

Teie 31.05.2006.a. nr 6-04/5979

Lp. hr Rein Lang
Justiitsminister
Tõnismägi 5A,
15191 Tallinn

26..07.2006.a.

Austatud härra minister

Vastavalt Teie palvele on Õnnetuse Eesti, Soome ja Rootsi uurimise ühiskomisjoni (JAIC) endised liikmed ja mõned komisjoni töös osalenud eksperdid koostanud vastused Teie ML ESTONIA hukku puudutavatele küsimustele.

Vastused on esitatud memorandumumi vormis.

Lugupidamisega



Uno Laur
Õnnetuse uurimise ühiskomisjoni endine esimees

Lisa: MEMORANDUM ON THE QUESTIONS POSED TO THE FORMER MEMBERS OF THE JOINT ACCIDENT INVESTIGATION COMMISSION (JAIC) OF THE M/V ESTONIA 1 eks

JUSTIITSMINISTEERIUM
26.07 2006 a.
indeks: 5979

**MEMORANDUM ON THE QUESTIONS POSED TO THE FORMER MEMBERS OF
THE JOINT ACCIDENT INVESTIGATION COMMISSION (JAIC) OF THE M/V
ESTONIA**

The memorandum has been drafted for the chairman of the JAIC, Captain Uno Laur. It is his task to explain the views of the former members of the JAIC to the Government of Estonia. All the members have had a chance to go through the draft memorandum and present any comments on the text. In addition some experts have been heard on various special issues.

1 Introduction

After 1997, the Governments of Estonia, Sweden and Finland have, in several different contexts, stated that they consider the Final Report of the JAIC to be reliable. It has been the unanimous view of the Governments that new investigations will be launched only if new facts emerge.

Early this year, a report was published in Estonia of a commission set by the Government and chaired by the Deputy State Prosecutor Margus Kurm (hereinafter COM). However, it contained no new facts. On the contrary, it seems that during its work the COM came under the influence of so-called dissidents. The COM Report contains theories mainly presented by dissidents during the past 11 years and rebutted a long time ago.

In discussions between the former members of the JAIC and the Estonian Minister of Justice it has been agreed that, where necessary, Captain Uno Laur will explain the views of the JAIC to the Government of Estonia and that the members and experts of the JAIC will support his work by drafting this memorandum.

On 31 May 2006, the Government of Estonia gave the JAIC a seven-item list of questions. The list did not contain the most flamboyant assertions of the COM Report. However, in this memorandum there is reason to comment not only the questions in the list, but also certain other sections of the COM Report. Because the faulty assertions are contained in an official State document, there is reason once more to rebut them.

The Government of Estonia has been concerned that the sinking of the ESTONIA is continually made subject to public debate. However, in this context it is important to note that this debate is being maintained by so-called dissidents and a few politicians in Sweden and Estonia assenting to their thoughts.

There are about a dozen dissidents and they are naval architects, journalists and amateur investigators. They have become involved in the matter at different times and for different motives, but nowadays they form a close group, they know each other and are in contact with each other. It has continuously been their joint demand to set up a new investigation commission.

The German shipyard which built the ESTONIA has never accepted the conclusions of the JAIC. Soon after the accident, it set up a group called "The German Group of Experts" (hereinafter GGE), which published its own report. At first, the shipyard strongly emphasised that the Estonian crew took very poor care of the vessel; so poor that when she set out for her last voyage, she was not seaworthy. Later on the GGE and the dissidents have been presenting the same conspirative and other theories. The shipyard is a party to the matter.

It was a central principle in the work of the JAIC that the JAIC did not conduct so-called negative argumentation. In its report, it did not rule out numerous theories that had proven faulty during the investigation although it may have done a lot of work to study them. The JAIC concentrated on obtaining as good proof as possible, confirmed by the research of scientific research institutes, of the cause that proved final. The JAIC has published the research results of these research institutes and other central material in the Supplement of the Final Report.

The cause of the accident was that the attachments of the visor failed due to an external load exceeding their strength. Thereafter the visor pounded against the forecastle and the visor fell into the sea opening the ramp. Masses of water entered the car deck through the ramp opening of the vessel, which was sailing almost against the waves, causing the vessel to develop very rapidly a heavy list.

The failure of the visor attachments is the "ring cue non" of the whole chain of events in the

The members and experts of the JAIC worked under official responsibility in accordance with the laws of their respective native countries. They have not had the right to include unfounded allegations in the report and they have the whole time been liable to treat the parties and the dissidents correctly and with respect.

In the course of the years, certain parties and dissidents have alleged that the members and experts of the JAIC have made themselves guilty inter alia of fraud and document falsification. Presenting such an unfounded allegation is a serious crime under the penal laws of Estonia, Finland and Sweden.

In addition to the cause analysis of the JAIC Final Report, no other cause theory forms an unbroken logical sequence of events. Those criticising the JAIC have taken certain details of the report, alleged that they contain errors and thus tried to undermine the credibility of the report. There has not even been any attempt to construct these details into a logical chain of events.

2 Answers to the questions in the list

1) Several members and experts of the JAIC had experience in the investigation of explosion accidents. At first, the forebody of the wreck of the ESTONIA was videographed with the videocamera of a Remotely Operated Vehicle (ROV). The studies conducted on the visor on land later on showed that its attachments had failed due to an external load exceeding their strength. The fractures indicated a slow plastic deformation. At a very fast failure, like in an explosion, the plastic material would have failed like a brittle material. In an explosion, the temperature rises so that paint surfaces melt and burn. Such traces were not found in the visor in the vicinity of the failed surfaces nor anywhere in the visor.

A chemical analysis was conducted by the Forensics Laboratory of the Finnish National Bureau of Investigation on the basis of paint samples taken from the inner parts of the visor to ascertain a matter clear as such. Especially in Estonia there were rumours causing anxiety to the families of the victims to the effect that the secret service of some country or a criminal or terrorist organisation would have blown up the vessel. This is an exception to the principle of avoiding negative argumentation referred to earlier. A chemical analysis of burn traces of explosives from any blown-up surfaces is considered a reliable method to establish or exclude an explosion.

Explosion theories have been presented also later on. However, the members and experts of the JAIC followed up the allegations carefully even after the completion of their work and they were in contact with the police organisations of their respective countries.

The first allegation of an explosion was included in the so-called Felix Report drafted by certain former KGB officers. However, the evident purpose of this report was to discredit certain Estonian politicians of the time.

At the end of last century it was asserted that the video images from the ESTONIA showed two unexploded bombs. Extensive investigations were conducted for this reason. One of the "bombs" proved evidently to be a tarpaulin and the other a corner block of a wooden pallet.

As the dissidents Jutta Rabe and Gregg Bemis Jr. in the year 2000, in spite of the sanctity of the grave, arranged a diving operation to the wreck of the ESTONIA, they took metal samples from the hull. As Rabe presented the video material in Tallinn after the operation, it turned out that the samples had been taken from the front bulkhead, through which the visor actuator struck as the visor was pounding back and forth after the failure of the attachments. Rabe and Bemis later on sent their samples to different metallurgy laboratories, which noted that the crystal structure of the surface parts of the metal had changes that can be generated as a result of high-speed impact, such as an explosion, but the laboratories did not unambiguously want to state that the case

involved an explosion. Rabe asserted that the truth of the ESTONIA would be told in a certain issue of Der Spiegel. However, before its publication, the editor-in-chief ordered that a statement be obtained from the German laboratory BAM, one of the leading laboratories in the world. BAM came to the conclusion that there had been no explosion and the article was never published. Instead, the newspaper published an article rebutting the explosion theory.

At the time of the diving survey of Rabe and Bemis, Helsinki University Institute of Seismology contacted the Finnish delegation of the JAIC. The Institute notified it that in the night of the accident it had a measuring station in Porkkala Cape. The equipment of the station was so sensitive that it would have registered even a small explosion on the ESTONIA, at least below water level. No explosions were registered at the time of the accident. Instead, in the same night, explosions were registered inter alia from oil-shale mines in North-Eastern Estonia.

Nor were any explosions recorded in the equipment of the Finnish maritime surveillance system.

All this indicates that the JAIC has investigated the issue of explosion very thoroughly, even checking all hints. However, the principle regarding negative argumentation referred to earlier is the reason why these issues are not mentioned in the Final Report.

2) The hull of the ESTONIA has been videographed thoroughly in all the sections possible by ROV inspections. No systematic ROV survey concentrating solely on the hull and covering each frame spacing has been conducted. The ROV inspection by the JAIC in October 1994 had to concentrate in the forebody of the wreck. The first task was to ascertain that the visor had actually been detached. The hull was further videographed by Rockwater AS, commissioned by the Government of Sweden, in December 1994. The Finnish Environment Institute has dozens of hours of video material. This material was taken in 1996, when oil was removed from inside the vessel. There is plenty of video footage on essential details.

In addition, there is the material of Rabe and Bemis. Their video did not show anything relevant in the hull, either. If it had, this would certainly have been mentioned in the press conferences of the operation. On the contrary, in the press conference in Tallinn Rabe told that the surface formation of the seabed sand between the visible part of the hull and the seabed is one indicating a hole in the hull side inside the mud.

The starboard side of the ESTONIA is inside the soil material of the seabed. It has been impossible to penetrate it by any means. The dissidents and the GGE have been talking about a hole in the starboard side, possibly made by an explosion. If the starboard bow had had a hole as asserted, the ESTONIA would have sunk in a way different from the way she actually sank as has been shown in two articles published in the Naval Architect –magazine.¹

3) The witness testimony has contradictions. Practically all the survivors were heard soon after the accident. The Finnish police heard the surviving crew members brought to Turku already on the day of the accident, when it for example became evident that the visor was detached as the vessel sank stern first. The other survivors were heard in their native countries within a few weeks at the latest while the key witnesses were heard several times. Usually fresh observations are the most reliable, but observation errors are fully understandable in the chaotic circumstances at the time they were made. When analysing the testimony it had to be noted that certain observations had to be erroneous. They were not systematic when compared with the observations of other witnesses relating to the same matter, which is common in accident investigation. The schedule of events in the JAIC report has been arrived at on the basis of all the possible evidence expressly looking for a systematic sequence of events.

¹ Karppinen T., Huss M., Rahka K. "Estonia: Hard facts and realities". The Naval Architect, Sept. 1998 pages 9-18.

Karppinen T., Huss M., Rahka K. "More thoughts of the "Estonia" accident". The Naval Architect, July/August 1999 pages 9-18.

The times have made it possible, with a certainty of two minutes (cf. Final Report p.97-98) to ascertain only the beginning and end of the distress radio traffic (at 0122 hrs – 0129 hrs) as well as the disappearance of the vessel from the radar at 0148 hrs. Few survivors looked at their watches. Technical and scientific experience has not made it possible to draw exact conclusions on the basis of the times when the clocks and watches stopped under water due to the pressure.

The JAIC considered the three crew members who survived from the engine control room important eye witnesses and heard them several times. Their observations were analysed and thoroughly discussed at the JAIC meetings. When the same issues as were presented in the COM Report were discussed towards the end of the 1990s, certain former members of the JAIC once more thoroughly interviewed one of the crew members surviving from the engine control room.

The time estimated in the Final Report for the separation of the visor, 0115 hrs, has, on purpose, been given with the exactitude of five minutes, because the time was not recorded anywhere nor can it be exactly estimated. The reconstruction of the route of the ESTONIA at the time of the sinking presented in Figure 13.2 of the Final Report has been made using a navigation simulator, and in the simulation, a point in time had to be selected as the estimated time when the visor fell off. The time chosen was 0114 hrs, but it could as well have been some other time close to it. The other times given in Figure 13.2 are estimates arrived at on the basis of the investigation.

An estimate of the list at the time the visor fell off was excluded from Figure 13.2 on purpose, because it is difficult to distinguish between a possible small list and the slow rolling of the vessel. The list values given in the Figure are estimates based on the testimony of the survivors, information on various events during the sinking of the vessel and the flooded stability calculations. The maximum exactitude of the list estimates is five degrees.

As the two crew members in the engine control room saw in the monitor that water was flowing onto the car deck from the sides of the ramp, the ramp must have been leaning against the structures of the visor, which had clear marks of this contact. As noted on page 181 of the Final Report, it is possible that the water collected in the visor has started to flow onto the car deck after the visor had forced the ramp partly open. The duration of this stage was of the order of five minutes. The third engineer described the inflow of water in his testimony (cf. Final Report p. 65) as "enormous". In fact, the monitor picture became unclear because the camera was sprayed with water.

The water collected onto the car deck at this stage has decreased the stability of the vessel, and, together with the effect of the waves, it may have caused the vessel slowly to roll or caused it to develop a minor list. In addition, the vessel had a small initial list and the wind was listing the vessel starboard. However, the list did not start to increase rapidly until the visor had fallen off and the ramp was totally open.

It has been possible to notice this slow rolling or listing in the engine control room at the same time as it could be seen in the monitor that water was flowing onto the car deck. When heard in 1999, the crew member who saw in the monitor that water was flowing onto the car deck said that he had looked at the monitor for at most one minute constantly changing the channels which showed the different parts of the car deck. He may thus have looked at the monitor just before the visor was detached. His estimate of the list was at least 15 degrees, but it is not easy to estimate a list in a closed space without windows. People also generally tend to overestimate list. Understandably, the situation in the engine control room, getting out of there and the events relating to the rescue may have caused his memory to be inexact. Therefore it is also possible that an observation of a list exceeding 15 degrees was not made until after looking into the monitor when the visor had fallen into the sea.

4) As the visor fell and collided with the bulb, a strong impact-like sound must have been heard, but impact-like sounds were also created as the waves hit the visor, the attachments of the visor failed and the visor pounded. On the basis of the marks in the visor and in the bulkhead, the visor has, at some stage, for example risen to a height of 1.4 metres (cf. Final Report, p. 181) and it must have caused a hard sound as it hit the bulkhead and fell on the forecastle. Thus various impact-like sounds may have been heard before anyone looked at the monitor in the engine control room.

During a few minutes, as the visor was falling and had fallen, a lot of things happened, whose sequence the survivors could remember wrong. The JAIC noticed discrepancies between the testimony of those who survived from the engine control room and those from other parts of the vessel as well as between the testimony and the sequence of events presented in the Final Report. Some of the conflicting statements can be proven wrong on the basis of the technical investigation and calculations. It is understandable that not all discrepancies can be explained.

5) As regards the different sounds heard by the witnesses, it is likely that sounds were heard already before 0100 hrs. The AB seaman heard a metallic bang from the bow at 0053 hrs according to his testimony. The determination of the time is not fully certain. However, it is possible that the sound related to a partial initial failure of the visor attachments.

The AB seaman came to the bridge a few minutes after 0100 hrs and soon it was noticed on the bridge that something was wrong. Within a few minutes, the AB was sent to the car deck to examine the condition of the cargo. He never reached the car deck due to the very rapidly increasing list.

Thereafter it has been possible for people to make very differing observations with their different senses. After the locking devices failed, the visor was pounding against the hull and its lower part was heavily distorted. The cutting of the lugs of the visor actuators through the steel plating of the deck also caused sounds. It is natural that a strong sound and vibrations in the hull was caused when the visor fell and hit the bulbous bow. In addition, there were sounds caused by the storm and the waves, which diminish the accuracy of auditory perception. The sounds created from the same source could have been heard and vibrations felt quite differently in various locations on the vessel. For instance, the pounding of the visor was evidently not noticed on the bridge.

6) The witnesses referred to in the question, who were hanging along the side of the vessel, are known to the JAIC. It is most likely that they saw the bottom side of the ramp, because its grid structure can easily remind one of a net. However, no certain conclusions on the position of the ramp can be drawn on the basis of their observations.

It is noted on page 175 of the Final Report that, after the visor had become detached and the ramp had fully opened, the waves could move the ramp between a fully open and partly closed position. The witnesses saw the ramp as the vessel was listing sideways. Especially at that stage the ramp could be almost freely moved by the waves. It was not possible for the ramp to be fully closed because its portside hinges had failed and the ramp could no longer attain its original position. The vessel was sinking stern first almost fully capsized, the ramp was hanging almost downwards and it finally settled in the partly open position as it is in the wreck.

The divers especially examined carefully the damage to the bottom side of the ramp and the forecastle of the wreck. Signs of impact corresponding to each other were found in the ramp and in the edges of the forecastle. This and other damage to the bottom side of the ramp show that the ramp hit the forecastle and was thus fully open.

7) The JAIC conducted thorough flooded stability calculations, which were used to study the stability and the floating position of the ESTONIA at the different stages of her sinking. It was assumed in these calculations deck by deck that certain compartments were flooded and the floating position of the vessel was calculated.

When water had entered the car deck, the vessel had a large stability reserve in the superstructure as long as it remained intact. The interior of the superstructure started to flood through broken windows and doors, the list increased, water reached upper decks and the stability reserve gradually disappeared. During the flooding of the accommodation decks and the increasing list, water had more and more possible routes to enter from above the watertight compartments below the car deck.

The JAIC was well aware of the fact that onboard the ESTONIA, like onboard other passenger ferries, there are various routes through which water can get to the compartments below the car deck. Some passengers who survived from the cabin departments below the car deck said right after the accident how they had seen water running to the corridor from chinks in the closed firedoors leading to the car deck and that one of them got a spray of water on his neck as he was moving to the staircase leading to the car deck level. It is also possible that the water was running down from the car deck through the doors of the elevators or that for example ventilation ducts on the car deck were broken and the water could get down through these. There were several ventilation ducts on both sides of the car deck.

At the final stage of sinking, the different compartments of the ESTONIA were quickly flooded as the water was flowing from compartment to compartment through the staircases and different openings. There is no doubt that water could get to the compartments below the car deck at the final stages of the sinking. This stage did not take long nor did it significantly slow down the sinking.

When the ESTONIA had a list of about 45 degrees, one survivor noticed that on deck 5 water was coming in through an aft door on the starboard side. This observation is mentioned on pages 73 and 182 of the Final Report. According to the observation of the divers, one of the aft doors on deck 5 was missing. Therefore there was no need to examine the breaking of these doors. Correspondingly, it is reasonable to assume that also on deck 4 the aft doors were broken or that some of the big windows were broken as a result of the waves or heavy objects falling on top of them. There is an observation of the moving of heavy objects on page 73 of the Final Report. The strength of windows was ascertained by other means than tests, for instance on the basis of information from other accidents and expert opinion.

The divers did not examine the situation of the watertight doors and the doors of the car deck with the exception of one watertight door, because this would have been too dangerous. It is not known why the status of the ventilation ducts was not surveyed. It could have been difficult, on the basis of the status of the doors and ducts to conclude the stage of sinking at which they either closed, opened or broke. With regard to the investigation of the sinking, the time is relevant.

On the basis of flooded stability calculations, it was clear that the ESTONIA could not have attained a deep list quickly if water had flown onboard below the car deck. As shown in the articles published in the Naval Architect -magazine, a massive flooding of several compartments either in the fore part below the car deck or in the machinery spaces would have caused the ESTONIA a maximum static list of about 15 degrees. When the compartments would have been full of water, the Estonia would have started sinking approximately upright. There would have been almost no list until a considerable amount of water had penetrated to the car deck from below. If the forward compartments had been flooded, the vessel would furthermore have started to sink bow first. This would have resulted in a completely different sequence of events than what really happened.

3 Other observations

In this context, attention must furthermore be paid to the fact that the COM Report takes a non-critical attitude to certain allegations presented by the dissidents in the course of the years, which have been rebutted a long time ago.

The time when the visor was found

The assertion that the visor would have been found already a few days after the accident and not on 18 October 1994, as happened, has been thoroughly dealt with in the article by Tuomo Karppinen in the Hufvudstadsbladet on 14 January 2001, which Karppinen referred to also when heard by Kurm. The assertion is based on taking a separate sentence from a telefax sent by Tuomo Karppinen to Börje Stenström and by ignoring the rest of the telefax.

The assertion that the visor was found earlier than it was is also rebutted by the telefaxes sent by Kari Lehtola to the Estonian members of the JAIC on 9 and 10 October, which should also be included in the Estonian archives. The former says that the sonar investigation had revealed a "big object", which could be the visor, while the latter notes that unfortunately the object turned out to be a steel plate (a so-called corrugated plate, which, due to its form, gives a stronger echo than otherwise).

Exact entries on the searches are contained in the log books of the vessels that participated in the searches, and those onboard could see what happened with their own eyes. If something shady were related to the matter, it would not have remained secret all these 11 years.

Interruptions in the videotapes

It is true that there are "breaks" in the videotapes made on commission of the JAIC (both on 2 October, 9 – 10 October and 2 – 5 December 1994). The shooting stops in one spot and continues later on in another spot where the time and depth differ from that before the interruption. The shooting was, indeed, interrupted from time to time, for example when nothing interesting was visible in the target, the cable of the ROV was caught in something or there was a need to transfer the ROV or the diver to another target. There are documents on the interruptions in the video shoots made in October 1994 at the exactitude of one second.

The allegation that the tapes had been afterwards edited by removing certain sections were first presented by consultants of the GGE. As, in this context, the phrase "falsification of evidence" was used, the Finnish investigators immediately gave the original videotapes to the possession of the Finnish Bureau of Investigation so that they would be retained untouched to any trial regarding the allegation of falsification. Later on the consultants have several times requested the original tapes for investigation, but they have only been allowed to watch them in police premises and to obtain copies from them.

Certain dissidents have later on developed fanciful theories from the interruptions in the tapes. It has, for example, been alleged that the shooting was once interrupted in the vicinity of the wreck because the visor would soon have become visible (it was alleged that the visor was never detached from the vessel, but that it was blown off, so that the Finnish and Swedish navies could move the visor suspended for a distance of about one nautical mile to "where it was found" or so that there was time to fetch sensitive military material away from the car deck).