



Investigation report

C3/2008M

M/S ANNE SIBUM, grounding near Tainio Lighthouse on 2 April 2008

Translation of the original Finnish report

Tämä tutkintaselostus on tehty turvallisuuden parantamiseksi ja uusien onnettomuuksien ennalta ehkäisemiseksi. Tässä ei käsitellä onnettomuudesta mahdollisesti johtuvaa vastuuta tai vahingonkorvausvelvollisuutta. Tutkintaselostuksen käyttämistä muuhun tarkoitukseen kuin turvallisuuden parantamiseen on vältettävä.

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SUMMARY

On 2 April 2008 M/V ANNE SIBUM was on a voyage from the port of Kotka to Germany and at 13:53, south of Orrengrund, the pilot disembarked. After having landed the pilot the master handed over the con of the ship to the Officer of the Watch (OOW). The vessel continued on the course 237.5°. However, after the next turn it passed over a shoal at 60°14.255'N, 026°24.160'E and, at 13:58, ran aground. The vessel reduced speed, turned back to the fairway and continued its voyage as the crew began to assess the damage.

No leaks were detected and because, in spite of the damage, the manoeuvring equipment and the thrusters worked well enough, the master decided to continue the voyage. He notified the shipping company of the event. However, he failed to inform the Finnish authorities. While the location of the grounding is within the area of Kotka VTS, they did not notice the fact that the vessel had been outside the fairway.

The accident was caused by an error in navigation. Inadequate bridge team resource management can be considered as a contributing factor.



ABBREVIATIONS

AIS	Automatic Identification System
BSU	Bundesstelle für Seeunfalluntersuchung
IMO	International Maritime Organisation
ISM	International Safety Management
MARPOL	Marine Pollution Convention
MRCC	Marine Rescue Coordination Center
kW	Kilowatt
OOW	Officer of the Watch
SMS	Safety Management System
SOPEP	Shipboard Marine Pollution Emergency Plan
SOLAS	Safety of Life At Sea
VDR	Voyage Data Recorder
VHF	Very High Frequency, 30 MHz–300 MHz
VTS	Vessel Traffic Service



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FOREWORD

The Accident Investigation Board (AIB) heard rumours in July 2008 about a possible grounding that happened on 2 April 2008. On 7 July 2008 an AIB investigator boarded ANNE SIBUM in Kotka so as to corroborate the information. AIB Finland began to investigate the matter together with the German Federal Bureau of Maritime Casualty Investigation BSU¹, from whom AIB received assistance in the form of VDR recordings, among other things.

AIB Finland contacted the authorities of Cyprus, the vessel's flag state. However, they did not want to investigate the accident because they considered it trivial. Pursuant to Section 5 of the Accident Investigation Act (373/1985), Accident Investigation Board Finland decided to initiate an investigation on the grounding of ANNE SIBUM near Orrengrund on 2 April 2008. Marine Accident Investigator, Captain Risto **Repo** was appointed Investigator in Charge, with AIB Investigators Juha **Sjölund** and Jukka **Häkämies** as members. The investigation report has been translated into English by R & J Language Service.

The investigators visited the vessel in Helsinki on 21 October 2008 and in Kotka on 12 November 2008. The present master of ANNE SIBUM has assisted investigators in the investigation of the grounding to the extent of his possibilities, handing over written and electronic information pertaining to the occurrence.

The purpose of accident investigation is the improvement of safety and therefore no issues of guilt or damages are handled. With regard to its contents and style, the Investigation Report has not been written so as to be meant to be used in legal action. The conclusions and safety recommendations presented in the Investigation Report do not constitute an assumption on guilt or liability in damages.

Statements on the Investigation Report. The final draft of the Investigation Report was sent for a statement under section 24 of the Decree on Accident Investigation (79/1996) and possible comments to the maritime and rescue authorities, the players on piloting field, the Master of the vessel and the shipping company as well as to the investigation bodies in Germany and Cyprus. The statements received are appended to the Finnish Investigation Report. The Investigation Board has reviewed the Investigation Report on the basis of the statements and supplemented it where it has deemed it necessary. The investigation report has been translated into English by R&J Language Service.

¹ Bundesstelle für Seeunfalluntersuchung.



1 OVERVIEW OF THE ACCIDENT AND THE INVESTIGATION

1.1 The vessel

1.1.1 General information



Figure 1. M/S ANNE SIBUM at Mussalo port in Kotka in July 2008.

Name of vessel	M/S ANNE SIBUM
Type	Container vessel
Flag	Cyprus
Owner	Sibum GmbH & Co. KG
Operator	Reederei Bernd Sibum GmbH & Co. KG
Homeport	Limassol
IMO number	9396696
Shipyard and year of build	SSW Shipyard, Bremerhafen, 2007
Call sign	C4YC2
Gross/Net tonnage	10585/5372
Length over all	151.72 m
Length btw perpendiculars	142.43 m
Breadth	23.40 m
Draught	9.0 m
Service Speed	18.5 knots
Power output	9,000 kW

1.1.2 Manning

The vessel had a multinational crew of sixteen (16) persons. The master and the chief officer were Ukrainian. The second officer, serving as OOW at the time of the occurrence, was Filipino. The crew was mainly Filipino, Ukrainian and Russian. The language of communication was English.

1.1.3 Bridge equipment

The bridge is modern and its equipment is versatile. There are two daylight screen radar and electronic navigation chart overlay displays, positioned in the middle of the bridge.



Figure 2. M/S ANNE SIBUM's bridge.

1.1.4 Machinery

The main engine is a MaK/Cat 9M43C, producing 9,000 kW. The power output of the bow thruster is 800 kW. In addition, there are four diesel generators for the purpose of generating electrical power as well as a shaft generator with an output of 1,700 kW.

1.1.5 Other systems

There is a Voyage Data Recorder, VDR on board the vessel. The German Federal Bureau of Maritime Casualty Investigation provided assistance in the analysis of the VDR data.



1.1.6 Cargo

M/S ANNE SIBUM is a container ship making regular voyages to ports in Germany, Denmark, Norway and Finland. Helsinki and Kotka are her main ports in Finland. Her container capacity is 1032 Twenty-foot Equivalent Units (TEU). At the time of the occurrence the vessel had a cargo of 7,400 mt.

At the time of the accident the fuel load was as follows:

Heavy fuel oil	501 tonnes
Gas oil	31 tonnes
Lubricant	34 tonnes.

The Heavy fuel oil was in vessel's side-tanks above the double bottom-tanks.

1.2 The accident

1.2.1 Meteorological information

Visibility was good, over 5 NM. Wind was fresh and direction variable. The weather conditions did not have impact to the accident.

1.2.2 The accident voyage

On 2 April 2008 at 12:30 the vessel departed Kotka under pilotage towards Orrengrund pilot station. The voyage through the archipelago was uneventful and the pilot disembarked the vessel at a boarding/landing area south of Orrengrund. As per the master's abbreviated report² the pilot disembarked at 13:49, whereafter the con of the ship was handed over to the OOW. The master then proceeded with his paperwork. The OOW continued to manoeuvre the ship and changed course several times from 230° to 252°, heading southwest. At 13:54:45 the course over ground was 230° and the vessel reached the point where it should have turned towards 203° (outbound from Orrengrund).

Nevertheless, the vessel continued towards the southwest, with an increasingly westerly course. At 13:55:45 the course over ground was 242° and, thirty seconds later, 243°. At 13:57:00 the course over ground was already 260°. The buoy 'gate' in Tainio Lighthouse's western channel was now on the port side of the bow. Soon after this the vessel was turned to port. However, at 13:58 she ran aground at 60°14.255' N, 026°24.160' E. The course over ground at the time was 211,6° (cf. figure 3–6). This information was derived from the vessel's electronic chart recordings.

² Master's Report, Kiel April 4, 2008, 'M/V Anne Sibum' To whom it may concern.

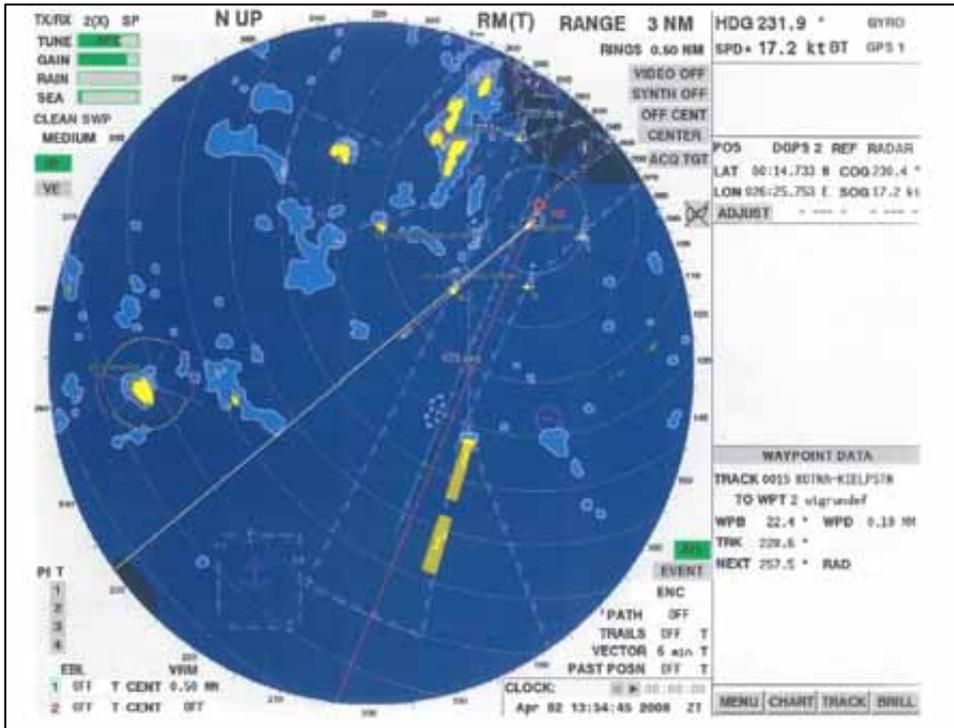


Figure 3. The COG³ is 230° and vessel should have turned to COG 203°. The red circle shows the turning point in the voyage plan. The racon signal of the Tainio lighthouse is visible right to the bottom of the display.

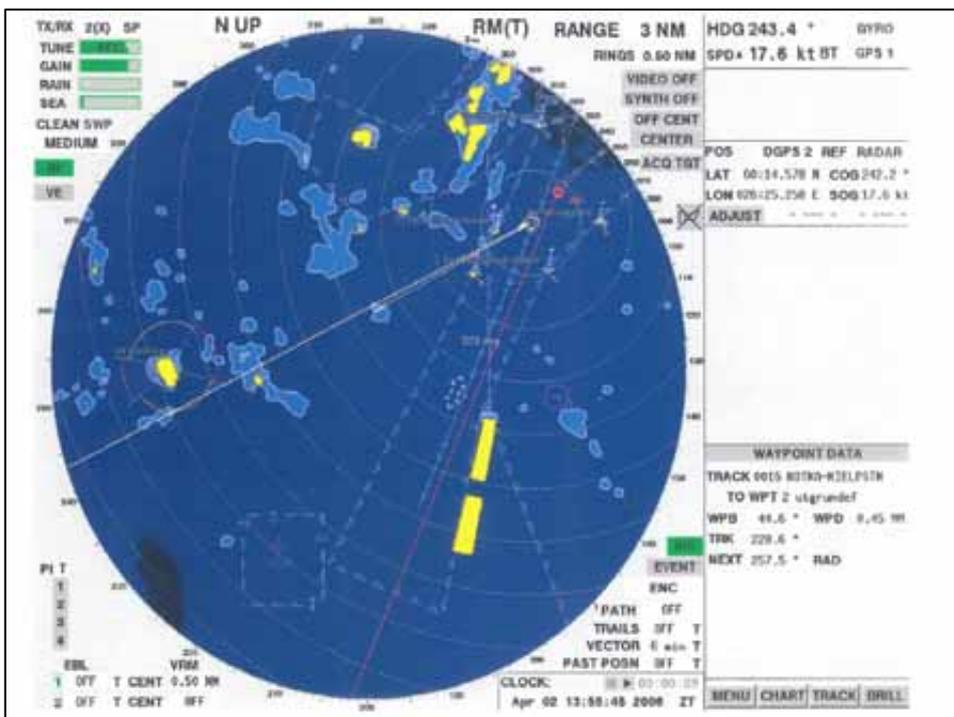


Figure 4. At 13:55:45 the COG is 242°.

³ Course over ground

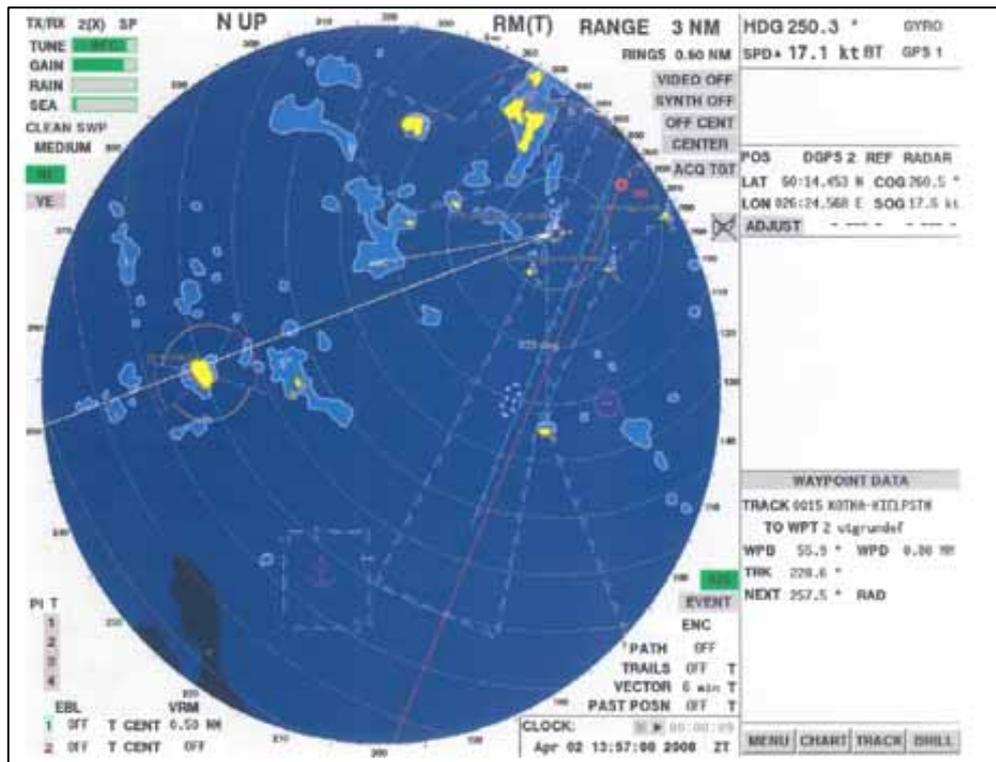


Figure 5. At 13:57:00 the COG has changed to 260 degrees. The Tainio western buoy gate was now at port bow.

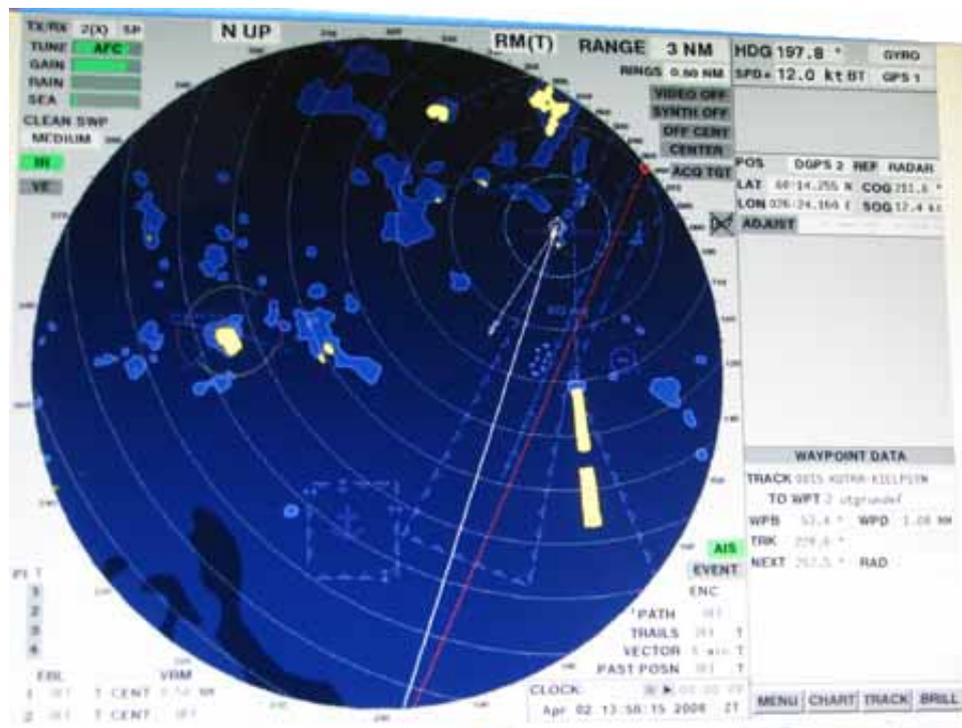


Figure 6. The vessel grounded at 13:58:15 in position 60°14.255 N 026°24.160 E. The vessel's COG was 211,6 degrees.



The following table is based on electronic chart and recordings as well as on the master's short report. There are some time differences between the recorded data and master's report. These have been adjusted in order to describe fluent flow of occurrences.

Time	Event
13.53	The pilot disembarks
13.55	The Second Officer takes over the con of the ship. However, this can not be heard on the voice recorder
13.57	The Second Officer reports that the vessel has drifted off the fairway. Course is 260° and speed 17.6 kt. Location 60°4.426 N, 026°24.448 E. Speed is reduced by 10% and rudder is turned hard to port and vessel turns to course 207°.
13.57.59	Speed 13.4 kt, course 223.4°.
13.58.15	The vessel runs aground at 60°14.255 N, 026°24.160 E. Course is 198°. Immediately after this the master tells the second officer to check the time and location.
13.59	The vessel was not stuck in the bottom but runs over the ground and continues her voyage. The master orders the crew to carry out damage control procedures. The voice recording does not include the sound of a general alarm. The vessel is in the fairway. Speed 11.7 kt, course 202.6°.
14.00– 14.50	The crew confirms that there are no leaks and that the manoeuvring equipment functions properly.
14.50	The master reports the occurrence to the shipping company. Furthermore, he reports that no visible damage has been detected and that equipment works properly. The voyage is continued as per the original plan.

1.2.3 Location

The location of the grounding is within Finnish territorial waters. The fairway is easy to navigate and clearly marked with buoys and navigation line marks ashore. Tainio Lighthouse transmits a Racon signal image on the radar display. The daylight screen radars were of top quality and modern devices.

1.2.4 The event

The vessel shuddered violently and listed to port. Scraping sounds from the bottom were heard in the machine room. The chief engineer turned the shaft generator off and started two auxiliary generators.

1.2.5 Action after the incident

Damage inspection was launched on the bridge as well as in the machine room. The shipping company's checklist and the vessel's SMM⁴ were used in ascertaining that nothing spilled into the sea and that the vessel was not taking in water. Furthermore, the functioning of the thruster and the rudder were confirmed. Different compartments were sounded and inspected for about an hour after the occurrence.

⁴ SMM; Safety Management Manual

At 14:50 the master reported the event to the shipping company. He said that they had not detected any visible damage or malfunctions. At 15:00 they resumed the original voyage plan and continued towards the Kiel Canal.

No report of the occurrence was made to the VTS centre, the Coast Guard or other Finnish authorities.

When the vessel arrived in Kiel, the bottom, rudder and damage to the thruster was inspected. The vessel was permitted to continue onwards to Bremerhaven, where its cargo was unloaded. Following this, the vessel went into dry dock where it was repaired for nearly two months.

1.2.6 Injuries and consequences to persons

There were no injuries to persons. The second officer who was the OOW at the time of the occurrence no longer works for the shipping company.

1.2.7 Damage to the vessel

On 4 April 2008 a diver inspected the damage to the vessel. Following this, on 5 April 2008, the vessel was permitted to continue her voyage to Bremerhaven to unload her cargo and into dry dock. The cargo was unloaded on 6 April 2008 whereafter the vessel moored to a waiting berth later that day. The vessel was shifted into dry dock on 9 April 2008. The propeller and propeller shaft were dismantled and sent ashore on 11 April, followed by the steering machinery on 16 April. Steelwork repairs were begun on 17 April in the ballast tanks and the cargo hold. The propeller shaft was reassembled on 22 May 2008, followed by the rudder on 27 May. On 30 May 2008 ANNE SIBUM left the dry dock. The complete damage report was not available to the investigators.



Figure 7. Minor crack in ship's bottom ballast tank.



1.2.8 Other damage

The vessel was out of service from 6 April to 30 May 2008.

1.2.9 Navigation and communication equipment

No malfunctions were detected in navigation and communication equipment.

1.2.10 Recorders

There is a Voyage Data Recorder (VDR) on board the vessel. The German Federal Bureau of Maritime Casualty Investigation (BSU) obtained the recordings which the vessel had delivered to the shipping company. BSU provided said recordings to the investigation commission.

1.2.11 Vessel traffic service (VTS)

The Orregrund fairway is within Kotka VTS area. The VTS provides navigational assistance and navigational warnings, among other things. Kotka VTS did not detect the grounding in question. The VTS traffic image from the day of the accident was no longer available as the information pertaining to the occurrence reached Finland as late as July.

1.3 Rescue operations

1.3.1 Distress alerts

The vessel concentrated on alerting the crew and informing the shipping company.

1.3.2 Launching of rescue operations

On the basis of inspections of the crew onboard the grounding did not warrant any rescue operation *per se*.

1.3.3 Passenger evacuation

There were no passengers.

1.3.4 Salvage

The grounding did not require a salvage operation.



1.4 Other investigations

1.4.1 Investigation of the accident vessel and at the site of the accident

The investigators visited ANNE SIBUM a number of times. However, they did not manage to hear the master of the time of the accident. The master and the second officer provided extremely brief reports of the occurrence to the investigators.

1.4.2 Technical investigation

Technical investigation was concentrated on analysing the VDR data.

There was over 500 tonnes of bunker oil onboard. Its distribution in various tanks was established in order to appraise the possibility of environmental damage. Most of the fuel, approximately 388 tonnes of Heavy Fuel Oil, was in the side fuel oil tanks, above the double bottom and the bilge keel. Therefore, there was no immediate environmental hazard because the vessel grounded at the spot of ballast tanks on the double bottom.

1.4.3 Crew action

Judging by documentation, the master's short report and other documents onboard, the action of the crew after the grounding was based on SMS⁵ instructions. These included, *inter alia*, checking for any possible spills or leaks as well as an inspection of the manoeuvring equipment and the thruster assembly.

1.4.4 Organisational and management information

Sibum GmbH & Co. owns several ships which operate as single-vessel shipping companies. The shipping companies and the vessels, however, are managed as a single corporation. All vessels have uniform manuals and instructions as well as regulations and SMS systems.

1.4.5 Other investigation

Kotka VTS did not closely follow the vessel's track and, therefore, the grounding was not observed.

⁵ Safety Management System



1.5 Statutes and regulations

1.5.1 National legislation

The Vessel Traffic Service Act (623/2005) lays down provisions on the supervision of traffic within Finland's territorial waters and related reporting. Pursuant to Section 23 of the Act, the master must notify the VTS authority of any incidents or accidents affecting safety of the vessel and any incidents or accidents endangering the safety of navigation; any circumstances that may cause pollution of the waters or the coast; and any pollutant spills and containers or packages drifting on the sea. The subject matter of this Section is consistent with the IMO's recommendations and conventions.

When the Maritime Rescue Act (1145/2001) was being revised, a new Section, 11a, titled 'Danger of distress', was added to Chapter 6 of the Maritime Act, which deals with the responsibilities of the master (1146/2001). The new Section obligates the master to proactively report a potential distress situation to the maritime rescue authorities. The goal of the provision is to prevent the often occurring situations in which masters procrastinate with distress alerts and, thus, hamper the efficient implementation of maritime rescue operations.

1.5.2 Regulatory provisions and advisories

In practice, the 'Gulf of Finland VTS Master's Guide' regulates cooperation between the vessel and the VTS centre in the Gulf of Finland. The other Finnish VTS centres have corresponding guides. Nevertheless, the guide has no instructions pertaining to accident reporting or reference to the details of Section 23 of the Vessel Traffic Service Act, nor to Chapter 6, Section 11a of the Maritime Act.

1.5.3 The operator's regulations

After the capsizing of M/S Herald of Free Enterprise the IMO adopted the International Safety Management Code with its resolution A.741 (18). The Code was later made mandatory with a SOLAS amendment, applicable to passenger ships and tankers as of 1 July 1998 and other ships as of 1 July 2002. The Code requires there be a Safety Management Manual onboard, which details procedures in exceptional circumstances. In addition, the Code includes cooperation with the shipping company as well as reporting to the authorities.

Section 8.2.4 of the shipping company's Safety Management System (SMS) describes the procedures after grounding. This section mandates the vessel to report the occurrence to other traffic on Channel 16 VHF (Securite) and to the coast radio station and to the shipping company's emergency organisation. The vessel made bottom contact without staying aground. After the crew had concluded that the vessel was in safe condition the master considered that he only needed to report the occurrence to the shipping company.



Section 9.1⁶ 'Incident reporting and handling' of the SMS deals with accident and incident reporting, handling and the requirements for corrective action. The investigators found no documents related to investigation or corrective action on the ship as regards this occurrence.

In accordance with amendments to the International Convention for the Prevention of Pollution from Ships (MARPOL) adopted in 2001, vessels must have Shipboard Marine Pollution Emergency Plans⁷, which include reporting in emergency situations.

Section 2.2.1.2 of the aforementioned Plan makes reporting discretionary when there is no oil spill or danger thereof. Since there was no oil spill the master decided against reporting the occurrence to the Finnish authorities.

Section 7.2.5 3 of the SMS details the way the responsibility of manoeuvring is handed over. The guide emphasises that it must be done loud and clear. The investigators had access to the VDR's voice recording from the bridge. The quality of the recording was poor and no communication related to handing over the con of the ship could be discerned. From the time the pilot disembarked to the grounding, i.e. an interval of approximately five minutes, the bridge personnel on did not communicate at all.

1.5.4 International conventions and general principles

With the growth of maritime traffic, various reporting obligations in many areas of busy traffic were instituted in the 1970s. Coastal states had the powers required to do this, at least within their territorial waters. Reports varied widely with regard to format and reporting language. The conference that prepared the International Convention on Maritime Search and Rescue (SAR Convention) in 1979 recommended that the IMO develop a standardised report template so as to make it easier for vessels to carry out their reporting obligations.

The first general principles of reporting were adopted by IMO Assembly resolution A.531 (13). The resolution was twice amended in the 1980s with the resolutions A.598 (15) and A.648 (16).

Protocol I of the MARPOL Convention that entered into force in 1983 includes an explicit requirement to report incidents. Reporting also includes any possible environmental hazards concerning defects to the hull or machinery.

⁶ ISM 9. Reports and analysis of non-conformities, accidents and hazardous occurrences. 9.1 The safety management system should include procedures ensuring that non-conformities, accidents and hazardous situations are reported to the Company, investigated and analysed with the objective of improving safety and pollution prevention. 9.2 The Company should establish procedures for the implementation of corrective action.

⁷ Shipboard Marine Pollution Emergency Plans, 2001 Edition which includes Guidelines for the development of Shipboard Oil Pollution Emergency Plans (SOPEP) (Resolution MEPC.54(32), as amended by resolution MEPC.86(44) and Guidelines for the development of Shipboard Marine Pollution Emergency Plans for Oil and/or Noxious Liquid Substances (Resolution MEPC.85(44)).



The International Convention Relating to Intervention on the High Seas in Cases of Oil Pollution Casualties mandates reporting to coastal states because a coastal state can undertake preventative measures in international waters.

The obligation to report to the coastal authorities (Regulation 8.1) included in Chapter V of the SOLAS Convention entered into force on 1 January 1996. As per this regulation a state's ship reporting systems are to be approved by the IMO. The master of a vessel has a general obligation to report in to the coastal authorities.

In order to harmonise regulations the verbiage of Protocol I of the MARPOL Convention was also amended. The amendment entered into force on 1 January 1998. As reporting became mandatory, the General Principles for Ship Reporting Systems and Ship Reporting Requirements, including the Standard Reporting Format, were also modernised by the adoption of IMO resolution A.851 (20) in 1999.⁸

When the comprehensive review of Chapter V of the SOLAS Convention entered into force on 1 July 2002, the number of the reporting regulation became V/11.

As marine protection plays an increasingly important role in the work of the IMO, the reporting regulations contain more and more details for reporting different types of environmental damage or the danger of such. Nevertheless, an important goal of reporting still relates to warning the rescue authorities early enough with regard to situations which could endanger human life, or, in the case of technical malfunctions, warning the maritime authorities of situations in which the vessel in question could disturb other traffic in its vicinity.

⁸ A.851 (20) 3.4.1 It is recognized that it would be impracticable to lay down precise definitions of all types of incidents involving probable discharge which would warrant an obligation to report. Nevertheless, as a general guideline the master of the ship should make reports in case of: 1 damage, failure or breakdown which affects the safety of ships; examples of such incidents are collision, grounding, fire, explosion, structural failure, flooding, cargo shifting and...



2 ANALYSIS

Safety Management System

Crew members are rarely familiar with all of the details of the IMO's conventions and recommendations. Nevertheless, said conventions mandate that ships engaged in international voyages carry manuals, such as the SMS and the SOPEP⁹, which also deal with reporting.

The Safety Management Manual, being one of these manuals, should *inter alia* ensure compliance with the mandatory rules and regulations and that the applicable codes, guidelines and standards recommended by the flag states, the IMO, classification societies and maritime industry organisations are taken into account.¹⁰ In addition, the company should ensure that all personnel involved in the Company's safety management system have an adequate understanding of the relevant rules, regulations, codes and guidelines.¹¹ The shipping company that operates the vessel should consider the materialisation of the principles and goals of the ISM code as an opportunity to provide the clearest possible guidelines for the crew. Shipping company regulations should be made more explicit by also mandating the reporting of groundings to the nearest MRCC and VTS. It can be considered poor seamanship to ignore the IMO's recommendations.

Nonconformity reporting as well as analysis and the implementation of corrective action are integral elements of a safety management system. After all, the goal is to learn from one's mistakes. Nonconformity management in a shipping company can also give the impression that they have not fully understood one of the key topics of the ISM code, i.e. section 9, or the shipping company's corresponding SMS section.

Bridge team resource management

The pilot disembarked when Orregrund was abeam, at which time they were not on the final course to the open sea. After the pilot had disembarked the master handed over the con of the ship to the OOW. However, the OOW may not have had full situational awareness at that time. Therefore, the vessel continued on the course it was maintaining when the pilot disembarked. The master then proceeded with his paperwork, which was of secondary importance in relation to safe navigation. After the pilot disembarked the master no longer participated in navigation, nor did he supervise the OOW even though they were still inside the archipelago. This being the case, bridge team resource management was unsatisfactory. Numerous course changes between 230°–260° were made without a clear purpose before the grounding. This indicates the uncertainty of the OOW.

⁹ Shipboard Marine Pollution Emergency Plans

¹⁰ ISM 1.2.3

¹¹ ISM 6.4



VTS guidelines

Previously the VTS 'Master's Guide' included a reporting obligation in the case of an accident. However, this was later removed from the guide. Even though masters are expected to master international legislation and guidelines, this is hardly always the case. Hence, it would be advisable to amend the 'Master's Guide' with regard to reporting of accidents. The role of Vessel Traffic Service as the guarantor of navigational safety is emphasised in the VTS area when the vessel does not sail under pilotage. Therefore, the VTS and the vessel should intensely communicate immediately before the pilot boards and after he disembarks.



3 CONCLUSIONS

3.1 Findings

1. The pilot disembarked before the vessel had reached the final course leading to the open sea. In the BA¹² Charts which the vessel used, the boarding/disembarking area is marked at the final waypoint on the outbound line from Orrengrund.
2. The second officer may have been in the dark with regard to situational awareness when the master handed over the con of the ship to him. This is indicated by the course changes without clear purpose.
3. The master proceeded with his paperwork, which was of secondary importance in relation to safe navigation. This being the case, bridge team resource management was unsatisfactory.
4. The second officer reported to the master that the vessel had drifted off the channel. The manoeuvring attempts could not prevent the bottom contact.
5. The crew proceeded to inspect the damage and, counter to the IMO's recommendations, the occurrence was not reported to the authorities.
6. Neither Kotka VTS nor the pilot station monitored the movement of the vessel closely enough to detect its deviation from the established fairway.
7. The bottom contact was not handled as per section 9 of the ISM Code. Therefore, no accident analysis or corrective action was implemented by 12.11.2008.

3.2 Probable cause and contributing factors

The bottom contact was caused by navigational error. Inadequate bridge team resource management is considered to be a contributing factor.

Contributing factors to the unsatisfactory reporting procedure may also include insufficient familiarity with the IMO's regulations as well as the shipping company's inadequate regulations with regard to ship reporting procedures.

¹² British Admiralty

4 SAFETY RECOMMENDATIONS

After investigating several accidents related to pilot disembarking, Accident Investigation Board Finland has notified that it is considering issuing a recommendation with regard to these accidents. Weather conditions in these instances were by no means so exceptional that it would have been appropriate for the pilot to remain onboard until the next port. However, prevailing winds often play an important role with regard to a pilot's safe boarding or disembarking. The vessel may turn sideways in the fairway in order to provide lee to the pilot boat. Since there are inherent risks in doing this, the investigators recommend that:

1. *The State Pilotage Enterprise amend their pilotage instructions so that the pilot, after disembarking, remains at the site and ensures that the vessel assumes the correct heading in time if it has been necessary to turn the vessel into a heading that deviates significantly from the course of the fairway so as to guarantee the pilot's safe landing.*

If the pilot disembarks well before the designated boarding/disembarking area the pilot boat should escort the vessel to the designated boarding/disembarking area.

Since crew members may not be fully familiar with international regulations, the investigation commission recommends that:

2. *The Vessel Traffic Service updates the ship reporting section in the 'Master's Guide' in such a manner so that occurrences involving non-standard manoeuvring or operation also be reported to the authorities. This requires that the reporting obligation related to nonconformities be described in detail.*

Helsinki April 7, 2009.

Risto Repo

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LIST OF SOURCES

1. SOLAS
2. MARPOL
3. Safety Management Manual
4. SOPEP
5. VDR recordings
6. Electronic chart recordings
7. Master's report
8. Photos