



Investigation report

D20/2009M

MS LAIMA and MS SILVA, collision in the Åland Sea on 13 September 2009

Translation from the original Finnish report

This investigation report was produced to improve standards of safety and to prevent further accidents. It does not concern itself with who may have been responsible for the accident or the question of liability for damages. It should therefore not be used for any purpose other than the improvement of safety.

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SUMMARY

MS LAIMA AND MS SILVA, COLLISION IN THE ÅLAND SEA ON 13 SEPTEMBER 2009

On 13 September 2009 MS SILVA was in the Åland Sea on her way from Oulu south towards Riga, and MS LAIMA was on her way from Mersrags, in Latvia, to Donsjö, Sweden.

The ships were approaching each other south of the Flötjan Lighthouse. At 05:20, the SILVA was on a course of 140 degrees when she spotted the LAIMA to starboard, at a distance of 15 nautical miles south-east. The SILVA positioned the LAIMA on the radar monitoring system, showing the CPA to be 0.5 miles. Despite this, however, the SILVA changed its course five degrees to starboard to 145°. The LAIMA saw the SILVA approximately eight miles away approaching her port side at a course of 343°. At 05:45 the SILVA checked the situation again, the LAIMA now being five miles away. According to the SILVA, the radar continued to show the CPA as 0.5 miles on both vessels' port side. The navigation officer then started to prepare for the change of watch. When the ships were approximately three miles apart the LAIMA called the SILVA on VHF channel 16 and repeated its call, but there was no reply. The VTS recording shows that there was the risk of a collision.

When the ships were at a distance of 0.5 nautical miles from one another, the LAIMA still thought there was a danger that they would collide. On VHF channel 16 she reported that she was turning to port. Receiving no reply, she began this manoeuvre, because MS ALLEGRETTO was 0.8 miles away on her starboard side. At the same time the SILVA saw the LAIMA five degrees off the starboard bow and at a distance of 0.3 miles. The LAIMA was displaying red sidelight. The SILVA turned the rudder hard to starboard to avoid a collision, but it was impossible. The vessels collided at approximately 06:00 at about 7.7 miles south of the Flötjan Lighthouse at 59 41.2, N 019 47.7 E.

The accident resulted in no personal injuries and the damage to the hull was above the waterline, and so this did not prevent the vessels from resuming their journey. The cause of the accident was probably faulty observation/look-out and too late manoeuvres of both ships and in the same direction to avoid a collision or 'near miss'.

ABBREVIATIONS USED

ARPA Automatic Radar Plotting Aid

CPA Closest Point of Approach

UTC Universal Time, Coordinated

VDR Voyage Data Recorder

VTS Vessel Traffic Service

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FOREWORD

On 13 September at 08:30 the Accident Investigation Board Finland received information from the Maritime Rescue Coordination Centre, Turku, that MS LAIMA and MS SILVA had collided in the Åland Sea. Later on, the Accident Investigation Board obtained an account of what had happened from both vessels and a list of measures relating to the incident from the West Finland Coast Guard District. The Marine Traffic Centre submitted the VTS recording relating to the case. The time used in the investigation is UTC+3h.



Figure 1. MS LAIMA

(Photo: Finnish Coast Guard)



Figure 2. MS SILVA

(Photo: Finnish Coast Guard)

1 EVENTS AND INVESTIGATIONS

1.1 The vessels

1.1.1 General information

MS LAIMA

Nationality	Cyprus
Port of registry	Limassol
Year of manufacture	1989 Romania
Vessel type	Dry cargo carrier
IMO No.	8846814
Call sign	P3YA7
Gross	2,554
Net	808
Deadweight	3,020 t
Maximum length	108.04 m
Breadth	15.03 m
Engine power	758 kW
Speed	8.8 knots
Crew	8
Classification society	Russian Maritime Register of Shipping

MS SILVA

Nationality	Isle of Man (Great Britain)
Port of registry	Douglas
Year of manufacture	2001
Vessel type	Dry cargo ship
IMO No.	9237010
Call sign	MGXL8
Gross	3,978
Net	1,757
Deadweight	5021 t
Maximum length	99.95 m
Breadth	16.5 m
Engine power	2,700 kW
Speed	12 knots
Crew	8
Classification society	Germanischer Lloyd

1.1.2 Crew

Both vessels had a crew of 8.

1.1.3 Controls and equipment

The vessels were fitted with normal navigational equipment and ARPA equipment.

1.1.4 Cargo

The LAIMA was carrying a cargo of timber and the SILVA was empty.

1.2 The accident event

1.2.1 Events leading up to the accident

The SILVA was empty and on her way from Oulu to Riga, and the LAIMA was loaded up with timber on her way from Mersrags to Donsjö. At 05:20 the SILVA spotted the LAIMA on her radar at a distance of 15 nautical miles and positioned the LAIMA on her radar monitoring system. After a few minutes the radar system showed the CPA to be 0.5 miles on both vessels' port side. The SILVA's course was 145°. The LAIMA spotted the SILVA on her radar approximately eight miles away approaching her port side at of the heading of 341°. The SILVA's speed was 11.2 knots, the LAIMA's 8.8 knots.

1.2.2 The accident

This description of the accident is based on the information provided by the ships and the VTS recording for the period 05:48-06:00.

At 05:45 the vessels were at a distance of approximately 5 nautical miles away from each other. The SILVA checked the situation and her radar still showed that the vessels would pass one another at a distance of 0.5 miles on their port side, the LAIMA being off her starboard bow at the time. After this, the navigation officer prepared for the change of watch. The LAIMA called the SILVA at 05:40 and again at 5.50 on VHF channel 16, but got no reply. The call is not on the VTS sound recording.

When the ships were around 0.3 miles away from each other, the LAIMA reported on VHF channel 16 that she was turning to port. According to the VTS recording, the LAIMA asked the SILVA three times to turn to port, but then the SILVA turned to starboard, and the vessels collided at 06:00. The LAIMA's starboard bow hit the left side of the SILVA at about 10 metres to the rear of the middle of the ship. Just before the collision, the LAIMA had stopped her engine and gone into reverse at full power. It is not known if the SILVA reduced engine power before the collision. The first officer on watch on the SILVA believes the accident was due to a lapse in his concentration during a difficult navigation situation and a change of watch.

Both ships reported having lookouts. According to the navigation/first officer of the SILVA, the lookout on watchman reported the LAIMA approaching from starboard.

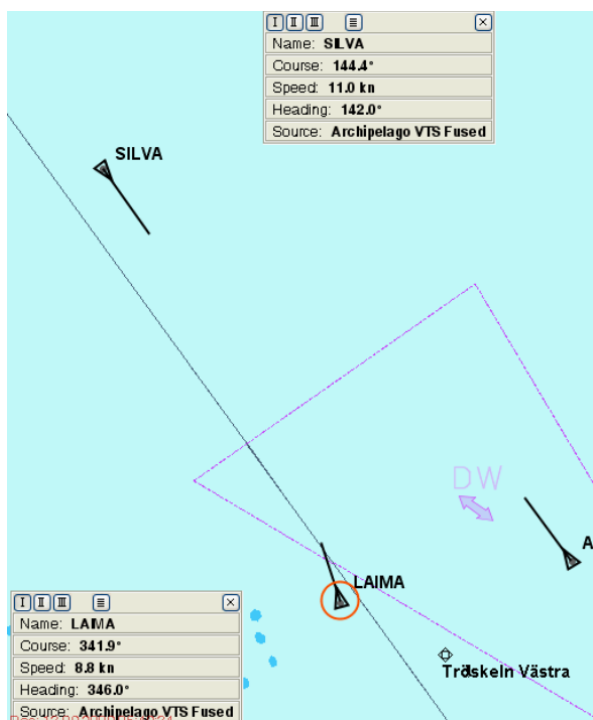


Figure 3. At 05:49:34 the vessels are approximately 3.83 nautical miles away from one another. The LAIMA calls the SILVA at 05:40, but gets no reply. The call is not heard in the VTS recording.

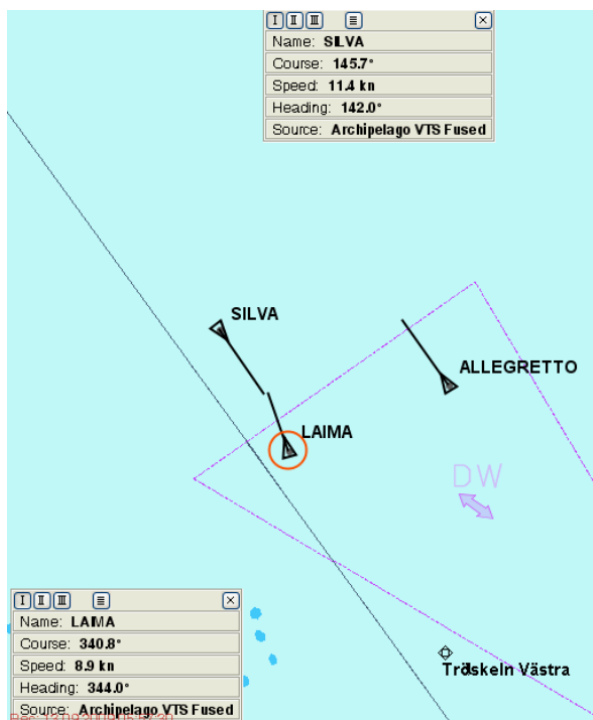


Figure 4. At 05:57:30 the vessels are approximately 1 mile distant from each other. There is imminent danger of a collision or a 'near miss'. From the recording it seems that at this stage the LAIMA was still able to turn to starboard.



Figure 5. At 05:59:23 the vessels are approximately 0.33 miles away from one another. The LAIMA informs the SILVA that she is turning to port. This is not heard in the VTS recording; instead it can be made out that the LAIMA asks the SILVA three times to turn to port. The SILVA makes no reply and turns to starboard. The vessels turn in more or less the same direction at the same time - westward.



Figure 6. The vessels collide at 06:00:34, according to this VTS record.

1.2.3 Site of the accident

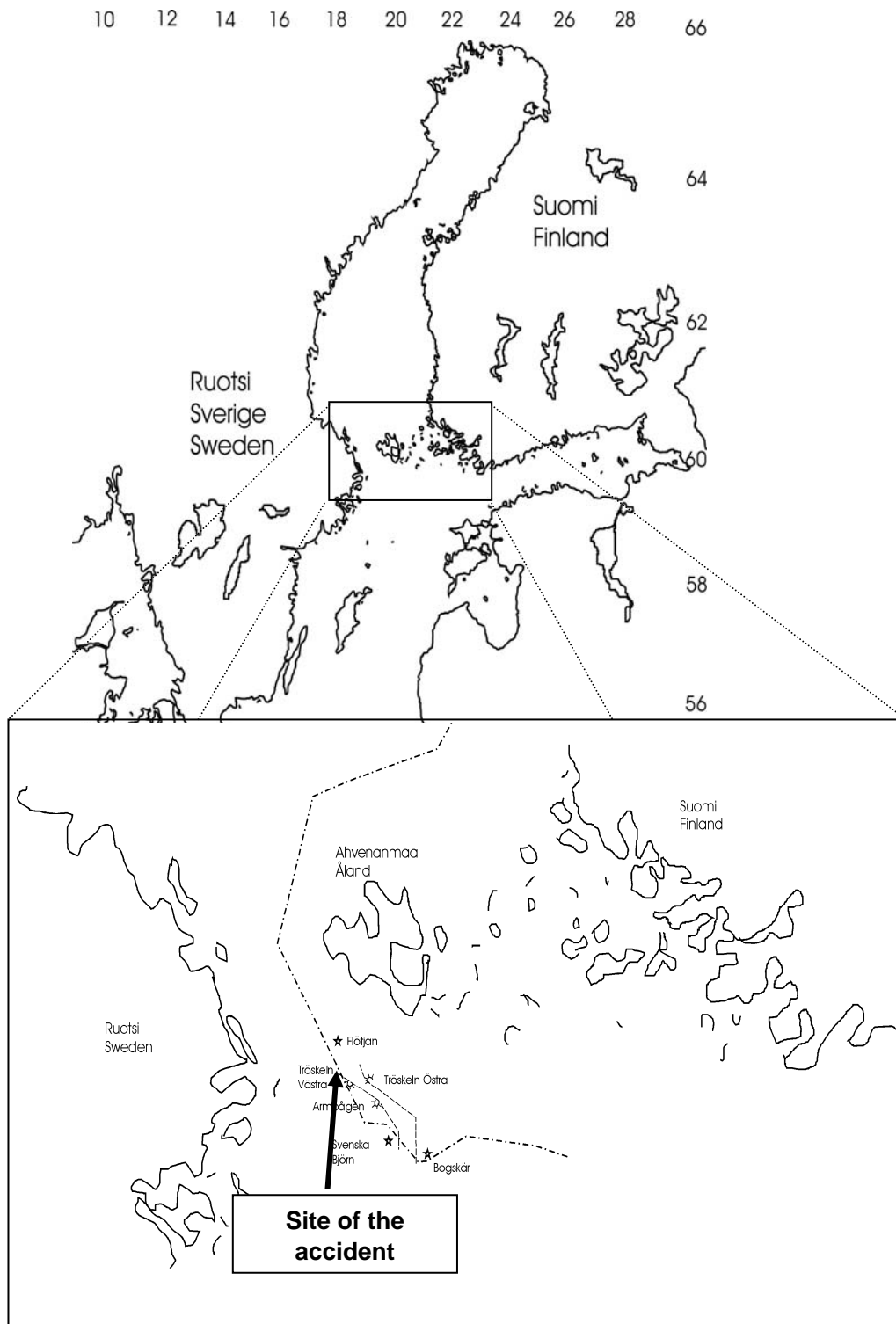


Figure 7. Site of the accident

The site of the accident is the southern part of the Åland Sea, approximately 7.4 nautical miles south of the Flötjan Lighthouse at 59° 41.2' N, 019°47.7' E.

An 18 metre deep water route leading to the Gulf of Bothnia with its border lines and markings was marked on maps in 1986¹. This was needed for vessels with this draught, to ensure the safety of consignments of coal from Poland to the deep-water harbour of Tahkoluoto, in Pori. The deep water route is not particularly a compulsory route for vessels that clearly have a draught of less than 18 metres. There are several shallows 10-12 metres deep close to the borderlines of the deep water route on both sides.

In spring 2008 the Finnish and Swedish maritime authorities put forward a proposal to the IMO's Subcommittee on the Safety of Navigation (NAV) for the establishment of a comprehensive traffic separation scheme for the deep water route in the Åland Sea. The scheme took effect by a decision of the Maritime Safety Committee (MSC) on 1 January 2010. The Finnish and Swedish authorities have also discussed the establishment of a bilateral international traffic monitoring scheme for the area.

1.2.4 Weather conditions

There was a 5 m/s east-northeast wind in the area and visibility was over five nautical miles. It is not believed that the weather conditions had any effect on the events surrounding the accident.

1.2.5 Personal injuries

None.

1.2.6 Damage to the vessels

The damage to the LAIMA did not affect her seaworthiness, so she was able to continue her journey after an inspection by the Finnish Maritime Administration, and the damages were repaired later.

The damage to the SILVA was mainly to her port side, which was dented. The rail was bent inwards.

Both vessels remained seaworthy and, following an inspection by the Finnish Maritime Administration, received permission to continue their journey.

¹ Accident Investigation Board report *B5/2000M, MV JANRA, Capsising in northern Baltic 23 December 2000.*



Figure 8. The damage to the LAIMA's starboard bow - external view.
(Photo: Finnish Coast Guard)



Figure 9. The damage as seen from inside the LAIMA's forecastle.



Figure 10. The damage to the SILVA.

(Photo: Finnish Coast Guard)

1.2.7 Navigation and communications equipment

The vessels were equipped with radar and used a VHF telephone for communications.

1.2.8 Recorders

The vessels did not have a VDR.

1.2.9 Monitoring and VTS systems

The incident was observed from Mariehamn Coast Guard Station's lookout tower. The area is not in either Finland's or Sweden's VTS monitoring area, but the Finnish VTS was able to record the incident.

1.2.10 Fairway systems

The fairway is clearly marked.

1.2.11 Measures subsequent to the incident

On the LAIMA a general state of emergency was declared and the rules on 'collision' were invoked. At 06:05 the vessel reported the collision on UHF channel 16 'calling all ships'.

At 06:20 an inspection was made of the LAIMA's forecastle, and the height of the surface of the water was measured as was the volume of water in the forepeak, the petty officer's store, the area around the emergency fire pump and the ballast tanks on the right side of the vessel. No floodwater was observed. The whole extent of the damage was above the waterline. The SILVA was informed of the damage and the fact that the vessel was not leaking.

On board the SILVA the main engine was stopped and a general state of emergency was called. The first officer went to the hold to inspect the damage and the chief engineer checked the engine room. The crew was sent to help the first officer. The SILVA contacted the LAIMA and exchanged information with her. A command centre was set up in the vessel and a list of inspection tasks was gone through. The vessel was in contact with the Finnish MRCC. At 06:30 it was found that there were no leaks and this was reported to the MRCC. At 07:10 the SILVA contacted the shipping company to report the incident.

The MRCC ordered both ships to head closer towards Mariehamn so that they might be inspected. The LAIMA anchored at 09:20 and the SILVA at 10:05. Officers representing the Coast Guard and the Finnish Maritime Administration inspected the vessels and breathalysed the crew. The results were negative (0‰). The authorities confirmed that the damage to the ships would not prevent their onward journey, so the vessels continued on their way.

1.3 The rescue operation

1.3.1 The alarm

The incident was observed from Mariehamn Coast Guard Station's lookout tower. The alarm was raised and the MRCC received it at 06:28. The case was obviously an emergency and warranted the use of VHF channel 16. At first the LAIMA did not reply to the radio calls. However, the MRCC did manage to contact the SILVA.

At 06:45 the Mayday relay message was acknowledged by one merchant vessel, which was ordered to approach the area. A Super Puma from Turku was called to aid the rescue operation, as were a helicopter from Sweden, the coast guard ship Uisko, a patrol boat from the Coast Guard Station at Mariehamn, and two surface units from Sweden. The emergency was soon over, however, and the additional assistance from Sweden was cancelled.

1.3.2 Launch of rescue operation

None required.

1.4 Laws and regulations

1.4.1 National law

The LAIMA sails under the flag of Cyprus and the SILVA under the flag of the Isle of Man. The laws in these countries therefore apply to the respective vessels.

1.4.2 Operator's regulations

There is a safety management system in operation on board both vessels.

1.4.3 International agreements and recommendations

Both vessels are governed by the International Regulations for Preventing Collisions at Sea.

The sections in regulations 7b, 8a and b, 16 and 17.(ii) and c. that particularly apply to the LAIMA and the SILVA are set out here in bold letters:

Rule 7

Risk of collision

a) Every vessel shall use all available means appropriate to the prevailing circumstances and conditions to determine if risk of collision exists. If there as any doubt such risk shall be deemed to exist.

b) Proper use shall be made of radar equipment if fitted and operational, including long-range scanning to obtain early warning of risk of collision and radar plotting or equivalent systematic observations of detected objects.

c) Assumptions shall not be made on the basis of scanty information, especially scanty radar information.

d) In determining if risk of collision exists the following considerations shall be among those taken into account.

1) Such risk shall be deemed to exist if the compass bearing of an approaching vessel does not appreciably change.

2) Such risk may sometimes exist even when an appreciable bearing change is evident, particularly when approaching a very large vessel or a tow or when approaching a vessel at close range

Rule 8**Action to avoid a collision**

a) Any action taken to avoid collision shall be taken in accordance with the Rules of this Part and shall, if the circumstances of the case admit, be positive, made in ample time and with due regard to the observance of good seamanship.

b) Any alteration of course and/or speed to avoid collision shall, if the circumstances of the case admit, be large enough to be readily apparent to another vessel observing visually or by radar; a succession of small alterations of course and/or speed should be avoided.

c) If there is sufficient sea room, alteration of course alone may be the most effective action to avoid a close-quarters situation provided that it is made in good time, is substantial and does not result in another close-quarters situation.

d) Action taken to avoid a collision with another vessel shall be such as to result in passing at a safe distance. The effectiveness of the action shall be carefully checked until the other vessel is finally past and clear.

e) If necessary to avoid collision or allow more time to assess the situation, a vessel shall slacken her speed or take all way off by stopping or reversing her means of propulsion.

Rule 16**Action by give-way vessel**

Every vessel which is directed to keep out of the way of another vessel shall, as far as possible, take early and substantial action to keep well clear.

Rule 17**Action by stand-on vessel**

(a) i) Where one of two vessels is to keep out of the way, the other shall keep her course and speed.

2) The latter vessel may however take action to avoid collision by her manoeuvre alone, as soon as it becomes apparent to her that the vessel required to keep out of the way is not taking appropriate action in compliance with these Rules.

b) When, from any cause, the vessel required to keep her course and speed finds herself so close that collision cannot be avoided by the action of the give-way vessel alone, she shall take such action as will best aid to avoid collision.

c) A power-driven vessel which takes action in a crossing situation in accordance with sub-paragraph (a) (ii) of this rule to avoid collision with another power-driven vessel **shall, if the circumstances at the case admit, not alter course to port for a vessel on her own port side.**

d) This rule does not relieve the give-way vessel of her obligation to keep out of the way.

2 ANALYSIS

2.1 Manoeuvres

The vessels spotted one another in good time and at a good distance from one another. They also stated that their courses were crossing². A detection at a distance of 15 nautical miles may be considered to be a long-range sighting, which should be monitored to assess the chances of a collision. This was carried out on board the SILVA at approximately 05:20. The LAIMA's officer of the watch spotted the SILVA when the vessels were around eight nautical miles away from one another. On board the SILVA the situation was checked again at approximately 05:45 at a distance of around five miles and the ship stated that she would pass at a distance of 0.5 miles on both vessels' port side. After that the SILVA stopped actively monitoring the progress of an object approaching from the right (the LAIMA)³, and turned its attention to matters of secondary importance from the perspective of safe navigation. According to the VTS recording, when the vessels were approximately 3.83 miles distant from each other, there was a danger of collision or a 'near miss' situation⁴. The LAIMA tried to contact the SILVA twice, with no success. This call is not heard on the VTS recording. Neither the LAIMA nor the SILVA altered her direction or speed.

When the ships were around one mile away from each other, a close-quarters situation was becoming more and more imminent (Figure 4), and the LAIMA did not see the SILVA making any manoeuvres to avoid a collision or 'near miss'. When they were at a distance of about 0.3 miles away from one another, the LAIMA reported that she was turning to port (not heard on the VTS recording), but received no response to this. Evidently, at virtually the same instant, the SILVA also turned in the same direction, i.e. to starboard. The LAIMA would hardly have begun to turn to port if she had noticed SILVA's manoeuvre to starboard. According to the VTS recording, the LAIMA asked the SILVA three times to turn to port moments before the collision. It is easy to see from the VTS video recording that the LAIMA could have easily avoided the collision by also turning to starboard (Figure 4) without jeopardising the passage of faster ship MS ALLEGRETTO on her starboard side⁵. The LAIMA's officer of the watch said that the reason why he did not steer to starboard was that the ALLEGRETTO was too close and his intention was also to reduce the amount of collision damage.

The vessels might have been able to pass at their original speed and in their original direction, but the passing distance would obviously have been very close, resulting in a 'near miss' situation, and this probably influenced the way the LAIMA assessed the situation and the manoeuvres she made.

² Colreg Regulation 15

³ Colreg Regulation 7b

⁴ Colreg Regulation 8

⁵ Colreg regulation 17c

2.2 The fairway

The area in which the ships were sailing is relative busy and the sea there is well marked with navigational safety equipment.

The effect on traffic of the deep water route⁶. Part of the area of the open sea has been designated a deep water route. Only vessels with a draught over a certain limit are obliged to follow the route. In practice, other traffic may sail to and fro along the route, in compliance with the International Regulations for Preventing Collisions at Sea.

The water's depth in the area means that only very few vessels need to observe the border markings, because these were established for deep draught vessels entering the Gulf of Bothnia. Nevertheless, an unofficial narrow channel has emerged due to their existence, and this tends to induce smaller draught vessels to sail between them.

A vessel passing along a narrow fairway must steer a course as close to the right edge as is practically possible (International Regulations for Preventing Collisions at Sea). This applies to those ships that have to use the marked deep water route anyway, owing to their size or draught. Because the obligations pertaining to the deep water route are not clear and the way the rules are interpreted varies, the choice of routes that ships make when travelling in the region may be affected accordingly and safety can be compromised.

In practice the shortest, most direct route is chosen through the area (the 'inside bend'). As a result, some ships sail amid oncoming traffic, thus compromising the International Regulations for Preventing Collisions at Sea.

In the case here investigated, the LAIMA was coming from the south and deviated from the west side of the deep water route to make a short cut. Just before the collision she had arrived at a position where there was oncoming traffic in the deep water route. Figure 11 shows the site of the collision at the northern end of the deep water route.

The stream of traffic is disorderly, and ships approaching one another just follow the international rules on navigation. It is difficult to know what other vessels are about to do. Many ships, whose draught would not oblige them to use the deep water route, nevertheless seem to think that they have to keep to a route between the gateway formed by the Tröskeln Västra and Tröskeln Östra, thus causing an obvious danger to other traffic.

There was still no traffic separation scheme in operation in the area, although one had taken effect on 1 January 2010.

⁶ C4/2006M, C5/2006M

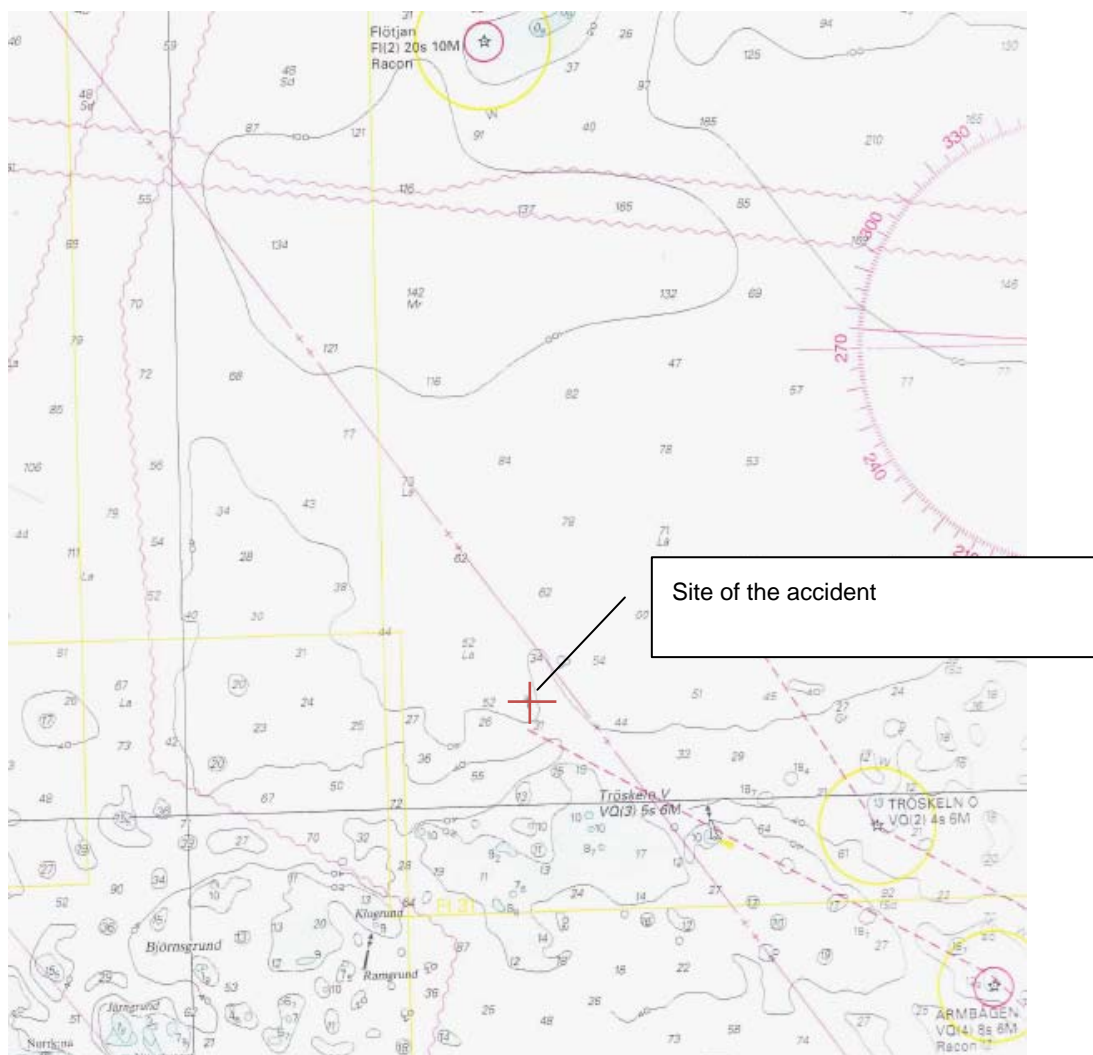


Figure 11. Site of the accident at the northern end of the deep water route. (Section of the Swedish chart 719. Not to scale.)

The rules on sailing with a **traffic separation scheme** in force oblige the traffic to keep to a certain route. Furthermore, when a passage plan is being prepared, such schemes need to be taken into account where they are relevant. A traffic separation scheme makes it easier to draft a passage plan and results in the standardisation of the traffic behaviour of different vessels. Compliance with such a scheme, however, does not relieve any vessel of her obligation under any other rule⁷.

Figure 12 shows the traffic regulation scheme that came into effect on 1 January 2010. This new scheme is a very welcome one and, if adhered to, could prevent situations such as the one described in this case.

⁷ International Regulations for Preventing Collisions at Sea, Rule 10.

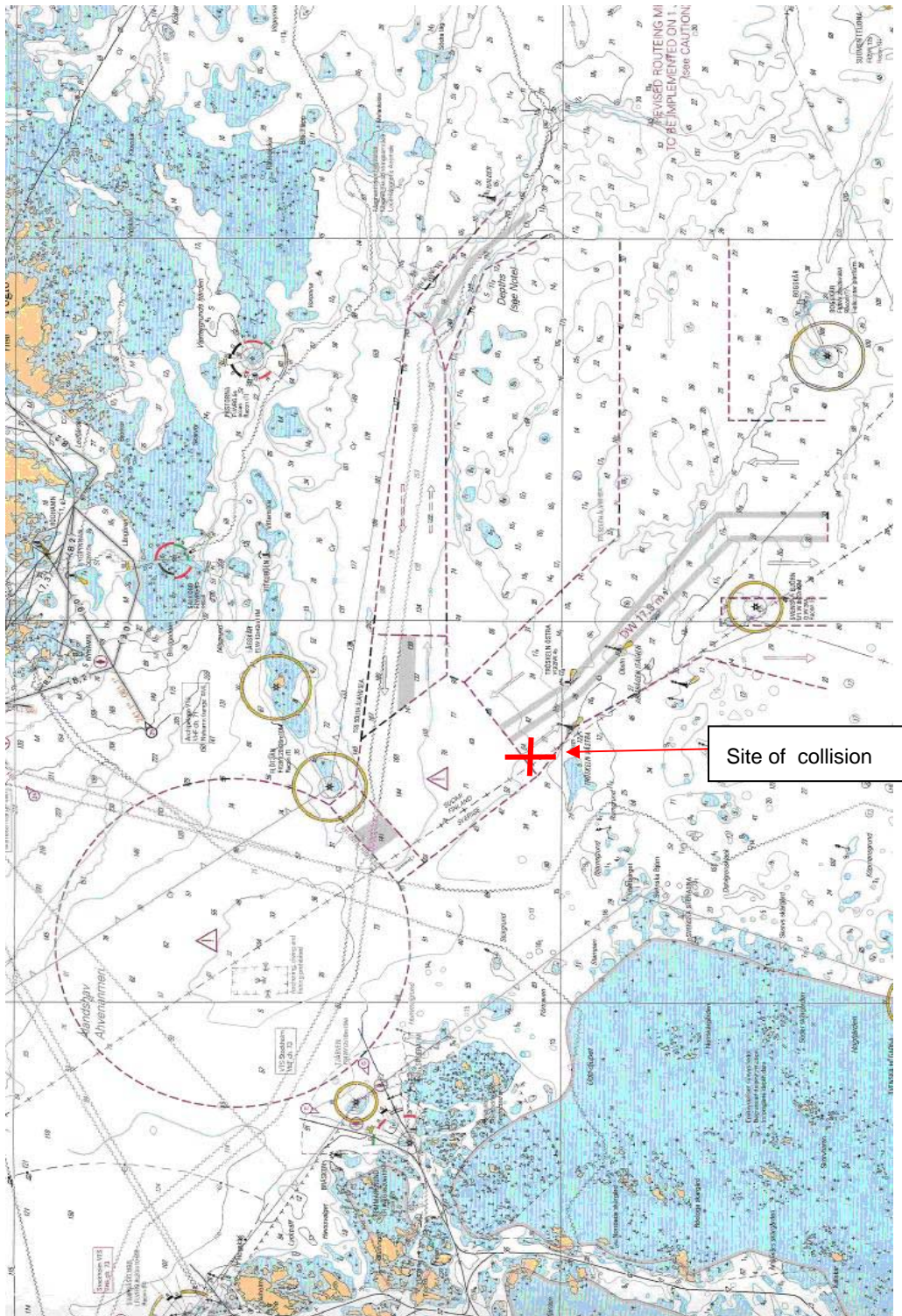


Figure 12. The traffic regulation scheme that came into effect on 1 January 2010. Finnish chart FIN 953. Not to scale so not to be used for navigational purposes.

3 CONCLUSIONS

This case shows very clearly how important it is to have proper lookout and situation surveillance. (Rule 7). 'Near miss' situations are to be avoided in good time and there should be clearly identifiable measures in place as set forth in the International Regulations for Preventing Collisions at Sea. The give-way vessel must carefully monitor the vessel approaching her on any collision or near-collision course, and should not allow matters of secondary importance from the perspective of safe navigation to interfere with this.

The passing margin or 'near miss' distance is not defined in terms of strict numbers in the Regulations, so its interpretation varies from ship to ship. A ship's radar might show that a close-quarters accident will be avoided, albeit narrowly, if direction and speed are not altered. But this could be interpreted as a danger situation by the other vessel. Such an action could make the stand-on vessel uncertain of the situation. A clearly discernible manoeuvre to avoid a collision is the right option in situations such as the one under investigation.

The ships' manoeuvres leading up to the accident resulted in a small collision angle and the damage was therefore minor. However, the incident had all the ingredients of a more serious accident.

The cause of the accident was probably faulty observation/lookout and the manoeuvres of both vessels that were too late to prevent a collision or near miss. The purpose of the new traffic separation scheme is to prevent such accidents from happening.

The case shows a clear need for traffic separation schemes to be introduced and the crucial importance of following the Collregs. Compliance with the regulations alone would not have prevented this accident, and the traffic separation scheme would probably have contributed to the avoidance of the accident. Neither the Swedish nor the Finnish vessel traffic services at present monitor compliance with the traffic separation scheme in force. The maritime authorities of the two countries should consider how monitoring might be introduced.

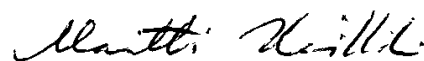
4 SAFETY RECOMMENDATIONS

No safety recommendations are being made as part of this investigation.

Helsinki, 23 February 2010

A handwritten signature in black ink, appearing to be "Juha Sjölund".

Juha Sjölund

A handwritten signature in black ink, appearing to be "Martti Heikkilä".

Martti Heikkilä

LIST OF SOURCES

1. Report of events by MS SILVA's navigation officer and commander
2. MS LAIMA's sea accident report
3. Extract from MS LAIMA's log and emails
4. Damage report by MS LAIMA's classification society, the Russian Maritime Register of Shipping.
5. West Finland Coast Guard District's list of measures relating to the incident (no.2034) and photographs
6. VTS recording
7. International Regulations for Preventing Collisions at Sea (Colreg)
8. Investigation reports C 4/2006 M and C 5/2006 M