons to make that deformation (but >210 tons when the lug is pulled apart). This means of course that the the three three lugs welded on the forepeak deck would have withstood >180 tons.

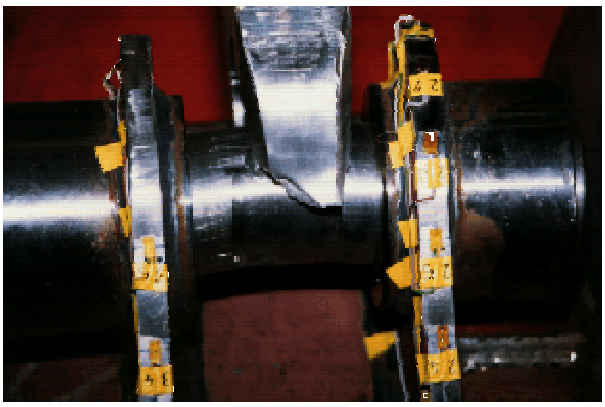

Figure 3.7.4 - close up of broken visor lug and deformed locking bolt

(B) If the visor lug for any reason did not break (if it had been of stronger material), the locking bolt should have sheared off (see figure 3.7.4 above), as it was the second weakest part. According the Commission the bolt was undamaged, when it was examined - found at the divings 2-4 December 1994 1.16 - then it was thrown away by Stenström. It is probable that Stenström then knew that the story of the lock was a lie. The bolt was probably rusty and dirty and showed no traces of having been used for some time. The Part report (16) page 19 states that the bolt was salvaged and inspected and that the diameter was ***79,8*** mm throughout except at the contact point with the visor lug where it was ***79,4*** mm. These are very accurate figures. Strangely enough no photographs were taken of the bolt.

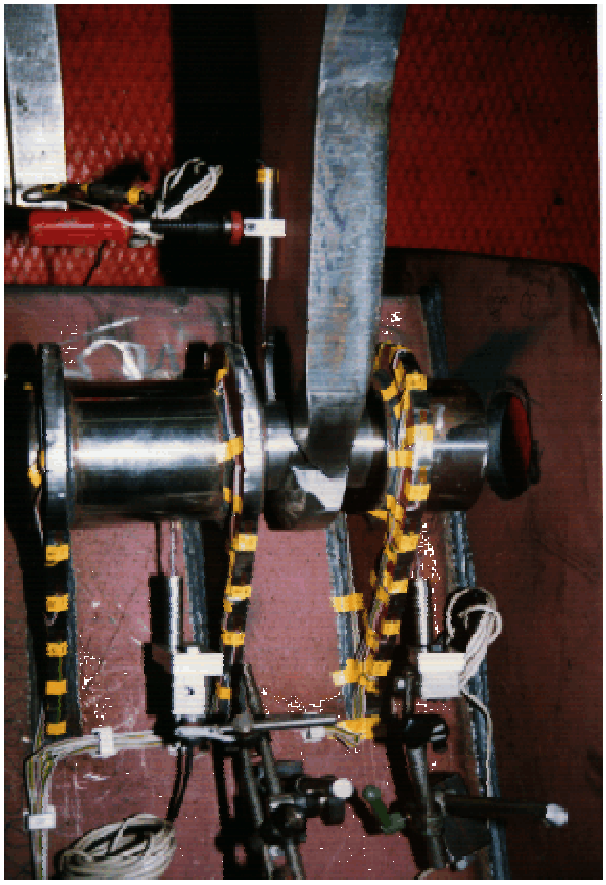

Figure 3.7.5 - the visor lug breaks at 210 tons load

The Final report (5) page 125 on the other hand states that the bolt diameter was about ***78*** mm (sic) with little wear at the lug.

(C) If the visor lug and the bolt for any reason did not break (e.g. the bolt bushes were incorrectly welded with only 1 mm in 1980 to their lugs), then the three lugs welded on the forepeak deck should have been damaged - but then only *two lugs adjacent to the visor lug* should have been *pulled* apart in the 8 and 2 o'clock positions and the middle one should have been bent, BUT, **the third lug - to port - should not have been pulled apart at all.** It should bend, while the bushing remained or was pulled away.

Evidently the visor lug itself will not bend, when the fore peak deck lugs are ripped apart. The damages to the forepeak deck lugs would look as seen in figures 3.7.6-7 below (where the bushings are completely incorrectly welded with only 1 mm to the lugs). Now on the wreck all three lugs were found ripped apart - and rusty! - and you wonder how it could have taken place. A logical explanation may be that the visor lug had been pushed against the port bushing by a transverse load, which pushed the bushing out of the lugs, and the lugs were later pulled apart as found. The weldings of the lugs to the bushings were also found rusty. The initial damage could very well have occurred *before* the accident on 28 September 1994.

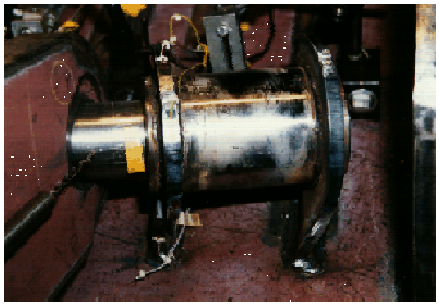

Figure 3.7.6 Port fore peak deck lug (right) and the middle lug bent, when the starboard lug has been pulled apart

The Commission has evidently never made above analysis. When it saw on an underwater video on 2 October 1994 that the lock was damaged, it made up the story that it had been pulled apart by one big wave impact on the visor.

They could also see the undamaged locking bolt on the ROV film, but the Commission did not then know that the weakest part of the lock was the visor lug, which was intact (the visor had officially not been found). When the damages later indicated that the lock probably had been damaged by a sideway force, the Commission ignored this possibility.

It is quite likely that the Atlantic lock was damaged before the accident.

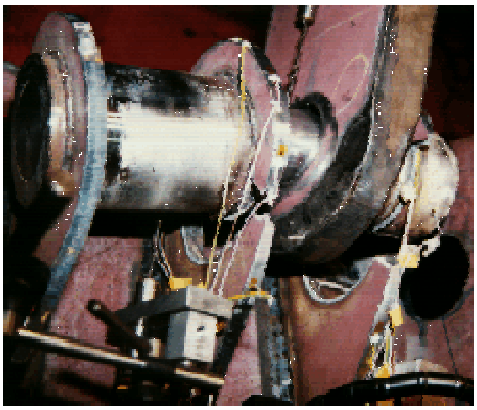

Fig 3.7.7 The Atlantic lock broken - the port lug (left) is bent and not ripped apart!

It does not change any conclusions in this book, as the visor had nothing to do with the accident - except as being used by the Commission as a patsy.

The visor lug was bent and its connection to the lower stringer was buckled and the lock could not be used - it did not fit - more **pictures**. Several parts were heavily rusted.

OLD DAMAGES DISCOVERED

All this was of course discovered by outside experts (in this case from the Royal Institute of Technology, KTH, Stockholm - see Supplement no. 517 in (5)).

But the KTH report assumed that, if the lock had been damaged *before* the accident, it would (a) have been detected and (b) been repaired and (c) therefore the lock must have been undamaged! A nice logical circle. The Commission finally concluded - and this is the proximate cause of the whole accident - that the bolt bushes had been incorrectly welded (<3 mm weld) to the deck lugs so that the lugs broke but forgot that the *visor* lug showed plastic deformations indicating a previous force (>150 tons) being transmitted by the lock with supposed correcly welded bushes. Evidently the bushes could not have been incorrectly welded resulting in

reduced strength, when other parts of the lock indicated that much higher loads had been transmitted previously.

It is interesting to see that the German report **3.18** published in June 2000 stated (again) that there were many findings to the effect that the visor did not fit and that the condition of the visor was bad. In spite of this the Germans have never stated that the Atlantic lock did not fit. However ...

The Bottom (Atlantic)-Lock was probably damaged before the Accident took place!

It is a reasonable assumption. Contacts with ice had dislocated the visor hinges a little and the Atlantic lock visor lug had been bent to starboard and was, say 20 mm out of line with the bushings - it didn't fit. Probably the bushings were not even there! What did you do? You put the lock assembly on the repair list and didn't use the lock at all. **It was not necessary to use the Atlantic lock as the visor was kept in place by the side locks and the hinges.**

If that were the case, the side locks would always have been in tension due to wave loads. And the side locks and the hinges were enough to keep the visor in place. The Atlantic lock was just an extra attachment to unload the side locks and the hinges.

The conclusion of this chapter is that the Commission never established the condition of the Atlantic lock prior to the accident and how, when and why it later was found damaged. However, in order for the visor to become detached the other attachments must fail. We shall in the next chapter look at the side locks.

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[109] What it means is the following: if one maximum load is probable during 30 minutes and another higher load is probable during 10 hours (20 times longer), then it is 5% (1/20 probability) that that the higher load occurs in any given period of 30 minutes.

3.8 THE ACCIDENT ACCORDING TO THE COMMISSION - THE SIDE LOCKS

If the Atlantic lock were pulled apart first, as suggested as *one* possibility of the Commission, the transmission of loads between visor and superstructure would change.

The Final Report (5) has no calculations, where different attachments are not active.

Without the Atlantic lock a vertical load P1 on the visor is transmitted to the hull via the side locks and the hinges. It works very well. Just because one lock fails due to one big wave impact, it doesn't mean that other locks will fail due to further wave impacts.

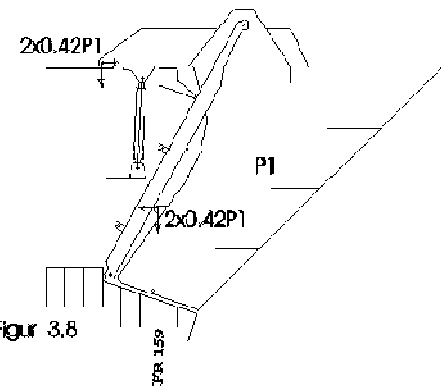
It is easy to demonstrate that a vertical upward load P1 on the visor is transmitted as a *horizontal* force 0,42*P1 at every attachment point (two side locks, two hinges). There is tension in the side locks and compression (and bending) in the hinge arms (again we ignore that much external load is transmitted to the superstructure as friction in the vertical rubber seals). See figure 3.8 below.

THE ATLANTIC LOCK WAS NOT NEEDED

You see that the Atlantic lock was not required. The visor was still attached by *four* strong points.

Visors were built in such a way in the 1950's and 1960's and it was only to unload and to reduce wear and tear in the *hinges*, why an Atlantic lock was later installed - to un-load the hinges!

The Commission states (see chapter 15.3 in the Final Report (5)) that the load-carrying capacity of the bottom lock was insufficient to satisfy various requirements, but in fact *the bottom lock was not required at all*. The Commission invented that the Atlantic lock was required for the safety of the ferry while in reality it was only an extra reinforcement to *unload* the hinges. If the Atlantic lock was broken (at 00.55 hrs?), the horizontal loads in the side locks were reduced (from 0.625*P to 0.42*P1), but the direction was changed - P1 caused a *tensile* load in the side lock lugs.



Figur 3.8

The Commission then states in the confusingly written Final Report that another impact load P1 (at 01.05 hrs?) on the visor caused another tensile load that pulled the side locks apart, i.e. the side lock lugs were ripped off out/sidewards with parts of the visor aft bulkhead plating. Of course there is no evidence for that. It is another invention of the Commission!

We are told that the 60 mm thick side lugs and pieces of visor bulkhead plates were pulled off the visor, but we do not told why (The lugs (each with a piece of plate from the visor) were never salvaged - they are still down at the wreck). According to the Commission this event may have occurred, when the visor was pushed up by another impact load P1 on the visor at about 01.05 hrs - 10 minutes after the damage to the Atlantic lock, or that it was a simultaneous happening. The Final Report is very unclear as shown in **3.7** - it could also have been the port visor hinge or side lock that broke off first according to the Commission.

The port side lock lug and plate attached to the wreck were filmed on 2 October 1994 (see figure 8.17 in (5)) - the depth indication has been edited away. But the starboard side lock lug and plate, located about five meters deeper down were apparently *not* filmed on 2 October. First on 9 October 1994 was the starboard side lock lug allegedly filmed - see figure 8.18 in (5) - at 67.6 meters depth. However - strangely enough the Commission/Karppinen did not film the starboard superstructure bulkhead just *above* the side lock on 9

October 1994. Just above the starboard side lock Czech divers filmed in August 2000 a big opening apparently caused by an explosion **3.10**.

BIG DAMAGE - BUT NO DAMAGE AT ALL ACCORDING TO THE COMMISSION

For unknown reasons the big damage *above* the starboard side lock is not mentioned in the Final Report (5) at all. Figure 8.18 in (5) is cut off - you cannot see what is above the side lock. The Commission has reported that the starboard front bulkhead of the superstructure is undamaged above the side lock - it is only at the top that the bulkhead connected to the weather deck is allegedly torn open a little (by the visor hydraulics). In reality there is a big opening - 0,6 meters wide and >2 meters long in the bulkhead!

THREE RIDICULOUS GERMAN PROPOSALS - TOO MUCH WATER INSIDE THE VISOR ... OR AN EXPLOSION ... OR THE CREW OPENED THE VISOR

The German group of experts long suggested that the side lock lugs were ripped off, when the visor tipped forward - full of water and with the hinges ripped apart - and rotated around the then undamaged Atlantic lock (it was thus engaged). This suggestion has never been investigated by the Commission. This proposal is quite ridiculous as the Germans never explain how first the hinges and then the side locks can be ripped apart in a forward direction. What force would have caused that?

Later, 1999, the Germans suggested **3.18** that an explosive device between visor and ramp may have *contributed* to the loss of the visor, i.e. all locks and hinges should have been ripped apart by a bomb exploding between ramp and visor. This is also quite ridiculous - what would have been the purpose of such a criminal act?

The Germans have also suggested that the crew tried to open or actually opened the visor and ramp at sea in order the dump cargo overboard (with the bow moving up/down 4-6 meters every 8 second). Nobody has complained about the Germans giving three different explanations about the same observations. Evidently the Germans lost all credibility by such nonsense. Let's look at some pictures of the damages around the side locks - indicating something else:

According to the Commission - chapter 8.6.2 of (5) -

"The visor side locking lugs remained in their recesses in the front bulkhead of the ship, located on their locking bolts. The port side lug had rotated as far as it could in the recess in a direction indicating an intial upwards movement of the attachment. The bottom face of the starboard lug was pointing out from the recess (Figure 8.18 (of (5)*) indicating only a slight rotation in the same direction as the port lug. ... A hole due to an impact by the lugs of the starboard manual lock was noted in the bulkhead just above the starboard side lock."*

Fig. 3.8.1 - SB side lug in its recess. Recess top severly damaged (Source: International Fact Group)

THE STARBOARD SIDE LOCK RECESS

Czech divers checked and filmed the *starboard* side

lock recess in August 2000 - figure 3.8.1 right. They found the locking lug in the recess, apparently located on its locking bolt.
In figure 3.8.2 you clearly see the bottom face of the lug pointing out.

However you can also clearly see that the plate edge of the upper part of the recess has been pushed and buckled ***upwards*** (!) and that as a consequence the bulkhead plate has fractured ***side ways***. **The Final report (5) does not report these strange damages.** The photo in figure 8.18 of (5) taken on 9 October 1994 has been cut not to show the damaged area. According to the Commission the area was undamaged!

How to explain these unreported damages? They seem to have been caused by the visor lug plate pushing against the edge of the hole in the frame plate, but the visor lug is fixed on its locking bolt. The answer will be found by studying the photos of the recess taken on 2 October 1994 (unless they have disappeared?). One suggestion is that the starboard side lug was not in a locked position and that the damage was caused by the visor moving upwards. It could have happened, e.g. if the visor side lock was not locked at sea - and that the starboard hinge then broke off, when the lug was free to move upwards and to damage the upper edge of the recess.

The lug must then have been removed from the visor (see figure 8.20 from (5) reproduced below) later and locked (or located) (!) into the recess. The problem with this scenario is that according to the Commission the visor was still not found on the 9 October 1994. It was located 1 560 meters west of the wreck on 17 October 1994.

Fig. 3.8.2 - SB side lug in its recess. Recess top severly damaged (Source International Fact Group)

The side locks could very well have been damaged in port, while trying to open the visor with the hydraulics and with the side lock engaged. The hydraulic forces on the visor hinges then pull out the side lock plates exactly as shown below.

This has happened before - the Swedish Ferry 'Diana II' had similar damages in December 1993. But it does not explain the damage to the top of the starboard recess hole. By studying the visor itself it is easy to conclude that the damages port and starboard are different.

Figur 8.19 Skada på grund av avskiljning av babords sidolåsöra. Det manuella låsets öron.

Fig. 8.19 of (5) Damages to port side lock lug. The manual lock hook below.

On port side (picture left) the steel plate below the side lock lug is pulled out resulting in a rectangular opening. The fractured edges are ***not*** rusty. The double plate hook plates of the port manual lock below the side lock lug are pushed together sideway, i.e. it could not have been used.
On the starboard side (picture right) the lug is evidently missing resulting in a rectangular hole, but *the plate is also ripped open outside the hole*. The fractured edges ***are*** rusty.

The starboard manual hook/lugs are ripped apart and deformed vertically/aftward.The reason for this damage is unclear - the Commission suggests that they punched a hole in the front bulkhead but the Czech divers did not find that hole - they found instead a 2,5x0,6 meters opening caused by explosives - see below and **3.10**.

Figur 8.20 Skada på visirets akterskott på styrbordssidan nära det avskilda sidolåsörat.

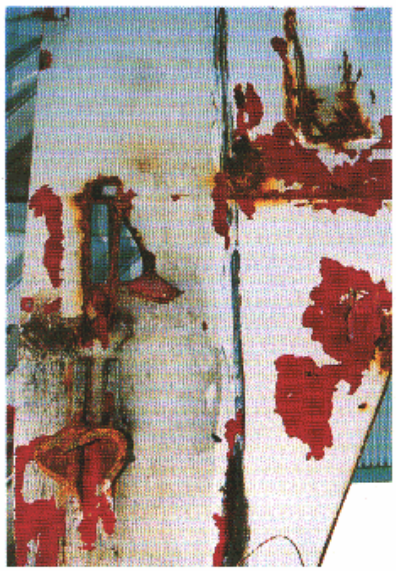


Fig. 8.20 of (5) Damages to starboard lock lug. The manual lock hook - damaged - below.

The Commission states in the Final report (5) that the manual side locks were not used, but the damages to the starboard manual lock hook evidently show that *it must have been* used or damaged, when the visor was removed.

The starboard manual side lock was probably engaged (locked!), because the ordinary, hydraulic side lock above was already damaged before the accident and could not be used.

On other photos, e.g. right taken immediately after the salvage of the visor, the manual hook is however undamaged! The starboard hook - undamaged - is seen left in the picture.

The author originally thought that the loss of the side lugs were caused by a sideway wave force, when the leaking and listing ferry hit the visor sideways straight down on a wave. This would have been easy to confirm by checking the lugs - scrape marks, but the lugs are still on the wreck. But it is more likely that the visor was attached to the ship, when it sank.

Fig. 3.8.3 - Visor just after salvage - manual hooks

Today the author thinks that the starboard damages were caused, when the visor, still attached to the superstructure starboard side, were removed under water after the accident. Explosives were then used.

Regardless - the Atlantic lock and the two side locks (and the starboard manual lock) could hardly have been ripped off simultaneously by one and the same vertical upward wave impact. You need at least *two* big impacts, P and P1, *one after the other,* P damaging the Atlantic lock, and P1 damaging the side locks, and there are many testimonies **2.1** about two bangs just before 01.00 hrs. But these bangs can hardly be associated with the visor locks collapsing, because soon after the ship suddenly heeled >30 degrees to starboard, then came

upright and finally reached a stable condition with about 15° list while rolling. How could the side locks have broken? When did the Commission actually discuss that subject?

SIDE LOCKS STRONGER THAN EXPECTED 1996 AND AS STATED 1994

Not until the ninth meeting of the Commission at Helsinki on 31 January and 1 February 1996 (act A162*) the Finnish delegation announced that they had done full scale tests of the side locks and measured a break load of 214.5 tons for one lock!

According to the calculations above you then needed an outside load of P1 >500 tons to pull them apart. In order for the statements of the Commission in 1994 and in the Final Report in 1997 to be correct, you thus need an initial impact P - 360 tons - to break the Atlantic lock and then another impact P1 - >500 tons - to damage the side locks.

According the Commission it could have been up to ten minutes between the impacts - first an impact P at 00.55 hrs, and then another impact P1 at 01.05 hrs without the crew reacting. But according to the model tests, **3.7** and **Appendix 2**, there were impacts >300 tons ***every*** minute! These model tests are strange, **certainly falsified due to incorrect extrapolation of full scale forces from model data** - does actually 300 tons impact forces, P and P1, hit a ferry like the 'Estonia' every minute - in 4,2 meters waves? Survivors were alleged by the Commission to have heard repeated *metallic* noise from the bow for ten minutes before the accident - listing but they never heard any wave impacts. So there were no wave impacts - there were metallic noises, we are told! But the ship's crew did nothing. Metallic noise is quite different from a wave impact. The latter is heard as canon shot followed by vibrations. The reader should by know that any allegation by the Commission about wave impacts on visors are pure imagination.

FREAK WAVES

Two ships of the author have been hit by freak - unexpected, steep and high - solid waves in heavy weather causing severe damages. One cargo ship was suddenly *rolling* into the freaksolid wave, which ripped off 50 metres of bulwark on the weather deck and damaged hatch covers and a crane. The bang was immediately heard and the damage noticed and the ship changed course to a port of refuge. A freak wave on the other ship *rolled over the stern* and impacted and damaged the deck house aft side - it was pushed in 10-20 centimetres - and smashed windows and doors and the 1st tier of the deck house was water filled. The impact was evidently heard and the ship changed course, etc.

It is strange (evidently the Commission just made up an untrue story!) that the crew on the 'Estonia' never noticed anything suspect before the ship suddenly listed (at 01.02 hrs or 01.15 hrs). According to the model tests **Appendix 2** there were very big impacts every two-three minutes but on the ship only two big bangs were noticed - then sudden listing - and a stable condition at reduced list.

Many Things must break before the Ramp is open

Regardless - after the side locks in the superstructure were broken a lot of other things in the *superstructure* or visor must break in tension before the ship can list (and capsize) due to water loaded in the superstructure -

(i) two visor hinges on top of (the weather) deck 4 eight meters above waterline,
(ii) the foundations of the visor lifting hydraulics inside the superstructure on deck 3,
(iii) the weather deck 4 deck plating, 8 mm thick, on top of the superstructure,
(iv) the strong deck beam at frame 159 P+S below weather deck 4 in the superstructure, and
(v) the top of the superstructure bulkhead forward of frame 159,
(vi) six hook/lock attachments of the ramp protecting the superstructure opening, and finally
(vii) the ramp hydraulics and preventer wires.

Only then the ramp can be pulled fully open around its hinges on deck 2 by a forward force (the lose visor?), so that water can fill the car deck in the *superstructure* after which the ship capsizes and floats upside down.

All these structural damages must take place before the visor can fall off under way without anybody onboard noticing anything. The Commission has not presented any evidence for any damages except the hinges - only some blurry photos taken 4 October 1994. The analysis of alleged (invented by the Commission) damages thus continues.

3.9 THE ACCIDENT ACCORDING TO THE COMMISSION - THE VISOR DECK HINGES

After the side locks had been broken as alleged by the Commission, the visor was kept in place by the two deck hinges (we assume that the hinges broke after the locks, even if the Commission has suggested that the port hinge broke first) and by the lifting hydraulic system connected to the hinge arms. Now the Commission suggests that two or four additional wave loads/impacts on the visor tore off the *lifting hydraulics* from their foundations at deck 3 (the Commission does not present any details), so that the visor was free to rotate around the **hinges** on deck 4, i.e. up/down and that then the hinges were ripped off one way or another. When all this should have taken place is not clear from the Final Report (5) - it could have been at 01.05 hrs - just after the side locks were broken - or it could have been at, say 01.12 hrs, when the visor had been swinging up and down for some time.

The Commission verbally stated that the visor had rotated around the hinges and then been crashing down on the fore peak deck.

Actually you would have expected the visor just to rotate freely around the hinges, when the locks were not active anymore. An impact on the visor would just lift the visor if it had enough energy. If the visor was lifted up, it could in theory be pushed sideways and the hinges would bend in parallel and when the visor fell down again it would not fit the horns, that usually steered the visor in position, and the horns would have been smashed. But for that you need a sideway force on the visor just *after* the impact and it is difficult to visualize that.

The impact lasts less than a second - bang. Say that the impact is sideway/upward from port. It lifts the visor above the horns, but as long as the visor is in touch with the horn the sideway component of the impact is transmitted to the hull via the horn. As already described in **3.7**, the explanations of the Commission how and why the visor hinges broke are very unclear. Why would also the hinges break?

For that you need a big force pulling the visor forward.

TEN MINUTES OF METALLIC NOISE AFTER ONE O'CLOCK

On page 175 in the Final Report (5) the Commission states that

> *'witnesses from several areas on board ... heard a repeated metallic noise from the bow area during a period of ten minutes, starting shortly after one o'clock ... it is beyond doubt that the sounds were caused by the visor moving and pounding on the forepeak deck. '*

The quote above is of course pure disinformation, as the expert Schager of the Commission in his summaries of testimonies 1995 **2.1** never concluded that

> *'witnesses from several areas on board ... heard a repeated metallic noise from the bow area during a period of ten minutes, starting shortly after one o'clock '.*

The Commission cannot name any witness that heard repeated metallic noise from the bow during a period of ten minutes. **It is one of numerous outrageous lies of the Commission.** The forepeak deck 2 is completely undamaged and a majority of the witnesses stated that the 'Estonia' listed suddenly already at **01.02** hrs, so *ten* minutes of metallic noise after one o'clock is impossible. The undersides of the visor arms must then also have pounded against the green painted weather (upper) deck 4 but they are undamaged and there are no green paint marks. Figure 8.1 in (5) states that there were pounding damage on the starboard side of the fore peak deck and chapter 8.5.2 in (5) page 121 states that

> *"Pounding damage was recorded to the shell plating edges around the forepeak deck ...",*

but nobody has been able to verify these damages on the video films available. All the edges seem to be intact.

It is unlikely that the visor pounded against the forepeak deck for ten minutes after 01.00 hrs. Expert Schager never recorded these strange events **2.1**.

The visor should not only have pounded against the fore peak (no. 2) deck. The visor lifting arms should also have pounded against the upper weather (no. 4) deck, but no damages due to that have been observed below the visor arms.

It is quite amazing how many lies the Commission presents in its Final report - lie after lie of events without causes and with no logical connections.

Survivors AE (on deck 4) and RS (in the pub on deck 6) never heard any repeated noise from the bow before the list **2.12**. They heard only the two bangs - and then there was the list - at 01.02-01.05 hrs. Their testimonies and many others demonstrate that the Commission's course of events has no foundation in reality.

The ten minutes of noise are an invention to tie together Linde's false testimony until about 01.00 hrs and Treu's testimony starting at 01.15 hrs, when nobody in the crew did anyhing to prevent the accident.

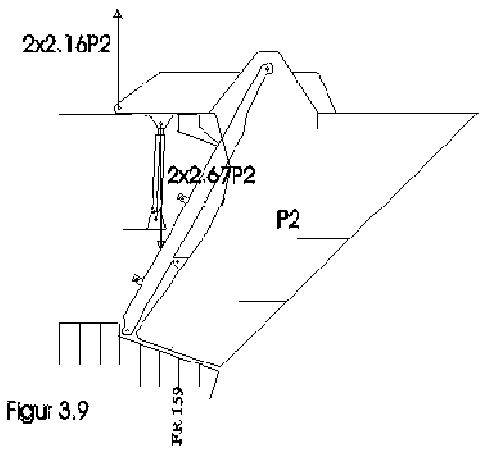
TIME TO TELEPHONE WHILE THE VISOR FALLS OFF

Because in order for the Commission's course of fantastic events to be valid **3.7** there must be a long delay between Linde hearing the first bang on the no. 2 car deck (at 00.55 hrs) and for Linde to return to the bridge on deck 9 (after a trip down on decks 1 and 0) to witness the change of watch at 01.00 hrs on deck 9. Then there must be more time for a telephone call and for Linde to be ordered down to check the car deck and the noise. Then there must be further time for Linde to wait five minutes at the reception on deck 5 to open the doors to the car (no. 2) deck, etc. so that the list according to the Commission and Treu occurred at 01.15 hrs. This is where the *'repeated metallic noise from the bow area during a period of ten minutes, starting shortly after one o'clock'* enters into the Final Report (5). There is no evidence for it anywhere - particularly not in chapter 6 of the Final report (5) with Summary of Testimonies by Survivors. That Linde and Treu are lying should be clear to anybody. Linde and Treu lie (or their statements are manipulated) to support the Commission's false story.

THE VISOR HINGES

But let's discuss how the visor hydraulics and the visor hinges may have broken:

Assume that a vertical upward force P2 now acted on the visor. This force P2 causes a pulling force 2.67*P2 in each hydraulic cylinder and a compressive force 2.16*P2 in each visor hinge lug (see figure 3.9 right). The Commission suggested that the compressive force 2.16*P2 was enough to pull (?) or bend apart the hinge lug and that the pulling force 2.67*P2 was sufficient to pull the hydraulic cylinder from its support. Nobody heard, when these four attachment points were destroyed. Note that the hinge lugs are in compression (and there is bending of the arm), while the Commission early on had suggested that the hinge was pulled apart by a pulling force in the forward direction of > 700 tons. How could such a force develop. The Final report says little.[110] In chapter 15.10 in the Final Report (5) is clearly stated that



Figur 3.9

"The load on the hinges ... is acting in an uncritical direction ...".

Figure 15.4 in (5) shows a possible *'reaction'* (sic) force distribution over the *undamaged* attachments. The Final Report (5) had earlier stated that the distribution of reaction forces was statically undetermined and there is no supporting calculations for the proposed distribution - it is in fact nonsense. But let's look at it. Note that all attachement points are intact and transfer load.

With a purely hypothetical wave load of 540 tons **vertical** upward, and 540 tons in the *aft* direction and 200 tons sideway - then it is suggested by the Commission that there was **only 63 tons *tension* in the Atlantic lock (which had a break strength of >200 tons),78 and 120 tons *tension* in the side locks (which also had a break strength of >200 tons each) and 450/439 tons *compression* in the hinges and an unknown force in the lifting hydraulics.**

How the force distribution had been developed is, as stated, not clear. The Commission forgot that there were a number of steel-to-steel contact points which transmit (a) all the sideway loads and (b) part of the load in the aft direction. No load seems to be transmitted via any rubber seals.

Thus the Commission demonstrates that a big impact 540 tons upwards and 540 tons aft and 200 tons sideways does not damage any attachments. The Commission could in fact never develop any force distributions, where the visor *locks* were overloaded. The hinges were always either not loaded or under compression. This was one reason why the Final report (5) was delayed three years. The Commission had great difficulties to falsify the simplest strength/force calculations to support the initial lies of October 1994. The figure 15.4 is just a falsification based on no scientific calculations at all!

HOW DID THE HINGES BREAK

So how could the hinges be pulled apart by a *third* vertical impact P2?

The author, AB, asked Klaus Rahka, KR, Finnish expert **1.5** of the Commission. In an e-mail exchange 7-8 November 1999, KR, suggested that the hinges had sheared off:

...

AB - "The hinges were not damaged in the shear mode. In the part report (16) is stated that the fracture at the lugs of the hinges occurred in tension".

KR - "It does not exclude shear as an additional load case....."

...

AB - "Other forces on the visor would only cause the visor to rotate around the hinges. There must be equilibrium, you know".

KR - "Exactly, but lifting hydraulics and dynamics can change the picture, so that the sideway forces (those causing shear) become important."

AB - "But how? How can wave loads on the visor (the locks are not active anymore) pull the visor forward?"

KR - "If the visor is a little open, the lower part of the visor is pushed down, which means that the upper part moves forward - just as a possible thought..."

AB - "Nowhere in the Part and Final reports are described the forces which had pulled apart the hinges, when the ship was upright, as these forces did not exist (could not be developed)".

KR - "The Commission never attempted to describe every detail of something that could not be reconstructed in detail. ***It was sufficient for this accident examination to show that the wave loads were sufficient to break the locks, which according to the general wording of the rules should have been so strong that they held the visor "firmly secured", which was not the case.*** *After the locks had broken, only the weak hinges remained, which - when the visor moved up and down -*

were critically loaded (in spite of the damping of the hydraulics). In the picture, which shows the forces ... you can see that the almost vertical component of the hinge reaction force can be considerable and then it together with a little dynamics could cause the damage, which has been observed.

AB -"The hinges were not weak - they hade a break load each of >350 tons. We speak of a horizontal force in the forward direction - the hinges were pulled apart forward". How did it develop?

etc., etc.

The logical error of Klaus Rauka is clear, when he states that:

> *"It was sufficient for this accident examination to show that the wave loads were sufficient to break the locks, which according to the general wording of the rules should have been so strong that they held the visor "firmly secured", which was not the case".*

The Commission evidently never shows this in the Final Report (5). The *'wave loads'* are certainly manipulated by the model tests **Appendix 2.** The Swedish SSPA Marine AB full scale forces are 100% false as the impact force/load does not exist. As shown in the previous chapters **3.7** and **3.8** the locks could not have been damaged by these alleged (false) forces. And the Commission has not demonstrated that the visor was *'firmly secured'* before the accident - the Atlantic lock was probably damaged before the accident. And who was responsible that the visor was *'firmly secured'*? The shipyard? It is accused of having badly designed and manufactured the locks. But who was going to check the shipyard? According to the Load Line convention it is the *maritime administration* (in this case Estonia) that is responsible that openings in *superstructures* are secure.

But of course, the visor did not protect an opening in the superstructure - it was only a piece of steel at the fore end of the superstructure protecting the ramp that was closing the superstructure. And now that piece of steel was alleged to be lose.

THE VISOR MOVES *FORWARD* BY A FORCE IN THE *AFT* DIRECTION

When the deck hinges had broken, how is not known - **3.7** and above, and when the lifting hydraulics also were lose, the Commission suggested that the visor moved forward - the weather deck 4 plating was allegedly torn open 120 mm by the upper lugs of the lifting hydraulics. Then these lugs hit against a strong transverse deck beam (frame 159).

> *"Subsequent wave impacts* (sic) *caused the visor to move ... forward* (sic) *... Impact marks indicate ... upward movement of about 1.4 meter... the number of heavy aftward* (sic) *blows was at least two and probably four ... The dynamics of this aft-forward movement of the visor generated sufficient impact forces* (sic) *to enable **the hinge beam lugs to cut through the transverse deck beam**, which was the heaviest structural element preventing the visor from moving forward "* (see page 181 in the Final Report).[111]

The time was now according to the Commission about 01.08-01.12 hrs. The ramp had not yet been pulled open. No water had entered the car deck. **The ramp was still locked and tight**. No water could have entered the *superstructure* space at this time! The Commission suggests that only metallic noise had been heard during ten minutes due to a moving visor and that everything else aboard was normal; Linde was waiting on deck 5 and Treu was in the ECR on deck 1. What impact marks that indicate an *upward* movement of about 1.4 meter of the visor are not clear. **Where are they?** The undersides of the visor arms have no such impact marks. Here we are facing another invention of the Commission - impact marks due to upward movement.

And ***'subsequent wave impacts'*** in the upward/aft directions allegedly ***'caused the visor to move forward'*** - how is it possible? The number of blows was at least two and probably four according to the Commission. The model tests above show that there is at least 60 seconds between *'wave impacts'*, so the time to cut through

the deck beam should be two to four minutes, but the wave impact only caused an **upward/aft** direction force - the deck beam must be cut by a **forward** acting force from aft to forward. How was the deck beam cut?

Dr. Klaus Rahka of the Commission has explained that

> *"It was sufficient for this accident examination to show that the wave loads were sufficient to break the (visor) locks, which according to the general wording of the rules should have been so strong that they held the visor "firmly secured", which was not the case."*

How the hinges and the lifting hydraulics and the superstructure upper deck structure, incl. the strong beam, were broken was of no interest to the Commission. Actually the Commission could never explain how the visor got lose by the wave loads. In reality the visor never fell off the ship!

Everything the Commission stated about the visor 1994-1997 was pure nonsense and part of one of the most successful disinformation campaigns ever. The CIA/FBI of the United States could not have produced better lies.

FULL SPEED

Full speed - actually 15 knots - was maintained during the 20 minutes between 00.55-01.15 hrs, when the visor allegedly got lose and demolished the superstructure forward structure (deck 4 and the front bulkhead) and ripped open the ramp. Nobody thought to reduce the speed.

Several persons, including the writer, have since 1998 observed that there are *no score marks* on the port and starboard upper lugs of lifting hydraulics below the visor hinge beams - particularly the forward edges. How could these lifting lugs have cut through the weather deck 4 plating and the strong deck beam, *without the paint on the lug being scraped/scored off*? And evidently there are no marks on the ***undersides*** of the visor arms indicating either upwards or forward movements. Or downward or forward movements!

There are no pictures or details of the alleged cut through transverse deck beam in the Final Report? The question remains, if the deck beam was in fact cut through at all, which is analysed in the next chapter.

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[110] One possibility that a *forward* force pulled apart the hinges is that an explosion between visor and ramp caused it. Another possibility is that the visor hinges were pulled apart under water, when divers detached the visor.

[111] How the Commission knows that it was two or four wave impacts is not known. And the Commission correctly states that the wave impacts acted in the *aftward* direction - but to cut the deck beam you need a force in the *forward* direction. And this alleged forward force is never explained anywhere in the Final Report.

3.10 THE ACCIDENT ACCORDING TO THE COMMISSION - DAMAGES TO THE FORE SHIP AND THE RAMP - THE HOLE IN THE SUPERSTRUCTURE FORWARD SIDE BEHIND THE VISOR

If the visor, previously attached to the *superstructure* at five (three locks and two hinges) or seven (including the lifting pistons/the actuators) strong points, actually was lose at 01.08-01.12 hrs according to the Commission, it should have rested on the ship as follows:

> *the **two visor hinge arms** port and starboard (they are intact and straight but ripped of at the hinges) would have rested on the upper superstructure weather deck 4 and the **bottom of the visor**, it is not particularly damaged, would have rested against the forepeak deck 2 on top of the hull.*

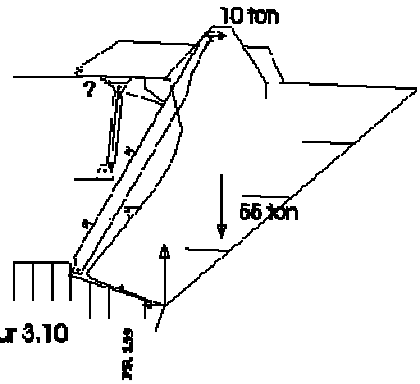
You would then have expected to find scrape marks and green deck paint on the *underside* of the visor hinge arms but no such marks can be seen. You would also expect the forepeak deck 2 to be damaged but it is intact (based on video films).

The **visor lifting hydraulics pistons** are at this time still hanging *inside* the superstructure through openings in deck 4. Now the lugs below the visor arms or the lifting pistons cut forward through the *deck beam* at frame 159 according to the Commission.

After having cut forward through the weather deck 4 plating and the deck beam, the lose visor should then have ended up in a position shown in figure 3.10 below. The aft wall of the visor ramp housing is alleged to be pushing against the ramp top and there are some bent stiffeners inside the housing *port* side indicating a contact with the ramp. The Commission suggests that these damages were caused, when the visor pushed the ramp forward, but they could be old contact damages. You would have expect more scrape marks inside the visor housing, if the visor had actually pushed forward against the ramp.

The lugs of the lifting hydraulics on the hinge arms have cut or are in the process of cutting through the deck beam at frame159. There are no active attachments between visor and ship - the visor is lose. The visor is allegedly tipping forward by its own weight against the ramp. If vertical, upward and horizontal, aftward (the ship moves forward at 15 knots), wave loads in excess of the visor weight now acted on the visor, these wave forces try to lift the visor (filled with water) up, above the ramp, and aftward, and when the wave force ceases, the visor may crash back down on the open weather deck 4 and the fore peak deck 2.

However, there is no evidence that the forepeak deck 2 or the weather deck 4 or the undersides of the hinge arms are damaged due to such movements. Actually - model tests show that the waves cannot lift the visor! It is too heavy and the wave loads are too small!! And there is very hazy evidence that the visor cut through deck 4 - see below!



Figur 3.10

*Now several things must happen more or less simultaneously:- The **visor** must*

*(i) push the ramp **forward** against the waves and*
*(ii) **pull apart** the ramp locks/hooks forward, so that*
(iii) the ramp falls forward into the lose visor.

*The **actuator lifting lugs** must (or has already) at the same time*

*(iv) **'cut'** forward through the deck plate and then deck beam at frame 159 on both sides of the ramp. Later, the actuator lugs or the hydraulic cylinders must tear open another 360 mm of deck 4 plate and then the top of the superstructure front bulkhead plates. **But it never happened!**In the Part Report (16) the Commission states April 1995* that:

"The (superstructure no. 4 upper) *deck was torn open from the visor operating actuator openings and forward (figure 11.4* (see below) *). The openings continued for some length down the front bulkhead (figure 11.5* (see below)*). The deck damage was extensive, while the openings in the bulkhead had rather clean-cut edges"*.

That is all. Not a word about the deck beam. The Commission was apparently not aware of the deck beam in April 1995!

THE DECK BEAM AT FRAME 159

The Independent Fact Group has shown that one lifting lug cannot cut the deck beam http://factgroup.tripod.com. The deck beam at frame 159 is thus another mystery.

The weather deck plate of the superstructure is 8 mm and the four *'cutting edges'* are four 20 mm thick lifting lugs of steel plate (about 400 mm high) - one pair on each side of the ramp. The *'cutting edges'* in each pair are about 100 mm apart, i.e. they should cut two 100 mm wide openings in the deck. When *'the pairs of cutting edges'* arrive at the deck beam at frame 159, after having cut 120 mm of deck plate, they shall first cut a 100 mm wide opening *downward* (!) through the beam vertical web plate, 8 mm thick and 400 mm deep (!), and then through the beam face flat - **a 22 mm thick and 160 mm wide steel plate (!),** which is 400 mm *below* the deck. How the visor arm lugs can cut 400 mm downward is not clear - the underside of visor arms rests on the weather deck. Or was the beam web and face flat torn/cut by the hydraulic cylinder? There are no pictures whatsoever of the cut off deck beam port and starboard in the Final Report (5) or in the available video films! It is very strange that the divers did not examine and photograph the deck beam in December 1994.

It is interesting to note that the *'cutting edges'* (the lugs) and the cut material consist of the same material - normal grade A ship steel. According the Fact Group you need a force in the *forward* direction >185 ton to *'cut'* through the 22 mm face flat (400 mm below the weather deck) during the whole cutting time. **Where did this force come from?** Did it exist? All the wave loads on the visor acted upward and in the *aft* direction!

The port visor actuator lifting lugs below the visor arm and its lifting piston are shown in figure 13.10.1 right. The two lugs, where white paint is still visible, are alleged to have cut through steel!

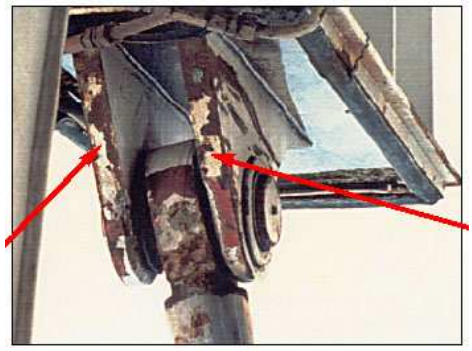


Figure 3.10.1 - Visor *port* lifting arm lugs and actuator *after* the accident and *after* having cut through deck plates and deck beams. The paint on the lugs' forward and inside edges remains!

And how could the cutting edge on the visor arm lugs cut structure 400 mm *below* the deck from aft to *forward*? The cutting edges of the lugs seem to have been in the air flat in line with the open weather deck no. 4 *above* the face !

The pistons of the lifting hydraulics were still attached to the lugs. Did the round hydraulic cylinders or the round piston rods cut throught the beam? The actuator piston is still painted white!

The Commission has never investigated the matter and the Final Report (5) only concludes that the beam was cut port and starboard by the lugs (there is evidently no photo evidence) - but how? What kind of damages could the lugs do? It is in fact impossible that the lugs can 'cut' the beam.

UNCLEAR EVIDENCE OF ANY DAMAGES

Right is **figure 11.4** from (16) with a very unclear picture of the allegedly *'extensive deck damages'* from film taken on 2 October 1994 **1.4**. It is an alleged close-up of the **port** side no. 4 open deck on 65,2 meters depth - the time is 13.52.56 hrs. The picture is upside down in the Part report (16).

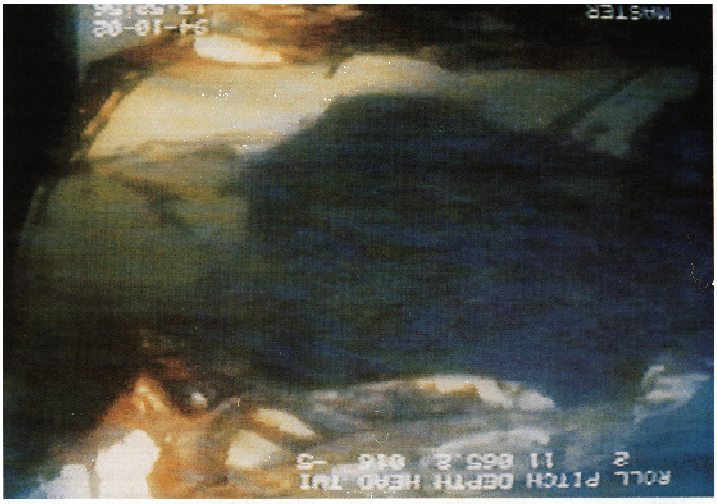


FIG 11.4 Skador på däcket orsakat av fästören för visirets hydraulcylinder

Figure 3.10.2 - Fig.11.4 of the Part Report (16) - *'Damages on the deck caused by the lugs of the visor hydraulic cylinder'* according to the Commission.

The Commission states that the *port* side deck plate damages on the top of the superstructure, deck 4, are caused (cut) by the **lifting lugs** - *'the cutting edges',* (see figure 13.10.1 above). The author cannot judge the picture 13.10.2. Where are the extensive damages? Where is the 100 mm wide opening cut by the lugs, so that we can see the plate edges? Where is the deck beam? The deck was apparently painted **green** but we cannot see any **green** structure on the picture.

The front bulkhead was on the other hand painted white.

Why weren't better pictures made by the divers inspecting the damages in December 1994? Is it actually deck 4 forward we are looking at? Or is the picture of something else? Just shown to confuse the public?

Right is **figure 11.5** from (16) shown with another very unclear close-up of allegedly *'the openings in the bulkhead with rather clean-cut edges'* and which *'continued for some length down the front bulkhead'.* It is a close-up of the *port* side bulkhead at 64.5 meters depth taken at 13.50.59 hrs. The picture is turned 180° compared with the picture in figure 3.10.1 above.

FIG 11.5 Skador på frontskottet orsakat av visirets hydraulcylinder

Figure 3.10.3 - Fig.11.5 of the Part Report (16) - *'Damages on the front bulkhead caused by the visor hydraulic cylinder'*

The Commission states that the damages on the *port* side front bulkhead of the superstructure were caused by the **hydraulic cylinder**, i.e. not by the lugs. The author cannot judge the picture, which should be a continuation forward of the picture in figure 3.10.2. Where is the front bulkhead? Where are the damages with the *'clean-cut edges'* - in the lower part of the picture?

How can a round hydraulic cylinder (see figure 13.10.1), or its piston rod, cut through a plate? And why were there no scrape marks on the white painted port hydraulic cylinder indicating that it should have cut through

steel (the paint on the cylinder is virtually intact!). And how much did the damage extend down the bulkhead? Why wasn't a better photo made by the divers in December 1994?

The conclusion is that the above picture does not show what the Commission suggests! It is only published to confuse the public!

In the Final Report (5) chapter 8.5.2 (page 121) the Commission, states that the damages on the green weather deck and the white front bulkhead of the superstructure were as follows:-

> *"The deck was torn open from the visor operating actuator openings and forward. The openings continued for some length down the front bulkhead. The deck damage was extensive with uneven fracture whereas the opening in the front bulkhead on the port side had rather clean-cut contours (figure 8.2* (see below)*)."*

That is all. The green deck had *'uneven fracture'*, while the white ***port*** side bulkhead had *'clean-cut contours'*. But how was the deck beam port and starboard cut? **And the damages on the starboard side bulkhead? Why weren't they filmed?** And what does *'some length down the front bulkhead'* mean?

The above two figures are the only evidence shown by the Commission that the visor had fallen off the ship and caused the rest of the accident. Not very convincing, to say the least!

To see the area of the superstructure we are studying figure 8.1 from (5) right refers.

Only the allegedly damaged weather deck and the front bulkhead of the superstructure are shown - *the deck beam, frame 159, is not shown.*

The starboard bulkhead is only torn at the *upper* part.

Figure 8.1 above says that there is an *'impact hole'* in the starboard bulkhead just above the side lock. That particular damage is not further investigated in the Final Report (5) and as will be shown below, the real damage is a big opening about **60 centimetres wide and two meters high (long)** - which the Commission has *carefully* avoided to film, analyse and report. It also indicated *'damages'* in the starboard bulkhead *below* the side lock, but these too are not further described in the Final Report (5).

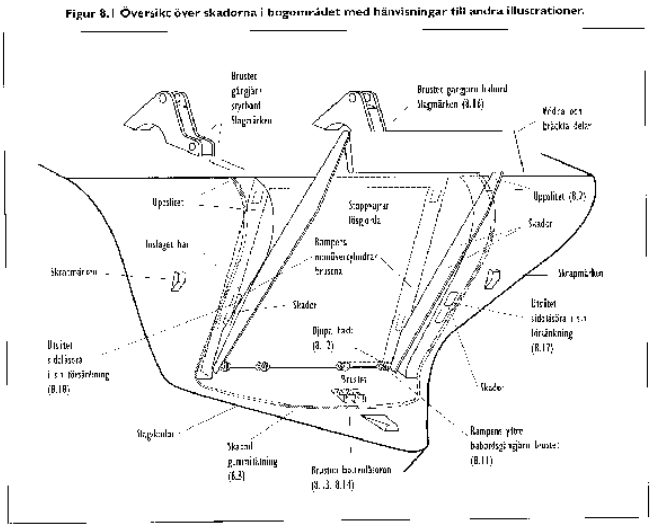


Figure 3.10.4 - Fig. 8.1 of the Final Report (5) - *'Summary of damages in the bow area'*

The damaged hole on the starboard side is much wider than, e.g. the starboard hydraulic cylinder. We know that the paint work of the starboard hydraulic cylinder is undamaged. The cylinder could therefore not have caused the damage to the bulkhead. What caused it?

The situation is thus that the Commission has reported and shown very unclear pictures taken 2 October 1994 of alleged damages on the green weather deck 4 of the superstructure and the white top of the bulkhead just below the superstructure top deck 4, which it suggests to have been caused by the visor lifting lugs, see figure 13.10.1, and hydraulic cylinders, when the visor fell off. Furthermore, there are damages/impact hole further down on the starboard bulkhead, which are not described at all by the Commission.

Another sketch of the same damages filmed on 9 October 1994 **1.14** is the appendix to the fax of Karppinen on 10 October 1994 (act I16) right.**Note that there are *no* damages on the starboard bulkhead above or below the side lock (A). Only at the top is a damage (B) - *'torn out plate'*.** But there is a 2-3 meters high and 0.5-0.6 meters big hole there - see below!

At 23.16 hrs a mysterious *'orange box'* was filmed in the vicinity of the *port* locking pin (A), which is not marked on the drawing **4.1**.

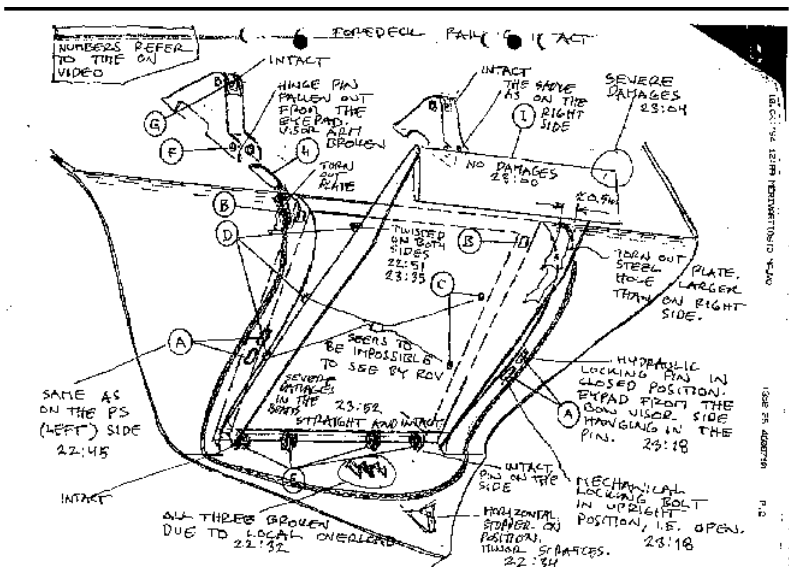


Figure 3.10.5 - Appendix to fax 10 October 1994 - *'Summary of damages at the bow'* (act I16)

THE VISOR WAS ATTACHED TO THE WRECK ON THE SEA FLOOR

Another interesting note is F (on starboard side) *'Hinge pin fallen out from the eye pad. **Visor arm** broken'*. Evidently you cannot see any visor arm on the picture and the visor had not yet been found, so why would anybody write on a fax on 9 October that the visor arm was broken? If the hinge pin had fallen out, the visor arm could very well have been undamaged. Or could you see the visor (!) and the damaged visor arm on the original film? There are many indications to this effect, e.g. that there are no scrape marks whatsoever on the starboard hydraulic cylinder and very few marks on the lugs. The starboard cylinder should therefore have been pulled out, when the ship had >120° list on the sea floor! The visor was thus still attached to the wreck then!

The only 'evidence' in the Final report (5) that the weather deck (painted green) and front bulkhead (painted white) are damaged is shown right - **Figure 8.2** from (5).

This picture - which according the Commission shows a close-up of the *port* green deck and white bulkhead in front of the opening for the visor operating actuator in the superstructure - is only figure 11.4 from the Part report (16) - see figure 3.10.2 above - turned upside down to a correct position as seen by the ROV with arrows indicating Bow and Port! Where are the *'uneven fracture'* in the green painted deck and *'clean-cut contour'* in the white painted bulkhead? And why are the damages on starboard side not shown? The picture is taken by an ROV on 2 October 1994, and the same area - and the starboard side - should have been filmed on 9 October **1.14**.

Figur 8.2 Skadat däck och frontskott framför öppningen för visirmanövreringscylindern på babordssidan.

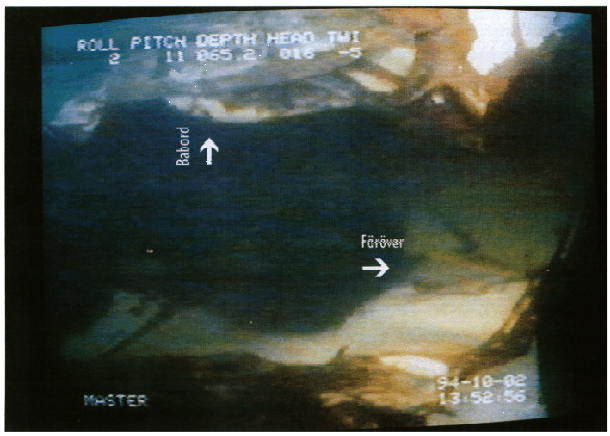


Figure 3.10.6 - Fig.8.2 of the Final Report (5) - *'Damaged deck and front bulkhead in front of the opening for the visor operating actuator on the port side'*

In December 1994 **1.16** the same areas were again filmed by divers.

But why were not better photos taken by the divers in December 1994 of (a) the superstructure deck, (b) the superstructure bulkhead and (c) the deck beam on **both** sides - port and starboard - to record the alleged damages and particularly the edges clearer?

If e.g. the deck beam was cut off port and starboard it would have been easy to film it - but today there exist no video films or photos of any cut off deck beam. Many persons do not believe that the beam is cut. This author believes that the visor was still attached to the wreck, when the film of 2nd October was taken, and that the visor was later removed under water before the second film was taken on 9th October - to verify the removal.

ONLY PORT SIDE FILMED

It is only damages on the port bow side (the upper side of the wreck), which are allegedly shown on above (and other) pictures taken and copied from films taken on 2 October 1994. The pictures are very bad and difficult to interpret and do not prove anything, including the loss of the visor at the surface of the sea.

No pictures of damages on the *starboard* side from that film have been published by the Commission, which is an indication that the visor might still have been partly attached to hinges and lifting hydraulics there on 2 October 1994! This conclusion is supported by the fact that there are no scrape marks on the starboard cylinder suggesting that it should have been pulled out through ripped open steel before the 'accident' started.

The visor could very well have been only *partly* detached, when the list was >100 degrees and some port side attachments of the visor were broken and visible, so that some port side parts could be filmed. But it is quite probable that the visor was still attached on the starboard side and that, e.g. the starboard hinge pin fell out, when somebody tried to remove the visor under water *after the accident*.

We must not forget that Dr. Nuorteva on four sonar pictures taken on 30 September 1994 had observed an object at the bow, which looked like the visor 1.4. The films allegedly taken 2 and 9 October 1994 at the bow also seems to be edited only to show selected parts of the *port* side of the superstructure. The excuse - that the films showed human bodies at the wreck - cannot be accepted. There were no bodies outside the wreck at the bow! And later no better pictures of the alleged damages of the superstructure were later done at, e.g. the diving in December 1994.

THE COMMISSION LIED

In view of the fact that the Commission 1994-1997 lied about every *essential* fact of the accident and produced a totally false sequence and plot of events 1.9, it is very likely that above pictures do not show the alleged damages in the forward port side superstructure caused by the visor. The pictures are simply extracts from the 2 October video film of some other, damaged part of the hull. The figure 8.2 of the Final report (5) and the figures 11.4 and 11.5 of the Part report (16) are simply clever disinformation to mislead the public. The Commission knew that it had succeeded to fool the public with the pictures in the Part report (16) in April 1995. Therefore it just repeated the stunt in the Final report (5) in December 1997. The simple conclusion is that there is no evidence that the starboard visor lugs and cylinder ever cut through the superstructure.

THE BIG HOLE IN THE STARBOARD FRONT BULKHEAD

At a private dive expedtion 2.24 in August 2000 parts of the *starboard* front bulkhead of the superstructure was filmed - see picture (below right). Unfortunately the starboard weather deck, the deck beam and the upper part of the bulkhead were not filmed.

The reason was that the divers found - and then concentrated on - and filmed a very big hole - 2 meters long and 60 cms wide in the starboard front bulkhead just *above* the side lock in an area, **which the Commission had reported as undamaged** (or with an impact hole without further explanations). The edges of the opening are partly bent outward, partly cut off and most of the original material has *disappeared*.

It is self-evident that the opening cannot have been caused by the starboard hydraulic cylinder ripping through the bulkhead. It is evident the hole is caused by explosives!

The opening is *wider* than the cylinder, plate material is *missing* and the bulkhead above the opening does not appear to be damaged, and there are no scrape marks on the cylinder itself!

Two test pieces were cut out from the edges and has since been analysed by several laboratories. Preliminary results show that the material has been modified due to an explosion. Did the hole (and explosion) occur when the visor was detached under water 4.1? The opening cannot have been caused by the starboard hydraulic cylinder pulling out of the ship 2.24. The damage has never been reported by the Commission or described in the Final Report (5).
The picture has been shown in Germany (Focus TV, Spiegel TV, Der Spiegel 5/01 page 135) and in the Czech Republic (Nova TV) in January 2001.(The picture is of the front of the white painted bulkhead (starboard side) against which the visor rests in the closed position - there is a 5-10 cms gap between visor/bulkhead except at the rubbers and other contact points. The surface is now covered by dark mud.)

The reader should note that above damage is *not* indicated at all on the damage report of Mr Karppinen faxed to Stenström on 10 October 1994 in figure 3.10.4 above.

In figure 3.10.7b right we can see the damage in the starboard forward bulkhead sketched in on a photo of the area (before damage occurred).

Arrow 1 shows the actuator lug that is alleged to have cut through the strong deck beam at fr. 159. Arrow 3 shows the plate that has been ripped open and that has disappeared. Arrow 4 shows the first horizontal stiffener of three that also have been cut ... and disappeared. Arrow 6 indicates the location of the rubber seal channel on the outside.

When and how did this damage in the starboard front bulkhead occur? While removing the visor under water

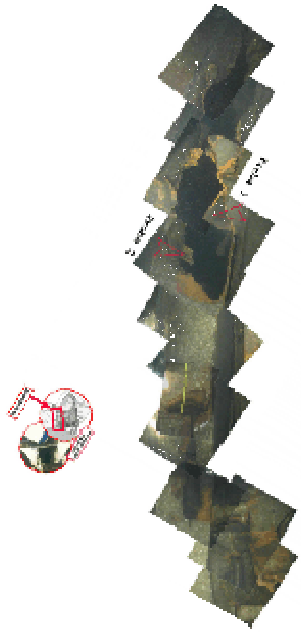


Figure 3.10.7 Starboard front bulkhead with a big damage hole.

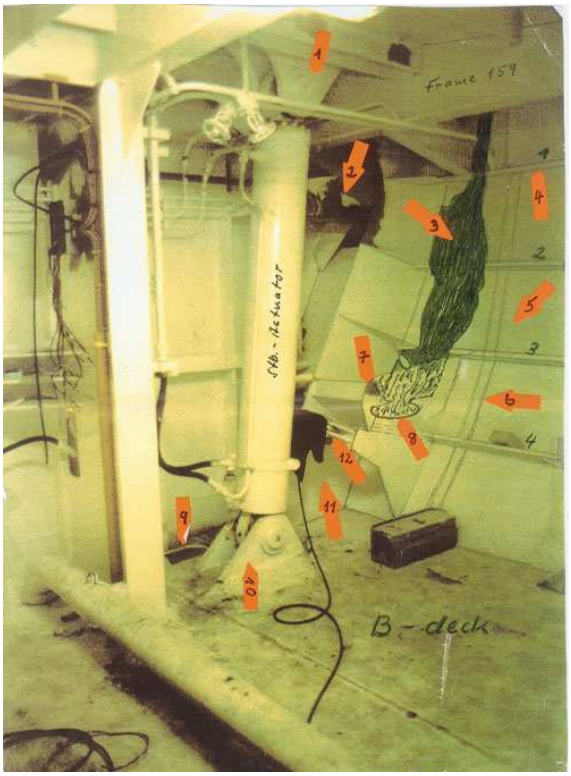


Figure 3.10.7b Starboard front bulkhead with a big damage - seen from inside.

after the accident between 2 and 9 October 1994?

The visor was then resting against the outside of the bulkhead and one or more explosive devices applied between the horizontal stiffeners blowed it away causing the hole in the bulkhead and also some indents in the aft bulkhead of the visor itself!

It is very easy to verify - just check again the original MASTER film taken on 2nd October 1994 (and not the edited copy made available) and look at the visor.

The Commission alleges that *after* all visor attachments were broken, actuator lugs, cylinders or piston rods cut through and/or ripped open a lot of steel structure in the superstructure, when AB Linde was waiting at the reception and 3/E Treu was fiddling around in the ECR. All this destruction should have caused large noises sometimes between 01.05-01.10 hrs. The Commission cannot comment upon this - they just refer to 10 minutes of metallic noise between 01.02 and 01.12 hrs noted by *'several anonymous witnesses'* when the ship made 15 knots forward speed and nothing unusual had happened (except the noise).

That the survivors experienced the sudden list >30 degrees starboard already at 01.02-01.05 hrs and then were escaping must be censored by the Commission. If the sudden list took place at 01.02 hrs, then the visor got lose at say 00.52 hrs, when Linde was allegedly checking the ramp on the car deck - and heard nothing.

Of course we know today that the whole story of the visor is nonsense: with water inside the *superstructure* the 'Estonia' should have capsized and floated upside down - and it never happened.

NO SCRAPE MARKS

Most of the white paint remains on the visor hinge arm lugs particularly on their ports sides - see e.g. figure 10.2 in the part report (16) of the starboard lugs and figure 13.10.8 right - *all paint remains*.

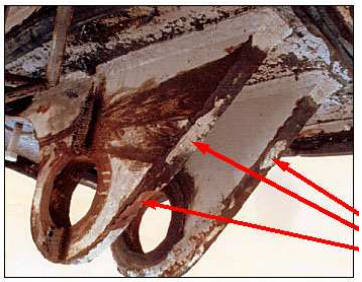


Figure 3.10.8 Starboard visor actuator lugs below the visor arms after the accident and after having cut through steel. Note that paint remains at the forward and inside/outside edges.

Figure 8.9 (also 8.4) in the Final Report (5) shows the starboard side of the *port* side lugs, and there are some score marks, *but* all paint should have been removed after alleged cutting the deck plate, the beam web plate and face flat, etc. and on the other side of the lug *all* the paint remains. The paint on the starboard lugs *forward* edge (figure 10.3 in (16)) and on the port lugs *forward* edge (figure 8.9 in (5)) remains - it is evidently not possible, if these *'cutting edges'* had cut steel.

There should also be scrape marks on the *undersides* of the hinge arms themselves and green deck paint from the weather deck of the superstructure.

The vi No such marks can be seen. And evidently there should be more scrape marks inside the visor housing if it had been in touch with the ramp. And finally, there should be scrape marks on the starboard cylinder, if it had cut through the superstructure plate and beams. But its paint is undamaged.

sor itself is the best evidence that the visor did not fall off as alleged by the Commission. Actually all information given by the Commission to the effect that the visor fell off at sea is not supported by any evidence at all.

THE RAMP OPENS

No known survivor heard anything from the bow between 01.02 and 01.12 hrs, as in reality the vessel had already listed at 01.02-01.05 hrs, and all witnesses were in the process of saving themselves. But the Commission presents another story - fairy tale!

According to the Commission the visor housing now - say at 01.12 hrs - pushed against the ramp top and detached the ramp from its hooks and locks. The evidence should be three, four bent stays *inside* the visor housing (see e.g. figure 8.7 in (5)) but no other score marks. It is quite amazing that the whole inside of the visor housing has no score marks or that the aft edge of the housing is not damaged at all. Thus two hooks and four looks of the ramp **3.4** were allegedly torn apart by strange forces on the visor in the forward direction of > 30 tons, while the visor housing was almost intact.

According the Commission this occurred at about 01.13 hrs.

WHAT ACTUALLY HAPPENS, IF A LOSE VISOR TRIES TO PUSH OPEN A LOCKED RAMP?

3-D FEM (three dimensional finite element) calculations done by the author show, e.g. that a 10 tons symmetrical, forward force on top of the ramp caused by the visor weight 55 tons,[112] results in a 7.7 tons *pulling force* in each locking hook one meter below the top of the ramp[113] - the ramp *rotates* around the hooks and pulls the hooks forward, while it *pushes* against the lower side locks - the upper locks with 2.2 tons, the lower locks with very little force. If the forward 10 tons push force is asymmetrically applied at the port ramp edge, the *pulling force* in the port hook increases to 14.0 tons and is reduced in the starboard hook to 2.1 tons. The ramp pushes against the port upper side lock with 5 tons, etc.

A load due to the weight of the visor tipping forward on the ramp, could not pull open the ramp.

A 30 tons *asymmetrical* forward force on port ramp *top* in contact with the *inside* of the visor housing should in principle pull apart the top port ramp hook (and damage the visor housing). But from where did that forward acting force originate?

All wave loads were always pushing the visor aftward (or upward). The Commission does not provide an explanation how the loads were pulling forward and downward.

A forged upper ramp hook has an area in its arm 18.75 cm² - with break stress 4 000 kgs/cm² the hook arm can resist 75 tons: evidently the shaped forged hook tip breaks earlier - say at 25-40 tons, unless the pin, around which the hook grips, breaks (shears off) even earlier. It would have been easy for the Commission to prove that the ramp had been pulled open - it is only to show (photos of) two broken ramp hooks or pins. But the Final Report does not show any damaged ramp hooks or locks at all! And by observing the underwater films it seems that the hooks are undamaged. According to the Germans the ramp could not be locked! It was twisted and the locks and hooks didn't fit any longer.

To secure the ramp a rope was simply slung around the top and secured on the weather deck. Thus the ramp was secure!

Then the visor was closed - but due to the rope the visor could not be locked either. So the visor was secured only by the lifting hydraulics - and it worked! The heavy visor hardly moved due to ship motions, and the ramp was secure. Only a little water may have leaked in.

It is impossible that the ramp was pulled open by a forward force of say 30 tons on the ramp port *top*, when the visor was lose, in spite of the small observed damages inside the housing, which could have been caused earlier (or later).

The Author does not believe the Ramp was open at all!

There are no witnesses who have seen an open ramp 1.4.

The author wrote an article about the above in the Royal Institute of Naval Architects' magazine the Naval Architect in 1998. It resulted in a reply by Karppinen and Huss to the effect that

> *"the mating boxes of the ramp side locks were ripped open".*

But that was not true. The mating boxes area actually visible on the video films taken 1994 and made available to the public 1998. They are not damaged! Beacuse the ramp was never locked and thus the locks could not have been ripped open.

OBSERVATIONS BY MR JOHAN RIDDERSTOLPE

Johan Ridderstolpe of the Independent Fact Group has studied all the video films and has informed the following:

> *"... the mating pockets of the side locks of the ramp are virtually intact and not ripped open as stated by the Commission.*[116]
>
> *... it is quite clear that the ramp* ***was not properly locked prior to the loss of the visor****. The ramp lock pins were extended but not into the mating boxes, probably to activate the indication that the ramp was locked ... (the pins extended into air above the boxes)*
>
> *...The Final report says: "The bow loading ramp was found slightly open, with a gap of about one metre at the top". I have checked the films and note that on the early films the opening is only 10-30 cms.*
>
> *On later films the ramp is more open 40-60 cms and on the latest film 1 meter. ...*
>
> *... that attempts have been made to open the ramp at the bottom of the sea is quite clear".*

No such attempts were reported at the dive examination in December 1994 **1.16**. It is thus possible that the ramp was not locked at departure from Tallinn *before* the accident but only put in a partly closed position with help of ropes, etc. as the Germans also suggest **3.17**. Furthermore by Ridderstolpe:

> *"The lower part of the ramp is totally closed. ... The ramp is bent slightly forward ...*
>
> *... the mating pockets of the side locks of the ramp are virtually intact and not ripped open as stated by the Commission ... there are some fractures in the mating pockets connections to the ramp itself , but they are not the result of any ripping open the ramp. The locking pins are too long to slide out of the pockets ...*
>
> ***If the ramp was actually properly locked, the mating boxes should have been completely ripped open - and they are not ripped open.***[116]"

GUARD RAILS REMOVED

Ridderstolpe has produced other indications that the ramp was never open:

> *"The guard rails welded on the ramp sides*[117] *have been removed under water ... on the early films you can see the guard rails ... on all later films the guard rails have been cut off ... it is obvious that the guard rails have been cut off below water, as they prove that the ramp was never open ... the ramp guard rails would have been damaged by the locking pins of the ramp ... these pins are extended from the frame and should have been fully inside the mating boxes ... the length of the locking pins is such that they would grip into the guard rails, which are flush with the frame ... furthermore - the guard rails had folding parts at the top of the ramp ... if the ramp had been opened*

and then closed, when the ship sank with a big list, the folding part would have got stuck between the ramp and its frame - the ramp would never have closed again ... etc., etc. ".

What Ridderstolpe hasn't noticed is that the guard rails can be seen on the seabed on an ROV video film already on 2 October 1994, i.e. they must have been removed before then. But how and by whom? No divers had officially visited the wreck at that time - it didn't take place until 2-4 December 1994 **1.16**.

This author therefore concludes that divers visited the ship already on 30 September and 1 October. These divers were probably Swedish because the Swedish navy (HMS Furusund) had immediately anchored up at the wreck. What they did - except having a look around - is described in other chapters of this book. They probably tried to open the ramp and to remove the visor! And they succeeded.

They blow off the visor using explosives under water! And then the starboard visor lifting cylinder slipped out of the deck hole without any scraping, etc. Then they pulled apart the hinges and the visor fell to the bottom below the wreck! There were no scrape marks on visor lugs and arms.

A final remark is that not only the side guardrails would have prevented the ramp closing: also the starboard ramp lifting hydraulic cylinder would have stuck out and prevented the closing, if the ramp were ever open.

THE INSIDE OF THE RAMP NOT EXAMINED

The Commission in the Final Report (5) states that the inside of the ramp and the car deck were never inspected by them (or anybody), even if it is clear that a survey of the car deck was requested by Smit Tak and carried out. Ridderstolpe has seen several videos taken 2-4 December 1994 **1.16** where divers and an ROV (sic) operate *inside* the car deck. The ROV should have entered through a 'hole' in the starboard side! - it could not get through at the ramp itself. The 'hole' was probably the open starboard pilot door **1.4**. It seems clear that the car deck was in fact inspected and filmed at the request of the Commission (or Franson), but that most films were edited later because they showed that (i) the ramp locks were undamaged and (ii) that divers removed the guard rails on the ramp (probably in September/October 1994) in an attempt to open the ramp.

Ridderstolpe thus supports the suggestion that the ramp was never open during the accident - not *before* nor *after* the list. Ridderstolpe concludes that the ramp was not even locked, while the Commission states that the ramp was locked, before it was detached by the visor **1.15.**5. AB seaman Linde has stated that the ramp was closed and that no water leaked in.

The Germans suggest that the ramp was held in place by mooring ropes around the top of the ramp at departure Tallinn; the ropes were secured on the upper, no. 4 weather deck.

Ridderstolpe has stated that divers were inside the car deck space, while the Commission reports that the car deck and the inside of the ramp were not examined on its behalf. The Finnish delegation of the Commission has later stated (lied) that various objects got trapped in the partly open ramp opening, when the ship sank **4.1** and that divers had to shift them to inspect the inside of the ramp! It is not mentioned in the Final report (5).

Let's still continue listening to the Commission, which states (invents) that the ramp was pulled fully open by the visor and that the visor was subsequently lost. What happened then?

The reader should now be fully convinced that the invention about the visor causing the accident is fantasy, but it is of course interesting to hear the end of the Commission's fairy tale.

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[112] If the visor bottom slips forward and the force on the ramp is applied further down on the ramp, e.g. at the weather deck level, the resulting forces in the ramp hooks are much lower.

[113] Weight of water in the visor is not included in the calculations.

[116] The author has seen pictures from the video showing intact mating pockets. You find them at **http://factgroup.tripod.com** .

[117] The guard rails on the ramp sides are described in chapter 3.3.4 in the Final report (5). Actually the guard rails can be seen on the seabed already on a video film taken 2 October 1994 at 19:39.49 hrs by an ROV, which means that divers had before then been down to the wreck and removed them. The divers - probably Swedish - had apparently entered the superstructure through the open starboard pilot door **1.4**.

3.11 THE ACCIDENT ACCORDING TO THE COMMISSION - THE OPENING OF THE BOW RAMP AND THE LOSS OF THE VISOR - THE LISTING WITH WATER ON THE CAR DECK

After the ramp had been ripped away from its two hooks and four locks, the Commission said in its early statements in October 1994 that the ramp moved forward to a *partly* open position, when the water, about 50 - 100 tons collected inside the visor, started to flow into the *superstructure* and on the car deck, this is was Treu is stated to have seen, and that the ship slowly listed a little at 01.15 hrs.

That the ship suddenly listed >30 degrees at 01.02 hrs and became stable with about 15 degrees list according to a majority of survivors had to be forgotten.

The lower part of the ramp was still inside the *'tunnel'* leading into the superstructure **3.4** and the opening between the ramp and the frame was blocked by the longitudinal bulkheads - see figure 3.11 below. The time for this event is **01.15** hrs or a little later, when Treu and Sillaste saw the leaking ramp on the monitor in the ECR, **1.3** and **1.9**. It is probable that the visor lifting hydraulics had not yet torn open the front bulkhead starboard and port **3.10**.

THE STAR WITNESS TREU DOES NOT NOTICE THE SUDDEN LISTING >30 DEGREES

Treu states (5) that the list quickly became 3-4 degrees. His colleagues Sillaste and Kadak have stated different experiences; **1.3**, **1.10** and **1.48**.

When they rushed into the ECR, the ship had *already* had a sudden list (>30 degrees?) and then become upright and then stopped at about 10-15 degrees list, but this the Commission had to censor. Treu states in (5) that, just *before* he saw water leaking in at the ramp, there were two hard bangs. But before that all was normal, i.e. Treu had not heard that the Atlantic lock was broken **3.7** at **00.55** hrs, side locks breaking at say **01.05** hrs **3.8** and that the visor had moved up and down during ten minutes say **01.05-01.15** hrs around the hinges **3.9**, before they broke, the lifting hydraulic cylinders were ripped lose and the deck plating and deck beam in the superstructure were cut open or apart **3.10**.

In the Part report (16) Treu said that he *first* saw water coming in at the edges of the ramp and that the ramp appeared to be in *closed* position. But ..

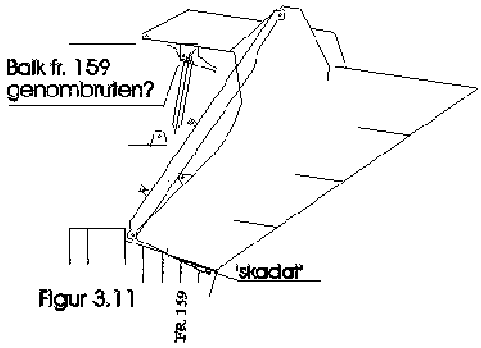
> *"A few moments later hard metallic noise was heard and a further moment later the ship started rolling heavily and got a list to starboard".*

Treu - the star witness of the Commission - thus did not notice the sudden list >30 degrees to starboard (at 01.02 hrs!) and that the ship became upright due to roll and ended up with a permanent list. Earlier - before **01.15** hrs - all was normal in the ECR and the engine room. No problems at all! But what did Treu hear?

THE SOUND INSULATED CONTROL ROOM

What Treu could have heard inside the *sound insulated* ECR was the ramp locks being ripped open **3.10** at **01.13** hrs, but it was - according to the Commission - the weight of the visor tearing up the ramp as a sardine tin, and it must have occurred before the list.[119]

It is very easy to test what you can hear in the ECR of the 'Estonia' - measure it on the sister ship! Sillaste (on deck 0) and Kadak (in the workshop on deck 1 port side) heard some bangs. A moment later the ramp was *fully* pulled out according to the *later* statements of the Commission, say at **01.14-01.16** hrs, and the visor was lost. Treu might have heard that - the ramp hit against the forepeak deck, the visor was lost and the ship collided with the visor. Then the hydraulic cylinders of the visor must have been pulled through the normal deck openings or through openings torn open in the deck and the front bulkhead. There are no score marks on the cylinders proving this. *And Treu never saw a fully open ramp on the monitor.* He always only saw a *closed*, *leaking* ramp.



"Deck beam 159 broken, fore peak deck and visor bottom damaged"

If the visor had pulled open the ramp, then the ramp should have hit the fore peak deck with 1.8 MNm energy.

The visor should then first have remained *hanging on the ramp top*, when the ramp was open - the visor was pushed aft by the water, waves and the forward motion of the ship. If the ramp actually fell down on the forepeak deck, the ramp plate grid should have been bent downward, all ramp hinges should have been broken, the ramp side guard rails might have been damaged and should have been bent outwards **3.10**, the 'preventer' wires[120] and the *ramp hydraulics should have been pulled out* and it would later have been impossible to close the ramp **1.8**. The starboard ripped apart *ramp* hydraulics should have hanged out and should later have blocked the closing of the ramp, when the list was >90 degrees. The ramp should have folded itself around the fore peak structure. The forepeak deck 2 should have been smashed (but it is undamaged). Then you would expect the visor to slip off the ramp causing more damages to visor housing, etc. But none is seen.

It is now that the visor had been lost *'under way'* between Tallinn and Stockholm 1.14 and water can start entering the superstructure. You would now - with the ramp fully open - expect that the 'Estonia' would have capsized after two minutes to float upside down but it never happened.

A moment earlier the damages on the starboard front bulkhead of the superstructure **3.10** should have occurred. But as we have seen earlier, the Commission did not report anything about the big damaged hole in the starboard bulkhead. When and how did it come about?

THE RAMP WAS FULLY OPEN

The Commission stated that

(i) the ramp was fully open at **01.15** hrs,
(ii) the speed was unchanged,
(iii) that water flowed into the superstructure (250 tons/minute according to the Commission **1.9**, >1 800-3 600 tons/minute according the author **Appendix 4**,
(iv) the ship listed,
but the Commission could not explain the relationship between water on the car deck in the superstructure and the angle of list of the hull.

Now the 'Estonia' should have capsized and floated upside down on the hull after a few minutes!

But the Commission concluded differently! The ship should have *sunk* after 01.50 hrs without capsize. So what happened during the following 35 minutes? The Swedish Board of Psychological Defence shall give the answer - sometime.

All three engine crew members, Treu, Sillaste and Kadak, were reportedly in the ECR on deck 1 at this time - a few minutes after the sudden listing. Sillaste had been on deck 0 repairing the vacuum sewage system, when he noticed the sudden listing, and Kadak was in the workshop on deck 1 starboard, when the ship listed. They then returned to the ECR, where they joined Treu and remained for at least seven minutes (until after 01.22 hrs).

They should then have seen the wide open ramp on the monitor and the sea outside and how the waves moved into the superstructure every sixth second, when the ship pitched down into the waves, but they only saw a *closed* and leaking ramp at the forward end of the superstructure according to their early statements. The light was on in the car deck.

THE ENGINE CREW REMAINS IN THE CONTROL ROOM AND LIES ABOUT THE EVENTS

Then they reportedly stayed another 7-10 minutes in the ECR trying to save the ship 1.48 trying to start pumps, talking calmly to the bridge four times, while all the passengers immediately escaped. These guys were very, very brave indeed - staying inside a ship that was going to capsize or sink.

The bilge pumps had been started - when, how and why? **1.3**, the watertight doors were open and were allegedly later closed - who closed them, when and why? **1.23**. And how did the engine crew members get out from the ECR after *seven* minutes of alleged bravery in the ECR, when the watertight doors were closed?

The surviving passengers had reacted immediately to evacuate and it took them a few or several minutes to get out.

But the engine crew remained calmly in the ECR trying to save the ship - it sounds strange, to say the least. But the Commission believes only the engine crew ... but does not clarify why they saw a closed ramp ... and stayed on. Why didn't the engine crew escape at once?

EXPERT HUSS EXPLAINS THE MATTER

Expert Huss stated that it took **28** minutes to fill the superstructure with 2 000 tons of water: 71.4 tons/min between 00.15-01.43 hrs **1.9** and, if that were the case, there were no real danger to anybody. The ship was floating safely albeit with water loaded in the *superstructure*. That water should have flowed out immediately when the ship stopped and the 'Estonia' would have become upright immediately.

But the Commission changed the developments in the Final report (5); (a) it took only seven, eight minutes to fill the superstructure with 2 000 tons, (b) *the ship did not capsize nor lose its stability completely as it was floating on the deck house,* which the Commission could not explain, (c) the ship turned south or port 180°, so that it could head back to Tallinn (not proven), (d) that the angle of heel increased *without* the ship capsizing, (e) that a Mayday was sent at 01.24 hrs, (f) that the *deck house* filled with water latest at **01.28** hrs (14 000 tons flowed in during two minutes!) but the stability was not lost, (f) no water flowed out, when the ship stopped, etc.

We must not forget that also a lot of *fragments* fell off the ship at this time according to the Commission - proving, e.g. the port turn 2 000 meters west of the final wreck position. Why and where the *fragments* fell off we are never told.

Assisting ships saw the 'Estonia' at this time - around **01.30** hrs - immobile, stopped in the water (probably close to the final wreck position), while the Commission stated that the sinking ship with angle of list 60-110 degrees moved - drifted - *sideways* with 2,2 knots speed in an eastward direction during another 20 minutes - >1.200 meters - before it sank.

But how the *hull* was water filled during these 20 minutes, the Commission could not explain except that the hull compartments were flooded from above - but when? - and how?

It took the Commission more than three years to establish the above described fantastic course of events. There is no evidence for anything. All of it is lies! Incredible. The Commission invented a fairy tale to write the Final report (5). And nobody reacted.

In 2001 the Swedish government appointed the Swedish Board of Psychological Defence to explain how the hull of the 'Estonia' filled with water between 01.30-01.52 hrs allowing the sinking **1.49**.

Later **4.1** the Commission suggested that various floating objects were trapped in the opening between the ramp and its frame, when the ship sank, and that the ramp then moved back, due to gravity, to an almost closed position at a list angle >100 degrees as found at the sea floor.

That the ship sank is true, but was it caused by faulty visor locks, etc., water on the car deck in the *superstructure*, etc, and what then followed? Of course not!

All the brave witnesses in the ECR lied.

The Commission lied from day one ordered to do so by their governments, so the crew witnesses had to lie too (or their testimonies were re-written to support the official lies). They all including their governments thought they could get away with a false course of events and Final Report. That was why, it took the Commission more than three years to cover up the real story and to write a fairy tale.

How many years more shall it take to uncover the true story?

THE 'INDEPENDENT' EXPERTS SUPPORT THE COMMISSION

It is quite interesting to observe the large number of 'independent experts' stating 1998-2001 to the government (Minister Mona Sahlin) - in spite of the above obvious lies - that the course of events of the Commission is still *'probable'* and that the Final report (5) is still complete and trustworthy and that all other theories are '*fantasies'* or *'conspiracy theories'*. Why do they state **that**? How can Ms Mona Sahlin believe such outright lies? Aha ... all these experts are simply government employées.

This author is definitely no conspiracy theorist. He has suggested that the sudden listing was caused by free water inside the hull and that the ship sank due to leakage of the hull. The leakage of the hull was evidently caused by a burst shell plate, e.g. due to corrosion in the swimming pool compartment) or to a faulty stabilizer installation eight months before the accident or defective shell plate repairs (like the 'Erika' 1999) or due to a collision. He has concluded that open watertight doors contributed to the sinking and that defective life saving equipment contributed to the high number of victims, etc, etc. None of these non-conspiratorial observations have been investigated. Instead the Commission has suggested that the hull was intact, there was no hull leakage, the watertight doors were closed, the life saving equipment was in perfect order and the crew was well trained. What a fairy tale. And the Commission could never explain how the ship sank. It is quite criminal actually! Governments and their servants evidently hiding something ... a crime!

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[119] The author is convinced that Treu simply lied at the request of his masters! Treu could not have heard anything in the bottom of the ship inside the sound insulated ECR with noisy engine rooms outside. Was Treu in the ECR, when the list occurred?

[120] Video films show that at least one 'preventer' wire is intact with its shackle and bolt screwed together, i.e. it was not connected to the ramp.

'Mr Björkman has bombarded the world, at the limit to maniac energy, with his basically conspiratorially founded opinions about the Commission and the cause of the sinking. ... Representatives of Swedish safety at sea, among them myself, chose to work with matters, that we consider more important for the safety at sea, than to discuss with Anders Björkman.'

Johan Franson, Director for Safety at Sea, Swedish NMA in Swedish daily FinansTidningen, March 1999

3.12 THE ACCIDENT ACCORDING TO THE COMMISSION - THE SHIP SINKS. EQUILIBRIUM WITH 14 000 TONS WATER IN THE DECKHOUSE

After the (alleged _ not proven) loss of the visor and *after* the ramp had (allegedly) been pulled fully open allowing water to be loaded inside the superstructure and the ship listed at 01.15 hrs, water thus according to the Commission flowed in *slowly* in spite of the fact that the forward speed of the ship was >7 m/s and the opening was >16 m² into the car deck in the *superstructure*.

At this time all passengers started immediately to evacuate from inside the ship to open decks, while the three crewmembers in the ECR bravely stayed on witnessing the events on the monitor - that the *superstructure* filled with water. Why the crewmembers did *not* evacuate is a mystery.

NO CAPSIZE!

The author evidently thinks that the 'Estonia' at this time, when the *superstructure* had been filled with 2.000 tons of water in one minute - a very big weight, should have immediately capsized and floated upside down on the hull. The author is mystified, why everything developed so *slowly* according to the Commission and completely different to what was described by the passengers. Why and how was the 'Estonia' still stable and floating with a list >40 degrees at 01.22 hrs (or any time!), when >2 000 tons of extra water had allegedly entered the *superstructure* and no water had flowed down into the engine room and the bilges of the *hull* on deck 0? 'Estonia' could safely load about 3 300 tons of cargo. At the accident she only loaded about 2 800 tons but then another 2 000 tons was loaded (water) - total 4 800 tons of 'cargo' - 1 500 tons more than permitted = capsize - but no capsize took place!

DECKHOUSE FLOODED

How the 'Estonia' sank - without capsizing - is described very shortly (actually not at all) by the Commission on pages 181-183 in the Final Report (5). It is mostly about how the *deckhouse* eight meters *above* the waterline was flooded with water, when the ship listed >40 degrees, i.e. not a word about how water in the *superstructure* below the deck house should have caused instant capsize.

No questions about ship stability during the actual sinking are correctly handled in the Final Report (5). The official plot of the sequence of events after the loss of the visor with angles of heel, etc, is an obvious falsification - it is a plot of an undamaged ship turning and drifting but never sinking made by Huss and Rosengren, which has later been edited by the Commission 1.9 with different angles of heel.

WINDOWS ARE SMASHED

The Commission states that at 40 degrees list - with 2 000 tons of water on the car deck inside the *superstructure* >2 meters above waterline - the windows ('critical openings' (sic)) on deck 4 > 8 meters above waterline are smashed and that the *deckhouse* starts to fill with water. Later the windows (more 'critical openings') on deck 5, etc. were smashed. And the Commission suggests that now the 'Estonia' starts to sink!

It is obvious - a *deckhouse with windows* 8-9 meters above the waterline is neither weather- nor watertight and does not contribute to any stability at large angles of heel or any buoyancy.

SHIP FLOATS ON THE WATERTIGHT DECKHOUSE

But all the stability calculations of the Commission assume that the deckhouse is *watertight* (!!) in many different and strange ways.

This is clear falsifications of basic stability calculations. Supplement no. 504, figure 4.19 (below) assumes that the deckhouse sides and decks 6-8 (sic) are *watertight* and provide buoyancy and prevent capsize, while the ship sinks.

Many survivors left the ship through side doors to deck 7 port side, but some left on the starboard side heeling into/towards the sea. Is an open door 'water tight'?

The Commission suggests that deck 7 starboard deckhouse side is watertight!

Likewise deck 6 deckhouse side is allegedly watertight!

The Commission suggests that decks 4 and 5 were flooded at starting 01.24 hrs and that deck 9 forward, the bridge, was flooded at 01.35 hrs, when the clock stopped. But the intermediate decks 6-8 were not flooded! **It is an obvious falsification!**

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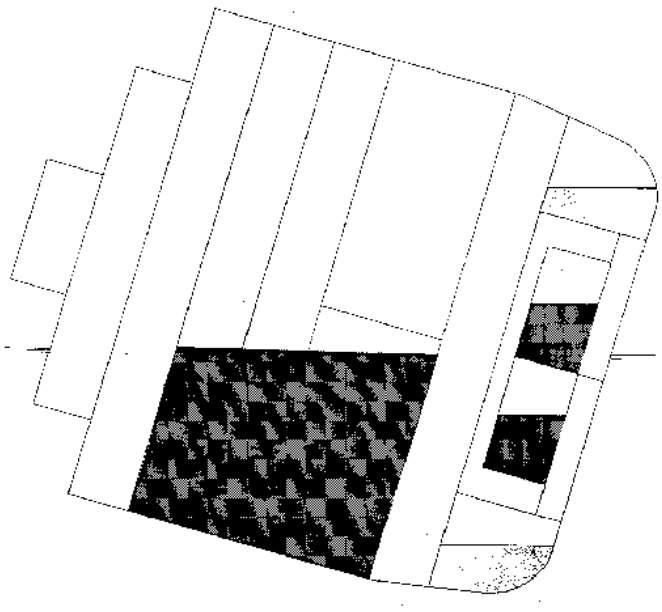

Figure 4.19 The equilibrium floating position of the ship for the case when the cardeck and decks between 4-6 are out. The cross-section is at the longitudinal coordinate x=79.4 m from the after perpendicular.

Figure 3.11.1 - Figure 4.19 of Supplement no. 504

Figure 4.19 in Supplement no. 504 of (5) shows a floating condition in ***equilibrium* (sic!)** with decks 4-5 and the *superstructure* space - decks 2-3 filled with water (shaded), i.e. the windows on decks 4 and 5 starboard are broken allowing total flooding of the spaces.

But decks 6-8 are completely *watertight* - the windows on decks 6 and 7 and the side doors to deck 7 starboard *below water* (!) in the figure above are assumed to be ***intact*** and closed ***watertight***!

We see also that neither deck 1 or 0 in the hull are water filled according to the Commission, as the openings in the *watertight* deck 2 (the stairwell at centreline on the car deck) are above the waterline. The latter is correct, if the trim is zero, but all other assumptions behind the figure and the calculations are totally unrealistic.

Decks 6, 7 and 8 shall naturally also be water filled, as the windows and doors there are broken and the deck 6 itself is not watertight. Then the ship capsizes and floats upside down on the air trapped in the *hull* spaces of decks 1 and 0 - about 18 000 m^3. The weight of the ship is only 12 000 tons.

In the figure the trim is not mentioned. If the trim is say 5 meters on the stern, then of course deck 8 is completely under water aft and also the superstructure is filled to >0.7B aft and the aft hull compartments are flooded and the ship sinks immediately. But the figure is clear - it is equilibrium, *floating* position at 75 degrees list, i.e. buoyancy (somewhere) balances all the weights - and there is another **20 minutes until the 'Estonia' sinks.** During that time the ship drifts >1 200 meters northeast! How is it possible? It is not possible! The Commission falsified the sinking sequence!

THE AUTHORS' OF THE FALSE STABILITY CALCULATIONS

Supplement no. 504 was written by Commission member Tuomo Karppinen in May1996 together with Mr Antti Rantanen , who acknowledge help from Mr. **Veli-Matti Junnila** of Ship Consulting Ltd., Turku and *professor* Jerzy Matusiak, of the Technical University at Helsinki, Finland, having approved the report.

It does not make the supplement report - or the Final report (5) for that matter - any truer - *all statements in the report are based on false assumptions about the* ***watertight*** *deckhouse*.

Tuomo Karppinen was evidently a member of the Commission. How Karppinen could persuade Mr. Antti Rantanen and Mr. **Veli-Matti Junnila** and professor Jerzy Matusiak to support the false idea that the 'Estonia' was in equilibrium due to *watertight* deckhouse compartments 14 meters *above* the waterline is still unknown. No ship in history has ever floated on a deckhouse.

Mr. **Veli-Matti Junnila** is an interesting person in the 'Estonia' cover-up. Mr. **Veli-Matti Junnila** was also the 'stability expert' of the German Group of Experts **3.17** and apparently made the Germans believe that the 'Estonia' is been stable with > 40-50 degrees list and >2 000 tons of water in the *superstructure*. Mr. **Veli-Matti Junnila** wrote the original stability manual for the 'Estonia' in 1991 **2.17** and made (falsified) other stability calculations for the Commission 1996 (Supplement no. 505).

SHE FLOATED ON THE DECKHOUSE

The safety-at-sea director Johan Franson of the Swedish NMA has in the Swedish daily Finanstidningen March 1999 explained how the 'Estonia' floated on the *deckhouse*, while she sank, preventing capsize. The following is the official view of the Swedish NMA - and the Swedish government, as the government has delegated all questions of safety at sea to the NMA.

As usual the Swedish authorities start and end with an insult and defamation - thus:

The Problem

Mr Björkman has bombarded the world, at the limit to maniac energy, with his basically conspiratorially founded opinions about the Commission and the cause of the sinking.

and then the statement continues:

... The problem is however that Björkman appears to be factual to other people in his statements, but it is highly probable that he is wrong. Björkman states shortly the following. The Estonia cannot have sunk due to water in the superstructure as stated by the Commission. The ship has probably sunk due to leakage below the waterline. If the accident had developed as stated by the Commission, the ship evidently should have capsized and floated upside down.

Rough generalization

What Björkman disregards is that the deckhouse of the Estonia is large and has subdivision that prevents it for a moment from flooding, when it heels below water. The hypothesis of Björkman is based on the rough generalization that the deckhouse, not even at the initial stages, gives a contribution to the reserve (residual) stability. The deckhouse constitutes during the time of the sinking a gradually reduced righting lever.

Self evidently water flows down below the car deck

It means, in layman terms, that when the ship heels on the side, the deckhouse assists to keep her floating, but that the buoyancy is gradually reduced, when windows are broken and doors are pushed in, and water therefore also enters the deckhouse. Self evidently water flows down below the car deck at this stage; there are stairwells and hatches from the deckhouse to the space below the car deck. The hull is gradually flooded and does not need to capsize/turn turtle 180 degrees.

The Final report gives a well-considered and professional impression

The Final report of the Estonia accident gives a well-considered and professional impression. I have with my contacts with other national maritime administrations not heard any criticism against the Report. ...

The end of the statement is typically Swedish:

Representatives of Swedish safety at sea, among them myself, chose to work with matters, that we consider more important for the safety at sea, than to discuss with Anders Björkman.

JOHAN FRANSON

Head and Director of Safety at Sea, Swedish NMA

Regardless, if the Final report gives a well-considered and professional *impression* to Mr. Franson, it is still a fact that every essential piece of information in it is false or misleading. The above official statement of the Swedish Maritime Administration is tragic rubbish.

The deckhouse is not watertight and does not *'constitute during the time of the sinking a gradually reduced righting lever'.* And it is not *'self evident that water flows down below the car deck at this stage'.* Self evidently water floods the deckhouse and the ship capsizes and floats upside down.

Concerning the contributions to safety at sea of the Swedish NMA since 1995 they are nil. An administration that cannot spot the faults of a maritime accident investigation as described in this book evidently cannot make a serious contribution to safety at sea! Millions have been wasted on incorrect safety rules **3.21**. The above declaration is only a stupid attempt to protect the Swedish Maritime Administration by its incompetent head and gate keeper, Johan Franson from valid and serious criticism.

THE SINKING

The Commission states, regarding the sinking, that

> *'The watertight compartments below the car deck were thus flooded from above,* (so that the ship sank)*'* (page 182 in (5)).

Then the ramp closed to the position it was found.

But how did all this take place between, e.g. 01.30 and 01.52 hrs? How could at least 6 000 tons of water on top of the car deck in the *superstructure*, which should have caused capsize already, when 2 000 tons had flowed in, flood the *hull* from above and *sink* the ship? This question the author put to (a) Stenström already in October 1994, (b) in a letter to the Commission in April 1995 and (c) at many later occasions. The Commission has never been able to reply! Naturally the Commission ignored facts and questions it could not explain.

NO VENT TRUNKS

The Swedish NMA has later explained that the water flowed down through *damaged* vent trunks in the inside of the no. 2 car deck leading down to the 14 watertight compartments below in the *hull* and Karppinen stated the same thing at Glasgow 1999 - the water on the car deck flowed down through the starboard vent trunks that had been damaged inside the superstructure by shifting cargo. No evidence has been shown of any kind. Vent trunks in the side?

The vent trunks however surfaces again, 2003, in the SPF study to explain the sinking **1.51**. Now on the other hand the starboard vent trunks are *undamaged* inside the superstructure but their inlet/outlets openings in the outer side (sic) of the superstructure just below deck 4 are submerged, when the list is >40 degrees, and the hull compartments are flooded through these undamaged - and fully open - vent trunks.

Actually there were no major vent trunks in the side of the car deck on the 'Estonia' with openings in outer side just below deck 4.

The watertight compartments below the car deck were ventilated via the fire proof trunk/casing between decks 2 and 9 in the *centreline* of the car deck, which also houses the stairwells to said compartments and also exhaust pipes, etc. from the generator and main engine rooms. This trunk/casing - fitted with a number of sliding fire doors - was always above any waterline outside or inside the ship superstructure, when the list was <60 degrees due to alleged water on top of the car deck (and the trim was small)! And the ship should have capsized - floated upside down - when the list is only about 35-40 degrees due to 1.500-2 000 tons of water in the *superstructure*, when any vent trunk openings in the starboard side are still *above* waterline.

INCORRECT CALCULATIONS

The Final Report (5) page 183 states dryly that

> *"Calculations indicate ... that 18 000 tons* (sic) *of water on board, distributed between the car deck* (i.e. inside the superstructure) *and decks 4 and 5* (sic - the lower part of the deckhouse)*, would have given a heel angle of about 75 degrees"***1.9**.

No calculations are evidently shown (unless it is figure 3.11.1 above (figure 4.19 of supplement no. 504)), because the 'Estonia' with 18 000 tons of water on board in the *superstructure* and *deckhouse* was unstable and should have capsized **2.16** much earlier.

Where exactly were the 18 000 tons in the *superstructure* (decks 2-3/deckhouse (decks 4-5)?

It is a very big weight and is there space for it? If the average length of deckhouse and superstructure was 120 meters, then the flooded cross area was 150 m², i.e. the superstructure and deck house decks 4 and 5 were flooded >B/2. Evidently the ship should have capsized long before reaching that strange condition.

The error is obvious - the Commission (with help of Mr. **Veli-Matti Junnila**) assumes that decks 6-8 were completely (sides and decks) **watertight** at all times and provided buoyancy (and prevented capsize). Further disinformation -

> *"This amount of water had entered the vessel in about 15 minutes, indicating a flow rate of 20 tons per second ... ".*

THE DECKHOUSE IS FILLED WITH 125 TONS/SECOND - BUT ONLY FOR TWO MINUTES

However - the Commission had elsewhere indicated that first 4 000 tons flowed into the *superstructure* during 13 minutes (780 seconds - abt 50 tons/sec) on the car deck **1.9** between 01.15 and 01.28 hrs, which means that about 14 000 tons must have flowed into the *deck house* the last two minutes - **flow rate >125 tons per second - at 01.28-01.30 hrs on decks 4 and 5.**

Nowhere in the Final Report (5) is described how the water flowed down *below* the watertight car deck no. 2 to sink the ship. Instead the Commission clearly stated that

> *"When windows on the accommodation decks* (i.e. decks 4, 5, 6, 7 and 8) *were broken by wave forces, subsequent sinking* (sic) *was inevitable".*

END OF VOYAGE

The Commission avoids the word *'capsizing',* because it knows the fact that, when 14 000 tons of water filled the *deckhouse* during two minutes, the 'Estonia' should simply have capsized, stopped and floated upside down; **1.1**, **1.9**, **2.16** and **2.17**. End of voyage!

But it did not fit the course of events of the Commission. Therefore the ridiculous statement by gate keeper Johan Franson

> *" ... The deckhouse constitutes during the time of the sinking a gradually reduced righting lever. ..."*

In conclusion - the Commission stated that the decisive event - the proximate cause - of the accident was that the **visor locks were incorrectly designed and manufactured** in 1979/1980. This caused a long sequence of other *unexpected (and not proven),* introductory events 14 years later, e.g. the visor falling off and water in the *superstructure* listing the ship, which resulted into 14 000 tons of water flowing into the *deck house* during two minutes about 01.29 hrs and the alleged catastrophic final event - that the ship sank (sic) at or after 01.50 hrs.

We are however not told how the ship actually sank in 20 minutes between 01.30 and 01.50 hrs. How were the hull compartments flooded? How was the buoyancy lost. Why are all events between 01.30 and 01.50 hrs censored in the Final report (5)?

THE 'ESTONIA' SHOULD HAVE CAPSIZED AND FLOATED UPSIDE DOWN

The Commission in 1994, or at least 1995, no doubt knew that the 'Estonia' should have *capsized* with about 2 000 tons of water on the car deck in the superstructure and it made all efforts to hide it by secrecy and disinformation.

Three years later the Commission denied the simple fact in the Final Report by manipulating the meaning of *'capsize'*. And later it still refuses to even discuss the matter. Instead Johan Franson, the man that falsified

numerous reports to the government 1994 and the complete dive investigation 1.16, is sent out to succour the Commission.

The Commission knew perfectly well that a passenger ferry like the 'Estonia' was subdivided into 14 watertight compartments *below* the car deck in the *hull* and would have survived with two compartments flooded due to leakage *below* the waterline.

The Commission states that *no* watertight compartment below the car deck was damaged or flooded, i.e. the ship had always 18 000 m^3 of buoyancy in the hull *below* the car deck to float on during the accident, when first >2 000 tons of water flooded the car deck and that the ferry heeled >40 degrees. Later >4 000 tons of water in the superstructure caused 50 degrees list.

All this water is just extra weight loaded on the car deck - the underwater hull was undamaged. Due to the heel the deckhouse decks 4, 5, 6, 7 etc. are then flooded with 14 000 tons of water, when the windows - the critical(?) openings - were smashed 10.28-01.30 hrs.

Then of course the ship should at least have capsized - turned upside down - and floated on the 18 000 m^3 of air trapped between decks 0 and 2, which then were *above* decks 4, 5, 6, 7 etc. But the Commission denies it - they say that the 14 watertight hull compartments started to fill up from *above* after 01.30 hrs, when the sinking started (sic) - even if the ship should have been upside down then!

Not even the Germans 1994-2001 seemed to have understood these **simple stability** matters with water on a car deck in a *superstructure*.

THE GERMAN GROUP OF EXPERTS

When the shipyard was informed 1994 that it was accused of faulty visor lock, it appointed its own group of investigators to check the work of the Commission. Captain Werner Hummel, an experienced accident investigator, led this German group. The Germans never 1994-2001 checked the stability of the 'Estonia' before, during and after the *'sudden list'* with water loaded on the car deck.

The Germans always believed the stupid story of the Commission that the 'Estonia' sank (sic) due to water on the car deck in a *superstructure* (sic) and never bothered to make its own stability calculations, which would have immediately shown that the Commission's story was false. The German Group of Experts never included a German ship stability expert! The Germans apparently relied on the Finnish Mr. Veli-Matti Junnila, who provided falsified stability calculations to the Commission. It seems that the Germans were fooled from the start.

The Germans collected however other interesting information - and disinformation, which are described in the following chapters.

3.13 THE GERMAN GROUP OF EXPERTS

Already 1994 the Commission suggested that the accident was caused by a *'design fault'*, which a German shipyard at Papenburg had done in 1979. The German shipyard let its lawyers appoint an independent group of experts 1995 to check and to verify the investigation of the Commission and to do its own investigation.

Captain Werner Hummel at Hamburg led the German group of experts. Werner Hummel and the author have in common to have worked for the same marine accident investigation company, Scandinavian Underwriters Agency at Rotterdam and Hamburg at different times 1978-1988.

The German shipyard acted correctly 1994. If you are accused, like Alfred Dreyfus 1894 - 100 years earlier, to have committed a crime with which you have nothing to do, you have to defend yourself. When the accusations come from government authorities, it does not help to accuse them in turn for errors and incompetence and political considerations.

The German group of expert made an excellent job to verify (24) the actual conditions of the visor and ramp before the accident and to document what actually happened aboard by interviewing survivors and other persons involved with the ship. The only outside party that the Commission (Stenström) ever talked to was the German group of experts. Stenström asked for information and tried to manipulate the yard to confirm the false allegations of the Commission.

The German group of experts published it findings at regular intervals and changed its opinions about the events during its long investigation when new facts emerged. The German Final report was published on the Internet summer 2000 at **http://www.estoniaferrydisaster.net**.

THE BIG ERROR OF THE GERMANS - NO STABILITY CALCULATIONS

The German group of experts made a big error at the beginning. They believed the story of the Commission that it was the *visor* - and water on the car deck in the *superstructure* - that caused the accident. The Germans never studied the stability of the 'Estonia' with water in the superstructure, which would have told them to look elsewhere for the real cause of accident.

So the Germans started by checking the actual condition of the visor and the ramp - it was not such a bad idea after all.

The Germans apparently did not understand that the Commission was presenting false information from the start. When the Germans provided the Commission with various information in August 1995 and January 1996 without getting any reply; **1.19**, **1.22** and **1.44**, they should have become suspicious.

The findings of the German group of experts at various times are described in the following chapters. The Germans found that the condition and maintenance of the 'Estonia' were not very good, later they found information to the effect that the 'Estonia' must have been leaking, and finally they found information about damages caused by explosives down on the superstructure bow of the wreck.

The Germans could never make any sense of all this information - except that the Commission was not doing a correct job. Unfortunately the Germans never suggested that the Commission was a fraud.

3.14 THE ACTUAL CONDITION OF THE VISOR - DAMAGED

According the Commission (5) the visor was in excellent original condition 1994 without any modifications during 14 years service and without wear and tear. The evidences (sic) for this were various anonymous statements. In chapter 13.2.3 of the Final report (5) - *The condition of the bow visor and the ramp installations* - only a few minor defects are described.

According to the report (24) of the German group of experts, which had already been informed to the Commission in letter of 14 August 1995 (act B104** and B122**) the maintenance of the visor was not done properly. The Final report (5) does not investigate, i.a. the following facts of the German group of experts.

The visor stem steel bar, which normally should transfer 80% of the weight of the visor to the hull, when the visor was closed, was damaged before the accident, and the visor rested on the guide cone on the fore peak deck, which was deformed.

The rubber packing of the visor had not been renewed when worn and the visor was leaking. The capability of the packing to dampen visor movements, when the visor was locked, was also lost - the visor was rattling. It also meant that the whole load transmission between visor and hull was changed.

Serious plate damages due to sailing in ice the winter 1993/4 had been caused to the visor. The geometry of the visor had changed - it did not fit properly.

The deck hinges had been modified. The Germans showed that the bushes had been replaced, so that the strength was reduced. However as shown **3.3**, the hinges were only exposed to maximum load, when the visor was opened and closed, and it had worked fine at Tallinn, when the last voyage started.

The Atlantic lock had been renewed and fitted in another position already in 1981/2 and then the welding between bushes and lugs must have been reduced from 8 to 3 mm. The lock had later been *'repaired'* with bad welding, when a person - X - further reduced the strength:

> ... (*X ... has cut off the upper parts of the three steel lugs holding the bolt ... bushings ... After having removed these parts he has welded the bolt ... bushing into positions, fitting ... the changed position of the visor lug...*) ,

The eye of the visor lug had been enlarged to suit the bolt, etc. The Germans did not conclude that the Atlantic lock was probably not in use at all at the fatal voyage - that it had been damaged before **3.7**.

The hydraulics of the Atlantic lock did not work; the bolt had to engaged and removed by hammering on it, etc.

The side locks were misaligned at least 10 mm and were probably not original. The side locks were not salvaged in December 1994 to be examined.

The Germans pointed out a lot of other defects, all demonstrating that the ship owner or the crew did not bother too much with the visor maintenance. Later the Germans have suggested that the visor was not locked at departure but held in place by the hydraulics and its own weight. The manual locks may have been used. Thus the Atlantic lock was not used at the fatal voyage (it was damaged). The hydraulic side locks were also not used.

In conclusion the Germans demonstrated already in 1996 that the condition of the visor was not what the Commission stated. The Commission decided to ignore the German findings - it was the easiest solution - and strangely the Germans never protested too loudly.

3.15 THE ACTUAL CONDITION OF THE BOW RAMP - NOT TIGHT!

According to the Germans 1996 (24) the condition of the inner ramp was also not correct.

The weather tightness of the ramp had not been maintained, i.e. the ramp was leaking. The Germans demonstrated that the port, outer, bottom hinge was broken and that the whole ramp was twisted. This in turn meant that you could not lock the ramp - the lock pins did not fit into the pockets on the ramp itself.

In order to make the ramp weather tight the Germans stated that the crew applied *'pillows'* and similar material in the openings between ramp and frame. These *'pillows'* can still be seen on the video films taken early October 1994. It meant of course that the ramp had not been open during the accident, as in that case they would have been swept away.

The Commission states that the ramp was in perfect condition, even if officially the ramp was never inspected from the inside. The Commission (Lehtola) stated also that the *'pillows'* had ended up between the ramp and its frame *after* the ship had sunk, when the ramp closed itself, i.e. the *'pillows'* had floated into position on top of the water in the car deck space and been pushed into place, when the ship sank, i.e. the ramp was closed then **4.2**.

The observations of the Germans 1996, i.e. that the visor had many defects and that the ramp was twisted and could not be locked, have later been confirmed by other private investigators 1998, when the Final report had been published and the video films became available for scrutiny.

The Germans suggests that the un-locked ramp was held in place by mooring ropes 4.2. Evidently the ramp could then not have been pulled open by the visor - the visor weight could never have pulled a mooring rope apart!

However, in 1996 the Commission had to maintain the illusion that the ramp was tight, closed and locked, which had been stated by the Commission's star witness Linde, who allegedly had been just behind the ramp before 01.00 hrs and had reported that the ramp was locked and tight without any *'pillows'*, etc.

The Germans maintain that Linde lies!

3.16 THE ACCIDENT ACCORDING TO THE GERMANS - THE VISOR

The Germans concluded (24) 1997 that the primary causes of the accident were

(a) that the visor was filled with water (it was not tight) due to the sea condition and that this water leaked into the car deck space through the leaking ramp (which Linde was lying about). The Germans then thought that the water on the car deck sloshed around on the car deck and that some water flowed down to deck 1, **and**

(b) that the fore ship was subject to short, steep waves on the port side due to too high speed and that badly secured vehicles on the deck were lose and moved forward and pushed open the ramp from inside, so that even more water flowed in on the car deck.

The Germans thought that it was the (badly repaired) visor hinges that were broken first 1.11 - the water inside the visor should have caused a force in the forward direction pulling the hinges apart, and then that the (also badly repaired) side locks should have been ripped open. Then the visor tipped forward and pushed open the ramp already at 00.45-00.46 hrs and a lot of water flooded the car deck. The visor was then held in place by the hydraulics and the bottom Atlantic lock. But the Germans did not say how much water actually came into the *superstructure* and why the ship did not permanently list until sudden capsize. It was suggested that the stabilizers kept the ship upright.

NO GERMAN STABILITY CALCULATIONS

The Germans 1995-1999 did not make any stability calculations with water on the car deck in the *superstructure.*

The Germans never considered that any water on the car deck would flow to the lowest point on the car deck and would trim and heel the ship. As the lowest point naturally would shift position, the water on the car deck would thus move around. It would have resulted in violent movements - say 600 tons of water - an enormous lose weight - would trim the ship one meter on the bow and on the stern, when it moved forward/aft and it would have caused permanent list 10 degrees, when it flowed sideway. Such movements were never observed by any survivor, so there were never any big amounts of water in the superstructure. The Germans - like the Commission - could not imagine what 600 tons of lose water would have been - a monster that could not have been controlled, and if this monster later consisted of 1 500-2 000 tons of water, that it would have tipped the ship upside down - capsize.

The Germans suggested then in (24) that the crew observed the lose visor, reduced speed and turned against the wind and tried to secure the visor, which is totally in contradiction with the Commission's course of events 1.9 - that the 'Estonia' continued at 14 knots for two minutes after losing the visor. The ship was still upright, but

> *' at 01.02 hrs the ship listed suddenly to starboard - estimated angle of list 50 degrees[124] - then up righted and listed then 15 degrees to starboard, from where the list slowly increased'.*

This is a very important observation of the Germans supported by plenty of evidence, 2.2 and 2.12. Evidently the ship would never upright with say 2 000 tons of water on the car deck!

The Final report (5) evidently does not mention that the 'Estonia' suddenly listed 30-50 degrees to starboard already at **01.02 hrs.** The Germans thought that it then was a lot of water on the car deck and that maybe the starboard stabilizer fin was broken, which caused the list.

The Germans apparently then never thought about the possibility that the hull was leaking and that water on deck 0 at the bottom of the hull caused the listing due to free water surface effects on deck 0.

NO GERMAN PLOT OF THE ACCIDENT

The Germans then thought that the visor starboard side was pushed up by a buoyancy force, when the angle of list was extreme, when the Atlantic lock was broken sideway **3.7** and that the visor at last was just hanging in the hydraulics. Finally the visor fell off at about 01.20 hrs - 18 minutes *after* the listing occurred. The Germans apparently believed that the visor was lost 1 560 meters west of the wreck but could never plot their alternative sequence of events.

But the ramp protecting the superstructure was apparently not pulled open - it only leaked all the time.

VISOR LOST AFTER THE LISTING

The German scenario is quite similar to the author's, i.e. the visor was lost *after* the listing occurred, pushed off sideways. The author however believes it happened *below* water *after* the accident. The Germans add several observations that the visor was pulled off sideway - scrape marks on various parts of it. The Final report (5) evidently does not examine the possibility that the visor was ripped off sideway. But it is possible that these scrap marks were made, when the visor was still attached to the ship.

It is very strange that the Germans never concluded that the cause of the sudden list was free water on deck 0 in the *hull* due to leakage resulting in the loss of initial stability - the sudden listing - and that then the very badly repaired and maintained visor just fell off by itself afterwards.

UNREALISTIC SUGGESTIONS - EXPLOSIONS BEFORE SINKING

Later, 1999, the Germans suggested that an explosive device between visor and ramp had ripped off the visor **3.18** before the ship started to sink, but the Germans could again not make any logical sense out of all its observations. An explosive device between visor and ramp of a *superstructur*e would not open the ramp. An explosive device between visor and ramp of the *superstructure* does not sink the ship! And the Germans never bothered to explain why and how the ship sank, how the *hull* was flooded, which is their biggest mistake.

The Germans had access to the media 1995-1997 but they never suggested to the media that water on the car deck in the *superstructure* would simply have caused immediate capsize and that the ship would then have floated upside down on the hull.

The main strength of the German investigation is that it presents new proven facts about the condition of visor and ramp and what happened aboard *before* the accident.

The main weakness of the German investigation is that it does not try to sort the facts what happened *after* the accident in a logical order and that it does not make any stability calculations whatsoever.

The Germans could never reconstruct a course of events with the visor falling off at 01.20 hrs, when they say that the ship was stable on the side with 40 degrees list. To be stable in that position the hull must have been flooded and the superstructure must have provided some buoyancy. The German final report issued 2000 is a strange document - it mirrors the Final report (5) of the Commission and points out some evident mistakes - *but avoids all facts about stability, watertight integrity, subdivision and watertight doors and life saving equipment and the real course of events - and the real cause of the accident.*

The Germans should of course have noticed that the alleged visor position of the Commission 1 560 meters west of the wreck did not tally with their or any scenario. Why didn't the Germans suggest that the visor position must have been false?

In 2007 the Germans suggest that a collision caused the loss of visor!

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[124] This author believes the angle of heel was only >30 degrees, but that the combination of sudden list, roll and waves hitting the side made the impression that the ship listed 50 degrees. In this book the sudden list is assumed to have been >30 degrees followed by a permanent list at 15 degrees.

3.17 THE ACCIDENT ACCORDING TO THE GERMANS - WATER ON THE CAR DECK

The Germans then think that the angle of list increased, when more water entered through the partly open ramp and collected on the starboard side in the *superstructure*. The Germans do not consider that the ship would ever capsize, as they have no idea of basic ship stability. They instead make a strange and erroneous (24) conclusion:

> *'at about **01.20 hrs** the visor moved forward, when the hydraulics broke through the forward bulkhead, and the visor separated from the **hull*** (sic) *- the angle of list was then 50-60 degrees and water flowed* (a) *in on top of the car deck and also* (b) *down to the lower decks in increasing amounts'.*

First some corrections - the visor never separated from the *hull*. The visor was only attached to the forward end of the *superstructure* several meters above waterline and the question remains how, why and when it was detached from the *superstructure*. Second - the Germans do not understand that the ship (a) **could not have been stable at 50-60 degrees list with water only in the *superstructure*.**

The water (>4 000 tons) on the car deck was not any longer *on* the deck (!) - it was of course on top of the starboard inner side 2.16 of the *superstructure* - see fig. 3.17.1 right.

That water could of course not (b) **flow down to lower decks in the *hull* as suggested, etc. - it could only tip the vessel upside down - capsize. And how could 4 000 tons of water have entered the superstructure space in the first place, if the *visor* and the *ramp* were still in place at 01.20 hrs and the list was 50-60 degrees?**

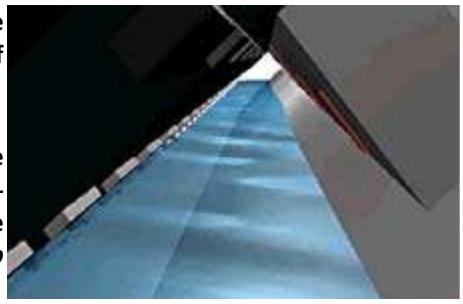

Fig. 3.17.1 - 40 degrees list with 2 000 tons of water in the superstructure. With 4 000 tons the list would be 50 degrees and the water would hit the underside of deck 4.

As can be seen in figure 3.10 the visor cannot push open the ramp in an upright condition *before* the hydraulics have cut off the deck beam at frame 159 and nobody has explained how the deck beam could have been cut, when the list was 50-60 degrees. There is no evidence that the beam is cut, neither when the 'Estonia' was upright with 15 knots forward speed, nor when she was at the side with 50-60 degrees list and no forward speed!

1t **01.20 hrs** the speed of the ship was nil and the bow was turned away from the waves. It means that the wave loads on the visor were nil and that the visor could not move forward and push open the ramp and that any water could not be pushed up into the ship. Unless the ship had capsized earlier, the water on the car deck would simply have flowed out the same way it came in, when the ship stopped. The German conclusions in (24) are therefore wrong. Totally wrong. This makes the German investigation very suspicious. Why do the Germans announce impossible conclusions?

THE GERMANS AND THE COMMISSION USED THE SAME 'STABILITY EXPERT'

Why did the Germans make the big mistake about basic ship stability with water loaded in the superstructure? Who was the expert of stability in the German Group of Experts?

He was no less than Mr. **Veli-Matti Junnila**, the same person that assisted the Commission (sic) to produce the false stability (stable) condition with 75 degrees list shown in 3.12. Mr. **Veli-Matti Junnila** had also done the last stability test in 1991 and the updated Stability manual of the 'Estonia' 2.17.

The Germans and the Commission used the same 'stability expert' to hide the fact that the 'Estonia' would capsize with about 2 000 tons of water in the superstructure!

The Germans cannot also explain the big hole in the starboard front bulkhead **3.10** or maybe they were not aware of it. The German suggestion that

> *«the hydraulics broke through the forward bulkhead*"

at 01.20 hrs at 50-60 degrees is not proven ... and physically impossible. The Germans were apparently mislead by the Commission, which suggested the same thing - that the visor hydraulics had broken the *superstructure* structure - even if the Commission said it was *before* the listing occurred at 01.15 hrs, when the ship was upright. But there is no evidence for that too. All suggestions that the visor pulled open the ramp when the ship was upright or at 50-60 degrees list are false.

It should be noted that the Germans consider that the listing occurred at 01.02-01.05 hrs, i.e. that it was at least 15 minutes between the first list and the alleged loss of the visor at 50-60 degrees list. What happened during these 15 minutes, when the 'Estonia' with visor in place and with closed ramp heeled over 50-60 degrees? The Germans do not say, except that water flowed in through a leaking ramp!

Another very big weakness of the German investigation is that it does not present a plot of the ship's movements with alleged water on the car deck *before* and *after* the visor was lost at 50-60 degrees list, and where it is also explained, why the ship did *not* capsize, when there was >2 000 tons of water on the car deck in the superstructure at less than 40 degrees list. The Germans have never explained how the visor could have been lost 1 560 meters west of the wreck.

Therefore, in its later findings 1999 and conclusions the Germans, like the Commission changed its mind about the sequence of events, and actually suggest that the *hull* of the 'Estonia' was leaking *before* the sudden listing and that it caused the sinking. The bow ramp in the superstructure was evidently also leaking, but it did not cause the sinking, the Germans implied. It was an old defect. So the visor had nothing to do with the sinking, according to the Germans. But they never said so. In 1999 the German investigation was morally bankrupt. And the Commission was happy. The German failures gave some surprising credibility to the Commission's lies.

3.18 THE ACCIDENT ACCORDING TO THE GERMANS - THE SAUNA WAS FLOODED

The Germans concluded already in 1997, before the Final report (5) of the Commission was published and before they lost their credibility 1999, after having reviewed the available testimonies (24), that the below facts a) - r) could be established.

Parts of the conclusions a) - r) below had been told to the Commission in a letter of 27 July 1996 (act B155** 1.22).

The Commission made this information secret and it was not made official until March 1998 - three months after the publication of the Final report (5) and two months after the author's first book (1) was published. The Germans did not protest that they were censored by the Commission.

Note the proposed (German) event **c)** - that a compartment on deck 0 was flooded and connected - **leakage** - to the sea, and that the time was **01.02** hrs - fact **j)**! Water inside the ship just at the time of the sudden listing can only have been caused by leakage below the waterline of the hull.

The leakage of the hull thus must therefore have started earlier but the Germans never present any further thoughts about the matter. Note also fact/event **f)** that the speed was reduced *before* 01.02 hrs and the course changed to port. This means that the crew knew that something was wrong, but the Germans do not seem to understand that. Evidently no detailed evidence was produced by the Germans to support their observations.

NO GERMAN OBSERVATIONS INVESTIGATED

None of the German conclusions have been investigated by the Commission and none are mentioned in the Final report (5). The author will not present the background and comments of the German statements here, but one statement - **o)** - below is definitely not correct. Thus the Germans suggested in 1997 below events left (with the author's comments right):

a) *there was water on the car deck before the accident occurred (the ramp was leaking);*	Probably a few tons of water on the car deck due to the leaking visor/ramp!
b) *there was also water on deck 1, before the sudden list to starboard occurred (at 01.02 hrs);*	Must have come from deck 0 and been caused by a serious leak.
c) ***the compartment on deck 0 with sauna/swimming pool was flooded and in connection with the outside sea;***	**It means the ship was leaking! But the Germans do not explain why!**
d) *the trim had changed since departure from Tallinn, from small stern trim to small bow trim as* (i) *a result of water in the visor and* (ii) *water on the car deck due to the leaking ramp and* (iii) ***water on deck 0***.	No trim calculations are provided.
e) *deck passenger Kikuts observed at 00.29 hrs that the visor was lose ...;* ***severe bangs were heard from the car deck at about 00.45/00.50 hrs ...*** *;*	Confusing.
f) *it was apparently reported to the bridge by Silver Linde, and* ***the speed of the ship was reduced*** (compare 1.4) *and the* ***bow was turned into the wind/thus to port ...*** *Silver Linde was instructed to close the inner ramp by the hydraulics; he was assisted by, e.g. bosun Aulis Lee and Arne Koppel;*[126] *they tried to stop the visor movements ...*	The Germans thus suggest that the ship slowed down and turned before 01.02 hrs, which means that the crew knew something was wrong. In the Final report (5) the speed was maintained long after the sudden listing.
g) *... they started the hydraulic pump at about 01.00 hrs ...*	
h) *... the visor was moving ... ;*	
j) ***at 01.00 hrs the ship was shaken by a hard bang, which according to the survivors cannot have been caused by the waves ...*** *then …* ***at 01.02 hrs the ferry suddenly listed to starboard - estimated angle 50 degrees (persons were standing on the walls) - then up-righted followed by a***	This is the most important observation of the Germans supported by a majority of the survivors 2.1. The sudden loss of stability can only have been caused by a fair amount - 300-500 tons of lose water inside the hull on deck 0.

permanent list at 15 degrees to starboard ... *the cargo shifted one meter sideway.*	
k) *the ship continued its port turn ... the port engines stopped at 01.10 hrs;*	
l) *at about 01.16/18 hrs the list was 40 degrees, when Hannes Kadak and Henrik Sillaste left the engine control room ...* ***the bow ramp was still in unchanged position,*** *only partly open (leaking) ... ;*	The Germans believe that Kadak/Sillaste stayed 14-16 minutes in the ECR ... doing what? And how could they escape 1.48?
m) *when the angle of list exceeded 40 degrees, the auxiliary generator engines stopped and the emergency generator started;*	
n) ***you have to assume that the visor separated from the ship at about 01.20 hrs ...****;*	Why do you have to assume that? The list was 50-60 degrees and the speed was zero. Why would the visor fall off?
o) *the ship had a* ***stable*** (sic) *condition with a list 40-50 degrees heading to SE, which meant the opening was 90° from wind and sea;*	**The stable condition has not been explained. But it must be assumed that many hull compartments were flooded, because the only stable condition with a list of >40 degrees is with about 500-1 000 tons of water on deck 0.**
p) *the ship was on the side at 01.31 hrs, when the emergency generator stopped;*	Probably correct.
r) *at 01.53 hrs the 'Estonia' disappeared from the radar screens of the 'Mariella' . The 'Mariella' was then the ship closest to the accident position.*	The time should be 01.36 hrs as nobody has presented any evidence that the ship sank at 01.53 hrs. The Germans should know that a ship on the side - 90 degrees list - cannot float another 22 minutes.

THE STABLE CONDITION

Re point **o)** above about the stable condition, it is an impossible statement unless there is 500-1 000 tons of water on deck 0 at this time. There is no stable condition at that angle of list 1.9 with a dry undamaged hull below deck 2 and with water on deck 2 in the *superstructure* open to the sea and the deck*house* being flooded.

It must be recalled that the German 'stability' expert was no less than Mr. **Veli-Matti Junnila**, who had (a) initially approved the stability of the 'Wasa King'/'Estonia' in 1991 and later had provided the Commission with false stability calculations, that the ship was stable with >40 degrees list, 3.12 and 2.17.

THE SWIMMING POOL FLOODED - THE SHIP WAS LEAKING

The sauna/swimming pool is on deck 0 forward Figure 3.18.1 Swimming pool on deck 0 below cabins nos. 1076-1096 on deck 1.

The Germans wrote 1997 in (24) (page 36) just before the Final report (5) was published that

'According to statements of most survivors, in particular of the key witnesses … Passenger CÖ (cabin 1049 - 1st deck) ... Passenger MN - (cabin 1027 - 1st deck), Passenger BN - (cabin 1026 - 1st deck) ... the sequence of events must have been somewhat different from what the JAIC has found and also what the authors Hellberg/Jörle assume in their book 'Katastrofkurs', because ... (b) there was water on the 1st deck, ... , in particular in the forward part, already before the sudden starboard heel occurred; (c) ***the sauna/swimming pool compartment on 0-deck ... was flooded and under pressure, i.e. open to the sea, before the sudden starboard heel occurred*** *... '.*

Fig. 3.18.2 – Swimming pool on 'Estonia deck 0 recessed into double bottom

The Final report and the Commission evidently never investigated the above statements, which were made just *before* the Final report (5) was issued and *before* the suspicions arose that the visor position may have been false. There were at least three separate events according to the Germans *before* the sudden listing -

(i) water in the sauna/pool compartment on deck 0 in the hull, i.e. *hull leakage* and

(ii) (old) problems with the visor (and the leaking ramp) at the forward end of the *superstructure* and

(iii) **a decision to slow down and change course.**

If you slow down before an accident you know something is wrong. But the Commission maintains that full speed - 15 knots - was maintained until after the 'accident' - the sudden heeling. Actually, there is no evidence that the speed was maintained after the first, sudden listing - just a statement by the Commission.

THE OLD PROBLEM WITH THE RAMP

It seems the Germans believe that at least three persons were in the *superstructure* on the car deck behind the ramp trying to secure it, when the sudden listing occurred. This is highly unlikely for the following two reasons, A and B, apart from the fact that the best solution would have been to stop for a while with the visor/ramp away from the waves:

(A) The three persons in the *superstructure* must be able to escape from the no. 2 car deck *after* the sudden listing to starboard, which was caused by the water in the *hull* on deck 0 and which they could not have anticipated.
There are only two possibilities:

(i) They could have taken the crew stairs up to the focsle (superstructure weather deck 4) deck forward of the deck house, but then it was impossible to reach open deck 7 port side - they then had to take outside stairs to 5 deck *starboard* forward stairwell and up to deck 7 starboard side and then cross over to the port side.
(ii) The other alternative was to run aft inside the *superstructure* on the car deck, which was blocked by shifting cargo, to the first fire door and to proceed up the stairwell to deck 4 and then up the main stairwell to deck 7 and out on the port side. In either case it is unlikely that the three persons would have reached open deck 7 port of the *deck house*.

(B) The sudden listing at **01.02** hrs could not have been caused by water on the car deck in the superstructure, if three persons were actually working there - for any reason. If the ship was trimming on the bow, any water on the car deck in the superstructure would have collected behind the ramp and the three persons would have been drenched - only 600 tons of water in the superstructure would heel the vessel 10 degrees and trim it 1 meter on the bow and **would have produced a more than 2 meter high wedge of water behind the ramp!** If that were the case, the solution would have been easy - stop the ship, put the bow away from wind and waves, lift the visor, open the ramp - and the water would have flowed out by itself! Remember the car deck in the *superstructure* was >2 meters above the (original) waterline or 1.5 meter above the waterline taking account of the trim.

It was no danger of the ship with only 600 tons of water in the superstructure - only a terrible nuisance. The ship would still float on the hull - even if the sauna compartment was flooded.

This author therefore does not believe the German suggestion that the three persons were working inside the superstructure with the ramp at 01.00 hrs. They may have been working there or on the open deck 4 earlier to secure the ramp with ropes, but the main problem was evidently the water on deck 0 in the *hull*, and it could only have been caused by a serious leakage.

Why the Germans never spell out clearly that the 'Estonia' was in fact leaking *before* the sudden listing is not clear. The Germans finally suggest that the ship sank due to bad maintenance, which is nonsense. Bad maintenance is not the proximate cause of the accident - only a contributory cause.

Strangely enough the Germans never pursue the statements of Sillaste 1.3 that he had started the bilge pumps to pump compartments on deck 0 dry - before the sudden listing!

SPEED REDUCED BEFORE THE ACCIDENT - CREW AWARE OF PROBLEMS - NO ALARM

It is interesting to note that the Germans suggest, based on unknown testimonies, that the speed was reduced *before* the sudden listing. It means of course that the crew and the Master were aware of some problem - probably leakage - as you do not slow down in the middle of the ocean at night unless something is seriously wrong and then the Master is informed. Maybe the Master was on the bridge already at 00.50 hrs (or earlier) after having been alerted at 00.45 hrs (or earlier) - such information the Commission **had to** censor, as it indicated that the crew was aware of a problem long *before* the ship listed at 01.02 hrs - or according to the Commission at 01.15 hrs. The Germans never comment upon the fact that no alarm was raised, when the speed was reduced.

The Germans believe that two (or three) persons in the ECR escaped 14-16 minutes after the sudden listing, but this is hardly realistic or logic 1.48. They could not get out so late, but the Germans apparently believe so.

The German early assumption that the visor fell off about 18 minutes *after* the sudden listing was probably based on the information that the visor was allegedly found 1 560 meters west of the wreck. The Commission evidently suggests that the 'Estonia' then at 01.15 hrs was heading west, while the Germans propose that the 'Estonia' then at 01.20 hrs was heading east at no or little speed, but the Germans never attempt to recreate the course of events *before* or *after* the sudden listing (heading west) at 01.02 hrs, *after* the loss of the visor (heading east) at 01.20 hrs and before the sinking, which the Germans believe took place at after 01.50 hrs. It is more likely that the visor was attached to the ship, when it sank. Later the Germans have hinted that so was the case.

THE 'ESTONIA' SANK AT 01.35 HRS

That the 'Estonia' sank at 01.35 hrs (and not 01.53 hrs) is based on the statement of the mate of the 'Mariella'.

The Commission apparently changed the sinking time to 01.53 hrs to permit the vessel to drift to the wreck position in Dr. Huss' false plot, which the Germans never noted.

Actually the sinking time 01.53 is absolutely false and manipulated by the Commission. The reason is that the Commission decided to change the time of the 'accident' - the listing and the alleged loss of visor from 01.02 to 01.15 hrs, i.e. 13 minutes delay. Then neither the Commission nor Dr. Huss could admit that the ship sank as early as 01.35 hrs, because it was then too short time to sink and drift, so they added, in a first attempt 13 minutes, when the ship was sinking at 01.48 hrs, and later 17-18 minutes, when the official sinking time became 01.52-01.53 hrs to enable the ship to drift northeast >1 200 meters at >2,2 knots the last 20 minutes.

That everything the Commission suggested about the sinking is lies has been shown in 1.9, but the Germans have never pointed this out in their reports. Actually, the Germans have ignored every observation in this book. Is it because the 'Viking Sally' that later became the 'Estonia' was badly - incompetently - designed and built at 1979 with 22 watertight doors and defective life saving equipment? Could not the Germans admit that there were some inherent defects in the ferry?

The Commission has, as stated earlier, always refused to comment upon the German observations, 1.19 and 1.22. The reason was to avoid any discussion about the Commission's own fantasies.

OF COURSE - THE SHIP SHOULD HAVE CAPSIZED

The Germans developed and modified their conclusions 1997-1999. In 1999 a **leakage** of the hull below waterline must have contributed to - but not caused? - the accident, the Germans thought, but they had still no idea what caused the leakage. In an interview in the Swedish daily newspaper FinansTidningen 12 August 1999 by KC the Germans (WH) explained:

....

WH: ... the 'Estonia' should not have sunk, if she had been properly maintained and if the owners had followed the safety rules, SOLAS. ***The main reason for the accident was that the ship was not seaworthy ...*** *If the visor and ramp had been properly closed and locked the accident would not have occurred. ...* ***the ramp was damaged and impossible to lock.***

KC: ... ***Already in June 1997 you discussed a leak forward below the waterline****.*

WH: Yes, but we do not know where and how it developed. Survivors stated that ... ***deck 1 was under pressure from below,*** *from the sauna and conference compartments.*

KC: ***Several persons have suggested that, if the 'Estonia' had only had water on the car deck, she should have tipped upside down and floated upside down like the 'Jan Heweliusz' and other ro-ro-ferries.***

WH: ***Yes of course. It is what happens with water on the car deck ... It is common knowledge.***[130]

KC: If there is a hull damage - a leak - where is it?

WH: We do not know. ***Everything from the starboard bottom ... has been edited away (cut off) from the video films of the wreck*** (between the bridge and the funnel).

...

On 30 December 1999 the German group of experts handed in its Final report to a court at Stockholm. A few days later the Swedish 'Estonia' minister Ms Mona Sahlin stated that it didn't contain any new revelations.

NEW FINDINGS NEVER INVESTIGATED

The German final report contains at least eleven additional new allegations, without complete evidence, which had not been reported before and which, evidently, are not examined in the Commission's Final report (5) **Appendix 5**. The new allegations are below left (with some author's comments right):

1. 'The Estonia' was leaking already at departure Tallinn - ***some double bottom tanks on starboard side were leaking and could not be pumped dry.*** *Therefore the port heeling tank was filled to compensate the imbalance.*	Not proven. There is no evidence that the port heeling tank was ever filled.
2. ***The Utö-plot exists*** *and shows how i.a. the 'Estonia' took the course along the Finnish coats, and later turned south-west-south, etc.*	It also shows that the 'Estonia' slowed down and turned before 01.00 hrs and sank at 01.36 hrs.
3. Silver Linde raised alarm at about ***00.45 hrs*** *about large amounts of* ***water on the car deck****.*	See below. The alarm was about water on deck 0!?
4. A seaman was ordered to ***make the lifeboats ready before the sudden listing occurred.***	X
5. Both Treu and Sillaste state that ***the bow ramp was closed after the bangs at 01.00 hrs and the sudden listing at 01.02 hrs****.* ***The ramp had been*** *raised and* ***secured*** *manually* ***by rope*** *in the port basin at Tallinn.*	Correct - thus very little water could have entered at the ramp. And if the ramp was secured by ropes it could hardly be pulled open.
6. ***The crew worked*** *with the visor- and ramp-hydraulics on*	Why would they do that?

the car deck before the listing.	
*7. **Several passengers saw the visor**, when they were on the side of the sinking ship.*	Probably correct - the visor was still attached to the superstructure.
*8. **The visor fell off, when the list was 135 degrees,** when the starboard hydraulic piston was ripped out, and the visor ended up on the bottom just beside the wreck. There it was located a few days after the accident.*	Or it hanged on to the wreck, when the ship sank.
*9. MOB-boat was found 8,5 miles **south of the wreck** on 29 September.*	Correct position is 35 miles east of the wreck.
*10. **Two survivors in life rafts saw the MOB-boat leaving the ship**.*	Correct!
11. All video films of the diving have been edited in a systematically manner - sequences of identical areas filmed on all films, e.g. the forward starboard side between bilge and car deck have been cut away.	Correct!

These new, fantastic observations, which contradict many earlier German suggestions, support the theory of the author that a severe leak in the *hull* below the waterline caused the accident and that the crew must have been aware of it before the listing occurred. The Germans may have misunderstood Linde - it must have been a serious leak on deck 0 - not the car deck - that Linde (or Treu) raised an alarm about at 00.45 hrs and that was why they slowed down.

The ramp on the car deck in the superstructure was evidently also leaking all the time, but it did not cause the accident. It was only when the hull started to leak and when water flowed in on deck 0 in the hull that the trim changed and leak water started to collect inside the ramp on the no. 2 car deck/superstructure. Then there were two bangs - the ship may have got even trim, while pitching - and the little water on the car deck flowed aft and was heard by the passengers on deck 1 below. Then there was the sudden listing due to massive amounts of free water on deck 0. That the ramp was then still closed is obvious. The ramp was obviously closed all the time, even if the Germans never make a big point about it.

THE GERMAN FINAL REPORT - VITAL INFORMATION MISSING - NO LOGIC

The German Final report is available on the Internet at **www.estoniaferrydisaster.net**. It contains a lot of valuable information.

However it also lacks a lot of *very* vital information;

stability data,
bilge pump data,
escape routes from the ECR and the engine room,
lifesaving equipment and procedures,
watertight subdivision and 22 watertight doors,
a plot of the various events, etc., etc.

The German Final report only mirrors the official report (5) and points out many errors in the latter.

The Germans never dared to state that *all* essential information in the official report (5) is false and that plenty of information was completely missing.

This is one of the reasons for this book.

STRANGE BEHAVIOUR

The Germans have in fact behaved very strange towards this investigator. The Germans had regularly asked the author for information and have even visited the author's office and the author has provided *all* information available in (1) and in this book.

The Germans have repeatedly proposed to the author that his stability calculations 2.17 are wrong! But it is not the *author's* stability calculations - it is basic, elementary stability calculations taught in schools.

For several years the Germans disagreed, like Stenström, with the simple conclusion that the 'Estonia' would have immediately capsized and floated upside down with >1 500 tons of water on the car deck in the superstructure.

It is one of the mysteries of the Germans! Why did they never point out this basic lie of the Commission - that water would only capsize the ship?

Furthermore, the Germans have withheld a lot of information from the author, e.g. simple drawings of the ship, escape arrangements, swimming pool design, etc.

The German Final report also includes information about various strange damages - e.g. holes in various plates - in the fore ship of the *superstructure*, which explosive devices are assumed to have caused before the 'accident'. The Commission denies their existence in spite of the fact that the damages can be seen on the video films taken. And there is no logic in the German reasoning: on the one hand the crew was trying to secure the ramp from inside; on the other hand unknown persons were blowing off the visor outside the ramp at the same time.

The Germans must have been asked by the Commission to present a stupid report - a little criticism of the Commission but not too much. And to add some conspiracy theories! This author believes that the Germans and the Commission are today cooperating in confusing the public.

STUPID CONSPIRACY THEORIES

Various conspiracy theorists - including the Germans - suggest that the explosive devices exploded, *when the ship was still afloat*, in an attempt to stop the ship - and to sink it!

The conclusion is silly - if anybody would have blown off the visor, the ramp would only have got stuck in its frame, etc. and nothing would have happened.

This author believes the damages in the fore ship of the superstructure were caused *under water* in (a) successful attempt to remove the visor from the bow, so that it sank to the bottom 10-15 meters below the bow, and (b) in an unsuccessful attempt to open the ramp. The reason for this strange and unusual undertaking must have been to give credibility to the alleged cause of accident of the Commission that the visor had (c) fallen off the superstructure under way and (d) pulled open the ramp. This very peculiar job should have taken place 3-4 October 1994.

It is thus easy to verify - check the video films taken on 2 October 1994 and compare with the films taken on 9 October 1994! The big hole in the front bulkhead **3.10** should have been made between 2 and 8 October 1994 *under* water to remove the visor. Strangely enough the Germans never pointed out this evident damage.

More comments about the German report **Appendix 9**.

So what caused the damages to the visor? A **collision**?

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[126] Lee and Koppel were rescued aboard the 'Mariella', **1.41** and **1.42**.

[130] But not reported in the German final report, **2.16** and **2.17**.

3.19 SUMMARY AND CONCLUSIONS. FULL SPEED TOWARDS DISASTER! THE REPORT OF LIES

The technical descriptions and analysis of the accident in the Final Report (5) are evidently totally unsatisfactory. Also the German information is completely confusing. The contradictions are remarkable. You must recall that, when the Final Report (5) was written 1994-1997, there were total secrecy and no public insight. All information about the accident was classified including the German letters to the Commission. No reasons for such drastic requirements in a democratic society were given, but as such was the case, you should require absolute evidence later. What did actually happen at the accident? The German attempts to clarify the matter are not serious. The Commission in fact presented two myopic versions, both of course ignoring everything surviving passengers had reported and, worse, basic stability principles that the vessel would have capsized and floated upside down with >2.000 tons of water on the car deck in the superstructure, which should have occurred after a few minutes with an open ramp.

TWO STORIES ABOUT THE 'ACCIDENT'

On the one hand the Commission referred to third engineer Treu, who inside the sound insulated engine control room, ECR, allegedly heard two bangs just before (or after?) **01.15** hrs **4.4** and then observed that the ship heeled a few degrees and then on a monitor saw that the bow ramp protecting the *superstructure* was leaking and that water flowed into the superstructure space. This apparently came as a total surprise for all crew aboard, both in the engine room and on the bridge. Treu and his colleagues in the engine room did not have, e.g. any idea about *any* problems before **01.14** hrs.

Treu never raised any alarm, when things started to happen. No blame is put on Treu for that (because you cannot blame a person for something he was forced to say he did ... but never did).

The main engines continued to run until **01.20** hrs and the speed was not reduced. Treu and his two colleagues remained bravely in the ECR on deck 1 until after **01.22** hrs, when the lifeboat alarm was heard. *Not until then* did they start to evacuate the ECR to abandon the ship. The three heroes - they had tried to save ship by ballasting with a pump that could pump 100 tons/hour, etc. while they had > 2 000 tons of water on top of the ECR! - then proceeded quickly and in good order to deck 8 in a few minutes **1.48**. The Commission has not presented any evidence for all this. All is based on the oral testimonies of the three crewmembers.

The correct story was probably totally different - the three evacuated the engine room immediately when they lost control of the leakage and when the watertight doors were opened and ran to deck 7. But that could not be said - they had to present false testimonies to the effect that they had remain in the control room and seen water on the car deck on a TV-monitor - the water entered at the leaking but *closed* ramp of the superstructure and then they tried to ballast the ship upright. Only an idiot could have convinced these stupid crewmembers to tell that story. But strangely enough the media, and the Germans, accepted the story, probably encouraged by the Swedish government.

On the other hand **3.7** the Commission (Stenström) has invented a complicated scenario starting with AB seaman Linde on the car deck in the superstructure hearing a big bang before **01.00** hrs, but that everything then was apparently in order, even if an alleged wave impact of 360 ton then had broken the Atlantic lock at about **00.55** hrs. After five minutes long check on the car deck 2 behind the ramp - no leakage, no noises, no impacts - Linde is stated to have returned to the bridge on deck 9 a few minutes later. The ramp was tight and there was no water in the superstructure - or anywhere in the hull.

Then - after **01.00** hrs - the bridge is alerted by phone (not by Treu, who was charging his walkie-talkie) that there were problems down in the ship, and Linde is sent down to check. **The ECR (3/E Treu) is not informed**. The visor side locks are allegedly broken at say **01.02** or **01.05** hrs by another big wave impact (>500 ton) **3.8**, the visor is hitting up and down against the forepeak deck for 10 minutes between **01.02-01.12** hrs, when metallic noise is heard in the whole ship but not by Treu and not by Linde when he is waiting at the reception

for five minutes and cannot enter the car deck, and when still nobody on the bridge is calling the ECR (Treu) to e.g. reduce the speed.

During that time the two visor hinges and the lifting hydraulics are allegedly broken, the visor is free to move and is cutting up the weather steel deck and a deck beam at frame 159 - all in the *superstructure* on deck 4 about 20 meters forward of the bridge on deck 9.

Then the Commission suggested that the lose visor dislodged the bow ramp, that the visor fell off, that the ramp was pulled fully open and that 1 000 tons of water flowed into the superstructure at **01.15-01.20** hrs, just as Treu had stated (actually Treu did not see an open ramp, but - anyway!), and that the ship slowly listed to 15-20 degrees at **01.20** hrs, when the bridge called the ECR and wondered, if Treu could ballast the ship upright - with a wide open ramp.

BALLAST THE SHIP UPRIGHT

In the meantime the bridge had - according to the Final report (5) - noticed that the ship had collided with the lost visor - Bang! - and the officers on the bridge had (a) initiated a turn to port and (b) reduced the speed. The ramp was fully open - water flowed into the *superstructure*. Nobody saw the light in the superstructure illuminating the outside sea. Then, and only then, did the bridge call Treu and asked him, if he could ballast (!?) the ship upright, in spite of the ramp being fully open. This extraordinary call - the ferry listing 20 degrees with a wide open ramp and big waves running into the ship - is an outrageous mendacity. Treu has clearly described it - it is the 4/O Kikas on the bridge that calls and requests Treu ballasting or shifting ballast from starboard to port. The general alarm had not yet been raised. The Mayday had not yet been sent.

The bridge did not ask Treu to stop the main engines or to go astern and no such manoeuvres were done by remote control from the bridge in spite of the fact that the dive examination **1.16** found the bridge control full astern. No evidence for any of all above has been presented by the Commission in its Final report. It is only stated as proven facts. But there is no evidence.

And Treu allegedly actually attempts to ballast the ship upright according to his fantastic testimonies. He moves to the panel/console in the ECR with the ballast pumps - starts a pump, open the relevant valves and finds that he is pumping air - from the starboard tank on the lee side. This he reports to the bridge - a second call or a long first call. The starboard tank is empty - there is no water to transfer from starboard to port to reduce the list. At the same time more water enters the superstructure.

According the Final Report the crew never reduced the speed - it was full ahead - until the engines stopped by themselves at 01.20 hrs. The Commission assumed that the bridge reduced speed and initiated a turn, but there is no evidence for that.

The Final report also states that pumps had been started to pump the car deck empty - but no such pumps exist.

Then the list was >70 degrees and the ramp closed itself (!) and the ship sank slowly - the 14 watertight compartments below the car deck in the hull filled up with water. No survivors in the water were reported to having seen the ramp open. Some survivors stated that the visor was missing (but it could have been hanging from the lee-, starboard side).

Comparing the above two scenarios with what was said in the Part Report 1.19 it is easy to show that the Final Report is only an expanded reconstruction of what had been stated - invented - without any evidence, nineteen days after the accident 1.12 on 17 October 1994. Then the crew also did not do anything to prevent the accident, except that Linde was sent down to investigate some alleged noise. It was full speed ahead, until the ship was listing at 01.15 hrs, when the engines stopped by themselves at 01.20 hrs!

But you could not blame the Crew!

It is a nice coincidence that the observations of Treu at **01.15** hrs, are in complete agreement with all the other alleged happenings of the Commission until **01.15** hrs. That everything is one big lie does not make the job worse - it is quite a stupid manipulation. How the nine persons Commission with plenty of experts and observers managed to put together such a shameful document is another story. A Final Report of Lies!

Nothing agrees with the statements of the surviving passengers, 2.1 and 2.12, or with the laws of physics or basic stability conditions with water on the car deck in the superstructure 1.9.

The ultimate lie was that the visor had been lost *prior to* the 'accident' - the sudden list. But the Commission could never explain what happened earlier and how, why and when the visor had been lost. And the Commission could not explain what happened after the visor had been lost. Nor could the Germans.

Why didn't the ship capsize in one minute as the 'Herald of Free Enterprise'?

The plot of the Kalmar Maritime Academy shows that the 'Estonia' moved >3 000 meters after the alleged loss of the visor, which the Commission fully supports in the Final Report. But is the plot true? It is a falsification **1.9**! Not even the head master of the Academy - Rolf Zeberg - believes the plot.

Leakage as the cause of the sudden list? No - the Commission has stated informally that *that* cause had been investigated and it was not possible. Why? Therefore! When? Sometime! The Final Report (5) does not mention leakage as a possibility. How were the 14 watertight compartments flooded? From above when the ship had >70 degree list! But then the air in the watertight compartments could not escape - why didn't the 'Estonia' float on that air upside down? The Commission could not answer - instead it became rude - the author was unintelligent, conspiratorial and unreasonable.

MANY PARTIES OF THE COVER-UP

Then there was the high number of victims. Evidently at least 10 additional Estonian crewmembers survived and were not hesitating to state that the ferry sank due to leakage so the Commission arranged that they 'disappeared'. The Commission had to explain why 10 additional persons had died so the whole rescue effort had to be manipulated **1 .41**.

The false certificates and incorrect lifesaving equipment and systems worried the Commission? The solution? It stated that (a) all certificates were in order and (b) that all lifesaving equipment and systems were 100% as per the SOLAS rules and (c) that the crew and the shipping company maintained correct safety procedures, when in fact **1.33** the ship was totally unseaworthy in all respects.

How could members of the **Marine Accident Investigator's Maritime Forum**, MAIIF, sign such a report of lies?

How could the **International Maritime Organisation** accept such a Report of Lies?

How could international safety at sea expertise accept such a Report of Lies?

How could 50 ship inspectors of the Swedish NMA accept such a Report of Lies?

And how could thousands of other, highly educated engineers and master mariners accept such a Report of Lies?

And how could the German group of experts accept such a report? It was so easy to state that the Commission just faked an investigation and that everything was false. But the Germans never did that - they issued a strange report of their own with many stupid conclusions.

Was it easiest just to forget the whole matter?

The Swedish Accident Investigation Board, SHK, does not any longer reply to any suggestions about the Final Report its members actually signed. The SHK only repeats that the Final Report (5) is complete and correct in all respects. The SHK paroles 'What happened?', 'Why did it happen?' and 'How to avoid that the accident happens again?', when investigating an accident, are not of interest to the SHK anymore **1.38**.

It is quite sad to observe how the Report of Lies is accepted in Sweden. But the Report of Lies is just water flowing in a river. The river remains - and it stinks.

3.20 WHY DID THE UNDERWRITERS PAY?

Accidents of different kinds are very common at sea and happen every day. Different ship parts are broken due to heavy weather or wear and tear or due to crew negligence.[137] Ships collide and run aground. Seldom are the authorities or administrations interested in the accidents, which **always are investigated** and paid for by the insurance companies and the underwriters. The administrations are mainly interested in big and deadly accidents, collisions, grounding and oil spills, where criminal liability may come in play.

It is interesting to note that the 'Estonia' underwriters and insurance companies and their lawyers do not seem to have studied the 'Estonia' accident in any depth and investigated its cause(s).

The Commission seems *never* to have met any representatives of the underwriters/insurers (no correspondence exist) and the latter seem not to have followed the work of the Commission - the underwriters had no observer in the Commission. The underwriters have paid SEK100's of millions in claims (total loss of ship, loss of cargo, etc.) to the shipping company and cargo owners *before* the official investigation was finalized and have not participated in the investigation. Normally the lawyers of the underwriters first interview the crew and later assist the crew, when it is questioned by various authorities, police, e.g. In this case the insurance companies are totally absent.

THE UNDERWRITERS NEVER INVESTIGATED THE ACCIDENT

The underwriters have apparently only accepted all the early statements of the Commission and the insured to the effect that the cause of loss was valid, have paid the claims and then requested payment from the re-insurance companies. This is quite remarkable as underwriters normally do not pay a claim unless there are very good technical reasons and **evidence**.[138] The facts are that hull underwriters quickly paid the full insured value of the ferry and that P&I underwriters paid all claims of the shipping company from survivors and relatives (which the shipping company had paid), before the official investigation was final.

In the latter case has the P&I club Skuld apparently paid more (or less?) than necessary as per its rules. Based on the information in this book the 'Estonia' was not seaworthy at any time and in breach of basic insurance conditions. The underwriters were not required to pay a penny! The underwriters have been duly informed but do not react. This is very strange.

Cannot the underwriters' technical experts make a simple stability calculation? 2.16 for help! The writer has worked as underwriters' inspector at Rotterdam and as average adjuster in Monaco in the 1970's and has handled >100 claims, all correctly analysed and presented, some to Lloyd's of London, for final approval and payment. In some cases the suggested cause of accident was not agreed and the claimant had to go to court. You wonder who agreed paying the 'Estonia' H&M claim?

Interesting enough the P&I club Skuld was also the underwriters of the 'Scandinavian Star' accident 1990, which has many similarities with the 'Estonia' accident. The 'Scandinavian Star' cover up is described at http://www.axdal.ninja.dk. It is alleged that the Scandinavian Star accident investigation was also manipulated to hide unseaworthyness, so that the ship owner could collect insurance.

Luckily there are relatives that are not happy just being paid and which have not accepted the alleged causes of accident as suggested by the Commission and have taken the matter to court. But all court proceedings have been delayed 1.45 by unknown forces. More than nine years after the accident these relatives have not managed to have the Final report discussed in court. It is an indication that something is wrong. The insurance companies should arrange (and pay) a new investigation - maybe they paid an invalid claim? Why should private insurance companies and their clients pay for an accident which was never properly investigated by three countries and the cause of which is still unclear?

That the falsified Final report (5) may be a part of a clever insurance fraud is possible. Many Swedish persons involved with the 'Scandinavian Star' investigation were also involved with the 'Estonia' cover up.

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[137] In the 1970's the author worked as insurance surveyor at Rotterdam for Scandinavian underwriters and investigated more than 100 accidents.

[138] The author has tried to contact one of the underwriters of the 'Estonia' for comments without success.

"One of the most serious traumas of the 'Estonia' accident ... was the inability of the assisting ferries to launch their rescue boats and to pick up survivors swimming in the cold water in the rough seas. ... Rescue boats ... were not launched because it was considered too dangerous for their crew. ... this situation should not be repeated after the 1st of July 2000, when new regulations require that ***all ferries should carry a seaworthy rescue-boat*** *which can be launched at a significant wave height of 3 meters. This is one of the major improvements in rescue equipment on the ferries in recent time"*

Professor Olle Rutgersson, Royal Institute of Technology, Stockholm - 29 May 2000

"Do not to include the fast rescue boat in the Port State Control examinations, i.e. do not consider if the crew is trained to handle the boat"

IMO recommendation 2001

"The DE Sub-Committee agreed that fast rescue boats should not, as a rule, be regarded as means of rescue."

International Maritime Organization's Sub-Committee on Ship Design and Equipment (DE 47)
London 25 February - 5 March 2004
Mr. I. Ponomarev (Russian Federation)
chairman

3.21 SHIPPING COMPANIES PAY BILLIONS! THE STOCKHOLM AGREEMENT. FAST RESCUE BOATS ARE REQUIRED 1995 BUT NOT CONSIDERED 'MEANS OF RESCUE' 2004

The Scandinavian ferry companies have paid SEK100's of millions for strange modifications to prevent a new 'Estonia' accident, which will be described below. The money is wasted. The modifications will *not* and cannot prevent a new 'Estonia' accident. **The *'modifications'* were mainly propaganda to cover-up the real reasons for the 'Estonia' accident - the leaking hull due to a collision (?), the open watertight doors in the watertight bulkheads and defective life saving equipment.**

A modern society cannot evidently function without rules. Particularly safety at sea requires international rules, which are developed and agreed by the United Nations and its International Maritime Organization, IMO. The foundation for the safety at sea work should be made by seamen, ship owners, ship builders and other parties with similar interests, e.g. ferry passengers. The practical applications are however handled by civil servants at the NMA's under the control of the governments and the members of the parliaments. In Sweden the government and the ministry of Transport have delegated the work for safety at sea rules to the Sjöfartsinspektionen - a department of the Swedish National Maritime Administration. **Johan Franson** **1.16** is the head of the Sjöfartsinspektionen. Johan Franson is not the right person to develop better safety at sea. He is an active participant in the 'Estonia' cover-up.

When an accident happens, e.g. the 'Estonia', and the whole community is activated, it may easily happen that the safety at sea work is negatively affected. Badly informed public and politicians with little knowledge about safety at sea rules may ignore why the ship really sank and why there were so many victims. They are rightly angry with the large number of victims.

Everybody interested in safety at sea knows that true developments can only be done if the **Truth** is established about accidents.

After the 'Estonia' accident 1994 there were no real discussions - the work of the Commission charged to investigate the accident was secret (!), only a false cause of accident was presented and investigated, and when its Final report was published in December 1997 there was no further discussion. The responsible parties - including the governments - refused to discuss. The whole investigation was in fact organized disinformation. In the meantime money was wasted.

A result of the 'Estonia' accident was very fast rule changes without discussion or analysis. Below are two examples.

THE STOCKHOLM AGREEMENT

The first is about water on the car deck in the *superstructure* of a passenger ferry. **Every honest naval architect knows that water in a *superstructure* causes *capsize* and that the ship turns and floats upside down:**

Fig. 3.21.1 – Ferry floating after capsize

The IMO 1995 refused to adopt this amendment proposed by, i.a. Sweden, Estonia and Finland about fitting partitions on the car deck in the superstructure high above the waterline of ferries. Instead some Northwest European countries adopted the so-called *Stockholm agreement* to the same effect. The *Stockholm agreement* assumes that a ferry or passenger ship is severely damaged in the *side* due to *collision* (sic - **the 'Estonia' never collided**) in *severe* weather and that two watertight compartments in the *hull* below the car deck is water filled (sic - **the hull of the 'Estonia' was undamaged**).

Evidently the ferry or passenger ship still floats safely on the *undamaged* parts of the *hull* in that condition - this is the basic requirement of existing SOLAS rules - the *superstructure* and the car deck is evidently above the damaged waterline. There is a fair amount of residual stability in the ship due to the remaining undamaged *hull* - maybe 80% of the total.

UNREALISTIC ASSUMPTIONS

However, the Stockholm rule makers now assume that the ferry or passenger ship with the damaged hull *rolls* in *severe* weather with the side damage *towards* the wind and waves; that water flows up (sic) on the car deck into the *superstructure*, which is damaged i.w.o. the collision impact area above the waterline, and *collects* on the car deck and that; as a result, the ship *capsizes*, i.e. tips upside down and floats upside down as shown in figure 3.21.1. The assumed damage case is as follows:

(i) *Severe* collision in the side,
(ii) *Two* watertight compartments are flooded,
(iii) The other ship backs out of the opening,
(iv) The damaged ferry loses engine and generator power (even if the engine/generator rooms are intact) and cannot be manoeuvred,
(v) The damaged ferry is floating helplessly sideway with the *damage towards the wind and seas*,
(vi) The weather is very *severe*,
(vii) The *damaged ferry rolls* in the *severe* weather,
(viii) Water is scoped up on top of the (undamaged parts of) car deck in the *superstructure above waterline*,
(ix) The damaged ferry *capsizes* and floats upside down as shown on the picture above.

It has evidently nothing to do with the 'Estonia'. Estonia's hull was allegedly undamaged and water was only loaded on the vehicle deck via an open bow door in the superstructure 2,5 meters above the waterline.

The probability for events (i-viii) is probably zero (such an accident has never taken place in maritime history) and then it is still not certain that event (ix) actually occurs. Evacuation of the ship seems impossible - severe rolling/big waves, etc. - but as the probability for the whole event is zero, the evacuation is of no interest.

Seamanship is not permitted in the above events - turn the damage away from the waves, heel the vessel on the undamaged side, etc.

The Stockholm agreement rules 1995 specify with some theoretical (sic - **they cannot evidently be verified**) formulas how much water is scoped up through the hole in the side on top of the damaged car deck in the damaged superstructure above the damaged waterline in severe weather. The damaged ship is assumed to roll, so that water can flow in on top of the car deck. Then the ship is assumed to roll back, so that the water is collected on the car deck, then the ship rolls again into the wave - no water flows out through the damage hole - but more water flows in, etc.

This is crazy - it has never been seen in reality.

This phenomenon has thus never been seen in reality, but theoretical formulas were developed (by **Dr. Huss**?) to describe it. If the ship is damaged at one of the ends, it evidently trims on the damaged end and no water can flow *upwards* into the superstructure. If it is damaged amidships the superstructure may be close to the waterline but why would water flow in, when the ship rolls? Why doesn't it flow out when the ship rolls to the other side? **Not one ship model basin or university in Europe has been able to verify the Stockholm agreement rules** - but all shuts up except the Hamburg Ship Model Basin, which recently published a report about 'Time-Dependent Survival Probability of a Damaged Passenger Ship (HSVA Report No. CFD 05/2002 by **Petri Valanto**, February 2002).

Mr Valanto had a little problem - ***"A permission to use an existing vessel for the simulation could not be obtained"***, i.e. no ferry company subject to the Stockholm agreement wanted to assist in the circus. Valanto never asked serious ferry operators in, e.g. the Mediterranean.

The Valanto report simulates mathematically what happens with an 'Estonia' type ferry after collision in *extremely severe (and thus rare)* weather and refers to another HSVA Report No. 1623 (1998) about model tests of leaking ferries in very severe weather (mathematical simulations must of course be checked against model simulations):

Example 1 - Wave height **13** m (sic - three times the wave height of the 'Estonia' accident - you wonder how ships manage to collide in such extreme weather?), period 6,7 s (very short), damage case 003/P1. The car deck fills with 6 000 tons (sic) of water during 150 seconds and the angle of heel increases to 30° on the damaged side - no capsize. Suddenly the ship rolls >60° to an angle of heel 35° on the *opposite* undamaged side, where it remains 10 seconds, then it rolls to the other, damaged, side again, angle of heel 45° and suddenly it rolls back to the other undamaged side - and **capsizes and floats upside down**.

Example 2 -Wave height **10** m, period 5,0 s (extremely short), damage case 005/P1. The car deck fills with about 4 000 tons of water during 210 seconds and the angle of heel increases to 20° on the damaged side - no capsize - ship rolls 10-20° at an increased angle of list. Suddenly after another 200 seconds the ship rolls >60° to an angle of heel 30° on the opposite, undamaged, side, where it remains 1 second, then it rolls to the other, damaged side again, angle of heel 45° and suddenly it rolls back to the other undamaged side - **and capsizes and floats upside down.**

The sea states used - wave height 10-13 meters - never occur in the Baltic or North Sea/Skagerak and hardly anywhere else. **Who has ever heard about a ferry or passenger ship collision in 10-13 meter waves?** The phenomena are explained as follows by Valanto (in his ivory tower):

> *"The roll motions of the ship are greatly subdued by the water in the damaged compartments and on the vehicle deck, until a sufficient amount of water has accumulated and ship loses its stability rapidly. At this point the large oscillations, which then end up in capsizing, can* (sic) *take place".*

There is no business like ship model basins - you can invent what you like Appendix 2. The Stockholm agreement rules then mandate that watertight (sic) divisions - barriers - shall be installed on the car deck to prevent the assumed water on the car deck making the ferry capsize.

How and why barriers *inside* the superstructure *above* the waterline - damaged or not - would prevent water to come is not clear. It is suggested that the barriers will prevent the water to spread inside the superstructure and that the barriers will enclose the water inside the superstructure preventing more water to flow in (when the ship rolls).

All this is of course nonsense - so it could never be seriously discussed.

Figure 3.21.2 - Movable 'watertight door/bulkhead' in the side of the superstructure

A typical (Norwegian) installation is shown in figures 3.21.2 and 3 right installed under a hanging, portable car deck.

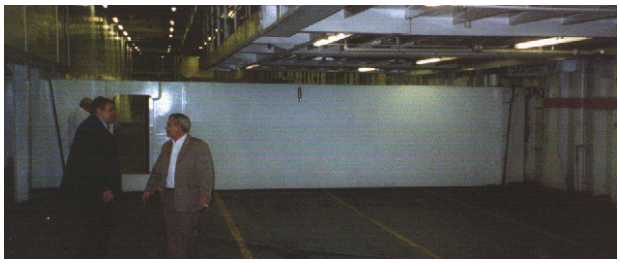

Figure 3.21.3 - The movable 'watertight' bulkhead in the superstructure in closed position

The moveable bulkhead is positioned at the ship's side, when the ferry is being loaded. Thereafter it is swung athwart ships to block the open car deck. There are two pairs of moveable bulkheads on the shown ship. If water enters the superstructure due to rolling, it collects at the side and the ship heels.

The *'moveable'* bulkheads do not prevent this. The water only collects between the new bulkheads. And when the ferry heels due to rolling, very soon **the water spills over the new bulkheads, as they are open at the top!** And when the water is on the other side of the bulkhead, it is really trapped. It cannot flow out!

Figure 3.21.4 - The movable 'watertight' bulkhead at the side

In the ship in the pictures the *'moveable'* bulkhead is only two meters high. The ship's breadth is 18,5 meters. Let's assume that *after collision* the ship floats/survives with the superstructure close to the waterline and that one movable bulkhead on car deck has been damaged in the collision; the outside top edge of the newly installed intact bulkhead in the superstructure is below water, when as per the Rules the ship rolls >12 degrees. Two/thirds of the car deck can be flooded. After the collision and flooding of two compartments the displacement may be, say 5.500 tons. The maximum righting arm, GZ is then between 0,05 and 0,20 meters, i.e. the maximum built in righting moment is of the order 275-1,100 ton-meters. It means that you only need **35-138** tons of water on the car deck (8 meters from the centre line) to tip the ship upside down - capsize. The remaining intact 'moveable' bulkheads will not prevent it.

If a new 'Estonia' accident were to happen, the new 'movable' bulkheads do not prevent it either, as the water in the superstructure heels the ship and then passes over the bulkheads at the other side.

The Stockholm agreement applies to some 100's of ferries in northwest Europe.

The cost to install watertight divisions varies depending on many variables - the number of divisions and other modifications, escapes, ventilations, fire protection, etc. An estimate is about SEK 25 million per ferry and total cost at least SEK 2 000 millions. **Norway** applied the rules ahead of all others based on the theoretical assumptions and forced its owners to install barriers based on the theoretical assumptions. The pictures are an example of such folly.

Does it look safe? Later, 2002, the IMO has proposed that the car deck doors shall be watertight at the top - this amendment may come into force 2004 or 2005 - and then all the Stockholm agreement ferries have to be re-built again.

MODEL TESTS

However the Stockholm agreement permitted an alternative to the particular specific, theoretical rules how much water was scoped up on the car deck through a hole in the side - *model tests*! Model tests are cheap - about SEK 400.000:- per ferry - and the result is interesting: much less water - if any - is shown to enter the car deck than assumed by the theoretical rules in the assumed sea states (not 13 or 10 meter waves!) and the modification costs can be reduced considerably. It seems that the rules did not consider the trim! With a severe damage forward or aft (where hull subdivision is tighter) the ferry trims on the end and no water can flow up into the superstructure or the water occupies so little space that it doesn't matter. If the damage is amidships the trim may be small and the superstructure may be close to the water. But the ship is still floating safely. When it rolls and the superstructure side is temporarily under water, evidently you get water in the superstructure, but it also flows out when the ship rolls over in the other direction. Water may flow in and collect inside and the ship may list - and float - on the undamaged side and no more water can flow in. If a big wave comes and rolls the ship onto the damaged side, the water in the superstructure flows out through the hole. You would have expected that the theoretical rules would be changed due to the fact that model tests gave another result - but no.

The model tanks are happy to carry out these tests - why should they query the rules behind them?

The European model tanks are very afraid of criticizing the Stockholm agreement, as they will lose a lot of business doing it. It is better to shut up and carry out useless model tests. For the same reason the model basins do not criticize the Estonia accident investigation Final report (5). They all know that the Swedish model basin SSPA Marin AB falsified its model tests **Appendix 2**.

Actually, the sea states assumed in the Stockholm agreement were realistic - Beaufort 8-9 - wave heights 6-7 meters and then no damaged ferry capsizes. To really capsize a ferry you had to increase the wave heights to 10-13 meters, etc. and use the worst collision case - amidships damage. And then you could always find some idiotic scientist to develop mathematical 'simulation' programs to obtain the same result.

SEAMANSHIP - THE BEST SOLUTION - NOT PERMITTED

There is of course a much simpler solution to the problem to prevent water inflow through a hole in the side of a *damaged* ferry caused by another ship in *collision* and *severe* weather and 6-7 meters waves - seamanship!

First, if you are unlucky to collide in severe weather, you heel the ferry on the undamaged side using the trim tanks, so that the car deck on the damaged side becomes high above the waterline - then no or little water can enter there, when it rolls (in any weather). Second you turn the ship, so that the damage is on the lee side! The ship then floats safely on the undamaged side facing the wind! Evidently you ask the passengers to gather on the lower undamaged side facing the wind. If you apply these two or three simple actions, no water enters the car deck in the superstructure of a damaged ferry in severe weather both as per the theoretical rules and the model tests. The damaged ferry floats safely. You do not even have to evacuate the passengers in the very severe weather and you cannot do it, the LSA does not work in such weather!

But this solution was not acceptable by, e.g. the Swedish NMA/Franson. No reason was given.

The real reason for this is simple. The theoretical rules of the Stockholm agreement were manipulated to show that large amounts of water entered the *superstructure* (above the damaged waterline) through an opening in the side of a damaged ferry under the worst of assumptions - *severe* weather, big waves, the hole was *windward*, the ferry *rolled* deeply into the waves, you were not permitted to heel the ferry a few degrees, so

that the car deck became several meters above the damaged water line, etc. Then the only solution - it was stated - was barriers on the car deck, etc. and the rule could be used as propaganda for better safety at sea, which would have prevented the 'Estonia' accident. If the barriers actually helped could not be proven at the time. The rules were so confusingly written, that they could be interpreted in various ways. The rules had nothing to do with reality - who has heard of a passenger ferry colliding in severe weather and then helplessly rolling, until it capsizes with water in the *superstructure*? It had never happened. And would barriers in the *superstructure* prevent it? Evidently not.

Why was it not permitted to heel the ferry on the undamaged side to make it safer after an accident? It is international practice always to ballast any damaged ship to make its damage stability better! If the damage is forward/aft, you are permitted to ballast the ship aft/forward, so that the damage forward/aft becomes higher above the water. If the damage is amidships or anywhere and causes unsymmetrical flooding, you are permitted to heel the ship, so that the damaged side becomes higher above the water, etc.

However as the Stockholm agreement was neither realistic (specific, theoretical rules did not agree with model tests or intelligent seamanship and no accident of the suggested type had never occurred) nor had prevented the 'Estonia' accident - the IMO refused to adopt the amendment as international safety standard. The IMO rightly considered the proposal as nonsense - but never said so. It was part of the deal. The result was that North European ferry owners were forced to invest over SEK 2 000 millions in systems, which are not internationally adopted and do not improve safety at sea.

To install worthless doors on the car decks of existing ferries in North Europe became a profitable geschäft for a small number of specialized firms. The Stockholm agreement - like the 'Estonia' investigation - could not be discussed openly. Business as usual!

Today many ferries in the Baltic fitted with the 'Stockholm Agreement Barriers' in the superstructure do not even bother to use them. Port state control does not bother. The 'Stockholm Agreement' comes fully into force September 2002. Actually the older ships built in the 70's can wait until then. Ferries built in the 80' and 90's had to be upgraded earlier. The Swedish NMA has pushed the 'Stockholm Agreement' forcefully at the European Commission and Parliament and suggested that it shall be applied everywhere in the European Union, and the EU seems to listen. Hopefully the real safety at sea experts in the Mediterranean area will inform their EMP's that the 'Stockholm Agreement' is only a useless rule as part of the 'Estonia' accident investigation cover-up!

FAST RESCUE BOATS ARE KILLING SEAMEN 1995-2001

The second case of useless rules is about fast rescue boats. **The IMO decided 1995 after the 'Estonia' accident that all roro- passenger ferries (but no other ships) should have a *fast* rescue boat from 1 July 2000, which you should be able to launch and recover in *severe* weather, defined as Beaufort 6 with 3 meters waves** in spite of the fact that the 'Estonia' accident took place in Beaufort 7 with 4,3 meters waves.

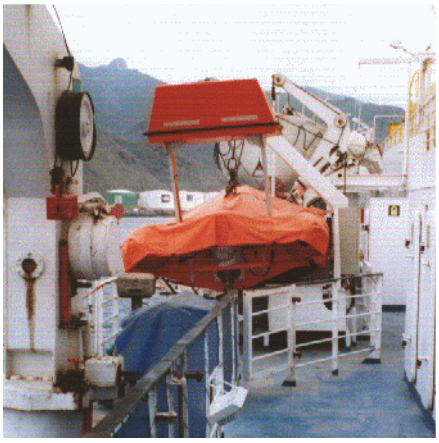

Figure 3.21.5 - New, fast rescue boat on a ferry. It cannot be launched in severe weather

The rescue boat *shall* have two specially trained crews on board, which shall demonstrate that they can tip the capsized rescue boat upright in severe weather, etc. The rescue boat shall be able to rescue *one* person in the water. When the rules were decided all ferries had rescue boats, some even had fast rescue boats.

A simple analysis shows that all ferries can save persons in the water in normal circumstances. The rescue boat is one solution, but it is only adapted to rescue one person. By launching a big lifeboat you can evidently pick up many more persons in the water.

The lifeboats can evidently be launched in severe weather - Beaufort 6, 3 meters waves - but the problem is to recover the boats again. It is not easy to recover the lifeboats in severe weather - they were not designed for that. And can you recover a fast rescue boat?

The fast rescue boats were developed for *anchored* offshore installations and similar. If somebody fell into the water, you launched the fast rescue boat and simply picked up the person. Then - in any weather - you returned to the anchored platform below the crane - and as the anchored platform was not rolling - you could be recovered, even if the sea was severe. You just waited for the right moment to hook on the fast rescue boat - and you were hoisted aboard again. No risk to hit any side of the offshore installation. This has been tested many times. This is not possible on a ferry (or any other ship) in severe weather. Then the ship is rolling so much that you cannot launch the boat.

The boat in figure 3.21.4 above is 11 meters above waterline. All installations look the same on 100's of ferries. In severe weather when the ferry rolls, it is smashed against the side. To recover the boat in severe weather, i.e. to hook on to the crane is impossible. And if you can hook on to the crane, the probability is 100% that the rescue boat is smashed against the *side* of the rolling ferry and that one rescued person and five crewmembers fall into the sea! The only location where you might be able to launch and recover a fast rescue boat in severe weather (Beaufort 6 and 3 meters waves) is at the stern of a ferry with a very special crane. Strangely enough no such cranes have been fitted.

All the ferries of the world shall according the IMO have a fast rescue boat today. The cost of a new, fast rescue boat including a special crane is about SEK 1 million, to train two crews and two reserve crews - total 20 crew members per ferry - is estimated at SEK 300.000:- . It means that the world ferry fleet shall invest about SEK 650 millions in fast rescue boats 2000. That such a rescue boat could not have saved any person at the 'Estonia' accident is another matter. The boat could neither be launched nor recovered.

The author has inspected numerous ferries with fast rescue boats and always asks if they have two trained crews aboard and train with the rescue boats. The answer is always NO! The boat is just an expensive decoration ... of no use!

Furthermore it seems that the rule is not applied 100%. All ferries evidently have fast rescue boats but they are located in the side of the ferry and *cannot be launched in severe weather* - thus exemptions are given (severe weather is so rare that there is no need to apply the requirement that the fast rescue boat shall be able to be launched and recovered in severe weather, etc.).

THE IMO STOPS THE USE OF FAST RESCUE BOATS 2001

Fast rescue boats have thus been fitted on all ferries since 2000.

Soon a number of accidents occurred when testing the boats, some accidents were fatal. Seamen were killed.

The accidents were due to the fact that the installations were not proper - it was not possible to launch and retrieve the boats in severe weather - or even fair weather. Or the crews were not properly trained. Every ferry shall have two five-man fast rescue boat crews onboard. These men or women must train regularly - but when do they have time to train on a ferry on a regular schedule? Actually it is very easy on paper - stop the ferry for a few minutes at sea, when the weather is rough, and launch the fast rescue boat - and try to recover it. It should only take 5-10 minutes. **However, neither Sweden, Finland nor Estonia has ever requested since 1 July 2000 that launching/recovering of rescue boats on ferries are trained at sea!** So much for preventive safety at sea in the Baltic! Maybe they tried and found that they could not recover the boat at all without endangering the life of the seamen/crew on the rescue boat? What do you do then? Abandon the fast rescue boat in the rough waters in the middle of the Baltic? The Swedish, Danish, German, Finnish and Estonian maritime administrations do not like questions like that. So they order their staff to shut up! So much for safety at sea in North Europe. But fast rescue boats shall be used everywhere. Also the USA and Japan do not complain.

In 2001 the IMO issued a recommendation to its members not to include the fast rescue boat in the PSC examinations, i.e. if the crew is trained to handle the boats.

Surprisingly the IMO tells its members not to apply the SOLAS.

Why not amend the rule and remove the rescue boats from all ferries?

Thus it is proven that (a) the rule was stupid in the first place and (b) the fast rescue boat does not contribute to the safety at sea. Sadly the fast rescue boats have already killed crewmembers (and not saved anybody in severe weather).

TWO SEAMAN KILLED USING A FAST RESCUE BOAT

On 6 March 2002 the German frigate 'Meklenburg-Vorpommern' was exercising in the Baltic with the British HMS 'Cumberland' and for unknown reasons the Germans used a fast rescue boat. The weather was not too bad Beaufort 5 (a 30 knots wind), when the fast rescue boat suddenly capsized and two crewmembers fell into the water - and drowned. They were reportedly picked up from the water after 17 minutes but were dead. The German navy did not at first produce any clear explanations what happened - and why. Later they blamed the accident on - faulty life jackets!

It is frankly speaking stupid to use a fast rescue boat in severe weather; the boat crew has to be very well trained to handle it in the first place and it is easy to capsize in severe weather - too much engine power in the small boat. And evidently a ferry crew has never time to practice in severe weather with the rescue boat - they may practice in calm weather and get a worthless certificate to prove that they can use the boat, etc. - to fulfil stupid rules.

The fast rescue boat rule is totally mad. Experience has shown that you cannot even train with the rescue boats at sea in severe weather without endangering lives. **The maritime administration surveyor or inspector should of course self attend the exercise on the spot - in the rescue boat - and prove that the rules are followed.** But have you ever heard about any such person stating that the rules are mad - dangerous?

THE IMO STARTS TO PREVENT FAST RESCUE BOATS 2004

The 47th session of the International Maritime Organization's Sub-Committee on Ship Design and Equipment (DE 47) was held in London from 25 February to 5 March 2004, under the Chairmanship of Mr. I. Ponomarev (Russian Federation). One of the items to consider and decide upon was point 7:

> **REVIEW OF FAST RESCUE BOAT AND MEANS OF RESCUE REQUIREMENTS**
>
> 7.1 The Sub-Committee had for its consideration under this agenda item documents submitted by Finland (DE 47/7), Sweden (DE 47/INF.4) and ICS (DE 47/7/1).
>
> 7.2 The Sub-Committee discussed Finland's opinion that ***fast rescue boats should not be used as a means of rescue***, ICS's analysis of the issues involved and the results of Sweden's study 'Improvement in safety and function of fast rescue operations' and agreed that:
>
> .1 ***fast rescue boats should not, as a rule, be regarded as means of rescue***; and
>
> .2 training with fast rescue boats needed to be enhanced, noting in this connection that the STW Sub-Committee was currently working on the issue.
>
> 7.3 Having invited the Committee to note the above conclusions, the Sub-Committee considered that no further work on the item was necessary and agreed to recommend to the Committee the deletion of the item from the work programme.

Thus, the two countries Finland and Sweden that produced the false 'Estonia' report (5) 1997 and earlier, 1995, recommended that all ships should carry fast rescue boats, now suggested, 2004, that fast rescue boats are useless, killing people, and should not be regarded as means of rescue. And the DE Sub-Committee agreed!

Crazy - isn't it? Fast rescue boats are very good means of rescue ... e.g. on fixed offshore platforms and at shore life rescue stations. But on ro-ro passenger ferries fast rescue boats are death traps!

So what will happen now? The DE Sub-Committee deleted the subject from its work programme! Will the IMO Marine Safety Committee now recommend that fast rescue boats shall be removed from all ro-ro passenger ferries, as they are no means of rescue?

MAD RULE CHANGES

Other totally mad rule changes are described in **chapter 5** of (1). No NMA anywhere is however prepared to suggest that the rules are corrected at the IMO. Incompetent bureaucrats run all NMAs.

In conclusion; the ferry industry after the 'Estonia' accident has silently accepted rule changes costing billions of Swedish crowns and which have caused several losses of life.

Furthermore the conclusion is that these enormous investments would not have prevented the 'Estonia' accident and would not contribute to that assisting ferries would have saved more persons.

Even worse - proposals to improve *existing* equipment which would have, e.g. saved persons in the water at the 'Estonia' accident have been ignored. It is simple to reinforce existing lifeboats (on e.g. Baltic ferries) so that they can be launched (but not recovered) in severe weather and pick up survivors in the water.

It is unbelievable that Swedish decision makers refuse to examine new information about the Estonia accident. There are international IMO resolutions that all new facts shall be reviewed.

Also unbelievable is the silence and passivity of Swedish, Finnish and Estonian ferry companies in this respect. Their passengers would benefit from such a review, which would cost a fraction what the ferry companies have already paid in useless modifications to their ferries.

European safety at sea research continues to concentrate on pseudo matters like survival after ferry collisions in Beaufort 12 with 15 meters waves, which can occupy stupid PhD students and their ivory tower professors and model basins a couple of years. **European safety at sea research carefully avoids any analysis of the 'Estonia' accident.** Swedish safety at sea research is nil - SEK 50 million is instead used to feed 2000-2005 the participants of the cover up in similar pseudo research by **Vinnova**. One research project is about **fast rescue boats**.

3.22 PERSONAL SUMMARY OF THE ACCIDENT INVESTIGATION. SAVE YOURSELF - IF YOU CAN!

The 'Estonia' was built in Germany as the 'Viking Sally' 1980 for *coastal trading* between Stockholm and Åland. Neither the ship owner, Sally Line, nor the Swedish and the Finnish maritime administrations demanded that ***all*** the requirements of the SOLAS for international trade were fulfilled (in spite of any statement to the contrary of the Commission). **Save yourself - if you can!**

It meant, i.a. that cheap throw-over-board life rafts (probably SOLAS 60 type) were installed, which could not be launched by cranes or davits. To abandon ship a passenger had to jump into the water and swim to a raft that somebody else had thrown into the water 1.33, or ashore. Save yourself - if you can!

They also installed a (too) large number of watertight doors in the watertight bulkheads below the car deck and permitted that these doors, against all rules, were open at sea, so that passengers and crew could move around without climbing up/down over the watertight bulkheads 1.23. The watertight doors could also be opened, and be kept open, from a panel on the bridge, which was a very unusual arrangement. Save yourself - if you can!

To make matters worse a swimming pool was built with connections to the double bottom on deck 0! The double bottom (B/15 meters deep) was evidently required as grounding protection, but on the 'Viking Sally' (TBR 'Estonia') it was used as part of an in-door swimming pool. **Save yourself - if you can!**

The German shipyard could not have been proud of such a ship.

The Finnish maritime administration then issued a certificate 1980, which was accepted by the Swedish maritime administration, because the two parties had since a long time a silent agreement not to question each other's certificates and how to equip the ships. It worked (badly) until 1994, as no accident occurred, which tested the safety. It would have been better that a (small) accident had happened and revealed the incompetence of the Swedish and Finnish maritime administrations in this respect**. Save yourself - if you can!**

Sally Line, the owners of the 'Viking Sally', - the incompetent Johansson brothers that had inherited the company - went bankrupt in the end of the 80's and the ship suddenly belonged to a bank, which let a competing company run the ship. It is highly likely that the maintenance of the ship then started to deteriorate. Why maintain a ship that does not belong to you? Only the minimal was done. **Save yourself - if you can!**

When the Estonian/Swedish joint venture company Estline bought the ship 1993 from the bank and changed the name to the 'Estonia' and the trade to between Tallinn-Stockholm, the Estonian maritime administration, whose government was a part owner of the ferry, did not change *any* safety arrangements on board. Maybe they had learnt from Finland and Sweden that you could interpret the safety rules as you liked - cheap - and to sail around in an unseaworthy condition. Probably Estline had no money - the bank lent 100% of the value of the ship - and there was no extra money to upgrade the ship with correct lifesaving equipment for (short) international voyages across the Baltic 1993. And they did not even close the watertight doors. **Save yourself - if you can!**

Or another reason was that the Estonian maritime administration had no idea what rules to apply for the passenger ship trade between Tallinn and Stockholm. The Swedish NMA was appointed as consultant and to train the Estonian staff. The Bureau Veritas office in Sweden was appointed by the Estonian NMA to do the certification on behalf of Estonia. This serious error was not even detected, when the shipping company allegedly wrote the new emergency and abandon ship plans to train the new crew 1993, because the plan didn't work. Nobody - ship owner, maritime administration or the crew was interested in safety. **Save yourself - if you can!**

What they did was the following:- Instead of developing its own safety system, the Estline only copied the earlier (Finnish-Swedish Viking-) system, which was badly described in the Swedish, Finnish and English

languages aboard - and believed that it was in order for the new trade Appendix 7. But they never translated the instruction into the Estonian language, and naturally, they never tested the system - even if they maintain that they did it. Save yourself - if you can!

Why did they not test the system? Naturally because then they should have noticed that it did not work - you could not force passengers to jump into the sea, when abandoning the ship (sic) 1993 Appendix 7. They should of course also have detected that it was wrong to sail around with open watertight doors on the Baltic. **But no party in the venture was interested in safety at sea.** And because there was no money, the maintenance started to deteriorate even more 1.46 - maintenance previously done by a shipyard was now going to be done by the crew. **Save yourself - if you can!**

The Swedish maritime administration never found any defects on the 'Estonia' at at least five Port State Controls 1993/4. The Swedish maritime administration de facto approved the system, that the passengers should jump into the water, when the ship was going to be abandoned at a test at Tallinn in January 1993 1.34! It is highly probable that other faults were detected later, but that the inspectors were told not to cause trouble for the owners. The shipping line was already losing money. The superintendent of the ship, Mr Ulf Hobro, happened to be an old employee of the Swedish maritime administration. That apparently helped. After the accident Hobro disappeared for a while, but in September 1999 the Swedish maritime administration reemployed Hobro as head of the Stockholm office. **Save yourself - if you can!**

THE SHIP WAS NOT ARRESTED

That the ship had incorrect equipment, instructions and certificates was by chance detected by other Swedish inspectors - from Malmö - the day before the accident, 1.1 footnote, 1.23 and 1.33, but nothing was done to correct the defects (31). The inspectors could easily have stopped the ship by refusing its entry to Sweden. The ship sailed into disaster a few hours later. All above is easy to prove and it contributed to at least 852 persons dying or disappearing, when the 'Estonia' sank! This is one of the minor reasons why the Swedish government will never permit the accident to be re-examined by an independent Commission. Save yourself - if you can!

When the 'Estonia', on the night of the accident in the middle of the Baltic, apparently sprang a leak, probably at 00.55-00.58 hrs, it resulted in water starting to flood, e.g. the stabiliser room, the swimming pool on deck no. 0 or some other space (aft?). The cause of the leakage is another story and is dealt with elsewhere - it was probably due to a collision. The leak was of course observed by the watch keeping crew (including Treu and Linde), and they apparently had problems starting the bilge pumps. They thus called upon Sillaste, who came down and started the bilge pumps 1.3 unless Sillaste was not already in place trying to start the stabilisers. The leakage was considerable and exceeded the capacity of the bilge pumps and they naturally tried to close the relevant watertight doors in the bulkheads. Unfortunately it was not possible locally, 1.23 and 2.3, but probably they managed to do it from the bridge. The leakage was thus isolated and under control. No alarm to passengers was raised. All the officers were at this time mustered to the bridge (including wives and girl friends) and some lifeboats were made ready. The Master arrived and was informed about the leakage and that the watertight doors had been closed. The speed may have been reduced - there are some observations that the speed was reduced just before 01.00 hrs - but the Commission of course maintained that the ship kept 14-15 knots speed until *after* the list (at 01.15 hrs) based on the testimony of third engineer Treu. Treu lied naturally 1.48. **Save yourself - if you can! Treu did!**

At this time - after the big bangs due to the collision but before the sudden listing - a survivor from deck 1 observed that water flowed out from an air pipe ending on deck 1 below the waterline! This air pipe was located just above the swimming pool in the double bottom on deck 0, and it is possible that it was connected to a cofferdam around the swimming pool. **Save yourself - if you can!**

This the survivor did so he could report this strange observation.

When the master on the Bridge checked the panel for the watertight doors, he observed that the indication was both red and green for various doors, i.e. he got the impression that several doors were open. When he

tried to close these doors, he made a fatal error. He actually opened two or more doors! The result was water shooting out of filled compartments just before 01.00 hrs. And then the water spread on deck 0 reducing the initial stability due to free water surfaces on the inner bottom. The result was logical - a sudden list to starboard occurred at about 01.02 hrs, when persons were thrown down into the starboard lee, 2.1 and 2.16 . Save yourself - if you can!

The sudden list apparently occurred at 01.02-01.05 hrs and the ship was at the side - at 90 degrees list - at 01.30 hrs (wrist watches stopped or were broken, when the ship was on the side, and when persons jumped into the water). What happened during these 25 minutes? The list was so sudden that the crew never reduced the speed manually - the engines stopped by themselves - as the crew on the bridge hanged on to consoles and panels, unless they, as all passengers, evacuated the spaces, where they were, immediately. The list probably occurred with about 300-600 tons of water in at least three compartments below the car deck - the leakage itself had started 00.55-58 hrs. After the sudden list >30 degrees at 01.02-01.05 hrs the 'Estonia' stabilized itself at say 15 degrees heel with three or more partly filled compartments - passengers and crew naturally immediately - instinctively - started to evacuate - mainly to open deck 7 port. They had 10 minutes to get out (not five as suggested by the Commission!) - while water spread through open watertight doors in the centre line on deck 0 - one compartment after the other filled up with water - which caused a jerky increase in list - starting say at 01.15 hrs. It meant that during 10 minutes many persons had time to get out - 25 degrees list was the limit to evacuate, but when the ship rolled to port the slope of the deck and stairs was less. Most persons only needed to climb one, two or three decks - only the persons on deck 1 had to climb six decks (but the narrow stairwell to deck 4 helped). It was not so hopeless to get out - but - **Save yourself - if you can!**

The Commission evidently delayed the time of the sudden list to 01.15/6 hrs to explain its false course of events - and it enabled the Commission also to suggest that only, say, 250 persons managed to escape during five minutes. Maybe the Commission did not want to admit that more persons got out? **Save yourself - if you can!**

It is possible that as many as >500 persons managed to get out at deck 7 during the first 15 minutes. Save yourself - if you can!

But most of these persons were later forced to jump into the water *without a life jacket*. **Save yourself - if you can!**

Why does the author believe the above? Many survivors must have seen how many persons were on deck 7 port at 01.15 hrs. But there are not many questions and answers in the police protocols about it, and the reports of Schager 2.1 about the number of persons seen on deck 7 at this time are vague. The testimonies in chapter 6.3.10 in the Final Report (5) have been edited, so that the information is useless. This is remarkable. **Save yourself - if you can!**

It is very probable that many more than 237 persons, as suggested by the Commission, managed to get out. The sudden list at 01.02-01.05 hrs must have been observed by everybody aboard. Everybody awoke - the time was midnight Swedish time and the arrival was at 09.00 hrs Swedish time - and it is probable that a majority of the persons aboard - almost 1 000 persons - were still up or awake in their beds. Say that 600 (of 989) persons were awake and soon understood that something was wrong and that they had to escape. Say that another 200 persons awoke and decided to get out, then 800 persons were on the way out at 01.05-01.10 hrs. **Save yourself - if you can!**

Evidence 1 - many persons were naked on deck 7 - they had slept, when the list occurred but still managed to leave the cabin and get out. Others dressed and had to unblock the cabin doors and lost several minutes but also managed to get out. Only very old persons and mothers with children remained in the cabins - everybody else attempted - and succeeded - to escape. **Save yourself - if you can!**

Evidence 2 - divers only saw 110 -120 bodies inside the wreck - most of them trapped in the stairwells. Had the ship been salvaged maybe you had only found another 80-90 additional bodies, i.e. total 200 and had then been able to verify that most cabins were empty!. This was one reason - among others - not to salvage the

wreck - there were very few bodies left inside the wreck. And with no identified bodies, no crime. **Save yourself - if you can!**

It is possible that >500 person got out and there was plenty of space on deck 7 port for them! Listen to RS for example **2.12**. He got out early and has told the author that quite a number got out after him from the aft main stairwell - but most persons must have gotten out amidships and a few from the forward stairwell. Maybe only 400 got out on the port side but it was good. Others came out on the starboard side - it was easier - but they had to jump immediately overboard, when that deck came under water as early as 01.22 hrs. **Save yourself - if you can!**

When all these person - >500! - with our without life jackets had jumped into the water, they discovered that they did not have a chance to get into the infamous throw-over-board life rafts (probably SOLAS 60), which should have never been permitted on board in the first place and should have been burnt (destroyed) latest in January 1993, when the trade changed, and replaced by new, correct ones. The reason, why the Commission minimised the number of persons which managed to escape to deck 7 to the number of rescued and dead found, is that it would not conclude that the life rafts were totally illegal and unsafe. They did not work! They were never meant to be used. They were there as decorations! Worthless. **Save yourself - if you can!**

The majority of the persons jumping into the sea drowned and disappeared under water already at 01.30 - 02.00 hrs - just before the 'Mariella' arrived. The water was cold, the waves were high. **Save yourself - if you can!**

But only 90-100 bodies were officially found after the accident! Where did all the others end up - 200-300 bodies - if >500 persons got out? Not *one* body was officially found later! Naturally they drowned - without life jacket - but they should have re-floated three, four weeks later due to development of gases inside the body. With a life jacket they should have floated, but the author does not believe that they ever got a life jacket. All was a mess on deck 7 between 01.15 - 01.30 hrs. Only the hundred first persons - including RS and his friends found life jackets. The others never got one because there was only a limited number of life jackets stored on the open deck - in spite of the statements of the Commission to the contrary - that there was an orderly distribution of life jackets on deck 7 at 01.15 hrs. **Save yourself - if you can!**

We know that about 92-94 dead bodies, with or without life jackets, were salvaged - mostly from rafts but also from the sea during 12 hours after the accident. But what happened later? Not *one* body was found or salvaged. Life rafts, lifeboats, EPIRBS, empty life jackets, etc were picked up on the Estonian coast starting three, four days after the accident. But not *one* body. It is almost too good and makes you wonder. **Save yourself - if you can!**

Why were no bodies ever found? Well, if, say, 300 bodies had been swept up on the Estonian coast three, four weeks after the accident, the relatives and others would start thinking - why? Did they have to jump into the sea without life jackets? So it never happened! Save yourself - if you can!

Thus - the sudden list occurred at 01.02-01.05 hrs and the angle of heel was 90 degrees at 01.30 hrs - then all aboard had at least ten minutes between 01.05 and 01.15 hrs - list 15 - 25 degrees - to get out. Say that 150 persons got out before 01.10 hrs - all persons in the public rooms, etc. - it took them five minutes - then another 250-350 persons got out between 01.10-01.15 hrs, so that 400-500 was out in the open at 01.15 hrs. The author believes that. **Save yourself - if you can!**

Where is the evidence that that they found, or did not find, any bodies three weeks later? Did they search? Well, ships were out looking for the visor, which probably already had been found at the bow, but all bodies would first have sunk only to float up three or four weeks later. At that time the Commission had already presented a false first interim report on 4 October. The Commission had announced a false position of the wreck. The Commission had stated that the visor had not been found. And then the Commission had announced that the visor was suddenly found on 18 October a mile west of the wreck. But no evidence has ever been presented for, e.g. the visor. Does anybody believe such a Commission? **Save yourself - if you can!**

It is very probable that >237 persons evacuated the 'Estonia' and that >200 bodies were later recovered at the Estonian coast three four weeks after the accident. The Commission (admiral Iivonen) could not admit it, because it would prove that the course of events of the Commission was false, and that the Estonians in the Commission were already 100% committed to cover up the real facts. These bodies were later probably recovered and sunk at the wreck. Only the future will prove this theory right or wrong. **Save yourself - if you can!**

But let's continue the drama on board after 01.05 hrs. The crew might have turned the ship into the wind (to port) or away from the wind (to starboard) and then the crew left the ECR and the bridge. There was total confusion. **Save yourself - if you can!**

That the Mayday was sent so late at 01.22 hrs onwards - >20 minutes after the sudden list - must have been due to panic on board, unless the Commission also changed the time of the Mayday - unlikely, or that somebody on the bridge prevented sending the Mayday. The crew on the bridge must have left the bridge - maybe some escaped with the no. 1 MoB-boat - but then, when the ship stabilised itself, some returned to send the Mayday. Some witnesses (the infamous crew witnesses Treu & Co.) say they saw these officers later - at 01.30 hrs leaving the bridge through the aft port door - but it is hardly possible - the ship was then on the side and sank a few minutes later. **Save yourself - if you can!**

Because when 4 deck aft was under water, the car deck started to fill from above through the 4 deck ventilation openings of the car deck space below and the ship sank fast on the stern. The attending ferries could not do anything to pick up survivors in the water. Not one lifeboat or rescue boat was launched by e.g. four big ferries. The weather was too bad. **Save yourself - if you can!**

When the Estonian president Lennart Meri was told about the accident a few hours later he immediately appointed his own Commission to investigate the accident. But the three prime ministers met later the same day, **1.2** and **4.4,** and they decided that another, joint Commission should be appointed. What the prime ministers discussed and what instructions were given are unclear. The Swedish and Finnish members of the Commission were appointed very early. They must have known exactly what had happened - that the ship had sunk due to leakage and faulty procedures aboard. At least one crewmember - Sillaste - told Finnish police that the ship was leaking **1.3**. Contributing causes were incorrect safety equipment, bad maintenance and lack of emergency instructions, etc.

For some unknown reason the Swedish and Finnish authorities agreed with the Estonians not to tell the public the Truth and to cover up all the crimes.

Estonia had de facto sent an unseaworthy ship to sea and leakage, which should have been controlled, had developed into a disaster of tragic proportions. The public had the right to feel anger. But apparently decided the three prime ministers, *for political reasons*, to cover up the truth - the Swedish vice prime minister Odd Engström hinted at this 1998 **1.35**. The cover up was simplified by the fact that the visor had been partly detached after the listing and during the sinking. The Commission thus decided quickly - on 28 September 1994 - to blame the accident on bad weather, defective visor locks and that the visor had simply fallen off and that water had entered the car deck and had sunk the ship. It was a very bold move - it is not easy to falsify an accident investigation report - and the Commission had not yet found the allegedly lost visor **1.4**. The Commission apparently thought they could recreate a similar type of accident as the 'Herald of Free Enterprise'. Then they *'found'* the visor in a very strange location **1.14**, which the Commission later could not explain. The remainder of the developments of the investigation has been described in this book. **Save yourself - if you can!**

... WASN'T IT A WONDERFUL COVER-UP OF THE ACCIDENT...

The four surviving crewmembers - the key witnesses - were forced to manipulate their testimonies. The Commission was then caught in a web of lies and contradictory statements, i.a. about the stability, but it ice coldly calculated that the shocked and ignorant public never would discover the lies.

The media of all sorts helped to distribute the disinformation **1.44**.

To dive down and to make a proper examination of the hull had to be manipulated.

Probably the Finns had already found the visor at the wreck on 30 September and filmed it on 2 October 1994, but then the Commission had already started hinting that the visor had been lost *before* the 'accident' - the listing - occurred.

The visor could therefore not be found at the wreck.

Swedish divers had probably detached the visor from the wreck between 2 and 9 October, so that the Commission could film the fore ship without a visor on 9 October. But apparently they had blown a big hole in the starboard front bulkhead in this operation, so it was necessary to censor and edit the films not to show it. The result of the only dive expedition had to be falsified, **1.16** and **3.10**, i.e. completely false statements about the diving were given by the Swedish NMA and Johan Franson, who directed the diving, to support the Commission. Franson then sent reports with disinformation to the Swedish government and to the so called Ethical Advisory group, which later decided that wreck and bodies should not be touched (as a rubbish heap) and that no bodies should be identified. No bodies, no crime!

All persons questioning the official cause of accident were effectively silenced in various ways. It was easy in Sweden, Finland and Estonia, where most experts were employed by shipping companies and universities, which in various ways depended on the government authorities. A message was delivered that they should keep quiet - and most experts in North Europe apparently agreed as few talk about the 'Estonia' accident and the Final Report.

The author was far away in the Mediterranean and Red Sea, when the 'Estonia' sank. Could the same thing happen to the author's ferries? When he later asked that question to some Swedish 'experts' they all behaved very strangely - most of them wanted to keep quiet. Actually the author bought a ferry in the Baltic 1998 and before the sale he took the Swedish seller's superintendent to a restaurant. One idea was to present the seller with a copy of the book 'Lies and truths ... '. But before that was possible the seller's man - with a few beers in the stomach - suggested that ... *wasn't it a wonderful cover-up of the accident*!?

He never got his copy of the book. The author understands the despair, anger and distress of the survivors and all relatives of the victims. They were not told the Truth. And they have little chance to find the Truth as no government or authority will help them. The few officials who today stand up and defend the Final Report make an embarrassing impression, but nobody cares. Save yourself - if you can!

The Commission 1994 decided - stupidly - to blame the accident on the German shipyard, which appointed its own experts to investigate 1995. These experts must quickly have found out that *everything* the Commission stated was disinformation. The Germans was in a very difficult situation - should they accuse the Commission of a criminal cover up of the real facts - or play along? **Save yourself - if you can!**

The Germans played along - pointed out some obvious errors of the Commission but kept quiet about the big error - that all the Commission stated was lies. **Save yourself - if you can!**

All lies could easily have been detected if proper stability calculations with water in the superstructure had been done immediately after the accident showing that the 'Estonia' would have capsized and floated upside down with about 1 500-2 000 tons of water on the car deck. No doubt somebody told this to the Commission, and the Commission decided to state the opposite. The Commission got help from Mr. Veli-Matti Junnila of Ship Consultancy Ltd OY/AB who produced false stability calculations to this effect. Junnila simply assumed that the deck house was watertight! Veli-Matti Junnila then became the stability expert of the German group of experts providing it with the same falsifications. Save yourself - if you can!

Unfortunately no responsible party will ever - in the near future - admit that the accident investigation was a cover up of a crime. It means that similar accidents and investigations (and counter-investigations) will happen

in the future, unless the 'Estonia' investigation is re-opened as per IMO Resolution A.849(20), Annex paragraph 13 **Foreword**, which clearly rules that accident investigations shall be re-opened and review all new facts, which change earlier analysis and conclusions. **Save yourself - if you can!**

But the Swedish government - Ms Mona Sahlin - does not want to follow the IMO procedures. She says that this must be done in agreement with Finland and Estonia, which are signatories to the same laws, which apparently also have no interest to re-open any investigation as per the laws. Why are Swedish authorities and shipping companies afraid of real safety at sea? Real safety at sea is only possible with correct casualty investigations. It is nothing to negotiate with Finland and Estonia about.

Just before the fifth anniversary of the accident the Finnish delegation of the Commission presented a memorandum (27), which cast new light over many conclusions at that date **4.1**! **Save yourself now - if you can!**

SUMMARY OF PART 3

- **The description of the visor and ramp and their functions and damages by the Commission are wrong.**
- **There are no correct drawings in the Final Report.**
- **The German descriptions of the visor and ramp and their functions and damages are also wrong.**
- **The Germans have given another explanation of the accident, which is not mentioned in the Final Report. A complete investigation report shall examine *all* information.**
- **A ferry does not sink, if the visor falls off and pulls open the ramp protecting the superstructure. The Final Report (5) states the opposite without any evidence. This is one reason, why the Commission refuses to discuss its 'findings'.**
- **Luckily there is clear evidence that the ramp was never pulled open. The forepeak deck is undamaged, the ramp locks are undamaged, etc.**
- **Video films from October 1994 show a closed ramp, while video films from December 1994 show a partly open ramp, i.e. the divers tried to pull open the ramp. And then the video films show that the ramp locks are undamaged.**
- **The video films from October and December 1994 do not show the starboard front bulkhead of the superstructure, where there is a big unreported damage. The video films do not show the starboard side in way of the sauna/pool compartment, where another damage is supposed to be.**
- **The 'Estonia' probably sank due leakage below the waterline, which the crew did not control. The author believes that the manipulated control- and indication-panel of the watertight doors on the bridge played a critical role in the accident. Inspector G. Zahlér has testified that you could remotely open the watertight doors from the bridge, which is not permitted. The indication was also confusing. The Final Report has censored all information about the watertight doors.**
- **The Germans think that the 'Estonia' was subject to sabotage.**
- **The Germans think that the 'Estonia' was not seaworthy, i.e. did not comply with requirements and rules for a safe voyage, which caused the accident. That leakage below waterline was another contributing cause should be clear.**
- **Ann-Louise Eksborg does not only refuse to answer questions about the accident. When she speaks to the media she presents clear disinformation about the Final Report and the findings of the investigation. The SHK is not interested in the Truth about the accident.**
- **A new investigation should simply review all facts to the effect that the 'Estonia' was leaking.**

Many international safety at sea rules were changed after the accident based on false information about the 'Estonia' accident and much money has been wasted to fulfil the new requirements. It costs much less to review the new facts about the 'Estonia' and then correct the latest rules.

'I will never accept that no reasonable explanation of the accident was ever given. Or that no investigator ever asked us survivors, what we experienced at the disaster. Or all mistakes made all these years after the accident. I will never accept that a new investigation is not done'

Kent Härstedt, survivor and Swedish MP (s), 990927 (in Swedish daily Aftonbladet)

'The lying. A river of lies. Translating the truth into a lie. Translating one lie into another lie. The **competence** *people display in their lying. The* **skill.** *Carefully sizing up the situation and then, with a calm voice and straight face, delivering the most productive lie. Should they speak even the partial truth, nine times out of ten it's on behalf of a lie'*

Philip Roth in 'I Married A Communist', 1998

*'**We cannot establish the truth**, instead we can establish clarifications, better structure of the available information. The truth of past times is always difficult to establish and it requires that you have complete background information about all matters and such complete information does not exist'.*

Björn Körlof, director general of the **Swedish Board of Psychological Defence**, 010423 (in Swedish Radio) after having been ordered by the Swedish government (sic) to create a 'fact bank' of 'Estonia' information not included in the Final report (5)

PART 4. THE 'ESTONIA' IN THE FUTURE - 1999-2001. CONSPIRACY?

4.1 EXPLOSIVE DEVICES ON THE 'ESTONIA' AND WHY

During 1998/9 information was published in the media that explosive devices had contributed to the sinking of the 'Estonia'. Strange boxes and parcels and unexplained damages had been seen on the newly released video films, which the Commission had not explained in (5). Had they contributed to the sinking? That question was asked. But if they had contributed to the removal of the visor *after* the accident, *below* water, was not considered.

The Finnish chief investigator Lehtola told Norwegian media in August 1999 that the question was a trick by the German lawyers.[142] No consideration was evidently given to the possibility that the explosive devices had been applied by Swedish divers after the accident on 30 September or early October 1994 to remove the visor and to open the ramp to support the fantastic story that water inside the superstructure had caused the accident **1.16**. It was too early for such ideas. The Finnish delegation then issued on 24 September 1999 an official memorandum (27) in English at a press conference at Tallinn, which stated that all information about bombs and explosive devices were wrong. The casualty investigation was de-facto partly re-opened. One interesting thing is not the information that there were no bombs, but the Finns used new facts, arguments and information that had never been published before. The memo follows below:

THE FINNISH GROUP OF THE FORMER JOINT ACCIDENT INVESTIGATION COMMISSION

MEMORANDUM SEPTEMBER 24 1999

SUGGESTIONS OF BOMBS ONBOARD M/V ESTONIA

During the last year, European media has presented suggestions that bombs would have been placed onboard the ESTONIA before her capsizing and sinking on September 28 1994. The Swedish TV-4 reported in a program on August 10 1999 that the German Expert Group investigating the accident on behalf of the German Jos. L. Meyer shipyard, builders of the ESTONIA, is going to tell that a bomb has been found in the ESTONIA's hull in a report to be published in September. TV-4 also showed a picture of the alleged bomb.

Already earlier in December 1998 the Swedish Aftonbladet published news that there is an object suspected to be a bomb above a window on the ESTONIA's side.

Suspected orange coloured object in the ESTONIA's ramp opening

The Swedish TV-4 showed on August 10 1999 also a picture of an object that is claimed to be a bomb. The picture was taken from a videotape showing the ESTONIA's wreck. The videotape had been made by the Finnish Coast Guard for the Joint Accident Investigation Commission (JAIC). In the videotape picture, the object claimed to be a bomb has an orange colour. The object is later called a "box". The box is visible in frames taken on October 9 1994 at 2316 hrs. Appendix 1 shows a video print where the object can be seen.

The Finnish delegation of the JAIC has been studying the videotapes in order to find out what the box in question could be. The following conclusions can be made on the basis of the video material:

"At the moment in question, the ROV (Remotely Operated Vehicle) used in making the underwater videotapes, is monitoring the space between the vessel hull and the partly open bow ramp on the port side. The visor and ramp side locks were close to this site. The vessel's mooring lines can be seen near the box on its both sides going into the ramp opening. On the basis of the visible mooring lines and shadows, the box is not fastened onto the vessel's hull or to the ramp. Because the diameter of a standard mooring line is a little under 10 cm, the dimensions of the box may be estimated by comparing the box to a line. Appendix 2 shows a video print where objects near the box have been made clearer. Names of the objects have been marked.

"When the ESTONIA sank stern first, the air remaining in the car deck space flowed out through the partly open ramp sides. At the same time, loose floating objects on the car deck, like mattress overlays and wooden pallets, drifted with the rising water towards the openings at the ramp sides. Some objects came out while some remained trapped at the sides.

"It is known on the basis of the videotapes that pallets floated up towards the bow on the car deck.. During the diving operation carried out by divers of the Norwegian Rockwater A/S in December 1994, pallets had to be moved aside to allow the free movement of divers.

"After the accident a pallet was observed in a service space on the side of the ramp. It can be seen on a videotape made by the Finnish Coast Guard during the ROV inspection on October 2 1994 at 1433 hrs. In the picture this pallet is upside down and most clearly can be seen the central bottom board with blocks. The side bottom board and the blocks are missing. A video print of this pallet is in Appendix 3.

"When the size of the "box" is being estimated on the basis of a mooring line's diameter, the "box" size agrees well with size of a pallet's block. Above the "box" is a protruding part the shape and dimensions of which closely resemble a bottom board fastened to a block. The protruding part is not rectangular, which means that the board may have been twisted. It can however be understood that when a pallet breaks, joints may become dislocated. According to the video print the board would extend both at the end and at the side over the edges of the block. This feature however exists in pallets; for instance the edge of the central bottom board in the pallet in Appendix 3 extends over the block edge.

"The surface of the "box" is not smooth but it looks like uneven, rough. Also colour variations can be seen in the surface.

"The head of the Finnish Coast Guard ROV inspection group has stated that in 1994 when the ROV and video technologies were not on the present level, videotapes made underwater using artificial lighting easily received wrong tones of colour. If reflecting red surfaces were near, the objects in the picture could easily receive a shade of red. It is fully possible that for instance a new wood surface looks reddish under these conditions. The considerations presented above strongly support the assumption that the "box" is part of a broken pallet of which can be seen one block and a bottom board fastened to it. The surface of the "box" looks like wooden. The uncontroversial position of the "box" in the ramp opening closes out the theory presented in the media that it would be an object attached to the hull by a magnetic fastening device. No indications of objects involved in explosive technology have been observed in the neighbourhood of the "box".

The object suggested to be a bomb that was found on the ESTONIA's side above a window

The Swedish Aftonbladet published in December news that there is an object that is suspected to be a bomb on the ESTONIA's side on the lower edge of a window.

A picture of the object suggested to be a bomb is on a videotape made by the Norwegian Rockwater A/S on December 3 1994 at 1832 hrs to 1833 hrs. At that time Rockwater was video inspecting the ESTONIA's wreck for the Swedish Government and the Joint Accident Investigation Commission. The window, on the lower edge of which the object is lying, is the ninth window from the bow on the level of deck 6. Appendix 4 shows a video print of this object suggested to be a bomb. The Finnish group of JAIC has also tried to find out what the object in question could be. Studies of the videotapes show that the object could not have been in its place immediately after the accident on October 2 1994. The Finnish Coast Guard made that day a videotape showing the same site of the wreck and the object in question cannot be seen on the videotape.

The Finnish group of JAIC has asked both from the Rockwater personnel who participated in the diving operation and seamen who have worked on the ESTONIA when she was sailing under the Finnish flag under a different name, if they have any recollections whether the object in question could be an object which was used during the diving operation or on board in service. No one has been able to give any clarifying information.

The Finnish group's assumption is that the object in question may be a folded light plastic cover - a tarpaulin - which for some reason could have drifted with currents above the window in question. During the accident it could not have been at the same site as on December 3 1994.

Concluding remark

Conclusions presented in the JAIC's Final Report are still fully valid and in our opinion an explosion as a possible cause or contributing factor in the accident is totally closed out.

Above mentioned pictures are available on the Finnish Accident Investigation web site.

The memo thus states the following -

> *"When the ESTONIA sank stern first, the air remaining in the car deck space flowed out through the partly open ramp sides. At the same time, loose floating objects on the car deck, like mattress overlays and wooden pallets, drifted with the rising water towards the openings at the ramp sides. Some objects came out while some remained trapped at the sides".*

It must be recalled that the Commission first - on 4 October 1994 - stated that the 'Estonia' sank due to water penetrating into a *'partly open ramp'* 1.14, i.e. the ramp was never fully open in that version of the casualty. Then - on 15 December 1994 - the Commission stated that the ramp had been locked prior to the accident and that the visor had *'pulled the ramp fully open'* permitting large amounts of water to enter 1.17 and that later, not fully explained, the ramp had closed itself to the partly open position, when the ship sank as observed down at the wreck.

We are thus now told that the ramp must have been in a partly open or partly closed position, when the ship sank. It must further be recalled that there are two times for the 'sinking'. The Commission says the ship sank at around **01.52** hrs after having drifted >2 000 meters and that it then had >110 degrees list and thus that the lose ramp must then have been closed. The author evidently thinks that the bow came under water already at **01.36** hrs, when Linde, inside a life raft launched from the sinking ship with Sillaste and Kadak, saw the ramp closed, 1.8 and 1.48.

The Finns thus suggest - there is no evidence - that *'some objects came out'* from the car deck through the partly open ramp, when the ship sank. What objects floated out are not stated and are of little importance, except that it would have been interesting to know why some - small? - objects floated out and some were trapped.

Then it is suggested that some objects *'remained trapped at the sides'*. The *'sides'* mean here apparently the lower corner of the deck 2 horizontal side and the port side against the vertical ramp frame, which allegedly formed the upper corner of the ramp opening, when the ship sank. All the floating objects that were trapped should have ended up there. The Commission has evidently never commented upon the facts showing that the ramp was never fully open at all during the sinking, **3.10** and **3.11**. Nevertheless - here we are told that a pallet board was not trapped inside the ramp but stuck between the ramp and the frame with a wooden box-shaped piece on the outside at about the middle height of the ramp. Sounds convincing?

A FALSE POSITION OF THE VISOR ADVISED

When you read the above memorandum the following should be clear **1.14**:

The statement is done by (i) Mr Kari Lehtola, who already in October 1994 told the media a false position of the wreck and that they had filmed a big *'steel plate'* on the bottom, etc. and (ii) Mr Tuomo Karppinen, who twice filmed the 'Estonia' 2 and 9 October 1994 and informed that the 'Estonia' was undamaged except for the alleged lost visor - the area with the exploded hole in the picture right was undamaged according to Karppinen - and who together with Börje Stenström on 10-11 October 1994 saw films of the visor at least one week before it was officially found, and by (iii) admiral Heimo Iivonen, who arranged that the Utö plot disappeared, etc. These three (or four) persons cannot be trusted by the public.

Figure 4.1.1 – Undamaged front bulkhead according Lehtola!

Evidently European media has never stated that the alleged explosive devices had been placed on the 'Estonia' *'before'* the ship suddenly listed.

The media has stated that observers of films taken *after* the accident under water by the Commission show something on (a) the *deck house* and (b) the *superstructure* front, which looks like *explosive* devices. The same observers had also noted *damages* of the bow steel structure of the *superstructure* - not the big hole in the starboard front bulkhead above that was filmed later - that could have been caused by explosive devices, which Lehtola & Co. did not mention.

The orange coloured object or 'box' can be seen on a film of the superstructure port front bulkhead taken on **9** October 1994 by an ROV from the 'Tursas', where Karppinen was. The same area was filmed already on **2** October 1994 **1.4** and then the 'box' was not there. Strange!? Not if Swedish divers had been visiting the area in the meantime **1.3**.

VISOR AND RAMP FILMED ON 9 OCTOBER

On 10 October Karppinen told Stenström that they had filmed the *visor* and the ramp, etc. even if the *visor* was then still not located (1 560 meters from the wreck). It is probable that five Swedish divers **1.16** had visited the wreck just before the 9 October. We do not know why and when these divers visited the wreck or what they did, but we know that the Commission had found the wreck with aid of sonar already on 30 September and that the wreck - and apparently the *visor* - had been filmed for the first time on 2 October by an ROV **1.4**. The Commission had however on 4 October stated to the media that the visor had been lost (at 01.15 hrs) 38 minutes before the 'Estonia' sank (at 01.53 hrs), i.e. **it was not possible to locate the visor beside the wreck.** The ship had turned 180° and drifted a long distance since losing the visor, the public was told.

The wreck was found on 30 September 1994 with about 120 degrees list on the bottom and we have to assume that the lose visor was hanging from the forward weather deck 4 still attached by the starboard lifting hydraulics. The Commission could see this on the sonar pictures 1.4 and it was probably confirmed by the video filming on 2 October. The visor bottom lock was never locked but already damaged before the

accident 3.7, and, when the ship sank, the port side lock had been ripped off, but the visor was still hanging from the wreck by the starboard lifting hydraulics and side lock - the starboard weather deck was otherwise visible and undamaged and the visor was hanging below the bow. For unknown reasons this could not be announced.

The Finns also filmed the *port* weather deck on top of the superstructure on 2 October **3.10** and you get the impression that the port lifting hydraulics had ripped open the weather deck, but the quality of the video film pictures is very bad and the official statements are very confusing - we are only shown close-up pictures of the *port side* taken about 30 cms from the wreck. No alleged damages from the *starboard* side are shown from the video pictures of the 2 October 1994 in e.g. (5). And no orange object or 'box' was filmed on the *port* side on 2 October! When the wreck was officially inspected by divers on 2-4 December 1994 no more clear or descriptive pictures or photos were taken of the alleged damages. It was still maintained that the exploded hole did not exist. It was not discovered until August 2000.

THE VISOR WAS REMOVED UNDER WATER

The job of the Swedish divers 1 and 3-4 0ctober 1994 was probably simply to ensure that the visor got lose and could fall to the bottom below the wreck **1.3**. The divers had maybe no idea that they were part of a cover-up. They were probably told that the work was necessary to investigate the wreck. Then the Commission could, by further manipulations of the alleged positions of the wreck and the visor and edited video films, create the impression that the visor had fallen off somewhere else. By announcing a false wreck position Lehtola diverted all ships at the wreck 2 111 meters to NE and then the Swedish divers could detach the visor and pull apart the visor hinges on the wreck in peace and quiet - and try to open the ramp. Then a week later it was time to film the visor below the bow on 9 October - without showing the wreck and the exploded hole that part was cut away from the films - which was discussed by Karppinen and Stenström at Nantali on 11 October **1.14**. On the 18 October 1994 it was then time to announce that the visor had been found *'a mile west of the wreck'*. The ship 'Tursas' that allegedly located the visor was probably not at sea at the time.

The author is trying to find a logical pattern in all confusing information (lies) stated by the Commission in October 1994 as presented in Part 1. If the 'Estonia' had really sunk due to the visor falling off, was it really necessary to announce a false wreck position and later to present edited ROV-films of the outside of the wreck?

By applying small, explosive devices on the fore part of the superstructure - in this case the ramp frame - the Swedish divers tried to make a pressure wave that was going to lose the hanging visor from the wreck. The orange 'box' on the 'Estonia' filmed on 9 October should then simply have been an explosive device that was *forgotten* by error down on the wreck. The job had succeeded - the visor was detached from the wreck - even if they had forgotten one explosive device.

But the divers had caused more damage than necessary - they had apparently blown a big opening in the starboard front bulkhead of the superstructure just above the side lock **3.10**! That damage had to be hidden by editing the films taken already in October 1994 and later in December 1994 and the summer 1996. The Germans and other independent observers have since found other damages at the forward end of the superstructure - it seems that the divers also tried to blow open the ramp down at the wreck - the orange 'box' could have been applied with that in mind. It would indicate that the divers visited the wreck as early as 3-5 October 1994 - later the weather was getting worse.

It was probably five *Swedish* divers that made the job to remove the visor and the author assumes that they used Swedish military standard equipment used by navy divers to remove and destroy enemy mines.

The former Swedish head of the 'Estonia' investigation, Olof Forssberg, was previously legal head of the Swedish ministry of Defence. The chief Swedish technical investigator, Börje Stenström, was a navy commander (engineering). It was thus simple for these two persons to call up their friends at the Swedish navy (admiral Frank Rosenius) to order some navy divers (e.g. Håkan Bergmark) to remove the visor by explosives. It should have taken place 2-9 - probably 3-5 - October 1994. Had it been detected by anybody on a passing ship, it was easy to explain that also Swedish divers were having a look at the wreck.

It is very easy to verify the above - what does Swedish navy underwater explosives look like, which are used to remove underwater mines - like the orange *'box'*? And where was Swedish warship the HMS Furusund at the time and who were onboard? The Swedish Navy refuses to publish the logbooks and the crew lists even if they are official documents.

The second filming by the Finns of the wreck with an ROV on 9 October 1994 was then necessary to confirm the result of the work of the Swedish divers - that the visor was removed. Mr Karppinen was on board the 'Tursas' to ensure that all was done correctly 1.14, which he then reported to Stenström.

There is no other logical explanation why the Finns filmed the wreck *twice* - first on 2 October, when the visor still hanged from the bow, then on 9 October 1994, when the visor had fallen to the bottom. According to the very unclear and edited films available today they were filming many things twice - and many areas not at all including the exploded hole. And no area where the visor was hanging on 2 October is shown on that film - all is edited away!

The Estonian's were probably not aware of the above manipulations. They were happily instructing their crewmembers to blame the accident on the visor and must have been pleasantly surprised that the visor was later found *'a mile west of the wreck'*, etc.

EXPLOSIVES WHEN THE 'ESTONIA' WAS FLOATING COULD NOT HAVE CAUSED THE SINKING

It was and is evidently inconceivable that one or more small explosive devices between the ramp and the visor could have sunk the 'Estonia', which the Germans - and other conspiracy theory supporters - believe 3.18 and that it would have taken place, when the ship was still afloat. An explosion in that space, before the ship sank, would only have pushed the ramp tighter towards the frame and made it tighter! The visor may have ended up anywhere - it could have swung up around its very strong hinges and have smashed the aft end of the fore weather deck from above.

There are no pictures available of the upper foredeck of the superstructure, where there is a small port radar mast, etc. The only reasonable explanation is that small explosive devices (Swedish made?) were applied to the forward part of the superstructure *under* water *after* the accident to remove the visor in order to support the false allegations made by the Commission on 4 October 1994 that the visor had been lost 'under way'.

THE 'PARCEL'

The parcel on the port upper side of the deck house of the wreck as she lies is another story. As seen in figures in 1.16 the port side is at about 60 meters depth. The parcel was filmed by an ROV on 3 December (the Franson dive). It was a completely unnecessary filming - everybody knew that the port side was completely undamaged and totally uninteresting from salvage aspect - but still they filmed there; maybe they had to produce a certain amount of film as per contract. If additional underwater activities had taken place between 10 October and 2 December 1994, it should have been on the lower starboard side forward on 83 meters depth.

Anyway - in 1999 the three Finns suggested that a mysterious orange 'box' seen on a video film of the forward part of the superstructure was a piece of wood from a pallet. The author took the opportunity to ask the Finns

some more questions - see next chapter (the author was then still unaware of the picture of the exploded hole - it was not filmed until August 2000).

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[142] ***Eksperter avviser "Estonia"-bombe.*** *Påstander om at bilferja "Estonia" sank på grunn av en bombe om bord, ble i dag kontant avvist av lederen for den internasjonale havarikommisjonen, Kari Lehtola.* ***(Onsdag 11. august 1999 14:13).*** *Lehtona understreker at baugvisiret ble reddet opp fra sjøen og ligger lagret i Hangö. Det fins ingen tegn på endringer i metallet som følge av eksplosjon. - Vi ville være sikre og tok mengder av prøver fra innsiden av visiret. Politiet har analysert dem og konstatert at det ikke fins spor av kjente sprengstoff, sa Lehtola. Han legger til at bombeteorien ikke er noe nytt for havarikommisjonen. Kort etter katastrofen begynte den å dukke opp, spesielt i Tyskland der båten ble bygd, og i Estland. Lehtola sier at han kjenner godt til Werner Hummel, som kom med de siste påstandene på svensk fjernsyn. Han er sjøkaptein og en respektert ekspert, men Lehtola gir likevel ikke mye for hans teori. Lehtola sier at baugvisirets fester ble slitt i stykker av bølgene, visiret løsnet og dro med seg rampen. Dermed kom store mengder vann inn i båten og forårsaket slagside. Det trengtes ingen sprenglegemer for å senke båten. Lehtola sa han har en klar teori om hvorfor Hummel kommer med påstandene.* ***Han arbeider for advokatfirmaet til familien som eier verftet som bygde "Estonia".*** *Meyerverftet har selv aldri kommet med noen erklæring etter havariet, og alt har gått via advokatfirmaet.* (NTB)

4.2 NEW INFORMATION BY THE FINNISH DELEGATION OF THE COMMISSION SEPTEMBER 1999

The Finns thus stated in September 1999, after informally having re-opened the investigation, that a wooden block on a board from a damaged pallet had got stuck between the ramp and frame at the forward end of the superstructure, which looked like an orange 'box' on the video film of 9 October 1994. As it is now established that the ramp may not have been open during the accident at all, the author sent an e-mail to the Finns on 29 September 1999 to find out more. Lehtola surprisingly replied on 25 October. Some questions were about the ramp:

"When was the ramp pulled fully open by the visor (that fell off)? At 01.15 hrs? When was the ramp closed again? Expert Huss has in one Supplement stated that it should have taken 28 minutes to fill up the car deck with 2 000 tons of water and that then the ship capsizes. The Final report states that 4 000 tons of water came in during 16 minutes through the bow opening without the ship capsizing 1.9 and then the deck house was filled with 14 000 tons of water in two minutes. In both cases the ramp is considered to be fully open. But survivors saw the ramp closed before the ship sank. Can you clarify this?

Reply by Lehtola:

> *"**The ramp was pulled fully open, when the visor fell into the sea*** (at 01.15 hrs) *and was partly closed again, when the ship sank on the stern at an angle of about 45 degrees* (at 01.52 hrs)*. At that time the ship had capsized* (sic) *and was lying almost upside down. Thus the ramp was hanging downward in its hinges, compare linen that hangs from a washing line."*

Lehtola thus states that the ramp protecting the opening in the superstructure was pulled fully open, when the visor fell off, in spite of three persons in the ECR seeing that the ramp was closed two minutes *after* the sudden listing occurred, 1.4 and 1.30. Lehtola also believes that the ramp closed itself by gravity, when the ship is turning upside down. If the ship actually turned upside down before sinking is not established. As seen in 3.10 the ramp could not close itself, as various items would have got stuck between the ramp and the frame, e.g. the folding guardrails and also damaged hydraulics, 'preventer' wires, etc. And at least one survivor saw the ramp closed see 1.18, when the ship sank and the bow was above the water. But let's assume first that Lehtola is right - the ramp was pulled fully open at 01.15 hrs.

As already stated in 1.1 the following would have happened, if the ramp were pulled fully open:

If the 'Estonia', with unchanged speed (>14 knots) and course forward during one minute, had lost its visor and if the ramp had been pulled fully open, then big waves would have filled up the car deck every fifth or sixth second Appendix 4 due to pitching below the waves. Each wave added at least about 180 tons of water on the car deck, which was pushed inside the superstructure with a forward velocity of about 7 m/s. The whole ramp opening would be filled up, three, four metres above the car deck, when the forward part of the superstructure was down into the wave, all cargo (trucks and cars) should have been pushed aft, light fittings and TV cameras for monitoring would have been torn away, persons on the car deck would have been smashed to pieces. The immediate damage would have been enormous. The waves straight into the open superstructure would have caused an enormous noise. When the waves were stopped by the cargo, the water would spread on top of the deck inside the superstructure, but it is probable that the ferry would trim on the bow, stop and list *immediately* already after five, six waves - in less than a minute. The ferry would have lost its propulsive power already at 30 degrees list after five waves, would be impossible to control and would stop.

A ship naturally cannot sail with an open bow ramp in a superstructure in four meter waves, Beaufort 7, when the fore ship moves up five metres and down five metres as suggested by the Commission! Then the ferry would have capsized, 1.9, 1.15 and 2.16, in one minute and floated upside down on the undamaged underwater hull and its undamaged water- and airtight compartments.

This is very easy to demonstrate with model tests and one reason the Commission never did any model tests with an open ramp!

But Lehtola still believes that 4 000 tons of water only slowly entered into the *superstructure* and pushed the cargo aft while causing the ship to heel. The ship never capsized nor trimmed. Later the ramp closed - and the only item that got stuck between the ramp and the frame was a board from a broken pallet with a wooden block on it. The board itself was stuck between the ramp/frame - the wooden block was on the outside. Can we believe that?

"How do you know that there were floating objects like mattresses, overlays and wooden pallets on the car deck? Should they not have been secured or loaded inside trucks, etc.?

Reply by Lehtola:

> *"Mentioned objects can be seen on the video films taken of the wreck. Crew members rescued from the ship and members of the relieve crew have stated that dirty linen, e.g. mattresses, were stored on the car deck, in its forward part, on an open pallet. The dirty linen dropped down on the pallet through ducts from upper decks. In this connection the same person stated that there were some empty, lose pallets on the car deck".*

It is interesting to note that *dirty linen* was stored openly inside the superstructure on the car deck - on pallets? Normally dirty linen is stored in bins and hardly on the car deck (there are no ducts from the upper deck)! Pallets are used for heavy stuff. Lehtola also confirms that they filmed inside the superstructure, where all above mentioned rubbish was seen. The official position is that nobody ever examined or filmed inside the car deck **1.16**.

"Where did the Rockwater A/S divers remove pallets in order to be able to get access? On the car deck?

Reply by Lehtola:

> *"On video band D13, which were recorded by the divers on 3 December1994, is seen at one hour and 32 minutes from the beginning of the band, a heap of some pallets, which are on the "wall" to a narrower part which leads from the car deck to the ramp".*

Thus it is confirmed that divers were on the car deck inside the *superstructure.* The Final report denies this fact.

"If the divers were inside and inspected the car deck, why wasn't it reported in the Final report?

Reply by Lehtola:

> *"The divers did not inspect the car deck. They only inspected the ramp locks and the inside surface of the ramp"*

Lehtola confirms again that the divers were inside the car deck of the superstructure but only inspected the *ramp locks* and the inside surface of the forward part of the superstructure. This has been established previously **3.10**, but the matter is not mentioned in the Final report (5). And it is not clear how the divers accessed the superstructure car space - the ramp opening itself was too small to enter at the top. The orange 'box' was allegedly stuck between the ramp and the frame halfway down. The box itself is *outside* of the ramp only visible from outside

"How did the 'box' end up where it is, if it were a piece of a pallet - a bottom board and a wooden block, which floated out through the ramp opening? How could the block be outside and the board get stuck?"

Reply by Lehtola:

"The object in question, the wooden block and the edge of a board from a pallet, is only seen on one video band. The wooden block is not seen on the video taken on 2 October 1994, as the ROV then must be positioned absolutely exactly at a certain position near the lower part of the ramp port side, in order the block to be seen. Based on the design of the pallet the board continues behind the ramp, where it has got stuck between the ramp and the frame of the opening. The opening between the ramp edge and the frame is quite narrow at this location. The block and the edge of the board are not seen on the video band taken on 19 June 1996. Probably the divers have moved the relevant part of the pallet aside, at the same time they moved other pallets and, e.g. removed at least one of the ship's mooring lines, which had got stuck in the ramp, which can be seen on the video band taken on 19 June1996".

Independent observers of the films state that the area of orange box position in the forward part of the superstructure was in fact filmed on 2 October and *the box or a board of a pallet was not there*. According to Lehtola the divers (in June 1996 or December 1994?) not only opened the ramp a little to remove the wooden block, they also moved other pallets and a mooring rope. But none of it is reported in any dive reports or the Final report (5).

"What are the ship's mooring lines doing *i n s i d e* on the car deck, behind the part open, i.e. almost closed ramp. Normally there are no ropes there".

Reply by Lehtola:-

"You are quite right that the ship's mooring lines should not be at the location where they are seen, i.e. the ramp opening. It is a fact that they are there. When the 'Estonia' sank, the ropes apparently were pulled off their drums on the fore deck and drifted around with different currents. That the ropes have happened to flow into the ramp opening indicates that the ramp was more open at the time the ropes have floated to the opening. No conclusions how much rope there is on the car deck side can be drawn based on the picture".

Lehtola does not know that, i.a. the Germans have suggested that the mooring ropes were used to secure the lose ramp, which could not be locked due to being twisted **3.15**. But it is always interesting to hear Lehtola making up stories - the ropes flowed inside the ramp opening from outside/in and got stuck and the pallet floated from inside/out and got stuck. And later divers inspected the ramp from inside - and found the ramp locks broken, while films released later shows the ramp locks intact.

4.3 QUESTIONS WITHOUT ANSWERS. WHERE WAS THE VISOR FOUND?

There are still many questions without answer about the 'Estonia' accident.

As the accident was caused by human beings, it is important to know the answers. It is an important part of the healing process among relatives and survivors. That the Commission lied and spread disinformation has been established in Part 1 and that **Lehtola** & Co. continues the process is clear from the previous chapters. Regardless, the Swedish government does not want to appoint a new investigation, not even making a summary of questions never examined by the Commission. There are today many new facts that were never examined by the 'Estonia' investigators and the Analysis group and that contradict the Final Report. There is thus reason to examine some new facts presented in this book parts 2 and 3 from a new perspective.

A logical question is -

How could the Visor be lost, if the Ramp was never open?

How could the visor jump over the closed ramp and sink 1 560 meters west of the wreck as suggested in the Final report (5)? The author first thought that the visor was stricken off and slid off the ramp sideways *after* the listing occurred - is it still possible? Or was the visor detached by help of explosives under water and then pulled off? How possible is the assumption that the visor was actually found at the wreck? Or was visor location/position 1 560 meters west of the wreck of 18 October 1994 false - disinformation? Below is an attempt to answer these questions with a repetition of facts and statements presented earlier:-

WRECK FOUND 30 SEPTEMBER AND FILMED 2 OCTOBER - LARGE OBJECT AT THE BOW

The same day the 'Estonia' sank on 28 September 1994 the prime ministers of Estonia, Finland and Sweden decided to appoint an international Commission to investigate the accident **1.5**. The investigation was to be secret and not as per the IMO resolutions. The wreck was apparently found with help of echo sounder/sonar two days later on 30 September by the Finnish vessel 'Suunta' and on 2 October the wreck was filmed by an ROV camera from the Finnish vessel 'Halli'. We were told that the visor at the forward part of the superstructure was missing. We were also told a false wreck position. We were told the ramp was closed.

Furthermore, when the Finns found and examined the wreck on 30 September with sonar, a *large object* was according to the Swedish daily Dagens Nyheter and many other news papers observed at the bow **1.4**. What this *large object* really was is not mentioned in the Final Report 1997.

The author assumes today that the Commission actually had found the visor at or in the vicinity of the bow (50-100 meters radius) on 2 October - it must have been the *large object* and that the ROV films of 2 October have later been edited not to show the visor. On 5 October the Commission stated that they had found other *'fragments'* and scrap objects in the vicinity of (south, east of the wreck), but we still do not know exactly what the fragments were and where and how they were found relative to the true wreck position, which was announced several months later. It is possible that the announcements of *'fragments'* were disinformation made to draw the attention away from the *'large object'* at the bow.

THE FALSE WRECK POSITION

The mystery of the *'large object'*, the *'fragments'* and other scrap must be connected with the statement of the Commission (**Lehtola**) on 2 October 1994 of, what was later revealed to be, a *false* position of the wreck **1.14**. Evidently the two Finnish vessels 'Suunta' and 'Halli' must have reported the correct wreck position to **Kari Lehtola**, but why Lehtola announced a false position is still not clear. Lehtola has later said that he wanted to *'isolate'* the wreck. From what? The visor? The *'large object'*? The *'fragments'*? A **blue** buoy was apparently anchored at the false wreck position. The *'fragments'* and scrap were apparently found on 5 October - these were reported to be east or south of the wreck - the confusion was apparently due to the false wreck position.

But the *'large object'* at the bow disappeared from the media and public attention at this time. No large object is seen on any films. No large object is mentioned in the Final report (5).

RENEWED FILMING 9 OCTOBER - NO VISOR, NO EXPLODED HOLE IN THE 'ESTONIA'

The Finnish vessel 'Tursas' filmed the wreck again on 9 October 1994 for no apparent reason - naturally at the correct wreck position - so the 'Tursas' was aware of the true wreck position! The ramp was closed and the area of the exploded hole filmed by the Czech diver in August 2000, **2.24** and **3.10**, was stated to be undamaged. It was the 'Tursas' which also found - when searching for the visor - a *'steel plate'*, which should have indicated the course of the 'Estonia' before or after the accident. Where this steel plate was found has never been reported. The Estonian vessel 'EVA-200' was also out searching for the visor at this time.

VISOR FOUND 18 OCTOBER

On 18 October the Commission stated that the Finnish vessel 'Tursas' had found the visor with echo sounder *'a mile west of the wreck'* **1.14**. The 'Tursas' also filmed the visor on the bottom by ROV. The delay to find the visor was blamed on bad weather and bad luck and that they had previously only searched east of the wreck and had found *'fragments'* etc.. No actual position, lat./long., was given for the visor on 18 October.

FRAGMENTS AND OBJECTS FOUND BUT NOT FILMED

In the Final Report chapter 12.5 first line the Commission states that investigations of *'fragment'* from the 'Estonia', found on 5 October, enabled to establish the port turn after the loss of the visor *'a mile west of the wreck'* of the 'Estonia'. **The port turn occurred *one and a half mile* west of the wreck and another half mile west from the visor.** But nobody filmed the bottom west of the visor. The Commission lied! The *'fragments'* - one and a half mile west of the wreck? - were reported by many newspapers, e.g. the Swedish daily Svenska Dagbladet, SvD. SvD on 8 October:

> *"According a Finnish member of the Commission the 'Tursas' … found a large object very close to the route, which the 'Estonia' used to follow ... Toumo Karppinen: ...it must be very close to the 'Estonia'."*

SvD on 9 October:

> *"...While searching with echo sounder in the area objects have been found on the sea floor along the route taken by the 'Estonia'. According Olof Forssberg, chairman of the Swedish delegation in the Commission, it is probably among other things the visor, which has been found.* ***Kari Lehtola:*** *We have found scrap, but it is probably from other parts of the ship. These parts tell us what course the 'Estonia' had."*[145]

SvD on 10 October:

> *"**Kari Lehtola** dismisses the opinion of his colleague, Olof Forssberg that the bow visor already has been found during the searches by echo sounder. Kari Lehtola: Metallic parts have been found, but they are not large enough to be the bow visor."*

Swedish news agency TT on 11 October:

> *"**Kari Lehtola:** No bow visor has been found until now but actually a large metallic object. From the working material of the Commission it is seen that the metallic part, apart from the scrap, was 5-7 x 10 meters and had the shape, which coincided with the visor. Later examinations, when the part had been filmed, showed that it 'was only a steel plate' ".*

It was in the vicinity of the wreck.

From above press cuttings you get the impression that Forssberg thought that somebody had found the visor (at the wreck?), which Lehtola must have known but did not want to tell the media. It is unbelievable that no journalists inquired more about these *'fragments'* that later disappear from the Estonia investigation - except that they should have proven the port turn one and a half mile west of the wreck after the loss of the visor. The film with the *'steel plate'* has also disappeared. Naturally *'scrap'* or steel plates do not fall off a ship, which has hardly listed - all is secured.

VISOR SALVAGED BY SWEDISH NAVY - AT UNKNOWN POSITION

The visor was salvaged by the Swedish navy in the middle of November 1994 and taken to Hangö, Finland. The Swedish navy ship HMS 'Furusund' had on 10-11 November again filmed the visor, so that a lifting hook could be made. No outside civilian contractor was asked to salvage the visor. The operation was a *military*, secret operation and no outsiders were invited. The visor was lifted by a Finnish crane vessel, the 'Nordica' under Swedish navy command.

As the visor probably was in the vicinity of the wreck, when it was lifted, the 'Nordica' must have been at the true wreck position at the salvage operation. But - as shown below - the Commission had put a (**blue**) buoy at the false position, so that the crew on the ship thought that they were *'a mile west of the wreck'*. The 'Nordica' evidently could not tell the position, where it was (a mile west of the false wreck position?). The German expert group later tried to check the log book of the 'Nordica', when it salvaged the visor. The given position was not at the visor position - stated later - nor at the real wreck position. And part of the log book was written with pencil. The logbook of the 'Furusund' should also be checked - where was she, when she filmed the visor on 10-11 November?

THE WRECK HAD DISAPPEARED

On 2-4 December the official dive examination took place. The dive barge 'Semi I' first went to the false wreck position, **1.14** and **1.16**. If the **blue** buoy was still there is unclear; it probably was - and they had to search half a day until they found the wreck 2112 meters to southwest. Who told the captain on the dive barge where to look is unclear. Maybe it was Stenström or Karppinen, who were on board.

The position of the visor was given in a message to the Commission dated 9 December 1994 from the Swedish navy (sic) (coastal artillery/defence forces). Actually the position was that of a **red** buoy, which had been anchored during the salvage operations. The position (of the buoy) was about N59°22',97, E21°39',33 ± 100 meters. This is also the official visor position in the Final report (5).

It is a very strange explanation, as the Swedish navy vessel HMS 'Furusund' had filmed the visor with ROV on 10-11 November and should then have announced the position - but then the 'Furusund' was probably above the wreck. When the **red** buoy was laid is not known. Or when it was removed.

The wreck was filmed for the first time on 2 October 1994 and Mr Lehtola told the media the position - N59°23'54.60" (N59°23.9'), E21°42'10.20" (E21°42.2') - which was not a nautical mile (1 852 meters) east of the visor but much more. It was the position, where they tried to dive first on 2 December 1994.

The position of the wreck was changed later - in December 1994 - by the Commission, to an *'as found'* position at N59°22'56.13", E21°41'00.98", which is 1 560 meters east of the alleged visor position. This position is correct: in the centre of the dive prohibition zone of the wreck and later confirmed by many sonar pictures, etc. But what positions, which the Finnish vessels 'Suunta', 'Halli' and 'Tursas', the Swedish 'Furusund' and the Estonia 'EVA-200' had, when they found and filmed both wreck and visor, have never been stated but should be clear from their log books.

The Final Report (5) describes the finding of the wreck in chapter 8.1 as follows:

> *"The locating of the wreck of the ESTONIA' started on 29 September 1994, the day after the accident. The work was performed by the hydrographical survey vessel SUUNTA operated by the Finnish Maritime Administration. A side-scan sonar and a multibeam echo sounding system were used ... The wreck was spotted on 30 September, the location was confirmed and* ***the position was marked with a buoy****. ... The wreck is located at N59°22.9', O21°41'... ".*

The above position is of course the *'as found'* position - announced in December 1994 - and the Final Report states that it was marked with a buoy on 30 September. The latter was not true - no buoy was ever put on the real wreck position - the **blue** buoy was 2 100 meters to NE, the **red** buoy 1 560 meters to west. You wonder then, what was the reason to announce a false wreck position **1.14**, if the real one was marked with a buoy?! And how could the dive barge 'Semi 1' go to a wrong position marked by a **blue** buoy, if the real position was marked with another buoy - colour?

The Final report evidently does not mention the ' *pyramid shaped object'* seen on the sonar pictures taken on 30 September **1.4**. How such a big object - even in another position - could have been undetected during several weeks is of course impossible.

DEBRIS 100-350 M WEST OF THE WRECK

The Final report (5) thus does *not* say that the Commission stated a false wreck position for several months after the accident, and that the wreck, **blue**, buoy evidently was positioned there by the Finnish NMA. Further from chapter 8.1 in (5):

> *"The side scan sonograms also indicate that there was debris from the wreck in an area 100 -350 m west of the wreck".*

This is another strange statement. The Commission never stated in October 1994 that the 'Suunta' found *'debris'* - fragments - 100-350 meters *west* of the wreck using sonar.[145] According to the Commission it was the 'Tursas' that found 'fragments' and scrap - apparently east or south of the (the false or correct?) wreck (position) on 5 October.

If it were the *'debris'* found 100-350 west of the *wreck* that should have confirmed a port turn half a mile west of the *visor* is not clear. Regardless - according the Commission the 'Estonia' never passed the area 100-350 meters west of the (false or correct?) wreck (position) before or after the sinking **1.9**. And what was the *'debris'*?

Furthermore - chapter 8.3 in the Final report:

> *"The visor was found at N59°23,0', 021°39.2' about one nautical mile west of the wreck, on 18 October.".*

This statement is not proven. Evidently it was the 'Tursas' that allegedly found the visor, but she did not announce any position at that time, and it is not clear if she was at sea at the time. It is not stated, if a **red** buoy was anchored at the visor, and by whom - 'Tursas'?. The visor position was only later established by the Swedish navy being that of a **red** buoy - see above. It is in fact extremely disturbing that the official position of the visor in a non-military accident is announced by the Swedish navy - which officially had nothing to do with neither the accident nor the its investigation - three months after the accident and two and a half months after *'finding'* the visor.

With above manipulations - falsifications of History - of positions, etc., by four Finnish, one Swedish and one Estonian ships and the Swedish navy, the Commission managed to divide or split the visor from the wreck at the bottom of the sea.

FINNISH DENIALS - KARI LEHTOLA EXPLAINS THE VIDEO FOOTAGE AND WHY IT IS NOT EDITED AND THE SEARCH OF AND THE POSITION OF THE BOW VISOR

Mr Kari Lehtola, who announced the false wreck position and the finding of the 'steel plate', etc, etc, evidently denies all errors during the 'investigation': The big hole filmed by the Czechs does not exist. The visor position was not that of a **red** buoy, etc., etc. Mr Lehtola has no choice than denial.

From Helsingin Sanomat Wednesday 9 August 2000:

The official commission has been accused of covering up evidence and withholding information on the real reasons of the disaster, in which more than 800 people were killed.

According to the claims, ***the video footage of the wreck had been edited*** *so as not to reveal a large hole in the hull, supposedly caused by an explosion.*

Another issue is ***the location of the bow door visor.*** *The official reason given for the sinking was that the bow door visor had fallen off in heavy seas, eventually leading to the flooding of the car deck. The commission is said to have deceived the public when they said that the bow door visor had been found a nautical mile west of the location of the sunken ship. According to the revisionist theory, the visor was either attached to the ship all the time, or it was found right next to the hull.*

It has been suggested that the entire search operation for the bow door visor was put on just for show.

The third claim is that the video footage of the sunken ship had been doctored. The commission supposedly edited out parts of the tape shot by units of Finland's Frontier Guard that they did not want to make public.

Kari Lehtola, the chairman of the Finnish side of the commission rejects all of these claims for several reasons.

He notes that in addition to the Frontier Guard, videotape of the wreck was taken by divers of the Finnish Environment Institute, and a team of Norwegian divers.

NO EXPLOSION

In their Tuesday statement, the Finnish commission members note that ***none of the footage contains anything that would suggest an explosion, a collision, or other event that would have punctured the hull.***

VISOR LOCATION IN LOG BOOKS

As for the location of the bow door visor, it was lifted to the surface by a Finnish multi-purpose icebreaker, with a Swedish naval vessel serving as a command ship. ***The location of the bow door visor was recorded in a number of ships' logs and sonar maps.***

NO COVER-UP

Claims of video footage manipulation were refuted by Kari Lehtola, and the other Finnish members of the commission, Dr. Tuomo Karppinen and rear admiral Heino Iivonen. They point out that dozens of people, mainly members of the Finnish Frontier Guard, were involved in the operation. With so many people involved, no cover up would have succeeded.

The commission members dismiss as ridiculous all claims of a cover-up conspiracy.

The shipyard which originally built the Estonia has advanced the theory that there was a hole on one side of the hull. Diver Gregg Bemis has also said that his team will be looking for holes possibly caused by an explosion.

"These traces of explosions have been found, because there are plenty of retired colonels around the world who will make such claims for money", Kari Lehtola said sarcastically.

Lehtola also notes that an organisation called the Independent Fact Group, comprising two Swedish consultants, has accused the commission of falsifying documents.

Perhaps the most bizarre claim is linked with the location of the bow door visor. In its report, the shipyard has suggested that a decoy operation to find the visor had to be staged to give time to dismantle a secret mine field across the Gulf of Finland.

The Estonia disaster also continues to tickle the imagination of the ordinary man on the street. The Accident Investigation Board continues to get tip-offs of various theories almost every week. Such theories are reportedly usually dreamed up in bars late at night.

BÖRJE STENSTRÖM

It was probably Börje Stenström (an old Swedish navy commander) who decided to position the visor 1 560 meters west of the wreck. The Commission could not state that the visor was found east or south of the wreck, where they had been searching for two weeks. Stenström probably thought he could recreate an accident with a sharp port turn, resulting in the 'Estonia' sinking a mile east of the visor. The 'Herald of Free Enterprise', which capsized outside the port of Zeebrügge after having left port with an open bow door, also made a 90° turn to port out of the fairway before capsizing on its port side. But it took only one minute.

The Commission then spread rumours that the mate on the 'Mariella' had seen the hard port turn of the 'Estonia' at 01.17-01.20 hrs just before the Mayday (see page 251 in (20)), but it was disinformation. The second mate of the Mariella did not observe closely the 'Estonia' until *after* the Mayday at 01.24 hrs, - at 01.30 hrs - when the 'Estonia' was immobile in the water. According to the mate on the 'Mariella' **1.9** the only 'turn' - if it was a turn - took place just before the 'Estonia' sank at 01.36 hrs. Before that the 'Estonia' was immobile in the water. And how can an immobile ship turn?

GREAT PROBLEMS

The Commission thus had great problems with the positions of the wreck and the visor - no crew member testified about a port turn *after* the loss of the visor at 01.15 hrs. The time was of course wrong - the listing had taken place at 01.02 hrs and the port turn (see fig. 13.2 in the Final Report reproduced in **1.9**) was physically impossible with the port rudder and propeller above water and when the speed was reduced, etc. But Dr. Huss made a nice try to falsify the manoeuvre. He had no choice - to recreate the alleged sequence of events of the Commission a sharp port turn was absolutely necessary *after* the alleged loss of the visor (at the false visor position). He got assistance from Hans Rosengren.

All assisting vessels apparently saw the 'Estonia' immobile in the water, when the Mayday was sent at 01.24-01.30 hrs, in the vicinity where she sank - the true wreck position - and nobody saw the 'Estonia' at the false wreck position announced by Mr. Lehtola. And nobody saw the port turn.

Finnish shore radar at Utö island plotted all ships inclusive the 'Estonia' prior to the accident. But the plot from Utö disappeared. But it existed - it was sent at 16.45 hrs by fax from Utö to Finnish Coast Guard headquarters by fax and the Commission had a copy. The reason why the plot disappeared was simply that it showed that the 'Estonia' never passed the position, where the visor should allegedly have been lost.

The author believes that the 'Estonia' sank due to leakage of the hull. *The story about the visor at the front of the superstructure was just announced to cover up the real story and a probable crime.* The visor could evidently not have fallen off 1 560 meters east of the wreck, and probably it did not fall off at all. And it did not pull open the ramp.

It is **Disaster Investigation.** You have now almost read all of it - only two chapters to go!

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[145] According Karppinen on 23 October 1999 at Glasgow *'fragment'* (debris) were found a couple of hundred meters west of the (correct position of the) wreck 300 meters (?) north of the alleged course kept before the accident - the list occurred **2.26**. It means that the debris must either has fallen off at 01.11-01.12 hr, when the ship was still upright (and 300 meters further north), or at 01.40-01.50 hrs, when the ship had >110 degrees list. What the *'debris'* was is still not known. Probably the *'debris'* did not exist at all.

4.4 **DISASTER INVESTIGATION**

The incomplete, illogical and totally improbable investigation of the 'Estonia' sinking has been described in part **1** - the conclusion is that the official Final Report is a shameful manipulation of all relevant and essential facts.

Part **2** is an attempt to show what actually happened based on new, proven facts, which were not published in the Final Report (5) and kept secret 1994-1998.

Part **3** is a summary of technical investigations in particular about the visor and the ramp that had nothing to do with the accident, which show that the visor could not have fallen off, when the ship was upright, and naturally the visor could not have pulled open the ramp **3.10**, etc. An allegedly wide-open ramp at the forward end of the *superstructure* should have caused immediate capsize with the ship floating upside down on its watertight hull. Under no circumstances can a passenger ship *sink* due to water (>2 000 tons) loaded on the car deck in the *superstructure* several meters above the waterline, it always capsizes. The watertight subdivision and integrity of the hull below would ensure just that. Only if the watertight subdivision and integrity *below* the car deck were damaged or not intact and the vessel was leaking below the *waterline*, the vessel would have sunk - due to leakage of the hull.

So a contributory cause of accident must have been a severe hull leakage below waterline of unknown origin *and* open watertight doors. Part 4.1-3 above shows that the investigation cannot be regarded as completed. No explanation is given why the investigation only concerned the visor locks and their faulty design.

The Finns have in their clumsy manner confirmed many unclear areas 1999. The mystery with the false position of the wreck **1.14** and the censored damages of the starboard front bulkhead **3.10** of the superstructure demand a final analysis. It is thus time for some more questions, analysis and a conclusion.

· The obvious question is - why did Lehtola and the Commission manipulate the investigation with a false position of the wreck, the 'steel plate', fragments, etc.? As the cause was design fault of the visor locks, there was no reason to announce false info of any kind.

· Who invented the story about thousands of tons of water on the car deck inside the superstructure? Didn't this person know that water loaded there on an intact ship would only lead to capsize/floating upside down when GZ was zero?

· Why and who decided that it was necessary to change the time of the listing from 01.02 to 01.15 hrs?

WHY DELAY THE ACCIDENT?

The last question is easiest to answer. It was a quick decision so that false data would fit other false data. The Commission was forced to delay the listing, while otherwise AB seaman Linde would have been on the car deck in the *superstructure*, when the visor was allegedly broken lose during 10-20 minutes, which the German group of experts believes actually happened for other reasons. The Germans are certainly wrong **3.18**. It was not possible, e.g. to say that the Atlantic lock broke at say 00.40 hrs during the normal patrol round of Linde and that the visor *then* hit against the forepeak deck for ten minutes, and that *then* the ramp should have been pulled (fully?) open already at 01.00 hrs resulting in a listing at 01.02 hrs as observed by survivors **2.1**. Linde **1.1** had already told the media (see below) that he was on the car deck at that time and then did not hear anything from the ramp except a big bang at about 00.40 hrs (in later testimonies at 00.55 hrs), the origin of which could not be identified. Linde then added that he had seen the ramp closed at 01.30 hrs, when he had abandoned the ship.

Linde has given several different statements about his movements around at various times and who were on the bridge then. Linde has however never stated, like many passengers, that there were two bangs just before 01.00 hrs and that they were followed by an enormous listing/roll to starboard followed by a stable condition

with starboard list except in one very late questioning **1.48**, when he was at the reception on deck 5 and fell, when the sudden heel occurred.

LEAKAGE OF THE HULL REPORTED BY DAGENS NYHETER 7 OCTOBER 1994

One version by Linde what happened is as follows from an interview in Swedish daily Dagens Nyheter October 7, 1994 by an Estonian speaking Swedish reporter, Mert Kubu. It is evidently made long before the Commission started to change all times: It is said that fire patrol man Linde was at **00.30** hrs (sic) in the garage in the superstructure, when he experienced that the vessel suffered a heavy impact, so that Linde fell to the deck **2.1**. Linde contacted the bridge by talkie-walkie and reported the incident and was told to check the forward ramp and to continue the fire patrol round. In retrospect this event is strange as the impact would have been heard on the bridge and all over the ship if it were a normal wave impact against the bow, when you slow down.

Linde found nothing wrong at the ramp, he continued his patrol round and returned to the bridge at **00.40** hrs (sic - no more wave impacts against the bow during 10 minutes), where he reported to 2/0 Peeter Kannussaar and saw 3/0 Andres Tammes and the Master Arvo Andresson. The Germans believe that Linde and Peeter Kannussaar and some other crewmembers on the car deck were trying to secure the lose visor and ramp at this time 00.40-01.00 hrs **Appendix 5** and never returned to the bridge at all. Note here that Linde, in this DN interview, meets the Master already at **00.40** hrs on the bridge on deck 9 and that he has then terminated his fire patrol round, which must have started earlier than 00.30 hrs.

Linde - back on the bridge at 00.40 hrs - noted that the vessel's speed was 15 knots. At about **00.45** hrs (sic) there was a telephone call to the bridge taken by 2/0 Kannussaar. **It was about the presence of water on deck 1**. Kannussaar, not the Master, told Linde to go down and check deck 1. This is also a strange event. The person calling, probably an officer or senior crew member as passengers cannot call the bridge, must have reported more. Linde must have been told where this person was located and where on deck 1 there was water.

Linde descended the forward stairway and reached deck 4 level, where the stairway is reduced in width down to deck 1. There Linde met many passengers from deck 1 saying that there was water on deck 1. The ship had not yet listed! Linde could not go down against the flow of passengers. Linde contacted the bridge by way of talkie-walkie and reported this. The abrupt listing >30 degrees to starboard and back to upright and to equilibrium at 15 degrees starboard list occurred soon thereafter, thus at **01.02 - 01.05** hrs. Linde then reached deck 7 and assisted passengers, and Kadak and Sillaste **1.48** into life rafts.

From this simple sequence of events it would appear clear that the ship had suffered a leak - say at **00.30 - 00.40** hrs, that this, or something else, was reported to the bridge at 00.45 hrs and that then the ship lost its stability due to free water on deck 0 - the inner bottom of the hull - at **01.02** hrs.

MODIFIED STATEMENTS - THE TIME AND EVENTS CHANGE

In another statement to the Commission, which is partly used in the Final report, Linde stated another version to the effect that he was in the garage/superstructure much later (20). He experienced the heavy impact, reported it by talkie-walki to the bridge (2/0 Kannussaar) and was told to check the forward ramp for five minutes. Linde did not notice anything suspicious. He then returned to the bridge, where he met 2/0 Tormi Ainsalu and 4/0 Kaimar Kikas (sic). The reason for this was that the crew watch on the bridge had been changed at **01.00** hrs. Note also that 'Estonia' had two second officers (2/0), Kannussaar and Ainsalu.

Linde stated clearly to the Commission that 2/0 Kannussaar and 3/0 Tammes had left the bridge and he did not mention the presence of the Master Andresson. The time was thus after **01.00** hrs. In another statement, a third version, Linde has proposed that he arrived on the bridge just behind the Master.

STRANGE NOISES AT THE RAMP

According to the second version of events of Linde as reported by Hellberg **1.44** in (20) Linde was then on the bridge a few minutes, when there was a telephone call taken by 2/0 Ainsalu (sic). The call was about strange noises at the inner ramp but not about water on the car deck and not about water on deck 1 and Linde was ordered to go down and check. He descended the stairway and reached deck 5 level in the deck house and asked the reception (sic) to open the fire doors to the garage in the superstructure - deck 2. Then there was the abrupt list >30 degrees to starboard. And then the passengers started to escape from deck 1 saying there was water on deck 1 in the hull. Linde followed the passengers to deck 7 and, there he reported by talkie-walkie to the bridge (2/0 Ainsalu), that there was water on deck 1.

After Linde left the bridge to attend the emergency in the garage or wherever, the Commission suggested that the Master visited the bridge at **01.07** hrs (Lloyd's List March 17, 1997). The Master is quoted to have said *'we are one hour late'* and then he left. How the Commission knows this is not known to the author. All persons on the bridge at that time, whoever they were, are dead, and according to many passengers, the vessel was already listing since **01.02** hrs.

CONVERSATION OVERHEARD

3/E Treu has told the Commission that he overheard the last conversation between Linde on deck 7 and 2/0 Ainsalu on his talkie-walkie/portable VHF unit in the ECR. Treu states that Linde told Ainsalu that *'there was water in the garage* (deck 2)', not on deck 1 as Linde stated, even if Linde had no possibility to know anything about water on deck 2. Treu has evidently told the Commission that he (Treu) saw water entering the garage/superstructure at the forward ramp at **01.15** hrs (without raising an alarm). Treu is the heroic star witness of the Commission. The abrupt listing should then have taken place *after* **01.15** hrs. 3/E Treu has also stated to the Commission that, after the abrupt listing had occurred, he talked to 4/0 Kaimar Kikas on the bridge about the possibility to shift ballast in order to reduce the listing caused by free water in the garage (sic). This conversation took place between 01.20 and 01.25 hrs, when normal passengers had immediately escaped from wherever they were. We shall believe that Treu stayed behind in the ECR for 10 minutes, while there was full panic everywhere else on the ship.

However, Linde must leave the car deck and return to the bridge just before (or after) 01.00 hrs to witness what the Commission then *invented* happened on the bridge. There is no evidence at all that Linde actually returned to the bridge at any time - all is based on his own testimonies probably manipulated by the Commission, even if the first, DN version sounds good - Linde was back already at 00.40 hrs. But the Final Report states that Linde was on the car deck (deck 2) at **00.55** hrs (or little earlier), heard the bang, waited five minutes - no noise, no wave impacts, nothing - and then returned quickly to the bridge on deck 9 with or without completing the patrol round on decks 1 and 0 of the *hull*.

Linde has actually at other occasions testified that he completed the round, but it would have taken another five, ten minutes, as there was no hurry or cause for alarm - no more wave impacts! Linde is therefore back on deck 9 - the bridge - at around **01.00** hrs. The telephone rings or had rung earlier - not proven - and somebody - evidently a member of the crew - informs about problems, noise (sic) down in the ship and Linde is *ordered* by the second mate to go down to the car deck again, just *after* 01.00 hrs, to check the noise. This is not proven either. Linde goes to the reception (deck 5) and waits another five (!) minutes - the reception shall open the doors to the car deck three decks lower down?!? Of course Linde had his own key, but Linde must be further delayed. The reason for the delay is that Linde must not see any water on the car deck in the superstructure and raise an alarm before the 'accident'. And then *slow* listing allegedly occurs at 01.15 hrs, when the water starts to flow into the *superstructure* at the leaking (or fully open ramp - announced two months later). The Commission suggests that the time is **01.14-01.15** hrs. The Estonian delegation has given two versions of the above **Appendix 8** but neither is convincing, because they ignore all testimonies of surviving passengers and what was reported in the media the first week. The Estonian proposals are just stupid.

Nevertheless - it seems that the first version of Linde reported to the daily Dagens Nyheter on 7 October is most close to the Truth. Linde had already done his patrol round and found nothing special - except one

impact/bang, which probably caused the hull leakage - and had returned to the bridge long before 01.00 hrs. Then he was called down and met the passengers from deck 1, i.e. the bridge was informed that something was wrong before 01.00 hrs - and the Master was already on the bridge!

This is what the Commission tried to hide - that the ship officers were aware of something being seriously wrong before 01.00 hrs and that the accident - the listing - occurred at 01.02 hrs, which probably was clear from the famous, original Utö-plot!

EARLY EVACUATION

That some passengers from decks 1 and 4 already were on their way up, *before* the listing occurred, some had been awakened by two *'bangs'* sometime before, and that all passengers talked about a *sudden* listing at **01.02/5** hrs was difficult to explain, but the Commission had no choice. The Commission simply had to manipulate *all* crew testimonies and to forget all passenger statements, so they fitted the invented new time schedule: what had been published in the newspapers and the summaries of Mr Schager's summaries of testimonies **2.1** had to be forgotten or censored.

The Commission delayed the listing - the 'accident' - 14 minutes - in order for Linde to leave the car deck and for him to inform, in manipulated later testimonies, the unproven events on the bridge, etc.

We do not know where Linde was at 01.02 hrs. And he probably panicked like all others and ran straight to deck 7 port side to save himself, when the listing occurred. And there he remained, met Kadak and Sillaste that had got away from the ECR immediately and got into a life raft. Not very heroic but human. This author does not blame Linde. Linde did his job and nobody listened to him.

As the time for the accident was delayed about 14 minutes by the Commission, it apparently decided to change the time for the sinking from 01.36 hrs to 01.50 hrs or later. It made the Utö plot worthless - of course it was already worthless, probably showing the 'Estonia' changing course towards Sandhamn earlier, slowing down, never turning after the 'accident' and many other things, which the Commission could never explain. From the above description it should be clear that everything about the accident is inventions by the Commission using falsified testimonies, etc.

INVENTIONS - BY WHOM?

As the Commission could manipulate the times, it could also invent the story that 1 000's of tons of water had entered the deck 2 of the superstructure due to a lost visor and a *pulled open* ramp and to say that this combination of events had caused the listing. The independent 'expert' Mr Hans Wermelin was used to plant the story in the media **1.3** on the day of the accident. The Commission then did not know that 1 500-2 000 tons of water on the car deck would have resulted in immediate capsize and the end of the voyage. All aboard would have died. But the disinformation worked smoothly. The Commission skilfully talked about capsizing and sinking, as if it were one and the same thing. That it was impossible to sink a passenger ship with an intact hull and watertight subdivision due to water inside the superstructure had to be conveniently forgotten.

THE FALSE VISOR POSITION

The Commission probably found the visor at the wreck already on 30 September **1.14** and it was confirmed, when filming the wreck on 2 October and then Lehtola decided, or was told or forced, to announce a false wreck position marked by a **blue** buoy. Curious persons should stay away from the actual wreck position. It is highly likely that the visor was then detached from the wreck, *under water*, during 2-9 October. **Why, otherwise, announce a false wreck position?**

As the Commission delayed the listing 13-14 minutes, they forced 3/Eng Treu and his two colleagues to delay all they did - or did not do - in the ECR 15 minutes. We do not know if Treu really were in the ECR at 01.15 hrs. It is highly unlikely. He would have had great difficulties to evacuate that space, if he were or stayed on.

Somebody apparently convinced Treu to state that he not only was in the ECR at 01.15 hrs, he also stayed *on* for more than 10 minutes trying to save the ship long *after* the lifeboat alarm was allegedly raised at 01.22 hrs **1.33**. But it was difficult because all passengers and crew agreed that the ship was on the side with 70-90 degrees list at 01.30 hrs. Treu's testimony could have been accepted with about 30 minutes between the first listing at 01.02 hrs and the ship on the side at 01.30 hrs with Treu evacuating at the last moment, *about 01.08 hrs!*, even if it is highly likely that Treu immediately abandoned the ECR **1.48**, if he were there. That the same events of Treu; listing, ballasting, telephone calls with the bridge, evacuation, etc., could be compressed between 01.16 hrs (listing) and 1.30 hrs (>70 degrees listing according the Commission) was not possible, **1.9** and **.1**. If the vessel were on the side at 01.30 hrs as proven by broken watches, when the last people on the side jumped into the water, then the ship sank already at **01.32-01.36 hrs** as stated by the mate of the 'Mariella' and shown by the clock on the bridge of the 'Estonia', which stopped at 01.35 hrs, and not as late as 01.53-01.55 hrs, which the Commission states.

The alleged sinking after 01.53 hrs was necessary, so that the false plot of Huss/Rosengren 1.9 would fit.

Huss/Rosengren needed >35 minutes to allow the 'Estonia' to lose the visor at 01.15 hrs, turn 180°, drift and sink a mile east of the visor. They never managed to show this as any water in the superstructure would have flowed out after the turn and the stopping, so in the end they used the plot of an undamaged ship to perform the feat. Quite remarkable. Why did Huss and Rosengren assist hiding a crime?

It means that *all* testimonies from the ECR are manipulated **1.48**; Treu's, Sillaste's and Kadak's. And that Linde also lied about the last 60 minutes in his latter testimonies. Things were not improved by Treu stating that it was *full speed forward all the time* until *after* the listing. Probably the vessel had slowed down and stopped earlier, as shown on the Utö plot, but the Commission could evidently not admit that.

It meant that the bridge then should have known that there was a serious fault on the ferry - the real cause of accident - leakage of the hull and that they had slowed down to investigate - and it meant further that they could not announce the correct positions of the wreck and the visor, which would have indicated that the speed was reduced.

KEY WITNESSES LIED ABOUT EVERYTHING ON 28 SEPTEMBER

The author thinks today that the four *'key witnesses'* lied about everything of the accident already on the 28 September. Linde was probably never on the bridge and the three persons in the ECR, if they were there - they might have been in the engine room or in the stabilizer space, sewage tank compartment or the swimming pool room trying to prevent the leakage - probably evacuated immediately to open deck, when the listing occurred at **01.02** hrs as otherwise they had drowned.

But why did they all lie so coordinated - even if details and times did not match - already on the day of the accident?

The above means that the alleged course of events of the Commission was *falsified* already he same day of the accident on 28 September 1994, *before* they had found wreck or visor, the latter probably at the bow of the wreck.

Who could have initiated this manipulation/falsification so early?

Enn Neidre **1.6/7**? No, the matter is probably more complex than that, even if Neidre and several members of the crew evidently knew exactly what happened on board, but for various reasons did not say what. Neidre was on location in Finland, when the surviving crewmembers came ashore and told him what had happened. Of course the crewmembers told exactly what had happened. They were not responsible for the accident; only victims. Naturally the crewmembers were then ordered to tell another story. But the falsification was decided very early - before anybody checked the stability aspects of the falsifications **1.9**, etc. That is why nothing tallies. It was in fact Swedish Prime Minister Carl Bildt that announced on 28 September 1994 that the visor had probably caused the accident!

THE EARLY BIRDS OF THE SWEDISH GOVERNMENT

Let us repeat the events on 28 September after the sinking, as they are summarised in the part report of the Swedish Analysis group *'En granskning av Estoniakatastrofen och dess följder'* (25) ('A review of the 'Estonia' disaster and its consequences') published 1998 **1.40**. It provides another perspective why the crew lied.

Already at 03.00 hrs Estonian time on the night of the accident, i.e. 90 minutes after Mayday, parts of the Swedish government including Prime Minister Carl Bildt and civil servants, politically and publicly appointed, gathered to analyse the situation (page 24 in (25)):

> *'At around 4 o'clock ... they concluded that the procedures of an accident investigation is an important question. They want to avoid that another state is responsible for such an investigation without giving Swedish experts insight into the work.'*

Nobody informed, naturally, at this early hour that the United Nations ship safety organ the IMO had previously approved *two* resolutions about the procedures of marine casualty investigations and that a third was being developed. *There was already an internationally accepted standard for marine casualty investigations* **1.2** and the Swedish government did not have to worry. Nowhere in any public Swedish examination and investigation 1994-1998 around the 'Estonia' events is this fact mentioned. The Swedish Board of Psychological Defence denies it today, 2001 **1.49**.

Not only the experts of the Swedish government but also the public had *the right to attend* an accident investigation of this kind. But you get the impression that the Swedish government at 04.00 hrs - three hours after the listing occurred - was prepared to ensure that Swedish experts should have insight into the investigation. It was self-evident.

But what about the public?

The government immediately asked its Board of Accident Investigation, SHK, to fly to Turku and assist the Estonians. But why the Swedish government 1994 then decided that the investigation should be secret for more than three years should be clarified today 2001! The Swedish government also apparently encouraged their civil servants not to follow the Swedish law (1990:712) about accident investigations, which refers to the IMO-resolution. It is a self-evident fact that the secrecy of the investigation enabled both the manipulations of the Commission and the conspiracy theories of unknown parties. At the same time the government put the Swedish rescue service Räddningstjänsten on alert to arrange a dive inspection of the wreck **1.3**.

In the morning the Swedish Prime Minister Carl Bildt contacts his Finnish and Estonian colleagues (the Prime Ministers) and they agree to meet the same day (page 26 in (25)). In the afternoon the Swedish Prime Minister Carl Bildt and two assistants, Jonas Hafström and navy brigadier (commander) Emil Svensson, took an aeroplane to Åbo/Turku (page 28 in (25)). It was about this time, when German TV showed captain Arvo Piht at Utö and informed that also Piht was on his way to Åbo/Turku **1.46** and when the 'Mariella' left the area of the accident with 25 or 28 or more survivors onboard **1.41**.

On arrival at Åbo/Turku the Swedish Prime Minister Carl Bildt informs that the government has asked its Board of Accident Investigation, the SHK, to assist Estonia to investigate the accident (page 29 in (25)). It was exactly in accordance with the UN/IMO resolutions about international cooperation at marine casualty investigations, even if the Swedish prime minister should also have ensured that the Swedish public should have had full insight during the whole investigations. *Secrecy during a purely technical accident investigation is not permitted*.

Later there was a presentation at the rescue centre followed by *private* deliberations between the prime ministers. Apparently they decided a three-party Commission, total *secrecy* during the investigation and that all evidence should be *confidential*. Nobody else could have decided that. The Estonians could then appoint delegates with no interest in a proper investigation **1.7**.

Then the three prime ministers met survivors. The Estonian prime minister *'Mart Laar talks to three Estonian crew members, who tell about a wave, which lifted the bow visor from below'* (page 29 in (25)).

This explanation in (25) is not possible. The three, evidently 3/E Treu, systems engineer Sillaste and oiler/motorman Kadak, had no possibility to know that *one wave* had lifted the bow visor **1.10** on 28 September and they have never repeated such statements. They had never seen a pulled open ramp of the superstructure. They had, reported in a first version of events, only seen a closed but leaking ramp at the forward end of the superstructure on a TV-monitor in the ECR *after* the sudden listing, which was then the official position of the Commission.

If (25) is true, already on 28 September the testimonies/crew members were manipulated *before* the meeting with the prime ministers! Or did the Analysis Group get things wrong?

Then there was a press conference.

DESIGN FAULT

Later the Swedish prime minister went home and now the description becomes interesting. From the airport Carl Bildt called the Swedish transport minister Mats Odell and ordered (25) that

> *'it shall be investigated if other passenger ferries in operation are designed in the same way as the 'Estonia'. The information from the surviving crew members about the bow visor being 'lifted from below' can be an indication of **design fault**'* (page 29 in (25)). *'The transport minister is given the task to contact the NMA'.*

At the about the same time two Swedish helicopters land on the 'Mariella', which just entered Swedish waters, and disembarked police men to *'protect'* the 25/28 survivors **1.41** on the ship, which is not mentioned in (25).

Why was it so important to isolate these survivors on the 'Mariella' from the public and media?

The official explanation was to protect these survivors from the media, but there was no media on the 'Mariella' at the time.

On his return the Prime Minister Carl Bildt attends a crisis group meeting at the government headquarters (page 31 in (25)). The prime minister summarises, i.a.

> *'As a **design fault** may have caused the accident, it should be investigated if similar faults can be found on other ships'* (page 31 in (25)).

For the second time on the day of the accident itself the Prime Minister Carl Bildt hints that ***design fault*** may have caused the accident. Interestingly enough the Commission later just investigated ***design fault***. And nothing else.

The Swedish delegates of the Commission did not arrive at Åbo/Turku until the evening; Forssberg, Stenström, Gunnel Göransson (secretary), all three SHK, and Sten Andersson,(the NMA observer. They met the Finns, there is no protocol of the meeting, and were told that the Estonian delegates of the Commission will arrive the following day (page 33 in (25)). It is not correct. Captain Enn Neidre was already in place questioning crewmembers. Transport minister Meister was apparently at Tallinn and discussed with Stolt Comex about salvaging all bodies and may have come later. The Estonians were not formally appointed until the 10 October **1.5**, so it was not clear on the 28 September, *who* the Estonian investigators were, but many Estonian officials were at Turku already on the 28th.

During the day of the accident the *stability* of the 'Estonia' with water in the *superstructure* seems not to have been discussed!

The following day (Thursday 29 September) the Swedish government crisis group meets again (page 45 in (25)):

> *'The question about bow doors with **design faults** is discussed'. 'The prime minister points out regarding this matter that it is important that all requested material* (about bow visors) *is collected and that it must be checked by Finland'* (page 46 in (25)). *'He finds it remarkable that the suspicions about the bow visors came via the government and did not seem to be known by the responsible authority'*.

At the same meeting the government apparently gave the go-ahead with its own dive inspection by Räddningstjänsten/Swedish navy. Concurrently the Commission meets at Åbo/Turku **1.3**. Captain Avo Piht is still reported as a survivor by the Baltic News Service, the media and official institutions; Estonian ministries, Finnish police, and one of the Veide sisters calls her mother - the call is cut - and the purser Andres Vihmare **1.46** calls the wife of the ship's doctor, Viktor Bogdanov, and states that he has survived. It is not mentioned in (25). The Swedish and Finnish delegates then question some crewmembers and then Meister decided to send the crew home. No representatives of hull and P&I underwriters or legal counsel of the ship owner is reported in (25) to have attended at Åbo/Turku to assist with the investigation and support the crewmembers **3.20**. This was no normal accident investigation.

However, the interest of the Swedish Prime Minister Carl Bildt of bow visors with ***design faults*** on 28/29 September is **remarkable**, as nobody at that time had stated that the visor had caused the accident or pulled open the ramp in the superstructure. It is also remarkable that nobody informed him about the UN/IMO resolutions about international cooperation at marine accident investigations and that the public should have full insight.

On the second day after the accident the *stability* aspects with water in the superstructure were not yet discussed.

NO INFORMATION OF STABILITY AND THE PRINCIPLE OF ARCHIMEDES

On Friday (30 September) the Swedish government crisis group meets again. It discussed

> *'a meeting with NMA safety director Bengt-Erik Stenmark the same morning about the NMA analysis of probable causes of accident'* (page 49 in (25)).

What actually was discussed at the meetings on 30 September is not given in (25) - probable causes of accident? It would have been interesting to know, *what* various causes suggested by the Swedish National Maritime Administration were discussed. Stenmark apparently does not inform about his talk with senior ship inspector Åke Sjöblom Tuesday evening eight hours before the accident; **1.1** footnote 11, **1.23** and **1.33**, about the 'Estonia' not being seaworthy with a long list of defects at departure on 27 September.

Stenmark apparently does not inform that a ship floats on its *hull* and that a ship sinks, if the hull is leaking below the waterline, but capsizes and floats upside down on the hull, if it gets water on the car deck above the waterline 1.9 inside the *superstructure* above the hull. Stenmark does not mention that a lost visor protecting a *superstructure* cannot cause sinking of a ship.

Not a word about the ramp just closing an opening in the *weather tight superstructure* around the car deck and that water in such *superstructure* does not sink the ship in 30 minutes, as it floats all the time on the hull.

It is not known how correct the above report (25) of the Analysis group is. It could be a clever part of continued disinformation that all qualified authorities supported the false visor theory from day one, but it shows that the interest quickly focused on the *bow visor* in the superstructure - design fault - as *cause of accident* - strongly encouraged by the Prime Minister Carl Bildt - while the Swedish NMA evidently withheld damaging and/or essential information about the 'Estonia' not being seaworthy. The stability of the 'Estonia' seems not to have been discussed at all and it is still a subject not to be discussed by the NMA staff.

That the Swedish NMA had a particular interest to support a cover-up was not noticed by anybody 1.16. The Swedish NMA evidently knew that the ship was unseaworthy eight hours before the accident.

In retrospect they knew that the 'Estonia' was unseaworthy from the start of operations 1993.

The Swedish NMA had approved the procedure that 65+ years old passengers were supposed to jump into the sea and swim to a life raft, when the ship was abandoned, 1.33 and 1.34, etc.

It must be added that the 'the faulty visor' theory was already, also discussed on the Internet on 28 September 1994 and reported in the media on 29 September. The origin of this theory was always crew members from the ECR (or elsewhere), who were then in hospital at Turku. One of these crew members was however also quoted to have been standing to his knees in water somewhere on a lower deck, just before the listing. Evidently he could not have been standing in water to his knees in one location (aft of the ramp on car deck no. 2) and at the same time be witnessing the drama on the monitor in the ECR on deck 1. But it is a fact that a Mr Mats Winberg of **etxmow@garbo.ericsson.se** on 28 Sep 1994 at 11:12:15 hrs GMT reported on the Internet that:

> *I just heard on the Swedish radio that an Estonian crew member that has been saved has told the news agency TT: "I was on the lower deck when I noticed water streaming in through the front (where the cars and trucks are loaded/unloaded). **I had water to my knees and then the ship started to tilt over**".*

DISASTER MANIPULATIONS

One reason why the investigation was manipulated is the following:

Assume that the ship sprang a leak at 0040-00.50-00.58 hrs and that only some crewmembers were called upon to control the situation and that no passenger alarm was raised. It was the bang that Linde noticed on his patrol round and told DN that caused the leak. Assume that at that time all the watertight doors in the hull were open 1.23.

Say that the crew managed to close locally the watertight doors on deck 0 and managed to isolate one or two watertight compartments that had already been flooded. Closing watertight doors should have activated loud alarm bells and no survivor reports hearing such an alarm, but maybe the alarm clocks were disconnected.

Assume that Treu, Kadak and Sillaste were occupied with that and had started the bilge pumps. Everybody thought that the situation was under control, but assume that Treu then reported by phone to the bridge that the water was rising up on deck 1, where the passengers were accommodated. Confusion on the bridge! Linde was sent down to warn the passengers on deck 1. Some passengers had already noticed the water and were running up. Nobody had at that time closed the watertight doors on deck 1. Linde met the escaping passengers in the stairwell at deck 4. At the same time there was further confusion on the bridge - some lamps were red, some green on the watertight door control panel. Somebody decided to close all watertight doors but pushes the wrong button on the panel. The watertight door control panel was very confusing 1.23. The locally closed doors on deck 0 were opened from the bridge. The doors were under full water pressure of the flooded compartment(s). Two bangs were caused, when the water shot out of the full compartments and spread on deck 0! Soon after followed the sudden listing!

After the accident the crew members were requested not to say anything about it, but to blame the accident on the visor and water leaking into the superstructure. And that events developed so fast that they could do little; e.g. slow down.

Captain **Avo Piht** and chief engineer **Lembit Leiger** 1.46 probably survived and they disagreed to keep quiet. They must have been extremely upset about the whole stupid accident and wanted to tell the media. But they were kept isolated in various hospitals as Piht was flown to Finland and later they disappeared. Maybe they were forced to keep a low profile for a while? Six, seven years?

Thus only Treu, Sillaste, Kadak and Linde stated in various ways, just what Prime Minister Carl Bildt told the media, that the visor must have caused the accident. They had seen water leaking in at the closed ramp (except Linde of course) and that the visor was missing, when the ship sank, but that the ramp was closed, and all these statements were published on 28 on the Internet and 29 and 30 September in the media and the Finnish and Estonian prime ministers supported them. Linde didn't like the situation and gave a frank interview to DN. But then the visor was probably found at the bow on 30 September and filmed on 1 October **1.3** by the Swedish divers and on 2 October by the Finnish ROV, i.e. it had *not* fallen off 30 or 40 minutes before the sinking. The four testimonies and the whole theory about the visor then became useless. The Commission thus decided to move the wreck (!) - on paper of course..

LEHTOLA ANNOUNCED A FALSE WRECK POSITION!

A **blue** buoy was anchored at the false wreck position and the ships guarding the wreck were moved to the buoy. Another ship (HMS Furusund or Urd from the Swedish navy) could then anchor at the wreck 1-3-4 October and remove the visor! Simple lie became a flood of lies. Probably the condition of the visor and ramp was bad - the ramp was twisted, could not be locked and was leaking and was secured by ropes and the visor was also twisted and did not fit properly. The Atlantic lock was probably damaged earlier and was not in use. But it could be used as the *'cause of accident'*!! And it worked well in the beginning - false statements presented by media as facts became established facts.

Why the Commission - and the prime ministers - did not want to admit normal leakage, as cause of accident, is not known - to protect the crew and the ship owner - or themselves?

In the end the Commission accused the innocent shipyard - as an Alfred Dreyfus - to have incorrectly designed and manufactured the visor locks in 1979. But the explanations in the Final report (5) are evidently not convincing at all about the faulty designed and manufactured visor.

Interestingly enough the ship's insurance underwriters kept quiet - they should pay for the accident, but apparently just accepted the lies of the Commission. The underwriters should evidently not have paid a penny - the ship was not seaworthy with false certificates, etc.

Swedish NMA safety director Bengt-Erik Stenmark and his staff certainly knew that there were severe defects on the 'Estonia' *and* that it was not the visor that was the main problem - it was, e.g. the life saving equipment **1.27**, **1.33** and **1.34**, the bilge pumps and the watertight subdivision **1.23**, and other defects in the hull: stabilizer installation, the swimming pool on the double bottom, etc. But it seems that Bildt and Stenmark only discussed the visor. According to the description by the Analysis group above in (25) 1998, it seems clear that on the first and following days *only* the bow visor in the superstructure should be examined and that only one cause of accident - *design fault* - should be investigated.

It is of course possible that Stenmark told Prime Minister Carl Bildt that the 'Estonia' was not seaworthy at departure from Tallinn and that this information was kept secret; like all evidence of the investigation. *You get the impression that these two persons, Bildt and Stenmark, have not given correct information to the Analysis group 1997/8.*

However, the Analysis group 1.36 was aware of all information in (1) at that time and most new facts in this book - all censored by the Commission - when it wrote its reports (25) and (26) 1998 and 1999. None of the new facts of this author were used by the Analysis group in its investigation and analysis.

The reason not to use the author's information was that the Analysis group should not study the accident investigation (sic). The Analysis group studied only if the dead bodies were to be salvaged and how Swedish authorities had looked after survivors and relatives of the victims.

Anyway - according to the description of the Analysis group the Swedish Prime Minister Carl Bildt strongly influenced the Commission only to investigate a ***design fault*** of the visor (a) *before* it had even been established, if the visor could have pulled open the ramp, (b) *before* they had studied the intact stability with

water loaded in the superstructure, (c) *before* they had interviewed the survivors and (d) before they had investigated any other defects of the ship. Neither wreck nor visor was officially found, when Carl Bildt put his demand forward.

No other safety defects should be investigated. The stability of the 'Estonia' with water in the *superstructure* was never discussed. It is quite strange actually. It seems that everything that really happened was censored, and that only bits and pieces of disinformation were made public the first days.

COMPLICATIONS

The matter was complicated by the fact that the Commission delayed the time for the loss of the visor and thus the listing by about 14 minutes. It was done to protect Linde - see above -and it took place on 28/29 September *before* finding the wreck. It meant that the Utö-plot became worthless or **1.13**, as Rosengren told captain Mäkelä on the 'Silja Europa' in November 1994, was *"incorrect"*, as it must have shown that the listing occurred at 01.02 hrs, when the ship stopped and the course changed unless course and speed had changed earlier?.

Why was it really necessary to change the time for the listing?

It took place on 28/29 September. In his first testimony of 28 September **2.1** Treu said clearly that the listing occurred at **01.00** hrs, in his second testimony (probably false - it never took place!) on 29 September that it was at **01.16** hrs. Also the time for the sinking was changed. Probably all assisting ships saw that the 'Estonia' sank already at 01.32-01.36 hrs, but the Commission decided to delay the sinking to about 01.52 hrs so that the ship could drift one mile while being filled with water and sink a mile east of the visor **1.9**.

Why didn't the Commission accept that the listing occurred at 01.02 hrs, as most survivors said, and decided instead to advance the visit of Linde on the car deck to already at, say, 00.30 hrs, when he normally should have been there anyway - and probably was? The false course of events was still working, even if the time between the listing and the Mayday increased from six to 20 minutes. A delayed Mayday could have been explained by panic on the bridge after the listing.

NO KNOWLEDGE ABOUT STABILITY - OR CAPSIZE

The last question is not really necessary. The error of the Commission was that it stated already on 4 October 1994 that water on the car deck in the ***superstructure*** had caused the sinking - the first interim report **1.4**.

The Commission did not know on 29 September or 4 October, what would actually happen with 2 000 tons of water on the car deck in the superstructure - it thought it could invent anything to mislead the public.

The Commission or Meister, Forssberg and Lehtola did not know the physical relationship between free water on an enclosed car deck inside a *superstructure above* the waterline of an intact *hull* and the resulting angle of heel, and that the *residual* stability became zero at a certain angle causing immediate *capsize* and floating upside down **2.16** on the intact watertight and airtight subdivision of the *hull.*

THE RAMP WAS FULLY OPEN - BUT WHY NO CAPSIZE?

The Commission did not know that you needed 1 000 tons on the car deck inside the superstructure to cause a list of 20 degrees. If a 20 degree list occurred quickly, the water - 1 000 tons - must have entered quickly, and it was not possible through a half-closed, leaking ramp. So later, on 15 December **1.17**, the Commission stated that the ramp had been pulled fully open - quickly. But the Commission still did not know, what should happen then. If 1.000 tons entered in one minute, then of course 2 000 tons entered in two minutes and the angle of heel would become >35 degrees, which would have caused immediate *capsize*. But nobody in the Commission had any knowledge about these simple stability matters - at that time. Only later various experts tried to explain the realities to the Commission in closed and secret meetings - and the Commission did not know what

to do - except to suggest that the ship floated on the deck house and to delay the publication of the Final report, while Dr. Huss was falsifying the stability and sinking data and the plot of the accident **1.9**. When much later the suggestion by this author, that the ship should have capsized and floated upside down, became generally known and accepted by the public, the Commission and the Swedish NMA (Selén and Franson) went out with the totally untrue suggestion that the 'Estonia' had floated on the *watertight* ***deckhouse*** above the superstructure (car deck space) and 10-20 meters *above* the waterline, preventing capsize, etc.

INCOMPETENT AMATEURS

This book clearly demonstrates that Forssberg, Lehtola and Meister were incompetent or rather criminal amateurs regarding, i.a. *stability*. That is why the Commission 1994 shamelessly announced its theories about water on the car deck and didn't say that there was a severe leakage below the waterline, which could have been caused by bad maintenance or repairs previously or repairs being done at sea, even if a hull leakage should under *normal* conditions not sink the ship. **A leakage should have been isolated by closed watertight doors** and water could have been pumped out by bilge pumps, etc. But it seems that the Commission did not want to confirm that the *watertight doors* were open and *could not be closed*, etc. Now the Commission and the German experts censored all facts about the watertight doors **1.23** in the Final Report (5) and then the Commission and the German experts could never explain how the 'Estonia' sank **1.9**, i.e. how the watertight compartments in the *hull* were flooded! The bilge pumps were conveniently forgotten by the Commission and the Germans. Not to be forgotten it was apparently confusion on 28-29 September 1994. The public demanded quick answer, what could have caused the accident. So the visor was a good idea. It sounded good - 99.9% of the public believed it then including the Germans and many still believes it today with the help of the SPF **1.49**.

To blame the accident on crew error or negligence in connection with the leakage, faulty watertight doors and bilge pumps, etc. was apparently not possible. The visor story was good - four key witnesses could make up some stories about it, even if the stories did not tally. 'Respectable' Commission members could agree. Then the media could be manipulated quoting *'experts'* stating that passenger ferries sink due to water on the car deck in a *superstructure* above waterline. The latter is very serious.

THE PERFECT CONDITION OF THE SHIP - A MYTH

The Commission had otherwise several possibilities to manipulate the investigation. Officially it stated that the visor was in perfect condition and that it was a ***design fault*** and bad manufacture in 1979 by the shipyard and, not to forget, the lack of a proper inner collision bulkhead, which was the responsibility of the Estonian administration.

The Commission could instead have confirmed that the condition of the visor was bad and that it in itself didn't cause the accident and that it was a combination of high wave loads and fatigue of important parts and the lack of the collision bulkhead that caused the accident. In marine accidents normally you blame the Master for incompetence and the Master had drowned in this accident and could not defend himself, but this went against the Estonians. No individual Estonian should apparently be accused, as it would have hit back against the ship owner's superintendent and safety manager Ulf Hobro **Appendix 7** at Stockholm and the classification society Bureau Veritas and its surveyors Anders Wirstam and Hans Olsson, who also worked for the Estonian administration. These persons evidently knew all about the true condition of the 'Estonia' and the Commission did not waste time to manipulate these professionals - they were left in peace. Any criticism about the ship's condition - or anything - would also hit back against the Port State Control of the Swedish NMA at Stockholm - and Tallinn - so the Commission decided to blame the shipyard. And this was very good. The German shipyard decided to check everything what the Commission was doing **Appendix 5**.

THE GERMANS NEVER UNDERSTOOD THAT ALL INFORMATION OF THE COMMISSION WAS FALSE

Without the German private investigation many facts about the accident would have been swept under the carpet. The cover-up and the falsification of History would probably have succeeded. But the German

investigation is still not satisfactory. It accepted many statements of the Commission as facts including the loss of the visor, when *everything* stated by the Commission 1994-1997 today must be regarded as false. But who could have believed that 1994/5? The German experts must have been completely fed up in the end. They knew then that **everything** the Commission had stated was rubbish - lies - but, very interestingly, **they never stated it clearly.** In the end the Germans published its Final report **Appendix 9** - a strange document avoiding many items mentioned in this book. The German final report is as totally unsatisfactory as the Commission's but for other reasons. This author believes the German shipyard was convinced to drop the matter quietly. **The Germans became part of the conspiracy!** The German yard had in fact built a ferry with a lot of inherent defects due to incompetence, e.g. the watertight doors.

CREW MEMBERS KNOW WHAT HAPPENED

3/E Treu is an interesting person - he knows that they know, that he knows, that the accident did not develop as he has testified. Treu also knows who told him to change the story - it was probably the Estonian investigator captain Enn Neidre, after the visit of the prime ministers? Treu's time for the listing was changed then - AE has kindly pointed this out **2.1**. In Treu's latest testimony (act D24) allegedly made at 10.00 hrs on 29 September it is clear that all times have been delayed 15-16 minutes. As an example Treu states that at about 01.30 hrs the list was about 40-45 degrees and the main engines had stopped. And Treu had still no intent to abandon the control room.

In this second testimony (act D24) - which must have been manipulated in many ways, Treu states that

> *'Sillaste ... he had come down at about the time the problems started'.*

Sillaste had come down already at 00.30 hrs, **1.1**,**1.3** and **1.10**, to fix the vacuum **sewage system**. Was it then that the problems started? What problems? Finally Treu stated that he took

> *'the engine staff's own staircase'*

to get out, when the listing was almost 90 degrees **1.48**. **How was it possible?** How can you run seven floors up - totally about 20 meters - when the list is 90 degrees? It is impossible! But later the Germans (sic) have provided 'evidence' for this fabrication - a vertical, 20 meters long, narrow, emergency exit trunk should have existed (sic) between decks 1 and 9, even if it were not shown on any drawings. Evidently all the fabricated events in Treu's second testimony were delayed at least 15 minutes, and it is on this, and only this, testimony that the Final Report bases the time for the sudden listing. And what happened *before* the listing occurred - Treu says nothing - all was normal.

WHO ASKED TREU TO CHANGE THE TIME?

When we know that, we know who made up the story about the water on the car deck already on 28 September, before the majority of Commission members had arrived at Åbo/Turku and after the first questioning by the Finnish police of Treu. The protocol of the second questioning of Treu by the Finnish police is so confusing, so you wonder, if the questioning actually took place at all. It may be that the second testimony is totally false. Because why would the Finnish police question Treu twice, first on 28 September and then on 29 September, ask the same questions and accept different answers? It is something to investigate. Copies of the police records are at the Swedish Accident Investigation Board. Treu is alive in Estonia.

The three prime ministers were at Åbo/Turku already in the afternoon, but Forssberg, Stenström and Sten Anderson didn't arrive at Åbo until late evening on 28 September (page 33 in (25)).

It means that the scenario about water on the car deck was *not* made up by the Commission, but by persons in place *before* the Commission arrived, at about the same time captain Avo Piht disappeared between Utö and Åbo/Turku and the three persons he probably shared life raft with disappeared from the 'Mariella' **1.41**. Lembit

Leiger was recovering at the Huddinge hospital but was kept locked up by the police. When he started to make noise, he also disappeared.

THE VISOR STORY WAS MADE UP BY A THIRD PARTY

The conclusion of this author is that neither the crew nor the Commission made up the story about the visor but that somebody else - probably with assistance of captain Enn Neidre **1.6** first told Treu and then Linde what to say. It was difficult, so their stories did not tally. They also did not tell the full, new story to Sillaste, who told the media and the Finnish and Estonian police that *the bilge pumps* were running and that the ship was leaking **1.3**. The Commission was then told only to confirm the scenario with a faulty visor and water on the car deck with strong support of the Swedish prime minister. Early the Swedish *'expert'* Hans Wermelin had told media that the visor was lost and that ships sink without visor. They discovered however that Linde had told the media that he was on the car deck some time (20 or 5 minutes) before 01.00 hrs, when all was OK, so they had to change the time of the listing to 01.15 hrs to give time for all false events to take place, even if Treu had already confirmed the time 01.00 hrs of the listing, when he was questioned the first time. So Treu was questioned again and confirmed the time 01.15 hrs for the listing. When later Sillaste started talking about bilge pumps, the Commission censored that statement completely **1.3** in the Final Report (5). The Commission suggested that Sillaste meant that pumps were started to pump the car deck (!) empty, but the car deck was 2,5 meters above the waterline inside the *superstructure* and you did not have any pumps in the *superstructure*! Bilge pumps evidently pump from the bilges of the hull below deck 0.

WHO HAD REASON TO TOTALLY MANIPULATE THE COURSE OF EVENTS ALREADY ON THE 28TH?

The three prime ministers? They had officially nothing to do with the matter. Officially they knew nothing? But they were there at Turku and spread the story about the visor!

And why was it necessary to blame the whole accident on the visor?

Why not accept that the ship had sunk due to leakage. It would have been easier to falsify a story based on that (correct) assumption. But for unknown reasons somebody decided (captain Enn Neidre naturally knows who) already on 28 September (a) to blame everything on the visor and (b) to change the time for the listing to protect Linde. The Commission was then presented the task to sort out the *'details'* with help of its *'experts'*. To verify the developments Enn Neidre, a middle manager in the ship owning company, was manipulated into the Commission **1.6** to investigate the accident, i.e. to ensure that the accident was not investigated properly. Neidre could control the crew and Neidre succeeded to convince the crew to produce false statements. Captain Piht and chief engineer Leiger had to disappear.

SUPPORTERS AND CONSPIRATORS OF THE FALSE CAUSE OF ACCIDENT

The Swedish NMA observer Sten Anderson supported the false cause **1.4** in the media with so much disinformation, so that safety director Bengt-Erik Stenmark later (February 1995) had to resign from his position **1.37**. The Swedish NMA had a very strong reason to support the false cause to hide, e.g. that the 'Estonia' lacked correct life saving equipment and that it was impossible for *all* onboard to abandon the ship under *any* circumstances. It is very probable that both Sten Anderson and Bengt-Erik Stenmark know what actually happened.

The author has a strong feeling that the Commission was ordered, late on 28 or early 29 September that the cause of accident should be the lost visor and water on the car deck and that the Commission should only announce and investigate that cause. Who gave the order to the Commission is evidently not yet clear. It was probably Swedish Prime Minister Carl Bildt. The Commission (Forssberg) then only demanded that the investigation should be secret and the demand was met. Who decided that? Did anybody ask why all this was necessary? Didn't anybody wonder if a crime had caused the accident?

Somebody should ask Judge Olof Forssberg in the Svea Hovrätt appeal court about it.

Anyway - the result can be studied in this book. The Commission met on 29 (30?) **1.3** September but it did not discuss the cause of accident - it was already decided. The full Commission was probably not aware of the fact that captain Piht and chief engineer Leiger had 'disappeared'. Then the Commission shamelessly announced the course of events and the cause of accident on 4 October **1.4** as ordered by respective governments. But there were immediate problems. The Finns had probably found the visor at the wreck and Lehtola had to announce the false wreck position, **1.14** and **4.3**, so that the visor could be removed and salvaged at the wreck (by the Swedes). Finland first announced that the visor had not been found, the search took a very long time, and in the meantime Swedish divers apparently detached the visor from the bow assisted by the Swedish and Finnish navies. This took probably place 30 September - 9 October 1994. With the visor off the bow, then the Commission could reconfirm the cause of accident on 17 October **1.11**, even if there were confusion **1.13**. All the members of the Commission were however at this time totally compromised - they could not withdraw. They had become co-conspirators to hide the Truth! Co-conspirators to hide a crime.

CALL THE NAVY!

The situation must have been so critical that the Commission demanded and got help from the Swedish Navy to remove the visor from the wreck 30 September - 9 October 1994. The persons controlling the Commission had strong powers.

That Swedish divers (from the Royal navy, the Räddningsverket (Rescue Board) and private companies **1.3**) have actually dived on the 'Estonia' was confirmed in the Swedish daily Expressen on 22 August 2000, page 13 (by Fredrik Engström) The article was later same day taken out but no explanation or correction was given:

"Håkan Bergmark, 41, from Stockholm was one of the first who dived down to the 'Estonia'. He says that he found a big hole in the side of the ship. He did not give it great attention then. "It was not my job to find the cause of the accident. But when the Final Report of the Commission was issued several years later I was very surprised", Bergmark says, who today wants to forget everything about the 'Estonia' . Two of the other four divers who were down together with Bergmark do not want to comment upon the 'Estonia' at all ".

Figure 4.4.1 – The big hole in 'Estonia'

The diving of Bergmark and his four - actually 14 - colleagues was probably under the leadership of Mr Gustav Hanuliak and has never been mentioned or reported by the Commission. The Commission states that only one diving expedition took place - in December 1994 - with American and British divers.

Who ordered the Swedish divers to visit the 'Estonia' and what did they do? What caused the large hole in the starboard front bulkhead **3.10**, which the Commission successfully tried to hide until it was found by Gregg Bemis' divers? Evidently the Swedes dived to detach the visor from the wreck. Evidently the Swedes used explosives to remove the visor under water between 2 and 9 October 1994.

THE VISOR WAS FOUND AND SALVAGED

And then the visor was allegedly found on 18 October by a Finnish ship the 'Tursas' - with *Swedish* navy officers on board - without a real search (the 'Tursas' was in port the day before and went straight to the visor!) a mile west of the 'wreck', i.e. we do not know, if it was relative the false or the real (then unknown) position, where the visor was found. So the actual position (lat./long.) of the visor was not announced! Probably the 'Tursas' went to the wreck and filmed the visor on the bottom below the bow of the ship without filming the wreck!

And then the visor was salvaged by the *Swedish* navy in the middle of November1994 without the actual position being given. The obvious question is - *where* did the salvage of the visor actually take place?

It seems that the Swedish and Finnish vessels of the wreck filming and visor salvage operations were told not to tell their positions to the media or the public. It enabled Lehtola to separate the visor from the wreck on the paper. Iivonen arranged that the Utö plot disappeared.

When these primary manipulations had been done, the Commission could present its false course of events. And as it apparently was accepted by the public, the Commission decided to state that the 'Estonia' was in perfect condition with correct lifesaving equipment, emergency plans and certificates, in spite of it being very easy to show the opposite **1.33**. One condition was of course that the investigation was secret and all the evidence confidential - no insight for the public. If the real facts - equipment, plans, certificates, etc. - had been published in 1994 anybody would have understood that the Commission's statements were false! The Baltic ferry industry gladly played along in this stupid game!

What does the Commission and the Baltic ferry industry say about the above?

SILENT INVESTIGATORS

The Commission and the Baltic ferry industry do not say anything. Forssberg refuses to speak - he is today a fairly incompetent judge at the Svea Hovrätt appeal court at Stockholm (according to certain staff) which is conveniently located in the same building as the SPF **1.49**. *In a letter April 1997 to the author he stated that he never was going to comment about the accident investigation.* It is highly probable that Forssberg was ordered only to investigate (lie about) the design fault of the visor that fell off, and that there was water on the car deck. Forssberg had previously made and signed many doubtful accident investigation reports. Stenström was ordered the same thing. Stenström probably did not fully believe in it, but agreed. The author knew Stenström before the accident. He appeared to be a qualified naval architect representing the International Chamber of Shipping at the IMO. But when the author met Stenström on Monday 31 October 1994 at the IMO and proposed that the Commission should check the stability - that the 'Estonia' should have capsized and floated upside down with water on the car deck **1.9** Stenström went pale and was never more himself, when the author met him later 1995/6. Stenström must have been quite worried at this time (October 1994). He knew that the visor was still at the wreck - it had just been removed under water and fallen to the bottom below the bow - and that it must be *'salvaged'* in a secret operation, so that later a false visor position 1 560 meters west of the wreck could be announced. Sten Anderson must have known what was required, as well as his boss, safety director Johan Franson, who manipulated the diving **1.16** - protect the Swedish NMA! But the other Swedes in the Commission, Rosengren, Huss, Noord, Schager and Eksborg, might not have known what orders had been given at the beginning, i.e. 1994, but later, 1996/7, they must have known or suspected that the whole investigation was not correct. But they never protested. The resignation of Schager in September 1997 was for show only when he had been paid >SEK 3 millions as a consultant.

In Finland Kari Lehtola, Admiral Heimo Iivonen and Tuomo Karppinen must have been fully aware that the official cause of accident was false - Karppinen and Iivonen had seen the visor on 2 October and made the Utö plot disappear and Lehtola announced the false wreck position, **1.14** and **4.3**, and probably a false visor position. Iivonen falsified the information about the rescue operation **1.20**.

The Finnish expert Klaus Rahka does not seem to understand that something was wrong with the investigation. He worked as a slave to find information and statements confirming the official cause that wave loads should have ripped off the visor - a useful idiot. The only proper meeting protocol during the investigation was written by him. That the content was rubbish was one thing - it looked proper. The Swedish expert Michael Huss must have known from 1995 on that all was wrong, as his reports were falsified by the Commission **1.9**. And NMA safety director Fransson, who directed the diving **1.16** and wrote all reports of consequences and analysis to the Swedish government, knows full well that all is a big bluff. He was rewarded by the appointment to safety director of the NMA. In April 2000 Franson appointed Huss as director of the Technical department of the NMA.

Today the complete top management of the Swedish NMA and Safety Inspection are active participants of the 'Estonia' cover-up*.

And the Baltic ferry industry kept silent!

It is quite unbelievable that so many persons became party of the falsification of History and since have not leaked about it or told the Truth. But today they seem to believe in their own lies - otherwise they cannot sleep?

A natural question - did the Commission on 28/29 September know, what really happened?

Or didn't they give a damn and just reported what they were told?

Was the Commission itself misled?

*Did the Commission know, e.g. that the ship sprang a leak at **0040-00.50-00.58** hrs and that an alarm raised the crew (but not the passengers)?*

Did the Commission know that the bilge pumps had been started and that the crew thought that they had the situation under control?

Can it be that the crew was informed about the leakage long before the sudden listing and that many crewmembers mustered on the bridge?

Can it be correct that at least one lifeboat - no. 1 starboard just outside the bridge - was made ready - if?

It seems that the crew assumed that the situation was under control - no alarm was given to the passengers. And then came the listing very suddenly! It could very well have been caused by somebody on the bridge opening the watertight doors, water spread with two bangs, the stability was lost, the vessel heeled to starboard - and panic developed. We know what happened in e.g. the Admiral's bar. The same thing must have happened on the bridge. The crew on the bridge was thrown down into the lee, but they might have got out and managed to get to the no. 1 starboard lifeboat, which was launched - and many crew members survived that way. The un-dead Estonians **1.46**? And they were rescued the same day and told what had happened. And the Commission did not want to announce that? They covered it up.

But why couldn't the Commission announce that a stupid error of a crewmember on the bridge caused the accident?

Then it would not have been necessary to hide the survivors, who knew what had happened. Maybe the Commission thought that they could produce a false Final Report and that the accident would soon be forgotten, and that the hidden survivors could go home later without causing too many questions. The answers to many 'Estonia' riddles may be found in Estonia proper.

In Estonia investigators of the Commission resigned or were dismissed en masse to cover up all traces of what had happened. The poor Estonian investigators with Andi Meister and Captain Enn Neidre in the lead made what they were told as faithful party workers in the former Soviet republic. Typically the head of the Estonian secret police, Priit Männik, entered the Commission for 15 months to ensure that the testimonies '*fitted*' and then he conveniently resigned two months prior to publication of the Final report **1.20** so that another poor Estonian professor must sign the Final report. All protests from powerless relatives in despair and from serious experts were ignored.

· The result is described in this book: a one-sided, incomplete, totally false and improbable Final Report, a dive expedition which should only confirm the false course of events, where the divers of Franson 1.16 broke into parts of the 'Estonia' searching for luggage, which was never informed to the public - an Underwatergate - and a suppression of all facts and information contradicting the suggested causes of**

accident and the condition of the ship. The international work for safety at sea was sabotaged for a long time into the future. The responsibility for the cover-up and the falsification of History remains with the president Lennart Meri of the republic of Estonia and the Estonian, Finnish and Swedish governments and their maritime administrations and boards of accident investigation. They are the true authors of this Disaster Investigation.

The discovery by Mr Gregg Bemis of dead bodies outside the wreck in August 2000 **2.24** may be another explanation of the questions above. How could these bodies be found *outside* the wreck six years after the accident? Why hadn't they floated to the surface and ashore - see the reflexions of the author in **3.22**. Is it possible that bodies were salvaged and later sunk at the wreck? And that it is *one* fact to hide? Among all the other lies. To cover up a crime without any identified bodies.

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[*] **It is quite interesting to note the following staff changes in the Swedish National Maritime Administration 2001 since the 'Estonia' accident 1994:**
1. Mr. Jan-Olof Selén is Director General 2001. In 1994 he was legal counsel at the Ministry of Transportation to Minister Ines Uusmann who decided not to or prevented the salvage of dead bodies. He is not a seafarer.
2. Mr. Johan Franson is Director of Maritime Safety. In 1994 he was legal counsel of the Swedish NMA and led the dive investigation of the wreck and presented several misleading information reports to the public about the 'Estonia'. He is not a seafarer.
3. Mr. Ulf Hobro is Chief Ship Inspector at Stockholm. In 1994 he was technical and safety superintendent of the Swedish owners of the 'Estonia' - N&T - and responsible for the safety of the 'Estonia'.
4. Mr. Åke Sjöblom is Chief Ship Inspector at Gothenburg. In 1994 he did the last safety control of the 'Estonia' at Tallinn 8 hours prior to the accident and found several defects that were not mentioned in the Final Report.
5. Mr. Per Nordström is deputy Director of Maritime Safety. In 1994 he was technical director of the Swedish Ship Owners Association of which the owner N&T of the 'Estonia' was leading member.
6. Dr. Michael Huss, PhD, is April 2001 appointed Chief - Ship Technical Division at the NMA. In 1994-1997 he produced a number of falsified studies to prove the official sequence of events and the sinking.
7. Capt. Sten Anderson is still Chief - Accident Investigations. In 1994-1997 he was the Swedish NMA observer in the international investigation.
The seven top members of the Swedish NMA have all contributed to the misleading 'Estonia' accident investigation. The official position of the Swedish NMA is that the Final Report is complete and correct and that this web page does not include any new information.

[**] Watergate was the given name of the famous attempt 1971-1973 by US president Nixon to cover-up the revelations of his staff breaking into the head quarters of the Democratic party at the 'Watergate' building. Nixon ordered his staff to lie about what had happened and to pay off the burglars. False information was fed to the media. The Nixon staff also lied to various political commissions appointed to investigate the matter. When one Nixon staff (Dean) decided to tell the truth, the cover-up collapsed like a house of cards. Another staff member, still un-named, probably leaked to the media earlier and guided the media to reveal the scandal. Nixon fired most of his staff in the process but had to resign as president later. The responsible staff - mainly lawyers -were sent to jail. Nixon was given immunity against prosecution by his successor (Ford).

'Even if the government has made its decision (not to salvage the 'Estonia'), *much work remains to clarify the causes of the accident. The safety at sea must be improved ... '*

Swedish Prime Minister Ingvar Carlsson (s) at the Parliament 15 December 1994

'Unterdrückung der Öffentlichkeit stellt eines der konstitutiven Kennzeichen der Diktatur dar. Dagegen bedeutet Information über die eigene Angelegenheiten die erste und wichtigste Voraussetzung für ein funktionierendes Gemeinwesen'. (or in English - *'**the suppression of insight into public affairs is one of the basic signs of a dictatorship.** On the other hand information about your own concerns is the first and most important condition of a correctly working society').*

Stefan Wolle in 'Die heile Welt der Diktatur' ('The holy World of a Dictatorship') (ISBN 3-612-26650-0)

4.5 EPILOGUE. WHO WROTE THE FINAL REPORT?

The 'Estonia' accident investigation is the biggest fraud in maritime history.

All started with a lie on 28 September 1994 - the bow visor at the forward end of the superstructure - to hide a crime. All essential official information that followed was pure disinformation. The biggest maritime fraud in History started. What had actually happened - leakage of the hull below the waterline for unknown reasons - could officially not have happened. Something else should or could have happened. The guilty persons and those who knew were in a strong position 1994. The public was then only told that the 'Estonia' had capsized and sunk and that more than 850 persons had died but not why. By quickly - almost the same day - shamelessly blaming the accident on a *'design fault'* of the bow visor in the superstructure, the persons in control - the conspirators - managed to mislead the public and survivors and relatives of victim and seamen and safety at sea experts. The persons in control then appointed a group of investigators in October 1994 to confirm the alleged cause of accident - the *'design fault'*. The investigators did what they were told during three years and two months of secret meetings - one lie became a flood of lies. A united and unanimous Commission presented its Final Report in December 1997 but it was not the original Commission.

Many of the original Commission members had resigned or died.

The *'design fault'* of the visor of the superstructure was the proximate cause of the accident - the ship, the *hull* and the crew were otherwise perfect. You should blame the yard that had manufactured the lock and the classification society that should have checked it. Today nobody can have any confidence in these investigators.

MANY ORIGINAL INVESTIGATORS RETIRED

In December 1997 only five of the original investigators **1.5** remained - the Estonian Laur, the three Finns and the Swede Rosengren.

Do you ask these investigators to explain all ambiguities in the Final Report apart from the *'unanimous'* conclusions, the only answer you get, if you get a reply at all, is that they no longer work with the investigation, all is explained, *or*, that they only worked with other aspects of the accident and cannot explain the unclear parts, but in all event, all is correct because the Commission was unanimous and the person asking must be wrong. If you continue to ask they accuse you to be unintelligent, unscientific, unreasonable, conspiratorial, trying to undermine democratic governments, etc. What a circus.

But it is rather clever - and stupid. The original objective of the Commission was throughout only to investigate a *'design fault'* and that you could not criticise the crew and that the ship was in perfect condition. Accordingly the Commission had to simply manipulate all testimonies and statements of facts that contradicted the original theory (read lye). It was quite easy, as long as the investigation and the evidence material were secret. The public had no chance to query the material. The manipulated course of events of Rosengren and Huss based on

false stability calculations and water inflows, **1.9**, **1.44** and **Appendix 4**, are clear examples of *shameless* manipulations.

Huss became technical director at the Swedish Maritime Administration as a result of the falsifications.

NO KNOWLEDGE ABOUT STABILITY

Figure 4.5.1 Result of capsize! Vessel floats upside down!

Nobody in the Commission had correct knowledge about ship stability with water on the car deck **2.16** inside the *superstructure* on top of a watertight *hull*- and that ships like the 'Estonia' capsize and float upside down on the *hull* with 1 500-2.000 tons of water on top of the superstructure car deck. Therefore they manipulated the time of the water inflow (2.000 tons) - 6 minutes, 28 minutes, 1,5 minute, 8 minutes - first through a partly open ramp and later through a fully open ramp, without showing that the ramp had been open. The Commission was ignorant of the fact that the physical relationship between the weight of the water on the car deck in the *superstructure* and the angle of heel could not be manipulated.

Then they decided that the 'Estonia' *slowly* sank due to water in the *deck house* (!) - in spite of the fact that the 'Estonia' should have floated upside down on the intact watertight subdivision in the *hull* below the car deck/*superstructure,* when the deck house was flooded. Totally false stability calculations were produced - and published **3.12**!

The easiest way to reveal the falsifications is to ask international recognised stability experts to verify the stability statements of the Commission. It is interesting to note that the German 'experts' carefully avoided to verifying the stability calculations of the Commission.

EARLY FALSIFICATIONS

One condition of the big manipulation was the falsifications and editions of the video films and the dive examinations of the wreck by, i.a. Tuomo Karppinen and Johan Franson, **1.16** and **1.43**. That the visor very likely was still attached to the *superstructure* of the wreck on 2 October 1994 and then was removed by explosives by Swedish navy divers, resulting in a big hole in the starboard front bulkhead **3.10**, could evidently not be announced in 1994. The films made on 2 and 9 October of the wreck and in the middle of November of the visor and at the dive expedition 2-4 December 1994 had to be censored and edited. The salvage of the visor below the wreck had to be done by a secret Swedish navy operation instead of by civilian experts after a public request for their services. Then it was easy to announce the alleged, but false, visor position 1 560 meters west of the wreck.

It should be very easy to verify that the original video films of the wreck have been manipulated later.

THE DEATHS OF KEY EXPERTS

Börje Stenström, the Swedish member of the Commission, with an M.Sc. from the Royal Institute of Technology at Stockholm followed by 12 years service with the Swedish Navy Engineering Corps, knew that he misled the public - he knew for sure, based on the findings of the Germans, that the condition and maintenance of the 'Estonia' were bad, which contributed to the accident, and he knew where the visor had been found. He was also aware of the statements by the author about lifesaving equipment and stability. Stenström died 1997 by a cancer during the investigation.

Captain **Simo Arnio**, the Finnish expert, apparently also knew that the visor was found at the wreck and that false information was fed to the media. He also died during the investigation1996.

The Swedish vice prime minister during the investigation, **Odd Engström**, must also have been aware that the investigation was manipulated. He too died during the investigation, after having resigned from the government **1.35**.

RESIGNATIONS

Olof Forssberg finalized the investigation in March 1997 and allowed himself to be dismissed from the Commission by the Swedish government (a nice way of distancing himself from the lies), so that he did not have to sign the Final Report (5). **Ann-Louise Eksborg** succeeded Forssberg and she signed the Final Report without hesitation in December 1997. She then became the spokeswoman of the Swedish delegation - a few months before she had never dealt with the 'Estonia' - suddenly she was an expert on all matters about the 'Estonia'. When Ms Eksborg is in doubt she asks Dr. Huss for advice, who repeatedly states that ferries like the 'Estonia' always sink slowly due to water on the car deck in the *superstructure*, etc, while they are stable, etc, so they do not capsize, etc, as they float on the *deck house*, etc, but even if they float on the *deck house*, they sink. How the watertight *hull* is filled with water, neither Eksborg nor Huss can explain. Two months earlier the expert **Bengt Schager** had resigned from the Commission - in the Swedish local daily Hallands Tidning he accused the Estonians for lying, footnote in **1.20,** a weak attempt to protect himself. Schager had previously ensured that all testimonies fitted the scenario of the Commission. Why all these persons were prepared to participate in the falsification of the Final Report is a mystery. Or is it? They were very handsomely paid for the job - Schager was, e.g. paid >SEK 4.000.000:-. Franson is paid SEK 800.000:- per year to ensure that the Swedish NMA staffs keep quiet.

NO NEW CIRCUMSTANCES

In spite of all these resignations, deaths and criticisms of the Final Report and money being spent generously the Swedish government (Mona Sahlin) has repeatedly 1999 **Appendix 3**, 2000 and 2001 stated that *no* new facts have been presented, which would require a new investigation. In a **letter** to the author 19 April 2001 Ms Sahlin, after the information in this book had been reviewed by **seven** Swedish authorities, schools or companies, states:

> *"The joint investigation commission of Estonia, Finland and Sweden handed over its Final Report in December 1997. After that **no** new circumstances have been presented, which show that the course of events of the accident in any essential manners differs from that described in the Final Report. Therefore there is **not any reason** to take any steps with the aim of a new accident investigation".*

Four days later the official press release to the same effect was issued, **front page** of this book. How long the Swedish government can maintain this ultimate lie? Why is Mona Sahlin 2001 protecting an accident investigation 1994-1997 and a report 1997, where all essential statements and information are false? The members of the Commission were informed about the essential facts in this book already 1995/6. The author talked to Ann-Louise Eksborg on 22 February 2000 at Stockholm: she informed that (i) that the investigation had been done properly as per the requirements, and (ii) that after the investigation is finished neither she nor the Swedish Board of Accident Investigation, SHK, has any duty to explain any ambiguities in the investigation and (iii) that the IMO resolution A.849(20) **foreword** was not applicable and cannot be applied, even if the United Kingdom re-opens more than 20 years old investigations as per the law. A Swedish bureaucrat has talked. She is evidently breaking Swedish law (1990:712) but nobody cares.

ESTONIAN DOUBTS SEPTEMBER 2000 - FINAL REPORT WRITTEN FOR EXPERTS

> *"Some 80 percent of Estonians polled said they don't believe official conclusions about why the ferry 'Estonia' sank six years ago this month in one of Europe's worst maritime disasters, local media reported on September 2. Investigators said the Sept. 28, 1994 tragedy, which killed 852, occurred when fierce waves broke badly made locks*

in the bow door, causing it to fall off and for water to flood the ship. They also said the crew reacted too slowly. Critics said the investigation was sloppy and conspiracy theories, including that a bomb blast may have crippled the vessel, have abounded. Some relatives of the mostly Swedish and Estonian victims have called for a new investigation. Of 400 Estonians questioned by ES Market Research, 78 percent said they didn't accept the 1997 findings of official Estonian, Finnish and Swedish investigators, reported the Eesti Paevaleht daily, which ordered the survey. Sixty-seven percent also said they backed last week's controversial dive of American Gregg Bemis to the Baltic Sea site of the shipwrecked ferry, which area governments opposed as a desecration of an officially declared gravesite. The poll, which had a margin of error of 4 percent, was conducted just before the dives got underway. Bemis said on September 1 that he may have found a previously undiscovered hole in the ship's hull, though he said it required further study.

In an editorial, Eesti Paevaleht said Swedes were more likely to believe the official conclusion, though it didn't cite poll results. It said Estonia's past under Soviet totalitarian rule made it more sceptical of official findings. Jaan Metsaveer[+], one of the investigators, adamantly defended the official explanation, arguing that laymen sought simplistic answers because they couldn't understand the technical accounts in the commission's lengthy final report. "It was a document that was written for experts, not for the general public," he was quoted as saying. He said some relatively minor details about the accident remain unknown, but that the general conclusions still stood. Estonia's government also dismissed suggestions that the dives led by Gregg Bemis last week may have made significant enough discoveries to justify a new investigation. "From the government's point of view, we've seen nothing new," government spokesman Priit Poiklik said. "We don't believe a new investigation is warranted.""(Baltic News Services September 2000)

A SWEDISH QUESTION?

The mystery around the 'Estonia' is perhaps a wholly Swedish question? Say that mess was initiated by the so called 'non-compliance' agency (the Swedish NMA!), which with four persons at Tallinn in January 1993 and later at four or five Port State Controls at Stockholm 1993/94 approved the ship 'Estonia' for passenger traffic on Sweden with a great number of unreported safety items of non compliance, i.e. no modifications were required by safety director Stenmark. One reason was that the person responsible for maintenance and safety on board was Ulf Hobro, **1.43**, **1.46** and **Appendix 7**, a former employee at the NMA, and that the NMA wanted to *'help'* him. Hobro had apparently been told to save money for maintenance and upgrading, i.a. the crew had to do the jobs previously done by yards and no new equipment could be bought. It meant that the Bureau Veritas - ship surveyors Anders Wirstam and his boss Hans Olsson (both Swedes with good connections to the Swedish NMA) - on behalf of the Estonian administration did not ask for any improvements of the safety at 1993. It was otherwise very simple to bring the 'Estonia' in order so that she complied with the SOLAS requirement (life rafts under davits, closed watertight doors, proper life jackets, all instructions in the Estonian language, permanently welding the swimming pool in the double bottom watertight, etc) making the 'Estonia' unsinkable and very safe. Most of the faults/defects of the 'Estonia' were of course old faults/defects introduced, when the ship was 12 years under Finnish flag trading on Sweden - and which then had gone un-detected (sic). Bad maintenance then completed the disaster.

The two Swedish ship inspectors from Malmö, who made the last inspection just eight hours before the accident, were not informed about this silent agreement and/or the old defects, so they made a correct job the day before the accident (or tried to?) - later totally censored by the Commission. The Independent **Fact Group** has described it in detail (31). The Commission falsified a Port State Control inspection report of 27 September 1994 to the effect that the ship had no defects, while in reality the PSC report listed numerous defects. Later the Commission suggested that the PSC inspection was an exercise - of no importance. But it is a fact that the PSC report was falsified.

WHO INVENTED THE ORIGINAL FALSE STORY?

It can be that it was Sten Anderson **1.5** of the NMA with the help of Hans Wermelin who invented the story about the visor and water on the car deck in the *superstructure* to cover up the sins of his 'non-compliance' agency 1980-1994 - the lack of lifesaving equipment in the deckhouse, the defective watertight doors, etc. **1.33**, **1.34** and **1.23**. Then the divers of Johan Franson **1.16** could confirm that the ramp of the *superstructure*

had been pulled fully open by the visor, etc. Forssberg and Stenström and the Swedish navy had already removed the visor (but failed to open the ramp). In the early confusion after the accident these person forgot that ferries capsize and floats upside down with water inside the superstructure.

What caused the leakage of the hull is still not known. A simple accident? Probably the pool compartment and the sewage tanks were extremely rusty and the stabilizer installation was faulty. The leakage started there! Then it spread through open watertight doors. The crew messed things up.

The Germans have described that the crew had big problems with both the visor and the ramp and that the crew tried to secure them at sea - the ramp was not locked in port and held back by mooring ropes and the visor was not properly secured (probably damaged before the accident). But then maybe the foundation of the starboard stabilizer fin broke with a big bang, when it was activated at 00.15-00.30 hrs. There are a few testimonies to the effect that the stabilizers were activated at that time and that the ship changed course at the same time (towards Söderarm! but it could as well be Sandhamn - according to the Fact Group (31)). We know that Sillaste was called up at 00.30 hrs about *'problems'* (he says it was the vacuum toilet system, but who knows).

Let's assume that the proximate cause of accident was a leakage in the hull - water flowed in, one compartment filled up with water and started to spill up 3 meters higher up on deck 1. Watch man Linde may have raised the crew alarm at 00.45 hrs and the Master went to the bridge **3.18**. Attempts were made to isolate the leakage, but later watertight doors were opened (by mistake?), the water now spread, first into the generator room, then the engine room and there was a sudden list. The two bangs just before the listing were the result of either the opening of the watertight doors or something done to stop the water inflow - or it was just rusty structure breaking. Often there is a combination of two or more different events that cause a disaster, in this case severe leakage (the proximate cause) and badly arranged watertight doors and an incompetent crew and a generally substandard and unseaworthy ship (consequent causes).

It seems that the crew was already occupied with another problem - the lose visor and the leaking ramp - when the ship sprang a leak.

All this might be guess work of the author. If the ship had started to leak at 00.30 hrs, you would have expected a normal crew to steer against shallow waters - to run the ship aground, if necessary. It is not a stupid idea to run a ship aground if it leaks - it will not sink. But in this case it seems that the crew on the 'Estonia' actually steered towards deeper waters - south - where the ship sank and at least 852 persons drowned.

THE PLOT MUST DISAPPEAR

The reason why the Utö-plot disappeared is maybe that it showed that the 'Estonia' changed course towards Sandhamn at 00.00 - 00.30 hrs and that the Commission could not explain this very strange course during the last 30-60 minutes. Or the ship actually changed course towards Sandhamn at 00.00 hrs and then at 00.45 changed course again, towards shallow waters. We do not know, as the famous Utö plot has disappeared. That plot evidently showed something else: a plot showing that a vessel slows down and/or changes course *before* it starts to list (and sink) is an indication that something was wrong at that early time. And this the Commission would not admit. The plot had to disappear.

It is of course possible that the 'Estonia' collided with a submerged, floating object - many survivors have testified about noise from a collision - and that the outer bottom was ripped open followed by the inner bottom splitting open - a severe hull leakage. The official video films of the underwater hull has been edited (and cut), so that it is impossible to identify any locations on the films. The private divers 2000 and 2001 have reportedly made a casual inspection of the underwater hull and have not found any hull damage. The hull damage may not be easy to find - a long, narrow fracture in the hull plate. A 0,2-0,4 m² large hull opening, when one plate is elastically pushed in by water pressure, was only required to sink the ship. Later it can be difficult to find the damage, when the plate is back in position.

NO SAFETY PLANS WORKED

Survivors have testified that the ship suddenly listed >30 degrees to starboard. Then no emergency safety plans worked onboard. All became a big mess. Later, after the accident, the crew was simply requested to lye by Sten Anderson and with the assistance of Enn Neidre, who both were at Åbo/Turku, in order to hide the errors of the Swedish NMA - and the poor crew.

The Swedish NMA had permitted the 'Estonia' to sail with open watertight doors and without correct lifesaving equipment since 1980 and there was not a chance to evacuate all onboard in a dry and safe condition. **"Please, jump into the water in case of an accident"** seems to have been the standing order **1.34** since 1980. The order to blame the accident on the visor thus did not come from Estonia but Sweden, and it made it easy for the Estonian crew to cooperate. Sweden did not want that the real cause of accident became known. The Swedes did not speak Estonian, so the Estonian captain Enn Neidre was asked to convey to the crew what to say at the questionings. The Swedish government assisted by stopping the Stolt-Comex offer to salvage all victims. Had all victims been salvaged, it would have later been impossible to refuse the request for a complete examination of the wreck and the hull.

Five Swedish divers visited the wreck soon after the accident, probably under the leadership of Mr Gustav Hanuliak. Who ordered the expedition(s) is not known, nor what they actually did down at the wreck. It is highly likely that they removed the visor using small explosive devices (anti-mine explosives). The divers were apparently trained to remove and destroy mines under water. But the visor hinges were very strong so you had to pull off the visor so that the hinges were torn apart.

Then - much later in 1998 - stupid rumours started to be spread (by the Germans) - the visor and ramp in the superstructure had been damaged by explosives *before* the sinking, when the ship was still afloat! Evidently such explosions would never have caused the ship to sink, but the rumours were actually good for the Swedish NMA and the Commission - to divert the attention away from the errors of the NMA and the manipulations of the Commission. And the persons stating such things could be written off as conspiracy freaks! So the Germans never accused the whole Commission of incompetence 3.18.

CUI BONO?

Who benefits of the cover up? The answer to the 'Estonia' riddle may be found in Sweden! But the Swedes will not talk. The government - Mona Sahlin - has decided 1999, 2000, 2001 and 2002 that *"there is **not any reason** to take any steps with the aim of a new accident investigation".* Ms Sahlin is evidently only protecting her friends at the Swedish NMA - Selén, Franson, Huss, etc. and of course the real culprits.

In Estonia the chairman of the Commission, transport minister Andi Meister resigned in 1996 and his colleagues captain Enn Neidre and secret police chief Priit Männik were kicked out of the Commission by the Estonian government or the president. In Estonia only the old and retired captain Uno Laur remained in the Commission from start to end, at the end as chairman and first signatory of the Final Report in December 1997. As a reward for his shameful work he was given a medal by the Estonian president Lennart Meri in February 1999. Laur know naturally the full truth of the Estonia accident - and he got a medal not to tell it. And he is an old man.

That is typical of dictatorships - suppress the Truth, so that the public does not know what is going on. But there are many young surviving Estonian crewmembers who know what happened. Why they do not talk is easy to explain - they are afraid and have been threatened.

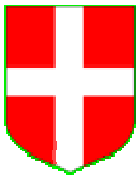
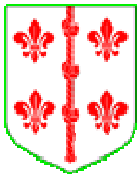
THE ETERNAL SOUND OF THE WAVES

On the first anniversary of the accident 1995 president Lennart Meri had asked his countrymen always to remember

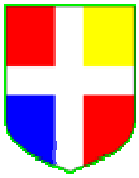
> *"those whose memory always is returned to us by the eternal sound of the waves of the sea".*

Meri also asked that the Estonian people should forgive what the sea had done.

"The sea has treated us badly", (Meri said solemnly), *"but we are a nation of seafarers and we cannot live without the sea. We must be at peace with the sea".*

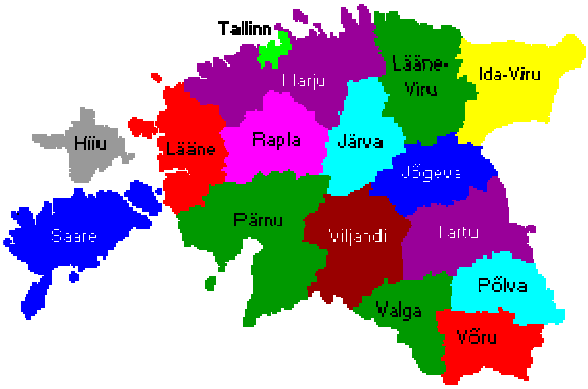



In spite of these words president Meri does not want today that Estonia follows the IMO resolutions to find out why the sea treated the 'Estonia' and Estonia so badly. The other Estonian members of the investigation are shadow figures without talents, which have never officially explained the document they de facto signed. Year 2000 Mart Laar, then 38 years old, was again prime minister, as he was when the accident took place 1994. Mart Laar, the leader of the Pro Patria-party, has also during six years ensured that Estonia does not follow the laws of the United Nations about marine accident investigations. The proposal of captain Erich Moik 1999 (see ▶1.46) about bad maintenance and insurance fraud have not been examined. And captain Moik lost his job at Estline.

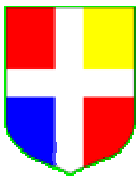



The 'Estonia' accident and the disaster investigation thus took place during the reign of the Estonian president Lennart Meri and he has consistently refused to support a new investigation 1997-2001. The presidency of Meri ends in the autumn 2001 and hopefully his successor might show a greater interest in the Truth and safety at sea and might support the demand for a new investigation.[++] Sometimes Sweden is looked upon as an island - with Kattegatt in the west, the Baltic in the south and east and the Atlantic and the Arctic Ocean in the north and northwest with Norway in between.










Estonia is also looked upon as an island with the Bay of Finland to the north, the Baltic in the west, the Bay of Riga in the south and the lake Peipus in the east. Islanders should be interested in safety at sea. The Estonians know well the seas and lakes around them and have many words for the winds sweeping across these waters and the resulting waves caused by the winds. One of Estonia's greatest cultural personalities, the language researcher Andrus Saareste, has noted over 100 different Estonian words to describe the waves on seas, lakes and water. Why does the Estonian language have so many different words for a wave? To help the poets rime, or to live and survive in Estonia? The words of Lennart Meri about waves and


"those whose memory always is returned to us by the eternal sound of the waves of the sea"

- do not sound true, because the Estonia accident investigation 1994-1997 is a shame for Estonia and Lennart Meri is personally responsible for this. Meri should listen more to the waves from the Baltic, where 852 persons died on the ship of shame, the 'Estonia', 1994. These waves will always reach the shores of Estonia, as long as all new facts and questions about the accident remain unanswered. But Meri's dreams to be remembered as

an Estonian statesman who liberated Estonia from the USSR will go down the drains with such admittance - so he is silent. Tragic!

FINNISH EXCUSES

The Finnish members of the Commission Lehtola, Iivonen and Karppinen stayed on from beginning to end. They steadfastly support the Final Report with any arguments **Foreword**), e.g. accusing the author by name on television to try to overthrow (sic) the Finnish government and similar nonsense. And they have full support of the former Finnish foreign minister and present president - Ms Tarja Halonen - who in February 2000 wrote to the author (30) and stated that the Finnish

> *"government has reviewed the (final) report and considers the result of the investigation of the Commission as reliable. In the recent debate about possible causes for the accident no new facts have been presented changing this opinion. The Finnish government thus sees no reason to take any action to re-open the accident investigation."*

The situation 2001 is thus that the three governments, which in 1994 decided that the Estonia accident should be wholly examined in a secret investigation, today consider that the investigation is final and that all facts have been reviewed and that the rules of the United Nations and the IMO are not applicable (or respective national laws), when new proven facts are presented later. It gives a false signal to the public; it prolongs and makes worse the sufferings of the relatives of the victims and the survivors and it is an insult of Democracy. The work for safety at sea suffers. You cannot develop better safety at sea, unless you know why an accident happened.

GERMAN POLICE INVESTIGATION

The results of the Gregg Bemis' dive expedition in August 2000 **2.24** were announced in Germany in the beginning of November 2000 - parts of the forward superstructure had been subject to explosive damages! The damage - the opening in the front bulkhead - is described in **3.10**. This damage has never been reported, examined and explained by the Commission. It is not mentioned in the Final Report (5). As five German citizens died in the accident the public prosecutor at Hamburg was asked to investigate, if these persons were in fact murdered. The murder investigation is done by Oberstaatsaanwalt Rüdiger Bagger at the Hamburger Staatsanwaltschaft and has number 7101 UJs 33/01 in Sachen 'Estonia'. In 2002 the affair was classified without further investigation.

THE VISOR

It was very simple for the German police to prove the Commission wrong. Study the visor at Södertälje, Sweden. The damages, particularly the scrape marks below the visor arms, clearly show that the visor did not fall off as alleged by the Commission. It is quite easy to see that the visor arm hinges were torn apart under water after the accident. But the Germans did nothing.

SWEDISH PARLIAMENT IS CENSORED

In October 2000 four Swedish Members of Parliament handed in three different motions to the Parliament with the same request - to investigate all new proven facts of the 'Estonia' presented after the publication of the Final Report (5). These motions were supposed to be reviewed by a parliamentary (traffic) committee in February 2001 to be voted upon by the Parliament during the spring 2001. However, very strangely, the motions have been put aside. Another two motions to the same effect were handed in autumn 2001. They have also been put aside. The Swedish Parliament is silenced by manipulations. When the motions were finally heard on 13 December 2001 it was in connection with Swedish transport policy - another manipulation.

The present politicians in power are responsible for the unsatisfactory situation and the shameless falsification of History. In Sweden the government has appointed a number of charlatans in top positions to prevent

studying the new proven facts and to prevent implementing correct safety at sea. It is evidently unacceptable that big *'commissions'* under secrecy negotiate a *'cause of accident'* based on badly manipulated and falsified technical reports, model tests and edited testimonies, to *'suit'* the fantasies of the Commission. It must not be repeated.

The Truth can be painful for the few persons responsible for the accident. There was no reason to ask other persons - in a Commission - to support those responsible persons with a false investigation. Naturally the Truth will be found by a new, independent investigation. It can produce strong feelings among the relatives of the victims and survivors, but reconciliation is possible. The persons that manipulated the investigation did not cause the accident. They were also stupid victims of the accident. The real culprits of the accident are still at large. And insurance underwriters have paid a false claim.

WHO WROTE THE FINAL REPORT?

The Final report (5) was officially agreed on the 20th meeting of the Commission in March 1997 but not published until December 1997 **1.21**. The Commission never officially met after March 1997. There are rumours of informal meetings checking proofs of the manuscript in English but nothing is documented. However, it should be clear that the Final report is so bad that it can hardly have been written by the nine fairly intelligent members in the Commission. **So who wrote the Final report in the end?** The manuscript of the report of

March 1997 does not exist. It has been suggested that the Final report was in the end written, or edited, by a professional, outside, third party. The Commission had in fact given up the job to produce a falsified Final report and suggested that the party giving the orders did the final job itself. It was evidently not easy to produce a convincing report, when all the evidence - films, divings, testimonies, etc., had been systematically manipulated 1994-1996. The result is known - a glossy Final report (5) that seems in order after a casual study but where *every essential fact* is proven false after in depth research. It is obvious that such a report could never have been agreed by the Commission. So who wrote it?

REMEMBER THE 'ESTONIA' - BUT WHY NOT ASK HUSS TO ASSIST?

We must both forget and remember the 'Estonia'. To forget and remember are different fruits on the tree of Knowledge. We must remember those who died - let them rest in peace wherever they are - and those who fought and still fight for the Truth of the accident. We shall later forget all those who misled the public by producing a false Final Report and whom the author has named in this book. The author wants to forget the 'Estonia', but not before *all* new proven facts have been reviewed, so that real improvements of safety at sea can be done and that not another 'Estonia' accident occurs. No more innocent persons shall end up at the bottom of the sea. A book like **Disaster Investigation** must not be written again.

A very good way to remember the 'Estonia' is to re-open the investigation according to IMO resolution A.849 (20) Annex point 13 - new evidence changing circumstances must be investigated. The author suggests that the figure 13.2 in the Final report (5) is a falsification 1.9. Figure 13.2 is stated to show the sequence of events, but is in fact only a plot of a completely undamaged ship, which turns and drift aided by a very strong current. All stability and floatability calculations of which figure 13.2 are based are also falsifications. Evidently the complete Final report (5) is evidence of modified circumstances, but why not start with this major plot?

Of course it is a pity for Dr. **Michael Huss** who falsified **the impossible sinking** in figure 13.2 and all **calculations**. Huss didn't suspect in November 1994 that he was appointed to 'prove' the myth of the conspirators. Huss then naturally didn't know that Finns and Swedes had found the wreck with the visor attached to the superstructure on 30 September 1994 and that divers had been sent out to remove the visor under water using explosives (and to open the ramp) assisted by the Swedish and Finnish navies on the surface. A false position of the wreck was announced by Mr **Kari Lehtola** to keep curious parties away. The first attempt on 1 October with an explosive device between visor and ramp resulted into the visor hanging on to the starboard side while the ramp was deformed aft and pushed hard into the frame, but a Finnish ROV that filmed the wreck on 2 October

could nevertheless show pictures of a lost visor at the *port* side of the superstructure and some damaged parts. The foundation of the myth was built. A few days later 4-5 October the divers returned to finally remove the visor with explosives, so that it sank to the bottom below the wreck, but then they caused a big **hole in the front bulkhead of the superstructure**. New Finnish ROV-films taken on 9 October showed this, but the Commission (Lehtola) called the visor a *'steel plate'* on the bottom, etc. that was edited away from the film. And the hole in the superstructure? - it disappeared completely - the bulkhead was officially undamaged! Naturally the visor could not remain on the sea floor below the wreck. It must first be *'found'* in another location, which was done by the Finnish coast guard vessel the 'Tursas' that 'found' the visor on 18 October - *a mile west of the wreck* (the false wreck position)! It was a little messy with all false positions, so when the visor then was salvaged no positions could be announced at all. Then the Swede Johan Franson & Co. could **investigate the wreck by divers** in peace and quiet on 2-4 December 1994. If Franson knew that divers had removed the visor by explosives in October is unclear, but the job of Franson was clear already then. He should recommend that neither wreck nor victims could be salvaged. His divers told clear lies - the *ramp* locks were broken indicating that the visor had ripped open the ramp. But the ramp locks were undamaged!

At the same time Huss was appointed expert to the Commission to do a particular task - to simulate the sequence of events - to fit the false positions. Huss was very proud, but the task was not easy, i.e. rather impossible. Huss had nobody to talk to - the other members of the Commission were arrogant and uncommitted at the big dinners that always were part of the meetings. Huss stopped attending the dinners - but made a falsified simulation/plot of the accident - and remained as expert. Matters were not improved when the Commission further modified/falsified the plot of Huss but Huss silently accepted it. **Forssberg** decided to resign and Ann-Louise Eksborg must sign the Final report. If Eksborg understood that the Final report was false from A to Z is unclear, but she always defends her report - often with assistance by Huss. Exactly as Mona Sahlin. All three are persons without their own critical thinking and lack of moral fibre - they operate in a society where falsified truth is common and is paid with a little *'prestige'* and pocket money. Eksborg as Director General of a new government Board to counter threats against Sweden in peace, Huss as technical director of the Swedish Maritime Administration (appointed by Franson). And Mona Sahlin as 'politician'. And the Parliament applauds - **252-60** (in Swedish only).

This barbaric society will continue to sink deeper, as long as the citizens are not prepared to accept responsibility for individual actions and the country they live in. All three (four) are parasites on a sick body. Unfortunately they are not alone. The false 'Estonia' accident investigation report is definitely a product of Sweden. And maybe Huss could finally change his mind and admit that he produced a false plot in figure 13.2? Send him a mail at michael.huss@sjofartsverket.se - it might work.

WARNUNG VOR SELBSTMORD

Diesen Rat will ich dir geben:
Wenn du zur Pistole greifst
und den Kopf hinhältst und
kneifst,
kannst du was von mir
erleben.

Weißt wohl wieder mal
geläufig,
was die Professoren lehren?
Daß die Guten selten wären
und die Schweinehunde
häufig?

Ist die Walze wieder dran,
daß es Arme gibt und Reiche?
Mensch, ich böte deiner
Leiche
noch im Sarge Prügel an!

Laß doch deine Neuigkeiten!
Laß doch diesen alten Mist!
Daß die Welt zum Schießen
ist,
wird kein Konfirmand
bestreiten.

War dein Plan nicht:
irgendwie
alle Menschen gut zu
machen?
Morgen wirst du drüber
lachen.
Aber besser kann man sie.

Ja, die Bösen und
Beschränkten
sind die Meisten und die
Stärkern.
Aber spiel nicht den
Gekränkten.
Bleib am Leben, sie zu ärgern!

Erich Kästner

[+] Jan Metsaveer became a full member of the Commission after one of the original or replaced Estonian members had resigned. Mestaveer prides himself to be a professor of structural design at the Tallinn University.

[++] In September 2001 Estonia elected a new president - a past Communist leader from the Soviet time. You can hardly expect this person to assist in clarifying the Estonia accident.

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APPENDIX 1 - "SOME OUTSTANDING QUESTIONS ABOUT THE M/S ESTONIA"

The author was invited to the Design for Safety Conference at Glasgow 1999: The below paper was presented:

"SOME OUTSTANDING QUESTIONS ABOUT THE M/S ESTONIA"

Paper presented by **Anders Björkman** the 27 October 1999 at the 'Debate on the Estonia' of the "DESIGN FOR SAFETY" CONFERENCE of the Ship Stability Research Centre, University of Strathclyde.

INTRODUCTION

The Estonia accident 1994 was the catalyst in the recent developments on ship safety and is still exercising the minds of the maritime profession. Many questions about the accident are outstanding. It is of vital importance to establish the real reasons, why the Estonia sank so fast and why so many passengers and crew - 852 - died. I am grateful to participate in this Debate and I hope Mr Karppinen, who was a member of the investigation commission, will be in a position to clarify three outstanding questions, which bothers me still. Hopefully DELTAMARINE can also contribute to clarifications of the issues.

Within only three weeks of the accident its cause was announced - it was stated that heavy weather had ripped apart the visor locks at about 01.00 hrs and for 10 minutes the visor moved up and down around the deck hinges hitting the fore peak deck; at about 01.10 hrs the visor hinges broke apart, the visor moved forward and dislodged the bow shell ramp from its six locks; by 01.14/01.15 hrs the visor fell off and sank to the bottom of the sea, the weather tight ramp was pulled fully open and water started to enter the car deck in the superstructure about 2.5 m above the waterline. While the vessel continued its course about half a mile west at 14-15 knots, the vessel heeled suddenly to starboard, then stopped heeling for a while, so that about 230 persons could get out, then the vessel allegedly turned 180° to port (not proven), the engines stopped, but the ship moved on an easterly course one and a half miles for about 30 minutes, when she was filling up with water and listing more and more to starboard, so that she sank one mile east of the visor position at about 01.51 hrs. Sometime during the accident the ramp closed. The official history of the tragic accident is shown in figure 13.2 of the Final Report about the accident published in December 1997, which is included at the end of this paper. Apart from the visor locks defective design and manufacture 1980 the ship was otherwise reported seaworthy in all respects 1994., i.e. the ship and crew were in perfect condition.

I have previously written two books about the accident investigation and the new SOLAS safety rules which followed: -

(1) **'Lies and Truths about the M/V Estonia accident'**, 128 pages, Editions EGC, Monaco February 1998, ISBN 2-911469-09-7. Price FF 100: - incl. postage.

(2) 'Nya Fakta om Estonia. Rapport om Estoniautredningen', 60 pages (in Swedish), Beausoleil, March 1999, Price Euro 15: - incl. postage.

Both publications are available from Björkman, 6 rue Victor Hugo, F 06240 Beausoleil, France. My views have also been published in many newspapers and magazines and are therefore well known and I will not repeat all of them here.

THE ESTONIA INVESTIGATORS DID NOT KNOW THE BASIC STABILITY FACTS

Everyone involved with ship's stability knows that water on a car deck in a superstructure of a roro-passenger ship is only extra, lose weight, which trims and heels the ship; the water shifts and flows to the lowest position on the roro car deck.

In the case of the Estonia 2 000 tons of water on the main roro car deck in the superstructure should have trimmed the ship 1.5 meter on the bow (or the stern) and should have caused a list of about 33 degrees. As the water would be loaded below the Vertical Centre of Gravity, VCG, of the ship, it would lower the VCG. As the ship's metacentrum M remains about constant, when extra cargo is loaded, the metacentric height GM actually *increases* due to extra cargo on the car deck! 2 000 tons of water also increases the ship's draft by 0.8 meter.

However, and this is critical, the water, which heels the ship as it collects in the side of the ship on top of the watertight car deck in the superstructure, reduces the righting arm GZ, as the Centre of Gravity is shifted sideways.

With 2 000 tons of water in the side GZ<0 for any angle of heel, i.e. the ship capsizes and floats upside down on the undamaged hull below the superstructure (and the water on the car deck flows out into the sea). The effects with water on a car deck in a superstructure above waterline are very simple to simulate with, e.g. a Napa Onboard stability computer.

The Estonia never capsized with water in the superstructure nor floated upside down on an undamaged hull. According to the Final Report the Estonia sank slowly on the stern after 37 minutes.

The righting arm curves with water on the car deck included in the Final Report of the Estonia accident report (figure 12.12 on page 162) suggests however that GZ>0 for heel angles >40-60 degrees with <2 000-4 000 tons water on the car deck in the superstructure. It shows that for three years the investigators did not understand the basic stability issues (*they assumed that the ship floated on the non-watertight deck house on top of the superstructure*), when they analysed the accident.

(**Addendum 3 January 2001** - on 15 December 2000 the Swedish National Maritime Administration, SNMA, confirmed in a letter to the Swedish government that you are not permitted to include buoyancy in a superstructure type deck house when calculating damage (and of course intact) stability as the deck house is assumed to be non-watertight. However, the SNMA added that in the case of the 'Estonia', there was apparently a large amount of buoyancy in the superstructure which prevented capsize. What this buoyancy consisted of was not stated).

I will however here concentrate on *three* other questions, which have not been properly answered in the Final Report about the Estonia accident.

· **Was the bow ramp to the car deck ever open?**

· **Were the watertight doors below the car deck closed?**

· **Why did the Estonia sink so fast?**

QUESTION 1 - WAS THE BOW RAMP TO THE CAR DECK EVER OPEN?

According to the official report the bow ramp of the Estonia was ripped fully open by the visor, when it fell off at 01.15 hrs. Reportedly the ramp locks were ripped apart and it is assumed that the ramp then fell down on the car deck below it. Water could enter the car deck, so that the ship would heel, trim and increase its draft. Later during the accident - before or after the sinking is not known - it is suggested that the ramp closed. The reason for this is that the ramp was found closed on the wreck by a Remote Operated Vehicle, ROV, with a TV camera sent down to investigate the wreck early October 1994.

According to e-mail to me from Tuomo Karppinen, VTT, Finland, on 6 May 1998 the accident investigators sent a written memo in November 1994 to the divers, which inspected the Estonia 2-4 December 1994, to confirm that the closed ramp had actually been open *during* the accident. The divers apparently reported that the ramp had been locked before the accident and opened and closed during the accident, but how they reached such conclusions is not clear. No photos, broken parts or similar proof have ever been shown that the ramp was ripped open.

The following are facts:

· *According to the Final Report three crew members in the engine control room saw the ramp closed on the car deck monitor two minutes **after** the ship heeled, i.e. the ramp was closed **after** the visor had fallen off (figure 6.1 on page 66 in the Final Report).*

· *According to the watch keeping seaman, at a hearing 17 October 1994 at Tallinn, he saw the ramp closed at 01.30 hrs, when he was in a life raft just outside the bow. Other survivors in the water also saw the ramp closed.*

· *The early official statements never suggested that the ramp had been fully open or ripped open by the visor. Instead it was officially stated that the ramp had been partly open or leaking to let water in. It was only later officially stated that the ramp had been more open during the actual accident and that the ramp later closed itself as found on the wreck.*

· *The Final Report is contradictory - on the one hand it says that the ramp was pulled fully open at 01.15 hrs, on the other hand it says that three persons saw the ramp closed two minutes after the ship had started to list.*

If the ramp had been ripped open by the visor, you would expect that the visor locks were damaged.

Unfortunately the Final Report does not include any details (drawings, scantlings, etc) whatsoever about the ramp locks, e.g. their design and strength. The ramp was in fact the *weather tight* door in the side shell as called for by the ICLL66, reg. 21, whose structural integrity should be commensurate with the surrounding shell plating. According my opinion, based on ships with similar ramps as Estonia's, the six ramp locks had a break strength exceeding 25-40 tons each, so that they could never have been ripped open by a 55 tons weight of a lose visor falling off the ship. The Final Report just states, as a matter of fact, that the visor ripped open the six ramp locks, but this is not proven. Furthermore - the forepeak deck below the ramp and the underside of the ramp itself are completely undamaged, indicating that the ramp never hit the forepeak deck. My conclusion is simple - *the bow ramp was never open during the accident*.

The German Group of Experts has studied the condition and maintenance of the ramp. Their conclusions will be made public in a report to be published at the end of this year. According to the Germans the ramp was *twisted* and *not weather tight*; some *locks could not be engaged* and *weather tighness was ensured by mattresses*, etc. pushed into the gap by the crew. Little water therefore leaked continuously into the car deck through the ramp in bad weather at sea. It was probably this water the crew saw at the closed ramp after the ship heeled. But the Germans probably agree with me that the ramp was never pulled open by the visor. Probably the ramp was never locked.

The answer to question 1 is thus that the bow ramp was never open!

QUESTION 2 - WERE THE WATERTIGHT DOORS BELOW THE CAR DECK CLOSED?

Intact and damage stability calculations assume that all watertight doors are closed. The Final report does not include any details whatsoever about the watertight doors in the bulkheads below the car deck on the Estonia, their numbers, their design, their control and indication, and whether the doors were actually closed prior to or after the accident. The reason for these serious omissions can only be that the doors did not comply with SOLAS II-1, reg. 15. Several facts support this suspicion:

· *The Estonia had total 20 watertight doors in 12 watertight bulkheads. One watertight bulkhead had totally three doors, several bulkheads had two watertight doors and all other bulkheads had one door. This situation was in complete contradiction with the requirement (reg. 15.1) that the number of openings in watertight bulkheads should be reduced to a minimum compatible with the design and proper working of the ship. The Estonia should have had only maximum six watertight doors for work and escapes in the engine room spaces. All other watertight doors were not required for the working of the ship.*

· Most or all of the watertight doors were kept open at sea in contradiction with reg. 15.9.1 that all doors shall be kept closed during navigation. The reasons for keeping the doors open were, i.a. to enable passengers to move between the sauna and conference rooms on deck 0 and passengers in cabins on deck 1 to go to the public toilets on the same deck (but in an adjacent watertight compartment) and to enable the crew to easily visit five main, auxiliary engine, pump and compressor rooms on two deck levels 0 and 1. Several surviving passengers and crew and shore staff have testified that the watertight doors were always open at sea.

· The remote and local closing control system of the watertight doors was wrong. The Swedish maritime inspector G. Zahlée, Malmö, who PSC inspected the Estonia on 27 September 1994, has testified that it was not possible to close the doors locally, as the local closing function was overruled by a signal from the central control console on the bridge (deck 9). In fact - if you tried to close a door locally, it immediately jumped open! The reason for this was apparently to prevent, e.g. passengers from closing the doors. The investigators censured the testimony.

· The indication system of the watertight doors on the bridge was manipulated. Several persons have testified that green lights indicated open watertight doors to make the impression, that the doors were in fact closed. Red light normally indicates an open door and as all doors should have been closed at sea, all indication lights should have been green on the bridge.

· Finally, the watertight central control console was not as per reg. 15.8.1, which provides remote closing of doors only. As shown above it was possible to open or to keep open the watertight doors from the bridge, a practice that evidently was both illegal and dangerous.

It is therefore very likely that all watertight doors were open on the Estonia prior to the accident. According to the Estonia emergency procedures a person on the bridge in the event of collision or grounding should then close the watertight doors. The Final report states that the doors were closed *after* the first heavy listing, but there is no proof for that. In any event the emergency procedure was wrong - the doors should have been closed already when leaving port. My conclusion is that most watertight doors on the Estonia were open at the accident, i.e. the ship had no internal watertight integrity in case of leakage and flooding. This may explain the sudden listing of the ship.

The answer to question 2 is that the watertight doors were open, when the ship sank!

QUESTION 3 - WHY DID THE ESTONIA SINK SO FAST?

This question is not answered at all in the official Final Report. As stated in the introduction the vessel allegedly sank between 01.14/01.15 and 01.51/01.52 hrs due to water *on* the car deck. It is also suggested that water entered the deck house through broken windows at deck 4 and 5, when the ship listed. This water allegedly flowed through the gas tight (sic) car deck ceiling (deck 4) down into the car deck space, and the water also flowed through the watertight (sic) car deck 2 and filled the 12 watertight compartments below the car deck, so that the ship actually could sink. As it is impossible that water flows through gas tight and watertight decks, the sinking process suggested by the Final Report is simply impossible.

As already pointed out above the Estonia should have capsized and floated upside down on the undamaged hull with only 2 000 tons of water on the car deck in the superstructure. It would have taken one or two minutes.

So why did the Estonia sink so fast? Captain Werner Hummel of the German Group of Experts has informed in an interview in the Swedish daily newspaper FinansTidningen 12 August 1999 that several survivors noted water on deck 1, which apparently flowed up from the sauna/pool compartment, just prior to the ship lost its stability already at 01.02 hrs. According to Hummel the sauna was flooded and in contact with the open sea, i.e. *the ship was leaking*. Several survivors have given a completely different description what happened than what is stated in the Final Report. According to many surviving passengers there were a number of heavy impacts - explosions?, collisions? - in the ship prior to 01.00 hrs; at 01.02 hrs the vessel suddenly lost its initial stability and heeled 40-50 degrees to starboard, when people and lose furniture and equipment were thrown down to starboard lee, many persons broke arms and legs, and then, about 01.05 hrs, the vessel uprighted and

became stable with about 15 degrees list, which enabled about 230 (or more) persons to evacuate the ship (almost all survivors were inside the ship, when it lost its stability) during several minutes, when the ship was rolling and the list was temporarily was reduced.

Hummel does not know, why the sauna was flooded or what caused the leakage. According Hummel it is possible that explosive devices caused it, as intact explosive charges were found, but not reported, on the wreck and are shown on video films. This was reported on the first page of Lloyd's List 12 August 1999. Hummel also suggests that the visor was blown off by one explosive charge *after* the sudden listing.

What everybody seems to forget about the fast sinking is that the Estonia sank with the stern first and with the bow high above the water (with the ramp closed, but with the visor allegedly missing - water could therefore not enter through the bow opening. Some survivors state that the visor was seen at the bow).

(**Addendum 3 January 2000** - the visor apparently was still attached to the hull when the ship sank and was then adjacent to the bow on sonar pictures of the wreck area taken 30 September 1994 - up-dated **web page**!).

A massive leak into one compartment aft below waterline explains the fast sinking.

There are three store rooms on deck 1 aft connected by watertight doors and three engine room spaces on deck 0 (cp-propeller equipment, compressors, pumps) below, also connected by watertight doors and with access to the main engine room. If the watertight doors were open - which I assume was the case - a leak aft would quickly flood three or more compartments. The result would be sudden loss of stability, as observed aboard at 01.02 hrs, uprighting, more listing while sinking on the stern, which actually happened.

I therefore suggest that the Estonia simply sank due to a leak aft. The possibility has never been investigated - actually the only cause, which has been investigated, is the one about the lost visor and water on the car deck in the superstructure.

(**Addendum 8 June 2001** - the author believes today that the leakage was in fact i.w.o. the sauna/pool compartment, which later extended into the empty, starboard heeling tank - open watertight doors on deck 0 made then sinking possible).

The answer to question 3 is then that the 'Estonia' sank fast due to a heavy leak and open watertight doors.

WHAT WENT WRONG WITH THE ESTONIA INVESTIGATION?

The Estonia accident investigation 1994-1997 was *sloppy, unscientific* and *unprofessional*. The marine investigators never interviewed the passengers. Two investigators died and five or six investigators resigned or were sacked or replaced. The investigation was *secret* for 38 months. Nobody from the public had any insight. The only outsiders permitted were five observers from the Danish, Estonian, Finnish, Norwegian and Swedish maritime administrations. Advice from outside master mariners, naval architects, insurance and safety surveyors was always ignored. The reason was that the official investigators had decided and publicly announced already 19 days after the accident, what they thought had happened. *When real facts then contradicted the erroneous ideas of the investigators, the facts were ignored.* **It seems that the truth often is the first victim in an accident investigation.** As the investigation was secret, the investigators could tell media whatever they wanted. The media could not check any facts. It seems that all information given to the media was false.

The investigators stated, e.g. that the visor had hit repeatedly up and down against the forepeak deck for 10 minutes, while all photos of the forepeak deck showed that it was undamaged! When it was certain that the ramp had never been open, the investigators chose to ignore that fact and stated the opposite. When it was virtually ascertained that the watertight doors were always open, which caused the fast sinking, when the ship was leaking and not as per SOLAS, the investigators chose not to mention the doors at all. And when it was clear to the investigators that a ship does not sink fast due to water on the car deck, they just made up the story - the fairy tale - that ships sink due to water on the car deck and censored all correct stability calculations

stating the opposite. No roro-passengership, as far as I know, has sunk due to water on the car deck; the Herald of Free Enterprise capsized in 2 minutes and never sank, the Jan Heweliusz capsized also quickly - a few minutes - and floated upside down for several days.

One reason why so many died was that the Estonia lacked proper liferafts launched by davits. The ship had mainly throw-overboard-rafts for *wet* evacuation - all survivors had to jump overboard and swim to a raft, which was incorrect standard in 1994. Had the accident taken place in December-March, when the water was colder, all persons would have frozen to death. It seems that the Estonian and Nordic maritime administrations want to cover up this fact, so therefore it is not mentioned in the Final Report. It is also clear that three surviving engine crew members are not telling the truth - they maintain that they remained in the engine control room, ECR, for at least seven minutes *after* the listing and then left the ECR on deck 1 and took the stairs to deck 8. However it was not possible to use the stairs at that time due to the heel angle.

The IMO panicked when the Estonia sank. An *'expert panel'* was quickly put together in 1994 but there were only a few stability experts in the panel and they never checked the Estonia's stability with water on the car deck. The *'expert panel'* made a number of not very clever rule change proposals in 1995 and they were quickly adopted without normal vetting in the MSC subcommittees using FSA, etc. The IMO did not follow its own work procedures after the Estonia and haste makes waste. The interested party should read my **book** for more details about the new SOLAS rules after Estonia!

OBVIOUS FAULTS IN THE OFFICIAL FINAL REPORT

Figure 13.2 - Course of events - of the Final Report is shown below: -

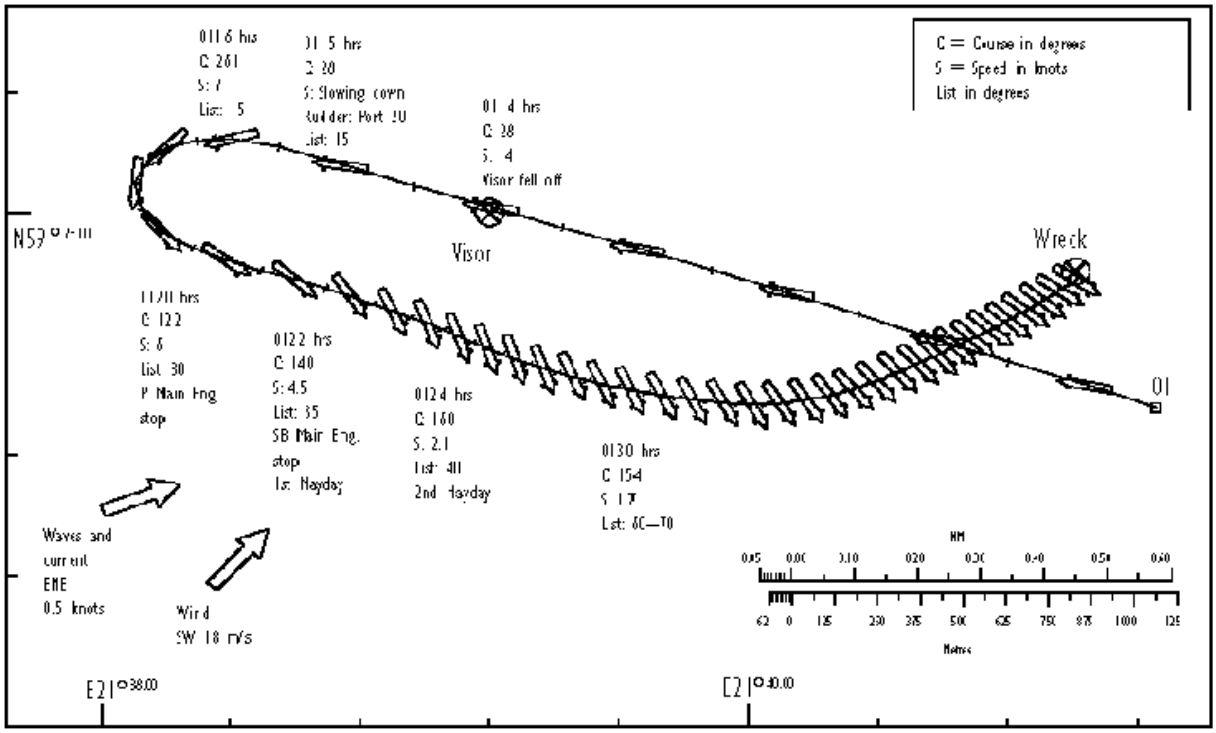


Figure 13.2 in the Final Report is a sloppy modification of figure 4.12 in supplement no. 522 to the Final Report by Michael Huss, Ph.D., *'Simulation of the Capsize'*, which in turn was a theoretical failure trying to reconstruct the accident by the Marine Academy of Kalmar. The modifications between Huss (H) and the Commission/Final report (5) concern, i.a. the angle of heel and the amount of water on the car deck at various times after the visor was lost as shown in the below table: -

Estonian Time (h. m. s)	Time after Loss of Visor (min)	Water in the Super-structure as per Huss (tons)	Inflow as per Huss (tons/ minute)	List as per Huss (degrees)	Wave Direction (°)	List as per Final Report (degrees)	Velocity of Heel (degrees per min) based on (5)	Diff. in List between Huss and Final Report	Speed acc. Huss (knots)	Speed acc. Final report (knots)
01.14.00	**0.0**	**0**	**400.0**	**0**	**135**	**0**	**15.0**	**0**	**14.5**	**14.0**
01.14.30	**0.5**	**200**	**400.0**	**6**	**135**	**-**	**15.0**	-	**14.5**	~
01.15.00	1.0	(340)	285.7	(10)	~	**15**	**15.0**	(+5)	~	~
01.15.12	**1.2**	**400**	**250.0**	**11**	**150**	**15**	**0**	**+4**	**13.0**	~
01.16.00	2.0	(571)	250.0	(15)	~	**15**	0	±0	~	**9.0**
01.16.24	**2.4**	**700**	**83.3**	**17**	***180**	**-**	**5.0**	-	**8.5**	~
01.20.00	**6.0**	**1 000**	**38.5**	**22**	~	**30**	**5.0**	**+8**	**5.5**	**6.0**
01.22.00 Alarm aboard	8.0	(1 077)	38.5	(23)	~	**35**	**2.5**	(+12)	~	**4.5**
01.24.00	10.0	(1 154)	38.5	(24)	~	**40**	**2.5**	(+15)	~	**2.1**
01.27.00	13.0	(1 269)	38.5	(26)	~	(50)	(3.3)	(+24)	~	~
01.30.00	16.0	(1 385)	38.5	(27)	~	**60-70**	**3.3-5.0**	(+33/43)	~	**1.7**
01.33.00	**19.0**	**1 500**	**55.6**	**29**	**255**	**80**	**6.7**	**+51**	**0.0**	2.2
01.40.00	**26.0**	(1 888)	55.6	(35)	255	**110**	**2.5**	(+75)	0.0	2.2
01.42.00	**28.0**	**2 000**	**55.6**	**37/180!**	**255**	**115**	**4.0**	**+78/-65**	**0.0**	**2.2**
01.43.00	29.0	2 056	-	180!!	~	(119)	4.0	(-61)	0.0	2.2
01.51.00	37.0	-	-	180!!	~	(150+)	4.0	(-30)	-	2.2

(figures in brackets are estimated by the author – *180° = head waves)
[a] *"During the port turn water continued to enter the car deck and the list increased to 20-30 degrees where the vessel for some minutes stabilised as the water inflow decreased".* (Chapter 13.2.6 of (5))
[b] *"By about 0120 hrs all four main engines had stopped ... The main generators stopped about five minutes later.*
After the main engines stopped, the 'Estonia' drifted with a list of about 40 degrees and the starboard side towards the waves". (Chapter 13.2.6 of (5)).

Expert Huss *'scientifically'* established based on model tests, assuming that the ship turned 180° back to Tallinn first into and later away from the waves, that it took **6-19-28** minutes to fill the car deck in the superstructure with **1 000-1 500-2 000** tons of water (inflow 166.7-38.5-55.6 tons/min). In that time the angle of heel increased to **22-29-37** degrees (velocity of heeling 3.67-0.54-0.89 °/min). It took the Estonia **19** minutes to stop in the water at 01.33 hrs according to Huss. Then Huss calculated that the vessel, immobile in the water, scoped up another 500 tons of water on the car deck in the superstructure during **9** minutes (inflow 55.6 tons/min) and capsized at 01.42 hrs. Unfortunately it seems that Huss forgot to consider, that water on the car deck trims the ship - all the water would collect forward and push the bow downwards and increase the inflow, so that the ship would quickly stop, capsize and turn upside down - like the Herald of Free Enterprise. Another suggestion is that the water should have flowed out by itself due to the bow trim, when the ship stopped with 1 000 tons on the car deck and that the ship would upright itself.

However, the official investigation just *changed* the Huss reconstruction report completely, e.g. it first stopped the water inflow between 01.15 and 01.16 hrs to enable the survivors to evacuate the ship. Then more water was added on the car deck in the superstructure, but the trim was ignored. It is shown, without any scientific base, that the angle of heel increased to 40 degrees in 10 minutes, to 60-70 degrees after 16 minutes and to 110 degrees at 01.40 hrs, as a result of allegedly increasing amounts of water on top of the car deck. The water on the car deck increased to 600-1 400-2 100->4 000 tons of water in 2-6-10-16 minutes, but the ship's speed never stopped, even if the car deck was filled with > 4 000 tons of water - the speed was 2.2 knots when the

ship sank, which was physically impossible. *Ships stop, when filled with water and when the engines are stopped.*

The *falsification* of the Huss data by the investigators is easy to demonstrate. Huss computed, based on model tests, that *only* 2 000 tons of water could have entered the car deck in the superstructure 2,5 meter above the waterline in **28** minutes. The average inflow was about 71,4 tons/min. Without any scientific base at all the official investigators changed the data and stated that >4 000 tons flowed into superstructure in only **16** minutes. The average inflow was >250 ton/min, which is more than 3 times the inflow rate from Huss model tests! According all model tests the inflow never exceeded 55 tons/min, when the bow was pointing away from the waves and the speed was less than 5 knots. How the hull was filled with water neither Huss nor the official investigators explained.

The official report says that the ship sank at about 01.51 hrs, but the time is not proven - the ship may have disappeared earlier. It is also assumed, that it is proven, that the Estonia should have turned 180 degrees after the accident back to Tallinn. Assisting ships however noted that the Estonia was almost *immobile* in the water when Mayday was sent 01.24-01.30 hrs (close to the sinking position). The Final Report chapter 12.5 states that it has been discovered by sonar investigations of *fragments* on the seabed, that the Estonia made a port turn after the visor was lost. *What the fragments are and why they fell off the ship half a mile west of the visor has never been stated.* According to media reports in October 1994 the 'fragments' were found east and south of the wreck - 3 000 metres away from the turning point! According to the official report the ship had >4 000 ton of water on the car deck at 01.30 and should have trimmed >3 meter on the bow and should have capsized much earlier. According to the official report the sinking ship moved sideways about 700 meter to NNE between 01.40 hrs, list 115 degrees, and 01.50 hrs, when the ship sank. *It is of course not possible that a sinking ship moves with 2.2 knots speed.* According Huss the speed was zero already at 01.33 hrs.

Thus - Dr. Huss tried to reconstruct the accident with water on the car deck in the superstructure but his times did not tally with the actual sinking. According Huss the vessel should have stopped after 19 minutes and capsized after 28 minutes. The author thinks the ship should have capsized and stopped after one minute and floated upside down on the undamaged hull. However - the official report changed the times, heel angles and water inflow of the Huss report to tally with observed times and heel angles, but then the data do not make physical sense. In spite of the fact that the official report increased the average inflow rate more than three times, it took the vessel 37 minutes to sink without capsizing. The errors are obvious. So neither Huss nor the investigators could explain how the hull was filled with water.

CONCLUSIONS

The official Final Report of the Estonia accident contains many errors.

· The suggested accident time history - figure 13.2 - evidently cannot be correct.

· The bow ramp was probably never open during the accident but was only leaking, so little water entered there. The ship did not sink due to water on the car deck.

· The ship probably sailed with all watertight doors open; the watertight doors were never closed when the ship sprang a leak, so the ship sank due to open watertight doors. This suggestion has not been investigated.

· The ship sank very quickly on the stern. It would appear that a leak aft below the waterline sank the ship. This suggestion has never been investigated.

RECOMMENDATIONS

I strongly recommend that the investigation into the sinking of the Estonia be *reopened* (as already requested by the ITF, 32 Swedish survivors and many others). I recommend that *a new underwater survey be done* to establish that the ramp was closed, the watertight doors were open and that there is a hull damage, which

sank the ship. I recommend that Bureau Veritas and the Estonian maritime administration *open* their records, so that it can be confirmed that the watertight door system did not comply with SOLAS. I finally recommend that the IMO *review* its latest rule changes, which were only adopted as a panic reaction, based on the wrong assumption, that water on the car deck caused the Estonia accident.

ABOUT THE AUTHOR

Mr **Anders Björkman** graduated from Chalmers University of Technology in 1969 with a M.Sc. in Naval Architecture and Marine Engineering. He spent a year in the Royal Navy i.a. with conversions of ferries and other ships into minelayers. Mr. Bjorkman has worked for Lloyd's Register as a class surveyor and for Scandinavian Underwriters Agency as an underwriter's surveyor. Since 1989 Mr Björkman has assisted the El Salam shipping company, Cairo, Egypt to be the leading roro-passenger shipping company in the Red Sea and lately the Mediterranean with today 14 roro-passenger ships transporting > 1 000 000 persons annually. When the Estonia sank Mr Björkman evidently immediately started his own investigation into the sinking, as per Company ISM instructions, so that similar accidents would not occur in his own fleet. The findings have been published in book form and received good reviews by, e.g. the Naval Architect magazine and national newspapers. The findings were brought to the attention of many maritime administrations and the IMO in 1997.

Mr. Björkman has developed the **Coulombi Egg oil tanker** protection system, which is the only alternative design system to double hull according to Marpol I/13F(5) approved by the IMO in 1997. It is the only ship design purely developed according to damage statistics and FSA.

Mr Björkman has made many written contributions about ship's safety and works as a ship safety consultant.

APPENDIX

I will here summarise my ideas how the Estonia accident took place. My observations are based on talks with three survivors, with the German Group of experts, with the official investigators Huss, Karppinen, Stenström, Forssberg, Schager and Eksborg and on basic stability and floatability theories and steering performance data of my own roro-passenger ships.

Most survivors suggest that the ship experienced a number of heavy impacts before the sudden loss of stability, i.e. when the time was 00.50-01.00 hrs. Most survivors suggest that the ship suddenly lost its stability at about 01.02 hrs and heeled 40-50 degrees to starboard. Lose furniture and persons not holding on to fixed objects were thrown down into the lee. Many persons broke arms and legs. Most survivors agree that the vessel then uprighted, but not to even keel but only to about 15 degrees list at say about 01.05 hrs, and that the ship remained stable in that position for a few minutes enabling people to get out. Most survivors agree that the vessel then heeled and ended up on the side while trimming on the stern, i.e. the ship sank with the stern first. Most survivors had to jump into the water from the upper decks at abt. 01.25-01.35 hrs, some survivors walked out on the flat side and down to the bilge keel and jumped into the sea from there when the ship superstructure sank below the water, say at 01.35 hrs.

I am fully aware of several testimonies to the effect that the sauna on deck 0 forward was flooded and that water spilled up on deck 1 forward, where it was observed. However, assuming that the watertight doors to the adjacent spaces (conference rooms) were closed, the ship would not sink due to a flooded sauna space. If water had spread to several spaces forward, the vessel should have sunk bow first, and this did not happen.

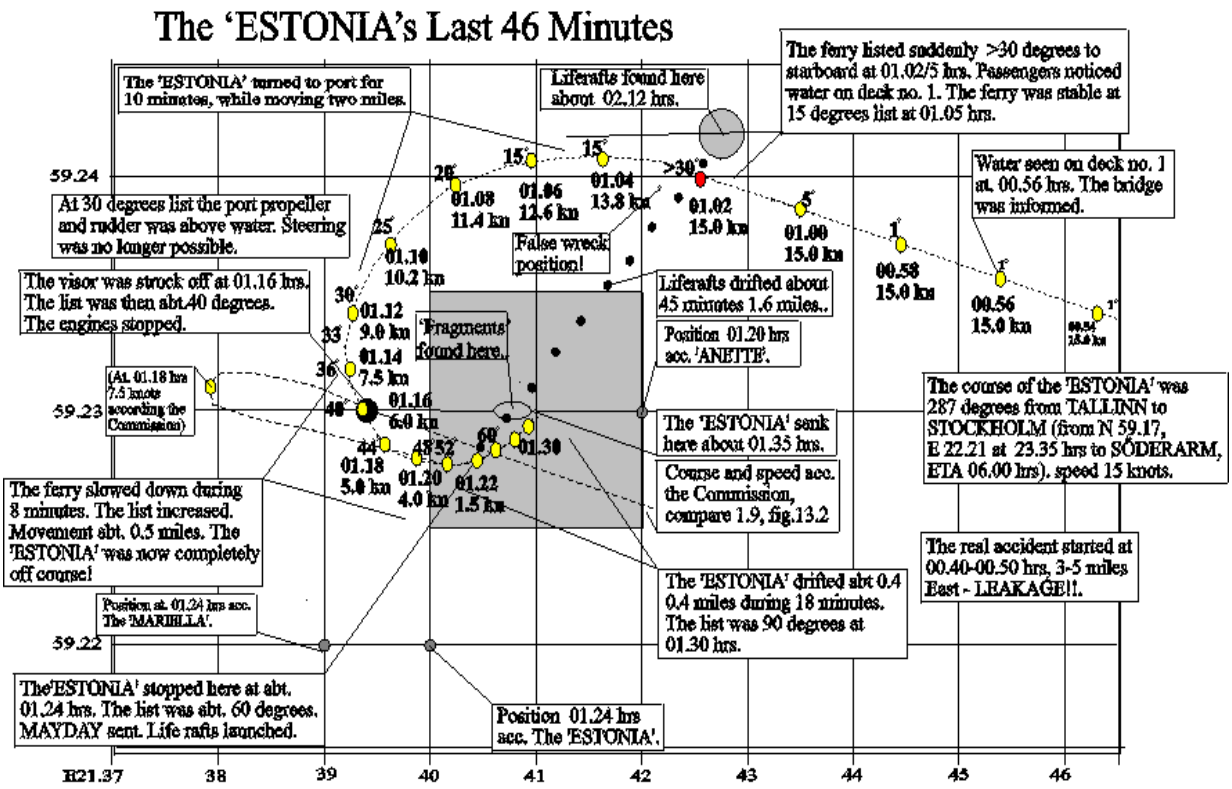
Based on the simple observation that the ship sank stern first, I think that there was a leak aft and that three or more compartments aft below the car deck (the stores) were quickly flooded already 00.50 hrs, that this caused the loss of initial stability (GM<0) at 01.02 hrs and the sudden heeling, but that the ship retained stability at 15° list due to positive righting arm (GZ>0) at that list. Then the ship sank, stern first.

The vessel turned to port already at 01.02 hrs to counter the list. At 01.16 hrs the heel angle was 50 degrees and the visor was lost, but then the ship had already turned about 135° and was already almost heading back to Tallinn. During the turn the port engine stopped first at its propeller came out of the water. Soon after the starboard engine stopped and the ship was un-steerable. The ship virtually stopped 300-400 meters from the sinking (wreck) position at 01.25-01.30 hrs, when the Mayday was sent. The ship then slowly drifted - speed 0.3 knots - to the (wreck) position where she sank.

The course of events is shown in the below reconstruction of the accident. The times, the positions of the visor and the wreck and the ship at 01.25/30 hrs, when Mayday was sent, and the turn to port between 01.02/25 hrs make sense. Also the timing of the sinking makes sense - the inflow of water through a hole below waterline was say about 150 tons/min and spread through open watertight doors to several watertight compartments below the car deck. After 30-40 minutes all buoyancy aft below the car deck was lost; the superstructure was immediately flooded so that the ship sank - stern first. The car deck was still intact and contained buoyancy, but it was not sufficient to keep the ship afloat.

(**Note 22 February 2001** - apparently the position of the visor shown below is false - the visor was attached to the ship when it sank. But it does not make this reconstruction less interesting. New information indicates that the ship had another course at the accident - towards Sandhamn, listed suddenly at 01.02 hrs and then just stopped. The visor was not properly locked and was ripped partly off during the sinking. Thus - the visor could not have caused the accident).

The shaded one square mile around the wreck is the diving exclusion zone proclaimed by Estonia, Finland and Sweden and accepted by Denmark and United Kingdom.



©Anders Björkman, 6 rue Victor Hugo, F 06 240 Beausoleil, Frankrike. PLOT of the 'ESTONIA's last 60 minutes. Assumed angle of list shown above and to the left of the plotted course. Estonian tmead (GMT +2 timmar). The assumed speed is indicated below and to the right of the plot. Wind SW, B 7.

APPENDIX 2 - MODEL TESTS WITH M/S ESTONIA (SUPPLEMENT NO. 410)

AN ANALYSIS BY HEIWA CO OF SSPA REPORT NO. 7524 OF 951205 BY PETER TRÄGARDH (SSPA MARINE AB)

This little report is an analysis of SSPA report no. 7524 of 951205 written by Mr. Peter Trägardh. The conclusion is that the report cannot be trusted and/or is misleading. **Actually the model tests are falsified to provide misleading conclusions!**

In **1. Introduction** it is stated that model tests of M/S 'Estonia' were carried out on behalf of the Swedish Accident Investigation Board, SHK. The purpose of the tests was to measure the wave induced loads on the bow visor. The main objective was to get a good statistical basis for estimation of *actual loads on the visor*. **Comment** - this was a good objective - without correct load estimates you cannot design a structure of any kind. It is further stated that the test program was decided in co-operation with a SHK representative who was also present at the tests. This might not have been a very good idea - it gives the idea that the SHK influenced the tests. The SHK representative was **Börje Stenström** who participated in the falsification of other investigation reports - stability, strength of material, etc. as described elsewhere in the book **Disaster Investigation**.

In **2. Model test data** it is stated that the tests were done June 19-20, 1995, in towing tank and June 28 - July 1, 1995, in the Maritime Dynamics Laboratory (MDL). Comment - note that the report was issued 5 months after the tests were completed - why was the report so late?

In **3. Wave tests in the towing tank** it is stated that the main objective of the tests (in the model tank) was to measure forces and moments on the bow visor caused by the wave impact(s). Test runs nos. 4-42 and 46-51 were run in the towing tank. Comment - for the first time is it stated that the wave load is an *impact*. Actually the wave loads measured in the towing tank were **not** impact loads but normal *buoyancy/added mass* loads, when the fore body/visor was submerged in water > 3 seconds (the visor 2 seconds). Total 45 runs were made and this took about 5 hours, i.e. each run took 6 minutes 40 seconds in the towing tank.

In **4. Wave tests in MDL** it is stated that test runs nos. 7-13, 15, 18, 20, 22, 34-37, 39-40, 45-46, 48-55, 56-66 and 67-116 were run in the MDL. Comment - in order to avoid confusion of tests in towing tank and MDL, it would have been better to number the runs in the MDL starting at 52. There were about 88 runs total and about 3 hours time, i.e. each run was about 2 minutes long. 60 runs were made in the actual 'Estonia' accident conditions, viz. 14.5 knots, bow seas, wave height 4.3 meters. This means about 2 hours model time, which represents 6 hours full scale time. However, it seems only 3 hours full-scale results are available.

In **6. Results and conclusive remarks** it is stated that the measured vertical Z-force has been corrected for the difference in mass of the model visor (127.8 tons in full scale) and the full-scale visor (53.0 tons) to a nominal value called Z-force nom. It is then stated that also the pure dynamic wave load, Z-force dyn, has been calculated. It is further stated that it should be noted that the weight of the visor is not (sic) included in the Z-force. **Comment** - as it is the total Z-force - the total vertical load on the visor including the weight of the visor - which is of interest, it is quite confusing that the report states that this force is divided into a Z-force nom and a Z-force dyn and that the weight of the visor is **not** included (in the Z-force). Later only Z-force is given. What was actually measured as Z-force? It seems that this statement maybe was made to confuse the report and the results. I think the Z-force (and X-force) has been manipulated. The reason is given below.

It is then stated that the results from these model tests are similar to what could be expected in view of tests of bow loads on ro/ro ships carried out 7 March 1995 (not included). This is a surprising statement in a report - why was it necessary to state that these results of the 'Estonia' were similar to other results obtained previously?

ANALYSIS OF THE SSPA RESULTS WITH COMMENTS - HOW THE LOADS ON THE VISOR IN REGULAR WAVES WERE FAKED

Run 47 in the towing tank - figures 12a-e in the final SSPA report - shows what allegedly happens in **regular** head waves.

The **wave profile** (fig 12a) shows the wave amplitude (height) of about 4.0 meters and the encounter period is about 6 seconds (as the ship is heading with speed 15 knots into waves with a period of 9.3 seconds). This is in order.

The **relative motion** (fig 12b) at the bow - the distance between the ship's still water waterline and the wave surface - is also correct, i.e. its amplitude is about 5 meters. This means that the ship puts its bow with visor about 5 meters into the wave and lifts it about 5 meters out of the wave at each wave encounter. As the moulded draft forward was 5.17 meters, this means that the bow was almost completely out of the water then. Nowhere in the report is it stated that the bow visor only starts to be submerged at a relative motion -2.45 meters (when the wave reaches the car deck level, even if a little bit of visor is below the car deck - see fig 4) and that the top of the visor is at a relative motion of about about -7.45 meters, which was never reached (because the freeboard/main deck is 7.62 meters above the keel and the visor top is at about 12.62 meters above keel, disregarding the bulwark on top of the visor). Unfortunately, the relative motion aft is not measured, i.e. we do not know, if the propellers were out of the water during the tests. No photos of the model aft during the tests are shown.

THE VERTICAL, LIFTING LOAD

The **Z-force** (fig 12d) (**vertical**), where the visor weight (0.53 MN) is not included (see above), seems logical in behaviour but not in magnitude - every time, i.e. every 6 seconds, when the bow is put into a wave, the Z-force becomes about -1.5MN (150 tons), which should be due to the buoyancy of the visor (Z-force nom?) plus the force by an added mass of water (Z-force dyn?), which together seems very high - 1.5 MN.

By deducting the visor weight 0.53MN it is concluded that the actual lifting load on the visor in regular seas would be about 1.0 MN, i.e. 100 tons lifting the visor free of its supports. The visor is then held back by the locks. As can be seen in fig 12b, the Z-force starts to build up, when the relative motion is about -2.0 meters, i.e. when the visor starts to be submerged, and then it increases to 1.5 MN in one second and is then zero again after another second, when the visor is out of the water. Actually a Z-force of 1.5MN (150 tons) in regular seas seems quite high, considering that only 2.5-3.0 meters of the bottom part of the visor is submerged in the wave, which does not include much buoyancy - say max 30-40 m^3.

How submerging 30-40 m^3 of visor in water produces a lifting force of 1.5 MN (150 tons), as allegedly measured in the test, is not known. The author is not aware of any scientific method to calculate full scale forces on a ship part above waterline based on forces measured in model tests ! The force consists of many components that follows different scale laws; thus you must separate the force measured in model test into its various components, re-calculate each component to full scale and add all full scale components to get the total full scale force, etc! Local pressures can on the other hand be scaled up - but no pressures were measured in the tests.

Anyway - the force has to be corrected for visor weight (-0.53MN) and then the regular, total force on the five visor locks and hinges were only about 100 tons, or 20 tons per connection. One question is - was the Z-force gauge actually properly calibrated? It seems that the Z-force gauge was set to produce a higher value (so that SHK/Stenström could show that bigger loads, than expected, had acted on the visor).

In my opinion, submerging the visor in regular waves as shown above would produce a lifting buoyancy static force of about 50 tons, to which we could add a dynamic force due to added mass of water 20 tons, i.e. the total upward peak load was 70 tons, which was reduced considerably by the visor weight 55 tons. **The surprise would then have been that very little upward positive load on the 55 tons visor was recorded in regular seas**

test no. 47. This could hardly be reported in the final report, so one way or another SSPA produced fig. 12d showing that a big load -1.5MN (150 tons) acted on the visor (and no correction for visor weight) and lifted it free of its supports every 6 seconds and that afterwards the visor crashed down on its supports with 55 tons!

It seems no sudden impact loads were recorded in regular waves!

THE HORIZONTAL, BRAKING LOAD

The **X-force (horizontal)** on the visor - fig. 12c - is produced when the submerged visor is being towed through the water, i.e. only 2-3 meters of visor is submerged and that seems to produce a 1.5 MN braking force - 150 tons. What is surprising here is, that this force does not stop the ship or at least reduces the speed considerably!! The two propellers hardly produce more thrust than 1.0 MN (100 tons). **So in my view the X-force is also completely unrealistic. It seems that the loads measured on the visor in regular waves are 100% faked. These tests can never be repeated by independent scientists!**

Note - maybe a power of about 10 000 kW (SHP) were used to turn the propellers of the vessel at 14.5 knots. Of the 10 000 kW say that 7 500 kW was used to produce the thrust (EHP) that pushed the vessel forward at 7.5 m/s speed. This means that the thrust (force) to push the ship forward was 1.0 MN (effect EHP divided by speed), i.e. 100 tons. In the SSPA report fig. 12c a braking force of 1.5 MN on the visor was produced every 6 seconds lasting 1.5 seconds, which should have been enough to reduce the speed considerably. The X-force seems therefore excessive, too! Of course the X-force always reduces the speed of ship, but this is hidden by the fact that engine power is often reduced in heavy seas. As we do not know the relative motion aft, we do not know, if the propellers were below water all the time to produce a forward thrust of 100 tons. As soon as the propellers are out of the water, the engines will race and you have to slow down the engines, which reduces the forward thrust and speed.

THE OPENING MOMENT

In figure 12e it is shown that the X and Z-forces cause a **Yh-moment** (around the hinge on the upper deck) - Positive opening, which varies between maximum +1.1 MNm (opening) and -2.5 MNm, i.e. a negative closing moment. This means that in regular seas the load on the visor would hardly open the visor (because to open the visor you need a higher moment). This seems very logical - there should have been so little actual X- and Z-forces on the visor in regular seas, which could never open the visor. (The weight of the visor 53 tons at 5 meters forward of the hinge causes a closing moment of 2.6 MNm. When the visor fills with water - and if we assume that weight some way or another is attached to the visor - the closing moment - visor and water - increases).

It should be quite clear to anyone, that the loads on the visor are cyclical and that the supports (the locks) are subject to fatigue. It is interesting to note that in the Final Report it was stated that the breaking load of the locks was overload in tension, not fatigue.

HOW THE LOADS ON THE VISOR IN IRREGULAR WAVES WERE FAKED

Runs nos. 67-116 in the MDL - figures 13a-e in the report - are supposed to show what happens in **irregular Bow Sea** with mean wave height 4.3 meters and ship speed 14.5 knots.

Only 1 000 seconds between time 6 600 and 7 600 seconds are shown in the report, i.e. 16 minutes and 40 seconds. Reportedly total 3 hours - 10 800 seconds of (full scale) test was done, i.e. we are shown 9.25% of the total results.

Figure 13a shows the **wave profile**, which varies from max +3.5 meters to -5.2 meters. Figure 13b shows the **relative motion** at the bow, which varies between ± 6.5-7.0 meters, i.e. very often the whole bow is out of the water - draft 5.17 meters - and very often the bow is submerged 7.0 meters, which means that the visor is

submerged about 5.05 meters, i.e. **only halfway to its extreme top,** see fig 4 of the SSPA-report. What happens now in irregular seas?

Fig 13c and fig 14d show the **braking X-force** acting on the ship (and the visor) in irregular waves. As shown above the X-force will reduce the ships speed, as it exceeds the average thrust of the ship's propellers, which is 1.0 MN. Very often, > 40 times, big horizontal (?) impacts >1.0 MN occurred according to fig 13c during 16 minutes 40 seconds, which in fact would have reduced the ship's speed considerably. More than 40 times during 17 minutes the visor is alleged to have been hit by a **horizontal**, opposing force >100 tons - nobody aboard noticed this behaviour. And we do not know what happened aft - were the propellers always in the water?

DID 600 TONS LOADS HIT THE VISOR UPWARDS EVERY 4 MINUTES?

Figure 13d shows the **Z-force (vertical)** in H_s=4,3 m bow waves, speed 14,5 knots (negative upward but not including the visor weight 0.53 MN). During 16 minutes 40 seconds the ship should meet about **150 waves** (average). What is totally recorded in figure 13d is

4 wave loads - 2.7% -(***impacts***) > 6 MN (maximum 7.4 MN),

9 wave loads - 6% - (smaller but big ***impacts***) between 3 and 6 MN,

12 wave loads (8%) between 2 and 3 MN (still ***impacts*** because the duration is short) and

16 wave loads 10.7%) between 1 and 2 MN in the upward direction (also short ***impact*** loads).

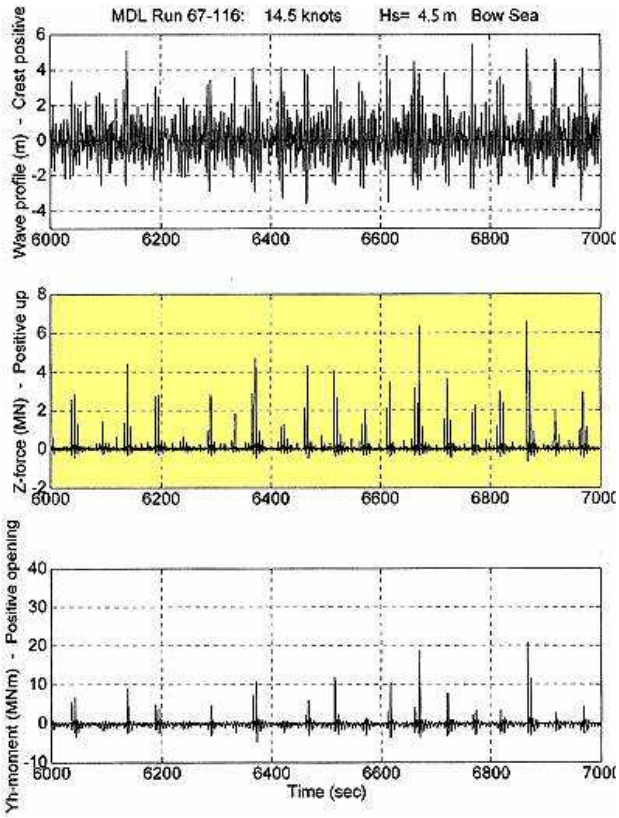


Figure 12.3 of (5)

The remaining wave loads - about 100 off (67%) - seems to have been smaller than 1 MN. Thus big wave loads - ***impacts*** - were very frequent according to this test -

every **4 minutes** the visor was slammed by an ***impact*** >600 tons (6 MN) upwards,

every **two minutes** there was an i***mpact*** >300 tons (3 MN) upwards and

every minute an ***impact*** > 200 tons (2 MN).

This is not the story in the 'Estonia' report (5)!

Nobody heard or felt big hundred tons ***impacts*** on the ship every minute!

You could also compare with Figure 12.7 in the Final report (5) (page 158) where above is stated to be plotted; every minute the Z force may exceed 2 MN, every two minutes the Z force may exceed 3 MN but you need 50 minutes - not 4 minutes - to exceed 6 MN. **Thus the results of Supplement No. 410 are not correctly copied in Figure 12.7 of the Final report (5).**

Note that the results are given in full-scale time. When doing the actual model tests at scale 1/35, the model is slowed down and the time scale is 1/2.986. Thus 60 full-scale minutes are about 20 model minutes. The weight/force scale seems to be 1/42875 but how it is achieved is a mystery. You cannot just scale up a model force to full scale using a factor. The force consists of different components following different scale factors.

To me figure 13d (and also figure 12.3 in (5) above) seems faked. First it is never explained in the SSPA report how suddenly very big *impacts* occur against the visor - how and why solid water slams perpendicular against the visor plates and how the vertical component becomes every 4 minutes > 600 tons (full scale). An impact is not solid water! An impact is locally compressed air between the wave and the shell plate surface that suddenly escapes at a certain high pressure. Nevertheless - more or less at every pitching - every 6 seconds - the lifting force exceeds the visor weight in the model tests, which would mean that every 6 seconds the visor was lifted up from its supports - by compressed air? - and then came crashing down. But nobody heard these strange phenomena on the 'Estonia'. Evidently the model tests are faked. I am 100% certain about it.

THE BIG IMPACT IN THE MODEL TESTS

The report tries to explain the worst ***impact*** -7.4 MN (740 ton Z-force - about 1 000 ton total) at time 7 520 seconds, which apparently also caused an opening moment 35 MNm (figure 13e). A similar impact is shown in the lower photo of fig. 10 (even if the wrong speed is given). In figure 14a is shown the **wave profile** between times 7 510 and 7 530 seconds - nothing amazing - the wave heights are about 4-6-4 meters before, during and after the ***enormous impact*** 740 ton Z-force. In figure 14b the **relative motion** is shown as -3.1, -6.4 and -5.4 meters before, during and after the **impact**, i.e. the visor was submerged 3.95 meters (-6.4 meters relative motion) when the impact occurred - see the photo in fig 10. Figure 14d shows the impact with its peak just after the 7 520 second. During less than a second there is an impact force of 7.4 MN, viz. 740 tons, 6 seconds later there is another impact of 200 tons.

Here you have to ask yourself, if a 740 tons force ever hit the model (followed by a 200 tons load). In model scale it seems to be 17.26 kilograms. Nevertheless - how could it just develop and disappear in less than a second? When the visor starts to submerge, the increasing volume/buoyancy of the visor, it slows down the relative motion, as seen in the regular waves (see above) data, and how does then the impact develop? When I measured impacts (pressures) a very long time ago (at the Webb Institute laboratory, 1968) on a flat bottom (slamming), it seems that the impact was very sudden - bang - due to high local pressure and of short duration - it receded quickly, when the water dispersed. And slamming was not very frequent! A wave impact on the bow aboard a real ferry is heard all over the ship and you slow down immediately.

THE ENERGY CONTENT

Now, another question is of course, if there was enough energy in the very short impact at time 7 520 seconds of 7.40 MN, which lasted less than a second, to damage the visor locks?

The SSPA report does not answer that question. Nowhere is it ever stated that a short impact load can damage the visor locks. In my simple opinion the alleged impact load of 740 tonnes in upright condition during less than a second (I do not think it really existed) would easily have been transmitted to the hull via the worn Atlantic lock - 100-200 tons - the worn side locks - 2 x (100-200) tons and the worn hinges 2 x (200-350) tons > total 800 tons strength, and the sudden impact - if it occurred (I doubt it) - would only have deformed the locks and

hinges and jammed the visor. It is more logical to assume that the visor was ripped off sideways by a wave impact, when the list was 40-50 degrees, when the impact load was very big 600-700 tons and when the locks were not efficient - *they could not keep the visor in place sideways*. But the visor was probably still attached to the ship when it sank.

However, I am ready to accept the possibility, that the visor was blown off by an explosion between the visor and the ramp - **under water** after the accident; it would explain how the side locks pulled out the plates they were welded to (but I do not understand, why anybody would cause an explosion - **under water** - between the ramp and the visor - it would achieve nothing except blowing off the visor and keeping the ramp closed).

The SSPA report says in the **Summary**, that model tests have been done and that a highest upward vertical force of 7.4 MN was recorded. Basta! It is suggested it is an 'impact'. The ulitmate faking was then probably done by Stenström in Dagens Nyheter 25 August 1995, where he informed the results; that model tests (done June 28-July 1, 1995) had proved that **only one wave could have caused the whole accident** - one big force had ripped away the visor **1.19**. But evidently the SSPA report does not say that.

FALSE SIMULATIONS OF THE VERTICAL FORCE

The Final report (5) also *simulates* the loads (Z-forces). The simulation (blue in Figure 12.7 of (5)) suggests it takes 800 hrs (!) before the Z force > 6 MN! Why is that? What is a simulated Z force? According to (5 - page 157) it is a combination of

(a) the weight of the visor,

(b) the inertia force,

(c) the hydrodynamic force due to added mass and damping,

(d) the hydrostatic buoyancy force,

(e) the Froude-Krylov force,

(f) the non-linear vertical impact force and

(g) the force due to stationary flow around the submerged visor.

This is interesting: (a) is known - 0.53 MN constant downwards!, (b) is known, if we know the acceleration, (c) is known - say 30% of d, (d) is known (the volume of the visor below water) acting upwards against (a), (e) is known and small like (g). But (f)? **How do you *simulate* the non-linear vertical impact force upwards?** The Final report (5) doesn't say and according to the author it does not exist any method to simulate impact loads on visors! Thus the simulations cannot be true (even if they show much smaller loads than the loads measured in the model tests).

You should look at the time series of the model tests, e.g. figure 12.3 of (5) and figure 13d of supplement no. 410. Suddenly - **within a fraction of a second the vertical Z force changes from 0 to say > 6MN (600 tons!)**. This change is evidently **not** due to (a) a sudden change in the weight of the visor (0.53 MN constant), or (b) the inertia force (it changes slowly 0,2-0,3 g = 0.12-0.18MN with the motion period), or (c) the hydrodynamic force (max 0.12-0.15 MN), or (d) the hydrostatic buoyancy force (max 0.4-0.5 MN) opposing (a) or (e) the Froude-Krylov force or (g) the stationary flow force (negligible).

All the simulated forces (a)+(b)+(c)+(d)+(e)+(g) should result in a combined load of about - zero or < 1 MN!

The only real load of interest is (f) **the non-linear vertical impact fore** - and **it does not exist any method to simulate it!** The 'impact' is just local high pressure. Thus the alleged very bad comparison of simulated and

modelled data in figure 12.7 is based on false information. The simulated data cannot have been computed (simulated) and the modelled data are probably 100% false.

Thus the *statements* in chapter 12.2.4 in the Final report (5) are false:

> *"Qualitatively the simulated results agree well with the experimental data".*

This statement is a **lie** to support the false experimental data. Obviously anyone asking the question how a 700 ton force could have been measured in model tests would only have been dismissed by the statement that simulations produce similar loads.

> *"The experimental time histories of the vertical load on the visor have high upward peaks similar to those of the simulated records and in the downward direction the loads are negligible".*

It is more probable that the very high upward modelled peaks are false as no simulated records exist to support the experimental data.

THE SUDDEN OPENING MOMENT

Another very important observation is in fig 13e and fig 14F showing the Yh-moment (MNm) - Positive opening, i.e. the opening moment only lasts less than half a second - then it is gone! **This means of course that the opening moment can never open the visor! It is of too short duration!** Also, as soon as the visor opens, it fills with water and becomes heavier. Water then does not act only on the outside of the visor, but also on the inside and reduces the opening moment. This means that the visor never could have flipped up and down during 10 minutes as stated by JAIC in the Final Report. Also, water in the visor reduces the load transmitted to the locks by an outside force.

To me the SSPA tests are faked and misleading. The report presents only 1 000 seconds of tests in irregular seas, 9.25% of the total 3 hours test - 10 800 s, and in this very short time - 1 000 seconds - the visor was allegedly hit 4 times by very big impacts >6 MN (600 tons) upwards. Every four minutes the visor was hit by a 600 tons impact. This is what the SSPA report says, but this is not what the Final Estonia report or any false simulations says - there the impacts are much, much rarer.

HOW THE FALSIFICATIONS WERE DONE

Probably SSPA Marine AB (Trägardh) was told by Stenström to produce a test with many big impacts, which Stenström thought could have ripped off the visor, and it was produced by SSPA. The media was of course informed about the big, recorded load peaks - they had ripped off the visor. Probably they faked the Z-force (and X-force?) gauge to record higher values. Then Stenström realised that the SSPA report produced too many big impacts, but then it was too late to change. The report does not say what happens aft with the propellers - were they in the water all the time?

Witnesses aboard never heard any of the big impacts forward every four minutes prior to the accident. So the JAIC had to fake the survivors testimonies also.

I do not believe the SSPA report - the Z- and X-forces recorded seem much (10 times) too high to reflect actual conditions and any alleged 'smulations' to support the peaks are false. The only possibility seems that the gauges were manipulated to record higher than actual loads in the model tests or that the printed records have been manipulated manuallly afterward. This matter should be investigated. It is very sad that SSPA Marine AB, the only Swedish ship testing tank, was forced to participate in the cover-up of the 'Estonia' accident. The SSPA Marine AB has evidently been asked to comment on above and has refused to answer.

APPENDIX 3 - QUESTION IN THE SWEDISH PARLIAMENT BY HELENA BARGHOLTZ (FP) TO MINISTER MONA SAHLIN ABOUT A NEW ESTONIA INVESTIGATION

on 3 September1999

The theories what caused the Estonia disaster are many. There are a lot of rumours; from the Russian mafia to arms smuggling, submarines and extortion. The investigation Commission is regularly accused of not having presented the whole truth.

According to the German Meyer shipyard the Estonia was victim of an attack by explosives. Sabotage, in combination with bad maintenance, sank the ship, the shipyard suggests.[152]

Several parties are requesting a new investigation to finally clarify all outstanding questions. In January the international and the Nordic transport workers federations demanded a new Estonia investigation. Last spring the press secretary of the minister assured, according to the press, that the government would make a decision before summer. It was not the case.

My question to the minister is thus:

When will the government make a decision in the question about a new investigation why the Estonia sank?

Reply by Mona Sahlin

on 15 September 1999

Helena Bargholtz has asked when will the government make a decision in the question about a new investigation why the Estonia sank.

The government will reply to the question in the budget resolution which will be submitted to parliament on 20 September.

PRESS RELEASE 16 September 1999 by the AgnEf (Work Group to investigate the Estonia Sinking)

Re the Estonia disaster

According unconfirmed statements the Government will in the budget resolution on 20 September give a negative reply to the requests for a new accident investigation by survivors, ITF/NTF, Anders Björkman, and others.

The newly created association AgnEf is worried that the responsible minister Mona Sahlin has no support in the Government for the recent positive promises given to relatives and survivors at the meeting on 20 April this year, where she promised both economic and moral support for the new association and its objective to arrange a seminary where all outstanding questions about the real causes of the accident shall be reviewed.

Her trustworthiness will be strongly questioned if the statement will be proven correct. In such case is shown that responsible politicians and authorities have not listened to the recommendations of, i.a. Peter Örn and the Group of Analysis have given in their Part and Final reports of their work.

The AgnEf has today sent to Ms Mona Sahlin the below question via e-mail. The AgnEf has also earlier this week, with reference to the Independent Fact Group (Stenberg/Ridderstolpe) report about falsifications of PSC reports hiding un-seaworthiness, appealed to the Chief prosecutor and in a request to the police asked whether a criminal act has been committed.

For the AgnEf (Arbetsgruppen för utredning av M/S Estonias förlisning)

Anders Ericson, Chairperson

-----e-mail -----

From: Anders Ericson <anders.ericson@oreline.net>

To: Näringsdepartementet <registrator@industry.ministry.se>

Anna Bohman, ND <anna.bohman@industry.ministry.se>

Date: 16 September 1999 18:39

Subject: Question to Mona Sahlin, minister responsible for the Estonia

To Mona Sahlin, minister responsible for the Estonia

Re. Estonia-discussions/decision in connection with the autumn budget

We (AgnEf) have information that questions have been put in the Parliament re. the Estonia and that some type of statement and answers to the questions about the possibility of a new investigation will be given as part of the government budget presentation.

AgnEf has in a letter applied for economic support for a planned seminary the objective of which, with your pronounced support, is to clearly find out why the disaster took place and to be able to write off other theories.

If a decision will be made that a new investigation shall be made, this is an honest decision to the effect that relatives, survivors and other interested parties together with responsible authorities will be given replies to outstanding questions about the Estonia disaster. It will also show the rest of the world that Sweden has power and ability to handle the difficult questions and that you now actually have listened to and respected the affected persons.

A decision to the contrary will be received with great surprise and will demonstrate that politicians and authorities have not learnt anything and that they are not properly informed and that they have not read the Part and Final reports of Peter Örn where, i.a. politicians and authorities are severely criticised. An important recommendation was, i.a. that consideration should be given to the rights of relatives and survivors to be offered participation in essential decisions affecting them.

We in the AgnEf express our concern that the work with the seminary which is planned will be made more difficult by a negative decision and assume that your decision and promise at the meeting on 20 April will be duly respected by other parties in the government and in the Parliament.

...

With kind regards

Anders Ericson,

Chair person AgnEf (Arbetsgruppen för utredning av M/S Estonias förlisning)

Swedish daily Aftonbladet 17 September 1999

No new Estonia investigation

STOCKHOLM. **There will be no new investigation of the Estonia disaster.** The government says no.

On Monday is expected the official decision, but already now the various organisations of relatives have been informed, according to Radio Sweden.

Organisations of relatives and the international and the Nordic transport workers federations have requested that the Estonia disaster shall be investigated again. But the Swedish Board of Accident Investigation and the National Maritime Administration think that no new investigation is required.

TT

The decision by the government on 20 September 1999 - resolution 1999/2000:1

... There have been several demands and various reasons for a new investigation. The Swedish Board of Accident Investigation and the National Maritime Administration have been given opportunity to comment on the demands and the reasons.

Another aspect to consider in this respect is that a new investigation of the wreck means that the agreement of grave yard peace must be renegotiated. When deciding in February this year, that no efforts to salvage the dead bodies shall be made, the government judged that renegotiating the agreement was difficult. This judgement is still valid.

All together the government finds today no reasons to work for a new accident investigation. It does not prevent that the question can be tested again, if the government in the future would find reasons for a new investigation.

---

[152] **3.18**.

APPENDIX 4 - DR. MICHAEL HUSS, FRINA, AND KARPPINEN MAKE INCORRECT WATER INFLOW CALCULATIONS

This appendix shows how Dr. Michael Huss, expert to the 'Estonia' accident investigation Commission, falsified the water inflow into the superstructure with an open bow ramp in a sea way and how Dr. Tuomi Karppinen, member of the accident investigation Commission, falsified 'simulations' of the same matter.

According supplement no. 523 formula (8) written by Dr. Huss the **instantaneous water inflow (ton/s)** on the car deck into the superstructure of the 'Estonia' above waterline due to forward motion/speed at a time t is, $M_{sp}(t)$,(specific weight x speed x area)

$$\mathbf{M_{sp}(t) = j \cdot V \cdot A(t)\ (ton/s)}$$

where

j = specific weight of water (1,008 t/m^3)

V = ship's speed (7,46 m/s)

A(t) = ∫(b(z)) dz = area of ramp opening in the superstructure (m²) below the waterline, where

b(z) = ramp breadth = 5,4 m, (constant when the ship is upright)

z = $Z_r(t)$ - C (m) vertical coordinate for height (m) of the opening (positive when the ramp is below water), where

$Z_r(t)$ = relative motion (m) at the ramp (see figures 12b and fig 14b in supplement 410) relative the waterline and positive below the waterline

C = the height of the ramp opening above the bow wave = 2,0 m.

This formula is in principle correct assuming the opening is clear. In reality it is blocked by trailers loaded inside the ramp.

Total water inflow (tons) during time 0 - t seconds on the car deck in the superstructure, when the ramp is below water, MA, is according formula (9) in supplement no. 523 of Dr. Huss

$$\mathbf{MA = \int(M_{sp}(t) + f(t))\, dt\ (ton)}$$

where

f(t) = inflow due to other factors (small influence) = 0 ton/s.

According Supplement no. 410 we know the relative motion $Z_r(t)$ in regular waves (figure 12b) and irregular sea (fig 14b) and we can thus calculate how much water flows into the superstructure during, e.g. one pitching down into a wave.

It is however a truth with modifications, as water on the car deck in the superstructure changes the trim of the ship, i.e. the relative motion increases and the inflow increases too.

To simplify the calculations *constant* (zero) trim and no heel during the inflow period and the extra weight are assumed by Dr. Huss. It is thus assumed by Huss that the extra weight of water inside the superstructure does not change the future relative motion, i.e. that the ship actually pitches up again.

It is then easy to calculate the inflow of water into the 'Estonia' superstructure in both regular and irregular waves during one minute or in below case, 39 second, - it is only a function of speed V.

INFLOW IN REGULAR WAVES DURING 39 SECONDS

$Z_r(t)$ in Regular waves (figure 12b of supplement 410) (head waves 15 knots, H = 4,0 m, T = 9,3 sec) - 7 pitchings up/down between seconds 59 and 99 (period 5,71 seconds) - total time 40 seconds of which only about 15,4 seconds with the bow opening of the superstructure *below* water (38,5% of the time).

z (the height of water above the lower edge of the ramp moving into the superstructure) varies from 0 to 3,0 m about as follows during one **2,2** seconds dip into a wave

0.0 - 0,6 m for **2,2** seconds

0,6 - 1,2 m for 1,9 seconds

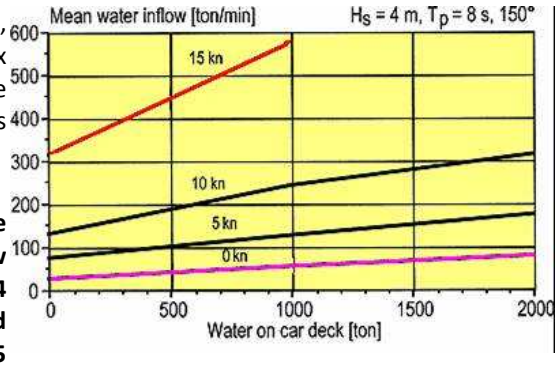
1,2 - 1,8 m for 1,4 seconds

1,8 - 2,4 m for 1,1 seconds

2,4 - 3,0 m for 0,8 seconds

The ramp opening 3,0 meter above the lower edge, 16,2 m², is *average* below water only during 1,48 seconds. The max height of the opening was >5 meters, thus only 60% of the opening was below water. Let's assume that all water flows below and beside the trailers loaded inside the ramp.

Total inflow MA during one pitching up/down of which the opening of the superstructure is only 2,2 seconds below water is thus about 180 tons (i.e. the whole opening 3 x 5,4 m = 16,2 m² is below water average 1,48 seconds - speed 7,45 m/s, j = 1,008). During one minute there are 10, 5 pitchings. Due to speed forward the water collects aft in the superstructure and does not flow out. But as soon as the ship stops with the opening away from the waves, all water flows out again!



Figur 12.9 i (5)

It means that total inflow in regular seas is 1 891 tons/minute with speed forward! According Huss (supplement 522 figure 4.2) the inflow is only 270 tons/minute. Hull falsifies the inflow by a factor of seven! In reality the inflow is probably much larger. The first 180 tons inside the superstructure trims the ship on the bow but has no time to flow out, the relative motion changes and the ship bow opening remains *longer* below water, more water flows in - the ship goes down like a submarine. It can easily be verified with model tests.

INFLOW IN IRREGULAR WAVES

A similar calculation can be done for three pitching up/down in irregular seas (bow seas 14.5 knots, H_s=4,3 m) according figure 14b - one pitching z_{max} = 1,2 m for 2 seconds, another pitching z_{max} = 4,6 m for 2 seconds, a third pitching z_{max} = 3,4 m for 2 seconds, etc. These three pitching up/down take about 20 seconds. With similar calculations as above the author finds that the inflow is 520 tons during 20 seconds, i.e **1 560 tons/min** in irregular (bow) sea.

According Karppinen (supplement 523 figur 3 -x-) the probability (sic) for this is <0,001. But evidently the inflows in regular and irregular sea are of the same order >**1 500 tons/minute,** and the probability (sic) for this inflow in irregular sea is one, i.e. it occurs all the time in any sequence of waves. The whole Karppinen report is pure falsification.

The above is calculated for speed V=15,0/14,5 knots. Naturally the inflow is reduced, if speed V is reduced. The relative motion amplitude hardly changes as long as the speed is >10 knots, but the number of pitching up/down per minute is reduced by reduced V, i.e. simply speaking the inflow is reduced by V^2. At 10 knots the inflow into the superstructure is reduced by 49%, i.e. it is still considerable. And as the speed was >10 knots for more than two minutes after the ramp was allegedly pulled open, enough water to make the 'Estonia' capsize would have flowed in at that time.

INCREASED INFLOW DUE TO OPEN RAMP

The above does not consider the open ramp. If the ramp is lowered (pulled fully open down to sea level), it acts as a plough and forces water up into the opening in the superstructure above the waves (there is at least 2x5,4=10,8 m^2 ramp opening above the wave), and the opening becomes apparently bigger (say 67%); figure in **3.3**. It means also that water flows in longer during each pitching down, as the ramp is under water longer than the opening in the superstructure itself (say 25%).

It means that the actual inflow will double.

SOUND AND NOISE WHEN WATER IS LOADED ON THE CAR DECK

To load >2 000 tons/min (or only 500 tons/min according Huss) water on a car deck in a superstructure on a ferry at sea should result ih big sound and noise and be noted by all aboard. The solid water is pushed in at high velocity and should destroy loose cargo in the way. Cars and trucks on the car deck must have been pushed aft and must have been demolished, electrical equipment must have been short circuited and damaged, passengers on deck 1 below the car deck should have heard an enormous thundering noise during several minutes when the water was pushed in ... but heard nothing. Huss and Karppinen never asked any survivors from deck 1 how they experienced water being loaded on top of them.

CONCLUSIONS

Huss has miscalculated the inflow of water into a superstructure for one minute with a factor of 7 - Huss states e.g. that the inflow in regular seas (head waves 15 knots H = 4,0 m, T = 9,3 sec) is only 270 tons/minute, when it should be at least 1 891 tons/minute, considerably more, if the ramp influence is considered. It is assumed that trailers and cars on the car deck are pushed aft by the water and do not influence the inflow.

Karppinen has also miscalculated the inflow in irregular seas (bow seas, 14,5 knots, H_s=4,3 m), where the total inflow is about 1 560 tons/minute for a typical sequence given in Supplement no. 410, while Karppinen states a very small probability (sic) (>0,001) for that value.

Neither Karppinen nor Huss considers the influence of the ramp - it doubles the inflows.

Neither Karppinen nor Huss considers that the first water/wave entering into the superstructure modifies the trim of the ship: when the opening in the superstructure comes below water (at 15 knots) the water (>150-180 tons) enters forward on the car deck and trims the ship (>1 meter!) on the bow and probably stops the relative motion, the ship will not pitch up again - you would expect the vessel to go immediately down like a submarine - the ship would never pitch up again! It can easily be confirmed by model tests.

But on the other hand, as soon as the vessel stops, all water flows out by itself.

Karppinen and Huss make so unrealistic calculations that you wonder, if the errors are intentional, as a part of the cover-up of the 'Estonia' investigation. Any university student can himself verify that the Huss/Karppinen calculations are manipulations.

Update 2007

In a **report by SSPA Marine AB dated 27 March 2007** the tests indicated that **initial flooding in the order of 2000-2500 tons/min could be expected with a fully open ramp.**

"Der finnische Leiter der offiziellen Untersuchungskommission, Kari Lehtola, sagte, die Kommission habe kein Loch in der Fähre entdeckt. Selbst wenn es ein solches Loch gebe, hätte dies nicht zu der Katastrophe führen können." (Or in English - "The Finnish leader of the official accident investigation, Kari Lehtola, said that the Commission has not discovered any damage hole in the ferry. And even if such a damage existed, it could not have caused the disaster")

Der Spiegel, 2 September 2000

APPENDIX 5 - ABOUT THE DAMAGE IN THE SIDE, WHICH LEHTOLA DENIES IS THERE

Below are various articles in Swedish media by Mr Knut Carlqvist, Ph.D, about the 'Estonia' investigation. Carlqvist has on 3 January 2000 presented all the German findings in a big Swedish daily - bad visor/ramp conditions, corroded shell plating, leakage below the waterline, the 'lost' Utö plot, the modified course of events with the sudden listing at 01.02-01.05 hrs and **strange stories about 'secret' military cargoes being dumped through the pilot door**, etc. - to the Swedish public, and the only response was silence. Therefore/after Carlqvist has written a book in May 2001 about his findings - **Tysta Leken** (The Silence Game). The damage in the starboard side below, or above, the waterline is mentioned several times - it must be there - but the official video films of the relevant area have been edited, so that the starboard side cannot be seen. And unfortunately the Bemis divers did not inspect the relevant area, when they did their diving in August 2000.

First is the article from the Swedish daily Svenska Dagbladet, SvD, 2000-01-03 based on the German Final report that suggests that most of the statements of the crew 1994 are lies, which the Commission used in its Final report (5). The German explanations how the ship sank are quite confusing - no stability calculations are used - but much info is quite interesting.

Did Bombs contribute to the Estonia Sinking?

By Knut Carlqvist, © SvD Brännpunkt 2000-01-03.

In the evening Wednesday 27 September 1994 there was a woman on the Finnish cruise ship 'Silja Festival' in the port of Tallinn. A ferry passed at 25 meters distance with an open visor. "A ship in Belgium sank, when it left the port like that", she told her son. The following morning she was informed that the 'Estonia' had sunk. The visor was closed before the 'Estonia' left the quay but was opened again in the port basin, so that the seamen could access and secure the bow ramp with a rope around it to the deck winches on deck 4.

The Ramp and visor were damaged earlier

The ramp was twisted; neither locks nor hooks could be used. The two port deck ramp hinges on deck 2 were broken. The wedges between ramp and frame were filled by mattresses and cloths from a store at the side. So was the condition since long. Already at the take-over in January 1993 there were remarks about the ramp hinges, the locks and the rubber packing.

Heiwa Co does not believe that the ramp and visor damages contributed to the sinking. Evidently some water may have leaked into *the superstructure > 2 meters above waterline* that way, but the amount must have been very small - and flowed out. One reason why the German report is not reliable is that it puts so much focus on the visor and ramp.

The latter also concerned the visor. Fifteen meters packing should be renewed around the visor and ten meters around the ramp. Nordström & Thulin were responsible for the maintenance and it was never done. Late winter 1994 the situation became worse, when the ferry was driven hard through the ice. The timetable must be kept at all cost. The repairs were postponed. Passengers have testified how seamen used sledge hammers to open and close the locks. Sometimes they were forced to cut or burn them lose.

Ulf Hobro, the NMA ship inspector, who had approved the 'Nord Estonia', the predecessor of the 'Estonia' 1991 and then joined the Nordström & Thulin, explained to the international accident commission (JAIC) on 17 February 1995:

"We never bothered about the rubber packing, we never replaced them and did not intend to do so. The visor was full of water at sea and all knew it."

The video films of the wreck show that the rubber packing is missing. Both Hobro and the Bureau Veritas Class surveyor Anders Wirstam - handpicked by the ship owner - knew that the 'Estonia' did not comply with safety requirements of SOLAS 1974 for ferries in international trade: the collision bulkhead behind the ramp was missing. She sailed with interim certificates. What they did not know, but should have suspected, was that the ferry was leaking.

Five years ago, when it was obvious that the JAIC was going to blame the shipyard for the accident, the building yard, Meyer Werft, appointed lawyer Peter Holtappels and marine insurance casualty investigator Werner Hummel at Hamburg to form a Group of experts to find the cause of accident and propose future actions. Their report is almost ready and I have just been down at Hamburg and read it. The information, partly new to me, originates from there (four thick files plus appendices).

The JAIC concluded in its Final report in December 1997 that the 'Estonia' left port with 1-degree list to starboard, in spite of the port heeling tank being full and the starboard tanks being empty. There was no possibility to make her upright. Wind from port side gave her later another 3-4 degrees list in open sea.

The Bottom was damaged - the ship was leaking

One assumption is that she was incorrectly loaded. The German report shows, after a reconstruction truck by truck, that the ferry was correctly loaded: Sten-Christer Forsberg - technical manager at Nordström & Thulin - agrees:

"It should have happened to any crew."

A full port heeling tank (and an empty starboard tank) compensates for 8 degrees, still there remained 1-degree list. Together it makes 9 degrees. There were thus almost 200 tons extra weight on the starboard side. You cannot even theoretically load 1 000 tons of trailers and trucks on a fully loaded car deck so badly.

Heiwa Co does not believe that some double bottom tanks were leaking at departure. Heiwa Co believes that the port heeling tank was never filled up at all at departure - it was made up later as an excuse, why the crew didn't use the tank later.

The extra 200 tons were somewhere else, probably in the form of water. **Detailed studies of the video films show a hole in the bottom, among other things a big corroded area. One or more double bottom tanks were flooded by water at departure (and it had been like that for a long time).**

The 'Estonia' was thus not seaworthy, when she left Tallinn. The Swedish ship inspector Åke Sjöblom tried to warn the officers, but he was on the ship to train Estonian colleagues and had no formal power to stop the ship. The officers ignored him.

The ferry joined the fairway at 16 knots. As usual the visor filled up with water to the bow wave level - the lower stringer. Traces of oil inside the visor prove it. When the wind and the waves increased, the amount of water inside the visor rose and leakage of water into the car deck space started. Several passengers have testified about metallic impacts, the visor hit against the hull, steel to steel.

Water in the Superstructure

At 20.45 hrs a conference was ended aft due to intermittent noise. The Group of experts have clarified, where the noise came from. On the wreck the starboard stern ramp is partly open. The 'Estonia' trimmed half a meter on the stern and the leaking water from the bow ramp ended up inside the stern ramp.

By now and then opening the stern ramp using the hydraulics the water was let out - an old trick having been used before. The intermittent noise was caused by the hydraulic pump being used from 19.30 hrs onwards. Twelve four inch scuppers were not enough. When the water inside the visor rose another meter - to 140 tons - she did not trim on the stern anymore. Water started to collect on the starboard side.

At 00.30 hrs she reached "the waypoint" - the position SE of Utö where she should change to a more northern course towards Söderarm.

The missing Plot

Here we encounter one of the mysteries of the story, the missing plot. Readers familiar with the JAIC Final report know that all ships in the area were plotted by Finnish coast guard radar on Utö - all except the 'Estonia'. We know how the ships moved.

Differently fanciful explanations have been given, why only the 'Estonia' plot is missing. Last summer I called Hans Rosengren at the Marine Academy at Kalmar about the matter, as I on the JAIC tape recording with the master on the 'Silja Europa', Esa Mäkelä, hear that Rosengren shows Mäkelä this plot with the comment that it *"evidently is wrong"*. Stressed Rosengren explains that he cannot comment and refers to Heimo Iivonen, Finnish member of the JAIC. Iivonen then explained to me that the 'Estonia' had gone too close to the Estonian coast, the signals were too weak. There was no plot.

But the plot existed. It was sent from Utö to Finnish navy headquarters at 16.45 hrs on the day of the accident. With 90 percent probability it shows the course of the 'Estonia', navy commander Vesa Ennevaara explained to the German group. Bearing and speed does not tally with reported positions, which was explained by some work being done manually and disturbances of radio communications. The plot shows that the 'Estonia' sailed closer to the Finnish coast than suggested by the JAIC and instead of turning north to Söderarm turned south in a west-south-west direction **1.26**.

The Germans experts consider that the plot is correct, as it tallies with other observations. What happens, when the 'Estonia' changes course, is that the ship starts to roll in the side wind, an effect reinforced by the water on the car deck. Captain Andresson orders the stabilizers to be activated, but there are problems with the starboard fin.[155] A couple of seamen get it out using a sledge hammer.

As the rolling does not stop, the master was forced to turn the ship against the wind, i.e. towards southwest, and slow down - footnote 24 in **1.4**.

The Visor is lose

The watchman Silver Linde reports about 00.45 hrs about large amounts of water on the car deck and seamen are sent down to do something. The visor side locks and one deck hinge have broken. The visor moves forward and aft. The hydraulic pressure falls and the bow ramp falls slowly forward against the horizontal beams inside the visor. Scraping noises from the swinging ramp frighten passengers in cabins below the car deck. They hear water sloshing above.

Heiwa Co does not believe this story. If it were large amounts of water in the superstructure at this time, the ship would have listed - or if the stabilizers managed to keep the ship upright - the water in the superstructure would have sloshed forward/aft inside the 150 meters long superstructure causing slower but deeper pitchings. But maybe only 10 tons of water sloshed around - could not cause much damage.

An early Mayday

At 00.50 hrs a weak Mayday is heard by a ship in the vicinity, probably from the 'Estonia', but as it is not repeated, no action is taken. What are the officers on the bridge doing? Based on judgements of the personality of captain Arvo Andresson the Germans believe he receives instructions from the superiors at Tallinn. No actions are taken to evacuate the passengers, many of whom are seasick in the cabins or are listening to Pierre Isaksson in the Karaoke bar.

Lifeboats prepared

One seaman is sent to prepare the lifeboats. Down on the car deck the crew is trying to secure the bow ramp with ropes - a dangerous work. But the ship is beyond saving.

Heiwa Co wonders why only *one* man went to prepare 10 lifeboats. At least 10-20 crewmembers were required for this job.

It is the water at the bottom of the ship that keeps her upright and the fact that the car deck is fully loaded, so that the trucks cannot move. Latest around 01.00 hrs the crew abandons its efforts to save the ramp and escapes up to deck 7. The visor hinge arms work through the deck beam. Passengers from cabins below the car deck call the information about water in the corridor. The girls there are very frightened and do not know what happens. Nobody has informed them.

Two, three hard Impacts - 50 degrees List

Now there are two, three hard impacts, Carl Ö who sits on the berth in his cabin below the car deck and smokes is thrown aft. "Now we hit an iceberg", somebody jokes up in the bar. Many survivors think afterwards that it felt, as if the ship had run aground. The passengers escape upward in the stairwells, remarkably many from deck 1. At 01.02 hrs they are surprised by a couple of heavy rolls to starboard, the last about 50 degrees. The time is confirmed with absolute accuracy by the testimonies. It can be established on the minute, as the alarm clock of Mikael Ö lost its batteries, when it fell to the floor. When he left the cabin, he took the clock with him. The last roll caused people being thrown across the Karaoke bar, through athwart ship corridors and down the stairs. Dead and injured persons were lying everywhere.

Water on Deck 1 in the Hull

Remarkably the JAIC has decided that the time was 01.15 hrs, which is only supported by one testimony, 3rd engineer Treu's. Probably the commission wants to shorten the time between the accident and the Mayday that is sent at 01.22 hrs, the first that was effective. Carl Ö leaves the cabin (at 01.00 hrs) just before the big roll and sees water flowing out from some air pipes in the corridor. Other survivors make similar observations. This water is coming from below, not from the car deck, where it collects on the side and cannot reach the stairwell at the centreline.

The Germans assume that the impacts and the rolls develop, when the visor hinge arms have cut the last deck beam and when the Atlantic lock bursts. The visor falls forward and rests on the forepeak deck, which in turn damages the visor bottom. The visor hangs on the ramp and, due to the list, its starboard side is pushed aft, but it is prevented from falling off by the starboard hydraulic

Heiwa Co does not believe this German scenario. The ship has at this time stopped and the wave loads on the visor above the water were very small. The visor can therefore not fall forward, cut the deck beam and pull open the ramp. And even if it did, very little water would enter into the *superstructure* - the speed was nil and the opening away from the waves.

cylinder, which is still attached to the ship. At the same time the ship turns sharply port, which causes the roll. The ship then stabilizes itself temporarily with 10 degrees list, which until 01.10 hrs increases in steps to 30 degrees. Then it is impossible to get out. The JAIC states, as is wellknown, that the visor fell off under way (without the bridge noticing) and pulled the ramp immediately fully open. After having sailed for two minutes against the waves with an open car deck, the Estonia got a list. That theory has no support of technical facts or testimonies. I will not develop the analysis of the testimonies here, but both Treu and systems engineer Sillaste - the key witnesses of the Commission - state firmly that the bow ramp was up after the impacts and the rolls. The water flowed in continuously around it, not only when the ship pitched into the waves. Thus the ramp was protected by the visor.

Until now both the JAIC and its critics have accepted the statements of watchman Linde, who was the only person on the car deck before the accident, but at one questioning he happened to say that the control panel for visor and ramp was open *"because the bosun worked with hydraulics, and it was only he who had the keys".* (Evidently the control panel was not locked at all - AB note).

Therefore Linde could see the control lamps at 00.45 hrs and thus the bosun was with him on the car deck. The summary of testimonies shows that other persons were there too, e.g. 2nd officer Kannusaar and the AB Aulis Lee. But the crew was told to shut up after the accident, the truth would have been a disaster for the shipping company.

Visor attached to Ship, when it sank

Several passengers saw the visor, when they were on the side of the sinking ship. ...

The German experts can therefore establish that the visor fell off, when the list was 135 degrees, when the starboard hydraulic arm was ripped out, and the visor ended up beside the bow. It was there that it was found a few days after the accident.

So far it is a simple and trustworthy explanation of the 'Estonia' sinking. But what about the talked-about bombs?, you ask.

Bombs and Deck Sprinkler System activated

In the German report they are put in Chapter 32 with the heading

Heiwa Co does not believe that bombs exploded in

"Unexplained damages/Unexplained evidence", after the summary. Peter Holtappels explains that he does not want to draw attention from the basic cause of the accident, the lack of seaworthiness. Had the 'Estonia' been better maintained, had she had an extra collision bulkhead and was she handled with judgement, then these bombs would not have sunk her.

the *superstructure* aft of the ramp and between the ramp and the visor at 00.45 hrs, i.e. 17 minutes *before* the sudden list occurred. Heiwa Co believes that the *'unexplained damages'* were caused, when the visor was removed from the ship after the accident under water - to back up the theory of the 'visor-lost-underway'.

That three charges detonated are almost certain, the only outstanding item is a metallurgic confirmation. Two on the starboard side and one on the port side, which probably had fallen down. In addition is seen an un-detonated charge on a film of the port ramp bulkhead. They had been placed in location after the departure from Tallinn and exploded at about 00.45 hrs. It was the reason why a group of crewmembers was sent down, and why the sprinkler system on the car deck was activated and why the fire alarm "Mr Skylight" was sent.

No. 1 Man-over-Board Boat picked up

It leads to a number of questions. Was the purpose to sink the ferry? How did the bombers in such case plan to leave the ferry afterwards? The planning was not by a suicide patrol. The last question can be answered. At the JAIC questioning of some crewmembers at Landvetter in March 1995 the Finnish member Kari Lehtola explained that all lifeboats had been found except one, the "man-over-board"-boat. According to the Final report chapter 8.10 it had been found drifting outside Hangö. The other lifeboats drifted south and ended up on Dagö. Why did the MoB-boat drift in the other direction? After several requests the Germans were told that it had been picked up by a small cargo ship 8,5 nautical miles south of the wreck position on 29 September and had been handed over at Hangö.[156] It did not make things better, why should the MoB-boat drift 8 miles in 36 hours, when the other boats drifted 28 miles in 24 hours? It was also stormy weather and no intelligent master would salvage a small empty boat in the severe weather. Two survivors in their rafts saw the MoB-boat leave the ship. Thure P "saw from the raft something like a fishing boat on its way from the ship without caring about the persons in the water". The watchman Elmar Siegel recognized the boat, it had the lights on.

Military Cargo carried

The motive remains. The Germans provide the basic information but draws no conclusions. Just before the departure the port area was closed and two trucks were driven onboard escorted by Estonian military.

The German group has rank and names of these men. With the trucks were foreign, military officers, who are not listed in the passenger name lists. The receivers were the Swedish army for further delivery to another Western country. Together with other observations all this is interesting.

- At the diving in December 1994 the Swedes refused to identify the dead bodies on the bridge. It would have been sufficient to film the uniforms. The JAIC states that there were three bodies. Checking the censored video films you find five bodies, three of which are not crewmembers. One of them had a tattoo on the right hand.

Swedish Military Intelligence Services edit the Films

- All video sequences showing the bottom, the starboard side below the waterline from the bridge to the funnel and the object at the bow, and much other parts, have been cut away by the Swedish military intelligence services.

- Officially no diving took place until December, but the films prove considerable activities around the wreck from day one. In December you can see one diver too many, without lifeline. Not much graveyard peace there.

- The most serious matter is the search of the visor, which took weeks, in spite of it being already found at the wreck.

A false Lead

I guess the reason is the missing plot. The Swedes and the Finns presented a false lead - a false wreck position - to send others in the wrong direction - while they searched the sea floor north of the wreck with the visor as an excuse. They searched for something a great military value. According one statement the object was thrown out through the pilot door. The German report explains indirectly, why it is impossible to salvage the 'Estonia'. I have

only two objections. The severe impacts just before the heavy listing at 01.02 hrs cannot have been caused by the port turn or by the visor falling forward. The passengers would not have experienced that with a feeling as if the ship were running aground. I cannot understand the explanation how the ship sank on the stern, that the aft storerooms were flooded. They are too small and separate from the other compartments below the car deck. The missing information is on the censored, edited video sequences.

The German group of experts has produced some information why the 'Estonia' actually sank.

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There was no reaction in the media after the above article. No newspaper, radio or TV station followed up the new information, e.g. the accusations against the Swedish military intelligence sevices having edited the video films. Only the Swedish daily Svenska Dagbladet reported the following day that the German *"Report on the 'Estonia' does not change anything"*. Further from the SvD:

" The report of the German Meyer shipyard about the 'Estonia' accident, which was on Thursday handed in to the Stockholm court of law, will not cause a new investigation of the disaster. According to the government - minister Mona Sahlin - the report does not contain any information, which requires a new examination of the wreck and the causes behind the accident.[157] *"*

The silence in Swedish media resulted into another article by Carlqvist:

The Silent Swede (FinansTidningen 2000-01-05).

Silence is magic ... I wrote the article about the German expert group report on the 'Estonia' and sent it to Svenska Dagbladet. It contained some sensational statements. ... But in the media it was dead silent. ...

There are new facts ... That the 'Estonia' was plotted by the coast guard on Utö is a fact. That the plot on the day of accident at 16.45 hrs was sent to the Finnish navy headquarters is another fact. I have a copy of the fax in front of me. That the JAIC denies the existence of the plot is another fact. ...

The Visor was found at Wreck

It is a fact that the visor was found at the bow of the wreck a few days after the accident, another fact is that the Finnish and Swedish navy searched for the visor until 18 October. A third fact is that Kari Lehtola for the Swedish daily Göteborgsposten (10 October) stated that the big object at the wreck seen on the sonar pictures of 30 September - the visor - was "some kind of stone pyramid". Why a stone pyramid and not a circus tent? It is difficult to know.

It is more difficult to prove that the visor was found at the bow. Say that it takes a few hours to consider the matter. But when you have done that, you realise that the JAIC is providing disinformation. You can speculate why the JAIC does that, but is is a fact that it does it. ...

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This article did not cause any reaction in Sweden. But Carlqvist returned on 000112 with the following:

Damage in Starboard Side (Finans Tidningen 000112)

...

"No external damages on the wreck have been observed, except the damages on the visor and in the area around the bow ramp."

This clear statement is from the JAIC, 'Final Report', 8.5.1, page 120. ...

When I 1998 started investigating the sinking, I was told by relatives that JAIC-member Olof Forssberg had admitted that there was damage on the starboard side of the hull. Somebody asked a question about it at a meeting with relatives the autumn 1994. Yes, said Forssberg directly. Next question? Nobody expected three years later that the JAIC would deny the information in the Final report.

...

Last autumn I got a tip from a colleague. The Swedish daily Dagens Nyheter had published an article about the damage in the starboard side on 18 October 1994, three weeks after the accident. The journalist Anders Hellberg (more about Hellberg at **1.44** - AB's note) quotes an anonymous source

"with good knowledge about the ship construction"

and

"other well informed sources",

but also the Swedish NMA observer in the JAIC, captain Sten Anderson. ...

Superstructure ripped open

The investigators could not understand why the ship sank so fast. The visor had, after getting lose, hanged on the bow ramp and pulled it open a little - a meter.

"But many experts have had difficulties to believe that this comparatively small opening at the ramp would permit the very large amounts of water to enter, which sank the ship",

Hellberg writes. The theory suggested is that

"the hydraulic cylinders, which normally regulate the opening, have ripped great tracks in the hull (superstructure). The beam to which the cylinder is attached has in its turn ripped away a large part of the hull plating ".

The illustrator of the DN shows how it may have taken place. Hellberg continues:

"According to the source of the DN it produces 'severe mechanical damages and a big opening in the hull (superstructure)'. The opening will then be situated below the waterline in the severe weather."

Whether the damage extended below the waterline is a little unclear. There is no waterline for severe weather, as far as I know. The theory is not probable or realistic. The hydraulic cylinder attachment cannot be stronger than a welded hull supported by narrowly spaced frames. The cylinder is ripped away before any beam is damaged. But the theory is presented, as the investigators try to explain the damages. Furthermore, Hellberg reports in the end two explanations. First the one in the illustration, where the hydraulic cylinder twists a beam, which in turn rips away shell plating, second that it is the visor, which has punched a hole in the superstructure after getting lose:

"The survivors from cabins below car deck forward in the ship have stated that they heard a scraping sound on the outside of the hull - thus the side of the ship. That sound could have been the visor being dragged along the ship's side."

The latter explanation assumes 1) that the 'Estonia' had a severe list and 2) that she made forward speed. These two assumptions cannot be combined. The JAIC decided early that the visor was lost underway (14 knots), while the ship was upright. What anonymous experts tell journalists has no value as evidence. But that Sten Anderson confirms the damages in the hull side has it. He is quoted directly by Hellberg and he never denies the information:

"When the 50 to 60 tons heavy visor started to move, the hydraulics ripped a track in the hull plating and there was a damage in the hull (superstructure)",

says Sten Anderson ... who himself was not present at the Monday meeting at Tallinn.

Pictures of the Damages

The colleagues in the JAIC were thus at Tallinn, when the interview was made.[158] Further:

"There are pictures of these damages, which we have got from new pictures taken by the ROV",

says Sten Anderson. It is evidence that the Swedish investigators at the time of the interview thought that you could not deny that the 'Estonia' had serious damages on the starboard side and that these damages were shown on the video films. From the silence thereafter we can conclude that the damage could not have been caused by the visor movements. Sten Anderson did then not understand that his statements were critical. Today when I phone him he has

"not the slightest idea"

that the JAIC ever discussed a damage in the starboard side. It is too long ago, he says.

No Film Pictures of the Starboard Side

Anybody looking at the publicly available video films does not see any damage in the starboard side,[159] **you cannot see any starboard side at all.** In the British Disengages report about the video films, which is attached to the German experts' report, and which shows what film frames and sequences have been cut, is said:

"... the cuttings of the films - different cassettes from various times and days - always concern the same identical areas of the ship ... and includes the starboard side between the bilge and the car deck."

Amongst the cutaway sequences no doubt are the pictures that gave Sten Anderson and his colleagues such a headache. Also Anders Hellberg suffered memory loss. The book he wrote with Anders Jörle ('Katastrofkurs', 1996) does not mention any damages of the hull or superstructure. ...

Is there any other evidence for a big opening in the starboard hull of the wreck? Yes, there is. When the ROV in December 1994 shall be transferred into the car deck, the operator finds that the opening at the ramp was too small to permit passage. Therefore the ROV is sent down to the seafloor and is then manoeuvred directly into the car deck space through the opening. The ROV is always at 89 to 90 meters depth (video B40b in the Estonia-archive) in the mud on the seafloor. Several attempts fail before the ROV finally is inside the ship. Johan Ridderstolpe spotted this a year ago and the British has confirmed his discovery. The big opening in the starboard superstructure side explains why the car deck inside starboard side is covered by mud.

...

***

THREE JOURNALISTS FIRED - THEIR UNION WAS SILENT

Naturally there was no reaction after this article either, except that Carlqvist lost his job as culture editor of the Finans Tidningen and that also the chief editor was fired. Strangely enough, or not?, the Svenska Dagbladet editor in charge of Brännpunkt (see the first article in this Appendix) was also fired from his position! He had admittedly also published an article of this author a few months earlier about the same subject. It was crystal clear that the journalists were fired to stop writing or publishing articles about the 'Estonia'. But their colleagues remained silent. So much for Swedish democracy and solidarity.

But Carlqvist didn't give up - in September 2000 he managed to publish the following in his old newspaper with new info about the damage in the side. Carlqvist is convinced that there is a big opening in the starboard side:

One Diver too many (Finans Tidningen 000914)

"Håkan Bergmark disappeared as quickly as he appeared. It is if he were brought to the Ljubljanka and Engström too"

"The most important is not, if there is a damage in the starboard side of the 'Estonia', the most important is that the public does not know about it.

Håkan Bergmark, 41, was one of the first to dive down to the 'Estonia'. He says that he saw and filmed a big damage in the ship's side. The statement was published in the Swedish daily the Expressen on 22 August 2000. How the journalist, Fredrik Engström, got hold of Bergmark is not clear, but he tried also to question two of Bergmark's colleagues of the dive team, but they refused to talk. Anyway, Bergmark did not consider his diving a big deal then, autumn 1994.

"It wasn't my job to find the cause of accident. But when the Final report of the commission was issued several years later and nothing was written about the damage, I was very surprised",

says Bergmark, who today rather wants to forget everything about the 'Estonia'.

Engström does not appear to understand that he had fallen upon something. Bergmark appears quietly in a text about the diving of Gregg Bemis. The morning editions have hardly left the printing office before I get the first e-mail. I went to the petrol station at one o'clock to read the Expressen newspaper.[160] Not a word about Bergmark.

Well, it appears that the statements of Bergmark had been edited away in the afternoon editions; the article had been rewritten by another journalist. And evidently the matter was not followed up, Håkan Bergmark disappeared as quickly as he had appeared. It is as if he were brought to the Ljubljanka and Engström too. The damage - I wrote about on this page already last year - is not news. But that Swedish divers early inspected the wreck has until now been denied. Officially it was only Halliburton/Rockwater diving in December 1994, and that company had only British divers. The guarding and supervision of the wreck was effective from day one, so no pirates have been around. Bergmark must have been one of the Swedish navy anti-mine divers.

Big Damage in Bow Superstructure

When the campaign against Bemis had lasted a week I wrote to the editorial page of the Dagens Nyheter. Already on 18 October 1994 the newspaper had reported about a big damage opening at the bow, well illustrated. Senior representatives of the Swedish NMA had explained about it, with name and all. The journalist was Anders Hellberg. But the editorial editor (Kjellander) refused to publish the letter and continued to state that it was immoral to look for damage in the side. Then a few weeks ago I ended up in the morning sofa of Rapport (a Swedish TV morning) program with the same Hellberg and he denied all about any damage in the side. Furthermore the starboard side was in the mud.

"You have yourself written about the damage", I said later. *"How can you pretend that it does not exist?"*

"It is located forward", said Hellberg. *"Now we talk about a damage aft."*

In principle Hellberg is right. The big damage opening in the starboard side almost at the bow leads to the car deck. It does not explain why the 'Estonia' sank, unless it extended down below the waterline. Thus I have chased the video film that the Swedish NMA staff looked at, but which is now lost without trace. The Bemis hull damage is another matter; it is located twenty meters further aft in the area of the conference compartment on deck 0, at the bottom of the ship. But even if the Hellberg damage were harmless, it is still not explained. Officially it does not exist.

No external Damages

"No external damages on the wreck have been observed, except the damages on the visor and in the area around the bow ramp." JAIC, 'Final Report', 8.5.1, page 120.

On 9 September 2000 the DN editorialist Lilian Öhrström wrote regarding the rumours about an opening in the 'Estonia' hull:

"In order not to create a climate for rumours several things are necessary: That the public has full confidence in its media. That as much information as possible is given ... That you really believe in the government."

Yes, you must make the public believe. In the government and the media. Clearer cannot the media project be formulated.

***

Carlqvist is too good a journalist - or rather a history researcher - and must have caused problems for the Board of Psychological Defence, SPF **1.49**. It seems that Lilian Öhrström was just quoting SPF above. But the SPF won the battle - no more newspaper or journalist in Sweden has dared since to write anything about the 'Estonia'. So much for democracy and freedom of speech in Sweden 2001. But the war goes on and the last battle has not yet been fought.

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[155] It was probably the reason why the systems engineer Sillaste was called down to the engine room at 00.30 hrs **1.3.**

[156] The German position is probably wrong. Another position is **2.24**. Or the Finns are just telling incorrect information to anybody.

[157] If you believe the SvD, Mona Sahlin had read >1 000 pages German (secret) report (in English/German) in a few days at the court of law and then concluded that

'the report does not contain any information, which requires a new examination of the wreck and the causes behind the accident'.

But Mona Sahlin cannot English! or German! And the German report only contains statements that the official report (5) is wrong **3.18**.

[158] It is the second meeting of the Commission **1.10-13**.

[159] The damages in the starboard side are further described **3.10**. The damages cannot have been caused by the visor, which probably was attached to the hull when the ship sank.

[160] Carlqvist had lost his job at the Finans Tidningen and worked from home.

APPENDIX 6 - THE FINNISH GROUP OF THE FORMER JOINT ACCIDENT INVESTIGATION COMMISSION

MEMORANDUM SEPTEMBER 24 1999

SUGGESTIONS OF BOMBS ONBOARD M/V ESTONIA

During the last year, European media has presented suggestions that bombs would have been placed onboard the ESTONIA before her capsizing and sinking on September 28 1994. The Swedish TV-4 reported in a program on August 10 1999 that the German Expert Group investigating the accident on behalf of the German Jos. L. Meyer shipyard, builders of the ESTONIA, is going to tell that a bomb has been found in the ESTONIA's hull in a report to be published in September. TV-4 also showed a picture of the alleged bomb.

Already earlier in December 1998 the Swedish Aftonbladet published news that there is an object suspected to be a bomb above a window on the ESTONIA's side.

Suspected orange coloured object in the ESTONIA's ramp opening

The Swedish TV-4 showed on August 10 1999 also a picture of an object that is claimed to be a bomb. The picture was taken from a videotape showing the ESTONIA's wreck. The videotape had been made by the Finnish Coast Guard for the Joint Accident Investigation Commission (JAIC). In the videotape picture, the object claimed to be a bomb has an orange colour. The object is later called a "box". The box is visible in frames taken on October 9 1994 at 2316 hrs. Appendix 1 shows a video print where the object can be seen.

The Finnish delegation of the JAIC has been studying the videotapes in order to find out what the box in question could be. The following conclusions can be made on the basis of the video material:

"At the moment in question, the ROV (Remotely Operated Vehicle) used in making the underwater videotapes, is monitoring the space between the vessel hull and the partly open bow ramp on the port side. The visor and ramp side locks were close to this site. The vessel's mooring lines can be seen near the box on its both sides going into the ramp opening. On the basis of the visible mooring lines and shadows, the box is not fastened onto the vessel's hull or to the ramp. Because the diameter of a standard mooring line is a little under 10 cm, the dimensions of the box may be estimated by comparing the box to a line. Appendix 2 shows a video print where objects near the box have been made clearer. Names of the objects have been marked.

"When the ESTONIA sank stern first, the air remaining in the car deck space flowed out through the partly open ramp sides. At the same time, loose floating objects on the car deck, like mattress overlays and wooden pallets, drifted with the rising water towards the openings at the ramp sides. Some objects came out while some remained trapped at the sides.

"It is known on the basis of the videotapes that pallets floated up towards the bow on the car deck.. During the diving operation carried out by divers of the Norwegian Rockwater A/S in December 1994, pallets had to be moved aside to allow the free movement of divers.

"After the accident a pallet was observed in a service space on the side of the ramp. It can be seen on a videotape made by the Finnish Coast Guard during the ROV inspection on October 2 1994 at 1433 hrs. In the picture this pallet is upside down and most clearly can be seen the central bottom board with blocks. The side bottom board and the blocks are missing. A video print of this pallet is in Appendix 3.

"When the size of the "box" is being estimated on the basis of a mooring line's diameter, the "box" size agrees well with size of a pallet's block. Above the "box" is a protruding part the shape and dimensions of which closely resemble a bottom board fastened to a block. The protruding part is not rectangular, which means that the board may have been twisted. It can however be understood that when a pallet breaks, joints may become

dislocated. According to the video print the board would extend both at the end and at the side over the edges of the block. This feature however exists in pallets; for instance the edge of the central bottom board in the pallet in Appendix 3 extends over the block edge.

"The surface of the "box" is not smooth but it looks like uneven, rough. Also colour variations can be seen in the surface.

"The head of the Finnish Coast Guard ROV inspection group has stated that in 1994 when the ROV and video technologies were not on the present level, videotapes made underwater using artificial lighting easily received wrong tones of colour. If reflecting red surfaces were near, the objects in the picture could easily receive a shade of red. It is fully possible that for instance a new wood surface looks reddish under these conditions. The considerations presented above strongly support the assumption that the "box" is part of a broken pallet of which can be seen one block and a bottom board fastened to it. The surface of the "box" looks like wooden. The uncontroversial position of the "box" in the ramp opening closes out the theory presented in the media that it would be an object attached to the hull by a magnetic fastening device. No indications of objects involved in explosive technology have been observed in the neighbourhood of the "box".

The object suggested to be a bomb that was found on the ESTONIA's side above a window

The Swedish Aftonbladet published in December news that there is an object that is suspected to be a bomb on the ESTONIA's side on the lower edge of a window.

A picture of the object suggested to be a bomb is on a videotape made by the Norwegian Rockwater A/S on December 3 1994 at 1832 hrs to 1833 hrs. At that time Rockwater was video inspecting the ESTONIA's wreck for the Swedish Government and the Joint Accident Investigation Commission. The window, on the lower edge of which the object is lying, is the ninth window from the bow on the level of deck 6. Appendix 4 shows a video print of this object suggested to be a bomb. The Finnish group of JAIC has also tried to find out what the object in question could be. Studies of the videotapes show that the object could not have been in its place immediately after the accident on October 2 1994. The Finnish Coast Guard made that day a videotape showing the same site of the wreck and the object in question cannot be seen on the videotape.

The Finnish group of JAIC has asked both from the Rockwater personnel who participated in the diving operation and seamen who have worked on the ESTONIA when she was sailing under the Finnish flag under a different name, if they have any recollections whether the object in question could be an object which was used during the diving operation or on board in service. No one has been able to give any clarifying information.

The Finnish group's assumption is that the object in question may be a folded light plastic cover - a tarpaulin - which for some reason could have drifted with currents above the window in question. During the accident it could not have been at the same site as on December 3 1994.

Concluding remark

Conclusions presented in the JAIC's Final Report are still fully valid and in our opinion an explosion as a possible cause or contributing factor in the accident is totally closed out.

APPENDIX 7 - EXTRACT FROM QUESTIONING OF THE N&T SUPERINTENDENT ULF HOBRO

On 17 November 1994 the N&T superintendent Ulf Hobro (UH) was questioned by Swedish members of the Commission (Rosengren, Forssberg, Schager, Sten Anderson, etc.). The questioning was done in Swedish (tape/act D6c). Below follows selected questions (F) and the replies of Hobro:

About the Safety Systems on board the 'Estonia'

...

UH. We started to plan how to get the 'Estonia' running (during the autumn 1992) ... first we put on board an engineer and a deck officer ... Swedes ... eight to ten weeks before the take-over. ... Then we started to look at adapting ... the safety system with safety plans and similar to suit the new trade ... translations and re-workings of manuals and alarm lists, adapting them to the new ... they were doing that. We also sent over a number of Estonians ...

F. Was the project clear ... ?

UH. We (i.e. N&T) should start it ...

UH. Then the ship went to Turku/Åbo for delivery docking (January 1993). At that time the (the new Estonian) crew came on board and then training and exercises were started ... and then were used the new alarm lists and the safety plan and training manuals and such ... what was ready. ...

UH. I contacted the (Swedish) NMA to supervise, before the ship started trading, a two.ninety ('två.nittio') - '2.90' test. We agreed that it should be done at Tallinn. Four persons from the (Swedish) NMA (Sjöfartsverket) came over.

F. Who attended from your company?

UH. Me, Tomas Rasmusson, Anders Andersson.

Practical Reasons to do Swedish Tests at Tallinn

F. What was the reason to do the exercise at Tallinn?

UH. Only practical.[159]

F. It was before she started trading?

UH. Yes.

F. The Estonians (i.e. representatives from the Estonian partners of the N&T or the Estonian NMA) were not participating?

UH. No - they were represented by the Bureau Veritas ... Anders Wirstam.

F. Safety plans and manuals ... ?

The Translations not checked

UH. They were translated by the Estonian masters with assistance of the mates, etc. ...We had no possibility to check the translations ... [160]

F. Tell us about the '2.90' exercise (in January 1993 at Tallinn)?

A complete Abandon Ship Exercise was done

UH. It went well. ... They exercised fire, escape and the *abandonment of the ship* ... *a complete exercise*. ... (Swedish) NMA was there. ... The crew had trained all for two-three weeks. ... I had told them what was expected.

F. Did you know what would happen if the tests failed?

UH. Yes - no permit to trade. ...

F. Were you responsible for the safety?

UH. Yes - assisted by Tomas Rasmusson and Anders Andersson ... the latter made all safety plans, etc. They were later translated into Estonian. ...

F. You had trained the crew for two weeks?

UH. Yes. ...

Ulf Hobro responsible for the Safety

F. You were responsible for the safety?

UH. Yes. ...

F. No conflict between safety and operations budget?

UH. No. ... The ship became better and better all the time.

F. You participated at the exercises - fire, etc.? ...

UH. I participated at the RITS-exercise

F. Escape, damage control ...?

UH. Yes, they were done.

No Damage Control Plan available Ashore

F. The Damage Control plan - have you got a copy of it?[161]

UH. ... (No).

Not aware of the Ramp Condition

F. Were you aware that the ramp didn't lock, if the ship was listing (in port)? ... that it could not be locked? ... that the hooks did not fit?

UH. I was not aware of it.

F. Have you heard about any problems with the ramp or the visor?

UH. No.

...

F. How often did you have problems with the ship?

UH. Big or small?

F. Big!

UH. Rarely. ...

F. Did you weld on board? There is a statement that the ramp had to be opened by help of burning/cutting on the trip before the accident.

UH. Have not heard about it. No.

F. You (i.e. N&T) were only going to be responsible for technical and safety operations a short while. But then it was extended?[162]

UH. Yes. ... first one year, then it was prolonged until the accident occurred.

---

[159] It is very strange that all Swedish test were done abroad - the tests should have been done at Stockholm. The abandon ship test took, e.g. only 17 minutes at Tallinn (footnote 78 **1.34**) and could of course have been done at Stockholm. What practical reasons were suggested to do the tests abroad is not known.

[160] There are no safety documents of any sort in the Estonian language in the Final report (5) and its Supplements.

[161] No questions were put about intact and damage stability or loading manuals in Estonian **2.17**.

[162] No questions were put about the modifications in dry-dock in January 1994 **2.23**.

APPENDIX 8 - TWO DIFFERENT ESTONIAN VERSIONS OF THE COURSE OF EVENTS

The Estonian delegation (Meister, Laur and Neidre) handed in two different versions of the course of events to the Commission.

The first (act C11*) is dated 17 January 1995.

The second (act 30*) is dated 18 August 1995, i.e. seven months later. Both were made secret by Forssberg.

It is interesting to note different times of the same events in the two versions as shown below, e.g. in the first version Linde arrives on the bridge before the change of watch at 01.00 hrs, in the second version he arrives seven minutes later.

Event	**Time (act C11*)**	**Time (act C30*)**	**Comments by AB**
Departure of the 'Estonia' from Tallinn.	**19.00**	**19.15**	
Linde starts his patrol round	-	00.30	
Mate Kukk leaves the bridge	00.30	00.30	
Kukk meets Linde at the Pub Admiral	00.32-00.33	About 00.40	
Linde makes his patrol round on the car deck	**00.35-00.43**	-	
Linde is behind the ramp and hears a metallic noise. Linde reports to the bridge (to 2/O Kannussar via talkie-walkie)	**00.45**	**00.50 or later**	
Linde leaves the car deck and goes down to decks 1/0 to complete the round	-	About 01.00	
Linde returns to the bridge	**00.58**	**01.05 or later**	
Change of watch on the bridge	01.00	01.00	
Linde leaves the bridge	**01.01-01.02**	**01.07 or later**	
The visor locks are broken and the visor has started to hit against the forward ramp. After the visor hinges are broken, the visor pushes/pulls the ramp open. **Water starts to flow into the ship**	**01.02-01.04**	-	
The ship gets starboard list. Linde on deck 5 sees things falling	**01.05-01.10**	-	*The official time for the sudden list is 01.15 hrs.*
Linde arrives to deck 5 and asks the 'Information' to open the doors to the car deck. **The ship suddenly lists to starboard**	-	01.08 or later	*The Estonians do not agree with JAIC that the sudden list was at 01.15 hrs*
Linde runs up to deck 7	**01.11-01.14**	**01.08 or later**	*Linde runs up after the sudden list, i.e. it occurred before 01.15 hrs*
Linde arrives to deck 7 and meets one passenger which states that it is water on deck 1	**01.15**	**01.10**	*This passenger must have escaped before the sudden list occurred, i.e. it was water on deck 1 before the sudden list*
3/E Treu hears strong hitting (impact) noises from the foreship and sees water leaking in at the ramp	**01.14-01.15**	**01.08-01.14**	*We should be informed when Treu in sound insulated ECR managed to hear the impacts - before or after the sudden listing*
The visor is detatched from the 'Estonia' and pulls out the ramp further	01.15	-	

The sudden increase in listing showed that the visor had fallen off and that the **ramp was completely open**	-	01.08-01.14	*It is suggested that the ramp was completely open before the sudden listing*
Order from the bridge to 3/E Treu to ballast the ship upright	01.15-01.20	Before 01.20	*It seems the first action on the bridge was to call Treu and to order him to ballast the ship upright. Is this plausible? Didn't they discuss other matters?*
Lifeboat alarm with bells. Alarm "Mr Skylight 1" and "Mr Skylight 2" via loud speakers. Then lifeboat alarm with the horn 1.33	**01.20**	**Before 01.22**	*Why did Treu ignore these alarms?*
Angle of list up to 25-30 degrees	01.20-01.26	-	
Angle of list >30 degrees	-	Before 01.22	
Port M.Es stop	01.20-01.26	Before 01.22	
Starboard M.Es stop	01.20-01.26	About 01.22	
Mayday call	01.24	01.25	
Angle of list is 40-45 degrees	**01.30**	-	
Angle of list is close to 90 degrees	-	**Before 01.30**	
3/E Treu leaves the ECR	**01.30**	-	*How?*
3/E Treu arrives at deck 7 (sic)	-	**Before 01.30**	*How?*
3/M Treu is swept overboard by a wave	-	About 01.30	
The 'Estonia' disappears from the radar screens of the 'Silja Europa' and the 'Mariella'	01.48	01.53	*How could Treu be swept overboard 18-23 minutes before the alleged sinking?*

Comments: The Estonian delegation ignored the testimonies of the passengers - the reports of Schager 2.1 were not considered. In one version Linde arrives to the bridge before the change of watch, in another after the change of watch. In one version Linde is already on deck 5 and notes the sudden listing, while in the other version Linde has not yet left the bridge. In the first version the sudden list occurs long before the visor was finally lost overboard

Neither version considers that Treu, Sillaste and Kadak saw the ramp closed at least two minutes after the sudden listing.

The escape of 3/E Treu is not explained 1.48. The Estonians believe Treu arrived at deck **7** and was immediately swept overboard 18-23 minutes before the sinking. In other statements Treu visits the emergency generator on deck 8.

The courses of events do not tally with the final one in figure 13.2 in (5) 1.9. In one version the angle of list is only 40-45 degrees at 01.30 hrs, in another Treu is already in the water at that time. After 3/E Treu has been swept overboard at 01.30 hrs, the 'Estonia' should have drifted another 2 500 meters eastward. The Estonians give two different times, when the 'Estonia' should have disappeared from the radar screens of both 'Silja Europa' and the 'Mariella'. They ignore the statement of the mate of the 'Mariella' that the 'Estonia' disappeared at 01.36 hrs.

Both versions must be regarded as attempts to falsify the course of events. It seems that the Commission agreed some events but could not agree on the times. In the first attempt the list was at 01.05-01.08 hrs, but then it seems that Commission agreed that the listing must have been at 01.15 hrs, so a new sequence of events was made. Evidently there is no real evidence for any event stated.

APPENDIX 9 - **THE GERMAN FINAL REPORT (JUNE 2000)** 3.18

The Final report of the German group of experts was published on the internet in June 2000 at

http://www.estoniaferrydisaster.net.

The German report does not exist in printed form.

The Germans disapprove of in principle *all* statements of the official Final report (5) and confirm most of the statements in this book. However the German report does not describe in any detail the real critical items on the 'Estonia':

A. The watertight door system **1.23**

B. The bilge system **1.24**.

C. The deficient life saving equipment **1.33**. In 8.2 Lifeboats and Rafts of their report the Germans simply conclude that *"According to the JAIC lifeboats and rafts provided on board satisfied the SOLAS 1974 requirements as to number and standard"*. Of course neither lifeboats nor rafts satisfied SOLAS 1974 which required dry evacuation of all persons aboard ... not the 'wet' evacuation (persons jumping into the water swimming ashore or to a life raft thrown into the water) approved by the Finnish NMA and later also approved by the Estonian NMA. It would have been simple

D. The stability before and after the sudden listing **1.9**.

E. The sinking **1.51**.

The Germans present some new information.

CORRODED BOTTOM PLATES

The Germans suggest that the bottom plates were corroded and that one or more *starboard* double bottoms tanks were permanently flooded. The evidence is video pictures of the bottom and the fact that the *port* heeling tank was filled at Tallinn to upright the ship, **2.17** and **Appendix 5**. The official explanation, why the *port* heeling tank was full (>180 tons), was that the ferry was incorrectly loaded on the *starboard* side, but as explained in 2.17 the centre of gravity of the 'Estonia' was located to *port*, so that you had to carry about 100 tons in the *starboard* heeling tank for an upright condition *without* cargo. The crew thus should have loaded about 100 ton extra on the starboard side for an upright condition without water in the *port* heeling tank. Very confusing!

With about 180 tons of water in the *port* heeling tank at departure Tallinn 27 September 1994 the Germans think that there was about 180-280 tons of water in the *starboard* double bottom **1.25**.

The author's opinion is simple as always. If the shell plating were corroded in the double bottom, it is also possible that the structure was corroded in the sauna/pool compartment. Maybe it was the double bottom below the sauna/pool compartment that was flooded at departure Tallinn? The Germans do not specify, where the outer bottom was corroded.

But who has heard of a ferry sailing around with a corroded outer bottom hull plate, so that some double bottom tanks were always full and that it was full pressure - 5-6 meters head - on the inner bottom? It was extremely dangerous. Water was filling up the air pipes of these double bottom tanks to the waterline! You could not open the manholes in the inner bottom, because then you would flood the compartment above! The solution was of course immediate dry docking, so that you could repair the corroded shell plate and make the tanks tight. It could probably

be done in 24-48 hours. Alternatively you could try to pump the tanks dry and to stop the leakage from inside with a 'cement' box or similarly. You could also use a diver and put a plate on the outside to stop the leakage - it could have been done in 12 hours - but dry docking was simpler.

WATER ON THE CAR DECK - OPEN STERN RAMP

The German report is mostly about the visor and the bow ramp. Both were in bad condition and leaking. The water always flowed in at the bow ramp during bad weather. The water flowed aft on the starboard side and should have escaped through the eleven scuppers in the deck. The Germans suggest that the scuppers were closed or insufficient to drain the car deck and that the crew had opened the aft ramp a little, where the water could escape! This author has never heard of such things. They seem utterly dangerous and stupid. But maybe the Germans are right. Bad weather was rare on the Baltic and it was only infrequent, when the car deck was partly flooded with water during a passage. But it must have been easier to make the bow ramp tight in the first place, when severe weather was expected. The opening was >2 meters above the waterline. Seamen are experts to make leaking hatches, etc. weather tight. Alternatively you could have slowed down a little at sea. Regardless, the Commission never asked the first officer and the crew of the replacement crew, who should have known, about the condition of the ramp and how they handled leakages at the ramp in severe weather.

MANIPULATED DIVE EXAMINATION

The Germans present new findings from the Swedish NMA dive examination on 2-4 December 1994 **1.16**. The divers should have found the starboard, aft ramp open, which was not announced. But the divers did other things. Between 14.42-16.02 hrs on 3 December the diver S. Jessop was inspecting the sauna/pool compartment on deck 0, where the big leak is assumed to have taken place. To hide the fact that the compartment was in fact inspected from the inside the Rockwater A/S falsified the dive log!

Furthermore is seems clear that the divers cut off the side guard rails from the inner bow ramp **3.10** inside the superstructure. The guard rails were apparently salvaged to the dive ship 'Semi I' and later dumped about 250 meters south of the wreck, where they later were filmed by an ROV. Strange story!

COURSE OF EVENTS - THE POSITION OF THE VISOR

The German final course of events assumes that the visor was detached long after the sudden listing occurred. The ship had stopped and the angle of heel may have been >90 degrees, i.e. the visor fell of adjacent to the wreck. Then the visor could not have pulled open the ramp.

DAMAGES DUE TO EXPLOSIVE DEVICES

The Germans present pictures of various small damages in the fore ship area and conclude that they are due to explosives. No explanations are provided. This author believes the damages are due to a successful attempt to remove the visor *under* water and to an unsuccessful attempt - also under water - to open the ramp a week after the accident. It would have taken place 3-5 October 1994 - probably by Swedish navy divers. The Germans never thought about that.

ULF HOBRO

The person 1994 responsible for the maintenance and safety of the 'Estonia' was Mr. Ulf Hobro. He has always stated that the 'Estonia' was in very good condition, but has never produced any convincing evidence to this effect. Mr Hobro was a Swedish NMA ship inspector prior to looking after the 'Estonia'. After the accident Mr. Hobro disappeared but surfaced in September 1999 as the *head* of the Swedish NMA Stockholm ship safety office - appointed by Mr Johan Franson.

CONCLUSIONS

If the German allegations are true - corroded and leaking bottom shell plates, flooded double bottom tanks, inner bottom under full pressure, damaged and leaking visor and ramp, etc. - the 'Estonia' was a floating coffin. Regardless, with the findings of this author - e.g. deficient life saving equipment 1.33 and irregular and non-functional internal watertight subdivision and open watertight doors 1.23 - the 'Estonia' was a death trap. The combination could only be one - disaster. And only a stupid disaster investigation could attempt to cover-up the facts and later only another real 'Disaster Investigation' - this one - could attempt to reveal the Truth. But the German contributions to the Truth of the casualty are finally nil. They could never explain anything and hid many inherent defects of the ship that was built by their principals - Meyer Werft, Papenburg.

GERMAN UP-DATE FEBRUARY 2007

The German Group of Experts has February 2007 up-dated its information at **http://www.estonia.xprimo.de/start.html** .

It seems that the Germans have not studied the Heiwa Co information as there are no references to it (except in section **Corrections of German report Chapter 8** where Heiwa Co is quoted as a major ferry operator in non-European waters. Nevertheless the German info is interesting. They suggest that there is a big damage in the starboard superstructure side at fr. 140 but forget that the **starboard pilot door is at frame 122** and that it later has been covered up with sand by divers. It is quite obvious that the starboard pilot door was in fact found open after the accident and that all access into the car deck space was done through that opening!

Contact **anders.bjorkman@wanadoo.fr**

WARNUNG VOR SELBSTMORD

Diesen Rat will ich dir geben:
Wenn du zur Pistole greifst
und den Kopf hinhältst und kneifst,
kannst du was von mir erleben.

Weißt wohl wieder mal geläufig,
was die Professoren lehren?
Daß die Guten selten wären
und die Schweinehunde häufig?

Ist die Walze wieder dran,
daß es Arme gibt und Reiche?
Mensch, ich böte deiner Leiche
noch im Sarge Prügel an!

Laß doch deine Neuigkeiten!
Laß doch diesen alten Mist!
Daß die Welt zum Schießen ist,
wird kein Konfirmand bestreiten.

War dein Plan nicht: irgendwie
alle Menschen gut zu machen?
Morgen wirst du drüber lachen.
Aber besser kann man sie.

Ja, die Bösen und Beschränkten
sind die Meisten und die Stärkern.
Aber spiel nicht den Gekränkten.
Bleib am Leben, sie zu ärgern!

Erich Kästner