FEBIMA

Vooruitgangstraat 56

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Belgium

Report 2021/002169

Report on the investigation

into a collision between

fv Z.85 – ALEXIS II and mts LS JAMIE

on March 31st 2021

in TSS Dover Strait

with serious damage to the fishing vessel.

Federal Bureau for the Investigation of Maritime Accidents

Extract from European Directive 2009/18

(26) Since the aim of the technical safety investigation is the prevention of marine casualties and incidents, the conclusions and the safety recommendations should in no circumstances determine liability or apportion blame.

In view of the COVID-19 pandemic in 2020, and local rules and regulations to prevent the further spread of the virus, the investigators of the Federal Bureau for the Investigation of Maritime Accidents adhered to all legislation in vigour, which might have hampered certain investigative acts. Nevertheless, no efforts were spared to conduct the investigation, into the cause of the marine accident mentioned in this report, to the largest possible extent and conclusions were only drawn after very large consideration.

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4. GLOSSARY OF ABBREVIATIONS AND ACRONYMS

%	Percent
'	Minute
°	Degree
AIS	Automatic Identification System
ARPA	Automatic Radar Plotting Aid
BFA	Barrier Failure Analysis
BOA	Breadth Over All
Bft	Beaufort
B.V.	Besloten Vennootschap (Limited Company)
C	Celsius
COG	Course Over Ground
COLREG	Convention on the International Regulations for Preventing Collisions at Sea
CPA	Closest Point of Approach
E	East
Etc.	Etcetera
Fv	Fishing Vessel
GPS	Global Positioning System
ILO	International Labour Organization
IMO	International Maritime Organization
kW	kiloWatt
Lbpp	Length Between Perpendiculars
LOA	Length Over All
LT	Local Time
M	Metres
MRCC	Maritime Rescue Coordination Centre
Mts	Motor Vessel
N	North
Nm	nautical miles
PS	Portside
PSC	Port State Control
ROT	Rate Of Turn
SB	Starboard
Sec	Seconds
SOG	Speed Over Ground
TCPA	Time to Closest Point of Approach
TSS	Traffic Separation Scheme
TT	Target Tracking
UK	United Kingdom
UTC	Universal Time Coordinated
VDR	Voyage Data Recorder
VHF	Very High Frequency
VTS	Vessel Traffic Services
W	West

5. CO-OPERATION IN MARINE ACCIDENT INVESTIGATION

Directive 2009/18/EC states that in principle, each marine casualty or incident shall be subject to only one investigation carried out by a Member State or a lead investigating Member State with the participation of any other substantially interested Member State.

The investigation into the cause of the collision between fv Z.85-ALEXIS II and mts LS JAMIE was jointly carried out between the Accident Investigation Bodies of two Member States, France and Belgium.

The Belgian investigating body FEBIMA, Federal Bureau for the Investigation of Maritime Accidents, was agreed upon as the lead investigating Accident Investigation Body with the French investigating body BEAmer, Bureau d' Enquêtes sur les Evénements de Mer, assisting.

6. MARINE CASUALTY INFORMATION

6.1 RESUME

Throughout this report all times are in Local Time, UTC+2, unless specified.

On March 31st, 2021, at 03:12 hours, mts LS JAMIE and fv Z.85 - ALEXIS II collided inside the Dover Strait Traffic Separation Scheme, 25 nm North of Dunkerque Port Ouest.

Mts LS JAMIE was in ballast condition and bound for Saltend, UK. She was eastbound following Dover Strait TSS.
Fv Z.85 - ALEXIS II was underway from the port of Dunkirk to fishing grounds in the UK. The fishing vessel was crossing Dover Strait TSS, on a course of 345°.

As a consequence of the collision, mts LS JAMIE was scratched on the SB hull plates near the bow. Mts LS JAMIE continued her voyage by her own means.

Fv Z.85- ALEXIS II was damaged on PS approximately 1 m from the PS bow and the hull was cracked at PS winch opening. The PS funnel was partly teared off.
All damages were situated above the waterline. No water had penetrated the vessel.
Fv Z.85 - ALEXIS II returned to the port of Dunkirk by her own means.

6.2 CLASSIFICATION OF ACCIDENT

According to Resolution A.849(20) of the IMO Assembly of November 27th 1997, Code for the investigation of Marine Casualties and Incidents, a *serious marine casualty* means a marine casualty involving a fire, explosion, grounding, contact, heavy weather damage, ice damage, hull cracking suspected hull defect, etc., resulting in:

- structural damage rendering the ship unseaworthy, such as penetration of the hull underwater, immobilization of main engines, extensive accommodation damage etc.;
- or pollution (regardless of quantity);
- and/or a breakdown necessitating towage or shore assistance.

According this definition, the accident was classified as a

SERIOUS MARINE CASUALTY

6.3 ACCIDENT DETAILS

Time and date	March 31st 2021, 03:12 hours LT, UTC+2
Location	51°27,77' N - 002°09,36' E 25nm N off Dunkerque Port Ouest
Persons on board mts LS JAMIE	13
Persons on board fv Z.85 – ALEXIS II	6
Injured persons	0

7. SYNOPSYS

7.1 NARRATIVE

On Tuesday March 30th 2021, fishing vessel Z.85 - ALEXIS II entered the port of Dunkirk, France around 14:00 hours.

Some ten hours later, around 00:00 hours, the fishing vessel left the port again, destined for fishing in the UK.

The sky was cloudy that night. Visibility was good and there was no precipitation. A four Beaufort wind was blowing from the South.

Fv Z.85 - ALEXIS II had turned on her navigation lights, making it visible for other vessels that she was a power-driven vessel underway. Two searchlights were also switched on to locate any debris in the water that could be harmful to the propellers. One searchlight was located at SB, the other one at PS, as indicated in Figure 1.

Figure 1 - PS search light on board fv Z.85 - ALEXIS II

The radar was set at on a range of one nautical mile. A CPA limit or a TCPA limit alarm was not set[1]. The AIS was switched on and the received AIS signals were visible on the Maxsea electronic chart display. The watchkeeper used this chart display for navigation.

Once the fishing vessel had entered Dover Strait, the autopilot was switched on and the vessel was steering a course of approximately 345° with a speed of approximately 9,5 knots.

[1] Fv Z.85 – ALEXIS II was equipped with a JRC JMA 3300 radar.
An extract of the manual can be found in Annex 1.

The watchkeeper was sitting in the steering chair in the wheelhouse. The skipper and the crew had gone to bed.

The steering chair was located on PS in the wheelhouse of fv Z.85 - ALEXIS II, as shown in Figure 2.

On the other side of the wheelhouse, on SB, there was a bunk bed, as seen in Figure 3. The skipper was at rest in this bunk bed.

Figure 2 - Wheelhouse of fv Z.85 - ALEXIS II

Figure 3 - Bunk bed at SB side of the wheelhouse

The pictures were taken during major repairs.

On Wednesday March 31st, 2021, around 00:00 hours, chem tanker LS JAMIE was underway from Le Havre anchorage, France, to the port of Saltend, UK. The vessel was following Dover Strait TSS, as shown in Figure 4.

The autopilot was activated and kept the vessel on a course of approximately 039°. The ground speed of mts LS JAMIE was approximately 14 knots.

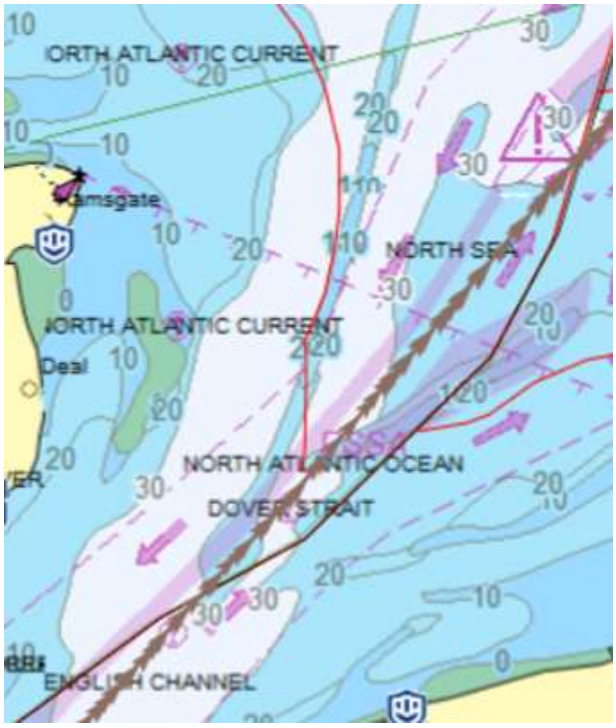


Figure 4 – Track of mts LS JAMIE in Dover Strait TSS

The officer of the watch and a look-out were on the bridge. They reported that they were mainly looking outside as the visibility was good and there was not a lot of traffic.

The radar was set off centre on a range of 6 nm, relative motion. The AIS overlay function on the radar was activated. Radar targets without AIS signal had to be acquired manually, as the ARPA function was set on manual acquisition[2], see Figure 5.

[2] A more detailed explanation can be found in Annex 2 - Radar use

Figure 5 – Radar settings on board mts LS JAMIE

Around 02:30 hours, on board fv Z.85 - ALEXIS II, the mts LS JAMIE was observed on the Maxsea screen. Fv Z.85 – ALEXIS II was sailing on a crossing course and had mts LS JAMIE on her PS. The mts LS JAMIE was appreciated as the give way vessel.

The Maxsea software indicated that fv Z.85 – ALEXIS II would pass in front of mts LS JAMIE. The indicated CPA between both vessels was not remembered on board the fv Z.85 – ALEXIS II.

Around 03:00 hours, mts LS JAMIE was observed visually over the left shoulder of the watchkeeper.

The Maxsea software still indicated that fv Z.85 - ALEXIS II was to pass in front of mts LS JAMIE. On board fv Z.85 - ALEXIS II an alteration of course of mts LS JAMIE was not observed, so idea that fv Z.85 – ALEXIS II would pass clear in front of mts LS JAMIE was maintained.

Consequently, fv Z.85 - ALEXIS II maintained her course and speed.

The radar was not used to verify whether or not a risk for collision existed.

At 03:09 hours, on board mts LS JAMIE small boat was observed at a distance of approximately 2 cables, or 375m. The boat was observed at 045° on SB and was approaching rapidly.

Reportedly, no navigation lights or other lights were visible. The OOW described the boat as an almost invisible target in the dark.

No AIS data of the boat was displayed on board mts LS JAMIE, and the echo of the boat had not been observed on radar.

The distance between both vessels further decreased and suddenly some lights of fv Z.85 ALEXIS II were seen on board the mts LS JAMIE. On board the mts LS JAMIE it was realized that there was an imminent danger for collision. Consequentially, the autopilot was switched off and the rudder was put hard to PS.

The fv Z.85 - ALEXIS II was convinced that she would pass in front of mts LS JAMIE until she observed mts LS JAMIE on her PS at a distance of approximately 50m. It was then realized that there was a danger for collision and the autopilot was switched off and the vessel was turned hard to SB.

Figure 6 gives an indication of the manoeuvres of both vessels. The manoeuvres were started at 03:11 hours. Mts LS JAMIE turned a little bit earlier than fv Z.85 – ALEXIS II. No sound signals were given, no VHF contact had taken place.

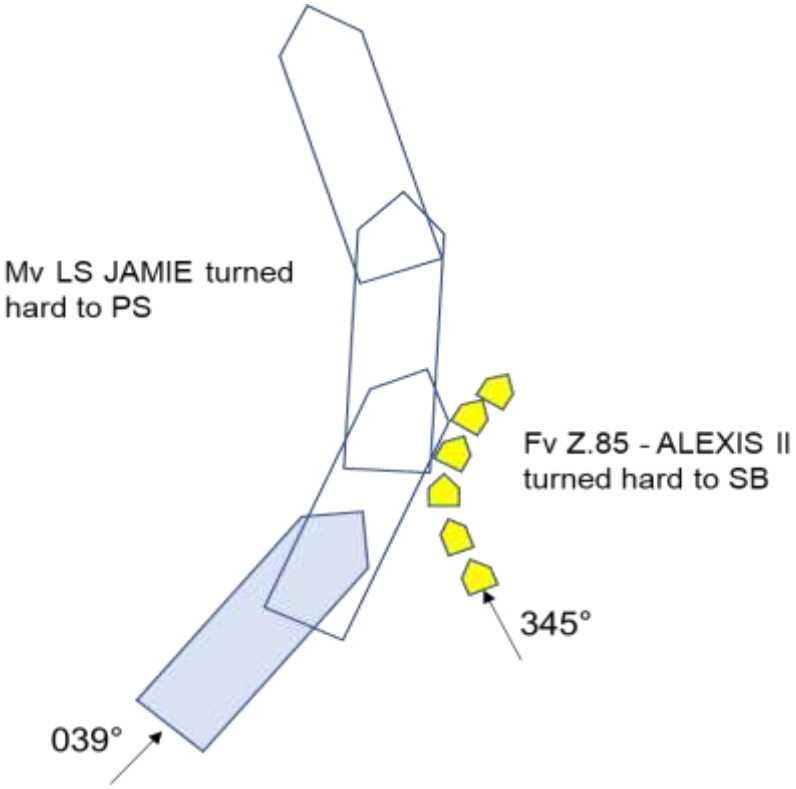


Figure 6 – Pictorial representation of the manoeuvres to avoid a collision

As a result of the manoeuvres, the PS hull of fv Z.85 – ALEXIS II scraped against the SB hull of mts LS JAMIE.

The impact was not noticed on board mts LS JAMIE. On board the mts LS JAMIE it was assumed that fv Z.85 – ALEXIS II barely escaped a collision and passed to the aft without any damage.

At 03:23 hours fv Z.85 – ALEXIS II hailed mts LS JAMIE on VHF 16. Mts LS JAMIE responded the call and both vessels switched to VHF 06.

Since no English was spoken on board fv Z.85-ALEXIS II and on board mts LS JAMIE no French was spoken or understood, it could not be explained what the impact of the collision was. The name of the fishing vessel was also not understood on board mts LS JAMIE.

Gris Nez Traffic centre[3] had not observed the collision on radar. The reflection of Fv Z.85 – ALEXIS II was very poor and hardly visible on the radar of Gris Nez traffic centre, as indicated in Figure 7.

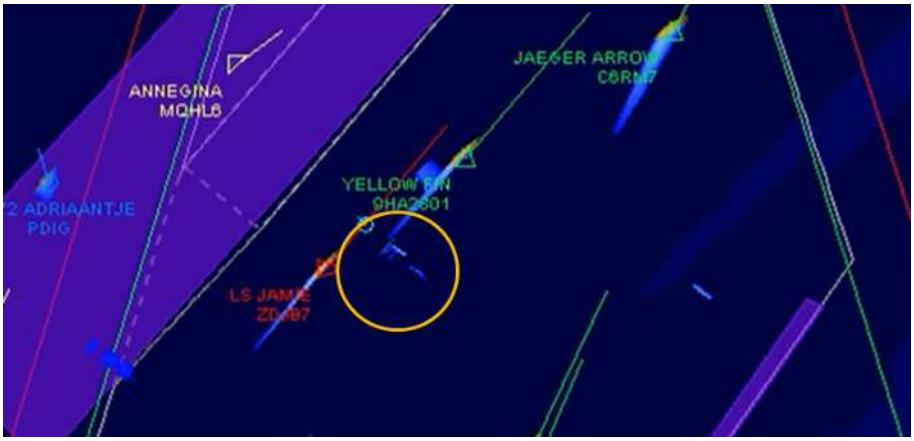


Figure 7 - Radar image of VTS/MRCC Gris Nez

At 03:26 hours, Gris Nez traffic centre picked up the conversation between mts LS JAMIE and fv Z.85 – ALEXIS II and tried to hail fv Z.85 – ALEXIS II on VHF 16, but the call was not responded.

At 03:27 hours, mts LS JAMIE hailed Gris Nez traffic centre on VHF 16. Gris Nez traffic centre responded and requested the vessel to switch to VHF 13.

[3] MRCC / VTS Gris Nez or CROSS Gris Nez. CROSS is the French abbreviation for Centre Régional Opérationnel de Surveillance et de Sauvetage.

On VHF 13 the conversation continued. Since the name of the fishing vessel was not known and as Gris Nez traffic centre could not reach fv Z.85 - ALEXIS II, Gris Nez traffic centre asked mts LS JAMIE to contact the fishing vessel and instruct them to report to Gris Nez traffic centre.

At 03:31 hours, mts LS JAMIE succeeded in contacting the fishing vessel and learned that her name was “ALEXIS II”.

At 03:32 hours, mts LS JAMIE contacted Gris Nez traffic centre again and confirmed that they had contacted fv Z.85 – ALEXIS II. Gris Nez traffic centre further informed about the impact of the collision to mts LS JAMIE.

At 03:35 hours, fv Z.85 – ALEXIS II hailed Gris Nez traffic centre. Gris Nez traffic centre ended the conversation with mts LS JAMIE and started communicating with fv Z.85 – ALEXIS II.

Fv Z.85 – ALEXIS II reported to Gris Nez traffic centre that they collided with their PS to the SB side of mts LS JAMIE. The fishing vessel declared that all crew was safe, that the place of impact was above the waterline and that there was no flooding. A short description of the damages, as observed at that moment, was given. Fv Z.85 – ALEXIS II reported that they would return to Dunkerque where they would arrive 02:50 hours later.

Gris Nez traffic centre asked to take contact upon arrival at Dunkerque and to switch on the AIS, since no AIS data had been visible thus far. Fv Z.85 – ALEXIS II ended the conversation by confirming that no assistance was required.

At 03:43 hours, after the conversation with fv Z.85 – ALEXIS II, Gris Nez traffic centre again hailed mts LS JAMIE to verify whether further assistance was needed and to inform the latter about the impact of the collision. Mts LS JAMIE responded that no assistance was required and inquired about the condition of the fishing vessel. Gris Nez traffic centre informed mts LS JAMIE about the condition of fv Z.85 – ALEXIS II. After the conversation, mts LS JAMIE resumed her voyage to Saltend.

Around 03:50 hours, Gris Nez traffic centre contacted fv Z.85 – ALEXIS II again to receive an update regarding the damages on board. Gris Nez traffic centre also informed the fishing vessel that no AIS data was available. A mobile number was asked by Gris Nez traffic centre to be able to contact the vessel. Fv Z.85 – ALEXIS II confirmed her ETA at 06:30 hours and continued her voyage towards the port of Dunkirk.

On March 31st 2021, Port State Control visited fv Z.85 – ALEXIS II at the port of Dunkirk. The PSC officer stated that the AIS displayed several alarms, as indicated in Figure 8.

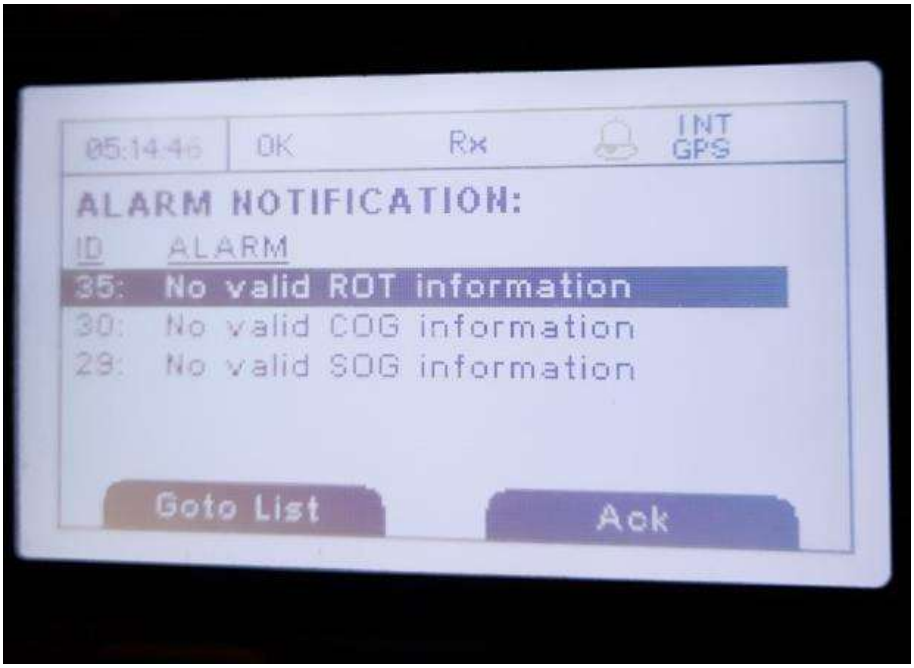


Figure 8 - AIS with error

The navigation lights of the fishing vessel were found damaged. Port sidelight was not working, and the lighting sector of the masthead light was not as required by regulations in vigour.

A revision of the AIS on board fv Z.85 – ALEXIS II learned that the alarms were generated because of the failure of the internal GPS of the AIS.

On April 2nd, 2021, a class inspector and a PSC officer boarded mts LS JAMIE in the port of Saltend, UK. No deficiencies were observed by PSC.
The class inspector carried out an occasional hull survey and stated that the vessel was in satisfactory condition and that the class status had not been affected.

The visibility of fv Z.85 – ALEXIS II on the radar of mts LS JAMIE was analysed by use of the VDR data of mts LS JAMIE.
Fv Z.85 – ALEXIS II became visible on the radar at 02:50 hours, twenty minutes before the collision, and remained visible till after the collision.
There was a good echo on the radar as shown in Figure 9.

The radar on board mts LS JAMIE was set in relative motion, so the course and speed of fv ALEXIS II were represented relatively to the movement of the mts LS JAMIE. The radar image did not show the true course and speed of fv Z.85 – ALEXIS II[4].

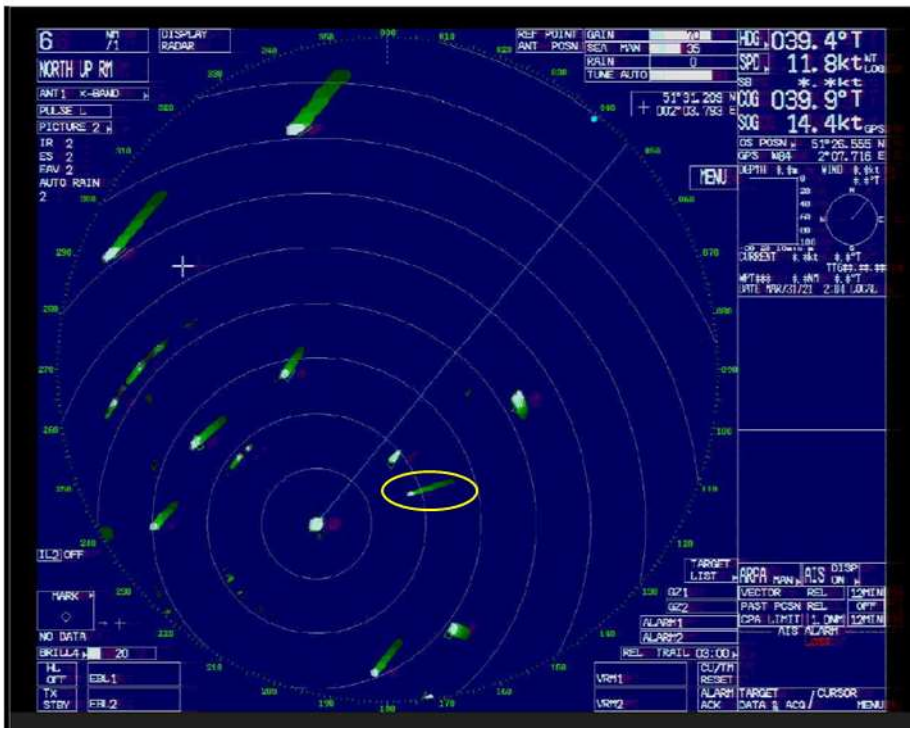


Figure 9 - Fv Z.85 - ALEXIS II on the radar of mts LS JAMIE at 03 :05 hours

[4] See Annex 2 - Radar use

8. FACTUAL INFORMATION

8.1 VESSEL'S PARTICULARS – FV Z. 85 – ALEXIS II

Figure 10 - Fv Z.85 – ALEXIS II

Type	Fishing vessel – entangling net
Flag	Belgium
Port of Registry	Zeebrugge
Call Sign	OPDG
Gross Tonnage	25
Keel Laid	1988
Shipyard	Alunox Saint Malo
Manager	BVBA Rederij YLEANE
N° of Main Engines	1
Max. Engine Power	176 kW
Main Engine Type	Diesel
Hull type	Aluminium
LOA	11,95 m
Breadth	6 m

8.2 VESSEL'S PARTICULARS – MTS LS JAMIE

Figure 11 - Mts LS JAMIE

Type	Oil/chemical tanker
Flag	Gibraltar
Port of Registry	Gibraltar
Call Sign	ZDJB7
IMO N°	9418937
Gross Tonnage	3992
Net Tonnage	1819
Summer Deadweight	5757,1 mt
Keel Laid	2009
Shipyard	Soli Shipyard, Kocaeli
Manager	Lauranne Shipping B.V.
N° of Main Engines	1
Max. Engine Power	3,000 kW
Main Engine Type	MaK
Service speed	13 knots
LOA	105,50 m
LBPP	99,35 m
BOA	16,80 m
Summer Draught	6,29 m

8.3 TRAFFIC SEPARATION SCHEMES

Figure 12 – Traffic Separation Scheme Dover Strait

Traffic separation schemes are areas designated by the International Maritime Organization, or IMO, and authorized by the International Convention for the Safety of Life at Sea, or SOLAS, for separating marine traffic where it converges.

Their purpose is to reduce traffic density, and usually lessen the incidence of encounters between ships on reciprocal or nearly reciprocal courses.

In 1967 the first traffic separation scheme in international waters was implemented in the Dover Strait and its adjacent waters.

Today some hundred separation schemes have been adopted by the IMO and over two hundred, some imposed by governments within their territorial waters, appear on official charts.

Since the introduction of traffic separation schemes, the high incidence of collisions between vessels going in opposite directions has been largely eliminated and there has been a substantial reduction of collisions worldwide.

In 1977, revised Collision Regulations came into force, and it became mandatory to comply with the new Rule 10 which deals with the observance of traffic separation schemes.[5]
The entire COLREG Rule 10 can be found in Annex 3.

[5] Sources : www.imo.org/en/OurWork/Safety/Pages/ShipsRouteing and IMO – Historical background on ship's routeing

Some highlights regarding sailing in a TSS:

- A vessel in a TSS shall proceed in the appropriate traffic lane and in the general direction of traffic flow for that lane;
- A vessel following a TSS shall so far as practicable keep clear of a traffic separation line or separation zone;
- Following a traffic separation scheme does not give right of way over other traffic;
- If the risk of collision exists you will have to take action as required by rule 18 of COLREGS;
- Fishing in a TSS is permitted;
- Vessels less than 20m in length and vessels engaged in fishing shall not impede the users of a TSS;
- Crossing a TSS must happen on a heading as nearly as practicable at right angles to the general direction of traffic flow.

9. DAMAGES

The PS of Fv Z.85 – ALEXIS II came into contact with the SB side of mts LS JAMIE.

This resulted in a dent of approximately 1 metre in length on PS bow of fv Z.85-ALEXIS II, as indicated in Figure 13.

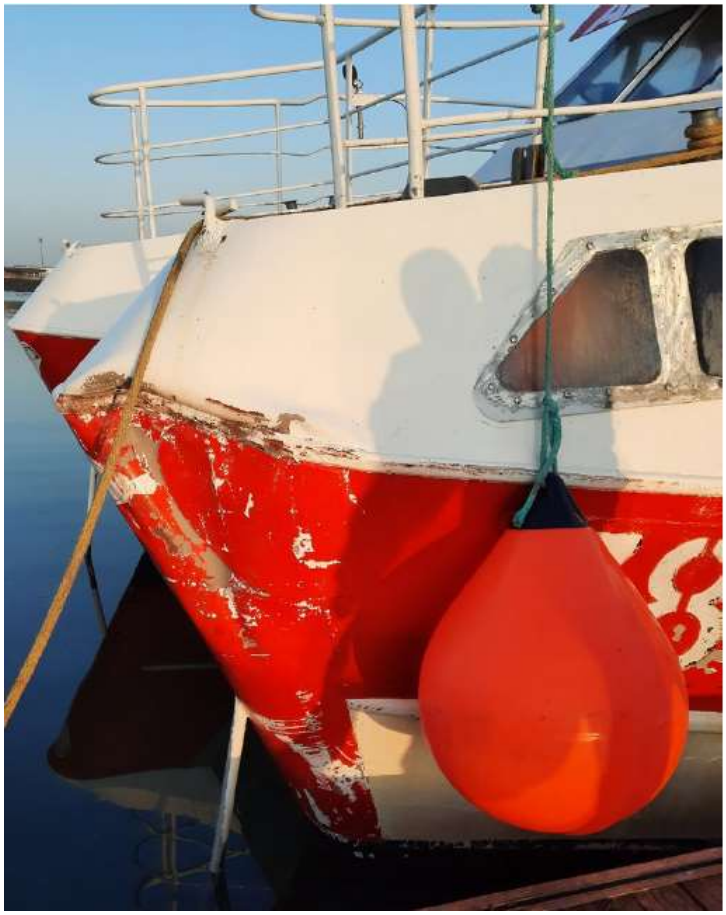


Figure 13 – Dent in PS bow of fv Z.85 – ALEXIS II

The bulwark near the winch on PS of fv Z.85 – ALEXIS II was ripped open, as shown in Figure 14.

Figure 14 – Rupture in the hull at the PS winch opening of fv Z.85 - ALEXIS II.

Figure 15 shows the funnel of fv Z.85 – ALEXIS II that was teared off the deck plate by the impact of the collision.

Figure 15 – Chimney of fv Z.85 – ALEXIS II teared off

Mts LS JAMIE did not make any contact with the mast or the navigation lights of fv Z.85 – ALEXIS II.

Mts LS JAMIE hit fv Z.85 – ALEXIS II with her SB side, resulting in damage to the hull coating on SB side forward on board mts LS JAMIE.

Figure 16 shows the scratches in the hull coating on board mts LS JAMIE.

Figure 16 – Damaged coating on board mts LS JAMIE

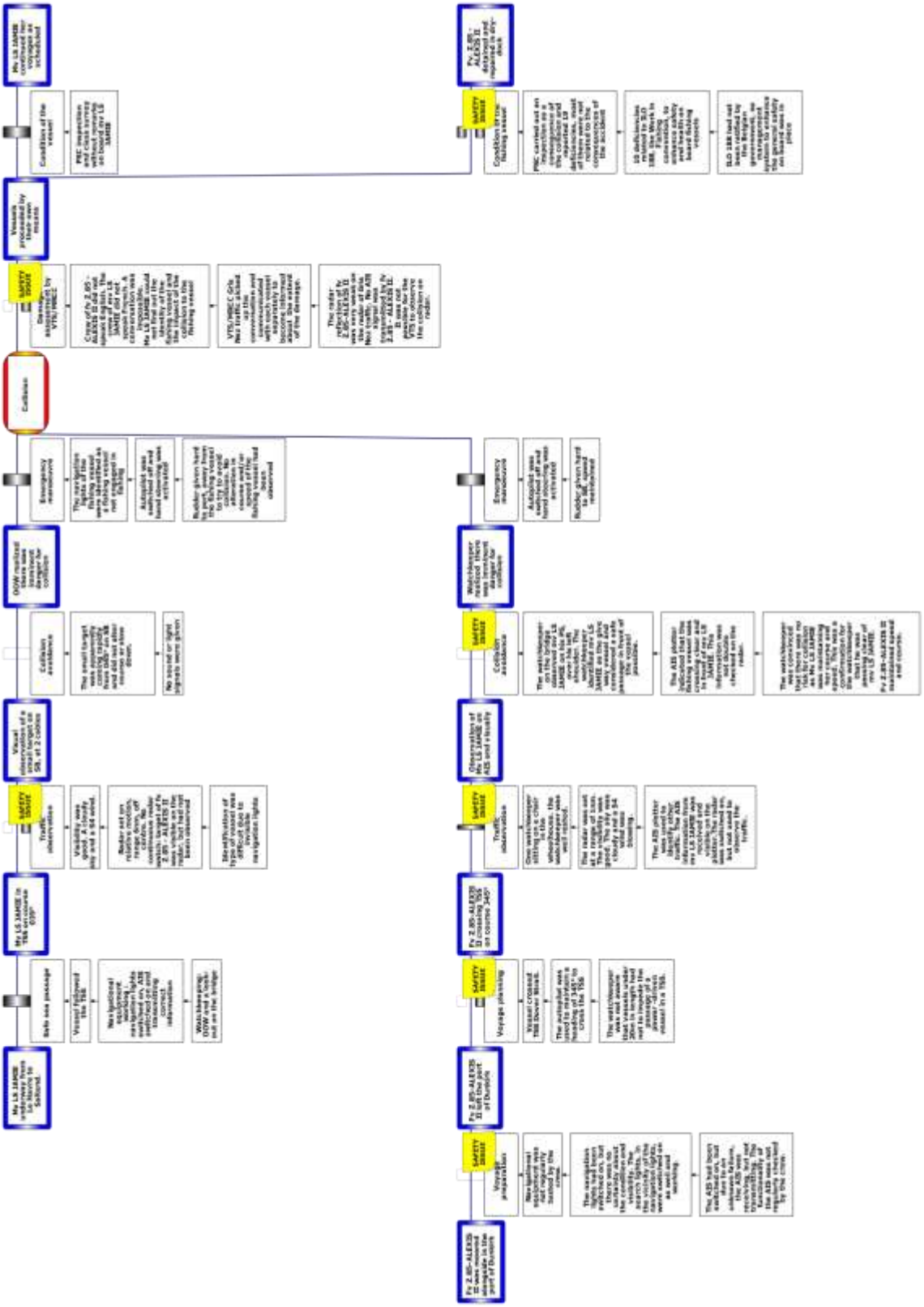
10. ANALYSIS

10.1 TIMELINE

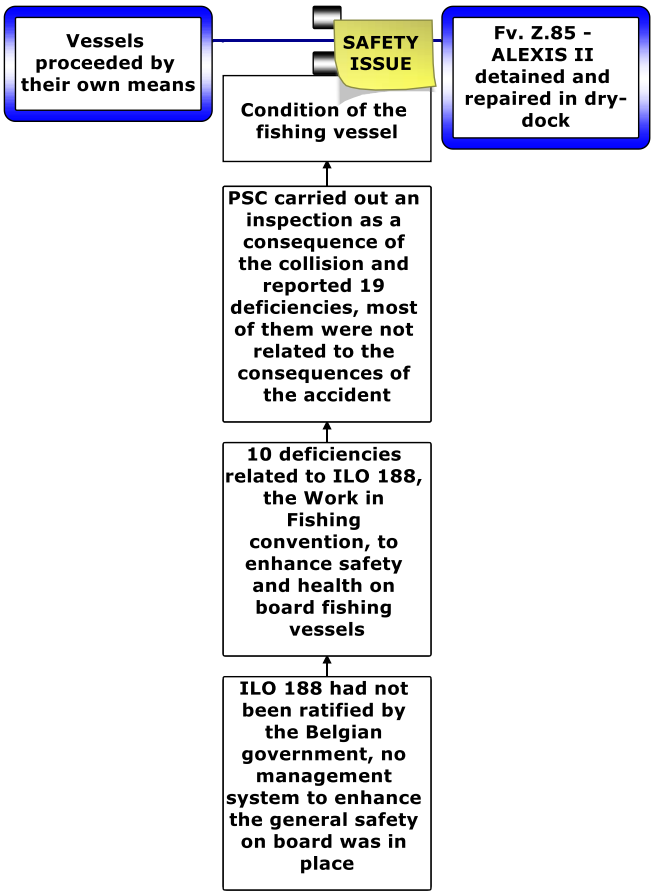
Actor	Date and Time	Name
Mts LS JAMIE	30/03/2021 14:00	Mts LS JAMIE commenced her sea passage from Le Havre anchorage
Fv Z.85 - ALEXIS II	30/03/2021 14:00	ALEXIS II entered the port of Dunkirk after a fishing voyage
Fv Z.85 - ALEXIS II	31/03/2021 0:00	ALEXIS II left the port of Dunkirk
Mts LS JAMIE	31/03/2021 0:00	Officer of the watch on the bridge together with a look-out
Fv Z.85 - ALEXIS II	31/03/2021	Navigation lights switched on, Search lights PS and SB switched on, AIS switched on, radar set on 1 nm
Mts LS JAMIE	31/03/2021 2:00	Mts LS JAMIE maintained a course of 039° and a speed of app. 14 knots, autopilot on
Fv Z.85 - ALEXIS II	31/03/2021 2:00	Fv ALEXIS II maintained a heading of 345° (VMS)and a speed of app. 9,5 knots, autopilot on
Weather	31/03/2021 2:00	S4, cloudy, good visibility
Fv Z.85 - ALEXIS II	31/03/2021 2:00	Officer on the bridge, other crew was asleep
Fv Z.85 - ALEXIS II	31/03/2021	Observation of mts LS JAMIE on AIS screen (MAXSEA)
Fv Z.85 - ALEXIS II	31/03/2021 3:00	Visual observation of mts LS JAMIE over the left shoulder of the watchkeeper. AIS indicated passing in front of mts LS JAMIE
Mts LS JAMIE	31/03/2021 3:09	Visual observation of small vessel 045° on SB
Fv Z.85 - ALEXIS II	31/03/2021 3:09	Fv ALEXIS II maintained course and speed
Mts LS JAMIE	31/03/2021 3:11	Switched to hand steering, hard to port
Fv Z.85 - ALEXIS II	31/03/2021 3:11	Switched to hand steering, hard to SB
Fv Z.85 - ALEXIS II	31/03/2021 3:12	PS of fv ALEXIS II stroke against SB side of MV LS JAMIE
Mts LS JAMIE	31/03/2021 3:14	Vessel turned 180°
Fv Z.85 - ALEXIS II	31/03/2021 3:15	ALEXIS II contacted mts LS JAMIE
Mts LS JAMIE	31/03/2021 3:15	Vessel in contact with ALEXIS II, VHF 06
Fv Z.85 - ALEXIS II	31/03/2021 3:17	Fishing vessel confirmed to mts LS JAMIE that crew is ok and no water ingress noted, communication in English was difficult
Gris Nez traffic centre	31/03/2021 3:20	Gris Nez traffic centre picked up the conversation between mts LS JAMIE and a fishing vessel. Gris Nez tried to contact the fishing vessel without success
Mts LS JAMIE	31/03/2021 3:21	Vessel contacted Gris Nez traffic centre on channel 16
Gris Nez traffic centre	31/03/2021 3:21	Gris Nez traffic centre switched to ch 13 and talks to mts LS JAMIE
Mts LS JAMIE	31/03/2021 3:21	Vessel confirmed collision to Gris Nez traffic centre
Mts LS JAMIE	31/03/2021 3:22	Vessel contacted fishing vessel to know her name and to bring the fishing vessel in contact with Gris Nez traffic centre on VHF 16
Gris Nez traffic centre	31/03/2021 3:23	Gris Nez traffic centre in communication with mts LS JAMIE about condition of the hull
Mts LS JAMIE	31/03/2021 3:23	Vessel confirmed contact with ALEXIS II on VHF 13
Fv Z.85 - ALEXIS II	31/03/2021 3:25	Fv ALEXIS II hailed Gris Nez traffic centre on VHF 13

Gris Nez traffic centre	31/03/2021 3:25	Conversation with fv ALEXIS II about collision and state of the vessel and crew
Gris Nez traffic centre	31/03/2021 3:25	No flooding of water reported by fv Z.85 – ALEXIS II
Gris Nez traffic centre	31/03/2021 3:28	Gris Nez traffic centre hailed LS JAMIE and confirmed ALEXIS II is ok
Mts LS JAMIE	31/03/2021 3:28	Vessel proceeded to destination
Fv Z.85 - ALEXIS II	31/03/2021 3:30	ALEXIS II in conversation with Gris Nez traffic centre
Fv Z.85 - ALEXIS II	31/03/2021 3:30	ALEXIS II returned to Dunkirk, ETA 0630
Gris Nez traffic centre	31/03/2021 3:30	No receipt of AIS of fv ALEXIS II
Gris Nez traffic centre	31/03/2021 3:30	Asked fv ALEXIS II to make contact upon arrival in Dunkerque
Fv Z.85 - ALEXIS II	31/03/2021	PSC detained the vessel based on several deficiencies
Fv Z.85 - ALEXIS II		Revision of the AIS revealed that the internal GPS of the AIS caused the AIS failure.

10.2 BARRIER FAILURE ANALYSES DIAGRAM (BFA) - OVERVIEW

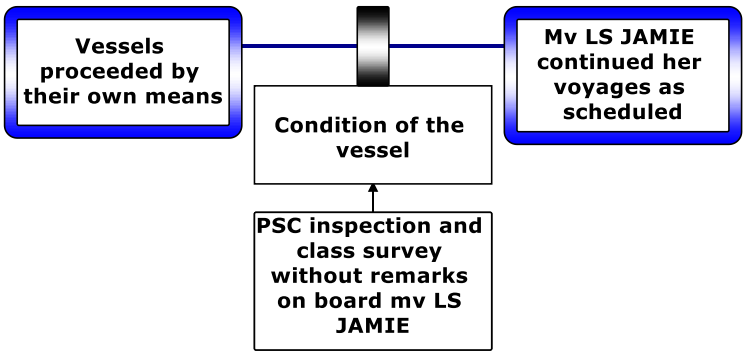


10.3 BARRIER FAILURE ANALYSIS DIAGRAM – DETAIL



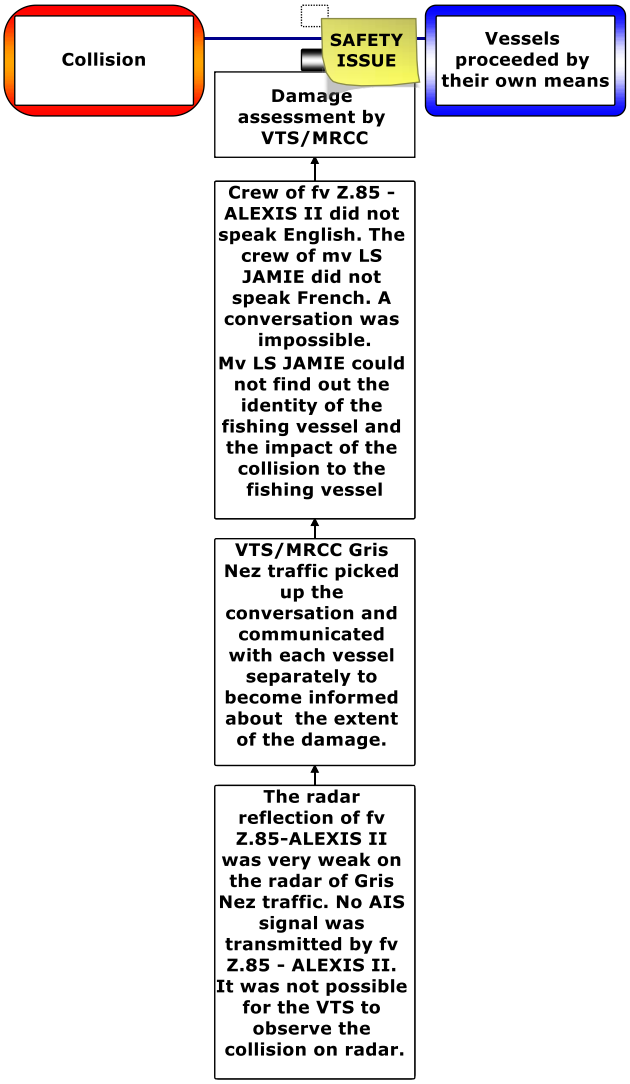
Fv. Z.85 - ALEXIS II detained and repaired in dry-dock

Incident Barrier	*Performance*	*Barrier Challenge*	*Remarks*
Failed Condition of the fishing vessel	Vessel	Compliance to regulations	PSC carried out an inspection as a consequence of the collision and reported 19 deficiencies, most of them were not related to the consequences of the accident
	Vessel and owner	General maintenance and operational preparedness	10 deficiencies related to ILO 188, the Work in Fishing convention, to enhance safety and health on board fishing vessels
	Flagstate	Ratification of conventions	ILO 188 had not been ratified by the Belgian government, no management system to enhance the general safety on board was in place



Mts LS JAMIE continued her voyages as scheduled

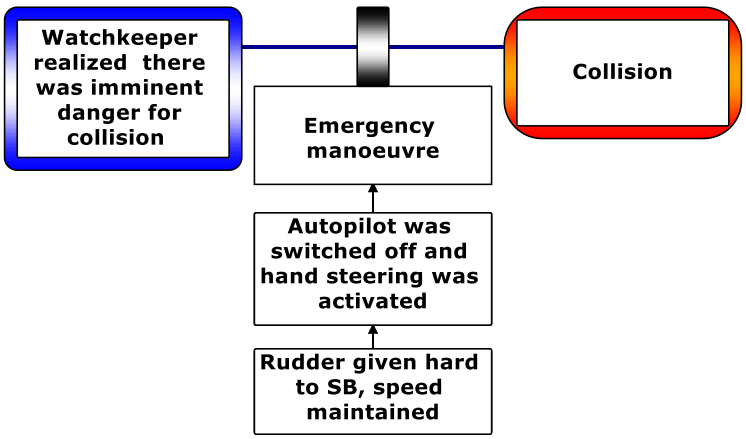
Incident Barrier	*Performance*	*Barrier Challenge*	*Remarks*
Effective Condition of the vessel	Vessel	Compliance to regulations	PSC inspection and class survey without remarks on board mts LS JAMIE



Vessels proceeded by their own means

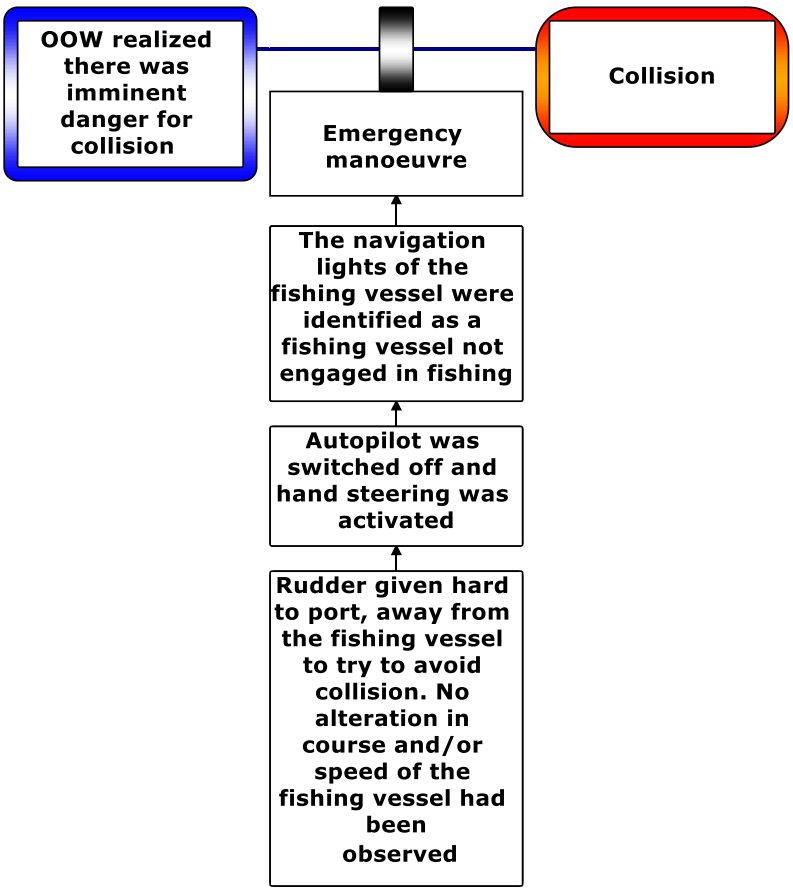
Incident Barrier	*Performance*	*Barrier Challenge*	*Remarks*
Inadequate Damage assessment by VTS/MRCC	Vessel and owner	Communication	Crew of fv Z.85 - ALEXIS II did not speak English. The crew of mts LS JAMIE did not speak French. A conversation was impossible. Mts LS JAMIE could not find out the identity of the fishing vessel and the impact of the collision to the fishing vessel
	VTS/MRCC	Communication	VTS/MRCC Gris Nez traffic picked up the conversation and communicated with each vessel separately to become informed about the extent of the damage.

	VTS/MRCC	Radar observation	The radar reflection of fv Z.85-ALEXIS II was very weak on the radar of Gris Nez traffic. No AIS signal was transmitted by fv Z.85 - ALEXIS II. It was not possible for the MRCC to observe the collision on radar.



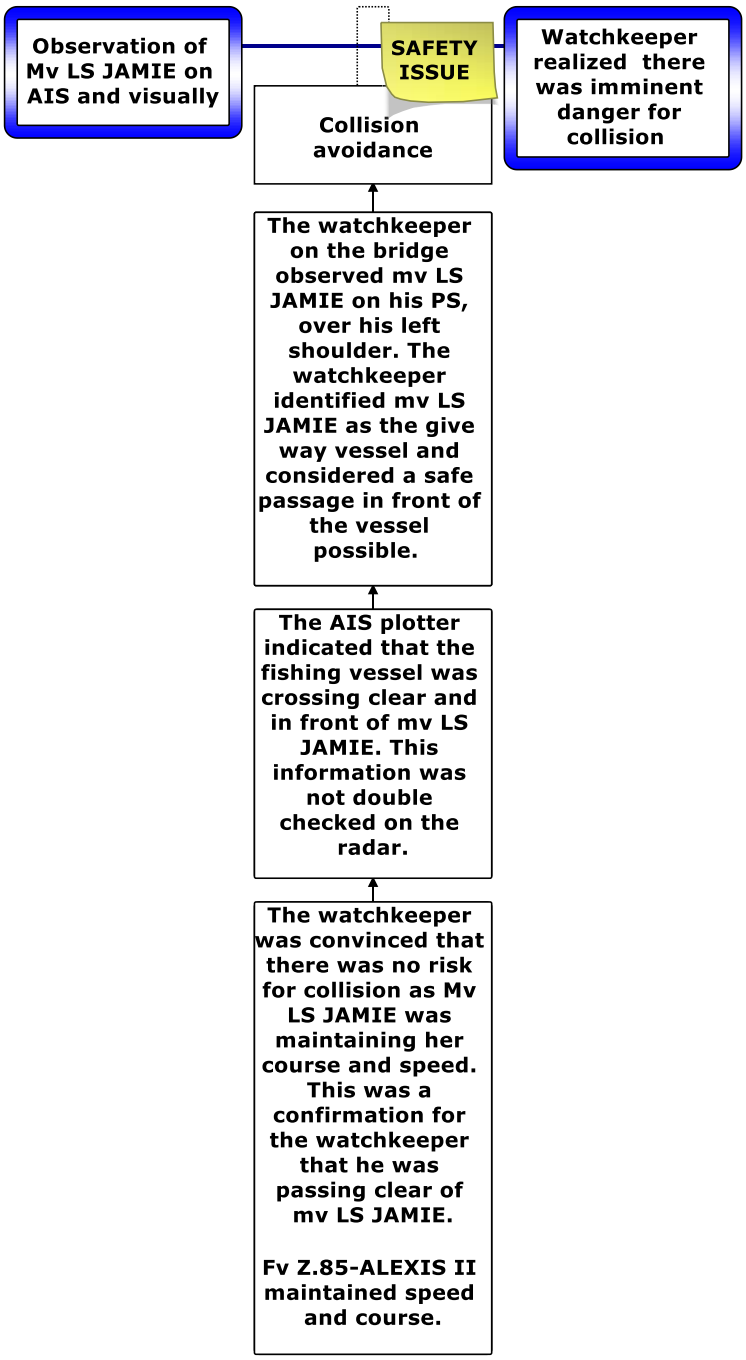
Collision

Incident Barrier	*Performance*	*Barrier Challenge*	*Remarks*
Effective	Vessel	Emergency response	Autopilot was switched off and hand steering was activated
Emergency manoeuvre	Vessel	Emergency response	Rudder given hard to SB, speed maintained



Collision

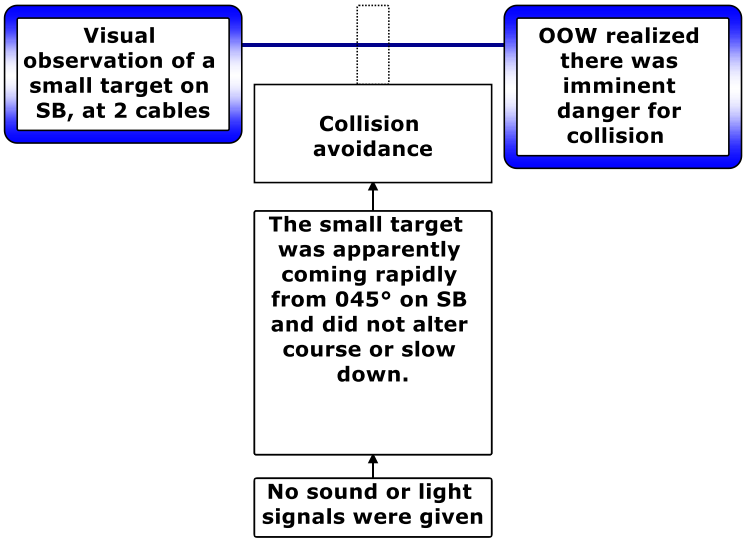
Incident Barrier	*Performance*	*Barrier Challenge*	*Remarks*
Effective	Vessel	COLREG	The navigation lights of the fishing vessel were identified as a fishing vessel not engaged in fishing
Emergency manoeuvre	Vessel	Emergency response	Autopilot was switched off and hand steering was activated
	Vessel	Emergency response	Rudder given hard to port, away from the fishing vessel to try to avoid collision. No alteration in course and/or speed of the fishing vessel had been observed



Watchkeeper realized there was imminent danger for collision

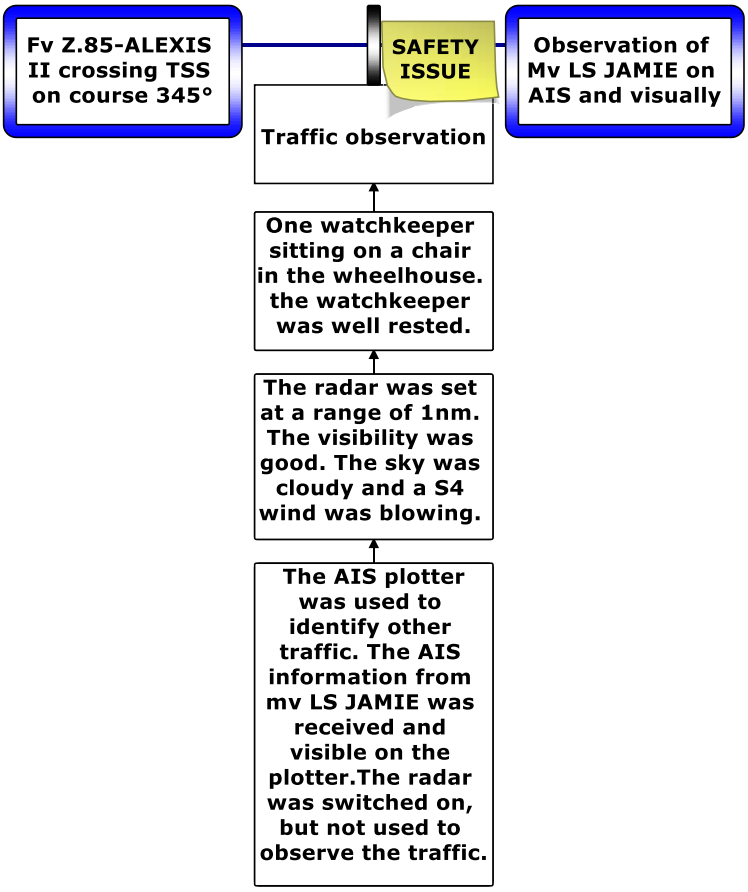
Incident Barrier	*Performance*	*Barrier Challenge*	*Remarks*
Missing Collision avoidance	Vessel	Watchkeeping	The watchkeeper on the bridge observed mts LS JAMIE on his PS, over his left shoulder. The watchkeeper identified mts LS JAMIE as the give way vessel and considered a safe passage in front of the vessel possible.

	Vessel	Watchkeeping and COLREG	The AIS plotter indicated that the fishing vessel was crossing clear and in front of mts LS JAMIE. This information was not double checked on the radar.
	Vessel	Watchkeeping and COLREG	The watchkeeper was convinced that there was no risk for collision as Mts LS JAMIE was maintaining her course and speed. This was a confirmation for the watchkeeper that he was passing clear of mts LS JAMIE. Fv Z.85-ALEXIS II maintained speed and course.



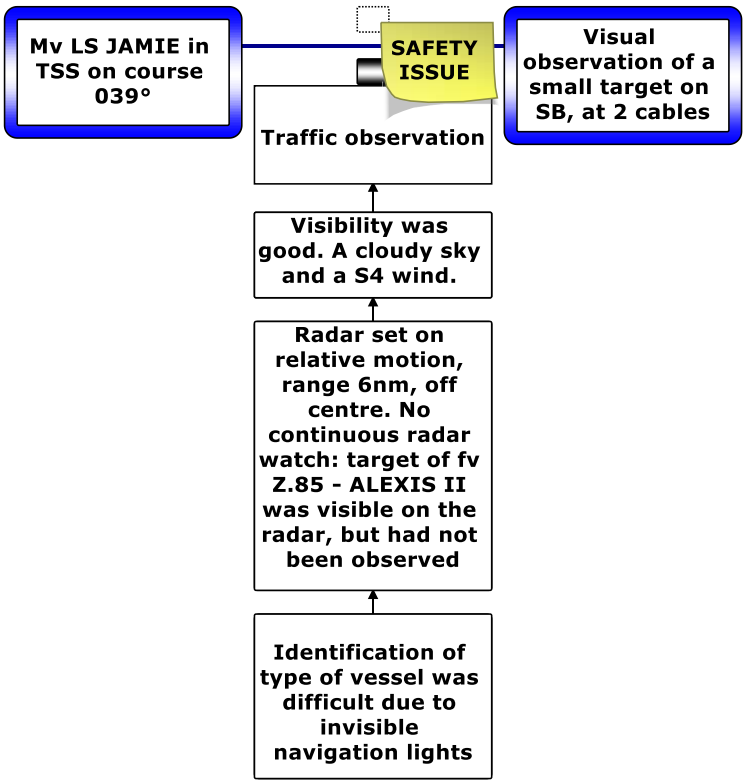
OOW realized there was imminent danger for collision

Incident Barrier	*Performance*	*Barrier Challenge*	*Remarks*
Missing Collision avoidance	Vessel	Watchkeeping	The small target was apparently coming rapidly from 045° on SB and did not alter course or slow down.
	Vessel	Collision avoidance	No sound or light signals were given



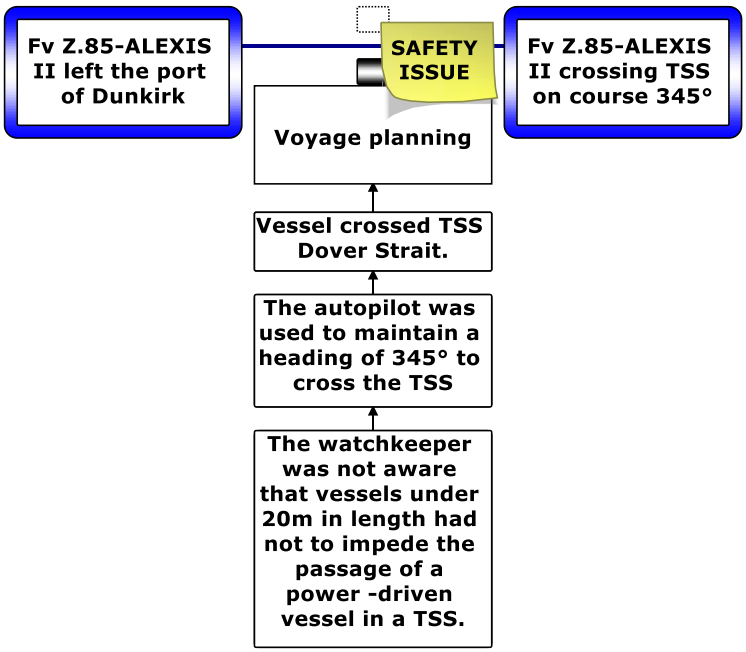
Observation of Mts LS JAMIE on AIS and visually

Incident Barrier	*Performance*	*Barrier Challenge*	Remarks
Unreliable	Vessel	Look-out and Watchkeeping	One watchkeeper sitting on a chair in the wheelhouse. the watchkeeper was well rested.
Traffic observation	Vessel	Watchkeeping	The radar was set at a range of 1nm. The visibility was good. The sky was cloudy and a S4 wind was blowing.
	Vessel	Watchkeeping and COLREG	The AIS plotter was used to identify other traffic. The AIS information from mts LS JAMIE was received and visible on the plotter. The radar was switched on, but not used to observe the traffic.



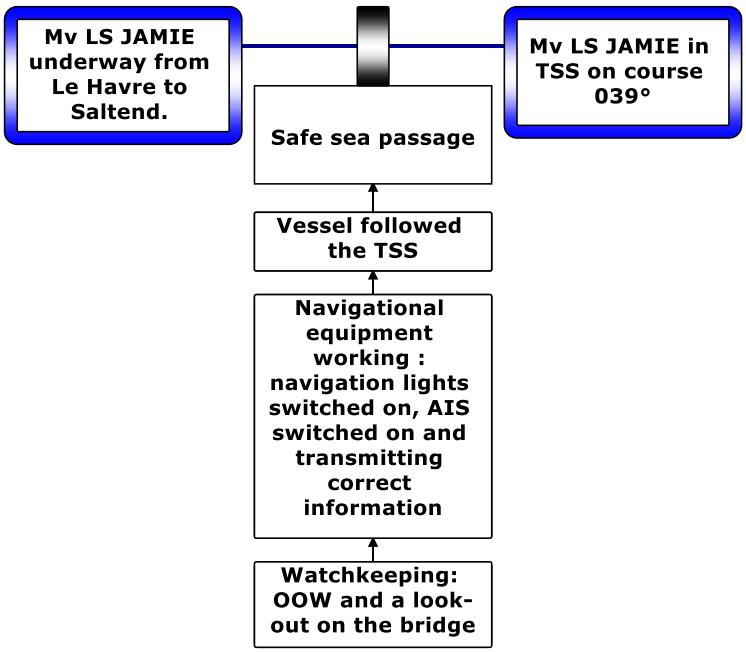
Visual observation of a small target on SB, at 2 cables

Incident Barrier	*Performance*	*Barrier Challenge*	*Remarks*
Inadequate	Weather	Visibility	Visibility was good. A cloudy sky and a S4 wind.
Traffic observation	Vessel	Watchkeeping and COLREG	Radar set on relative motion, range 6nm, off centre. No continuous radar watch: target of fv Z.85 - ALEXIS II was visible on the radar, but had not been observed
	Vessel	Watchkeeping and COLREG	Identification of type of vessel was difficult due to invisible navigation lights



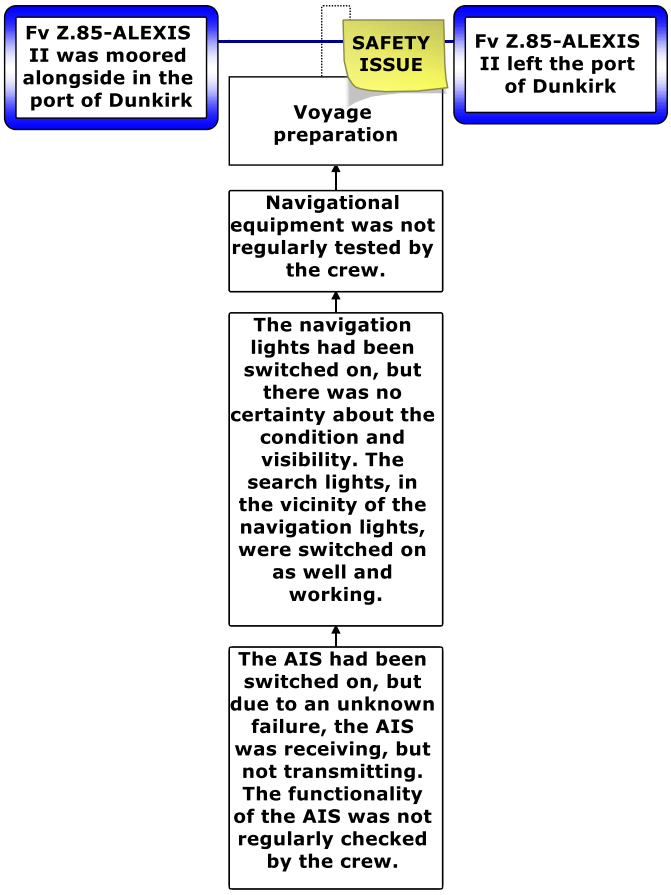
Fv Z.85-ALEXIS II crossing TSS on course 345°

Incident Barrier	*Performance*	*Barrier Challenge*	*Remarks*
Inadequate	Vessel	Route	Vessel crossed TSS Dover Strait.
Voyage planning	Vessel	Route	The autopilot was used to maintain a heading of 345° to cross the TSS
	vessel	COLREG	The watchkeeper was not aware that vessels under 20m in length had not to impede the passage of a power -driven vessel in a TSS.



Mts LS JAMIE in TSS on course 039°

Incident Barrier	*Performance*	*Barrier Challenge*	*Remarks*
Effective	Vessel	Route planning	Vessel followed the TSS
Safe sea passage	Vessel	Operational condition	Navigational equipment working : navigation lights switched on, AIS switched on and transmitting correct information
	Vessel	Watchkeeping	Watchkeeping: OOW and a look-out on the bridge



Fv Z.85-ALEXIS II left the port of Dunkirk

Incident Barrier	*Performance*	*Barrier Challenge*	*Remarks*
Missing	Vessel and owner	Operational condition	Navigational equipment was not regularly tested by the crew.
Voyage preparation	Vessel	Operational condition and COLREG	The navigation lights had been switched on, but there was no certainty about the condition and visibility. The search lights, in the vicinity of the navigation lights, were switched on as well and working.
	Vessel and owner	Operational condition	The AIS had been switched on, but due to an unknown failure, the AIS was receiving, but not transmitting. The functionality of the AIS was not regularly checked by the crew.

11. CAUSE OF THE ACCIDENT

The collision between fv Z.85 – ALEXIS II and mts LS JAMIE stemmed from fv Z.85 – ALEXIS II not being observed on radar on board mts LS JAMIE. The echo of fv Z.85 -ALEXIS II was clearly visible on radar but had not been observed.
By the time that fv Z.85 - ALEXIS II was visually observed and identified as a crossing vessel from SB, mts LS JAMIE only had the time to perform an emergency manoeuvre to avoid a collision.

The navigation lights to identify fv Z.85 – ALEXIS II could not be observed on board mts LS JAMIE.
The continuous use of search lights on board fv Z.85 – ALEXIS II hindered the visibility of the navigation lights. This can be considered as a contributing factor to the collision.
After the collision, it was stated that the port sidelight was not working and that the sector of the masthead light was not as required. The mast nor the navigation lights were hit by mts LS JAMIE during the collision. The status of the masthead light and port sidelight before the accident were not documented.

On board fv Z.85 – ALEXIS II, there was an internal GPS error. This error caused three AIS alarms:

- No valid ROT
- No valid COG
- No valid SOG

The crew on board fv Z.85 – ALEXIS II was not aware of these alarms. The own vessel was visible on the Maxsea electronic chart display and the status of navigational equipment had not been checked before sailing.
The non-transmitting of AIS information by fv Z.85 – ALEXIS II complicated the identification of the vessel and so contributed to the accident.
The reliance on invalid information due to not checking navigational equipment on board fv Z.85-ALEXIS II contributed to the accident.

On board fv Z.85 – ALEXIS II, the traffic situation was judged on the information displayed on the Maxsea electronic chart display. The software indicated a clear passage of fv Z.85 – ALEXIS II ahead of mts LS JAMIE. The displayed information had not been cross checked on radar.
Nothing on board made the fv Z.85 – ALEXIS II aware that there was a danger for collision. The idea that the vessel was passing clear ahead of mts LS JAMIE was maintained the whole time.

This error in judgement led to a close quarter situation where both vessels had to perform an emergency manoeuvre in order to avoid a collision and thus contributed to the accident.

12. SAFETY ISSUES

1. Watchkeeping habits on board mts LS JAMIE did not allow to timely observe a small vessel without AIS on radar. The radar was not used to identify any danger for collision: no continuous radar watch was maintained; no automatic target acquisition had been set and no alarms to warn for a possible collision were set.

2. On board fv Z.85 - ALEXIS II, no system was in place to verify the condition of navigational equipment before a voyage, including the AIS transponder and navigation lights.

3. Search lights were continuously switched on on board fv Z.85 – ALEXIS II. The light from these search lights hindered the visibility of the navigation lights.

4. The traffic situation on board fv Z.85- ALEXIS II was assessed by use of an electronic chart display, fed by invalid data. The radar was not used to asses any dangers for collision. No radar alarms were set to warn for a possible collision.

5. A safe passage astern of MV LS JAMIE had not been considered by fv Z.85 – ALEXIS II.

6. Fv Z.85 – ALEXIS II was not aware that, when crossing a TSS, a power driven vessel of less than 20m in length should not impede the safe passage of a power-driven vessel following a traffic lane.[6]

7. Fv Z.85 – ALEXIS II was bound for fishing in UK waters. Fv Z.85 – ALEXIS II was not able to start a conversation in standard English or SMCP's with mts LS JAMIE after both vessels collided. When fishing in UK waters, a minimum knowledge of English would save precious time and resources to communicate with the UK Coastguard in case of emergency.

[6] See Annex 3 – COLREG - Rule 10 Traffic Separation Schemes

13. ACTIONS TAKEN

The manager of mts LS JAMIE, Lauranne Shipping BV, reported that following actions had been taken after the accident:

1. Internal accident investigation:
   An on board safety meeting was organised between the master of the vessel and the OOW. A safety navigational audit was carried out on board of mts LS JAMIE and an internal accident investigation had been carried out.

2. Sharing of information within the fleet:
   A safety circular was issued by the company throughout the fleet stressing the importance of keeping a proper lookout and radar usage. The circular also warned the vessels for the risk of meeting unexpected fishing boats in the English Channel.
   The incident report was shared as well, to raise awareness to fishing boats in Dover Strait and to stress the importance of proper watchkeeping habits.

3. Evaluation and knowledge of Masters and Officers:
   A CES, crew evaluation system, test was made by the OOW to check his knowledge. The result was satisfactory.
   A new Seagull[7] COLREG module had been implemented within the fleet to have an additional training tool for the deck officers on board. All Deck Officers and Masters had to complete the module.

[7] Seagull Maritime AS is a provider of competence management solutions and e-learning material for seafarers worldwide and offers a comprehensive library of training and onboard courses.

14. RECOMMENDATIONS

YLEANE BVBA, the owner of fv Z.85- Alexis II, is recommended to:

1. Assure that the competency of watchkeepers on board is sufficient regarding the knowledge of COLREGS, specially regarding the regulations for vessels of less than 20m and regarding the use of all available means, including the radar, to detect a risk for collision.

2. Assure the watchkeeper is able to communicate in English, at least at level of the Standard Marine Communication Phrases, or SMCP.

3. Install a procedure or company order on board to verify that all navigational equipment, including, but not limited to, navigation lights and AIS is operational before departure.

15. ANNEXES

Chapter 2 OPERATIONS
2.15 SETTING TT/AIS

● Turning on/off the AIS function

1 Open [Function On/Off] - [AIS].

Function On/Off	TT
1. TT	1. Off
2. AIS	2. On

"AIS" menu appears.

[Off] : Turns off the AIS function.
[On] : Turns on the AIS function.

■ Setting Collision Decision Criteria

Set and check collision decision criteria before operating.

Target	TCPA Limit
1. Function On/Off	0.1-9.9
2. CPA Limit	1.5 NM
3. TCPA Limit	
4. CPA Ring	▲Value Up
5. Target Number Display	▼Value Down
6. Target Number Allocation	◀Input Figure Left
7. ALR Alarm From AIS	▶Input Figure Right

Input the CPA Limit value.

Turn the [MULTI] control to set the CPA Limit value.

The CPA Limit value can be set between 0.1 and 9.9 NM.

Target	TCPA Limit
1. Function On/Off	1-99
2. CPA Limit	10 min
3. TCPA Limit	
4. CPA Ring	▲Value Up
5. Target Number Display	▼Value Down
6. Target Number Allocation	◀Input Figure Left
7. ALR Alarm From AIS	▶Input Figure Right

Input the TCPA Limit value.

Turn the [MULTI] control to set the TCPA Limit value.

The TCPA Limit value can be set between 1 and 99 min.

2-124

Annex 1 - JMA 3300 radar manual

Radar use[8]

Head -up mode :

When your own vessel, also called the observing vessel, is presented in the centre of the radar screen, a line pointing straight up from the centre of the screen represents the vessel's forward motion. This line is called the heading marker and always points to 000° in head-up mode.

Objects in front of the vessel are reflected at the top of the screen, objects on starboard side are on the right of the screen, and so on.

Radar observations in head-up mode are relative to the observing vessel. This means that any object or target is moving with respect to the observing vessel. The observing vessel is a fixed point on the radar display.
Any target moving towards the fixed observing vessel on the radar display, is on a collision course with the observing vessel.

If the radar is used in head-up mode while altering course, the heading marker remains upward and the targets move on the screen.
The picture below shows a radar in head-up mode. The course is 270° and the true bearing of the target is 240°. In this picture, the vessel alters course 030° to SB.

[8] Sources:
www.splashmaritime.com.au
Radar and Arpa Manual – ISBN 0 7506 0818 8
www.starpath.com

Course-up mode:

When your own vessel is presented in the centre of the radar screen, the heading marker points straight up and the vessel's course is showed at the top of the display.

In course-up mode, the input of an electronic compass is needed.

Objects in front of the vessel are reflected at the top of the screen, objects on starboard side are on the right, and so on.

When using radar bearings in course-up mode, true bearings can be read of the radar display.

Some radars give the possibility to switch between true motion presentation and relative motion presentation, see also next page.

If the radar is used in course-up mode while altering course, the heading marker remains upward and the objects and target move on the screen. In this example, there is a big course alteration and the radar display shows some disruption. With small course alterations, this disruption is not visible on the display.

***North-up mode*:**

When your own vessel is presented in the centre of the radar screen, the heading marker represents the vessel's course. The heading marker is pointing in the direction of the vessel's course.

The true North is always shown on the top of the display, similar to a nautical chart. The view on the radar display corresponds perfectly with the chart. Taking radar bearings for position determination is easier in North-up mode.

When the vessel alters course, the heading marker swings around to the new course, but all targets remain on their true bearings. Only the heading marker moves.

True motion presentation:

A radar in true motion presentation shows the movement of your own vessel and targets in accordance to their respective speed and direction.
This can be the speed and direction through the water or over the ground, so called sea stabilization or ground stabilization. Additional data input is required.

Stationary targets will not move.

In true motion presentation, the heading and speed of targets becomes immediately available.

Relative motion presentation:

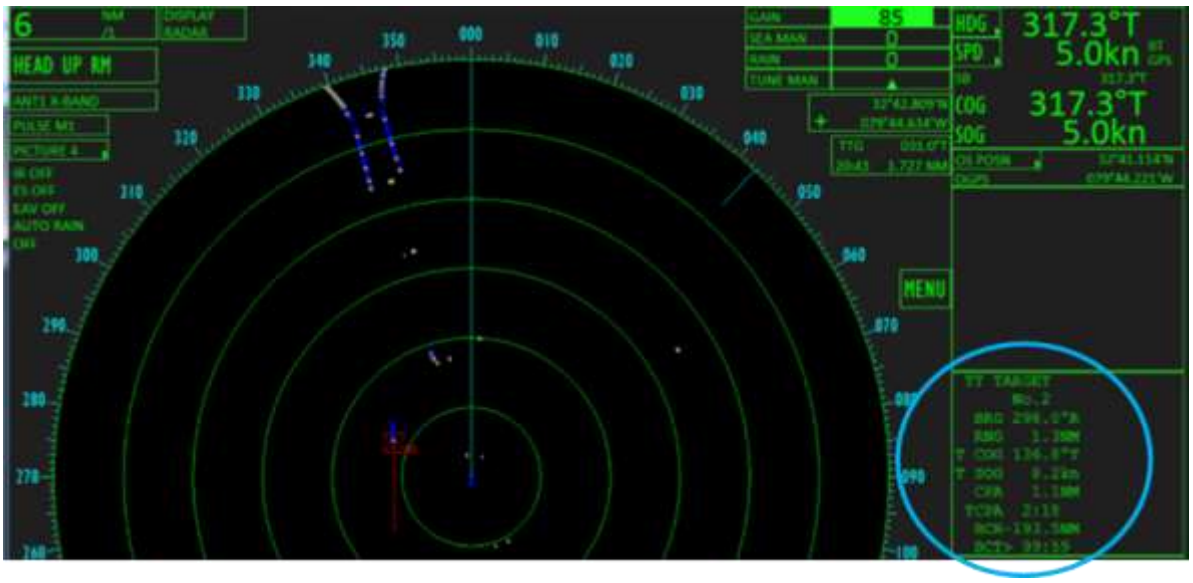
In relative motion presentation, the own vessel, also called observing vessel, is considered to be stationary and the motion of other targets is relative to the observing vessel.

Fixed objects are moving on the radar display when the observing vessel is moving.

ARPA/ TT :

Automatic Radar Plotting Aid/ Target tracking.
This is a computerized function of modern radars that can track, determine, and analyze interaction data for vessel targets on the radar screen. Such data might include CPA, time to CPA, true course and speed, relative course and speed, and so on.

For example, radars equipped with ARPA can show the navigator true bearings when the radar is set in head-up mode.



AIS Display:

AIS is connected to the radar and AIS information can be displayed, even with additional symbols to indicate a dangerous target, a lost target, etc.

Annex 2 - Radar use

COLREG Rule 10 (Traffic separation schemes)

(a) This Rule applies to traffic separation schemes adopted by the Organisation and does not relieve any vessel of her obligation under any other Rule.

(b) A vessel using a traffic separation scheme shall:

(i) proceed in the appropriate traffic lane in the general direction of traffic flow for that lane;

(ii) so far as practicable keep clear of a traffic separation line or separation zone;

(iii) normally join or leave a traffic lane at the termination of the lane, but when joining or leaving from either side shall do so at as small an angle to the general direction of traffic flow as practicable.

(c) A vessel shall, so far as practicable, avoid crossing traffic lanes but if obliged to do so shall cross on a heading as nearly as practicable at right angles to the general direction of traffic flow.

(d)

(i) A vessel shall not use an inshore traffic zones when she can safely use the appropriate traffic lane within the adjacent traffic separation scheme. However, vessels of less than 20 m in length, sailing vessels and vessels engaged in fishing may use the inshore traffic zones.

(ii) Notwithstanding subparagraph (d)(i), a vessel may use an inshore traffic zone when *en route* to or from a port, offshore installation or structure, pilot station or any other place situated within the inshore traffic zone, or to avoid immediate danger.

(e) A vessel other than a crossing vessel or a vessel joining or leaving a lane shall not normally enter a separation zone or cross a separation line except:

(i) in cases of emergency to avoid immediate danger;

(ii) to engage in fishing within a separation zone.

(f) A vessel navigating in areas near the terminations of traffic separation schemes shall do so with particular caution.

(g) A vessel shall so far as practicable avoid anchoring in a traffic separation scheme or in areas near its terminations.

(h) A vessel not using a traffic separation scheme shall avoid it by as wide a margin as is practicable.

(i) A vessel engaged in fishing shall not impede the passage of any vessel following a traffic lane.

(j) A vessel of less than 20 m in length or a sailing vessel shall not impede the safe passage of a power-driven vessel following a traffic lane.

(k) A vessel restricted in her ability to manoeuvre when engaged in an operation for the maintenance of safety of navigation in a traffic separation scheme is exempted from complying with this Rule to the extent necessary to carry out the operation.

(l) A vessel restricted in her ability to manoeuvre when engaged in an operation for the laying, servicing or picking up of a submarine cable, within a traffic separation scheme, is exempted from complying with this Rule to the extent necessary to carry out the operation.

Annex 3 – COLREG - Rule 10 Traffic Separation Schemes

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