



## Investigation report

D12/2009M

# STS POGORIA, Distress off Hanko, Finland, 7.7.2009

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**Centralen för undersökning av olyckor**  
**Accident Investigation Board**

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## **SUMMARY**

The Polish sail training vessel POGORIA was enroute from Gdynia, Poland to St. Petersburg, Russia. She took part in the Tall Ships' Races, Baltic 2009. In the entrance of the Gulf of Finland all her masts broke and the vessel started drifting helpless. The Finnish Border Guard evacuated ashore 37 persons of the total crew of 50. A salvage company tug towed POGORIA to Hanko, Finland.

After the necessary repair work POGORIA sailed with engine propulsion back to Gdynia to the repair yard. The reason for the breaking of the masts was their corrosion during 30 years. The vessel had been dry docked before the race but the poor condition of the masts had not been observed.





## TABLE OF CONTENTS

SUMMARY .....	I
ABBREVIATIONS.....	V
FOREWORD .....	VII
1 ACCIDENT AND INVESTIGATION .....	1
1.1 Vessel information.....	1
1.1.1 General information .....	2
1.1.2 Manning.....	2
1.1.3 Bridge and equipment .....	2
1.1.4 Machinery .....	3
1.1.5 The rig .....	3
1.1.6 Passengers and cargo.....	6
1.2 The Accident .....	6
1.2.1 The weather.....	6
1.2.2 The Accident voyage .....	6
1.2.3 The Accident site .....	7
1.2.4 The accident.....	7
1.2.5 Action after the accident .....	9
1.2.6 Personal injuries .....	9
1.2.7 Damage to the vessel.....	9
1.2.8 Other losses .....	9
1.3 Rescue activities .....	9
1.3.1 Distress activities.....	9
1.3.2 Rescue operation .....	9
1.4 The investigation .....	10
1.4.1 Investigation onboard .....	10
1.4.2 Technical investigation .....	10
1.4.3 Other investigations.....	11
2 ANALYSIS .....	13
3 CONCLUSIONS.....	15
4 ACTION TAKEN .....	17
5 SAFETY RECOMMENDATIONS.....	19





## **ABBREVIATIONS**

ESE	East-South-East
FMA	Finnish Maritime Administration
IMO	International Maritime Organization
mB	mbar
MRCC	Marine Rescue Co-ordination Centre
MRSC	Marine Rescue Sub Centre
Paris MOU	Paris Memorandum of Understanding
SB	Starboard
TSR	Tall Ships' Races
UTC	Coordinated Universal Time





## FOREWORD

The Polish sail training vessel POGORIA was enroute from Gdynia, Poland to St. Petersburg, Russia. She took part in the Tall Ships' Races, Baltic 2009. In the entrance of the Gulf of Finland all her masts broke and the vessel started drifting helpless. The Finnish Border Guard evacuated ashore 37 persons of the total crew of 50. A salvage company tug towed POGORIA to Hanko, Finland.

AIB Finland's marine accident investigator heard the news of the accident from the night's main TV news after 21.30 hours. The vessel was towed to Hanko during the night and the investigation was started during the forenoon next day. The investigation has been done partly in co-operation with FMA's maritime inspector. During the investigation the Master, Chief officer and some crew members have been interviewed. The diaries of the rescue operation and the vessel's Log book have been the most important sources of information in the investigation. Information has been gathered also from the Sail Training Association, Poland as well as from the web pages of POGORIA<sup>1</sup>.

After the necessary repair work POGORIA sailed with engine propulsion back to Gdynia to the repair yard. The reason for the breaking of the masts was their corrosion during 30 years. The vessel had been dry docked before the race but the poor condition of the masts had not been discovered.

The material for the investigation report has been collected to the archives of the AIB of Finland.

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<sup>1</sup> Pogoria Trainees' Guidelines



# 1 ACCIDENT AND INVESTIGATION

## 1.1 Vessel information



Figure 1. POGORIA, Portofino, January 2006<sup>2</sup>

Name	POGORIA
Type	Three masted barkentine
Flag	Poland
Owner	Sail Training Association Poland
Operator	Sail Training Association Poland
Home port	Gdynia
Built	Gdansk shipyard 1979–1980
Call sign	SQKY
Gross/Net	290.56/41.77
Length	48 m
Breadth	12.5 m
Draft	3.95 m
Sail area max.	1050 m <sup>2</sup>
Engine	Volvo Penta 255 kW

<sup>2</sup> 28.07.2009 [http://en.wikipedia.org/wiki/File:Pogoria\\_portofino.JPG#metadata](http://en.wikipedia.org/wiki/File:Pogoria_portofino.JPG#metadata), photo by Janekg,

### 1.1.1 General information

POGORIA is a sail training vessel, owned by Polish Sail Training Association. The aim of the Association is to enhance and train young people especially to work and live in a group, also in poor weather conditions in limited space and privacy.

The vessel had been docked in June 2009 and according the Master, the condition of the masts had been surveyed and some tests had been executed. The classification survey took place in Livorno, Italy in the beginning of March 2009. No deficiencies had been noted. The Safety Certificates of the vessel were valid until January 2013.

### 1.1.2 Manning

There were 50 persons onboard. Out of them 41 were young persons taking part as trainees. Almost all of them were of age under 25 years. They did not have professional seagoing history. The base manning included 9 persons. Master, Chief officer, the four OOW's, Chief engineer and bosun were experienced sailors.

### 1.1.3 Bridge and equipment



Figure 2. The helmsman's position. OOW sits usually on SB side

#### 1.1.4 Machinery

The vessel has a Volvo Penta diesel engine with output of 255 kW. The exhaust gases are led out through an exhaust pipe inside the aft mast.



*Figure 3. Manoeuvring pulpit on Port side aft. The Navigating bridge and Radio station are on the right inside the deckhouse. Engine was not in use when the accident occurred.*

#### 1.1.5 The rig

The vessel has three masts with maximum 15 sails, The total sail area is 1050 m<sup>2</sup>. The vessel's sail and rig arrangements are shown in figures 4 and 5.



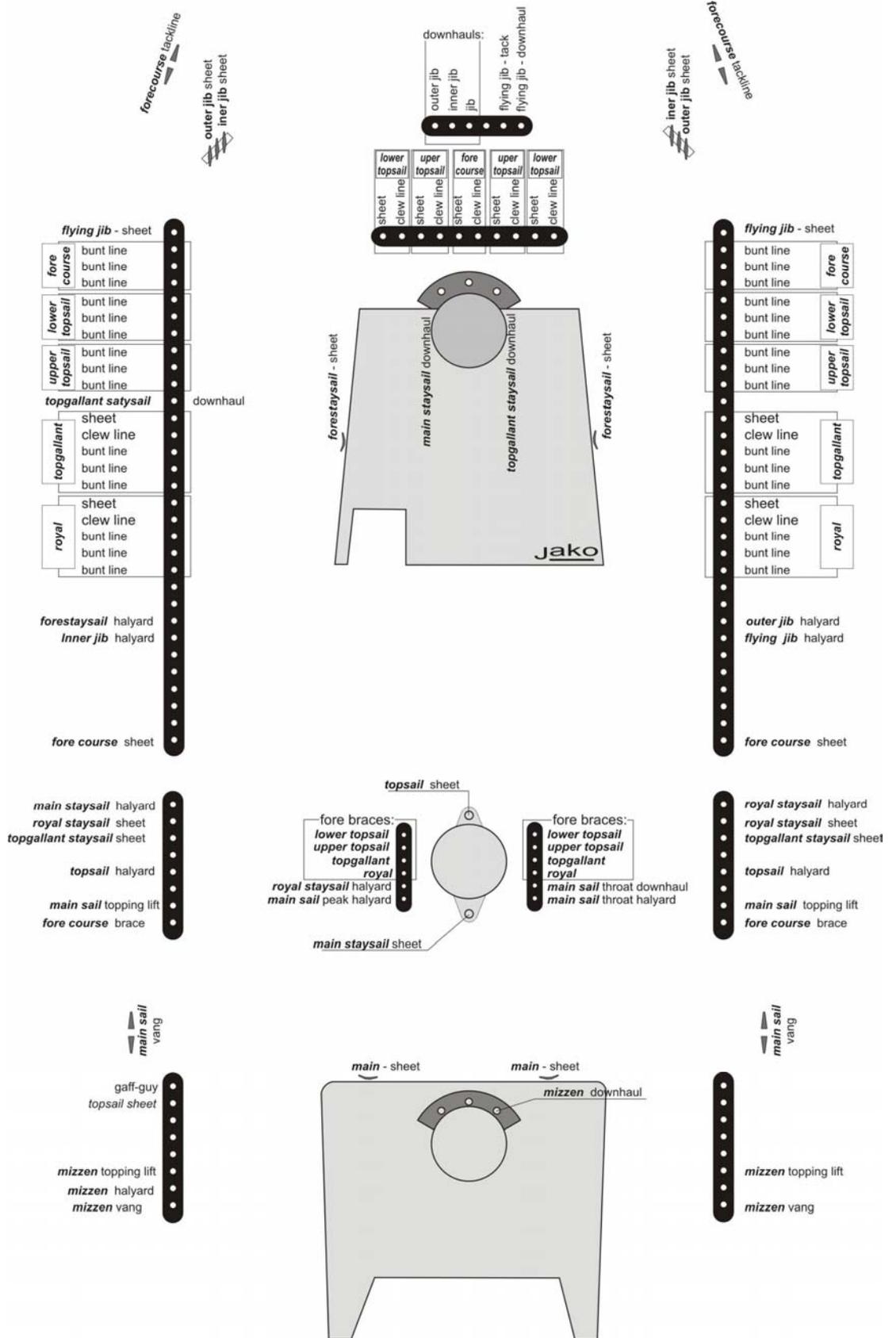


Figure 5. POGORIA's rig arrangement.

### **1.1.6 Passengers and cargo**

The POGORIA is a sail training vessel. The persons onboard, who do pay to the Ship owner (Company) for their participation to the trip, can be considered as passengers. POGORIA is not classified as a passenger vessel but the participants are signed as crew members. On the accident trip, there were 41 passengers. They were divided to four watches for sailing, manoeuvring and ship-keeping.

## **1.2 The Accident**

### **1.2.1 The weather**

In the early night hours on the accident day July 7, 2009, the wind speed was 5–7 m/s, during morning and fore noon 7.5–10 m/s from direction SE. In the beginning of the afternoon the wind veered more easterly to ESE to force 11–12 m/s. In gusts the wind reached from time to time slightly over 14 m/s. After this wind speed raised up a bit; average 12–14 m/s and in gusts 17 m/s. At it's highest, the wind was at 1340–1400 hours UTC.<sup>3</sup>

The information in vessel's logbook goes well together with Jussarö weather station information with regard to the weather changes. The wave height was 2.0–2.5 meters, drizzle decreased the visibility. Air pressure stayed during the forenoon in 1007 mB and decreased at noon to 1006 mbar.

### **1.2.2 The Accident voyage**

POGORIA sailed out on July 5, 2009, from Gdynia Poland to St. Petersburg, Russia. She took part in the Tall Ships' Races, Baltic 2009. The sails (10) were hoisted at about 1300 hours. The winds were poor during the day and she made speed between 5 to 7 knots.

The next day there was nearly no wind at all up to the noon and she was progressing slowly. At noon time SE wind freshened and the vessel reached an average speed of 10 knots up to the midnight.

A similar South -easterly wind of 4–5 beaufort continued, and the vessel made good 8–10 knots speed. At 10.00 hours according to the log book she had 14 sails up making totally sail area of 900 sq meters. The marking at 12.00 hours shows that the Main Topsail had been lowered off. Thus the sail area reduced to 860 sq meters. The wind had risen from 4–5 to 6 beaufort. Logbook marking at 14.00 hours, shows that another sail, the Topgallant stay sail, had been lowered and wind was ESE 6 beaufort. Sail area became 820 sq meters.

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<sup>3</sup> Finnis Meteorological Institute, Jussarö observations 7.7.2009, 08.50–14.30 UTC

### 1.2.3 The Accident site

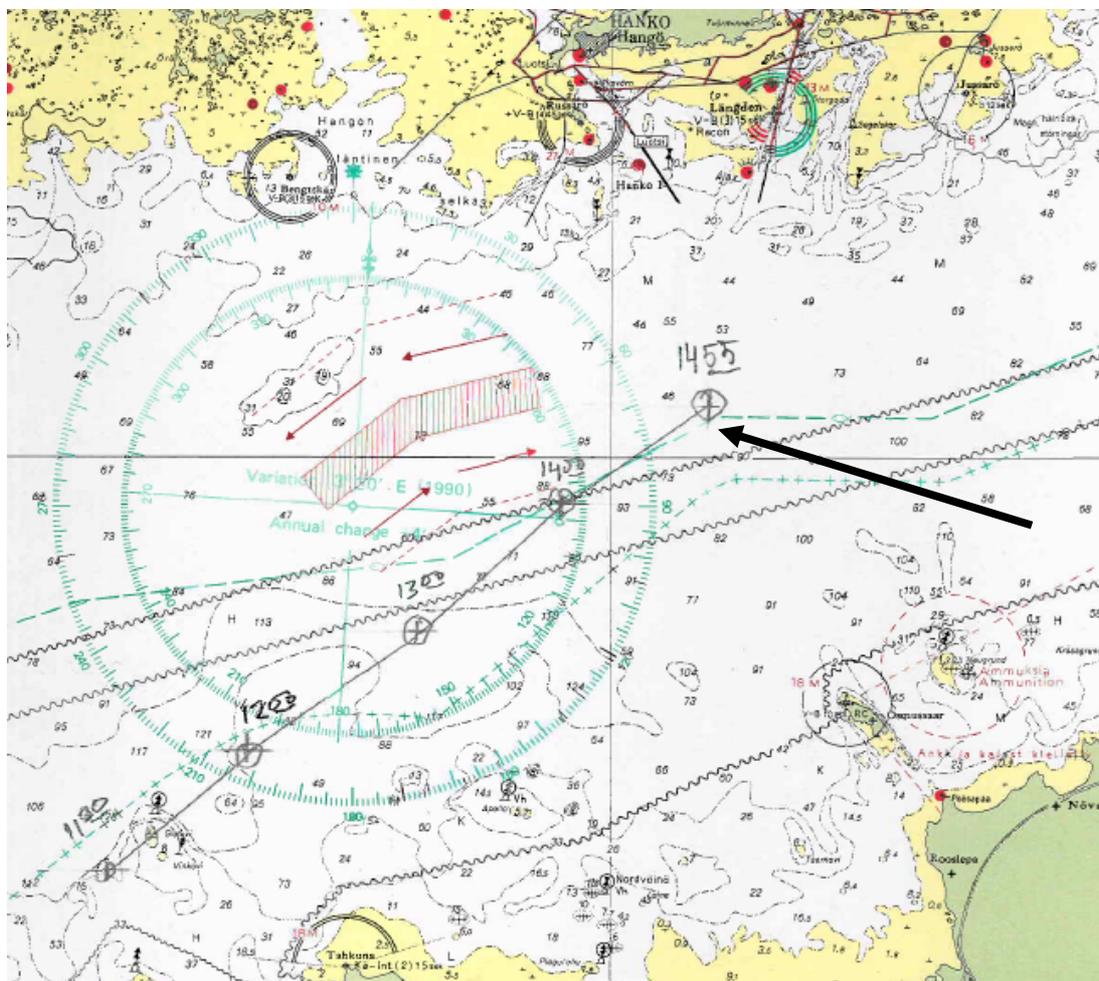


Figure 6. POGORIA's track, produced with the log book information. The arrow shows the Wind direction

The vessel had passed between 11.20-11.30 hours the Glotov shallow of 8 meters. With the draft of 4 meters and the wave height of 2 meters or more the route cannot be considered to show good seamanship.

The accident site is in the eastward traffic lane. There is not much crossing traffic.

### 1.2.4 The accident

The vessel's heading was 055 degrees at 14.55 and the wind from ESE, when the most upper part of the Foremast broke down. As the masts were connected to each other with a strong steel wire from top to top, the Foremast drew down the Mainmast and the Mizzenmast.

The most upper parts of the masts fell down with sails, and running and standing rigging to the port side of the vessel. This resulted in sudden load on the other parts of the masts and the masts broke also from the lower parts. The Foremast broke in two points; just above the upper spreader and above the lower spreader. Two spreaders were left in

the Foremast, the other of these hanging downwards to deck. Rest of the mast and its spreaders were left hanging on the port side of the hull.

The Mainmast broke from five points and the Mainsail was torn. The Mizzenmast broke above the upper spreader. The top part stayed hanging downwards. As the main engine's exhaust pipe was inside the Mizzenmast, the pipe was blocked and the engine could not be started.



Figure 7. The bended Mizzen Mast.



Figure 8. POGORIA in Hanko.



### **1.2.5 Action after the accident**

Immediately after the occurrence the crew started to clear the deck area. Different wires and ropes were cut and the masts and rigging, hanging on vessel's side, were secured to the hull.

When the masts fell down, the radio antennas were broken. A contact could still be made by portable VHF with another Polish vessel taking part in the Race. This vessel relayed the information of the accident to MRSC Turku and TSR's co-ordinating centre.

### **1.2.6 Personal injuries**

Three of those persons, who were on deck, got some injuries. One who was sitting on SB side aft was hit by a falling shroud in to her hand. Another was hit to toe by a shroud rope and a third got scratches to leg because of a falling shroud. First aid was given immediately to those injured.

### **1.2.7 Damage to the vessel**

The vessel lost all her masts and a major part of her rigging was damaged.

### **1.2.8 Other losses**

The vessel could not carry on the competition of the TSR.

## **1.3 Rescue activities**

### **1.3.1 Distress activities**

MRCC Turku got information of POGORIA having problems at 16.48. The case was classified as an uncertain situation. The message was; "50 metre sail vessel had lost her masts, not able to use the main engine, 50 persons onboard."

Between 17.08–17.20 hours the following units were alerted: Helsinki Air Squadron with helicopter OH-HVJ, Rescue vessel Russarö, Coast Guard vessel TAVI, Hanko Coast Guard station and its vessels PV-120 and NV-105. Also Turku Air Squadron and its helicopter OH-HVF and Coast Guard vessel UISKO were alerted.

MRCC Turku handed the operation's co-ordination to MRSC Helsinki as the vessel in distress was inside MRSC Helsinki's area.

### **1.3.2 Rescue operation**

The helicopter OH-HVJ was on site at 18.05 and it was noted that the situation was relatively calm. It was deemed that POGORIA has to be towed with a tug. At 19.51 a navigational warning was sent out for the traffic in the area. A NAVTEX message was delivered to Tallinn. At 20.00 it was agreed that 38 persons will be evacuated from POGORIA. The evacuation commenced at 20.32 and 37 persons had been airlifted to Hanko at 22.45.

The Coast Guard vessels safeguarded POGORIA until a commercial towage company's tug arrived at midnight. The negotiations to reach a salvage agreement took some time.

The helicopters and Coast Guard vessels were freed from the rescue at 01.20, VL TAVI remained on scene.

Tug AJAX commenced the tow at 02.15. TAVI safeguarded the tow. Early in the morning 8.7.2009 POGORIA was safely in Hanko.

## **1.4 The investigation**

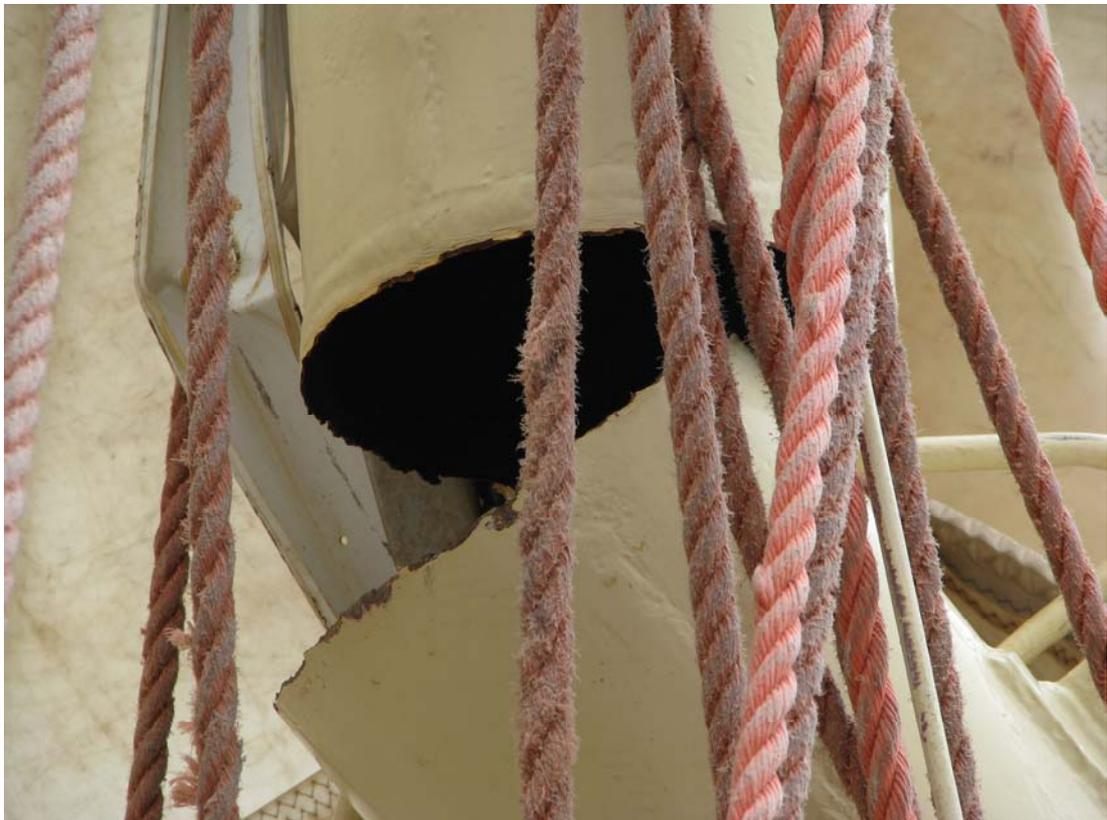
### **1.4.1 Investigation onboard**

MRSC Helsinki informed the on duty Maritime inspector of the accident at 23.45 and right after that also the duty officer of the Accident Investigation Board of Finland. The Maritime inspector and AIB commenced their investigation work during 8.7.2009.

During the investigation the Master and some crew members were interviewed. A coastguardsman who had been on the accident site with a boat described the weather and sea condition. A request for a copy of MRSC Helsinki's diary on the case was sent by email to Gulf of Finland Coast Guard on 9.7.2009. The diary was obtained by AIB only after a new request on 20.7.2009.

### **1.4.2 Technical investigation**

In Hanko the damages were visually evaluated. The masts had broken right beside the weld seams. There was clear corrosion in the masts.



*Figure 9. Broken mast, right at the weld seams.*



*Figure 10. Corrosion inside a mast. (FMA)*

#### **1.4.3 Other investigations**

The Maritime Inspector made an IMO Port State Control<sup>4</sup> on 8.7.2009. The conclusion of the inspection was that the prime cause of the accident was the corrosion of the steel masts.

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<sup>4</sup> IMO, Port State Control, Paris MOU



## 2 ANALYSIS

POGORIA was built to serve as a Sail Training Vessel in 1980. She seems to fit for the purpose well. Regardless of the mess onboard after the accident, the general impression was clean-cut well maintained.

According to the inspection by FMA the vessel documents were in good order. She had been docked just before the TSR competition. According to the Master, whilst in dockyard, the condition of the masts was inspected. Apparently, the inspection has not been thorough enough.

The weather, wind and sea-state, was reasonably strong, but all in all, the conditions were suitable for sailing. This can be concluded as the vessel had almost 90 % of her sails out.

The chain of events, starting from the fore mast's upper parts breaking, could have led to a major accident. Good luck was that there were only a few persons on deck. And luckily no one was near the Port side railing. If there had been people on the Port side, the results had been catastrophic.

The Master did not see reasons for evacuation of the people onboard. The Coast Guard's judgement was correct. The situation onboard was not safe for 50 persons. The vessel drifting with the wind and the waves, deck area full of parts of the masts, ropes and wires, was a very dangerous environment, specially for those, who had been onboard only a very short period.

In the investigation it was quite soon obvious that the strength of the masts had been weakened during the three decades. Clear corrosion, even corroded holes could be seen.

The condition of the masts must be inspected continuously. Even accurate visual investigation should have shown the defects.

Onboard a sail vessel there shall be a systematic survey program. With the program the condition of the masts is assessed frequently. The inspections shall be documented. This guarantees that the inspections are done extensively enough.

Search and rescue was done properly. MRCC in the beginning and MRSC later on reserved enough resources for the rescue work.

Informing some parties of the accident did not succeed properly. FMA's Maritime Inspections Division's and AIB of Finland's duty persons were not alerted until at 23.45.





### 3 CONCLUSIONS

- POGORIA had been in a dock yard just before the accident. The condition of the masts had not been inspected thoroughly during the docking nor earlier. In many points, the masts were corroded badly.
- Simultaneous load of wind, wave induced motion and possible rudder order was too much for the corroded Foremast. The breaking of the upper part led to the breaking of the other masts.
- This occurrence can be classified as an incident which could have led to a Major Accident.
- Search and Rescue work was done professionally.
- Informing some officials did not succeed properly.



#### **4 ACTION TAKEN**

POGORIA sailed with engine power to Poland with the base crew. She was docked for repair.





## 5 SAFETY RECOMMENDATIONS

The corrosion in the masts has developed during the years. The vessel has been inspected by the Classification Society and Maritime Administration. Regardless of this, the problem has not been detected. There are numerous sail training vessels in Poland. The accident illustrates that there is a problem within the supervision.

Accident investigation Board of Finland recommends that:

*The Polish Maritime Administration carries out an examination on the condition of masts of the Sail Training vessels under Polish flag*

Helsinki August 24, 2009

Risto Repo

Maritime Accident Investigator