



## Investigation report

B 6/2004 M

# Ms SUPERFAST VIII, Fall of an MOB boat to the sea in a drill in Hanko West Port on 9.11.2004

Translation of the original Finnish report

This investigation report has been written to improve safety and prevent new accidents. The report does not address the possible responsibility of liability caused by the accident. The investigation report should not be used for purposes other than the improvement of safety.





## SUMMARY

While the Greek passenger vessel the SUPERFAST VIII was in Hanko Port, a drill was held on-board, in which the so-called MOB boat was lowered to the sea. When the boat had been turned over the gunwale by means of the davit on the deck, the seaman in the boat detached the charging cable of the battery from its socket. The battery cable came to the boat from the davit fastened to a support wire. The combination of the charging cable and the wire got stuck in the release lever of the suspension hook of the boat so that the hook opened. The boat dropped to the sea from a height of over 20 metres together with three crew members. All three were injured, two severely and one less severely. The boat was not damaged.

One of the maritime inspectors on the site telephoned the emergency centre, which alerted help to the site. In addition, a patrol boat was alerted from the Hanko Coast Guard Station. Emergency Services units and ambulances arrived at the scene quickly. The accident victims were brought to the shore and transported to hospital.

The aim has been to prevent the accidental opening of suspension hook of the boat by means of a security pin and further by means of a safety spring, but these were not in place when the opening took place. In the opinion of the investigators, it has not been possible for the safety spring and the security pin to come loose by accident, and so it is likely that the pins have been removed either at the beginning of the drill or they have not been in place even before the drill. The purpose is not to remove the pin until the boat is close to the surface of the water, which those in the boat have said they knew. The instructions in the boat contain no mention of the removal of the pin nor of the fact that this should not be done until after the boat has been lowered to the water.

Survival craft and rescue boat drills always include risks, which, if realised, have also resulted in numerous other severe accidents. Therefore it should be ensured onboard all vessels that the security measures are sufficient and that the boat crew each time has available to them instructions detailing the safest operating procedure.





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Appendix 1. Statement from Superfast Ferries



## FOREWORD

The Accident Investigation Board was notified of what had happened about 15 minutes after the accident. The investigator quickly went to the scene, where he was informed of the events and familiarised himself with the operating procedures relating to the lowering of the rescue boats. Later on, the investigation was continued on the basis of documents, inter alia on a sister boat and again onboard the SUPERFAST VIII.

On 15 November 2004 the Accident Investigation Board appointed an investigation commission to investigate the accident. The chairman of the Investigation Commission was Captain Risto **Repo** and its member was M. Sc. (tech.) Kai **Valonen**. Pia **Vatanen** from Kvaerner Masa-Yards has acted as expert.

The draft of this Investigation Report was sent to the Finnish Maritime Administration and to Superfast Ferries and other parties involved for possible commentary on its facts, analysis and findings.





## 1 EVENTS AND INVESTIGATIONS

### 1.1 The vessel

#### 1.1.1 General information

##### Superfast VIII

Name of the vessel	The M/S SUPERFAST VIII
Route	Rostock–Hanko–Rostock
Type	Passenger/trailer ferry
Nationality	Greece
Company	Superfast Ferries
Owner	Superfast Okto
Home port	Piraeus, Greece
Call sign	SZLQ
IMO No.	9198953
Year and place of construction	2001, Howaldtswerke Deutsche Werft AG, Kiel, Germany
Classification society	American Bureau of Shipping
Class	ABS + A1E, RoRo Trailer and Passenger Ferry
GRT	30285
Net weight	10703
Length, max	203.30 m
Length, B.P.P.	185.60 m
Breadth, moulded	25 m
Draught	6.50/6.58 m
Engine power	4 x 11 520 hp ( 4 x 8 500kW)
Speed	27.1/30.4 knots
Number of passengers	626

The vessel has two variable pitch propellers and two rudders as well as two bow thrusters.

##### The MOB boat and the hoisting system

The vessel had 4 covered survival craft and also a fast rescue boat (FRB) and a man-over-board (MOB) boat. The accident took place with the MOB boat on deck 9 on the starboard side. The boat was suspended from a hoisting davit, which was of a turning type.

The MOB boat was a rescue boat of type RR 4.2 equipped with an outboard engine and manufactured by the German company Fassmer. The length of the boat was 4.23 m and its breadth 1.75 m. Its weight without people was about 500 kg. The maximum number of people was six. The boat was made of fiberglass-reinforced polyester resin (FRP).



Figure 1. *The M/S SUPERFAST VIII. The boat involved in the accident was behind the bridge slightly fore from midships.*



Figure 2. *The MOB boat, the hoisting davit and the hoisting hook. In addition to the hoisting wire, also the charging cable of the battery and its support wire came from the davit.*



The boat had three hoisting wires, two in the stern corners and one on bowside. The steel loops at the ends of the hoisting wires were connected to the hoisting loop in the hook of the hoisting davit. The hook and the davit were manufactured by Schat-Harding. The model of the hook was RRH15. A characteristic of the hook is that it can be opened also on-load, which makes it possible to open the hook in rough seas and when the vessel is moving. According to the markings, the safe working capacity of the hook is 15 kN, which corresponds to a load of 1,500 kg. The weight of the hook was 5 kg and its main dimensions were about 30 cm x 20 cm.

The purpose is to use the hook so that when the crew of the boat is onboard, the davit is turned over the gunwale and the boat is lowered to the sea suspended from the hook with the wire. When the boat reaches the water or is quite close to its surface, the hook is released manually from the boat by pushing the release lever of the hook upwards with the wire. Pushing is possible, because the short plastic cones nested around the wire form a pushing rod. Before the hook is opened, the security pin preventing the movement of the release lever has to be removed. The opening is done by means of pushing with plastic cones in order for the person to be able to sit on the seat of the boat upon the release instead of trying to reach the hook by hand.

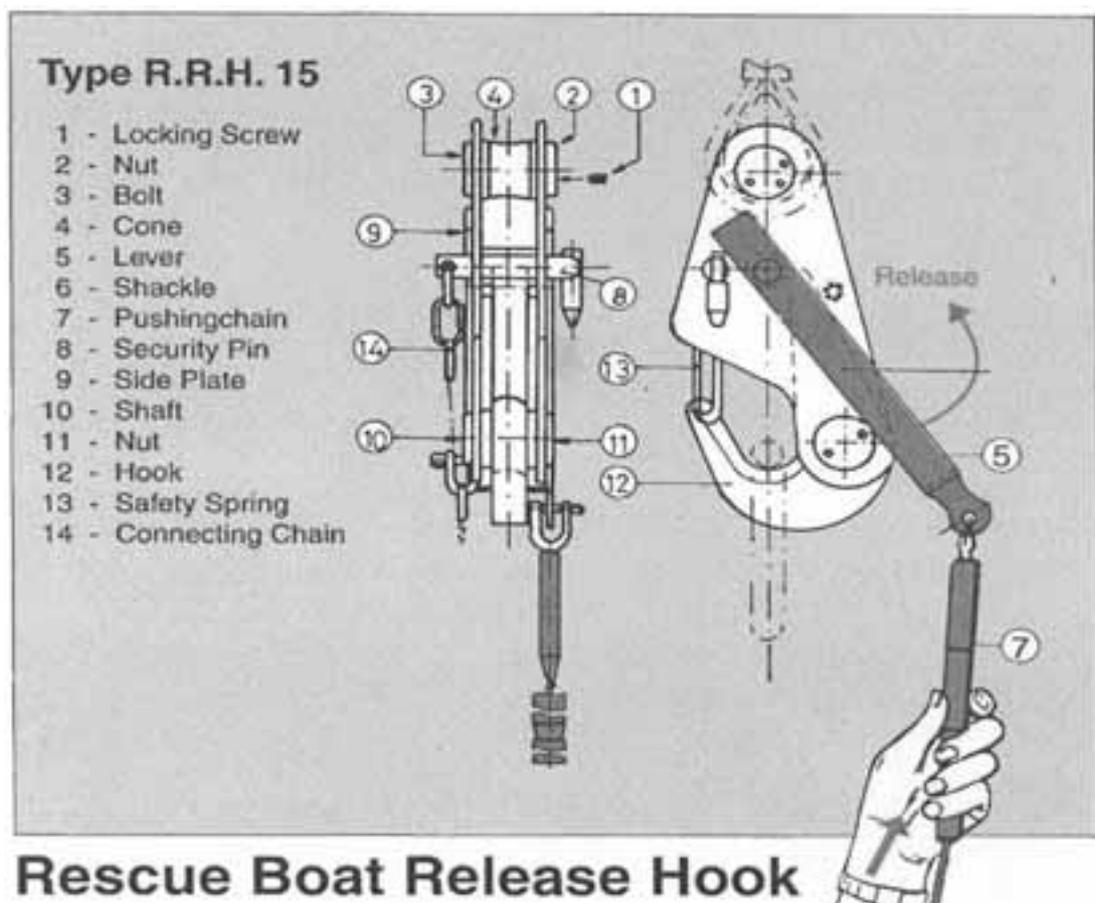


Figure 3. Hook RRH15. Unlike in the figure, the hook involved in the accident did not have a security pin (8), but a bolt, and it had been secured by means of a safety spring placed in a hole bored in the bolt.



*Figure 4. The hook of the boat in the accident, where the bolt used as the security pin is in place. The release wire goes downwards from the release lever. The charging cable of the battery and its support wire are on the left.*

### **1.1.2 Manning**

The vessel had a multinational crew; Greeks, Finns, Germans, Philippians, Slovaks, a Vietnamese and a Sri Lankan. The crew of the vessel had the required certifications.

When the accident took place, the vessel had a Finnish 30-year old chief mate and 35 and 37-year old Greek ABs.

The chief mate had been working on the SUPERFAST VIII since summer 2002 first as second mate and, since July 2003, as chief mate. In addition, he was the safety officer of the vessel. He had had certification as chief mate since 2000 and certificates i.a. of survival craft and rescue boat training including fast rescue boats. He further had certificates of training in medication, fire extinguishing, rescue systems, managing at sea, crisis management, safety as well as of separate training in fast rescue boats.

Both of the ABs had been working onboard the SUPERFAST VIII since autumn 2003. During that time, one of the ABs had also worked as purser. Both had valid certification as well as certificates of training that had included life saving, fire prevention and extinguishing, first aid, personal safety and social responsibility as well as survival craft and rescue boat training.



All the men involved in the accident had several times participated in drills where the MOB boat had been lowered to the sea.

## **1.2 The accident event**

### **1.2.1 The accident voyage and its preparation**

The vessel was on a normal scheduled voyage and moored in Hanko West Port. On-board there were two Maritime Administration inspectors from Finland and two inspectors from the Maritime Authority of Germany. The inspection was a so-called HSC - RoRo Passenger Vessel Inspection, conducted by the inspectors of the Port States in accordance with the Paris Memorandum of Understanding. One of the objects of the inspection was the drill involving the use of the MOB boat, where the crew named for the boat lowers the boat to the sea while the inspectors observe the functioning of the crew and the equipment.

### **1.2.2 Events**

There were altogether 10 people at the Survival Craft Station. Three crew members formed the actual boat crew; the chief mate and two ABs. They were all wearing survival suits. On deck, two deck hands participated in the operation. The two Finnish inspectors and the two German inspectors as well as the mate of the vessel were there as observers.

When the boat had been turned over the gunwale by means of the hoisting davit on deck, one of the ABs belonging to the boat crew in the boat detached the charging cable of the battery from its socket and moved the socket outside the boat. The battery cable came to the boat from the davit, fastened to a support wire. At the same time, the lowering of the boat was started by means of the davit and wire operated from the deck. That is when the combination of the cable and support wire got stuck in the release lever of the suspension hook of the boat. Because the security pin of the hook and the related spring bolt were not in place, the hook opened and the boat dropped to the sea with the three crew members. Before the hook opened, the boat had been lowered for about half a metre.

The fall height was over 20 metres. All three were injured, two severely and one less severely. According to eye-witness testimony, the chief mate in the boat fell on his back in the water after first having hit the gunwale of the boat. He did not lose consciousness while falling, at least not for a long period, because he was seen to wave his hand. The ABs in the boat stayed in the boat and remained unconscious on the bottom of the boat.



### 1.2.3 The site

The accident took place when the vessel was at the quay in Hanko West Port.

The Survival Craft Station was on the starboard side on a deck at the same level as the bridge. The Survival Craft Station was separated from the other deck structures with a steel rail, which had a gate. The height of the deck from sea level was about 24 metres.

Length-wise, the Survival Craft Station was some meters towards the bow from mid-ships.

### 1.2.4 Weather conditions

The wind was at 250 degrees and its speed was 9 m/s. Air temperature was +8o C and visibility was over 20 km.

### 1.2.5 Damage to persons

The chief mate suffered bone fractures in his arm and an open wound in his leg, the shoulder of one of the ABs was broken and he sustained a chest injury. The other AB sustained injuries in the lower part of his chest and at his waist.

### 1.2.6 Damage to the vessel

The MOB boat, the hoisting davit and the hoisting system were not damaged.

### 1.2.7 Other damage

No other damage was sustained.

### 1.2.8 Measures after the event

A maritime inspector at the site gave an emergency notification right after the accident to Hanko Emergency Centre by calling 112 on his mobile phone. The call came to the Emergency Centre at 11.38.

The bridge informed VTS Helsinki of the accident using a VHF phone. At 11:41, VTS transmitted to MRSC Helsinki information according to which one person had fallen into the sea from the SUPERFAST VIII in Hanko Port. When the MRSC contacted the Emergency Centre, the information was specified so that three persons had fallen to the sea. According to the information, those in the sea were wearing life vests.



### **1.3 Rescue operations and survival viewpoints**

#### **1.3.1 Alerting activities**

The Emergency Centre defined the task as the rescue of human life, and so it alerted the Rescue Service. Altogether six Emergency Services units and four ambulances were alerted to the scene. The Emergency Centre informed the police of what had happened at 11:46 and the Municipal Health Centre at 11:47. In addition, helicopter Medi-Heli with a physician was alerted to the scene at 11:50.

After receiving the alert, the MRSC in turn alerted the patrol boat PV 120 from the Hanko Coast Guard Station to the scene. In addition, Helsinki MRSC ordered VTS Helsinki to close cargo traffic in Hanko Port for the duration of the rescue operations.

#### **1.3.2 Getting the rescue operations started**

In accordance with the alarm report, the first to arrive at the scene as early as one minute from the alert at 11:41 was one ambulance, and evidently next was the Tammissaari rescue unit at 11:46. The arrivals of the next ambulances have been recorded at 11:57 and 12:02. The leader i.e., the officer unit on duty, P3, arrived at the scene at 12:13. There was no record of the time of arrival of two ambulances and three rescue units.

The PV 120 of the Coast Guard took the MOB boat to tow and took the victims to the other side of the port basin to the care of a doctor who had arrived. The divers of the Rescue Services in turn assisted in getting those in the sea to the shore. According to the notification of the coast guards to the MRSC, all the patients were taken ashore at around 12:00 and to the ambulances by 12.14. The helicopter with the physician arrived at the scene at 12:27, after which its physician took care of the necessary first aid and the transport of the patients to the hospital started. The patients who has remained in the boat when it fell, and who were estimated to have damage to their necks and spines, were transported to Töölö Hospital in Helsinki. The chief mate, who had landed in the water, was transported to the hospital of Tammissaari.

The patrol boat PV-120 towed the MOB boat to the side of the SUPERFAST VIII, from where it was lifted back to the vessel.

#### **1.3.3 Survival viewpoints**

When the boat fell, the chief mate fell partly outside it in the sea, but he hit the gunwale of the boat. He remained floating on his back in the water. Both of the ABs remained in the boat. What contributed to the survival of all of them were the survival suits they were wearing. The suit itself operates as an insulating layer against the impact. In addition, the air inside the tight suit acts as a cushioning insulation softening the blow. According to the information obtained by the investigators, usually only work uniforms and life vests are worn in the corresponding drills. In this case, perhaps because of the presence of the maritime inspectors, not only life vests but also survival suits were worn, even though it had been found that they made the use of i.a. the hands slightly more difficult.



## **1.4 Accounts obtained**

### **1.4.1 Investigations onboard the vessel and at the scene**

The Accident Investigation Board was informed of the events when the Maritime Administration chief inspector called a little before noon on 9 November 2004. MRSC Helsinki notified the duty officer of the Accident Investigation Board of the matter at 12:20. An investigator left for Hanko right away and started investigations onboard the vessel. Onboard, the likely progress of the events had also been somewhat clarified in the boat, which had been lifted in place. The scene had been visited by an investigator from Hanko Police Station, who had started his own investigation. In the course of the same day, the police heard the maritime inspectors who had been onboard and, on the following day, those injured in the accident.

The investigator familiarised himself with the practices complied with onboard another vessel of the company (the sister vessel Superfast VII) during a voyage Hanko-Rostock-Hanko in spring 2005.

### **1.4.2 Other investigations**

The investigators studied the drill practices onboard vessels with a rescue boat lifted with one hook. Many vessels had not fully trusted the original arrangements, because various additions had been made to the safety arrangements of drills.

The most common additional safety arrangement was a safety wire or chain, which prevents the boat from falling even if the hook opens for some reason during the lowering or lifting. The safety wire or chain is opened when the boat has been lowered near the water surface and, after that, the actual hoisting hook is opened in the drill very near the water surface.

## **1.5 Provisions and regulations guiding the operations**

### **1.5.1 International Conventions and recommendations**

According to the SOLAS<sup>1</sup> Convention, a passenger vessel must, in addition to ordinary survival craft, have, on both sides of the vessel, a rescue boat that can quickly be lowered to the sea. Onboard a ro-ro passenger vessel like the SUPERFAST VIII, at least one of these has to be a Fast Rescue Boat (FRB) going at least 20 knots for 4 hours in calm seas. The other was a slower and smaller so-called Man Over Board Boat (MOB). When the accident happened, the crew was practising with the MOB boat. It has to be possible to lower these two rescue boats quickly when the vessel is running at a speed of five knots. With regard to the FRB, the Convention further states that it has to be possible to lower the boat in difficult weather conditions.

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<sup>1</sup> Safety Of Life At Sea



The Fast Rescue Boat is not to be included when calculating the number of survival craft on the vessel and so the MOB was not included in this number. In this case they need not necessarily be governed by Rule 24 of Part III of the SOLAS, providing for the placement of the boats onboard. Survival crafts should not be placed at a height of over 15 metres from the water surface, if possible in practice. When the accident took place, the tip of the hoisting davit of the accident boat was at a height of about 25 metres from the water surface.

Rule 30 of the Convention on the type and number of drills requires a passenger vessel to have an abandon ship drill once every week.

Inspections by the authorities of the Port States (Port State Control) are based on the Paris Memorandum of Understanding. The inspections, for their part, supervise that the equipment is appropriate and in order and that it is used for drills.

After the accident under investigation, the Safety at Sea Committee of the IMO<sup>2</sup>, in its December 2004 session, adopted a Circular, "Safety Instructions during Abandon Ship Drills using Life Boats"<sup>3</sup>. The Circular noted that far too many accidents have taken place in life boat drills in the last few years. The Circular emphasises that: "Drills have to be safe." and that: "The main thing is learning". For this part it suggests that the drill be completed at an appropriate speed and that, where necessary, breaks be had to explain difficult aspects.

### **1.5.2 National legislation**

Greece and Finland, like other seafaring nations, have national legislation implementing all parts of the said SOLAS Convention.

### **1.5.3 Orders and instructions of the authorities**

In Finland, the maritime authority and the occupational safety authority made a joint evaluation of the risks of rescue drills at the turn of the millennia. This evaluation resulted in a memorandum presenting the various risks. The contents of the memorandum correspond to the Circular of the IMO mentioned in Point 1.5.1.

### **1.5.4 Orders and instructions of the operator**

With regard to survival craft training and drills, the SMS Manual of Superfast Ferries cites the SOLAS Convention.

Point 3.1 Lowering the lifeboat of the folder "Operator's handbook for Rescueboat type RR and FRIR", describes the instructions for lowering a lifeboat in English in the form of a check list. Shortened, the content of the instruction was the following:

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<sup>2</sup> IMO, Marine Safety Committee

<sup>3</sup> MSC/Circ.1136 15 December 2004: guidance on Safety during Abandon ship drills using lifeboats.



1. MOB signal, the designated crew gets ready with gear in accordance with the related list. The designated crew members prepare the boat for launching.
2. Disconnect charging cable, if fitted.
3. Switch on battery switch.
4. Engine should be maintained and ready for starting, i.e, with the fuel tank fitted and drained, fuel valve open, batteries charged, emergency stop rope fitted and engine hinged down, if possible.
5. Connect the fuel hose to tank, if necessary, open ventilation screw and operate pump in fuel line according to engine instruction.
6. Those on deck have to check the painter (the bow rope to be fastened to the vessel) and check that the hoisting arrangement is connected tight with davit, check that no maintenance "hanging-off" pendants are connected to the boat, that additional equipment is passed to the boat, check the fenders of the boat, prepare davits, lashings, etc, for lowering according to davit instructions, check the launching area for obstructions and then contact the bridge and report "ready for embarking".
7. The boat crew, normally 2-3 persons, enters the boat and distributes to provide horizontal hanging.
8. Open boat lashings and secure them in such a way that they don't interfere with the boat.
9. Lower the boat to the water according to davit instructions.
10. Engine starting according to engine instructions.
11. Release hook. DANGER, Release lever can drop the boat, handling by coxswain only. Refer to hook instructions!
12. Loosen painter.

The boat had the stage-wise operating instruction of the manufacturer with figure symbols. The instruction instructed to release the hook of the lowered boat according to hook instructions. See figure 5 below.

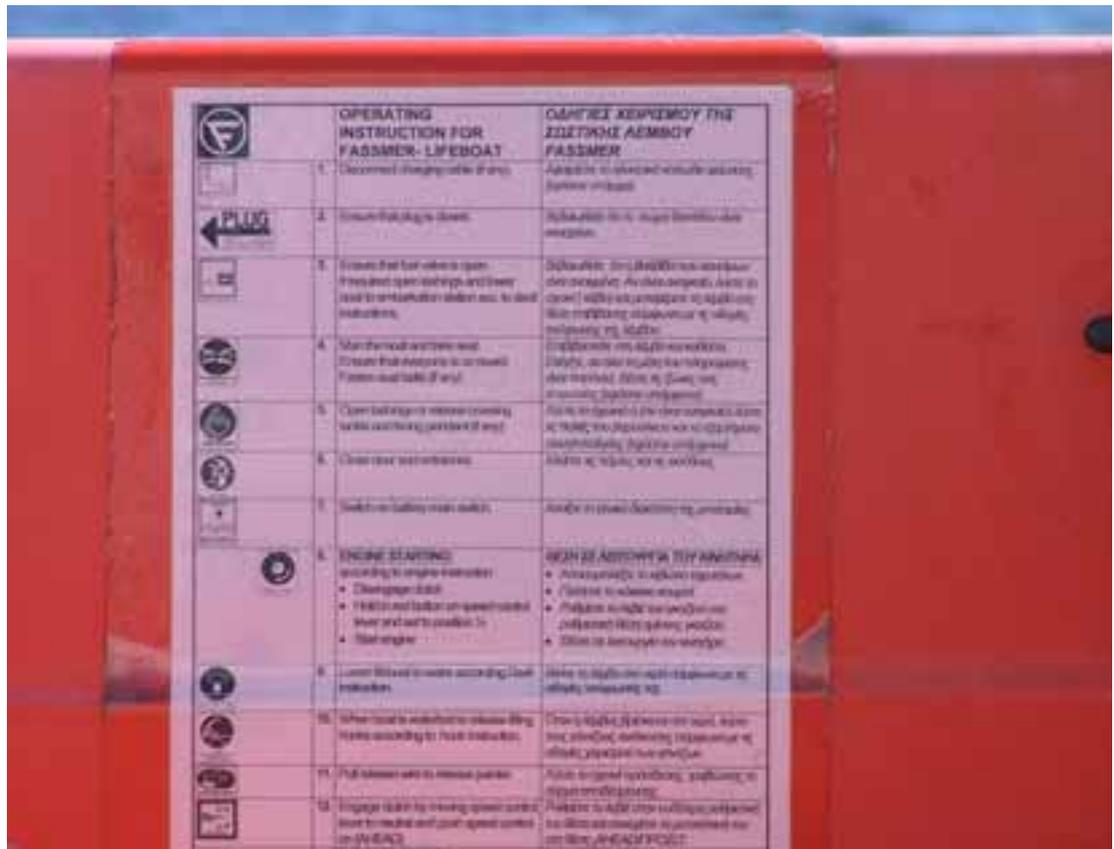


Figure 5.





## 2 ANALYSIS

### 2.1 The accident events

Those in the boat and the other eye witnesses told in a similar way about the events. The charging cable of the engine battery, hanging from the davit, and its support wire were left hanging in the air and caught in the release mechanism of the hoisting hook. Also the marks left in the cable wire suggest the same. Immediately after that the boat had dropped. It was possible for the hook accidentally to be released because the security pin and the safety spring ensuring that it remains in place were not in place.

This means that the safety spring and the security pin had been removed even before the lowering of the boat started or alternatively the pin had, for one reason or another, been out of place before the start of the drill. Its too early removal may have been affected by the defectiveness of the instructions or thus by unawareness of the correct mode of operation. Another possibility may be excessive trust in an unsecured hook and speeding up of the lowering of the boat by removing the pin in advance. However, those in the boat have said that they did know that the pin was not to be removed until the boat was in the water. Even if the pin had not been in place when the drill started, the progress of the drill should have included checking the security devices. In the opinion of the investigators, it is not possible for the pin to come loose by mistake, because the pin and safety spring that replaced the original pin are very secure in operation.

The instructions onboard were defective so that the instructions of the SMS (Safety Management System) were partly direct quotes from the SOLAS Convention. The file found onboard and the boat had slightly different check-list-type instructions relating to the lowering, but they had clearly not been drafted for this vessel or for the lowering of this MOB boat. An essential omission in addition to the lack of an instruction on the security pin were numerous references to the instructions of different equipment manufacturers.

Lowering the boat is a measure for which the boat crew must have direct access to an operating instruction that is short, but unambiguous, and which contains all that is essentials and which has been drafted for this very measure with the equipment that is available. Instructions that are not fully suited for the measure in question and which, due to references, require other simultaneously available instructions do not comply with the spirit of maritime provisions. Easy-to-read and short instructions in the form a check list would be especially necessary onboard vessels where the linguistic backgrounds of the crew vary.

When the accident took place, there were four inspectors on deck to follow the drill. The presence of the inspectors evidently affected the drill so that, unlike usually, the crew wore survival suits, which lessened damage to person. On the other hand, the observation by the inspectors may have caused the boat crew a pressure to manage the drill exceptionally flexibly, which in turn may decrease concentration on the drill.

## 2.2 The boat and its hoisting arrangements

The purpose has been to prevent accidental opening of the hook by means of the security pin in case the lever is hit by something or because the unsecured loaded hook might be opened if the boat swings for example in rough seas. In this case the securing did not work because at the time of the accident the security pin was not in place.

The head of the original security pin belonging to the hook is turning so that the turning head prevents the pin from sliding out of place. In the hook related to the accident, the security pin had been replaced with a bolt, which was hanging from the hook at the end of a short chain to prevent it from being lost. To ensure that the bolt stayed in place, a safety spring was used, which was placed in a hole bored in the bolt.



*Figure 6. The hoisting hook mechanism of the corresponding boat of the sister vessel, where the arrow points to the original security pin. The red plastic cones around the release wire are here correctly, i.e., with the tapered end downwards. In the hook involved in the accident, the tapered end pointed upwards, which made the releasing slightly more difficult.*

The hook is an essential security factor, and changing it without approval of the manufacturer is not recommendable. In this case, however, the bolt and the safety spring, if in place, prevent the accidental opening of the hook quite as certainly as the original pin. A weakness compared to the original is that the safety spring may be lost and the fact that there is no certainty about the endurance of the bolt and safety spring in sea conditions. In this case, the spring was not lost nor was there any significant corrosion.



The investigation did not reveal when and why the security pin has been changed. It is possible that the original has been lost and that the lost pin has been replaced with the bolt. It is also possible that the change has been made to make the use easier, because for example one of those in the boat has stated in the police interrogation that the use of hands is difficult when wearing the survival suits and the gloves forming part thereof. Both hands have to be used when removing the original pin, because the end of the pin has to be turned to a horizontal position while pulling from the other end of the pin. The pin made from the replacement bolt could be removed with one hand by first pulling out the safety spring and then the whole security pin.

In the accident hook, **the plastic cones of the release wire** were upside down compared to the drawings of the manufacturer and the sister vessel. When placed the wrong way, the release wire does not function as well as when installed in accordance with the instruction, but the hook can, nevertheless, be released. The way the plastic cones were installed did not have an effect on the accident.

The maintenance diaries had no mention of the change and the installation of the plastic cones even though the maintenance diaries had been kept regularly.



*Figure 7. The changed route of the battery charging cable, picture from the sister vessel.*

**Placement of the charging cable of the battery.** The cable had been fastened to the support wire evidently to make it easier to handle in windy conditions. When brought to the boat through the davit, the cable and the wire had an essential effect on the acci-

dent. It was the combination of the cable and the wire that released the unsecured hook. In addition, when the lowering is started, an extra wire moving in the field of vision of those in the boat, is a disturbing factor. Later on, the cable has been moved so that it comes to the boat from the deck of the vessel.

### **2.3 Location of the boat onboard the vessel**

The accident boat is on deck 9 of the vessel aft of the bridge slightly to the bow of midships. Point 1.5.1 handled the SOLAS Convention, which states that survival craft should, where possible, be at a maximum height of 15 metres. The rescue boats of the SUPERFAST were not included in the number of the survival craft of the vessel and so this requirement did not concern the MOB boat involved in the accident. Evidently, on this vessel the purpose has been to place the boat so that it would be visible to the bridge. Visual contact is, however, not necessary, because for example in a situation where the lowering of the boat has to be interrupted for some reason, this can take place by means of radiotelephone contact.

The starting point of the 15-metre maximum height proposed is a risk evaluation, because survival craft and rescue boat accidents are generally quite common and the height of the fall has a direct effect on the amount of damage and injuries. According to the understanding of the investigators, a much better place than the present one for the rescue boats of the SUPERFAST VIII would be at the height of deck 6 about ten metres aft from the present location. This would decrease the height by about 7 metres. This place suggested is midships, where the influence of the swell on the boat being lowered/hoisted is the smallest possible while the painter angle (of the rope to be fastened to the vessel) would become smaller. In these conditions, the lowering of the boat would be clearly safer than at present.

### **2.4 The hoisting davit of the boat**

When using the davit, the boat is first lifted from its seat on the deck and thereafter the davit is turned sidewise over the gunwale. The turn may cause the boat to start rocking if the turning movement is not uniform and calm. In this respect, the so-called A-frame davit is better and safer than the turning model, because, when using it, the boat lifted up is moved across the gunwale so that the davit is tilted outwards and the boat does not start to swing so easily.

### **2.5 The hook and its use**

It is possible to open the hook while the boat is still hanging from the wire, because this makes it possible to lower the rescue boat to the water as also in high seas, as required. The hook is of a type generally used and it is well-suited for its purpose of use.

What is essential from the perspective of the accident is that if the security pin is in place, the accidental opening of the hook is very unlikely.



Therefore it is important to have short and simple instructions near the hook also mentioning the security pin and especially the fact that the pin should not be removed until the boat has been lowered close to the surface of the water.

If the security pin is removed already when the boat is still high up, the whole pin loses its significance.

For example, a study of the MAIB<sup>4</sup> notes that accidents relating to accidental release of hooks are often due to the hooks being too complicated. Also in this case the hook was, to some extent, complicated, because for example the manner in which the parts inside the hook operate cannot be clearly seen from the outside. In addition, the turning direction of the release lever upwards is not necessarily self-evident, nor is the pushing of the lever in question by means of the wire and plastic cones. In the design of hooks, the aim should be a self-evident structure requiring only minor instructions and detailed training.

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<sup>4</sup> MAIB = The Marine Accident Investigation Branch, the authority of Great Britain investigating marine accidents.





### 3 CONCLUSIONS

The accident together with corresponding cases reported from elsewhere indicates that serious accidents may, and unfortunately often do, occur in survival craft drills. The matter has been studied for example in Great Britain, and in the ten-year period reviewed, a total of 12 seamen died in corresponding drills, which is 16 % of all deaths. In the same interval, another 87 seamen were injured in the drills. The study in question noted that the majority, i.e. 7 deaths and 9 accidents, were related to the release hook, which in most cases had accidentally opened.

In this case the accident was due to the fact that the security pin precisely meant to prevent accidental opening was not in place. It had either been removed when starting to lower the boat or it had been removed already earlier. In any case, it was neglected in the drill to ensure that the security pin would have been in place until the boat had been lowered to the water or close to the water surface. This is why the charging cable of the battery being caught in the release lever of the hook caused the hook to open.

The conclusion of the investigation is that boat drills involve possibilities of failure and that in these situations also the consequences may be serious. Therefore it should be ensured onboard all vessels that the lowering procedure is simple, the safety measures are sufficient and the boat crew each time has available to them instructions detailing the safest operating procedures. In addition, attention should be paid to the safe placement of the boats.

There has also been discussion on whether the number of boat drills should be decreased to decrease the number of accidents. Frequent drills bring such certainty to the operation that, in a real situation, the lowering of the boat is a routine operation and will most likely succeed. Therefore drills are important, but, where applicable, it should also be considered that boats at a high altitude be lowered empty, that extra security measures be used in the drills and that drills involving for example the operation of the hook be practised with a hook installed onboard for practising purposes.





#### **4 RECOMMENDATIONS**

On the basis of the investigation, no new security recommendations are issued, because the events, as presented in the investigation report, involve risks relating to this type of drills. Therefore, when planning hoisting equipment technology, instructions and drills, it is possible in advance to prevent similar cases from being repeated. The investigators also consider it important for vessels to draft vessel-specific and boat-specific unambiguous and comprehensive operating instructions for the drills.

Helsinki April 3, 2006

Risto Repo

Kai Valonen

Pia Vatanen



## LIST OF SOURCES

The following sources are stored at the Accident Investigation Board:

1. Decision of the Accident Investigation Board on the Investigation Commission B 6/2004 M
2. Memorandum of the Uusimaa Occupational Safety District of 11 November 2004 and decision 2505/330/2004 of the Gulf of Finland Inspection Unit of the Maritime Administration, 8 December 2004, appended with a statement of the master of the vessel on the events on 9 November 2004
3. An account of the hook manufacturer Schat-Harding on the reasons of the accident, 12 November 2004
4. Technical data, drawings and operating instructions of Schat-Harding Hook RRH 15
5. OCIMF, Intertanko and Sigtto, Lifeboat Incident Survey, 2000
6. The Marine Accident Investigation Branch, Great Britain, Safety Study 1/2001, Review of Lifeboat and Launching Systems' Accidents
7. Australian Transport Safety Bureau, Australia, Safety Bulletin 03, Lifeboat accidents
8. Brochures of different davit and hook systems
9. North of England P&I Association Limited, Great Britain, Signal Experiences, Case Study PI 025, Personal Injury, Drills and spills
10. Memorandum of the Occupational Safety Department of the Ministry of Social Affairs and Health 5 December 2001, Safety of Rescue Boat Drills
11. United States Coast Guard, the USA, Navigation and Vessel Inspection Circular, Manning and Training Guidance for Fast Rescue Boats on United States Vessels, 11 May 2000
12. Service and training records of those involved in the accident
13. Basic information on the SUPERFAST VIII and the MOB boat.
14. Instructions relating to survival craft and rescue boat drills, the inspection record of the hoisting davit of the rescue boat and the drill program of November 2004.
15. Finnish Institute of Marine Research, Significant swell-height between 6 November 2004 and 13 November 2004.
16. International Maritime Organization IMO, MSC/Circ.1136, Guidance on Safety During Abandon Ship Drills Using Lifeboats, 15 December 2004 as well as the same translated into Finnish.
17. Other orders and instructions relating to rescue boats and drills.
18. Alarm record of the Emergency Centre, accident report of the Rescue Service and the list of measures by MRSC of the Gulf of Finland Coast Guard Station on 9 November 2004.
19. Health & Safety Executive, Great Britain, Offshore Technology Report 2001/040, Marine Offshore Rescue Advisory Group: Good practice in offshore rescue
20. Photographs





SAAPUNUT

17. 05. 2006

142/5M

ea/ISM 019/06

12, May 2006

To  
Onnettomuustutkintakeskus,  
Sornaisten rantatie 33 C  
FIN - 00580 Helsinki  
FINLAND

Attn: Mr. Juha Sjolund

**Subject: SUPERFAST VIII - RESCUE BOAT**

Dear Sirs,

We would like to thank you for the accident report, regarding the fall of the rescue boat on Superfast VIII.  
Please find herebelow our comments on the report as well as the corrective actions we have undertaken.

Superfast Ferries S.A, has taken into account this accident as well as similar accidents occurred within shipping industry, the guidelines of IMO, the investigation conclusions of different organizations and has identified the potential risk when lowering a rescue boat into the water.

On the attached circular, issued on September 23, 2005 as amended on May 11,2006 we have given specific instructions on carrying out an "Abandon Ship" Drill and specifically launching a life and rescue boat.

We have also amended the manufacturer's instructions as well as the safety training booklet in order to incorporate more unambiguous instructions when operating release hooks of the said boats.

During our in-house briefings with the bridge officers as well as the superintendents inspections onboard our company's vessels, we have emphasized the importance in following these instructions.

As you have noticed we have modified the arrangement of the battery charging cable in order to be cleared of the release hook arrangement. (See attached picture).

We have also provided our vessels with a safety wire sling, you have suggested which is used during drills in order to mitigate any accidental release of the boat(s). (See attached picture).

## Appendix 1/ 2 (9)

A label has been placed in the release hook, next to the safety pin, specifically mentioning that the safety pin has to be removed only when the boat is waterborne. (See attached picture).

We are at your disposal for any further request.

Best Regards,



P. Makrigiannis  
D.P.A.

CC: Mr. J. Skoutas  
Mr. C. Kaintatzis  
Mr. G. Karkas

Attch: 5





Atch: 1

ea/ISM 141/05

23, September 2005

To  
Master, Staff Captain, Safety Officer  
SUPERFAST V, VI, VII, VIII, IX, X, XI, XII, NORDIA, MARIN

**Circular No 10**

**SUBJECT : GUIDANCE ON SAFETY DURING ABANDON SHIP DRILL**

Dear captain,

Considering the issue of the high number of accidents with lifeboats and rescue boats that have been occurring the recent years in which crewmembers were being injured, sometime fatally, as well as incidents occurred onboard vessels of our company during drills using boats, we are sending to you the following guidance which should be taken into account when such drills are conducted.

- Before conducting drills, it should be checked that the boat and its safety equipment as well as its davits have been maintained in accordance with the manufacture's instructions and only approved spare parts were used.
- Lifeboat drills should be conducted alongside in the port only.
- All precautionary measures described in the manufacture's operation manual should be taken.
- Abnormal conditions of wear and tear or corrosion should be reported to the master immediately.
- Drills should be carried out at safe speed. The time limits set out in SOLAS for ship abandonment should be considered as a secondary objective. During drills, care should be taken to ensure that everybody familiarizes themselves with their duties and with the equipment. If necessary, pauses should be made during the drills to explain especially difficult elements.
- Elements of the drill that may involve unnecessary risks need special attention or may be excluded from the drill.
- In preparing for a drill, master has to assure that responsible officers are conversant with the manufacturer instructions provided in their manual.
- The boat coxswain has to assure that crewmembers assigned in the boat have been instructed and understood the procedures and the duties they are going to perform.
- The staff captain and in the case of Ro/Ro cargo vessels the master has to assure that the drill is conducted properly.
- The lowering of the boat with its full complement of persons should be avoided as it may, depending on the circumstances, involve an unnecessary risk.
- During lowering of the fast rescue and rescue boats, the captain for ro/ro cargo vessels, the staff captain for ro/ro pax vessels and the boat's coxswain, have to assure

## Appendix 1/ 4 (9)

that the safety wire sling is fitted, before persons board the boat and is removed immediately after boat's recovery.

- Before placing persons onboard a lifeboat, it is recommended, the boat to be first lowered and recovered without persons onboard to ascertain that the arrangement functions correctly. The lifeboat then should be lowered into the water with only the number onboard necessary to operate the boat. These persons during lowering and recovery must hold themselves by the lifelines. No one will be seated inside the boat.
- Personnel safety precaution measures such as life jacket, helmet, gloves, e.t.c have to be taken.
- Lessons learned in the course of a drill, incidents that may under some circumstances lead in dangerous situation, failure of equipment, procedures and hazards considered to be assessed and any other element could contribute in improving safety procedures, should be immediately reported to the responsible person ashore.

The present circular supersedes company's circular with reference ea/MRN 099/05

We are at your disposal for any further question may arise.

Best regards,



P. Makrigiannis

CC: Mr. J. Skoutas  
Mr. C. Kaintatzis  
Mr. G. Kazepidis





Attach:2

ea/ISM 018/06

11, May 2006

REVISED

To  
Master, Staff Captain, Safety Officer  
SUPERFAST V, VI, X, XI, XII, NORDIA, MARIN

**Circular No 10**

**SUBJECT : GUIDANCE ON SAFETY DURING ABANDON SHIP DRILL**

Dear captain,

Considering the issue of the high number of accidents with lifeboats and rescue boats that have been occurring the recent years in which crewmembers were being injured, sometime fatally, as well as incidents occurred onboard vessels of our company during drills using boats, we are sending to you the following guidance which should be taken into account when such drills are conducted.

- Before conducting drills, it should be checked that the boat and its safety equipment as well as its davits have been maintained in accordance with the manufacture's instructions and only approved spare parts were used.

*Additionally on Ro-Ro passenger vessels, the Staff Captain or the Safety Officer will personally ensure that:*

1. *Before launching of life boat the release hooks are properly secured (indication arrow on hook in correct position), the release handle is in secured position with safety glass undamaged and the coxswain is duly familiar with the release gear operation instructions.*
2. *Before launching of the rescue boat the safety pin is in properly secured and the coxswain is duly familiar with the release gear operation instructions*

*The chief officer on Ro-Ro cargo vessels will personally ensure that:*

1. *Before rescue boat launching the release hook safety pin is properly secured and the coxswain is duly familiar with the release gear operation instructions.*

- Lifeboat drills should be conducted alongside in the port only.
- All precautionary measures described in the manufacture's operation manual should be taken.
- Abnormal conditions of wear and tear or corrosion should be reported to the master immediately.

## Appendix 1/ 6 (9)

- Drills should be carried out at safe speed. The time limits set out in SOLAS for ship abandonment should be considered as a secondary objective. During drills, care should be taken to ensure that everybody familiarizes themselves with their duties and with the equipment. If necessary, pauses should be made during the drills to explain especially difficult elements.
- Elements of the drill that may involve unnecessary risks need special attention or may be excluded from the drill.
- In preparing for a drill, master has to assure that responsible officers are conversant with the manufacturer instructions provided in their manual.
- The boat coxswain has to assure that crewmembers assigned in the boat have been instructed and understood the procedures and the duties they are going to perform.
- The staff captain and in the case of Ro/Ro cargo vessels the master has to assure that the drill is conducted properly.
- The lowering of the boat with its full complement of persons should be avoided as it may, depending on the circumstances, involve an unnecessary risk.
- During lowering of the fast rescue and rescue boats, the captain for ro/ro cargo vessels, the staff captain for ro/ro pax vessels and the boat's coxswain, have to assure that the safety wire sling is fitted, before persons board the boat and is removed immediately after boat's recovery.
- Before placing persons onboard a lifeboat, it is recommended, the boat to be first lowered and recovered without persons onboard to ascertain that the arrangement functions correctly. The lifeboat then should be lowered into the water with only the number onboard necessary to operate the boat. These persons during lowering and recovery must hold themselves by the lifelines. No one will be seated inside the boat.
- Personnel safety precaution measures such as life jacket, helmet, gloves, e.t.c have to be taken.
- Lessons learned in the course of a drill, incidents that may under some circumstances lead in dangerous situation, failure of equipment, procedures and hazards considered to be assessed and any other element could contribute in improving safety procedures, should be immediately reported to the responsible person ashore.

The present circular supersedes company's circular with reference ea/MRN 099/05

We are at your disposal for any further question may arise.

Best regards,



P. Makrigiannis

CC: Mr. J. Skoutas  
Mr. C. Kaintatzis  
Mr. G. Kazepidis



Attach: 3

Cease hoisting of boat just prior to the full inboard position being reached. In the event of this distance being misjudged or malfunction of a control button, the limit switch will isolate power supply and stop movement before injury to personnel or damage to equipment is incurred.

Disembark personnel from boat.

Stop winch motor.

Recover boat into the fully stowed position using hand crank and locate securing chain hook in shackle on davit arm. Gently raise the winch manual brake to allow spring unit pressure to be transferred to securing chain. Ensure that manual brake re-engages correctly after use. Leave a small amount of slack on the wire rope fall. Once hand crank operations are complete, the handle is to be removed immediately after use and stowed away safely.

Replace boat gripping gear and one man release gear.

Remove plug(s) to drain water from boat and then replace.

**Ensure that the rescueboat is left in a state of operational readiness at all times.**

**Rescue Boat Release hook Operating Instructions**

**OFF-Load release:**

- ✓ When boat is waterborne remove the suspension link (21) by lifting the snap spring Latch (4).
- If the link cannot be simply removed due to continuing load on the hook, apply the ON-load release procedure mentioned below.

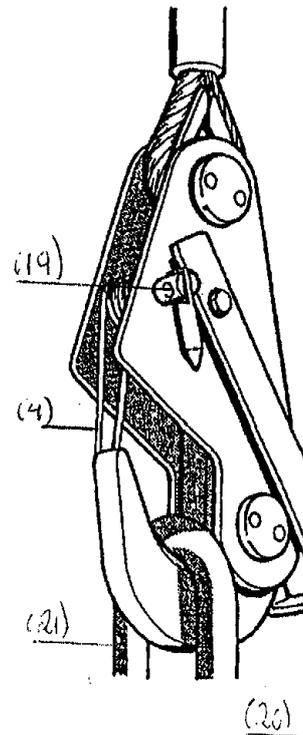
**ON-Load release :**

- ✓ Pull out safety pin (19).
- ✓ Lift the release control lever (20)

The safety pin must be released when the boat is waterborne.

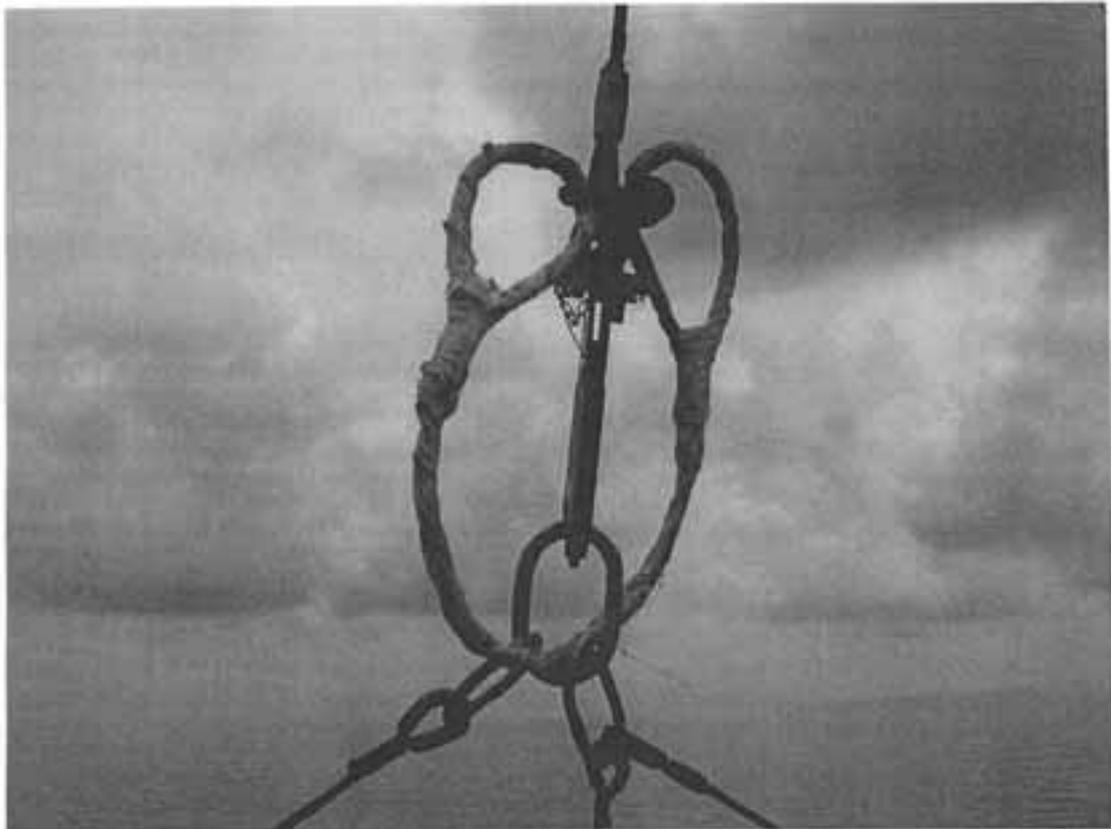
**Recovering the Boat.**

- ✓ Before start recovery operation ensure that the suspension link (21) is properly secured in the hook.
- ✓ Lift the boat approximately 2 meters above the water level and re-inspect the release hook status.



Appendix 1/ 8 (9)

Atch-4



Attach: S.

