HELLENIC REPUBLIC
HELLENIC BUREAU FOR MARINE CASUALTIES INVESTIGATION

MARINE CASUALTY SAFETY INVESTIGATION REPORT 02/2020

Collision between C/V MAERSK LAUNCESTON & Hellenic Navy Mine Hunter HS KALLISTO 3,6 nm South of Piraeus passenger port - Greece

July 2024

Contents

Foreword

The Hellenic Bureau for Marine Casualties Investigations was established by Law 4033/2011 (Government Gazette 264/12.22.2011), in the context of implementing EU Directive 2009/18/EC.

HBMCI conducts safety investigations into marine casualties or marine incidents with the sole objective to identify and ascertain the circumstances and contributing factors that caused it through analysis and to draw useful conclusions and lessons learned that may lead, if necessary, to safety recommendations addressed to parties involved or stakeholders interested in the marine casualty, aiming to prevent or avoid similar future marine accidents.

The conduct of Safety Investigations into marine casualties or incidents is independent from criminal, discipline, administrative or civil proceedings whose purpose is to apportion blame or determine liability.

This investigation report has been produced without taking under consideration any administrative, disciplinary, judicial (civil or criminal) proceedings and with no litigation in mind. It does not constitute legal advice in any way and should not be construed as such. It seeks to understand the sequence of events of the examined very serious maritime casualty occurred on the 27th of October 2020

Fragmentary or partial disposal of the contents of this report, for other purposes than those produced may lead to misleading conclusions.

The investigation report has been prepared in accordance with the format of Annex I of respective Law (Directive 2009/18/EC) and all times quoted are local times (UTC +2) unless otherwise stated.

Under the above framework HBMCI as the lead investigating State examined the collision between C/V MAERSK LAUNCESTON and the Hellenic Navy Mine Hunter HS KALLISTO occurred on the 27th of October 2020, in the sea area approximately 4 nm South of Piraeus Port, Greece and resulted in the penetration of C/V MAERSK LAUNCESTON’s bulbous to HS KALLISTO’s port side aft section, the separation of HS KALLISTO into two parts, the sinking of her stern part and the injury of crew members.

GLOSSARY OF ABBREVIATIONS AND ACRONYMS		
1.	AB	Able seaman
2.	AIS	Automatic identification system
3.	ARPA	Automatic radar plotting aid
4.	CoC	Certificate of Competency
5.	C/O	Chief Officer
6.	COG	Course over ground
7.	COLREGs	International regulations for preventing collisions at sea, 1972, as amended
8.	CPA	Closest point of approach
9.	°	degrees (of angle)
10.	‘	minutes (of angle)
11.	GMDSS	Global maritime distress and safety system
12.	GPS	Global positioning system
13.	gt	gross tonnage
14.	HCG	Hellenic Coast Guard
15.	EMSA IMDatE	The Integrated Marine Data Environment Technical framework that collects and combines data from EMSA's maritime applications and other external sources
16.	IMO	International Maritime Organization
17.	ISM	International Management Code for the safe operation of ships and for pollution prevention
18.	kW	Kilowatt
19.	LT	local time
20.	nm	nautical miles
21.	O(s)OW	Officer(s) on the watch
22.	Olympia Radio	National Coastal Station covering the maritime safety sector (GMDSS) for receiving and transmitting distress, urgency and safety signals and commercial maritime communications world widely.
23.	OS	Ordinary seaman (deck crew)
24.	rpm	revolutions per minute
25.	SMM	Safety management manual
26.	SMS	Safety management system
27.	SOLAS	Convention for the Safety of Life at Sea 1974, as amended
28.	STCW	International Convention on Standards of Training, Certification and Watchkeeping for seafarers
29.	TCPA	Time of Closest Point of Approach
30.	TSS	Traffic Separation Scheme
31.	SOG	Speed over ground
32.	UTC	Universal co-ordinated time
33.	VDR	Voyage data recorder
34.	VHF	Very high frequency (radio)
35.	Essberger	“John T. Essberger GmbH & Co.KG”, The managing company of MAERSK LAUNCESTON

1. Executive summary

On 27 October 2020, αt 07:30, C/V MAERSK LAUNCESTON under Portugal flag and the Hellenic Navy Mine Hunter HS KALLISTO collided in position lat: 37° 52΄.02 N long: 023° 36΄.35 E, approximately 4 nm South of Piraeus Port – Greece. Both vessels were navigating southbound towards the north entrance of Piraeus TSS following their passage from Psytalia Island. At the time of the marine casualty, weather conditions were reported to be good (wind force 2 bfrs, sea state calm with good visibility) with daytime conditions.

MAERSK LAUNCESTON, was en route to Canakkale Turkey, loaded with 1561 containers and departed at 06:43 from the Piraeus Container Terminal – Pier II, with a crew of 22 people. Pilot disembarkation was completed at 07:06 under the supervision of the Chief Officer and at 07:08 the vessel exited the NE passage of Psytalia Island. After Pilot disembarkation, the Chief Officer, who had OOW duties over the 0400-0800 navigational watch, was relieved by the Captain, in order to get her breakfast and at the bridge remained the Captain and the helmsman AB. At 07:13, the C/V was steaming with an estimated course of 161° and a speed of 8.1 knots. At 07:14 autopilot was engaged and at 07:15, the Captain relieved the AB from his duties in order to have his breakfast. Consequently, the Master remained alone on the bridge navigating the C/V on autopilot towards the north entrance of Piraeus Traffic Separation Scheme (TSS) and he remained alone until the collision.

The warship, at approximately 07:10 had exited the SW passage of Psytalia Island and proceeded towards the north entrance of Piraeus TSS. She was navigating with a course approximately 155° and with a speed of about 11 knots and she was displayed on the radar of the C/V. The navigational watch was consisted of two officers (the Commander and the Navigational Officer) and two Petty Officers (the Helmsman and the Lookout).

From 07:17 until the critical time of the collision, the C/V approached the warship in “overtaking” situation, making the C/V the overtaking vessel and the warship the vessel being overtaken. As the two vessels were navigating towards the north entrance of the Piraeus TSS and until the emergency maneuvering, shortly prior to the collision, HS KALLISTO kept an almost steady course and speed, while MAERSK LAUNCESTON gradually increased her speed approximately 8 knots and altered her course to Starboard 20° approximately.

As a result of the collision HS KALLISTO was broken in two pieces; the aft part sank rapidly and only the canopy remained afloat, while her fore section remained floating with a list of approximately 60° to starboard. Due to the heavy impact, 4 crew members of HS KALLISTO fell overboard and were recovered by an HCG patrol boat. Two of the recovered crew members were injured and they were transferred to shore for medical examination. From the rest of the crew 21 members were evacuated from HS KALLISTO by means of an HCG Patrol Boat and transferred to another warship. The Commander of HS KALLISTO and 3 crew members remained onboard the fore part of the vessel in order to facilitate the towage operation. Also, sea pollution was observed around the casualty area.

MAERSK LAUNCESTON sustained only scratches and coating damages on her bulbous bow and port bow quarter.

The fore part of HS KALLISTO and the canopy of the aft part that remained floating were towed to naval base of Salamina, while MAERSK LAUNCESTON proceeded to Piraeus anchorage and then to Piraeus Port.

2. Factual Information
2.1 Involved ships
2.1.1 Particulars of M/V MAERSK LAUNCESTON

Name of Vessel	MAERSK LAUNCESTON
Call Sign	CQGO
Company (ISM Code A 1.1.2)	John T. Essberger GmbH &Co KG
Ownership	KG Vierte OCEANIA Schiffahrtsgesellschaft mbH & Co.
Flag State	Portugal
Port of Registry	Madeira
IMO Number	9294408
Type of Vessel	Container Vessel
Classification Society	Lloyds Register
Year built	2005
Ship Yard	Odense Steel Shipyard Ltd –Danemark
Loa (Length over all)	265.84m
Boa (Breadth over all)	37.30m
Deadweight	63850
Summer Draft	14.02m
Gross Tonnage	50736
Net Tonnage	28350
Main Engine	Sulzer, Type 8RT-FLEX96C
Engine Power /Speed	45760 kW / 25.4 knots
Document of Compliance	(Date of Issue) Hamburg, 26 August 2020 by LR
Safety Management Cert.	(Date of Issue) Auckland, 08 January 2020 by LR
Last PSC Inspection (prior to casualty)	Manzanillo, Panama, 25 September 2020

Figure 1. *M/V MAERSK LAUNCESTON at Piraeus area (source: Marine Traffic)*

2.1.2 Particulars of Mine Hunter HS KALLISTO

Name of Vessel	HS KALLISTO
Flag State	Hellenic
Type of Vessel	Navy Ship
LOA (Length over all)	60,3 m
BOA (Breadth over all)	10.4 m
Displacement tonnage (Loaded ship)	685 TN
Displacement tonnage (Light ship)	603 TN
Year built	1987
Ship Yard	Vosper Thornycroft - Portsmouth UK
Construction	GRP (Glass Reinforced Plastic)
Engine power	Two (02) MTU 8V 396 74K 1080HP (805KW)

Figure 3. *HS KALLISTO (source: Hellenic Navy)*

2.2 Voyage Particulars

Vessel´s name	MAERSK LAUNCESTON	HS KALLISTO
Port of departure	Piraeus Container Terminal	Salamina Naval Base
Port of arrival	Izmit Container Terminal, Turkey	Chalkis, Greece
Type of voyage	International	National
Cargo information	Loaded – 2375 TEU	---
Manning	22	27
Minimum safe manning	11	---

2.3 Marine casualty information

Vessel´s name	MAERSK LAUNCESTON HS KALLISTO
Type of casualty	Very serious
Date and time	27 October 2020 at 07:30 LT
Position – location	Lat: 37° 52,02’ N, Long: 023° 36,35’ E North of Piraeus Traffic Separating Scheme, Saronic Gulf
External environment	Wind: Winds from variable directions with force 3 Bfrs, Sea state: calm, Visibility: good – clear, Daylight

Ship operation	en route	en route
Voyage segment	Towards North entrance of Piraeus TSS	Towards North entrance of Piraeus TSS
Consequences (to individuals, property, environment,)	Abrasions on the bulb and at the port bow quarter	Broken in two sections. The aft section sank and the fore section was towed to Salamina naval base

2.4 Emergency response

Piraeus Joint Search & Rescue Coordinating Center of the Hellenic Coast Guard (HCG) was notified about the collision by the Piraeus Traffic Control and immediately launched a Search & Rescue operation ordering the local and regional Coastguard Authorities to engage their Contingency Operation Plans.

One warship that was navigating nearby the casualty area, several HCG Patrol vessels and antipollution vessels based at Piraeus and the nearby HCG Authorities were deployed to the casualty. Also, an air unit was deployed however it was released before arriving at the casualty area because all four crew members of HS KALLISTO that fell into the sea were safely recovered by HCG Patrol vessel.

Two nearby tug boats were also ordered to proceed to the casualty area and provide assistance if needed.

The fore part of HS KALLISTO as well as the aft canopy were towed to Salamina Naval Base by a tug boat and a military tug boat respectively.

S & R Units involved	
State´s Units	→ 06 HCG Patrol Vessels → 02 HCG Antipollution vessels → 03 Hellenic Navy ships → 01 Hellenic Navy Helicopter → 03 Hellenic Navy Tugs and Auxiliary ship → 04 Hellenic Navy Fast crafts/boats
Other Vessels	→ 02 RoPax vessels → 03 Tugboats → 05 Antipollution vessels of private company

3. Narrative

The construction of the timeline of events is based mostly on data and information acquired by the electronic evidence of MAERSK LAUNCESTON VDR and electronic equipment, recorded positions extracted by a GPS device of HS KALLISTO, as well as the interview process.

3.1 C/V MAERSK LAUNCESTON

C/V MAERSK LAUNCESTON under Portugal Flag is a container vessel engaged in international trading.
She arrived at Piraeus Container Terminal – PCT on 26 October 2020 and was scheduled to depart morning hours of the following day.

3.1.1 Crew complement – key personnel

According to the vessel's Minimum Safe Manning Certificate issued by her Flag Administration pursuant to Regulation V/14.2 SOLAS as amended, a minimum crew of 11 seafarers was required. However, the crew of MAERSK LAUNCESTON comprised 22 seafarers, including two Deck Cadets, of seven nationalities.
More specifically the crew of the deck department apart from the cadets was consisted of the Master, one Chief Officer, one 2nd Officer and one 3rd Officer, three ABs and two OSs.

.1 Master

MAERSK LAUNCESTON´s 61 years old Master had a sea service in various types of ships. He began his career as deck cadet on fishing and reefer vessels and as an Officer he served on General Cargo, Reefers, Bulk carriers and Container vessels.
He held his Master certificate in 2001 and he had a total of 18 years of service as a Master six of them on Container vessels. For the last seven years prior to the casualty he was serving on MAERSK LAUNCESTON's managing company vessels and for the last two years only on Container vessels. He signed on MAERSK LAUNCESTON on 17 August 2020 and this was his 6th time to serve as a Master on the vessel.
Considering the above seagoing career and years of service it is suggested that he was an experienced seafarer and Master.

.2 Chief Officer

The 40 years of age Chief Officer had completed the Maritime Academy on 2005 and from 2007 she was serving as an Officer on Container vessels. As a cadet she served on several types of vessels including Passenger, General Cargo, Tug and Sailing yacht. On 2008 she started serving as an Officer solely on Container vessels. She joined MAERSK LAUNCESTON on 11-08-2020 and it was her 1st contract with MAERSK LAUNCESTON's managing company. She held a Master's Certificate for vessels over 3000 GT issued in 2019.
On MAERSK LAUNCESTON she was performing the 0400-0800, 1600-2000 navigational watch at sea and in port she was on day duties supervising, amongst others the cargo operations.
Considering the above seagoing career and years of service it is suggested that she was an experienced seafarer.

.3 AB on watch

The 40 years of age AB that comprised the 0400-0800 navigational watch had been serving as an OS from 2002 until 2008 on Container and General Cargo Vessels and from 2008 as an AB mostly on Container vessels. This was the 6th time to serve on MAERSK LAUNCESTON's managing company vessel and the 3rd time to serve on

MAERSK LAUNCESTON. The duration of the contracts were 8-10 months and he boarded MAERSK LAUNCESTON on 23 January 2020.

3.1.2 Departure from PCT

Upon MAERSK LAUNCESTON's arrival in Piraeus Container Terminal cargo operation commenced and they were completed at 06:06 on 27 October 2020.

At 05:20 of 27 October 2020 a one-hour notice was given to the engine crew and pre-departure checks commenced according to the relevant check list provided by the vessel's SMM. At 06:00 the steering gear operation was tested with both of the hydraulic pumps and at 06:06 the operation of the M/E was checked.

At 06:20 all checks according to pre-departure checklist were completed and the checklist was signed by the 3rd Officer. Amongst others the pre-departure check list required the following equipment to be checked, tested as appropriate and found ready for use:

- *ECDIS checklist completed*,
- *Binoculars, Sextants, bearing dioptres available,*
- *Electronic navigational position fixing systems,*
- *Radars / ARPA,*
- *Steering gear, including manual, auto-pilot and emergency changeover arrangements, rudder indicators, control system power, failure and power unit failure alarms,*
- *GMDSS equipment, including EGC receivers, NAVTEX, EPIRB,*
- *Sound signaling apparatus, including whistles and fog bell,*
- *AIS updated and on full power,*
- *VDR, no active alarm.*

Mooring gangs were assembled to the fore and aft mooring stations for which Officers in charge were the 2nd and 3rd Officer respectively.

At 06:36 Pilot boarded on the vessel and was escorted to the bridge where was the Master and the 0400-0800 navigational watch personnel consisted of the Chief Officer and an AB as helmsman. At the same time the two tugboats were connected to the vessel, one to the bow and one to the stern. The two ECDIS were in operation and both radars, S Band and X Band were in ST/BY mode.

After exchanging the Pilot Card information, the Pilot instructed the Master to heave up all lines and at 06:43 he ordered the two tug boats to start pulling the vessel. MAERSK LAUNCESTON with the assistance of the two tugboats maneuvered astern towards the channel and then proceeded to a starboard rotation towards the exit (Figure 4). Ahead of the vessel were one Container and one RoRo vessel that had departed from Piraeus shortly before the departure of MAERSK LAUNCESTON.

At 07:01 the Pilot instructed the Master to release the lines of the tug boats. Shortly after he left from the bridge and proceeded to the Pilot ladder arranged at the Port side of the vessel escorted by the C/O. In the meantime, both radars were set in operation at a range of 3 nm for the S Band and 0,75 nm for the X Band. At 07:06:30 C/O reported to the Master that Pilot disembarkation was completed and proceeded to the bridge. At that time MAERSK LAUNCESTON was between the north coast of Psytalia Island and the breakwater of Keratsini Port (Figure 5).

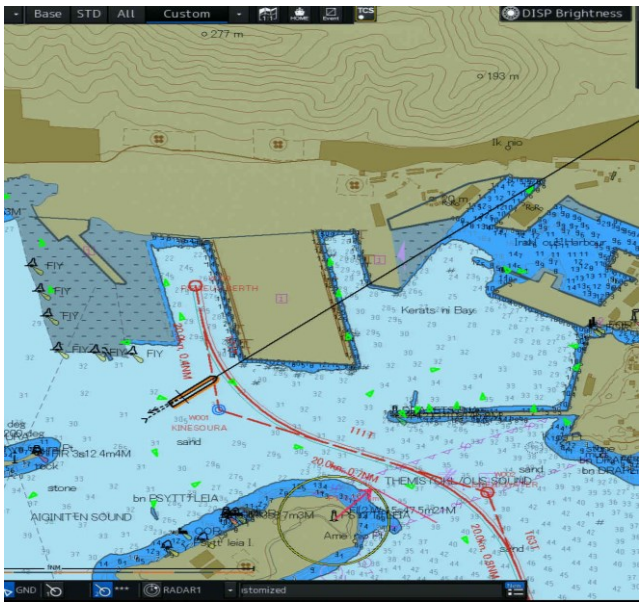

Figure 4. *Depiction of the departure maneuver (source: MAERSK LAUNCESTON ECDIS, time 06:59:02)*

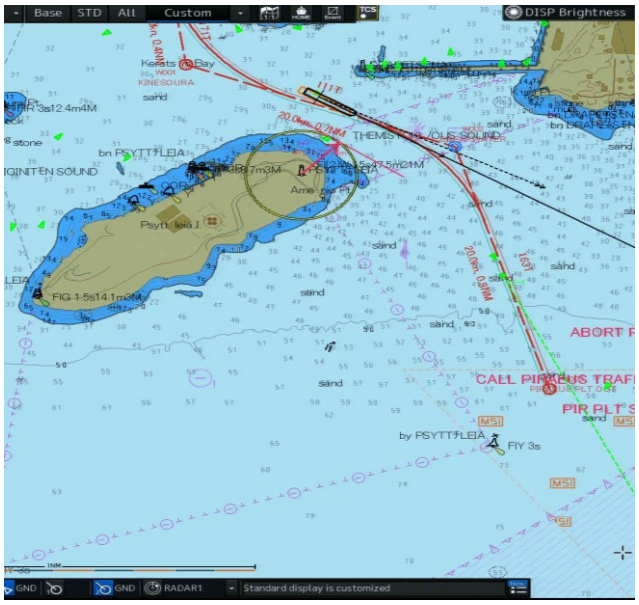

Figure 5. *Depiction of vessel's position at the time of Pilot disembarkation (source: MAERSK LAUNCESTON ECDIS, time 07:06:32)*

3.1.3 Steaming towards Piraeus TSS

Following Pilot disembarkation, the C/O returned to the bridge at 07:10 where was the Master with the helmsman AB. She had a short discussion with the Master concerning vessel's ballast condition and then she sent the regular departure report to the Charterers via a dedicated cell phone. At 07:13 Master relieved the C/O for breakfast and at the bridge remained the Master as the Officer on watch and the AB at the steering. At that time MAERSK LAUNCESTON was navigating with a COG of 161° and a speed of 8 knots. It is noted that taking over the OOW duties by the Master was not recorded to the bridge log book as per respective instructions by the vessel's SMM.

At approximately 07:14 the AB asked the Master if he needed a watchman on the bridge and the Master replied affirmative due to the traffic in the area. Right after that discussion Master ordered the AB to set the autopilot On. At that time the S band radar was operating on 3 nm range, the X band radar on 0,75 nm and according to the VDR data and the depiction of the S band radar screen, HS KALLISTO was approximately 1,4 nm distance from MAERSK LAUNCESTON at a bearing of approximately 221°. However, as the HS KALLISTO did not transmit her navigational data through the AIS her track was displayed only on MAERSK LAUNCESTON's radar and not on the ECDIS. Moreover, the Master had already acquired on the ARPA the navigational data of the C/V vessel that was 1.5 nm in front of MAERS LAUNCESTON (Figure 6).

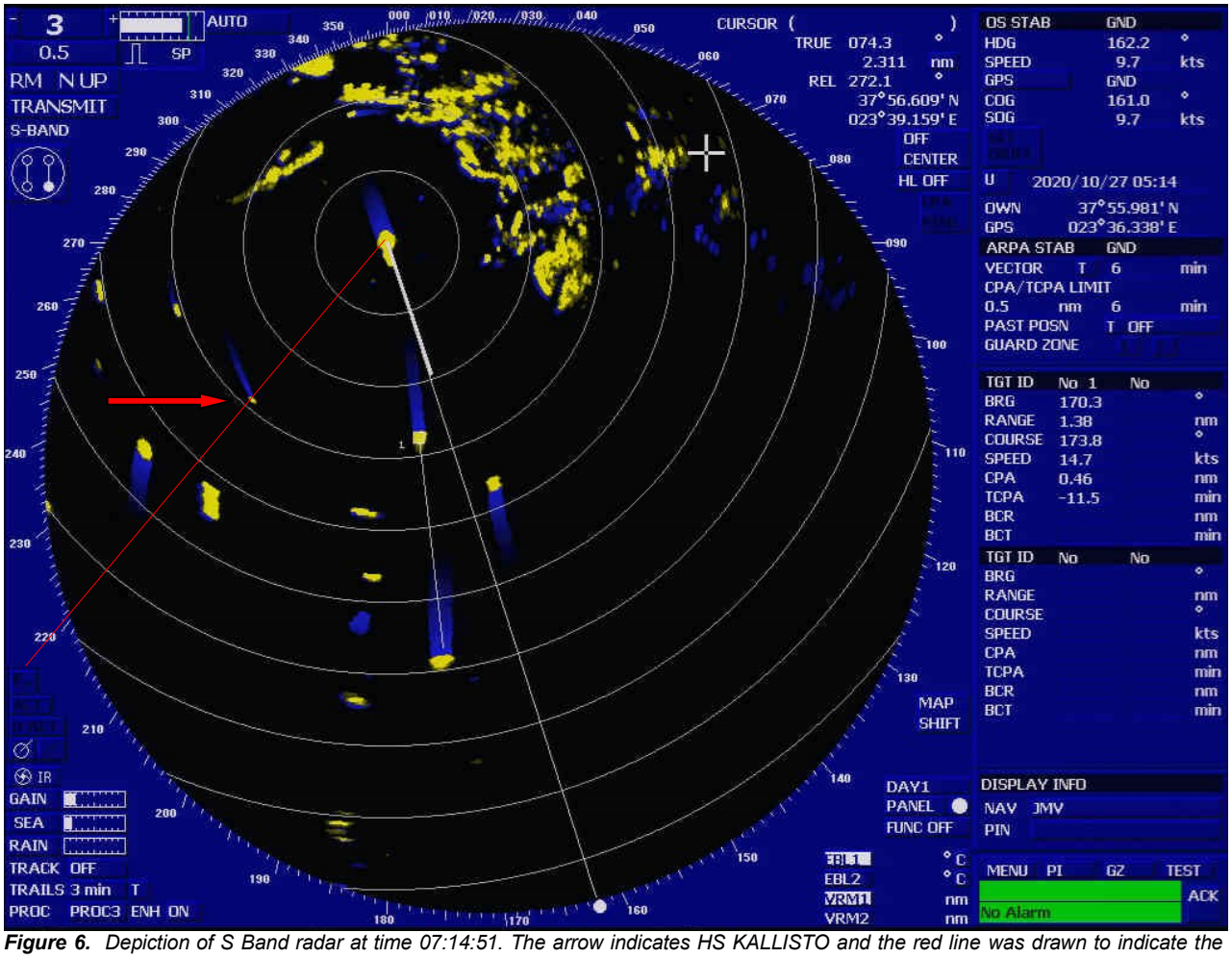

Figure 6. *Depiction of S Band radar at time 07:14:51. The arrow indicates HS KALLISTO and the red line was drawn to indicate the bearing from MAERSK LAUNCESTON.*

At approximately 07:15:20, while the vessel was navigating with a COG of 161° and a speed of 10,2 knots the Master relieved also the helmsman AB for breakfast and he remained by himself on the bridge. He also set the range of the X Band radar to 6 nm. Following that and as the vessel was steaming towards the north entrance of Piraeus TSS the Master progressively increased the vessel's speed to 16,5 Knots and altered the course to 179°. An abstract for the alteration of the vessel's speed and course, as provided by the VDR data is indicated at the following table 1:

Furthermore, the Master, who was the only one on the bridge, operated the ECDIS on the sea area of Canakkale Turkey in order to check the planned voyage and other navigational details. More specifically, according to the VDR data from 07:17:33 until 07:19:33 the ECDIS screen was displaying the CANAKKALE entrance area (Figures 7,8).

Time	COG (°)	Speed (Knots)
07:15:20	161	10,2
07:17:03	161	11,4
07:18:03	164	11,8
07:19:03	169	12,1
07:21:18	175	13,2
07:23:03	178	15,0
07:24:48	179	16,0
07:28:18	179	16,5

Table 1. *Speed – course alterations of MAERSK LAUNCESTON*

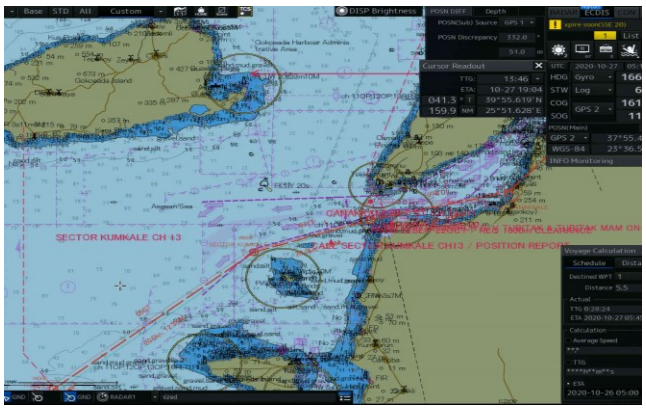

Figure 7. *Depiction of ECDIS screen at time 07:17:33.*

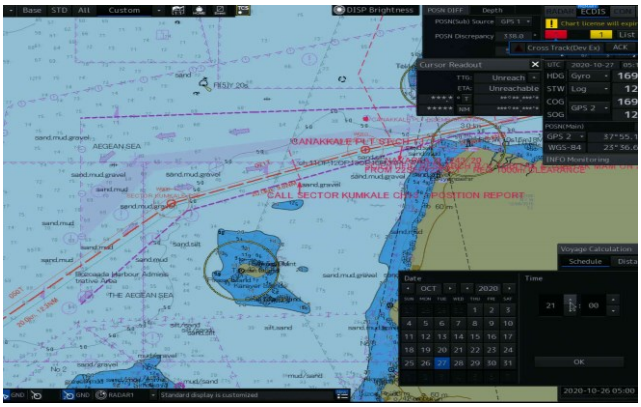

Figure 8. *Depiction of ECDIS screen at time 07:19:33.*

Further actions that the Master took as the vessel was proceeding towards the Piraeus TSS were:

- to increase the range of the S Band radar from 3 nm to 6 nm at approximately 07:22:06. At that time HS KALLISTO was at a distance of approximately 1,1 nm and at a bearing of 217° (Figure 9) and
- to acquire two more targets on the ARPA at approximately 07:23:51 which were two vessels also heading towards TSS and were in front of the already acquired Container vessel. At that time HS KALLISTO was at a distance of approximately 1 nm and at a bearing of approximately 217° (Figure10).

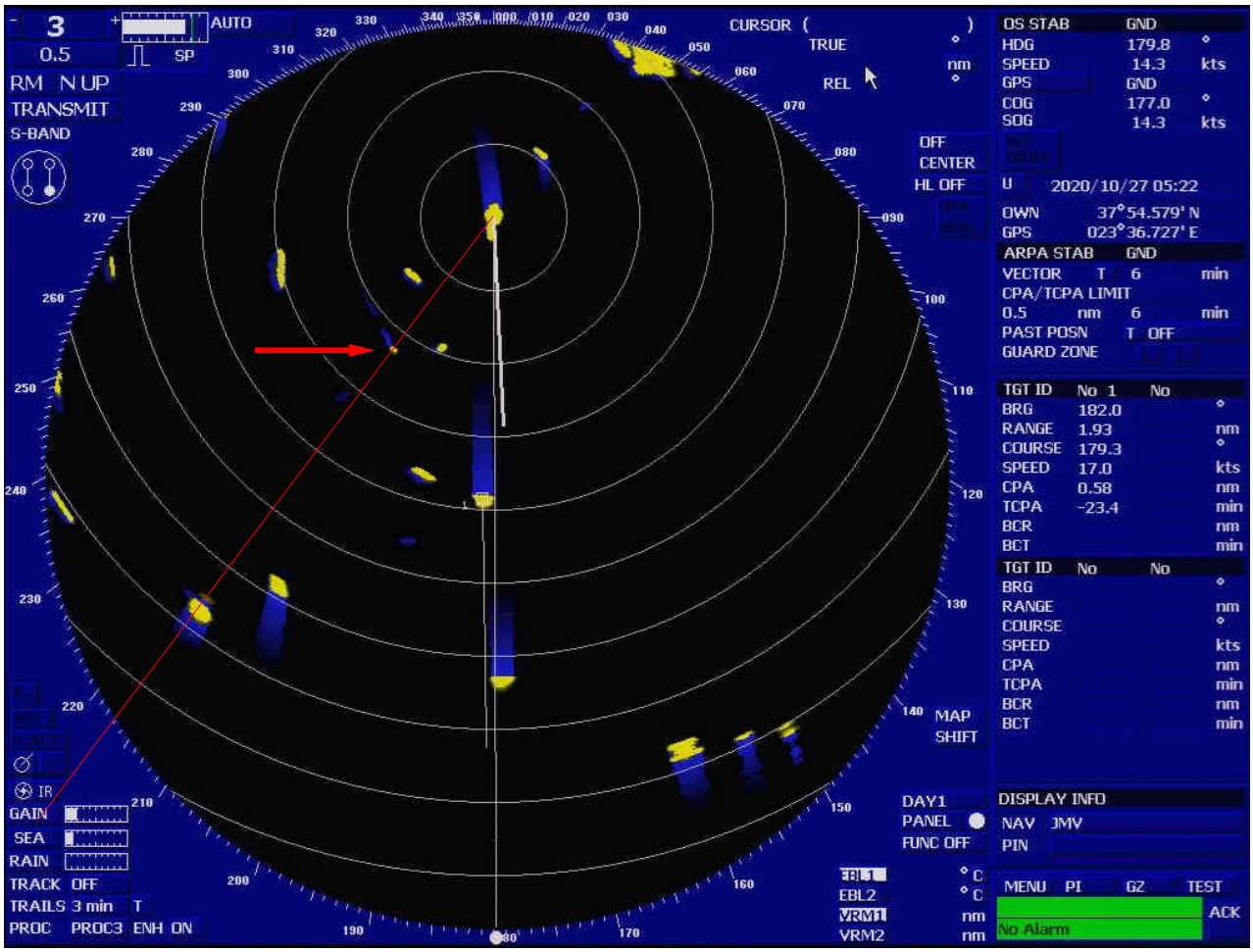

Figure 9. *The last depiction of S Band radar at 3nm range at time 07:22:06. The arrow indicates HS KALLISTO and the red line was drawn to indicate the bearing from MAERSK LAUNCESTON.*

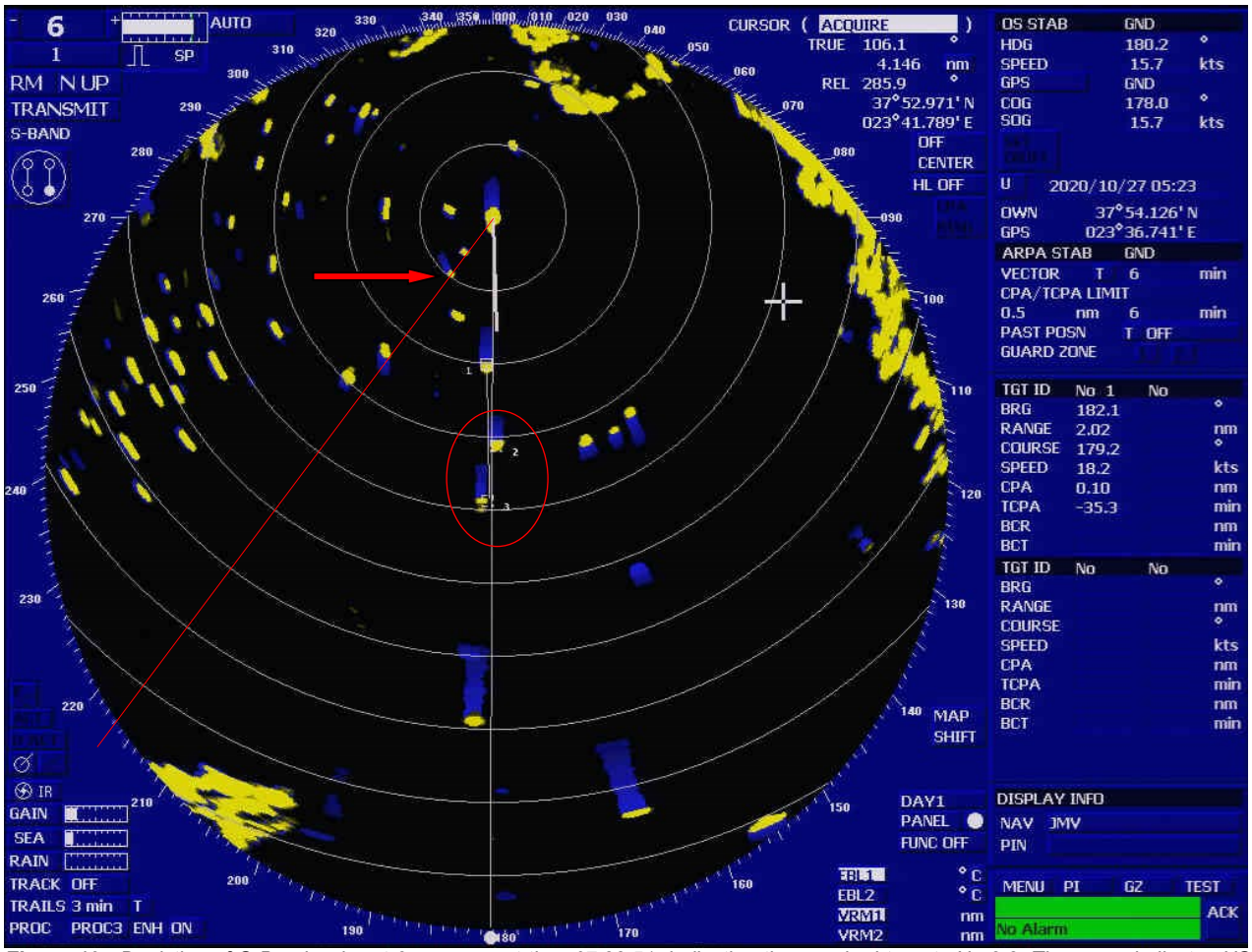

Figure 10. *Depiction of S Band radar at 6nm range at time 07:23:51, indicating the acquired targets No 2,3. The arrow indicates HS KALLISTO and the red line was drawn to indicate the bearing from MAERSK LAUNCESTON.*

3.2 HS KALLISTO

As HS KALLISTO was a Hellenic Navy Vessel it was not required to be equipped with certain navigational aids and equipment provided by the applied National and International regulatory framework for merchant ships. Thus, the only available navigational info from HS KALLISTO's navigational equipment were extracted from one of the two GPS devices by the manufacturer's local representative. Said data referred to the time period from 07:12:52 to 07:29:53 and provided the position of the ship per second as well as the COG and the SOG between two consecutive positions.

3.2.1 Departure from the Naval Base

On the 27 October 2020, HS KALLISTO was scheduled to depart early morning hours from Salamina Naval Base heading for Chalkida Greece. At 05:30 the Commander of HS KALLISTO ordered the crew to initiate the pre-departure procedures and preparations which were completed at 06:00 and the vessel departed at 06:30.

Leaving from the naval base HS KALLISTO navigated eastbound through the channel and at the Piraeus Container Terminal turned Starboard in order to pass between Kinosoura and Psytalia Island followed by a passage between Psytalia Isl. and Islet Atalandi (Figure 11).

Following HS KALLISTO's exit from the channel the Commander ordered the disassembly of the departure teams at 07:15 and he remained on the bridge together with the navigational watch consisted of the navigational watch Officer, one helmsman and one lookout as the vessel proceeded to the planned voyage.

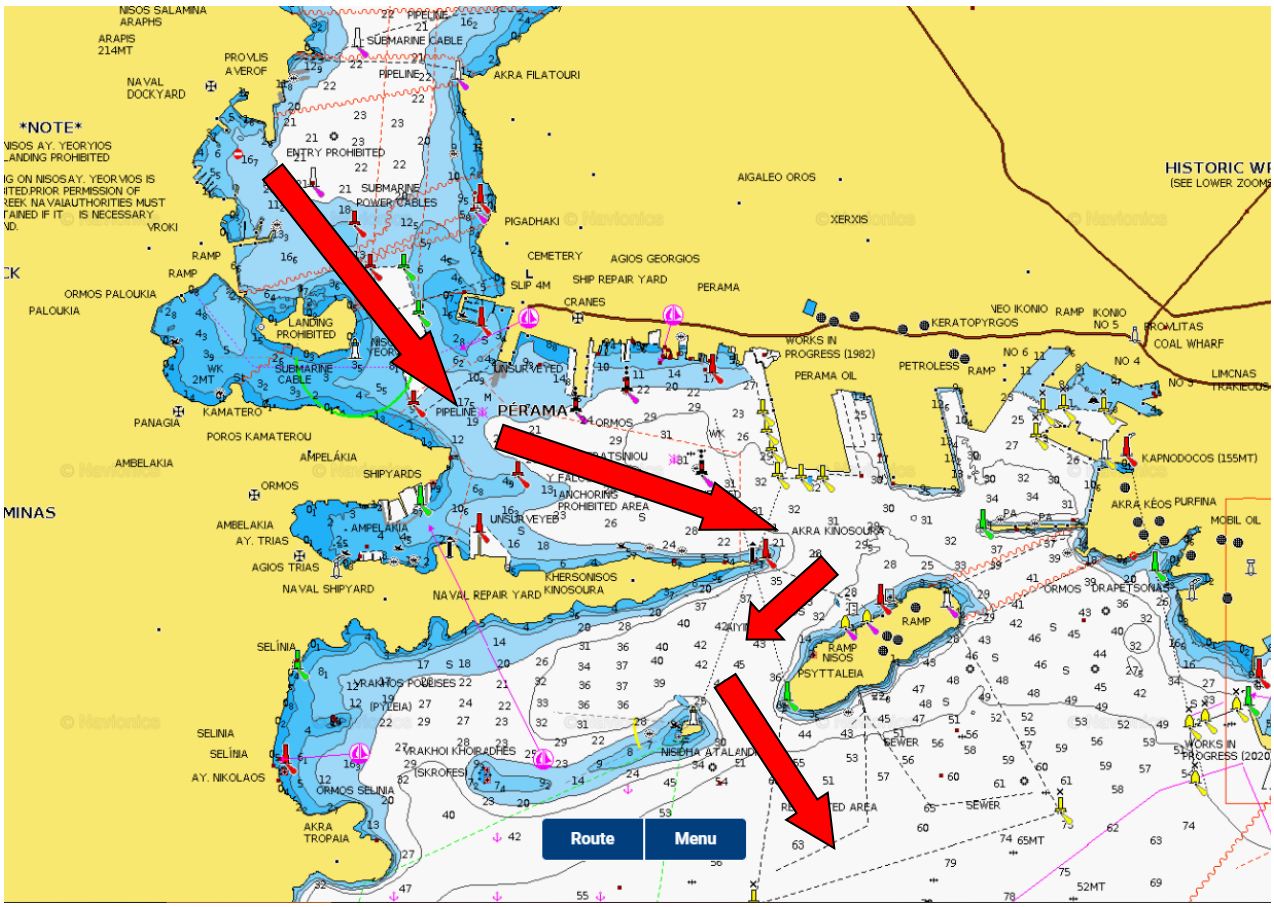

Figure 11. *HS KALLISTO's passage towards the exit of the channel (map source: https://webapp.navionics.com)*

3.2.2 Steaming towards Piraeus TSS

After exiting the area between Psytalia Island and Atalandi Islet, the Commander of HS KALLISTO assessed the traffic and proceeded with a SE course towards the Piraeus TSS. At that time, amongst others, Oil Tanker ATLAS was spotted at a distance approximately 3nm north from the TSS entrance with a heading of approximately 290° and SOG approximately 0,3 Knots and the Commander decided to proceed with a course that would have HS KALLISTO passing from the stern of the tanker with her Starboard side (Figure 12).

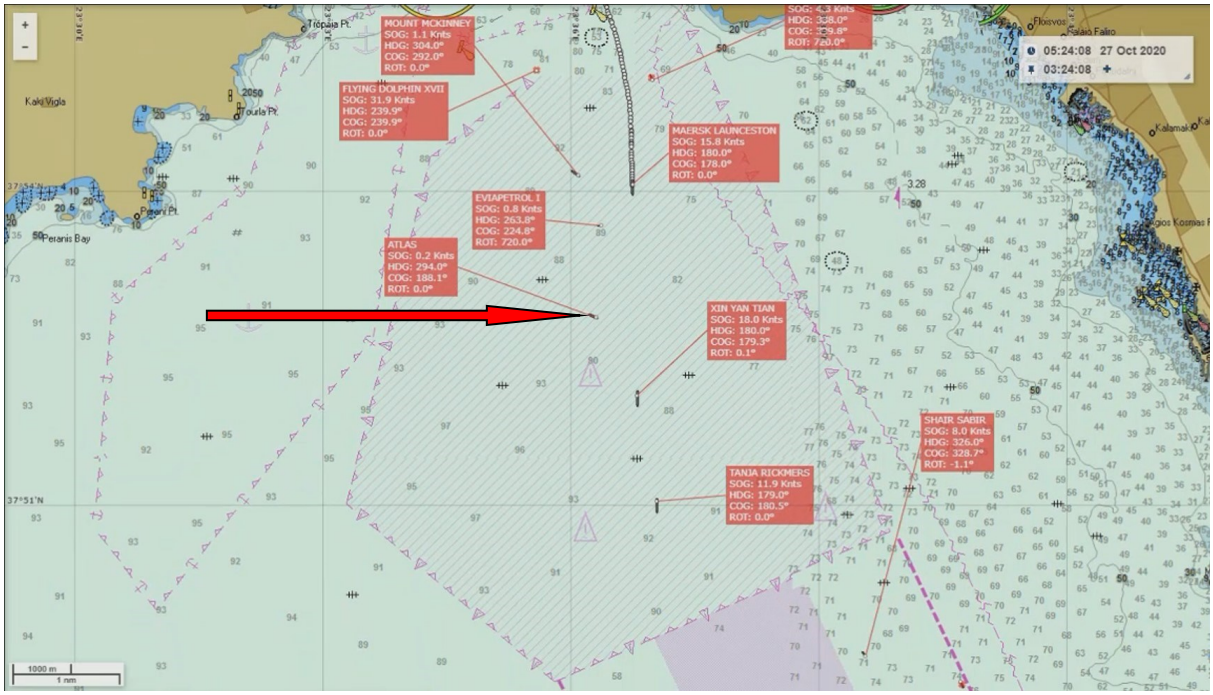

Figure 12. *Depiction of MAERSK LAUNCESTON ECDIS indicating M/T ATLAS navigating 3nm north of Piraeus TSS.*

As HS KALLISTO was not operating AIS the only source for her navigational details was the data recorded to one of the GPS devices. The data was extracted at the facilities of the manufacturer's representative in Greece and included navigational details for the timeframe from 07:12:52 until 07:29:53.

The extracted data provided the vessel's position per second as well as the distance, the average speed and the average course between two consecutive positions. According to the said data the followed course of HS KALLISTO can be summarized to the following table 2 which indicates the recorded position per minute, the average COG and SOG between two consecutive positions (per minute) as well as the minimum/maximum recorded COG and SOG of two consecutive recorded positions (per second).

Time	Position		Average COG (°)		Average SOG (knots)		Recorded COG				Recorded SOG			
	Lat (N)	Long (E)					Min (°)		Max (°)		Min (knots)		Max (knots)	
07:13:00	37°55,182	23°35,120	159		11		153,8		160,7		10		11	
07:14:00	37°55,009	23°35,205		159		11		153,8		160,7		10		11
07:15:00	37°54,837	23°35,289	156		11		149,4		160,7		10		12	
07:16:00	37°54,668	23°35,384		156		11		152,3		160,7		10		12
07:17:00	37°54,500	23°35,481	155		11		149,4		160,7		10		12	
07:18:00	37°54,333	23°35,578		155		11		149,4		158,5		10		12
07:19:00	37°54,165	23°35,675	155		11		152,3		156,3		10		12	
07:20:00	37°53,998	23°35,772		155		11		149,4		160,7		10		12
07:21:00	37°53,831	23°35,869	156		11		153,7		160,7		10		11	
07:22:00	37°53,664	23°35,964		156		11		153,7		160,7		10		12
07:23:00	37°53,497	23°36,060	152		11		149,4		156,3		10		12	
07:24:00	37°53,335	23°36,167		153		11		149,4		160,7		10		12

07:25:00	37°53,172	23°36,272	152		12		149,4		156,3		10		12	
07:26:00	37°53,010	23°36,379		153		12		149,4		156,3		10		12
07:27:00	37°52,848	23°36,485	153		12		149,4		156,3		10		12	
07:28:00	37°52,686	23°36,590		153		12		149,4		156,3		10		12
07:29:00	37°52,524	23°36,695												

Table 2. *Abstract of extracted data from HS KALLISTO's GPS*

In light of the above data it can be deduced that the HS KALLISTO while navigating towards the TSS did not proceed to any considerable alteration of her course and speed. Her almost steady course is also depicted by the plotting of the recorded positions to the GPS manufacturer's application (Figure 13).

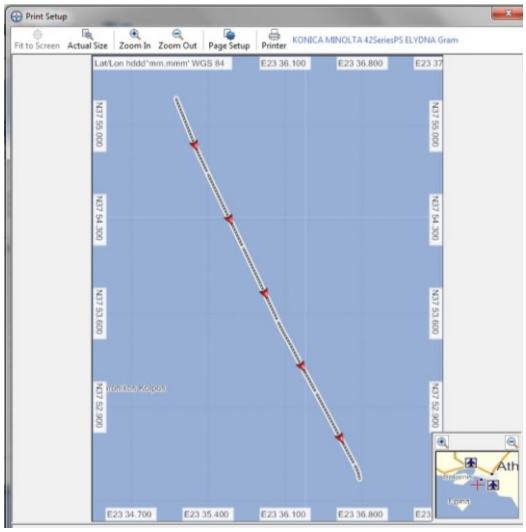

Figure 13. *The extracted positions of HS KALLISTO's GPS plotted on the manufacturer's application (Garmin HomePort).*

3.3 The collision

Based on the available navigational data of the two vessels while they were navigating towards Piraeus TSS a correlation of their plotted courses was depicted (Figure 14).

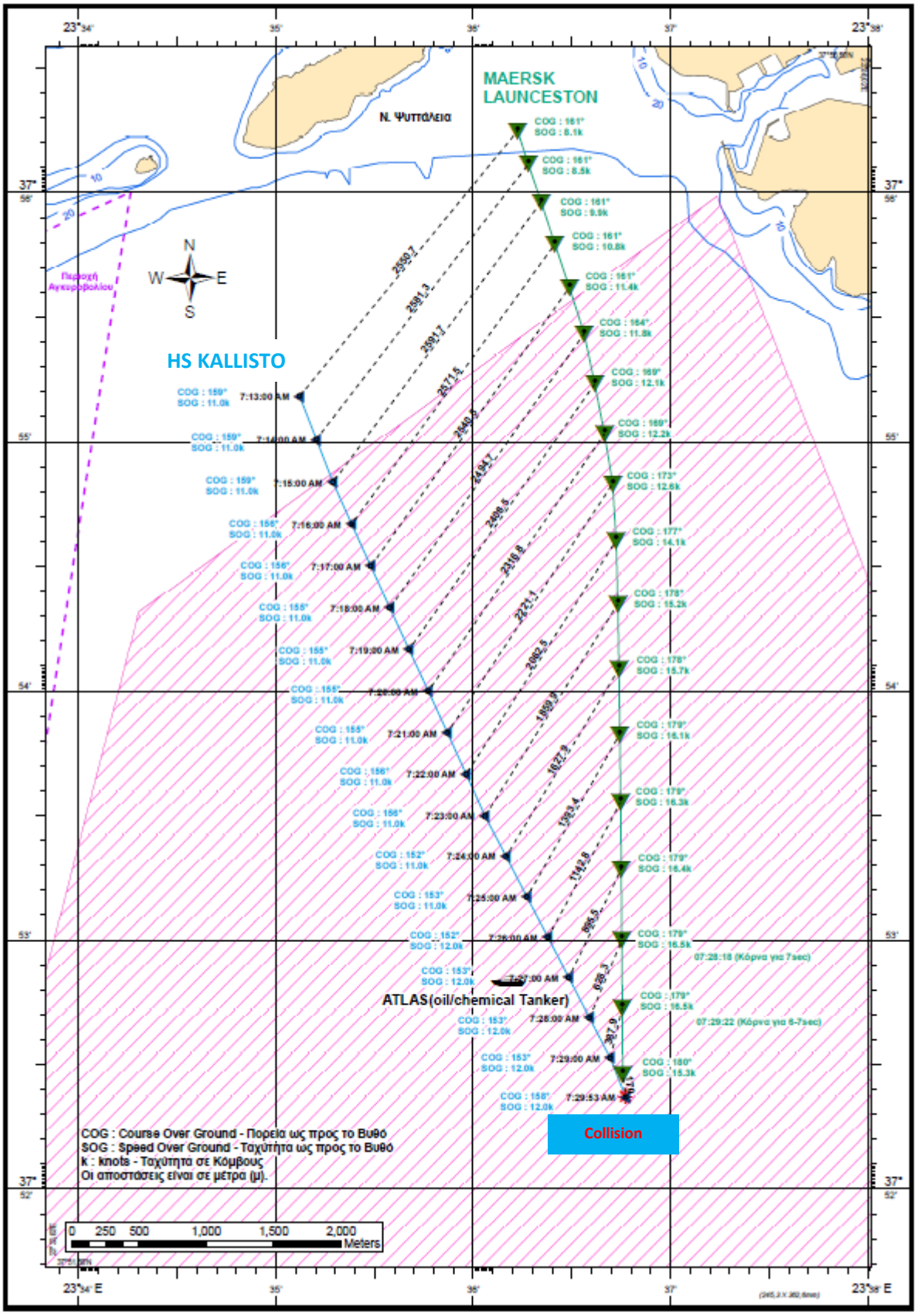

Figure 14. *Corelated courses plotted according to the positions of HS KALLISTO from table 2.*

At 07:28:19 both vessels were navigating at the sea area north of the Piraeus TSS. HS KALLISTO had passed from the stern of M/T ATLAS and according to data extracted from her GPS was steaming with a COG of 149,4° and SOG of 11 knots, while MAERSK LAUNCESTON was navigating with a COG of 179° and a SOG of 16,5 Knots. The distance between the two vessels was less than 0.4 nm and HS KALLISTO was at a bearing of approximately 212° (Figure 15).

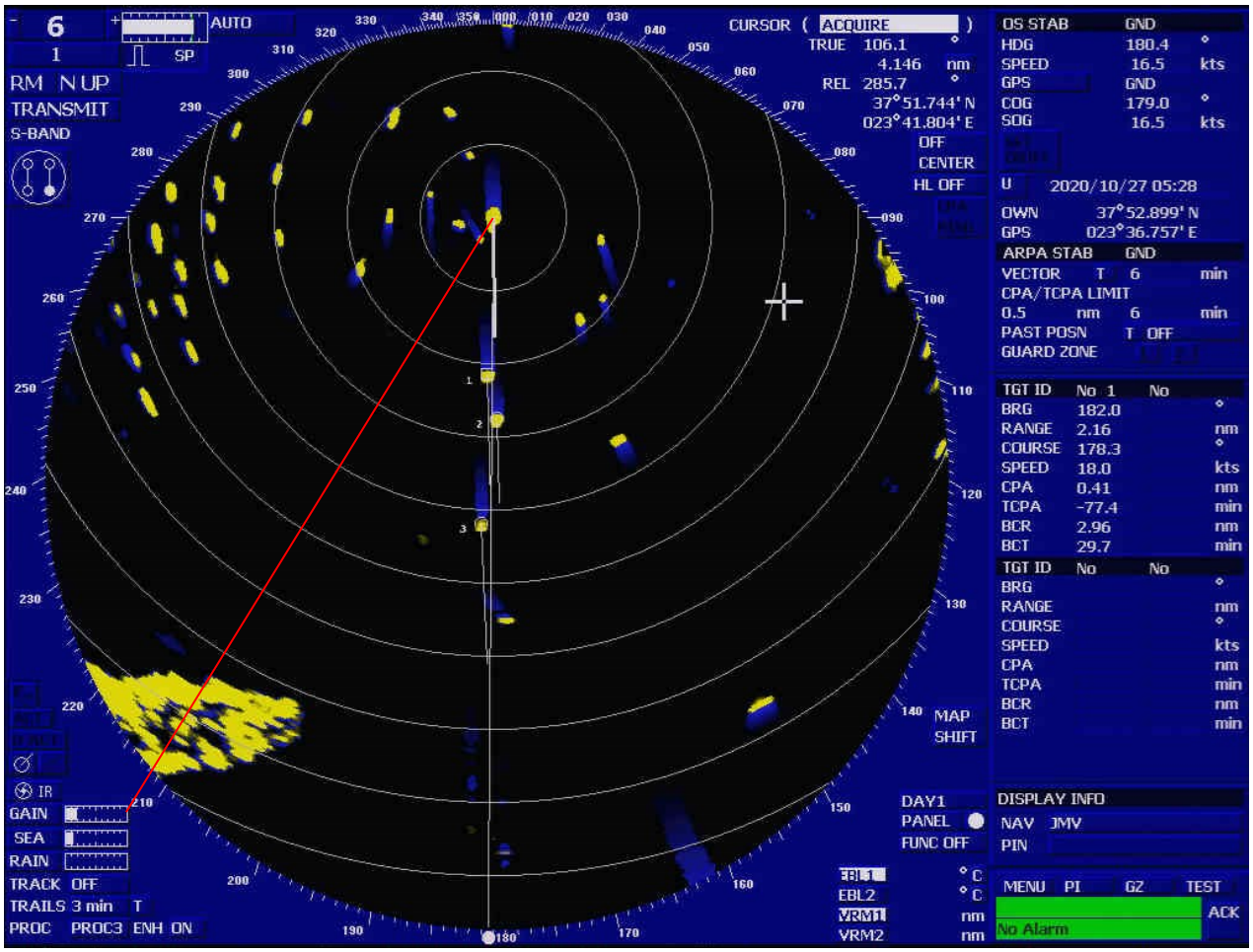

Figure 15. *Depiction of MAERSK LAUNCESTON S Band radar at time 07:28:21.*

At that time the Master of MAERSK LAUNCESTON, having assessed the evolving situation and having identified the collision risk, sounded a long blast with the vessel's whistle for a period of six (06) seconds, that is from 07:28:19 to 07:28:25, without altering the vessel's course and speed.

As the two vessels proceeded, at 07:29:15 HS KALLISTO called MAERSK LAUNCESTON on CH 16 however the call was in Greek language addressing partly the vessel's name, that is "*LAUNCESTON the war vessel*". The Master of MAERSK LAUNCESTON did not respond to that call and at 07:29:23 sounded another seven (07) second long blast with the vessel's whistle, that is from 07:29:23 to 07:29:29. During those seven seconds HS KALLISTO attempted again calling MAERSK LAUNCESTON on CH 16 however the call was not completed and only part of the name was received, that is "*LAUNCEST*".

At that time HS KALLISTO was at a close distance of MAERSK LAUNCESTON's Starboard bow for emergency collision avoidance actions; however, any actions taken did not have positive outcome and MAERSK LAUNCESTON hit HS KALLISTO at her port quarter. The bulbous penetrated HS KALLISTO's hull and due to the speed broke her in two parts.

The exact time of the collision as well as the exact maneuvers of the two vessels to steer clear from each other could not be established. Based on the available data extracted from MAERSK LAUNCESTON VDR and HS KALLISTO GPS it is estimated that the two vessels collided approximately at 07:29:53.

Right before the collision MAERSK LAUNCESTON's COG remained the same at 179°, the Heading altered from 180,3° to 180,4°, her SOG was reduced from 16,3 knots to 16 knots while the rudder angle altered from 0° to 1° Starboard. It was reported that the Master reduced the engine speed by putting the telegraph to minimum maneuvering speed; however, this could not be verified from the vessel's VDR as such data were not recorded. According to the extraction of the vessel's telegraph recordings the telegraph was put to "SLOW AHEAD" at 07:29:13 and the engine's rpm were reduced but it had almost no effect on the vessel's speed until the collision. A correlation of the recorded data from telegraph recordings and the vessel's speed is provided at the following table.

	Telegraph recording		**VDR DATA**
Time	**Position**	**Main Engine rpm**	**SOG (Knots)**
07:20:30	FULL AHEAD	48	12,2
07:20:32	FULL AHEAD	55	12,2
07:20:42	FULL AHEAD	63	12,3
07:29:13	SLOW AHEAD	63	16,5
07:29:20	SLOW AHEAD	57	16,5
07:29:30	SLOW AHEAD	49	16,4
07:29:40	SLOW AHEAD	40	16,3
07:30:02	SLOW AHEAD	35	14,9
07:30:25	SLOW AHEAD	29	13,5

For HS KALLISTO it was reported that the Commander interpreted the long blast of MAERSK LAUNCESTON as an intention to turn to Starboard so he ordered "Full Speed" and attempted a turn to Port in order to pass from her bow. According to the navigational recorded data extracted from her GPS, during that timeframe her SOG increased from 12 knots to a maximum of 15 knots at 07:29:51 and her COG altered from 160,7° to a maximum of 175,5° at 07:29:47. Nonetheless, said alterations cannot be considered sufficient enough to verify the emergency collision avoidance actions of HS KALLISTO, as it cannot be excluded that were caused by the collision itself; and attributed to a short time drifting of HS KALLISTO by MAERSK LAUNCESTON until the breaking of her hull.

At 07:29:59 the Master of MAERSK LAUNCESTON sounded a short blast with the vessel's whistle for two seconds; however, it is suggested that at time he could not have visual contact with HS KALLISTO as the war vessel was still within the blind sector of the bridge (Figure 16).

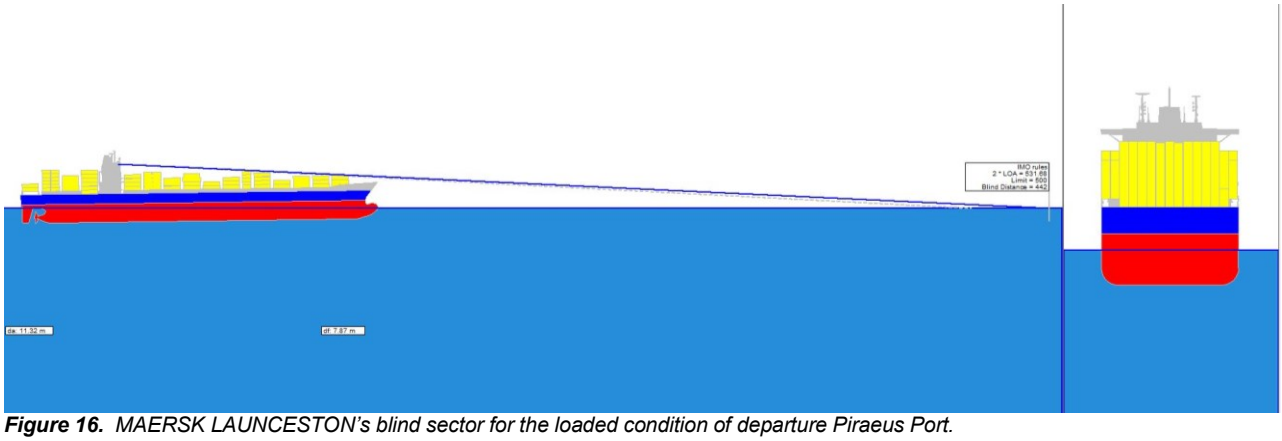

Figure 16. *MAERSK LAUNCESTON's blind sector for the loaded condition of departure Piraeus Port.*

3.4 Emergency response

After the collision the HS KALLISTO broke in two parts and four crew members fell into the sea. They managed to hold onto the life rings that were thrown by the other crew members from the fore part of the vessel.

The fore part of HS KALLISTO sustained rapidly an approximately 60° list to her starboard side and all the remaining crew mustered at her port side (Figure 17). Immediately the Commander ordered the counting of the crew and it was found that everyone was on board apart from the 4 crew members that were in the sea.

The aft part of HS KALLISTO sank rapidly. Only the canopy remained afloat which had detached from the aft part. The two liferafts that were stowed on top of the canopy were released automatically and inflated; however, they were not used by the crew members who fell into the sea as they were not in close distance and they had already managed to hold onto the life rings (Figure 18).

Figure 17. *The fore part of HS KALLISTO listed to her starboard side.*

Figure 18. *The canopy of the aft part of HS KALLISTO, the two liferafts and the four crew members holding on to the liferings.*

3.4.1 MAERSK LAUNCESTON

Following the collision, at 07:30:10 the Master of MAERSK LAUNCESTON called the C/O through the portable VHF and ordered her to go forward to assess the situation. Right after he called the AB on watch to proceed to the bridge. He also reduced the vessel's speed initially to 13 knots and then to 11 knots while continuing with a COG of 180°.

At 07:32:00 the C/O reported the situation to the Master and at 07:32:22 the Master sounded the General Alarm. He then contacted the Piraeus traffic control to report the collision and requested assistance for the safety of HS KALLISTO. Following, he ordered the AB to put the steering hard to starboard in order to return the vessel to the casualty area and provide assistance by lowering the rescue boat.

In the meantime, all crew were mustered to their muster stations and the C/O ordered the 3rd Mate to prepare the rescue boat. When the boat was prepared C/O reported to the Master who ordered to proceed with the launching. The C/O relayed the order and the rescue boat was lowered to the sea with three crew members, the 3rd mate as the leader, the 3rd Engineer and one AB.

The rescue boat remained on scene for almost an hour and returned to MAERSK LAUNCESTON at 08:35.

3.4.2 Rescue operation

Piraeus Traffic Control, after being notified by the Master of MAERSK LAUNCESTON, reported the casualty to Piraeus Joint Rescue Coordination Center and a Search and Rescue operation was launched, by ordering the Hellenic Coast Guard Authorities of Piraeus, Elefsina, Saronikos and Lavrio to engage their respective Contingency Plans, deploying all available means, and guiding the nearby vessels to the casualty area. Piraeus JRCC established direct contact with the Commander of HS KALLISTO who reported the situation and that four crew members were into the sea, one of which was the Chief Engineer who had also been injured.

The first vessel to arrive on scene was a war vessel of the Hellenic Navy which at the time of the casualty was navigating towards the naval base of Salamina. As soon as they

arrived on scene they started launching two fast boats for the rescue of the crew members that were still in the sea. In the meantime, an HCG Patrol Boat had already arrived to the casualty area and by 07:57 had safely recovered from the sea the four crew members.

Figure 19. *The recovery of the four crew members by the HCG Patrol Vessel. In the background it is also depicted the rescue boat of MAERSK LAUNCESTON heading to the casualty area.*

Subsequently, an operation was initiated for the safe evacuation of the remaining crew members on board the fore part of HS KALLISTO and their transfer to the other navy vessel. The operation was carried out by firstly embarking on the HCG Patrol vessel which then transfered them to the war vessel by means of the other HCG Patrol boats or the navy vessel's fast boat. By 08:48 the evacuation operation was completed and 21 crew members were on board the war vessel. The Commander of HS KALLISTO and three crew members had remained on board the fore part of HS KALLISTO while two injured crew members were transferred to shore for medical assistance.

At 09:06 a commercial T/B vessel started towing the fore part of HS KALLISTO towards the naval base of Salamina where it arrived at 13:35 and the towed part was secured. The aft canopy was collected by a Hellenic Navy T/B and it was transferred to Salamina naval base as well.

3.5 Pollution response

Following the collision and the sinking of the aft part of HS KALLISTO oil pollution from light oily mixtures as well as scattered spots of heavy oily mixtures were observed to the casualty area. Antipollution activities to the casualty area for the oil pollution and the collection of the debris from the wreckage were commenced on 27 and 28 October 2020 by HCG Antipollution vessels as well as antipollution vessels of a private company.

Moreover, during the towing operation of the fore part towards the naval base leakage of light oily mixtures was observed for which antipollution activities were commenced by antipollution vessels of private company by deploying antipollution booms.
Following the completion of the antipollution activities and the collection of all the debris, the casualty area was cleared for navigation.

3.6 Sustain damages

Due to the collision, MAERSK LAUNCESTON sustained only minor scratches at the bulbous and her port bow area. She was inspected by her Class on 28-10-2022 at Piraeus Port where "*no damage was found at the forward part of the vessel*" and so the vessel maintained her class and was allowed to continue voyages as per her statutory certificates (Figure 20, 21).

Figures 20,21. *The minor scratches to MAERSK LAUNCESTON's fore area.*

HS KALLISTO was broken in two parts at the engine room compartment and was considered a total loss. Her fore part was towed to Salamina naval base along with the aft canopy, while the aft part sank at approximately 90m depth and it was not recovered.

4. Analysis

The analysis of the examined marine casualty aims to identify and determine the factors and causes that contributed to the occurrence, taking into account the sequence of events and the collection of investigation information and data focusing both on specific points of the temporal evolution of these, as well as to the root causes in order to draw useful conclusions leading to safety recommendations.

It is noted that the Minehunter of the Hellenic Navy is out of the scope of the International regulatory framework applied to merchant ships concerning the navigational equipment, and therefore it was not equipped with a VDR. Consequently, information concerning the actions of the bridge team derived from the interview process.

A. MAERSK LAUNCESTON

4.1 Bridge layout and equipment

MAERSK LAUNCESTON had a standard ergonomic bridge arrangement. The steering control system was situated in the middle of the bridge and the other consoles and bridge equipment were located next to it.

More specifically, to the port side of the steering console were the X-Band Radar-ARPA and one of the two ECDIS while to the Starboard side were:

- the main console with the engine controls,
- the S-Band Radar-ARPA,
- the second ECDIS and,
- a chart table.

Also, there was a second chart table to the aft port side of the bridge as well as control consoles on the bridge wings.

4.1.1 Main Navigational Aids

.1 ECDIS

MAERSK LAUNCESTON was equipped with two JRC-JAN 9201 Electronic Chart Display and Information Systems (ECDIS), situated at the port and starboard side of the bridge. The passage plan for the intended voyage from Piraeus to Izmit was uploaded to the starboard side ECDIS on which the OOW could monitor the proper execution of the passage. During the time of the casualty both ECDIS were in operation.

.2 Radars

The vessel was equipped with a JRC JMA-9923-7XA X-Band Radar ARPA and a JRC JMA-9933-SA S-Band Radar ARPA. The S BAND was situated at the starboard side of the bridge next to the ECDIS to which the passage plan was uploaded. During the time of the casualty both radars were in operation.

.3 Automatic Identification System

The SAAB R4 AIS system was fitted on the main console next to the steering control system and during the time of the casualty it was in operation.

.4 GPS

The GPS was fitted on the chart table located at the aft port side of the bridge and during the time of the casualty it was in operation.

4.1.2 Bridge visibility

MAERSK LAUNCESTON´s wheelhouse arrangement offered a good view of the sea surface from the conning position to the navigated sea area. The forward blind sector that was formed by the loaded containers and the vessel's trim was calculated by the vessel's loading instrument to be 442m, that is within the limits provided by SOLAS Ch. V, Reg

22[1] (Figure 16).

Apart from the fore visibility restriction no other blind sector caused by the cargo, cargo gear or other obstruction outside the wheelhouse, obstructed the conning position's sea view from right ahead to the beam on both sides (Figure 22).

Considering the above it can be deduced that the Master could maintain a very good visual contact of the vessels navigating on MAERSK LAUNCESTON's Starboard bow or abeam.

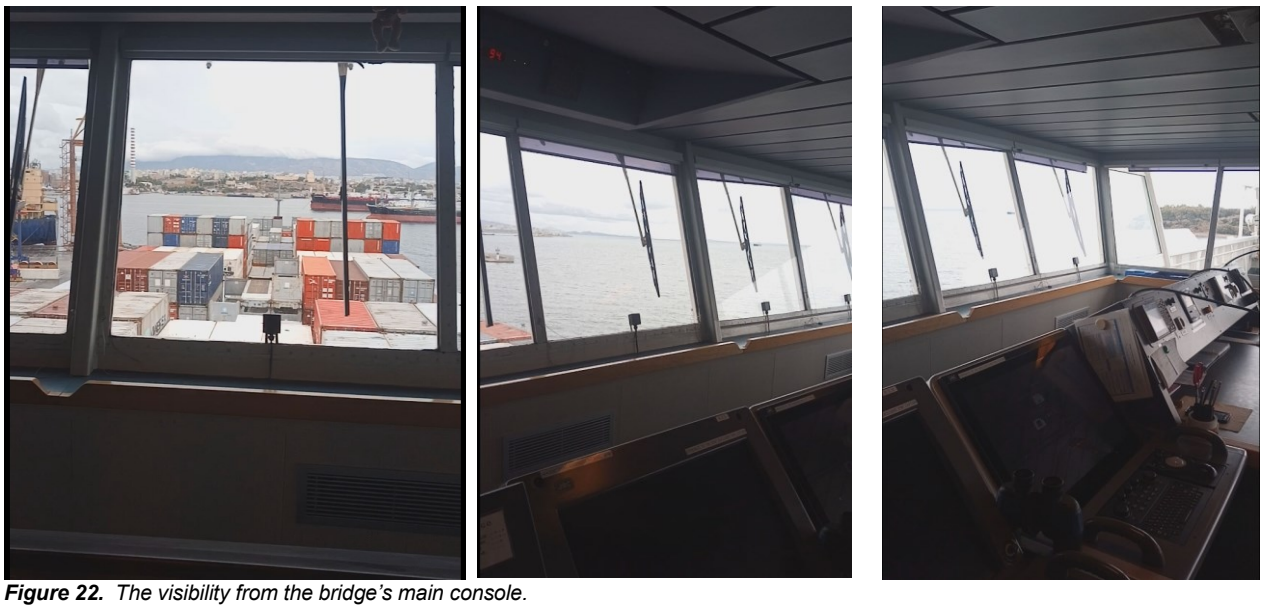

Figure 22. *The visibility from the bridge's main console.*

4.2 Environmental conditions

According to the Certificate provided by the Hellenic National Meteorological Service the weather conditions for the area and time of the casualty were reported to be good with winds from variable directions and force of 3Bf, sparsely cloudy and with good visibility.

MAERSK LAUNCESTON's Log Book weather recording for 10:00 on the day of the casualty was:

Wind force	2
Clouds	BC
Barometric pressure	1014 mb
Visibility	Good

In light of the above and taking into account that during the interview process no visibility restrictions were reported, the prevailed weather conditions cannot be considered to have been a contributing factor to examined marine casualty.

4.3 International Regulations for Preventing Collisions at Sea, 1972

As depicted in Figures 6,9,10,14 and 15, while the two vessels were steaming towards Piraeus TSS they were "in sight of one another", as per COLREGs, Rule 3, par. (k). During that time, the bearings of HS KALLISTO were ranged between 210° and 221°, which correspond to directions between 30° to 41° abaft the beam of HS KALLISTO.

Taking into account that HS KALLISTO did not proceed to any considerable alteration of her speed and course, as already described in par. 3.2.2, under the provisions of

[1] *".1 The view of the sea surface from the conning position shall not be obscured by more than two shiplengths, or 500 m, whichever is the less, forward of the bow to 10° on either side under all conditionsof draught, trim and deck cargo;."*

COLREGs, Rule. 13, the two vessels were in “overtaking’ situation with MAERSK LAUNCESTON being the “overtaking” vessel and HS KALLISTO the “overtaken”.

It is noted that according to par. (d) of the above Regulation any subsequent alteration of the bearing does alter the “overtaking” situation to a “crossing” situation.

Consequently, MAERSK LAUNCESTON should have kept out of the way of HS KALLISTO as she proceeded towards Piraeus TSS.

An abstract of the COLREGs that are relevant to the casualty’s sequence of events are referred to the below table:

1.	**Rule 1** ***Application***	(a). These Rules shall apply to all vessels upon the high seas and in all waters connected therewith navigable by seagoing vessels.
2.	**Rule 2** ***Responsibility***	(a). Nothing in these Rules shall exonerate any vessel, or the owner, master or crew thereof, from the consequences of any neglect to comply with these Rules or of the neglect of any precaution which may be required by the ordinary practice of seamen, or by the special circumstances of the case. (b). In construing and complying with these Rules due regard shall be had to all dangers of navigation and collision and to any special circumstances, including the limitations of the vessels involved, which may make a departure from these Rules necessary to avoid immediate danger.
3.	**Rule 3** **General Definitions**	(k) Vessels shall be deemed to be in sight of one another only when one can be observed visually from the other.
4.	**Rule 5** ***Look-out***	Every vessel shall at all times maintain a proper look-out by sight and hearing as well as by all available means appropriate in the prevailing circumstances and conditions so as to make a full appraisal of the situation and of the risk of collision.
5.	**Rule 6** **Safe Speed**	Every vessel shall at all times proceed at a safe speed so that she can take proper and effective action to avoid collision and be stopped within a distance appropriate to the prevailing circumstances and conditions. In determining a safe speed the following factors shall be among those taken into account: (a) By all vessels: (i) the state of visibility; (ii) the traffic density including concentrations of fishing vessels or any other vessels; (iii) the manoeuvrability of the vessel with special reference to stopping distance and turning ability in the prevailing conditions; ….. (b) Additionally, by vessels with operational radar: (i) the characteristics, efficiency and limitations of the radar equipment; (ii) any constraints imposed by the radar range scale in use; (iii) the effect on radar detection of the sea state, weather and other sources of interference; (iv) the possibility that small vessels, ice and other floating objects may not be detected by radar at an adequate range; (v) the number, location and movement of vessels detected by radar; (vi) the more exact assessment of the visibility that may be possible when radar is used to determine the range of vessels or other objects in the vicinity.
6.	**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 is 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 observation of detected objects. (c). Assumptions shall not be made on the basis of scanty information, especially scanty radar information.
7.	**Rule 8** ***Action to avoid collision***	(a). Any action 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 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. (i). A vessel which, by any of these Rules, is required not to impede the passage or safe passage of another vessel shall, when required by the circumstances of the case, take early action to allow sufficient sea-room for the safe passage of the other vessel. (ii). A vessel required not to impede the passage or safe passage of another vessel is not relieved of this obligation if approaching the other vessel so as to involve risk of collision and shall, when taking action, have full regard to the action which may be required by the Rules of this part. (iii). A vessel the passage of which is not to be impeded remains fully obliged to comply with the Rules of this part when the two vessels are approaching one another so as to involve risk of collision.
8.	***Rule 13 Overtaking***	(a) Notwithstanding anything contained in the Rules of Part B, Sections I and II any vessel overtaking any other shall keep out of the way of the vessel being overtaken. (b) A vessel shall be deemed to be overtaking when coming up with another vessel from a direction more than 22.5 degrees abaft her beam, that is, in such a position with reference to the vessel she is overtaking, that at night she would be able to see only the sternlight of that vessel but neither of her sidelights. (c) When a vessel is in any doubt as to whether she is overtaking another, she shall assume that this is the case and act accordingly. (d) Any subsequent alteration of the bearing between the two vessels shall not make the overtaking vessel a crossing vessel within the meaning of these Rules or relieve her of the duty of keeping clear of the overtaken vessel until she is finally past and clear.
9.	**Rule 16** ***Action by give-way vessel***	Every vessel which is directed to keep out of the way of another vessel shall, so far as possible, take early and substantial action to keep well clear.
10.	**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. (ii). 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 subparagraph (a)(ii) of this Rule to avoid collision with another power-driven vessel shall, if the circumstances of 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.

As described in par. 3.1.3. and 3.3, the Master of MAERSK LAUNCESTON did not proceed to any alteration of speed and course in order to keep out of the way of HS KALLISTO and avoid the collision risk. Moreover, the action to blast the vessel's whistle without alteration to course or speed, when the imminent danger of collision was identified by the Master of MAERSK LAUNCESTON, indicates that collision avoidance actions were expected by the HS KALLISTO. Said response disregarded the "overtaking" situation and the provisions of COLREGs, Rule 13 concerning the "overtaking vessel".

In light of the above and taking into consideration the sequence of the events it is deduced that the respective COLREGS for collision avoidance were disregarded by MAERSK LAUNCESTON's bridge watch.

4.4 Passage planning

STCW Code, section A-VIII/2, Part 2 "Voyage planning" sets out the general requirements for the obligation of the Masters to plan the intended voyage taking into account all pertinent data that amongst others concern the "up to date" information regarding navigational limitations and hazards which are of a permanent or predictable nature and which are relevant to the safe navigation of the ship.

Moreover, SOLAS/Chapter V/Reg. 34, as applied, determines the fundamental principles for "Safe navigation and avoidance of dangerous situations" in relation to the Master´s obligation to ensure that the intended voyage has been planned using the appropriate nautical charts and publications and also determining a route which inter alia ensures sufficient sea room for the safe passage of the ship throughout the voyage and anticipates all known navigational hazards.

The aforementioned SOLAS Regulation addresses the "Guidelines for voyage planning", that were established by IMO Assembly Resolution 893 (21), to be considered by Masters when developing the passage plan with the objective to safely and effectively navigate a vessel and to monitor the progress and execution of the planned routes.

In particular, aforementioned resolution conceives passage planning as a four phases procedure, that is:

- → **appraisal**, pertain to all information relevant to the contemplated voyage to be considered;
  Appraisal phase, includes seven basic factors that should be taken into account while the hindmost under the title "any relevant up-to date additional information", is subdivided to nine important items that inter alia include the following, pertinent to the examining case, factors:
  Item 7.3: "*climatological, hydrographical, and oceanographic data as well as other appropriate meteorological information;*"
  Item 7.5: *"existing ships' routeing and reporting systems, vessel traffic services, and marine environmental protection measures;"*.
  Item 7.6: *"volume of traffic likely to be encountered throughout the voyage or passage;" and*
  Item 7.7: "*if a pilot is to be used, information relating to pilotage and embarkation and disembarkation including the exchange of information between master and pilot*;"
- → **planning**, preparing the voyage plan on the basis of the fullest possible appraisal, covering the whole voyage form berth to berth.
  Planning phase or procedure, foresees two main factors to be considered whilst underlines, without being exhaustive, a list of nine primary items that deemed

critical to ensure safety of life at sea, safety and efficiency of navigation, and protection of the marine environment during the intended voyage or passage.
Aforementioned list, amongst others, includes:
Item 2.2.1. *"safe speed, having regard to the proximity of navigational hazards along the intended route or track, the maneuvering characteristics of the vessel and its draught in relation to the available water depth;"*

→ **execution**, the conduct of the passage in accordance with the plan or any changes made thereto.
Execution phase, presents five factors that should be taken into account when carrying out the plan with the last factor referring to the *"traffic conditions, especially at navigational focal point"*.

→ **monitoring**, the progress of the vessel in accordance with the voyage close and continuous control.
Monitoring phase does not require any specific factors or items to be considered, as it falls under the relevant provisions for watchkeeping duties of STCW Code and respective rules of COLREGS.

4.4.1 MAERSK LAUNCESTON´s Passage planning

Based on the aforementioned framework, MAERSK LAUNCESTON's Company, had incorporated to the vessel's Safety Management System Manual, the specific publication "Passage Planning", which provided detailed instructions for the four phases of the passage planning.

Amongst others, the aforementioned instructions[2] provided that the appraisal phase of the passage planning should include "*location of ferry routes, which may include high speed craft*", "*traffic separation schemes and mandatory routeing and reporting schemes*" as well as "*location of known areas of heavy traffic*".

With regards to the vessel's speed the guidelines for the planning phase of the passage provided that key elements of the plan included, amongst others, "*safe speed, maintaining the minimum UKC and any speed alterations necessary*".

In view of the above, MAERSK LAUNCESTON's voyage plan from Piraeus to Izmir was prepared according to the dedicated form by the 2nd Officer, was approved by the Master and was acknowledged by the C/O and the 3rd Officer. It comprised three segments of the intended voyage, that is:

- ✓ Berth to Pilot Station – outward pilotage,
- ✓ Pilot Station to Pilot Station – Sea Passage and
- ✓ Pilot Station to Berth – Inward pilotage.

The prepared passage plan provided, inter alia, information and instructions concerning the bridge watch condition, as well as the vessel's speed. The Bridge watch condition was classified by the vessel's SMSM to five categories and each one provided the proper manning levels (Figure 23).

[2] Document *BPM32-B2.1BPM32-B2.1, "Passage Appraisal and Planning"* of the vessel's SMSM

Watch Conditions				Master	OOW	Look-out	Helmsman	Pilot	Engine
A	Open Sea	Daylight	Good visibility		1	Optional	Auto		Unmanned
			Restricted visibility	1	1	1	Optional		Manned
		Darkness	Good visibility		1	1	Auto		Unmanned
			Restricted visibility	1	1	1	Optional		Manned
B	Heavy Traffic	All	Good visibility		1	1	Optional		Unmanned
			Restricted visibility	1	1	1	Optional		Manned
C	Onset of Heavy Weather & Navigating in Ice with an increased risk of damage to the vessel. SAR & Helicopter Operations	All	Good visibility	1	1	1	Optional		Manned
			Restricted visibility	1	1	1	1		Manned
D	Under Pilotage	All	All	1	1	Optional	1	1	Manned
E	At Anchor	Day	All		1	Optional	NA		Unmanned
		Night	All		1	1	NA		Unmanned

The Master is responsible for ensuring that appropriate bridge watch conditions are established depending on the prevailing circumstances.
The Officer On Watch may at any time increase the manning level of the Bridge Team by calling additional watch personnel and informing the Master.
The engine(s) shall be operated in maneuvering mode when Watch Conditions C and D are established.
The Engine Room shall be manned under all conditions if vessel is not classed UMS.
The actual bridge watch condition shall be recorded in the Deck Log Book.

Figure 23. *Abstract of SMM indicating the five bridge conditions and the manning levels.*

The voyage segment between the waypoints of Pilot disembarkation (*PIRAEUS PLT OUT*) and the Piraeus TSS north entrance (*TSS SARONIC*) provided that the vessel would navigate under category "B" bridge condition and at "Sea speed" (Figure 24). Consequently, following the pilot's disembarkation and as the vessel was steaming towards Piraeus TSS, the bridge team would consist the OOW, the Look-out with optional an AB as helmsman.

WP No.	WP Description	AP No.	AP Description	Chart	Position						Co (T°)	Distance			Position Monitoring System				Air Draft	UKC	Speed	Watch Comp	Security Level
					Lat			Long				This Course	Total Made	Total To Go	Primar	Second	Fix Int	PI					
Passage Berth To Pilot Station - outward pilotage																							
0	PIRAEUS BERTH	×××	Assist Pilot during embarkation.	ENC	37	57.34	N	23	35.24	E			0.0	1.9	GPS	RANGE/ BEARING	GPS- 10 mins R/B- 6 mins	Pls see on chart if any	42.90 m	as per table	Man. Speed	D	1
1	KINESOURA	×××	Monitor position and depth as per chart datum + tide	ENC	37	56.96	N	23	35.32	E	171	0.4	0.4	1.5	GPS	RANGE/ BEARING	GPS- 10 mins R/B- 6 mins	Pls see on chart if any	42.90 m	as per table	Man. Speed	D	1
3	BREAKWATER	×××	Monitor position and depth as per chart datum + tide	ENC	37	56.70	N	23	36.16	E	111	0.7	1.1	0.8	GPS	RANGE/ BEARING	GPS- 10 mins R/B- 6 mins	Pls see on chart if any	42.90 m	as per table	Man. Speed	D	1
4	PIRAEUS PLT OUT	×××	Assist Pilot during disembarkation.	ENC	37	55.94	N	23	36.46	E	163	0.8	1.9	0.0	GPS	RANGE/ BEARING	GPS- 10 mins R/B- 6 mins	Pls see on chart if any	42.90 m	as per table	Man. Speed	D	1
Passage Pilot Station To Pilot Station - Sea Passage																							
0	PIRAEUS PLT OUT	×××	Assist Pilot during disembarkation / Report to Piraeus Traffic CH.13	ENC	37	55.9	N	23	36.5	E			0.0	382.2	GPS	RANGE/ BEARING	GPS- 10 mins R/B- 20 mins				Man. Speed	D	1
1	TSS SARONIK	×××	Watch out small craft, fishing vessels. Navigate with caution. VHF watch as per VTS area and follow VTS advice	ENC	37	55.90	N	23	36.46	E	180	6.4	6.4	375.8	GPS	RANGE/ BEARING	GPS- 10 mins R/B- 20 mins				Sea Speed	B	1

Figure 24. *Abstract of passage plan indicating the navigational watch composition and the speed.*

On the above grounds and as at the time of the casualty the Master was by himself on the bridge and the autopilot was engaged, it derives that the provisions of the approved

passage plan concerning the bridge complement were not followed.

Moreover, it is noted that as depicted in Figure 12, the area between the exit of Piraeus port and the north entrance of the Piraeus TSS is indicated as a Precautionary Area. Taking into account that the approved passage plan provided no restrictions to the vessel's speed for that segment it is suggested that the hazards associated with navigation to the said area were not properly considered.

4.4.2 MAERSK LAUNCESTON´s speed

The approved passage plan provided that MAERSK LAUNCESTON should navigate with sea speed at the voyage segment where the casualty occurred. According to the data provided during the investigation process, the maximum engine rpm for the vessel's sea speed condition was 104 with the telegraph at NAVIGATION FULL AHEAD. Based on the vessel's maneuvering characteristics, the speed that the vessel could develop at said rpm ranged from 24,6 Knots to 26,4 Knots as per the below table:

	Telegraph	RPM	Speed (Knots)	
			Loaded Condition	Ballast condition
Maneuvering	Dead Slow	25	6.6	7.1
	Slow	35	8.9	9.6
	Half	50	12.7	13.7
	Full	65	16.4	17.6
Sea speed	Navigation Full Ahead	104	24,6	26,4

Taking into account the 6.4 nm distance of the voyage segment between the waypoints of Pilot disembarkation (PIRAEUS PLT OUT) and the Piraeus TSS north entrance (TSS SARONIC) it is unlikely that the vessel could increase her speed to 104 rpm however, it is noted that the approved passage plan did not provide any restrictions to the vessel's speed for that segment.

As described in par. 3.3, the extracted telegraph recordings indicate that prior to the engine speed reduction at 07:29:13, MAERSK LAUNCESTON was steaming with the telegraph at position FULL AHEAD, engine speed of 63 rpm and the SOG was 16,5 knots.

Considering the above it is suggested that at the time of the casualty the vessel's speed was at maneuvering speed.

4.4.2.1 MAERSK LAUNCESTON´s maneuvering characteristics

As the sea speed of the vessel according to her characteristics ranged up to a maximum of 24,6 knots, the followed speed while the vessel was navigating towards Piraeus TSS was up to the decision of the Officer in charge, taking into account COLREGs Rule 6, as well as the pertinent parameters for the execution phase of the passage plan.

From the vessel's maneuvering characteristics table (Figure 25), the closest condition to the actual speed at the time of the casualty is provided for engine telegraph at HALF and engine speed at 50 rpm. At this speed (HALF - 50 rpm) and normal loaded condition, the emergency maneuver to put the engine telegraph at Full Astern and with minimum rudder application, the vessel would need a time of 8min and 10 sec and a distance of 2000m for a full stop.

At the same condition (Half speed – loaded), the turning circle[3] of a hard to port rudder application provided an advance[4] of 570m and a 520m tactical diameter[5]. With a hard to starboard rudder application the vessel's turning circle provided a 600m advance and 620m tactical diameter.

The aforementioned data indicate that MAERSK LAUNCESTON's maneuverability demanded a timely action to avoid the risk of collision when navigating at a speed of 16.3 knots. It is suggested that the aforementioned maneuverability characteristics of MAERSK LAUNCESTON had affected Master's decision to blast the vessel's whistle when the collision risk with HS KALLISTO was identified, because her smaller size provided better maneuverability for avoiding the collision.

Taking into account that the bridge complement, as provided by the passage plan, was not followed, the traffic of the area and that the Master was the sole person on the bridge at the time of the casualty, it derives that Rule 6 of COLREGs concerning the safe speed was not followed.

In light of the above the vessel's speed while navigating towards Piraeus TSS is considered a contributing factor to the examined marine casualty.

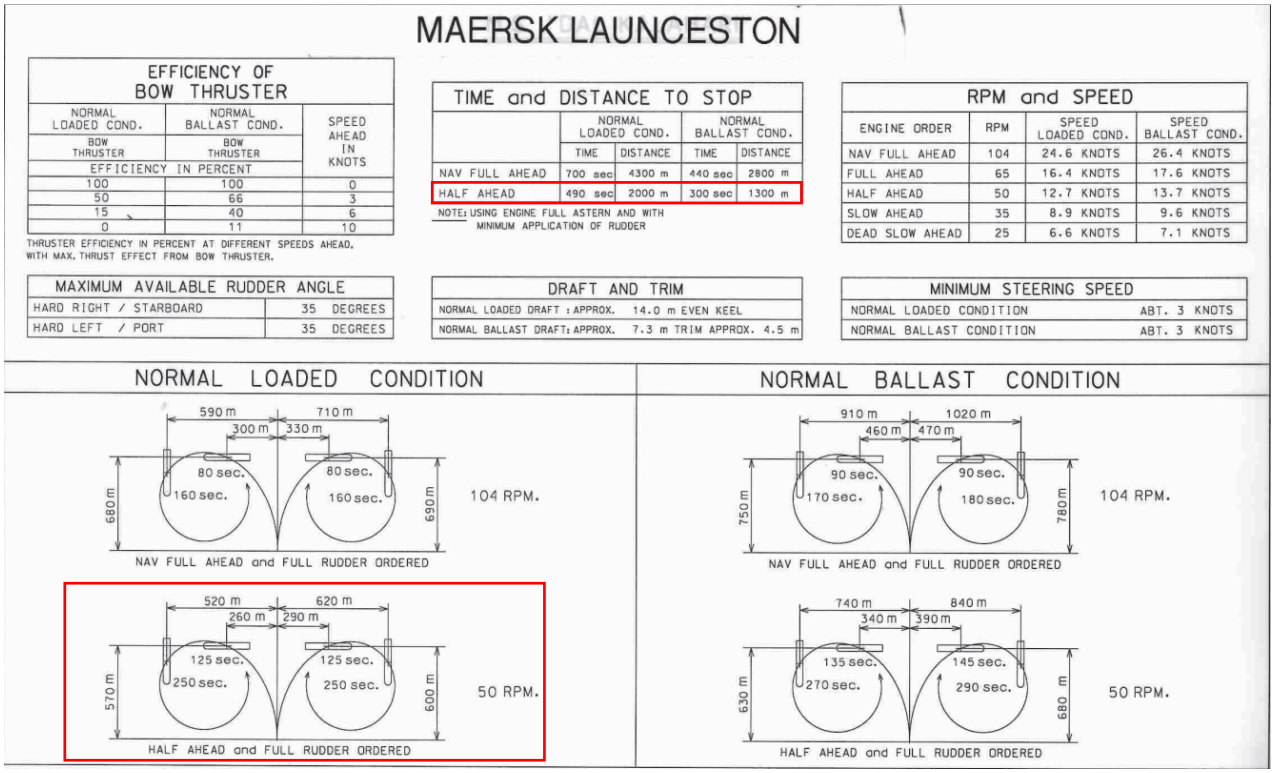

Figure 25. *MAERSK LAUNCESTON maneuvering table.*

4.5 Effective look out

During navigation, a "*proper look-out by sight and hearing as well as by all available means appropriate in the prevailing circumstances and conditions so as to make a full*

[3] Turning circle is the manoeuvre performed with 35° rudder angle or the maximum rudder angle permissible at the test speed.

[4] Advance is the distance the ship surges forward once the rudder angle is applied till the ship heading is 90° off course.

[5] Tactical diameter is the distance between the ship's original direction vector at a steady heading and that in the final phase of its turn when the ship has changed its heading by 180 degrees.

appraisal of the situation and of the risk of collision" should be maintained at all times, as provided by Rule 5 of the COLREGs.

Look out duty is defined by STCW Code/Part A/Chapter VIII/ Part 4-1, par. 14 which states:
"*14. A proper lookout shall be maintained at all times in compliance with rule 5 of the International Regulations for Preventing Collisions at Sea, 1972, as amended and shall serve the purpose of:*
.1 maintaining a continuous state of vigilance by sight and hearing, as well as by all other available means, with regard to any significant change in the operating environment;
.2 fully appraising the situation and the risk of collision, stranding and other dangers to navigation; and
.3 detecting ships or aircraft in distress, shipwrecked persons, wrecks, debris and other hazards to safe navigation".

The Master's decision to relieve the OOW and the AB for breakfast and remain by himself on the bridge, indicates that he took over the look-out duties as well. Apart from the fact that the approved passage plan provision concerning bridge complement was not followed, as it was analyzed in par. 4.4.1, the condition of a sole lookout on the bridge is provided by Part 4-1 of STCW Code/Part A/Chapter VIII which in par. 16 states:
"The officer in charge of the navigational watch may be the sole lookout in daylight provided that, on each such occasion:
.1 the situation has been carefully assessed and it has been established without doubt that it is safe to do so;
.2 full account has been taken of all relevant factors, including, but not limited to:
– state of weather;
– visibility;
– traffic density;
– proximity of dangers to navigation; and
– the attention necessary when navigating in or near traffic separation schemes; and
.3 assistance is immediately available to be summoned to the bridge when any change in the situation so requires".

In relation to the above it can be inferred that the decision to relieve the OOW and the helmsman, did not take into full account the relevant factors and more specifically the hazards of the area of navigation towards the TSS and the traffic density. It is suggested that said factors were overpowered by the calm weather and the good visibility which caused a sense of safety and complacency to MAERSK LAUNCESTON's Master.

Based on the analysis of the VDR data it derives that from 07:17:03 to 07:19:33 the Master operated the ECDIS to check the details of another voyage segment and changed the display chart from Piraeus area to Canakkale area. As depicted in figures 26, 27, during that time the bearing of HS KALLISTO remained almost the same at approximately 219°, while the distance between the two vessels was reduced.

In addition, as described into par. 3.1.3 while the two vessels were proceeding towards Piraeus TSS and the distance between them kept reducing, the bearing of HS KALLISTO had minor alteration. It is noted that a practical way for identifying the risk of collision by the navigational Officers and the lookouts is when the distance of the spotted target is reducing and the bearing remains the same.

Considering the above as well as the fact that no action was recorded to keep out of the "overtaken" HS KALLISTO's course prior to the blast of the vessel's whistle at 07:28:19, such as acquiring the target's navigational data to the radar-ARPA to check the CPA and TCPA, it is suggested that until that time HS KALLISTO's course was not properly

assessed and the “overtaking” situation, as per COLREGs, Rule 13, was not identified.

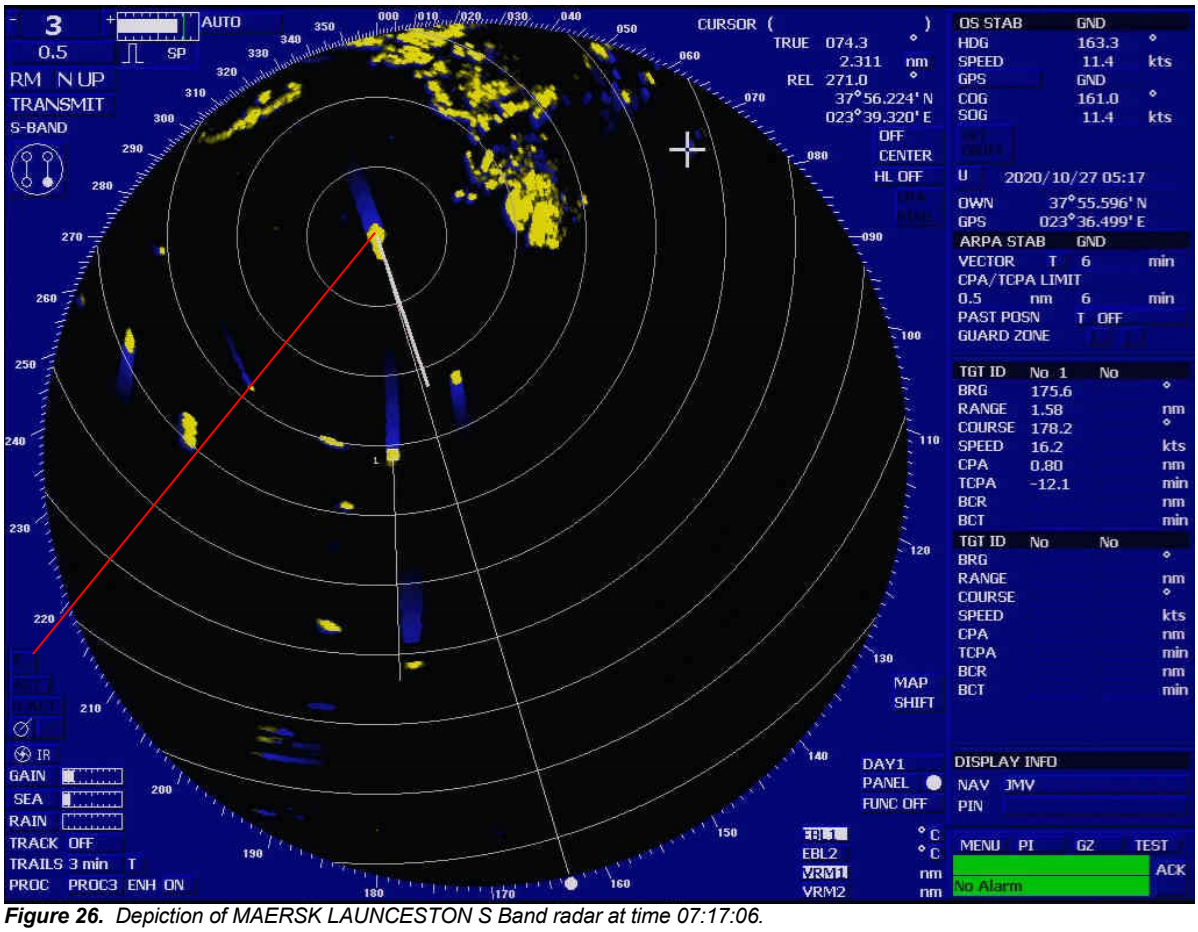

Figure 26. *Depiction of MAERSK LAUNCESTON S Band radar at time 07:17:06.*

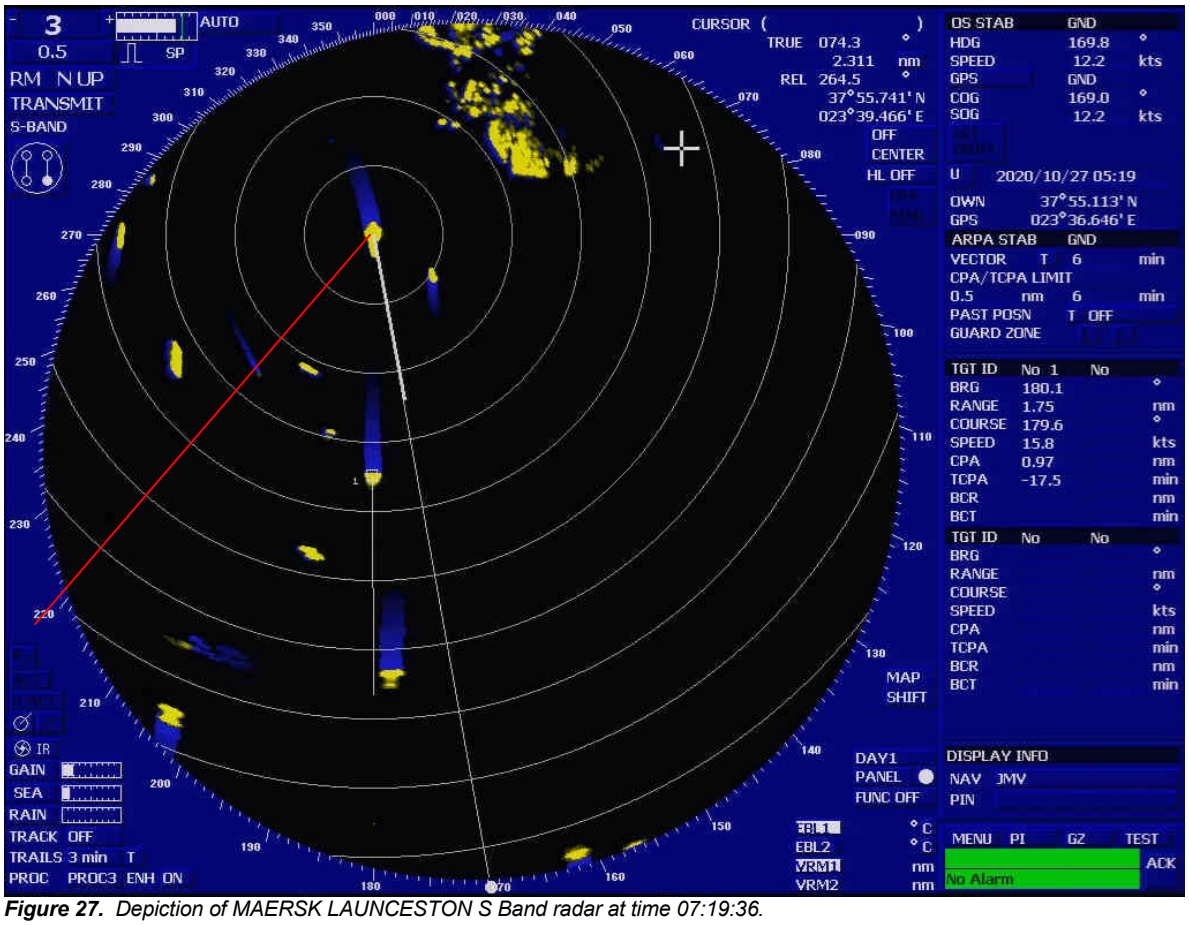

Figure 27. *Depiction of MAERSK LAUNCESTON S Band radar at time 07:19:36.*

4.6 Bridge Resource management

BRM is the effective management and integration of all the human and technical resources available to the bridge team, to safely navigate the vessel. The effective management of the bridge resources ensures safe navigation by fully utilizing all the technical advantages of the navigational equipment for the purpose of maintaining an effective awareness at any navigational situation.

Under STCW Code/Part A/Chapter VIII/Part 3 “Watch keeping Principles In general” the Bridge Resource Management principals have been introduced, while Chapter VIII/Part 4-1 have laid down a set of mandatory “principals to be observed in keeping a navigational watch”. Said provisions, amongst other, require that OsOW shall understand the functions and operation of the installed equipment and maintain a proper watch, making the most effective use of the resources available, such as information, installations/equipment and other personnel.

When the Master signed on MAERSK LAUNCESTON and before taking over his duties he received the provided by the SMM familiarization concerning Safety[6]by the 3rd Officer, as well as the Bridge Equipment[7] and ECDIS[8] by the 2nd Officer.

4.6.1 Radar-ARPA

MAERSK LAUNCESTON was equipped with one 9 GHz (X-Band) and one 3 GHz (S-Band) Radar ARPAs. Due to the higher operating frequency X-Band radars provide higher resolution and clear image and are operated mostly during day or night time under good weather conditions. S-Band Radars are mostly operated during night time, under poor visibility conditions and in coastal or congested waterways.

Both Radar-ARPAs of MAERSK LAUNCESTON were featuring a variety of utilities including “Guard Zone”, which offer to the OOW the ability to customize zones and provide an additional safeguard to the vessel’s passage to avoid the risk of collision. By utilizing the function, audible and visual alarms are activated when a target enters the guard zone, in order to alert the OOW and take actions as appropriate. Moreover, apart from the capability to manually acquire the navigational data of a target, MAERSK LAUNCESTON’s Radar-ARPAs featured a function for the automated acquisition of targets that enter to the Guard Zone.

According to the collected data the aforementioned functions were not utilized and HS KALLISTO target was not acquired. Consequently, as MAERSK LAUNCESTON was approaching HS KALLISTO the Master was not alerted about the collision risk in order to take immediate action.

It is noted that the relevant guidelines of the vessel’s SMM concerning navigation in Coastal Waters, Congested Areas and Traffic Separation Schemes (TSS)[9] did not incorporate any specific instruction concerning the aforementioned Radar ARPA features.

Failure to utilize the proper Radar-ARPAs’ utilities while the vessel was navigating in

---

[6] Code F31-B4.1 Form of Shipboard Operations Manual concerning “*Familiarization for all on-signing Masters, Officers, Engineers and Ratings”*

[7] Code F32-B6.1a Form of Bridge Procedures Manual concerning *“Bridge equipment technical familiarization”*

[8] Code F32-B5.2a Form of Bridge Procedures Manual concerning *“ECDIS technical familiarization”*

[9] Code BPM32-B3.4BPM32-B3.4 Form of vessel’s Bridge Procedure Manual concerning “*Navigation in Coastal Waters, Congested Areas and Traffic Separation Schemes (TSS)”*

contrast to the provisions of the approved passage plan concerning the bridge complement is considered a contributing factor to the examined casualty.

4.6.2 ECDIS

At the time of the casualty the two JRC-JAN 9201 Electronic Chart Display and Information Systems were in operation as per the respective instructions of the vessel's SMM. It is noted that ECDISs are integrated with other navigational equipment of the bridge in order to provide to the user all the pertinent information for the safe execution of the voyage and reduce the workload.

The Master of MAERSK LAUNCESTON had completed the relevant training in accordance to IMO Model Course 1.27 and the respective Certificate as per STCW Code provisions was issued on 27-11-2013. In addition, the Master had completed an approved by the manufacturer 16-hour type-specific training for the MAERSK LAUNCESTON's ECDIS on December 2017 and the respective Certificate was issued on 23-12-2017.

MAERSK LAUNCESTON's ECDISs integrated the data provided by the AIS device. Hence, every vessel in the area equipped and operating an AIS device was displayed on the vessel's ECDIS screens. However, according to the applied national and international regulatory framework not all vessels are mandated to be equipped with an AIS device. This is well known to navigational Officers and is also stipulated, amongst others, with a specific notice to the IMO Resolution A.1106(29), concerning the "*Revised guidelines for the onboard operational use of shipborne automatic identification systems (AIS)*". Consequently, HS KALLISTO could not be spotted on the ECDISs' screens. It is noted that specific item concerning the "*Display of AIS and ARPA targets and relevant information including limitations*" was included to the familiarization check list concerning the ECDIS that the Master received when he signed on to the vessel.

CAUTION

Not all ships carry AIS.

The officer of the watch (OOW) should always be aware that other ships, in particular leisure craft, fishing boats and warships, and some coastal shore stations including Vessel Traffic Service (VTS) centres, might not be fitted with AIS.

The OOW should always be aware that AIS fitted on other ships as a mandatory carriage requirement might, under certain circumstances, be switched off on the master's professional judgement.

Figure 28. *Abstract from IMO Resolution A.1106(29).*

Vessels not equipped or not operating the AIS could be projected to MAERSK LAUNCESTON's ECDIS display either by relaying the Radar-ARRPA screen or by acquiring the target on the ARPA which would transferred the target's navigational data on the ECDIS display. Nonetheless, the analysis of the VDR data indicate that HS KALLISTO was not projected to the ECDIS screen.

Taking into account that while the vessel was steaming towards Piraeus TSS, the Master changed the chart on the ECDIS in order to check the voyage details for the area of Canakkale, as well as the fact that HS KALLISTO's course was not observed visually or to the Radar-ARPA, as explained in par. 4.5, it is suggested that the Master's focus was mostly on the navigational information provided by the ECDIS and consequently did not

identify the collision risk with HS KALLISTO.

Failure to utilize the integration features of the ECDIS and Radar-ARPA in relation to the navigational hazards by vessels without AIS, as stipulated to the IMO Resolution A.1106(29), is considered a contributing factor to the examined casualty.

4.7 Master's decision

The ISM Code in Chapter 5. "Master´s responsibility and Authority" states that:
"*5.1 The Company should clearly define and document the master's responsibility with regard to:*

- *implementing the safety and environmental protection policy of the Company;*
- *motivating the crew in the observation of that policy;*
- *issuing appropriate orders and instructions in a clear and simple manner;*
- *verifying that specified requirements are observed; and*
- *reviewing the SMS and reporting its deficiencies to the shore-based management.*

5.2 The Company should ensure that the SMS operating on board the ship contains a clear statement emphasizing the Master's authority. The Company should establish in the SMS that the master has the overriding authority and the responsibility to make decisions with respect to safety and pollution prevention and to request the Company's assistance as may be necessary".

In addition to the ISM provisions Master's Authority is regulated by SOLAS, Ch. V, Reg 34 "Master's discretion", which states: "*The owner, the charterer, the company operating the ship as defined in regulation IX/1, or any other person shall not prevent or restrict the master of the ship from taking or executing any decision which, in the master's professional judgement, is necessary for safety of life at sea and protection of the marine environment".*

The above provisions are incorporated to vessels' SMM with specific instructions to afford the Masters with the necessary powers for the safe operation. Under the aforementioned instructions, Masters are provided with the authority to deviate from the procedures established by the SMM, when according to their professional judgement it is deemed necessary to ensure safety of life and property and the protection of the marine environment. That means that when unexpected events or conditions affect the planned operation, the Master has the authority and the duty to assess the evolving situation on the spot and decide how to respond, either by applying the instructions of the vessel's SMM or to take any other needed measure according to the professional judgement.

Amongst others, the aforementioned provisions were incorporated to MAERSK LAUNCESTON's SMM by the following provisions to the Bridge Procedure Manual:

- ✓ BPM32-A1 provided that "*The Master has the Overriding Authority to deviate from this manual if, in his professional opinion, it is necessary to preserve safety of life, the environment and/or the vessel*",
- ✓ BPM32-A3 provided that "*It is acknowledged by all shore-based personnel that in matters of safety and pollution prevention, the Master has the overriding authority and responsibility to take whatever action he considers to be in the best interest of the passengers and the crew, the cargo, the ship and the environment. ….. The Master can and indeed must depart from procedures if particular circumstances require him to do so*".

In the examined marine casualty, it was deduced that the Master's decision to relieve the C/O and the AB from their navigational duties was not in the context of the aforementioned provisions concerning Masters' authority.

It is noted that the Master's decision to disregard the provision of the approved passage

plan concerning the bridge complement, and consequently to reduce the applied safeguards for safe navigation, was not questioned either by the OOW nor by the AB who left the Master alone on the bridge.

The Master's disregard to the relevant SMM instructions and utilizing the overriding authority for purposes other than the preservation of safety and protection of the environment is considered a contributing factor to the examined marine casualty.

B. HS KALLISTO

4.8 Minimum CPA

After HS KALLISTO exited the Psytalia Channel and as she was proceeding to her planned voyage the Commander remained on the bridge together with the navigational watch Officer, the helmsman and the lookout.

The Commander assessed the traffic in the area and spotted the Oil Tanker ATLAS at a distance approximately 3nm north from the TSS entrance which was navigating with a heading of approximately 290° and SOG approximately 0,3 Knots. He decided to proceed with a course that would allow HS KALLISTO to pass with her starboard side from ATLAS's stern.

It was reported that at approximately 07:20 and as HS KALLISTO was proceeding towards passing from ATLAS's stern the Commander assessed the navigational data of MAERSK LAUNCESTON and the CPA was approximately 250 yards from HS KALLISTO's stern, that is approximately 230 meters and so he decided to not alter the course as it was considered a safe passage.

Taking into account the extracted navigational data from HS KALLISTO's GPS, as depicted at par. 3.2.2, from which it derives that HS KALLISTO proceeded without alteration to course and speed, until the reported collision avoidance maneuver to increase speed to "Full Speed" and turn hard to Port in order to pass from MAERSK LAUNCESTON's bow, it can be inferred that no other action was taken in order to increase the CPA.

During navigation in coastal water with dense traffic and when there is not available space for maneuvering, the 230 meters passage could be considered a safe distance. However, in said situations possible small alterations to course and speed by one of the vessels or both could increase the risk of collision by reducing the CPA and the TCPA. To mitigate the risk, bridge teams should have an effective monitoring of the other vessels in order to identify any alteration to the speed and course that would reduce the CPA and the TCPA and proceed to proper action to avoid the collision.

In light of the above, and taking into account that the Commander of HS KALLISTO did not proceed to any maneuver to increase the CPA, even though it was the overtaken vessel, it is considered that specific guidelines concerning the minimum CPA during coastal navigation and the additional measures to be followed when the minimum CPA cannot be maintained would have prompted the Commander of HS KALLISTO to proceed to a timely maneuver in order to increase the CPA with MAERSK LAUNCESTON and avoid the collision risk.

4.9 Communication

Communication between two vessels through VHF, although not clearly provided by the COLREGs is a practice applied by OsOW at some situations as an additional measure to ensure a safe passage and mitigate the collision risk by indicating their intentions and agree to a safe passage. However, due to the involved risks of misunderstanding or misinterpretation, when two vessels attempt to establish VHF communication in order to

report their intentions and agree to a clear passage this should be done timely, so as there is no loss of time for the communication instead of taking the needed action and clearly, stating the name of the vessels, the followed and the intended course as well as any other important information.

As stated in par. 3.3, according to the extracted data from MAERSK LAUNCESTON's VDR, at 07:29:15 HS KALLISTO called MAERSK LAUNCESTON on CH 16 but in Greek language addressing partly the vessel's name, that is "*LAUNCESTON the war vessel*". The Master of MAERSK LAUNCESTON did not respond to that call and at 07:29:23 sounded another seven (07) second long blast with the vessel's whistle. During those seven seconds HS KALLISTO attempted again calling MAERSK LAUNCESTON on CH 16 however the call was not completed and only part of the name was received, that is "*LAUNCEST*".

Taking into account that the first VHF call was made a short time prior to the casualty as well as the fact that at that time the Master of MAERSK LAUNCESTON was alone in the bridge, it is suggested that even if the call was made clear and in the English language it would be difficult for the Master to respond to the VHF and at the same time take action to avoid the collision.

4.10 Fatigue

Based on the collected data as well as the provided information during the interview process, fatigue was not considered a contributing factor to the examined marine casualty.

5. Conclusions

The following conclusions, safety issues and safety recommendations should not be taken as a presumption of blame or liability under any circumstances. The juxtaposition of these should not be considered with any order of priority or importance.

5.1 The approved passage plan for the voyage segment where the casualty occurred provided category "B" bridge complement, which consisted of the OOW, a look-out and option for an AB as helmsman (§ 4.4.1).

5.2 Master's decision to relieve the OOW and the helmsman for breakfast, and remain the sole person on the bridge disregarded the provisions of the approved passage plan (§ 4.4.1).

5.3 The hazards associated with navigation to the Precautionary area towards the north entrance of Piraeus TSS were not properly considered for determining the vessel's safe speed during the appraisal and planning phases of the passage plan (§ 4.4.1).

5.4 At the time of the casualty MAERSK LAUNCESTON's was steaming at maneuvering speed (§ 4.4.2).

5.5 Taking into account the maneuvering characteristics, the bridge complement and the traffic density, the speed of MAERSK LAUNCESTON at the time of the casualty was not in accordance to the provisions of COLREGs Rule 6 (§ 4.4.2.1).

5.6 Prior to the casualty, HS KALLISTO was navigating with an almost steady course and speed and did not proceed to any considerable alteration of her COG and SOG (§ 3.2.2).

5.7 MAERSK LAUNCESTON's bridge complement did not provide effective look out as per COLREGs Rule 5 (§ 4.5).

5.8 Calm weather and good visibility affected Master's performance by creating a sense of safety and complacency (§ 4.5).

5.9 HS KALLISTO's course was not properly assessed and the "overtaking" situation, as per COLREGs, Rule 13, was not identified (§ 4.5).

5.10 The provisions of COLREGs, Rule 13 concerning the "overtaking vessel" were disregarded (§ 4.3).

5.11 Radar-ARPAs' features concerning "Guard Zones" and automated acquisition of targets that enter to the Guard Zone were not utilized. No guidelines were incorporated to vessel's SMM for said features (§ 4.6.1).

5.12 Master's focus on ECDIS failed to identify that vessels without AIS are not projected on the screen (§ 4.6.2).

5.13 The ECDIS integration with the Radar-ARPA to project vessels without AIS was not utilized (§ 4.6.2).

5.14 Master's decision to remain the sole person on the bridge, disregarding the approved passage plan and the applied safeguards provided by the SMM was not in the context of ensuring safety of life and property and protecting the marine environment (§ 4.7).

5.15 The Commander of HS KALLISTO did not proceed to any maneuver to increase the CPA, even though it was the overtaken vessel (§ 4.8).

5.16 Specific guidelines concerning the minimum CPA during coastal navigation and the additional measures to be followed when the minimum CPA is not possible are considered that would have prompted the Commander of HS KALLISTO to proceed to a timely maneuver in order to increase the CPA with MAERSK LAUNCESTON and avoid the collision risk (§ 4.8).

6. Actions taken

Based on information provided by the managers of MAERSK LAUNCESTON and the Hellenic Navy, corrective actions taken include:

MAERSK LAUNCESTON's managers:

a) Review of the implementation of the navigation procedures.

b) 3rd party remote navigational assessments/audits of vessels.

c) Implementation of navigation campaign.

Hellenic Navy:

All necessary measures were taken by the Hellenic Navy following an internal investigation that they cannot be dispatched due to classification issues.

7. Safety recommendations

Taking into consideration the analysis and the conclusions derived from the safety investigation conducted the following recommendations are issued:

7.1 The Managers of MAERSK LAUNCESTON are recommended to:

04/2020 Incorporate specific guidelines to the Bridge Procedure Manual, Form Code: BPM32-B3.4BPM32-B3.4 concerning "*Navigation in Coastal Waters, Congested Areas and Traffic Separation Schemes (TSS)*", for OOW to examine the necessity of utilizing the Guard Zone feature of the Radar/ARPA when the vessel is navigating Coastal Waters, Congested Areas and Traffic Separation Schemes.

05/2020 Incorporate specific guidelines to the Bridge Procedure Manual, Form Code: BPM32-B2.1BPM32-B2.1, "Passage Appraisal and Planning" of the vessel's SMSM, to provide at the prepared passage plan maneuvering speed or indicate the maximum safe speed for navigation in Precautionary areas.

06/2020 Amend the vessel's SMM with specific guidelines concerning the Masters' authority, highlighting that authority to deviate from established procedures is provided for the purpose of ensuring safety of life and property and protecting the marine environment. To this direction, specific provisions to the vessel's SMM maybe examined to encourage Officers to raise concerns to the Masters when their orders affect the established safeguards for the operation.

7.2 The Hellenic navy is recommended to:

07/2020 Review the navigational guidelines for the Commanders and OsOW considering the establishment of a minimum safe CPA when navigating in coastal waters and Precautionary areas, as well as the additional measures to be taken to mitigate the collision risk when the minimum CPA cannot be maintained.

Published by the Hellenic Bureau for Marine Casualties Investigation (HBMCI), under the provisions of the article 16 of Law 4033/2011 (Government Gazette A΄ 264), as applied.
This report was written solely for the purposes of the investigation and is uploaded on the website of HBMCI (see below)
Accident Investigation Report 02/2020
Hellenic Bureau for Marine Casualties Investigation
150 Grigoriou Lambraki Str.,
Postal Code: 18518, Piraeus, Greece
Tel.: +30 213 4191970
FAX: +30 213 4191269
E-mail: hbmci@yna.gov.gr
Website: http://hbmci.gov.gr