

## 7. ANNEX III: ACCIDENT INVESTIGATION

### 7.1 Investigation reports

#### 7.1.1 *Grounding of the Star Princess (NTSB report MAR97/02)*

On June 23, 1995, the passenger vessel *Star Princess*, with 1,568 passengers and 639 crewmembers, onboard, grounded at 0142 about 21 miles northwest of Juneau (Alaska). The vessel's bottom sustained significant damage.

- About 1 minute after the grounding, the U.S. Coast Guard in Juneau notified of the accident.
- The Master thought of beaching the vessel but water too deep to do so.
- He decided to proceed to Auke Bay about 14 miles southeast of Poundstone Rock.
- He asked a vessel south of the *Star Princess* and moving northward, to follow his vessel in case assistance was needed.
- The Master ordered the checking of all the internal bottom tanks for seawater.
- First check showed no water ingress. Second check, right after the first, revealed water entering the ship's double bottom tanks on the starboard side. Flooding in four tanks was reported, and some hydraulic oil reported lost from the starboard shaft lubrication system.
- Propulsion, steering, and other mechanical equipment were ok.
- The first officer using the vessel's on-board stability computer with the information provided by the staff captain and chief engineer, determined that the vessel was stable and not in danger of sinking. He so advised the master.
- Around 10 minutes after the grounding, the master addressed the crew on the crew's public address system. He advised them that the vessel had struck a submerged object, that the situation was not serious, that they should remain calm and ready, and that they should listen for further announcements.
- He instructed them to advise passengers found awake or up and about in public spaces of the situation. He also had lifeboats readied (swung out and lowered to the embarkation deck) in case the vessel's stability status should have changed.
- He did not wake the sleeping passengers to inform them of the accident.
- He did not direct any passengers to go to their muster stations. He thought that waking the passengers would have upset them unnecessarily.

- Near the entrance of Auke Bay, the master advised the following vessel that its assistance was no longer needed.
- At about 0330 the *Star Princess* anchored in Auke Bay. Approximately an hour later, and for nearly 3 hours, divers made an initial damage assessment of the hull.
- An announcement to all passengers informing them of the situation was made at 0918.
- Over the next 2 days, the 1,568 passengers were transferred ashore by ship launches.

**Meteorological conditions:** The weather and sea conditions recorded in the *Star Princess* logbook between 0200 and 0400 on June 23 were cloudy skies, force 3 winds (approximately 7 to 10 knots) out of the east, and seas of 2 to 4 feet. Visibility was at least 10 miles. The seawater temperature was about 10°C

**Notes:**

The Master thought the situation serious enough to have the lifeboats readied but did not give the passengers timely notification about the situation; had the passengers needed to evacuate, they would not have been prepared to do so.

7.1.2 *Grounding of the Royal Majesty (NTSB report MAR97/01)*

About 2225 on June 10, 1995, the passenger ship *Royal Majesty* with 1,509 persons on board grounded on Rose and Crown Shoal about 10 miles east of Nantucket Island, Massachusetts.

- Immediately after the grounding, the Master ordered an immediate inspection of the vessel's double bottom hull and fuel tanks for signs of leakage.
- Several minutes later, it was reported to the Master that there was no evidence that the vessel was taking on any water. The master asked to repeat the inspection.
- At about 2245 it was again reported to him that no evidence of leakage had been found.
- Shortly thereafter, the master instructed the vessel's cruise director to inform the passengers and crewmembers that the vessel had run aground, that it was not in any danger, and that the crew was trying to free the vessel by using its engines.
- At 2310, the U.S. Coast Guard, after receiving a message from a passenger via cellular telephone, called the *Royal Majesty*, at which point the *Royal Majesty* requested Coast Guard assistance.

- At 0024 on June 11, the passengers were told that attempts to free the vessel were unsuccessful and that the vessel was awaiting the arrival of tugboats. Later that morning, the passengers were told that they would be transferred to ferries for transport to shore.
- At 1330 on June 11, two ferries that could hold together about 1,200 persons arrived on scene.
- At 1550, tugboats arrived on scene.
- Meanwhile, sea conditions continued to deteriorate. At about 1600, plans to offload passengers to the ferries were cancelled because sea conditions had become too hazardous. Shortly thereafter, the ferries returned to their port.
- At 2154, the Royal Majesty, with the aid of five tugboats, was refloated and escorted to a safe anchorage near Chatham, Massachusetts, where the damage was surveyed. At 0742 on the morning of June 12, the Coast Guard gave the vessel permission to begin the 6-hour trip to Boston.
- At 1535, the vessel was safely moored with its port side to the Black Falcon Passenger Terminal in Boston. Passengers began disembarking the vessel at 1710.

### **Meteorological Information**

The weather and sea conditions recorded by the Royal Majesty crew between 1800 and 2230 on June 10 generally indicated cloudy skies, force 4 winds (between 11 and 16 knots) out of the east, and seas between 2 and 4 feet. Visibility at sea level was reported to be at least 10 miles.

In the incident although the ship was not damaged and no water ingress was reported the Master kept the passengers informed of the situation.

#### *7.1.3 Grounding of the Empress of the North (NTSB report MAR08/02)*

On May 14, 2007, the passenger vessel Empress of the North grounded on Rocky Island, about 20 miles southwest of Juneau (Alaska). The vessel was carrying 206 passengers and 75 crew members.

### **Flooding control**

- Immediately after the vessel grounded, all engine-room crewmembers were alerted to report immediately to the engineering operating station.

- One crew member was sent forward to check for water in the internal spaces and three crewmembers were sent to find leaks and shut tank vents to prevent breached tanks from discharging water into the vessel.
- All available engine room pumps, including two bilge-and-ballast pumps, two bilge pumps, and the fire pump (which could also be used as a bilge pump) were used to pump out the void spaces. Portable pumps were used in crew accommodation spaces that had taken on water around the deck manhole seals because of pressure from the seawater in the breached voids underneath.
- The bridge was informed about which tanks had taken on water and the status of the engineering crew's actions and was periodically updated of the situation. The Bridge was also kept informed about the degree of starboard list, which was estimated to have increased to a maximum of 8° about 1 hour after the accident.
- As the crew controlled the flooding over the next few hours, the vessel eased back toward even keel. No fuel oil was released to the environment as a result of the grounding.
- Throughout the accident period, the vessel never lost power from the main generators and at no time was the emergency generator operated.

#### **Passengers' evacuation and rescue**

- The master arrived on the bridge seconds after the grounding and at 0132 instructed crewmembers to go to the main deck and made several emergency calls.
- At 0135, he radioed the Coast Guard in Juneau to inform it of the emergency and the vessel's location.
- At 0140, the Coast Guard issued an urgent marine information broadcast.
- At 0142, the master announced the emergency to passengers and instructed them to dress and report to their muster stations with their lifejackets. He told passengers to remain calm, assured them that the vessel was stable, and kept them informed about evacuation plans.
- Passengers were accounted for when they reached their muster stations.
- After the passengers mustered, crewmembers went through all the cabins to ensure that they were clear, marking the doors of those that had been searched and found empty.
- The master used two emergency procedures checklists in responding to the grounding which were kept on the vessel's bridge and were readily accessible.

- The master decided to launch liferafts as a precaution, although he considered them a “last resort” that he did not want to use because of the large number of elderly passengers on board.
- The liferafts were launched at 0224. Eight liferafts were launched from the port side, along with the IBA for that side, and that four liferafts were launched from the starboard side.
- The hand pumps failed to activate about half the mechanisms in the 12 liferafts that were launched. Crewmembers cut the lines with their knives to launch the liferafts.
- The vessel’s two inflatable evacuation slides were deployed on the port side. They both inflated upside down blocking the embarkation area and the exit. The crew had to cut the lines loose. They manually turned both slides over and secured one at the embarkation area. They spent about 15 minutes trying to deploy each slide.
- Among the vessels which received the distress call two fishing vessels, a small passenger vessel and a towing vessel agreed to help evacuate passengers from the cruise ship. The two fishing vessels were the closest.
- At 0223, the first fishing vessel came alongside the *Empress of the North*, allowing 30 passengers and 3 crewmembers to step onto it from the cruise ship. It departed at 0239.
- The second fishing vessel came alongside at 0251; 13 passengers and 1 crewmember from the *Empress of the North* stepped aboard, and it was away at 0308.
- At 0329, the small passenger vessel tied up on the port side of the *Empress of the North* and 52 persons (including 4 in wheelchairs and 5 needing help to walk) were transferred using the cruise vessel’s gangway. Meanwhile, the towing vessel arrived and tied up.
- The two fishing vessel then transferred the 47 passengers and crewmembers they had rescued to the towing vessel.
- At about 0415, the towing vessel tied up on the starboard side of the *Empress of the North* and took on 22 additional passengers. The towing vessel now had 65 passengers and 8 crewmembers on board.
- The small passenger vessel got back under way at 0424.
- At 0438, the Coast Guard cutter which had arrived at 0405 and assumed on-scene command, tied up on the port side of the *Empress of the North* and took on 89 passengers and 38 nonessential crewmembers (127 persons total). The towing vessel remained alongside the *Empress of the North* until 0519.
- A minute or so after the towing vessel untied, a Coast Guard 47-foot motor lifeboat that had been dispatched to the scene transferred the last four nonessential crewmembers from the *Empress of the North* to the towing vessel.

- At 0521, the cutter got back under way, leaving 29 essential crewmembers on board the *Empress of the North*. All 206 passengers and 46 nonessential crewmembers (252 persons) were now on board the towing vessel, the small passenger vessel or the cutter.
- The master decided that because the flooding rate was under control, he would try to return the vessel to port under its own power. Once he received the Coast Guard's clearance he departed for Auke Bay.
- At about 0554 a ferry which diverted to the scene to assist when it received the Coast Guard's urgent marine information broadcast arrived. The Coast Guard decided to transfer all evacuated passengers and crew to the ferry because it was a much better platform that could house everybody.
- At 0625 the cutter tied up to the ferry, making an access to the ferry's car deck that aligned well with the cutter's main deck. The 127 passengers and crewmembers on the cutter transferred to the ferry. Over the next 2 1/2 hours, the Coast Guard 47-foot motor lifeboat ferried passengers and crewmembers from the towing vessel and the small passenger vessel to the ferry by way of the cutter. The transfer was complete by 0840.
- After all passengers were safely on board the ferry, the cutter departed at 0855. The Coast Guard conducted a final accountability check before allowing the ferry to depart for Juneau shortly after 0900. The *Columbia* arrived at Auke Bay around 1100 and docked at the Alaska Marine Highway System pier.

## Summary

### 0132: Grounding

Time	Event	Time elapsed since incident
0132	Distress call	0
0135	Coast Guard (CG) informed of the emergency and location	3 min.
0140	CG issued urgent marine broadcast	8 min.
0142	Passengers informed of emergency and asked to don lifejackets and proceed to muster stations	10 min.
0223	First fishing vessel alongside the ship	51 min.
0224	Liferafts launched	52 min.
0239	First fishing vessel departed ( <u>took 16 minutes to transfer 30 passengers and 3 non essential crew members</u> )	1 h, 7 min.
0251	Second fishing vessel alongside the ship	1 h, 19 min.
0308	Second fishing vessel departed ( <u>took 17 minutes to transfer 13 passengers and 1 non essential crew members</u> )	1 h, 36 min.
0329	Small passenger vessel alongside the ship	1 h, 57 min.
0405	CG cutter arrived and assumed on scene command	2 h, 23 min.

0415	Towing vessel alongside the ship	2 h, 43 fv
0424	Small passenger vessel departed ( <u>took 55 minutes to transfer 52 passengers including 4 wheel chairs and 5 people needing assistance to walk</u> )	2 h, 52 min.
0438	CG cutter alongside the ship	3 h, 06 min.
0519	Towing vessel departed ( <u>took 56 minutes to transfer 22 passengers</u> )	3 h, 47 min.
0520	GC motor lifeboat alongside the ship to transfer 4 crew members	3 h, 48 min.
0521	GC cutter departed ( <u>took 43 minutes to transfer 89 passengers and 38 non essential crew members</u> )	3 h, 49 min.

**At this stage only the 29 essential crew members are onboard.**

0554	Ferry arrived	4 h, 22 min.
0625	CG cutter alongside the ferry to transfer 127 passengers + CG motor lifeboat to transfer passengers from towing vessel and small passenger vessel	4 h, 52 min.
0840	Transfer completed	7 h, 17 min.
0900	Ferry left accident scene after final checks by CG	7 h, 37 min.
1100	Ferry docked	9 h, 37 min.

### **Meteorological Information**

Skies were overcast at the time of the accident, visibility was 7 miles, the air temperature was 6° C, and winds were from the southeast at 8 to 10 miles per hour. Light rain was recorded at 0056.

### **Notes:**

In this incident it took about 6 hours to transfer passengers from the damaged ship to the final rescue vessel. A first transfer from the damaged ship to different rescue vessels took 3 hours, then another transfer from the rescue vessels to one vessel took more than 2 hours and a half.

#### *7.1.4 Grounding of the Monarch of the Seas (Joint report US Coast Guard and Maritime Investigator Norway)*

On the night of 15 December 1998, at approximately 0130 hours, after the evacuation to shore (St. Maarten) of a sick passenger, the MONARCH OF THE SEAS with 2,557 passengers onboard, raked the Proselyte Reef without becoming permanently stranded. At 0235 the vessel was intentionally grounded on a sandbank in Great Bay, St. Maarten.

- A considerable amount of water entered several tanks and watertight compartments and the vessel settled in the water down by the head.
- At 0133 Chief Engineer and safety officer reported to the bridge that the water in pump rooms 1 & 2 was too much for them and that he was closing watertight doors 1 & 2 and concentrated on the leaks in pump rooms 3 & 4.
- At 0135: general closing of all watertight doors from the bridge.
- At 0140: Captain informed marine Operations in Miami of situation and at 0145 he informed port agent and St. Maarten port authorities of the situation.
- At 0155: mustering of mobile fire/damage control groups, medical and stretcher teams.
- At 0157: deployment of mobile fire/damage control groups.
- At 0222: Safety officer reported water coming in through hatch from emergency escape from pump room # 1. He requested wood to put more pressure on it. Chief Officer ordered wood.
- At 0231: Security Officer reported that door # 0.010 was at knee-high level
- After consultation, the master decided the most appropriate course of action was to return to St. Maarten and intentionally ground the ship on a sandbank in Great Bay.
- The ship was grounded at 0235
- At 0249: CURACAO Coast Guard contacted ship to offer assistance.
- 0302: staff capt. reported that there was 1-112 meters of water already above deck 0 fwd. and it continues to come in.
- 0305: Safety Officer reported that water continues to come in through the elevator shaft.
- 0354: Safety Officer reported to staff captain that the hotel store-room and the laundry were at standard water level. The staff captain reported this as good news
- 0402 Chief Engineer Jr. reported that the water coming in pump room # 3 was stabilized and less water was coming in.
- 0404 Chief Engineer Jr. reported that water was still coming into pump room # 1 & 2 but # 3 was under control.

## Summary

**0130** : Raked reef



<b>Time</b>	<b>Event</b>	<b>Time elapsed since incident</b>
0147	General emergency signal sounded. All passengers and crew to report to their muster stations.	17 min.
0207	Captain announced on the p.a. system that ship had come into contact with the ground and it was taking in water. He stated that everything was under control but it was necessary for everyone to remain calm and listen carefully to their lifeboat commander's orders. He also stated that they would be returning to St. Maarten to ground the ship on the sand and receive assistance from the port authority. This announcement was translated into Spanish, French and German.	37 min.
0210	All port side boats lowered to promenade deck ready for embarkation.	40 min.
0213	Safety officer reported there was no power in the shell gates hydraulics pump to open the passenger gates on stb & port side (shell gates # 3 & 4).	43 min.
0215	All stb side life boats lowered to promenade deck ready for embarkation.	45 min.
0218	Captain explained again the situation on the p.a. system and that the passengers should prepare themselves for movement. This announcement was translated in Spanish, French and German.	48 min.
0220	Hotel manager reported all passenger and crew cabins have been cleared.	50 min.
<b>0235</b>	<b>Ship grounded in great bay, St. Maarten.</b>	1 h, 5 min.
0236	Crew gate port side open.	1h, 6 min.
0237	Medical emergency was reported 1 passenger fainted on deck 7 aft.	1h, 7 min.
0239	Staff captain ordered security officer to assist passengers and evacuate them right away through the port crew gate.	1h, 9 min.
0240	Captain went on p.a. system and announced to everyone that the ship was safe, high and dry and under control; but, as a precaution it was necessary for the guests to disembark. He added that it was not necessary to use the lifeboats and that tenders would be transporting them ashore. This announcement was translated into Spanish, French and German.	1h, 10 min.
0241	Nurse on duty ordered a stretcher team on deck 7, stb side, muster station # 7.	1h, 11min.
0242	Captain ordered to disembark guests in the following order: stations 3&4,1&2,7&8,9&10, 11&12.	1h, 12 min.
0245	First tender came to disembark guests on port side at bunker and crew gates.	1h, 15 min.
0307	Life boat commander station # 11 called the bridge to state that a guest in his station was "hyper" and needed to go to their cabin to get her medication. He wanted to know if it was o.k. to allow the guest to go to her cabin. Authorisation granted by 1st officer for the guest to return the her cabin	1h, 37 min.
0309	Captain made an announcement on the p.a. system reassuring guests that everything was under control and guests will continue to disembark; be transferred to shore by tenders; then, by buses to the	1h, 39 min.

<b>Time</b>	<b>Event</b>	<b>Time elapsed since incident</b>
	best possible hotels. This announcement was translated into Spanish, French and German.	
0326	A first tender reported 300 people onboard their tender.	1h, 56 min.
0334	The hotel manager reported 850 people accounted for that had disembarked	2h, 4 min.
0348	Agent in St. Maarten (at the pier) reported that the situation shore side for the guests was under control and they were being well taken care of. He also stated that the hotels had been contacted to accommodate the guests.	2h, 18 min.
0407	Safety officer reported that 1400 people had left the ship. He also said that 8 stations had disembarked and 4 more were waiting to go.	2h, 37 min.
0412	The second tender reported 300 passengers onboard ready to go ashore.	2h, 42 min.
0415	Chief purser reported 1600 guests ashore.	2h, 45 min.
0428	Hotel manager reported that cruise staff onshore, were coordinating things so that families with children and handicap were taken care of first.	2h, 58 min.
0441	Safety officer reported official count of 1860 guests and approx. 20 crew members to assist guests ashore.	3h, 11 min.
0510	Safety officer reported 2400 guests already ashore.	3h, 40 min.
0515	Hotel manager reported that all guests were accounted for and left the Monarch to go ashore.	3h, 45 min.
0519	Hotel manager confirmed there were no passengers on the promenade deck.	3h, 49 min.
0530	Captain went on p.a. system and announced that all crew was dismissed from their muster stations. He thanked everyone and said he was very proud for their full cooperation.	4h

### **Meteorological information**

The prevailing wind was easterly; force 6-8 knots, with a sea of approximately 1 meter high, darkness, good visibility, no precipitation and an air temperature of 28°C.

### **Notes:**

In this accident passengers had to disembark from the port crew gate. They had to use obstructed corridors. The lifeboats were not used instead passengers were evacuated by shore base tenders. No serious injuries or loss of life were reported.

### 7.1.5 *Sinking of the Explorer (Report of the Bureau of Maritime Affairs Liberia)*

On the 22<sup>nd</sup> November 2007, at about 2200 the Explorer with 54 crew and 100 passengers (including 9 Expedition Group members), on a tour in the Antarctic entered an ice field. At about midnight it hit a “wall of ice” and sustained damage to a section of the hull which led to rapid flooding.

#### **Flooding control**

- At about midnight an alarm sounded on the bridge coming from a cabin at level 300.
- A crew member reported water in the cabin after he was instructed by the Master to check the reason of the alarm.
- The Master sent the Safety Officer for additional evaluation of the flooding. The safety officer reported sea water at knee high.
- After assessing the extent the flooding by himself and identify that the flooding was due to damage to the hull, the Master called for the damage control team at deck 3.
- He decided to muster passengers and sounded the general alarm asking passengers to wear warm clothing and their lifejackets.
- The damage control team arrived on the level 300 with submersible pumps and tools. The Chief Officer inspected all four cabins on the starboard side and found water in all of them. He then inspected spaces forward and aft of the flooded spaces and found them dry. He reported to the bridge then went back to the flooding area to direct the damage control efforts.
- The crew working in the flooded cabin had difficulty locating the source of the water ingress and had to remove the bunk bed which was held in place by bolts. This proved to be challenging as the bolts were submerged by cold seawater and the crew member’s hands became numb with the cold.
- Once they felt the water pressure (could not see the source of the flooding), they jammed pillows down into the space and inserted a sheet of plywood over the pillows. A long bar was then used to apply pressure. Although the crewmembers thought they had stopped the flow, water continued to rush into the cabin.
- In the mean time pumps were used in the cabin with routed hoses overboard.
- While crew were working to control the flooding in the cabins, the Master ordered to make an external inspection of the hull. The vessel list angle had made visual inspection of the damage from the outside impossible, so it was not covered.
- The Master considered reversing the list to the port side to expose the damage above the waterline but he did not have time to attempt this.

- The Chief Engineer did not consider using the ballast tanks to correct the list because they were too small and would have minimal impact on the list.
- As passengers reported to the muster station and crew responded to the alarm, the Master ordered to transmit a distress message. He also contacted the Endeavour, which was travelling in the Antarctic region, and confirmed the Explorer was in distress and needed assistance.
- The Master of the Endeavour contacted the NORDNORGE which was in the area and transmitted details of the emergency on the Explorer.
- The master of the NORDNORGE was appointed on scene commander by the MRCC Chile.
- MRCC Chile ordered the activation of the MRCC Punta Arenas and the Maritime Rescue Sub Centre Antarctica. At 0140 MRCC Chile established communication with the Explorer.
- Water was flowing down into the Separator room from above and was rising very quickly. The watertight door between the Generator room and the Separator Room was closed but water was seeping into the Generator room, through the bottom corner of the watertight door at a height of about 20 cm.
- At about 0215 a black out occurred and 20 minutes later the ship was drifting back to the ice field. The Master decided to abandon as a precautionary measure.
- The generators were started again after the engineers replenished the generator tank with fuel and passengers abandoned the vessel in lifeboats.
- Water was flooding the generator room from the overhead and it was reaching the foundation of one of the generator so it was shut down. The Master was informed by the crew that the flooding could not be contained or stopped and that the ship could not be saved. The Master conducted then a head count of all the personnel that had been in the engine room and ordered them to abandon the vessel. Only the Master and the expedition group leader remained onboard.
- When the vessel started moving astern at 8 knots speed, and after he failed to switch off the main engines or the 2 operating generators, the Master with the group leader decided to abandon the vessel. They boarded a Zodiac which manoeuvred alongside the Explorer.

### **Passengers' evacuation and rescue**

- The Hotel Manager went to his assigned station at the muster station and took count of all the passengers when he heard the general alarm.

- He assigned crew to verify and close the watertight doors in the passenger decks. Five minutes later all the doors were closed properly.
- Once passengers were mustered, the Hotel Manager was instructed to assist as needed at the damage area. Passengers were left to the care of the expedition staff.
- The master came to the master station to assure passengers that everything possible was done for their safety and that rescue vessels had been notified and the nearest vessel was 6 hours away.
- There was some confusion when passengers whose cabins were not flooded, were allowed to return to their cabins to collect belongings, as passengers from the lower levels(flooded), were also attempting to return to their cabins.
- When the passengers who were in the cabins were packing, the cabins lost lighting and they all returned to the muster station.
- Not long after that the Master announced that they would abandon the vessel. At that time passengers were either on the open deck, in the muster station or on the port side of the vessel and were not mustered for another accountability check and were not provided any additional preparation for abandoning the vessel.
- The vessel had four open lifeboats. Boats 1 and 3 were located on the starboard side with lifeboat 1 closest to the bow. Lifeboats 2 and 4 were on the portside with Boat 2 forward. The capacity of lifeboats 1 and 2 was 39 persons each and the boats 3 and 4 had a capacity of 59 each.
- The expedition group members started to direct passengers toward the starboard lifeboats (1 and 3) first. There was some confusion as passengers did not know which lifeboat was assigned to them, they went to the first boat they reached so some people had to go from lifeboat to lifeboat to search for a place.
- The engine of lifeboat 1 took a long time to start and the crew could not start lifeboat 3 engine. The master ordered the lifeboats to be loaded and lowered.
- 3 or 4 passengers in lifeboat 3 had to stand as there was no more room to sit.
- Lifeboat 3 was lowered before lifeboat 1 and when it reached the water, the crew had difficulty pushing away from the Explorer and one of the oars used to clear from the Explorer broke.
- Lifeboat 1 was directly overhead with engine operating and passengers in lifeboat 3 started to panic and thought that lifeboat 1 would lower onto their boat, until they managed to clear away from the Explorer.

- Lifeboat 2 at the port side, because of the list, slid along the hull which caused it to tip outboard. Passengers were afraid they were going to be thrown into the water. Once waterborne, the crew used a pole to clear away from the Vessel.
- The restored power to the Explorer allowed for the seven Zodiacs to be launched. They were used to tow the lifeboat and ease the overcrowding of lifeboats by transferring passengers into the Zodiacs. Passengers had to jump into the Zodiacs and many could not jump without the crew help.
- Passengers were seasick in all lifeboats and the doctor was transported by Zodiac to the lifeboats to assist as possible. Passengers were not aware and were not told that seasickness tablets were in the lifeboats lockers. They did not know either that thermal blankets were in the lifeboat lockers until after an hour of being in the lifeboat a passenger opened the locker and found the blankets.
- The NORDNORGE and the Endeavour arrived on scene at about 0625. The NORDNORGE launched its Zodiacs to assist with the rescue.
- The NORDNORGE's lifeboats were lowered into the water and passengers transferred from the Explorer lifeboats to the NORDNORGE's lifeboats which were hoisted to the embarkation deck once full.
- Passengers who were in the Zodiacs had more difficulty boarding the NORDNORGE and it was riskier as the Zodiac manoeuvred its bow against the NORDNORGE in the location of the sideport. Passengers had to reach from the Zodiac and grab the rope ladder hanging from the sideport. Some passengers were too cold to climb the ladder and were helped by crew and other passengers. One passenger witnessed three incidents where people almost fell into the water.
- Once all the passengers were onboard the NORDNORGE, a head count was taken.
- Two hours after boarding the rescue vessel the weather and sea conditions deteriorated to gale force winds.

### Bridge log entries

0005	Received passenger cabin alarm
0008	C/O confirm ship has hole in the hull
0012	General emergency alarm
0020	All passengers evacuated to the muster station
0025	Captain contacts ashore
0035	Radio off. Send messengers to MRCC station. Distress call
0215	Power black out
0235	Signal for passengers to abandon ship

### Meteorological information

Fair weather, temperature around  $-7^{\circ}\text{C}$ .

**Notes:**

Although the Explorer is not considered a large passenger ship, this accident was included for its specific conditions (location, weather conditions, open lifeboats, etc.). It is also worth noting that the once passengers were mustered, the Expedition Group crew members look after the passengers although they were not crew members. Passengers stayed in the lifeboats for more than 5 hours.

*7.1.6 Striking and subsequent sinking of the RoPax Queen of the North (TSB report M06W0052)*

At 2000 on 21 March 2006, the passenger and vehicle ferry Queen of the North departed for Port Hardy, British Columbia. On board were 59 passengers (max capacity 650) and 42 crew members (max capacity 50). After entering Wright Sound from Grenville Channel, the vessel struck the northeast side of Gil Island at approximately 0021 on March 22. The vessel sustained extensive damage to its hull, lost its propulsion, and drifted for about 1 hour and 17 minutes before it sank in 430 m of water. Passengers and crew abandoned the vessel before it sank. Two passengers were unaccounted for after the abandonment and have since been declared dead.

**Flooding control**

- The master entered the bridge after the general alarm had been sounded. He ordered the watertight doors to be closed.
- The Queen of the North reported that there were 101 persons on board.
- Water ingress into the hull was immediate, rapid, and extensive. The bilge pumps could not keep up with the ingress of water, so the watertight door between the main engine room and the auxiliary engine room was closed manually.
- The bridge was informed that the engine rooms were being evacuated. The watertight door between the main engine room and the workshop was obstructed by debris, and, as there was flooding on both sides, the crew did not close it. The crew did not have the time to fully ascertain the extent of damage to the hull before evacuating.
- Both anchors were let go. One crew member went below through Decks 5, 4, and 3 calling out, looking for people, and assessing the flooding.
- The Prince Rupert BC Ferries marine superintendent, who was on board, informed BC Ferries management of the striking.

- At 0026, the Queen of the North advised Prince Rupert Traffic that the vessel was aground and required immediate assistance.
- At 0027, Prince Rupert Coast Guard Radio broadcast a Mayday Relay
- At 0038, Prince Rupert Traffic was informed that the watertight doors were being closed.
- At 0140, following abandonment, the ferry sank by the stern in 430 m of water.

### **Passengers' evacuation and rescue**

- After the ferry struck the island, water was rapidly accumulating in the crew accommodation spaces on Deck 2. In some cases, the water was waist deep by the time crew members evacuated.
- Some crew members knocked on other crew members doors and began clearing crew cabins on Deck 2.
- An announcement was made over the public address system that passengers and crew were to go to the upper-deck boat and liferaft stations.
- Some passengers, many having taken their lifejackets from their state rooms, went to Deck 8, but most proceeded directly to Deck 7. A few passengers experienced difficulties to evacuate their cabins as there were reports of baggage being displaced in the cabins and cabin door temporarily jammed. One crew member on Deck 2 was briefly trapped in her cabin when a locker fell and blocked the door. By the time she freed herself, some four feet of water had accumulated inside the cabin.
- Once passengers reached Deck 7, passengers and crew shared clothing with those who were not warmly dressed, and crew members ensured that everyone wore lifejackets. No head count was made while the crew prepared the survival craft for boarding.
- As crew members proceeded to muster stations, all passenger cabins except those on the starboard side of Deck 7 were eventually cleared. Clearing was not carried out according to procedures: chalk marks were not placed on doors, and not all rooms were physically searched. Not all cabins were cleared by those assigned to that particular muster duty: some crew members were delayed by water ingress; others had already cleared the areas; and there was some confusion about whether to follow the public announcement (directing people to proceed directly to the upper-deck boat and liferaft stations) versus following the procedure of clearing all passenger areas.
- On Deck 6, the lounges were cleared. On Deck 5, the cafeteria and bar were locked and inaccessible to passengers. It is not known if other public areas on Deck 5 were cleared.



- Deck 3 was observed to be flooding and was not cleared.
- Although most passengers had been asleep, the majority were alerted by the noise and motion of the striking. Roughly half of them, mostly those on Deck 6, as well as some crew on Deck 5 reported that they did not hear the public announcement or the general alarm. Nearly all had left their staterooms before crew members arrived to begin clearing cabins.
- Some passengers were directed to Deck 7; crew members there were busy clearing away the survival craft, and the passengers were sent back down, below-decks.
- Instructions to passengers were passed by word of mouth, some crew were not easily identifiable, and some passengers could not differentiate between port and starboard when told to move to the port side of Deck 7.
- As the port lifeboat was made ready and passengers embarked, a rigid-hull inflatable rescue boat was launched with two crew members. Three liferafts loaded with passengers, and davit launched. The roof of one liferaft did not fully inflate, but this did not impede the abandonment.
- Passengers and crew used three liferafts, one lifeboat, and one rescue boat during their abandonment.
- Difficulties were encountered when making accurate passenger counts. These were attempted at various stages of abandonment, often yielding differing numbers. For instance: as passengers boarded each survival craft, a count was carried out to prevent overcrowding, and these counts were relayed to the master but were not recorded.
- After abandoning the vessel, the master detailed one person in each lifeboat and liferaft to do a head count, but this was hampered by insufficient flashlights, no means of recording the counts, and no practised method of carrying out counts.
- The master requested several recounts as the totals were inconsistent.
- At 0026, the Joint Rescue Coordination Centre in Victoria (JRCC Victoria) was informed of the situation of the Queen of the North and set in motion search and rescue (SAR) operations.
- Immediately after the 0027 Mayday Relay broadcast, a ship, about 5 nm from the scene, informed MCTS Prince Rupert that it would provide assistance.
- Residents of Hartley Bay six miles away, heard the Mayday Relay at home and quickly responded, organizing several small craft to provide assistance. The cultural centre in Hartley Bay made preparations to receive survivors.

- A Canadian Coast Guard ship, which was at anchor 17 nm to the south and would later be tasked as the on-scene coordinator (OSC), informed MCTS Prince Rupert that it would be underway shortly and was sending its fast-rescue craft.
- JRCC Victoria tasked a number of resources, including two SAR aircraft and four Canadian Coast Guard (CCG) vessels.
- At 0053, the master and remaining crew members abandoned ship using an additional lifeboat, this one on the starboard side.
- At 0113 the first ship arrived and was instructed to make a sweep around the Queen of the North using a high-powered light, but no one was seen on board or in the water.
- One crew member with the master's permission, took the fast-rescue boat, with two deckhands, and circled the vessel looking for people. The interior of the vessel was visible through the windows. The outer decks were still lighted. The rescue boat remained on station as the vessel sank, and afterwards conducted a surface search.
- Other vessels arrived, including a second CCGS, and began to transfer some survivors to bring them to Hartley Bay. Arrangements were made to have the survivors met at the Hartley Bay dock for a head count and to take their names. The chief steward was detailed by the master to take charge of persons going ashore.
- Some survivors displayed signs of mild hypothermia by the time they reached Hartley Bay.
- At 0144, the first ship to reply to the Mayday arrived on scene and, after loading 17 survivors, took them to Hartley Bay.
- At 0154, the Queen of the North informed the on-scene commander (1<sup>st</sup> CCGS), using a handheld VHF radio, that they were not confident that all persons had been accounted for.
- Throughout the remainder of the rescue operation, the number of survivors reported recovered fluctuated and, given this variance in passenger counts, the search was continued.
- At 0156, the CCGS's fast rescue craft arrived on scene and at 0220, the on-scene commander arrived.
- Canadian Forces aircraft searched a radius of 5 nm from the debris field. Barrier searches were established at 1.5 nm and 5 nm from the accident site to search for anyone who did not make it into survival craft. At 1415 on March 22, the search was placed on reduced status, and officially concluded at 1856 on March 23.
- Two persons were unaccounted for, and have been declared dead. Their location onboard at the time of the striking could not be determined by the investigation.

- 3 Crew members were treated for minor injuries and 4 others required medical attention for stress

### **Meteorological information**

At the time of the striking, it was reported that there was little or no wind or rain, the seas were relatively calm, and the visibility was good. Air temperature was approximately 7°C and moonrise was at 0339.

### **Notes:**

Although the weather conditions were good and the number of passengers small: 59 compared to the actual capacity of the ferry which is 650, there were issues with the head count of passengers and two passengers were missing in what seemed an orderly evacuation.

#### *7.1.7 Capsize of the Herald Of Free Enterprise (MAIB report)*

On the 6th March 1987 the Roll on/Roll off passenger and freight ferry HERALD OF FREE ENTERPRISE, with 80 crew and 459 passengers sailed from the inner harbour at Zeebrugge at 18.05 G.M.T. The HERALD passed the outer mole at 18.24. She capsized about four minutes later.

- During the final moments the HERALD turned rapidly to starboard and was prevented from sinking totally because her port side took the ground in shallow water.
- Water rapidly filled the ship below the surface level with the result that not less than 150 passengers and 38 members of the crew lost their lives. Many others were injured.
- The rapid capsize of the Herald made the deployment and use of any of the life-saving appliances impossible, except the lifejackets which were stowed principally in lockers adjacent to the Muster Stations.
- The mass of floating jackets impeded some swimmers and prevented others from floating to the surface. Persons having access to lifejackets complained of difficulty in donning the jackets, untangling the tapes from other jackets and then discovering how to manipulate them. As hypothermia set in fingers, they became too numb to tie the tapes.
- Not one of the lifeboats was launched but those on the starboard side were the source of much useful equipment which was used by the crew in the rescue operation.

### **Search and Rescue**

- The dredger which observed the HERALD capsize at about 1828 informed Port Control Zeebrugge and immediately set out towards the scene of the accident. She commenced searching for survivors.
- The British coaster RIVER TAMAR was preparing to leave Zeebrugge at 1830 when Port Control informed her of the accident. The RIVER TAMAR proceeded at once to the wreck and after searching down tide for 15 minutes she went alongside.
- At about 1845 GMT two tugs from Zeebrugge BURGERMEESTER VAN DAMME and SEA HORSE also came alongside. By this time No. 1 LIFEBOAT from Zeebrugge had been launched and a control centre set up in the Pilot Station. Numerous small boats and fishing vessels were also searching the area for survivors.
- The Ferry EUROPEAN TRADER lowered a boat and searched the area to no avail, thereafter she anchored and later sent 2 of her crew members, both of whom had knowledge of the HERALD layout, to assist in locating survivors.
- The tug SEA LION ferried survivors.
- At 1910 the first Belgian Sea King was over the wreck and at 1925 the first Belgian diving team was aboard.
- The Ro/Ro ferry DUKE OF ANGLIA was approaching Zeebrugge when she picked up the Mayday Relay requesting all vessels' assistance. At 1955 she launched a lifeboat with her Chief Officer and 5 crew members.
- At 2050 the DUKE OF ANGLIA'S Chief Officer made the decision to board the wreck.
- Around 2100 most of the windows on the starboard side of the wreck which gave access to the passenger lounges had been broken and survivors were still being pulled out.
- Two British divers arrived on the HERALD by helicopter.
- At 2140 BURGERMEESTER VAN DAMME who had ferried survivors ashore was back alongside the RIVER TAMAR which departed to Zeebrugge with many more on board.
- At 2153 a U.K. helicopter with 20 divers arrived at Zeebrugge.
- The situation at this time was very confused due to lack of lighting, the numbers of rescuers and helicopter noise which made voice communication aboard the wreck almost impossible.
- During the next 40 minutes more survivors were ferried to shore by the BURGERMEESTER VAN DAMME and the FIGHTER while helicopters airlifted the more seriously injured.

- Up to 2250 the COWDENBURG had been co-ordinating the rescue on board the HERALD. Then Chief Officer of the DUKE OF ANGLIA was nominated as on scene commander (O.S.C.) and his vessel DUKE OF ANGLIA as co-ordinating vessel. At that time he was unaware of any shore centre and was in VHF communication with his own ship. This appears to have worked very well as language difficulties were eliminated.
- Persons with knowledge of the HERALD were requested by the O.S.C. and these were subsequently supplied.
- The O.S.C. now appeared to have gained overall control of the situation on board and was making continued requests for lights, ladders, stretchers and plans of the vessel. Most of these requests were met, except that lighting was never adequate and eventually diving had to cease due to the extreme danger within the darkened hull.
- From the time the HERALD capsized, the surviving crew of the HERALD had been engaged in rescue work and had been the initiators of the breaking of windows and lowering of ropes and ladders to haul up passengers. They did remarkable work. In most cases they themselves had first been rescued. Suffering from cold and shock they were persuaded to embark in BURGERMEESTER VAN DAMME for food and drink, and it was thought advisable to evacuate them to shore. It must be said though that many wished to stay aboard and continue the rescue.
- By 2330 it was apparent that most of the survivors above water level had been rescued and divers were organised to begin recovering bodies while still searching for survivors.
- At 2335 the tugs FIGHTER and RIVER TAMAR, the latter with reporters, who had refused the Master's request to leave the ship after jumping aboard in Zeebrugge, were back alongside. FIGHTER was requested to prepare her foredeck for bodies as no space remained on the HERALD.
- Shortly after this, reporters, who were onboard RIVER TAMAR, climbed aboard the HERALD and became an impediment to the operations. They refused to leave until the OSC threatened them with physical removal.
- By 2350 the hand lamps were failing and more were requested. Most of the visible bodies had been recovered and the divers were withdrawn from the darker recesses of the hull.
- At 0030 divers were despatched in an inflatable craft to hammer on the bottom of the wreck because there was no obvious access to the engine room. Officers and seamen from the other Townsend ships who were familiar with the HERALD layout arrived and more hand lamps became available. Further searches were then carried out.

- At 0115 three survivors were found in the forward drivers' accommodation. Shortly after this plans of the vessel arrived and a search was organized with the U.K. and Belgian clearance diving teams.
- At 0145 diving was again suspended until more lights became available at 0215. Thereafter systematic searching of the vessel continued. Helicopter movements were suspended to make it possible to communicate and to listen for hammering.
- The tide was now rising rapidly through the vessel. It was decided to suspend diving, after completion of the systematic search, until daylight and a fall in the water level.
- At 0315 DUKE OF ANGLIA handed rescue co-ordination to another ship. Shortly after a final search, which included the engine control room, the operation was completed.
- The OSC requested permission to hand over to the salvage teams which had arrived. This was granted at 0325. All teams left the HERALD until daylight.

### **Meteorological information**

Prevailing good weather. There was a light easterly breeze and very little sea or swell.

### **Notes:**

The focus of this report is on the rescue operation as the sinking of the ship was really quick, not allowing for any evacuation. The name of the different ships involved in the rescue operations were kept for clarity.

#### *7.1.8 Sinking of Estonia (Joint Accident Investigation Commission of Estonia, Finland and Sweden)*

The Ro-Ro passenger ferry ESTONIA departed from Tallinn (Estonia), on 27 September 1994 at 1915 hrs for a scheduled voyage to Stockholm (Sweden). She carried 989 people, 803 of whom were passengers.

At about 0115 hrs the visor separated from the bow and tilted over the stem. The ramp was pulled fully open, allowing large amounts of water to enter the car deck. Very rapidly the ship took on a heavy starboard list.

### **Passenger's evacuation and abandonment**

- Most passengers and crew members were alarmed by the accident itself and started to seek the open decks spontaneously and, in most cases, individually.

- The complete command group did not gather on the bridge.
- The bridge sent out alarm signals approximately five minutes after the list and when the situation had already become aggravated.
- The rapid development of the accident made organised efforts by the rest of the crew impossible.
- Some individual crew members took responsibility and initiative for alarming passengers, and organised the evacuation locally.
- Individual members of the deck and engine crew took responsibility for passengers and fellow crew members, as catering staff who were assigned to the evacuation seemed not to have played any role in the evacuation.
- Some of these crew members, including two who did not survive, made heroic contributions and were very active. Passengers also helped and supported each other, often sticking together in pairs or in small groups. A few especially energetic and active passengers also helped to organise and to direct others.
- Objects broke loose and slid away, injuring some passengers and preventing the movement of others. Also sliding carpets and slippery flooring material prevented some passengers from evacuating and created obstacles that slowed others down. Some passengers were standing but not moving, thereby preventing others from passing them.
- A few of those who survived behaved in an irrational way, but most did not.
- A number of people reacted incredulously to the very early signs. When they understood the situation, they acted promptly and with a clear goal: to get out to deck 7. They were the first to evacuate.
- A majority of those rescued, however, seem to have grasped the seriousness of the situation when the blows and the list came. They also promptly understood what to do and thus reacted clearly and appropriately.
- Many elderly people were seen making no or only faint efforts to escape.
- A great number of people were behaving without control, and screaming. Some of these were moving but not in a rational or purposeful way. Others were apathetic and some only held on to something without making further efforts to save themselves.
- Other people tried to escape but lacked the strength to continue climbing, became exhausted and held onto handrails, blocking the way for others.
- Spontaneous altruistic behaviour during the evacuation seems to have been more prevalent in the early stages where many people helped and took responsibility for each other or urged each other to move and climb.

- The building of human chains involved many people, both crew members and passengers, but these efforts ceased when it became difficult to hold on and when people became afraid. Collective and co-operative efforts then broke down into individual efforts. Some collective and spontaneous attempts were made later on when people felt more secure. Those who had reached the open deck helped each other again and also tried to help those still trapped on the staircases.
- Many of the survivors forced their way. During the struggle people became injured or forced out of the way by others. A situation arose where many took care of themselves only.
- The time span for the evacuation to the open decks, from the time people started to the 45-to 50-degree list, was thus between 15 and 20 minutes. For the majority, who were not alarmed until the first heel, the time span was about 10 minutes. During this time at least 237 reached the open decks.
- Crew members were seen working methodically releasing liferafts and distributing lifejackets. Passengers out on deck, however, had difficulties to understand how to use and to put on the lifejackets.
- Many lifejackets which were not equipped with a light were tied together in threes and were difficult to separate. Lifejackets were also torn off when people hit the water.
- People had to help each other both to understand how to use the jackets and also to put them on.
- None of the ten lifeboats could be launched. Nine broke loose when the vessel sank about 30 minutes after the 1st Mayday call. They had either capsized or were waterlogged.
- No one left the ship in an orderly fashion. Some were forced to jump, but most were swept into the sea by waves or slid into the sea inside or outside liferafts.
- The people who fell or jumped into the sea without lifejackets, and those who were badly injured, drowned or otherwise succumbed quickly.
- Some liferafts were automatically released and inflated when the vessel sank.
- Many rafts capsized due to the wind pressure and drifted upside down, and many did not fully inflate.
- The black colour of the liferafts' bottoms made the rafts difficult to detect when floating upside down.



- Some of the upside-down drifting rafts were later righted by the waves. When this happened, however, those who were on the raft were again thrown into the sea and had great difficulties in climbing back.
- The canopies of the rafts did not raise themselves automatically, and the openings could not be closed properly.
- Much water accumulated on the bottom of the rafts. In the worst case reported, there was 20 cm of water on the bottom of the raft.
- The various lines of the raft constituted obstacles for people trying to board. The rope ladder went underneath the raft, swinging the feet of those who were trying to climb on, and thus affording practically no help
- Some 160 people succeeded in climbing onto liferafts or lifeboats. Of them, about 20 succumbed to hypothermia or hypothermia-induced drowning.

### **Rescue operation**

- The ESTONIA addressed her distress calls to the passenger vessels in the vicinity but did not provide her position until about seven minutes from the 1st Mayday. No subsequent distress traffic was received from the ESTONIA.
- There were 5 passenger ferries around the ESTONIA. The closest was the MARIELLA at a distance of about 9 NM and furthest was the Silja Symphony, 23 NM away. Within a 35-nautical-mile radius from the ESTONIA there were three more vessels that received her Mayday calls.
- The MARIELLA started to turn towards the ESTONIA at 0132 hrs and reached the scene of the accident at about 0210 hrs, 20 minutes after the vessel sank.
- The SILJA EUROPA's who was the only radio station that had contact with the ESTONIA, started to turn toward the ESTONIA about 8 minutes after receiving her position.
- MRCC Turku, which rescue region covers the location of the accident, did not acknowledge receipt of the distress message from the ESTONIA. There was some confusion whether the distress call had been received and some valuable time was lost trying to notify the rescue centres.
- Helsinki Radio was informed by MARIELLA at 0142 hrs of the distress calls from the ESTONIA.
- At about the same time the SILJA EUROPA notified MRCC Helsinki of the distress calls.
- Almost all the vessels that participated in the rescue operation arrived after hearing the ESTONIA's distress call or receiving information from another vessel in the

vicinity. Only the vessels of the Finnish coast guard and navy were alerted by the coast stations.

- At 0205 hrs, the MRCC Turku appointed the master of the SILJA EUROPA On-Scene Commander (OSC).
- The two other passenger ferries near the ESTONIA, the SILJA SYMPHONY and the ISABELLA, approached the ESTONIA from the west at full speed. Three other vessels approached the scene of the accident from the east. They reported to the OSC and took part in the search and rescue.
- At the time of the accident there was only one officer on duty in MRCC Turku. After receiving the ESTONIA's exact position at 0129 hrs, at 0135 hrs he alerted the stand-by maritime rescue helicopter, which in the circumstances was the most rapid operational rescue unit.
- At 0152 hrs MRCC Stockholm was informed of the accident and at 0157 hrs they called MRCC Turku and offered helicopter assistance.
- The first contact from MRCC Turku with vessels at sea took place somewhat before 0200 hrs.
- At 0218 hrs MRCC Turku ordered MRCC Helsinki to alert the stand-by rescue helicopter in Helsinki. At 0252 hrs MRCC Turku alerted the Aeronautical Rescue Co-ordination Centre (ARCC) at Tampere to obtain military helicopters. At 0258 hrs the ARCC called the Air Force control centre and requested as many Air Force helicopters as possible.
- During the first few hours the entire rescue operation was conducted by the OSC himself, assisted only by his own crew. On his instructions the vessels searched for and rescued survivors. When a vessel located a liferaft that was believed to contain survivors, this was reported to the OSC who either called on a helicopter to check this raft or broadcast a general message. The participating vessels sometimes also contacted the helicopters directly.
- When the first helicopter arrived at the scene of the accident at 0305 hrs, no one was yet able to give its crew an exact description of the situation, so the crew had to make the decisions on its own. They searched for survivors in the light of the searchlights. The crew saw a number of lifejackets and liferafts but no people in the water. Some ten minutes after arrival, they began to examine the liferafts and rescue survivors from these.
- When the two following helicopters arrived on the scene at about 0400 hrs, they reported to the OSC and received instructions from him to concentrate on rescuing the survivors.

- At 0650 hrs additional resources were flown out to assist the OSC with the increasing number of helicopters. A co-ordinator surface search, appointed by MRCC Turku, with an assistant and an air traffic controller did not reach the vessel until 0945 hrs.
- While proceeding to the scene of the accident the assisting vessels made necessary preparations for the rescue operation and for taking care of survivors.
- Launching lifeboats in the prevailing weather was considered too risky. Instead, liferafts were prepared for use and in some ferries evacuation slides were prepared.
- On the MARIELLA an inflated liferaft was placed at each end of the vessel's flat side. The vessel was manoeuvred with that side towards the wind and caught drifting rafts from the ESTONIA in between them. Another raft was lowered and used as a hoistable platform. People from the ESTONIA's liferafts moved over to the lowered raft and were winched up.
- Two volunteers from the MARIELLA were lowered to a liferaft from which they managed to rescue two exhausted persons in another liferaft.
- The ISABELLA also lowered a liferaft with volunteer rescuers on board. They succeeded in getting about 20 people from one of the ESTONIA's rafts over to their own raft. The weight of the people and the water in the liferaft caused its bottom to rip during hoisting. At least five people fell into the sea, among them the three rescuemen. Four of these people were lifted up by a helicopter. One or more persons were lost during this operation.
- To save the 16 persons hanging onto the damaged liferaft, the evacuation slide was inflated and the raft lowered back to the sea. A rescueman was lowered down to the slide platform and assisted people in getting from the raft to the platform and up the slide. The evacuation slide proved to be a good means of rescuing people from the rafts and from the sea. From the platform people were pulled up the slide itself to safety.
- Because of large wave-induced motions, landing on the vessels was very difficult. Only the Finnish helicopters made successful ship landings, setting down 36 people.
- When MRCC Turku was informed that it was considered dangerous to land helicopters on the vessels it was decided to use primarily Utö (10 to 15 minutes flight), where medical personnel and facilities were available.
- During the rescue operation, the winch wires on three helicopters malfunctioned, and the winch mechanism on one of these broke down. These helicopters had to interrupt the rescue operation for several hours. The survivors and rescue men were rescued by other helicopters, and one rescue man was transported, hanging onto the wire, to the deck of a vessel.

- A fourth helicopter had an indicated engine problem and had to return to base. The helicopters operational period was limited by fuel and the fatigue of the rescue men. Many of the rescue men were also injured, to varying degrees, by hooks and by objects in the water.
- At the beginning of the operation, the rafts that had been searched were not marked in any way. As a result, the same raft could have been searched several times. Later, during the operations, instructions were given to mark searched rafts by ripping open the roof with a knife.
- At about 0630 hrs the helicopter fuel supply at Utö ran out. After this, the helicopters flew the survivors and the deceased to Hanko or Nauvo (20 to 25 minutes flight), where refuelling took place. The fuel supply at Hanko, in turn, ran out at about 1000 hrs, and five helicopters had to wait for half an hour for a new supply.
- Thirty- four people were rescued by the vessels and 104 by the helicopters.

### **Meteorological information**

The wind at about 0100 hrs at the site of the accident was south-westerly, 18-20 m/s, and the significant wave height was about 4 m.

## 7.2 Accidents accounts from the web

### 7.2.1 *Sinking of the Mikhail Lermontov February 1986*

The Mikhail Lermintov departed from Picton, at 3 p.m. on the 16<sup>th</sup> February for Milford Sound (New Zealand). 743 people were on board. Of the 372 passengers 5 were children and the average age of the passengers was 70 years.

The weather was overcast with heavy rain and a 25 knot Southerly wind.

About 5.37 p.m. The ship struck a rocky reef. 6 minutes after the collision the master sounded the General alarm. All watertight doors were shut and the pool was emptied. The main pumps were activated. The Master asked crew to check the extent of the damage. They reported back that 3 compartments were flooding.

In 7 minutes 4 compartments were filled with water. On crew member was trapped when the compartment where he was, flooded and the watertight doors were shut.

The ship started to list and around 6pm and about 40 minutes after the accident the Master asked for a place to beach the vessel. In the mean time he made stability calculation which gave him 4 hours before sinking. A Mayday call was broadcast at about 6.03 pm. At the same time Radio Cap Jackson which received the distress call, took the initiative to alert the small boats in the area to assist.

The L.P.G. Tanker Tarahiko turned towards the scene on receiving the Mayday call, but a signal that no further assistance would be required was received. Nevertheless the Captain decided to press on.

The Lermontov was difficult to manoeuvre and at 7.15 pm the engines stopped (the switchboard was already flooded so engines could not be restarted). At that moment the Master understood that the ship could not be saved so he ordered to abandon the ship.

Passengers started to board one lifeboat which was lowered then went towards the beach which was rocky and dangerous so passengers were not able to disembark.

Before 8.00 pm the Tarahiko arrived on scene. According to its Master the visibility was 3 to 4 miles, it was raining with wind about 20 knots and the Lermontov had about 20 degrees heel to the starboard.

The master of the Lermontov decided to lower the lifeboat into the water and evacuate passengers through a gun port door. So passengers were directed by crew through corridors and down the stairs which were quite dark, to board the lifeboats which were level with the deck. Crew were standing beside the lifeboats helping passengers who found boarding the lifeboats difficult.

At 9.35pm the ferry Arahura which had been diverted to the scene, arrived with over 600 passengers onboard. At that time no lights were seen from the Lermontov. The Arahura and Tarahiko started lowering their lifeboats. The Tarahiko's lifeboat approached the Lermontov and took 12 to 15 passengers onboard. During these manoeuvres a man fell unnoticed to the water.

The Lermontov was now listing too far to allow passengers to board the lifeboats from the gunport. Passengers were directed back to the top levels where rope ladders were tossed. As the vessel was listing further the rope ladder became too short and passengers had to jump.

The master ordered some of the crew members to check the vessel for any passengers. They found an old man in a bar, an old lady in the library and an old couple in their cabin. They helped them evacuate. It was difficult to walk as the ship was listing about 45 degrees.

Passengers were transferred from the Lermontov lifeboats to the rescue vessels lifeboats which were then hoisted.

The HMNZS Taupo arrived in time to check out the area and arrange for the shoreline to be searched. It was dark and raining heavily and there was great difficulty in penetrating the darkness with the ship's search-lights. Nevertheless they struggled through the night, searching the area to locate lost people in the water, on rafts or in lifeboats that may have been swept away in the wind and with the tide.

At 10.15 pm The Lermontov was listing 40° to starboard and at 10.27 pm she foundered, sinking by the bow and laying over on her port side.

The man who fell to the water was rescued after he spent 2 hours in the water by launches towing abandoned lifeboats back to Picton.

On their way to dry land a head count was performed and at the master order, when a check of the crews against the list was performed, they found out that a crew member was missing.

Some passengers sustained broken bones, other suffered from hypothermia and shock.

**Source:**

1. <http://www.nzmaritime.co.nz/lermontov.htm>
2. Documentary Destination Disaster: The Sinking of the Mikhail Lermontov  
<http://www.nzonscreen.com/title/destination-disaster-2008>

7.2.2 *Sinking SS Admiral Nakhimov August 1986*

At 11:12 p.m., the Admiral Nakhimov was struck by the freighter Pyotr Vasev, 15 km from the port at Novorossiysk and 4 km from shore line.

While many passengers had gone to bed by this time, some were on deck. They could only watch helplessly as the freighter rammed into the starboard side of the ship at a speed of about 5 knots (9 km/h).

The Admiral Nakhimov continued forwards with the freighter's bow in its side, ripping a 84 m<sup>2</sup> hole in the hull between the engine and boiler rooms.

The Admiral Nakhimov immediately took on a list on her starboard side, and her lights went out upon impact. After a few seconds, the emergency diesel generator powered on, but the lights went out again two minutes later, plunging the sinking ship into darkness. People below deck found themselves lost in the dark and rapidly canting hallways.

There was no time to launch the lifeboats. Hundreds of people dove into the oily water, clinging to lifejackets, barrels and pieces of debris.

The Admiral Nakhimov sank in only seven minutes. Rescue ships began arriving just 10 minutes after the ship went down. The Pyotr Vasev was not badly damaged and assisted in the rescue effort. Sixty-four rescue ships and 20 helicopters rushed to the scene, and 811 people were pulled from the water. Some people were so slick with fuel oil that they could not keep hold of the hands of their rescuers. Sailors had to jump into the water to save people.

The Admiral Nakhimov lacked proper ventilation, which was the reason all 90 windows in the cabins were open during the accident. The bulkheads that would have prevented the ship from sinking were removed during the conversion.

Passengers and crew had had little time to escape, and 423 perished. 64 of those killed were crew members and 359 were passengers.

**Source:**

[http://en.wikipedia.org/wiki/SS\\_Admiral\\_Nakhimov](http://en.wikipedia.org/wiki/SS_Admiral_Nakhimov)

*7.2.3 Sinking of the Oceanos August 1991*

On 3 August 1991, the Oceanos set out from East London, South Africa, headed to Durban. It headed into 40-knot winds and 9 m swells. Most passengers chose to stay in their cabin as the storm worsened while the evening progressed.

At approximately 21:30 (UTC+2), while off the Wild Coast of the Transkei, a muffled explosion was heard. The Oceanos lost her power following a leak in the engine room's sea chest. The ship's engineer reported to the Captain that water was entering the hull and flooding the generator room. The generators were shut down because the rising water would have shorted them. The supply of power to auxiliary equipment which ran the engines had been severed, so the ship was left floating adrift.

The water steadily rose, flowing through the 10 cm hole in the bulkhead and into the waste disposal tank. Without valves to close off the holding tank, the water coursed through the main drainage pipes and rose like a tide within the ship, spilling out of every shower, toilet, and waste disposal unit connected to the system.

Realizing the fate of the ship, the crew fled in panic, neglecting to close the lower deck watertights doors. No alarm was raised. Passengers remained ignorant of the events taking place until they themselves witnessed the first signs of flooding in the lower decks. At this stage, eyewitness accounts reveal that many of the crew, including the Captain, were already packed and ready to depart, seemingly unconcerned with the safety of the passengers.

### **Rescue efforts**

Nearby vessels responded to the ship's SOS and were the first to provide assistance. Most of the crew and some passengers were evacuated by lifeboats to these vessels.

The South African Navy along with the South African Air Force launched a massive seven-hour mission in which 16 helicopters were used to airlift the remainder of the passengers and crew to the nearby settlements of The Haven and Hole in the Wall. Of the 16 rescue helicopters, 13 were South African Air Force Pumas, nine of which were responsible for hoisting and evacuating 225 passengers off the deck of the sinking ship. All 571 people onboard were saved.

### **Passengers' testimony (taken from blogs)**

Passengers were not kept informed about the situation. They were prevented from returning to their cabins and asked to sit in the lounge upstairs. They were given lifejackets.

After a while, two staff (entertainers) working onboard, ordered woman with children to board the lifeboats from the side of the ship which was not listing. Lowering of the lifeboats was difficult because of the weather conditions. It was reported that in one case, one of the davits seized and had to be smashed loose with a pole. The rowing mechanism of the non-powered lifeboat jammed and broke in one of the lifeboats. Passengers stayed in the lifeboat for more than 10 hours as the different attempt to board the rescue ship failed because of the weather conditions. At first light they tried to approach the nearest ship which was an oil tanker. The lifeboat slammed into the ship side as the weather did not improved. Passengers were then hauled up the side of the ship by the crew using ropes.

The rest of the passengers were still onboard and the ship was listing over about 25 or 30 degrees.

In the early hours of the morning, the ship was heeled over at a very steep angle by now and passengers had to hold onto the railings to keep from slipping down along the deck.

At some stage two passengers were asked by the same two staff if they could assist in boarding the last lifeboat. The two passengers climbed in the lifeboat and started helping passengers to board. The operation was difficult because of the wind and the ship motions.



Once the lifeboat was full they tried to lower it but the mechanism was stuck. They smashed the winch mechanism loose on one side which caused the lifeboat to tip over. They were then smashed up against the side of the ship by a wave. After a while they managed to break the other side loose and the lifeboat was level again but was just hanging. It was impossible to lower the lifeboat as the electric motor did not work. It was decided to get out of the lifeboat and get back to the deck. This was really difficult as the deck was above the top of the passengers head.

It started to get lighter when the helicopters were approaching. One helicopter started hovering above the ship. They then lowered Navy Seals down on winches to the ship's deck. Once they were on the deck the seals set about cutting away as many of the obstacles as possible and it was shortly thereafter they began winching passengers up from the deck in a harness, two at a time.

As soon as one helicopter was full, it ferried passengers to the shore and another helicopter would take its place.

After a while the staff started moving passengers to the other end of the ship so that two helicopters could be used simultaneously to evacuate.

Some passengers had to jump overboard as the ship was listing further. They were then rescued and pulled onto a rubber dinghy by a Navy Seal and then ferried to a nearby lifeboat that had been launched from a rescue ship.

When the lifeboat got near to the rescue ship, the crew onboard realized passengers would not be able to climb up the ship's side, as the sea and wind were too strong. The rescue ship manoeuvred around to a different angle, to provide shelter from the wind and the sea on the protected side.

Passengers had to climb up onto the roof of the lifeboat's cabin, wait for the right moment and then jump across to a rope ladder which was suspended down the side of the ship, and which was being blown around all over the place. It was quite a slow process.

**Source:**

1. <http://en.wikipedia.org/wiki/Oceanos>,
2. [http://oceanossinking.blogspot.com/search/label/\\*My%20Story](http://oceanossinking.blogspot.com/search/label/*My%20Story),
3. <http://oceanossinking-myexperience.blogspot.com/>

#### 7.2.4 *Sinking of Royal Pacific 1992*

Royal Pacific departed Singapore in the evening on Friday August 21, 1992 with 355 passengers and 179 crew members for a two night cruise to nowhere. Weather conditions and visibility were good.

At precisely 0220 hours, whilst many of the passengers were have been in the Casino and the bars, with some asleep in their cabins, the a small fish factory vessel rammed into the aft section of the Royal Pacific on her port side, causing massive damage both well above and below the waterline. The damage was well above the level of the watertight bulkheads, which were open and for some reason could not be closed. The Chief Engineer said that the engine room was flooded within minutes. The damage was so extensive that the ship quickly heeled over as water rapidly entered the cabins on the decks above.

The Captain quickly ordered to “abandon ship” and all lifeboats were launched. Survivors were picked up by passing ships.

Malaysian rescue officials said it appeared there had been more than sufficient time to launch lifeboats from the Royal Pacific. The cruise ship sank about two hours after the collision.

Tragically three people drowned during the rescue and six others were reported missing. It was assumed that they were trapped inside the hull.

At the time of the collision, the Royal Pacific was just 12 miles out of Singapore.

**Source:**

1. <http://www.nytimes.com/1992/08/24/world/at-least-4-killed-in-sinking-of-cruise-ship.html?pagewanted=1>
2. <http://www.ssmaritime.com/TSMV-Empress-of-Australia.htm>

#### 7.2.5 *Sinking of Sun vista May 1999 after fire*

A fire broke in the main engine room switchboard of the Sun vista with 1,104 passengers and crew onboard on the 21<sup>st</sup> May 1999. The fire was first reported at 3.15pm local time but it was more than three hours before a distress signal was sent. Crew failed to control the fire and it is believed that the heat from the fire buckled plates below the water line, allowing the sea to rush in.

Passengers were banned from returning to their cabins because of the power-cut but they were told there was not a problem.

A 65 year-old passenger on the deck noticed the ship listing and smoke pouring from the stern.

The order to abandon ship was given.

The crew of the Sun Vista was said to have panicked during the evacuation.

Passengers were taken off in 18 lifeboats and four life rafts. Some floated up to 8 hours awaiting rescue ships with nothing to eat or drink. Some passengers suffered seasickness.

A 62 year-old passenger reported that the crew did not seem to know what they were doing as passengers pulled on lifejackets and scrambled into lifeboats. He reported problems lowering the lifeboat as it took about 10 minutes to lower one end of the boat. Nobody seemed to want to take charge. Luckily there was a passenger in the boat who seemed to know what he was doing.

It was reported by a 76 year-old passenger that the lifeboat he had boarded was overloaded. There were 76 people in when the capacity was 45, and the person responsible for it didn't seem to be very confident. They started the engine and it cut out. They started it again and it still didn't last long. Eventually they got the oars out but couldn't make much progress.

A spokesman for the Malaysian Marine Rescue and Co-ordination Centre said the first distress signal was sent at about 6.30pm on Thursday local time (11.30am BST) and the ship sank around seven hours later. All the rescued passengers were taken to Penang, where at least 16 were admitted to hospital with minor injuries.

On the whole people did not panic but became more scared as it got darker, before they were eventually picked up by a container ship.

One passenger had a heart attack as they were waiting to disembark, but he survived.

**Source:**

<http://www.independent.co.uk/news/passengers-on-sinking-cruise-ship-tell-of-panic-terror-and-incompetence-1095019.html>

*7.2.6 Sinking of Al Salam Boccaccio 98 after fire, February 2006*

On 02 February 2006, the ship departed Saudi Arabia, for Egypt, carrying 1,310-1,312 passengers, 96-104 crewmembers at about 6pm.

Shortly after departing, survivor accounts indicate that a fire broke out either in the engine room or a storage area below decks. As the ship's crew fought the fire, the fire-fighting water may have accumulated in the lower parts of the ship, including the car deck area. Some survivor accounts indicate that the ship had a list on it shortly after leaving port and, after several hours the list gradually became more pronounced. At no time did the ship send an SOS signal indicating that it was in trouble.

The ship's captain, had attempted to effect a 180-degree turn between 60 and 80-kilometers from the ship's intended destination. The ship capsized during the turn and sank in less than

10 minutes.

At 2358 UTC, an automated distress signal relayed via satellite from the ship, was received in Scotland. This distress alert was relayed, via France, to the Egyptian authorities. However, it would be almost 12 hours before any rescue attempt would get underway.

Once rescue efforts commenced, 4 Egyptian frigates and other rescue boats searched the area as well as an aircraft from the U.S. government.

Of the over 1,400 passengers and crew onboard, almost 400 were reported rescued. The number of bodies recovered was reported the day after the accident as being 185.

The Voyage Data Recorder was recovered 21 February 2006 and results of the analysis of the VDR indicated that:

- The evidence suggests that the Master, officers and crew had little or no idea how to respond to the most basic and fundamental 'emergency shipboard situation' - i.e. a fire on board.
- There was indecision, lack of leadership, disorganised and unstructured response

According to one passenger's testimony, the ship was slightly listing when leaving port. Four hours into the trip, He was in his cabin when two crew members broke into the room and ordered to go up on the deck because there was fire down below.

He reported that they heard a voice from the ship's speakers ordering passengers to go to one side to help balance the ship. The situation was terrible.

He said that the crew told the passengers that the situation was under control, but then the fire spread to the first floor. The ship's listing got worse. When the ship began sinking, he and his friends jumped into the cold water; his two friends drowned. He survived by clinging to an upturned lifeboat. No one according to him knew how to use the lifeboats.

He tied himself to the boat with other people and they helped each other to stay awake. He reported bodies of dead people were everywhere.

He saw some people sinking because others were holding on to them trying to save themselves.

In less than 6 hours, 3 of the people holding to the boat died. He said they were in terrible psychological shock. He reported that at 1 a.m. they saw a big private boat passing near them. They signalled to the boat with the light they had and it came to their rescue.

### **Meteorological information**

Weather conditions at the time consisted of high winds of possibly up to 24 knots. According to a passenger's testimony, the weather was extremely cold and the sea was rough.

**Source:**

1. Al-Salam 98 Passenger Recounts Tale of Survival:  
<http://www.arabnews.com/?page=1&section=0&article=78015&d=19&m=2&y=2006>
2. <http://www.shipwrecksofegypt.com/images/shippages/alsalamboccaccio.html>

*7.2.7 Sinking Sea Diamond after grounding April 2007*

On April 5, 2007, at around 16:00 EEST (13:00 UTC) the Sea Diamond ran aground on a volcanic reef east within the caldera of the Greek island of Santorini, and began taking on water and issued a distress signal. The ship listed up to 12 degrees to starboard before her watertight doors were reportedly closed (a report which was later refuted when the wreck was examined). The 1,195 passengers were initially all reported to be safely evacuated in three and a half hours, with four injuries. Some passengers, including a group of 77 students, were evacuated from the car ramp through the former car deck onto boats, but some passengers had to climb down rope ladders from the higher decks. The ship was towed off the rocks, and her list stabilized.

Later, it was reported that two French passengers were missing. They were accommodated in an 'outside' standard cabin on the starboard side of the vessel on deck 2, the lowest passenger deck. It was reported that their cabin had filled with water when the ship struck rocks. Their bodies were never found.

The large amount of water taken on board led to the ship sinking shortly before 7:00 EEST on April 6, 2007, only a few hundred meters from the shore.

A flotilla of commercial ships plus six navy helicopters and various navy vessels assisted the rescue.

Passengers on the sinking Sea Diamond said the evacuation was poorly coordinated and took too long.

A passenger recalls standing on the ship's main deck as life jackets were thrown into the crowd, instead of being handed out to passengers directly. The passenger never received a life jacket.

Some passengers thought that lack of preparedness and that it seemed like the crew weren't taking it as seriously as they should at the time. Another passenger reported that the crewmembers were more scared than the passengers and that they left before the passengers.

Passengers - many of them elderly - had to contend with physical obstacles, such as scaling rope ladders and climbing into life boats - in the evacuation.

Another passenger reported that most of the crew did not know what they were doing. He said that he did not get off the boat until 6:40 PM more that 2hours and half after the ship hit the rocks. He went over the railing on the back part of the ship on 8th or 9th floor down a

rope ladder and into a boat. He found the operation difficult as he had a medical pre condition (needed knee replacement).

A passenger said that the early stages of the rescue were chaotic and that the warning that the ship was sinking was some of the staff running down the corridor screaming out 'life jackets' and banging on doors. So passengers got no time to get ready and just left as they were.

### **Meteorological information**

The weather was good and the sea calm.

#### **Source:**

1. [http://en.wikipedia.org/wiki/MS\\_Sea\\_Diamond](http://en.wikipedia.org/wiki/MS_Sea_Diamond)
2. [http://www.krounerlaw.com/article\\_shipwrecked.html](http://www.krounerlaw.com/article_shipwrecked.html)
3. <http://crisisblogger.wordpress.com/2007/04/12/the-sea-diamond-passengers-speak/>
4. [http://www.usatoday.com/news/world/2007-04-06-greek-cruise\\_N.htm](http://www.usatoday.com/news/world/2007-04-06-greek-cruise_N.htm)
5. <http://news.bbc.co.uk/1/hi/world/europe/6530475.stm>

#### *7.2.8 Sinking of the express Samina September 2000 after striking a reef*

The vessel sailed from Port of Piraeus on 26 September 2000 at about 17.15 hours for the island of Paros to reach there at 22.18 hours carrying about 472 passengers and 61 crew.

The ship sailed with all and certainly the two critical watertight doors open.

The ship went off course and hit her right side against the rocks of the North Portes islet at about 22.12 hours.

Soon after the strike the main engine room flooded and the main engines stopped, as well as the main power generator, resulting few minutes later, in a black-out. The engine room crewmember was the first to try to abandon the ship without reporting in time to Bridge or taking measures to delay flooding or close WT doors. The emergency power generator (located at Sun deck), although started to operate soon after the black-out, stopped after a few minutes for technical reasons not specified.

The radio officer failed to give the ship's actual position and abandoned the ship without the permission of the Captain.

Thirteen minutes after impact the rescue authorities in Piraeus were notified.

Passengers were not notified about the severity of the situation or how or when to abandon the ship. The crew failed to provide proper and timely information to the passengers regarding the use of the onboard life saving equipment and provided insufficient support in general.

About two thirds of the passengers stated that there was inadequate life saving equipment onboard, mainly life jackets. The access to the life saving equipment was difficult or impossible. Parts of the onboard life jackets were deficient.

The launching of the backboard side lifeboats was greatly impaired and later impossible merely about 15 minutes after the collision, as the ship's heeling surpassed 15 degrees to starboard.

It took only about twenty minutes for the ship to get flooded to such extent that her embarkation deck reached the sea level.

The Ship disappeared from the sea surface about 50 minutes after hitting the rocks (at about 23:00 local time).

Dozens of fishing boats and other vessels rushed to the scene and helped in the rescue.

Passengers reported panic as survivors scrambled for lifeboats and jackets with no instructions from the crew. Some passengers were afraid to jump in the sea.

One survivor reported managing to climb on top of a life raft that was floating upside down after he fell in the water.

A survivor reported finding a lifeboat to get on despite all the screaming and chaos. They were about 12 in the Boat. They witnessed people jumping off the ship into the sea. After a while in the lifeboat they hit a rock and had to clamber on to the rock with waves crashing around. They were terrified and cold. They waited for over 3 hours before one of the three helicopters launched from a British aircraft carrier on exercise near the scene, rescued them and took them onboard the warship for treatment. They were suffering from hypothermia, shock and minor cuts and bruises.

Four hundred and fifty-three 453 have been rescued. It is assumed that a significant number of the final 80 people lost in this accident never managed to evacuate the ship.

### **Meteorological information**

Rather cloudy, with north winds of a force of 6 Bf, increasing to 7 Bf between 20.00 and 22.30 hours, and temporarily to 8 Bf, with no rain, good visibility of 7 up to 10 nm. Sea temperature was above zero. Waves had heights from 2.50 to 3m in the afternoon.

### **Source:**

1. <http://www.factgroup.nu/est/guardian1.html>
2. <http://www.factgroup.nu/est/guardian2.html>
3. *The accident of passenger-car vessel Samina Express (2000), when 80 persons died: An analysis by the principles of nonlinear management.* Alexandros M. Goulielmos, Markos A. Goulielmos, Androniki Gatzoli
4. *INVESTIGATION INTO THE SINKING OF THE RO-RO PASSENGER FERRY EXPRESS SAMINA.* A. Papanikolaou, D. Spanos, E. Boulougouris, E. Eliopoulou, A. Alissafaki

## 7.3 Other incidents/ accidents

### 7.3.1 *Capsize of Princess of the stars in Typhoon June 2008*

The MV Princess of the Stars left the port of Manila on June 20, 2008 on its way to Cebu City. The number of passengers is variously reported as between 700 and 800. The ferry sent a distress signal at midday on June 21 when its engines allegedly stalled in rough seas near Sibuyan Island.

Contact was lost with the vessel at about 1230 (0430 GMT) on Saturday.

Four survivors managed to reach the shore of Sibuyan, in Romblon province, where they were found by villagers, after being swept away at sea on a life boat for four hours. They had contusions all over the body and lacerations in the head

One survivor said he had been on the top deck when a crew member ordered passengers to put on life jackets at about 1130 on Saturday. About 30 minutes later, the ship tilted and elderly people and children slipped on the rain-soaked deck.

He said when the ship's captain announced to abandon ship, many hysterical passengers jumped off the sinking boat.

He said all 14 lifeboats of the Princess of the Stars were lowered but big waves engulfed some of them.

He said hundreds of unconscious bodies were floating at sea.

Another one said that many passengers jumped overboard. Some were able to board the life rafts, but that it was useless because the strong winds flipped them over.

Battling huge waves, a rescue ship only managed to reach the ferry more than 24 hours after it lost radio contact.

The Philippine Navy tried to send its vessel which could carry up to 50 persons stationed in Buriyas Island in Masbate at 10 a.m. on Sunday to help rescue the victims. However due to bad weather and big waves, the vessel retreated and came back at 1:45 p.m.

It was practically impossible to reach the accident area because the waves were about 10 feet high even as of Sunday afternoon.

#### **Source:**

1. <http://news.bbc.co.uk/1/hi/world/asia-pacific/7467696.stm>
2. [http://en.wikipedia.org/wiki/MV\\_Princess\\_of\\_the\\_Stars](http://en.wikipedia.org/wiki/MV_Princess_of_the_Stars)
3. <http://newsinfo.inquirer.net/breakingnews/regions/view/20080622-144154/Survivor-I-could-hear-children-wailing-as-the-boat-sank>



### 7.3.2 *Fire onboard the Achille Lauro November 1994*

November 30, 1994, the Achille Lauro was sailing 50 miles off the Somali coast when a fire broke out in one of the cabins.

The Crew battled with the flames for almost seven hours as passengers gathered on deck. The captain gave the order to abandon ship at 0500 local time (0200 GMT) after the fire began to burn out of control.

All 1,090 passengers and crew abandoned ship. A tanker was the first of a number of ships that answered the Achille Lauro's SOS and rescued most of the passengers.

Sadly, two people died, and eight were injured during the transfer of passengers from life rafts onto the tanker.

As night fell, survivors were recovering onboard the tanker. The fire raged for three days, and the Achille Lauro was declared a total loss. The Achille Lauro sank on December 2<sup>nd</sup>.

**Source:**

1. <http://www.ssmaritime.com/achillelauro.htm>
2. [http://news.bbc.co.uk/onthisday/hi/dates/stories/november/30/newsid\\_2525000/2525643.stm](http://news.bbc.co.uk/onthisday/hi/dates/stories/november/30/newsid_2525000/2525643.stm)