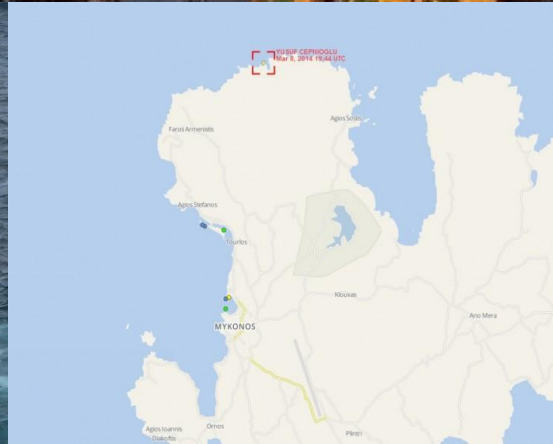




HELLENIC REPUBLIC



HELLENIC BUREAU FOR MARINE CASUALTIES INVESTIGATION



May 2017

CONTENTS

CONTENTS.....	2
Foreword	3
GLOSSARY OF ABBREVIATIONS AND ACRONYMS	4
1. Executive summary	5
2. Factual information	7
2.1 Vessel's Particulars	7
2.2 Weather data.....	8
2.3 Voyage particulars.....	8
2.4 Marine casualty information.....	8
3. Narrative.....	9
3.1 Voyage plan – navigational watch schedule.....	9
3.2 The Master 0800-1200/2000-2400 watch.....	10
3.3 The 2 nd Officer 0000-0400/1200-1600 watch	11
3.4 The Chief Officer 0400-0800/1600-2000 watch.....	13
3.5 The grounding	15
3.6 Emergency Response	16
3.7 Hellenic Coast Guard Response	19
3.8 Salvage, antipollution and wreck removal operations.....	19
4. Analysis	21
4.1 The feeder liner vessel operation	21
4.2 Yusuf Cepnioglu's positioning data from external sources	21
4.3 Yusuf Cepnioglu Crew	23
4.4 Crew information	25
4.5 Main Bridge equipment arrangement - Conning Position view	26
4.5.1 Main Bridge equipment arrangement	26
4.5.2 Wheelhouse view	27
4.6 Means of Navigation and Navigational Aids	27
4.6.1 Navigational Charts	27
4.6.2 Navigational practice	28
4.6.3 Radars.....	29
4.6.4 GPS.....	29
4.6.5 Bridge Navigational Watch Alarm System	30
4.7 Bridge resource management	32
4.8 Look-out watch	34
4.9 Safety Management System (SMS)	35
4.9.1 Navigational watch hand over procedure	35
4.9.2 Master's Standing and Night Orders	36
4.10 Fatigue	36
4.10.1 Chief Officer's fatigue	37
4.10.2 Deck crew fatigue	38
4.11 Crew complement	38
4.11.1 Minimum Safe Manning Principals	38
4.11.2 Yusuf Cepnioglu deck resources.....	39
4.12 Emergency response by the crew	40
4.13 Similar cases	41
5. Conclusions	42
6. Actions Taken.....	43
7. Safety Recommendations.....	43

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 technical 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 occurred on the 8th of March 2014 and resulted in the examined very serious marine casualty. 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 vessel's time that is Local Time (LT, UTC +2) unless otherwise stated.

Under the above framework HBMCI has been examining the grounding of Cargo-Container vessel (C/V) YUSUF CEPNIOGLU, occurred on the 8th of March 2014, in the sea area North East of Mykonos Island. This report is mainly based on information and evidence that have been derived from the interview process and information collected from those individuals involved in the marine casualty as vessel's S-VDR data was not recovered.

GLOSSARY OF ABBREVIATIONS AND ACRONYMS

1	AB	Able seaman
2	AIS	Automatic identification system
3	ARPA	Automatic radar plotting aid
4	BNWAS	Bridge Navigational Watch Alarm System
5	Bfrs	Force of wind in beaufort scale
6	CoC	Certificate of Competency
7	CoG	Course Over Ground. The actual path of a vessel with regard to the seabed, measured in degrees. Course may be relative to true north (true course) or magnetic north (magnetic course)
8	COLREGS	International regulations for preventing collisions at sea, 1972, as amended
9	°	degrees (of angle)
10	DOC	Document of Compliance
11	GMDSS	Global maritime distress and safety system
12	GOC	General Operators' Certificate for GMDSS
13	GPS	Global positioning system
14	Gt	gross tonnage
15	HDG	Heading. The direction in which a vessel is pointed at any given moment. Heading may be relative to true north (true heading) or magnetic north (magnetic heading)
16	HCG	Hellenic Coast Guard
17	Integrated Marine Data Environment (IMDatE)	a technical framework that collects and combines data from EMSA's maritime applications and other external sources
18	IMO	International Maritime Organization
19	ISM	International Management Code for the safe operation of ships and for pollution prevention
20	JRCC	Joint Rescue and Coordination Centre
21	Knots	unit of speed equal to one nautical mile (1.852 km) per hour
22	KW	Kilowatt
23	LT	local time
24	MLC	Maritime Labour Convention
25	mt	Metric ton
26	nm	nautical miles
27	O(s)OW	Officer(s) on the watch
28	OS	Ordinary seaman (deck crew)
29	rpm	revolutions per minute
30	SAR	Search and Rescue
31	SMC	Safety management certificate
32	SMS	Safety management system
33	SOLAS	Convention for the Safety of Life at Sea 1974, as amended
34	STCW	International Convention on Standards of Training, Certification and Watchkeeping for seafarers
35	S-VDR	Simplified Voyage Data Recorder
36	TEU	The twenty-foot equivalent unit (volume) of a 20 ft long (6.1 m) intermodal container.
37	UMS	Unmanned Machinery Space
38	UTC	Universal co-ordinated time
39	VDR	Voyage data recorder
40	VHF	Very high frequency (radio)

1. Executive summary

On the 8th of March 2014, at approximately 05:30, the Turkish registered Yusuf Cepnioglu grounded on the rocky coastline of Avlemonas bay at the North West part of Mykonos Island, in position lat: 37°29' 55" N, long:25°20' 12" E. At the time of the marine casualty, weather conditions were reported to be good with medium visibility, wind force up to 4-5 Bft NE, moderate sea and it was still dark.

Yusuf Cepnioglu was on the first day of her passage to Bizerte in Tunisia laden with 204 containers of general containerized cargo. On the 7th of March 2014 early evening hours, she had departed from the port of Nempont, located in Izmir/Turkey, after completion of loading/unloading operations. Notwithstanding weather conditions were good and navigational watch was quiet during the night hours prior to the accident, Yusuf Cepnioglu ran aground with a cruising speed of 12.5 knots.

The vessel suffered extensive cracks and indentations on her foresection and port side, mostly lengthwise, and more specifically at Forepeak Tank, Collision Bulkhead and No. 1 Cargo Hold. Port and starboard side Wing Ballast Tanks and Deep Tank were also affected and breached due to the heavy contact with the rocky seabed. Several compartments including engine room and cargo holds were flooded and pollution from bunkers was reported. None of the crew was injured.

The grounding of the vessel alerted the crew and the Master who reported the incident to the managing company and Olympia Radio which notified Piraeus JRCC and the local Coastguard Authority.

Following the incident Yusuf Cepnioglu's trim and stability condition was closely monitored by her crew and the local Coast Guard Authority. At approximately 10:00 the vessel listed to starboard and her Master having assessed the situation ordered the abandonment of the vessel. Eleven (11) crew members abandoned the vessel using a liferaft, and were recovered by a HCG patrol boat. The Chief Engineer could not board at the liferaft and remained on the vessel until he evacuated with the assistance of a private launch boat. Master and chief officer remained on the vessel as well and evacuated later by a U.S. SAR Helicopter which participated in the rescue operation.

Due to prevailing gale winds and the high waves causing Yusuf Cepnioglu's heavy rolling part of her cargo containers were washed overboard. Substantial quantities of debris from the smashed containers washed up on shore and to the nearby inlets. Moreover due to the vessel's hull damages her bunkers leaked into the sea creating an oil spill which spread into the wider sea area and washed on the nearby coastline. The owners of the vessel assigned to a salvage company the anti-pollution response operations as well as the vessel's refloating and removal from the casualty area.

The HBMCI launched a safety investigation into aforementioned marine accident. The investigation Team arrived at casualty site on the 9th of March 2014. Based on the findings of the investigation process it was evident that the OOW had shown a total disregard to COLREGS and STCW conventions and was not monitoring the vessel's tracking positions in relation to the voyage plan. The safety investigation conducted has also highlighted additional contributing factors, such as the fatigue of the Chief Officer and the absence of a posted lookout during night-time navigational watch, which jointly led to the examined marine casualty as presented in the Analysis section.

Note:

- *This report is mainly based on information and evidence that have been derived from the interview process and information collected from those individuals involved in the*

marine casualty, as well as electronic positioning data provided by the competent authorities of the Hellenic Coastguard.

Yusuf Cepnioglu's VDR data was not recovered while the information provided from the vessel's owners was limited.

- *In respect to the above grounds, Commission Regulation (EU) No 1286/2011/Annex/paragraphs 4.2 & 4.3¹ have been generated in order to properly identify causal and contributing factors led to the marine accident.*

¹**Abstract from Com. Regulation 1286/2011“Common methodology for investigating marine casualties and incidents”.**

4.2 *Proper identification of causal factors requires timely and methodical investigation, going beyond the immediate evidence and looking for underlying conditions, which may be remote from the site of the marine casualty or incident, and which may cause other future marine casualties and marine incidents. Marine safety investigations should therefore in principle serve as a means of identifying not only immediate causal factors but also conditions that may be present in the whole operational process. To achieve this, the analysis of the evidence collected shall be thorough and iterative.*

4.3 *If a gap of information cannot be resolved and is filled in by logical extrapolation and reasonable assumptions, such extrapolation and assumptions shall be made clear in the wording of the report. A useful tool in this process can be the identification of all options and their analytical reduction to reach the most likely hypotheses.*

2. Factual information

2.1 Vessel's Particulars

Name of vessel	YUSUF CEPNIOGLU		
Type of vessel	General Cargo/ Container Vessel		
Nationality/flag	TURKISH		
Port of registry	ISTANBUL		
IMO number	9119646		
Call sign	TCYI8		
Managing company	FURKAN DENIZCILIK SAN.VE TIC.LTD STI		
IMO company No. (DOC)	1919490		
Year built	1995		
Ship yard	HUGO PETERS, WEWELSFLETH/GERMANY		
Classification society	ABS		
Minimum Safe Manning	11		
Length overall	116.4 m		
Breadth overall	19.2 m		
Gross tonnage	4,984		
Deadweight	6,876 t		
Draught max.	9.2 m		
Engine power	3,960 kW		
Service speed	15.5 knots		
Hull material	Steel		
Hull design	Singlehull		
Last Port state Control Inspection	27-09-2013	Varna, Bulgaria	with no deficiencies



Figure 1: YusuF Cepnioglu grounded at Mykonos Island.

Wind – direction	4 to 5 bf –N/NE, later on 7 to 8bf – N/NE
Wave height	1-2 m
Visibility	Medium
Light/dark	Dark
Current	Unknown

2.2 Weather data

2.3 Voyage particulars

Port of origin	Nemport, Turkey
Port of call	Bizerte, Tunisia
Type of voyage	International
Cargo information	204 containers
Crew on board	14

2.4 Marine casualty information

Type of marine incident	Very serious marine casualty
Date, time	08 March 2014 at 05:30 LT
Location	NW of Mykonos Island, SE Aegean
Position	Lat.:37° 29' 55" N, Long.:25° 20' 12" E
Ship's operation, voyage segment	En route
Place on board	Fore section & bottom - structural damages
Consequences to individuals	No
Consequences to environment	Sea and shore pollution from bunkers and cargo debris
Consequences to property	Extended structural damages /semi-sinking /total loss

3. Narrative

On the 07th of March 2014 at approximately 08:00, Container vessel Yusuf Cepnioglu was approaching the port of Nemport/Izmir (Turkey), where cargo discharging operations were scheduled to take place. The C/O of the vessel was on the bridge together with an AB as posted look-out forming the 04:00-08:00 navigational watch. The Master arrived at the bridge at approximately 07:30 and at 08:00 he took over the command from the C/O who left the bridge to have breakfast, while the rest of bridge personnel were preparing ship's documents and cargo information for the arrival at Nemport. At approximately 09:00 all crew was on standby and the pilot came on board. At 09:30 vessel had safely berthed alongside the dock. After completion of the standard arrival formalities, the Master and the C/O went ashore, leaving the 2nd officer in charge of the cargo operations. They both returned on the vessel between 15:30-16:00.

At 19:35 a port pilot got on board and Yusuf Cepnioglu sailed laden with 204 containers and 212.6mt of fuel oil, 36.7mt of diesel oil and 7,135kgr of lube oil on board, destined to the port of Bizerte (Tunisia). At 20:00 the pilot disembarked, and Yusuf Cepnioglu continued her voyage towards Bizerte. The Master, who was the 20:00-00:00 OOW, remained on the bridge together with the deck cadet, and no further look-out, was posted for that segment of the voyage.

3.1 Voyage plan – navigational watch schedule

The voyage plan, according to Yusuf Cepnioglu's shipboard operational procedure was prepared by the 2nd Officer, signed by the Chief Officer and approved by the Master. The initial segment of the voyage plan was comprised of a passage East of Oinoussai Island, then a South West course for crossing the eastern strait of Nissos Chios, followed by a 226° course for crossing the Central Aegean Sea area and a 236° course for crossing the sea area between the islands of Mykonos and Tinos, as shown in Figure 2. The distance between the exit waypoint from Chios strait and the waypoint north from Mykonos Island was 46.2 nm.

Yusuf Cepnioglu's navigational watch schedule comprised a pattern of three navigational watches performed by the Master (0800-1200/2000-2400), the Chief Officer (0400-0800/1600-2000) and the 2nd officer (0000-0400/1200-1600). According to the vessel's operation system each navigational watch was formed by a team of two crew members, the OOW and an AB as a lookout. At the time of the casualty Yusuf Cepnioglu was navigating with both radars operating in head-up mode at a range of 12nm and 6nm respectively.



Figure2: Abstract of Yusuf Cepnioglu voyage plan segment approaching the strait between Nissos Tinos and Nissos Mykonos.

Just before midnight the vessel was crossing the Chios strait and 2nd Officer came on the bridge to take over as the 00:00-04:00 OOW. At that time the Master was on the bridge with the deck cadet, as the 20:00-24:00 lookout AB had been allowed to stay in his cabin to rest. Moreover the 00:00-04:00 lookout AB did not go at the bridge to take over his watch as he also was allowed to remain at the mess room on ST/BY and go on the bridge if needed. The Master handed over the navigational watch to the 2nd Officer, however he remained on the bridge until 01:00 since the AB was still at the mess room. When the Master left from the bridge he visited the engine room where he stayed until 02:00. Then he returned on bridge and stayed with the 2nd Officer until 02:30 approximately, when he left to go to his cabin to rest. During the aforementioned time the lookout AB had not gone to the bridge and had remained at the mess room.

3.2 The Master 0800-1200/2000-2400 watch

The Master was performing the 08:00-12:00/20:00-24:00 navigational watch. The previous day of the casualty on the 07th of March 2014 he had woken up at 07:30 when the vessel was approaching to the port of Nemrut bay, Turkey and went on the bridge for his watch duties where he stayed until the vessel's berth. At around 10:00 he went ashore with the vessel's agent to take care of various matters concerning the vessel and he returned on board around 15:30, while the 2nd Officer had been left in charge for cargo operation. At 19:35 the pilot came on board and the vessel departed from Nemrut. When the vessel exited the port and the pilot disembarked the Master remained on the bridge for his navigational watch together with the deck cadet while the lookout AB was permitted to rest at his cabin. At 00:00 the Master handed over the navigational watch to the 2nd Officer and stayed on the bridge, whereas the deck cadet was relieved and went

to his cabin to rest. At the time of the watch change over the vessel was at the mid-way of crossing the Chios Strait with a speed of approximately 12 knots and a COG of 204°.

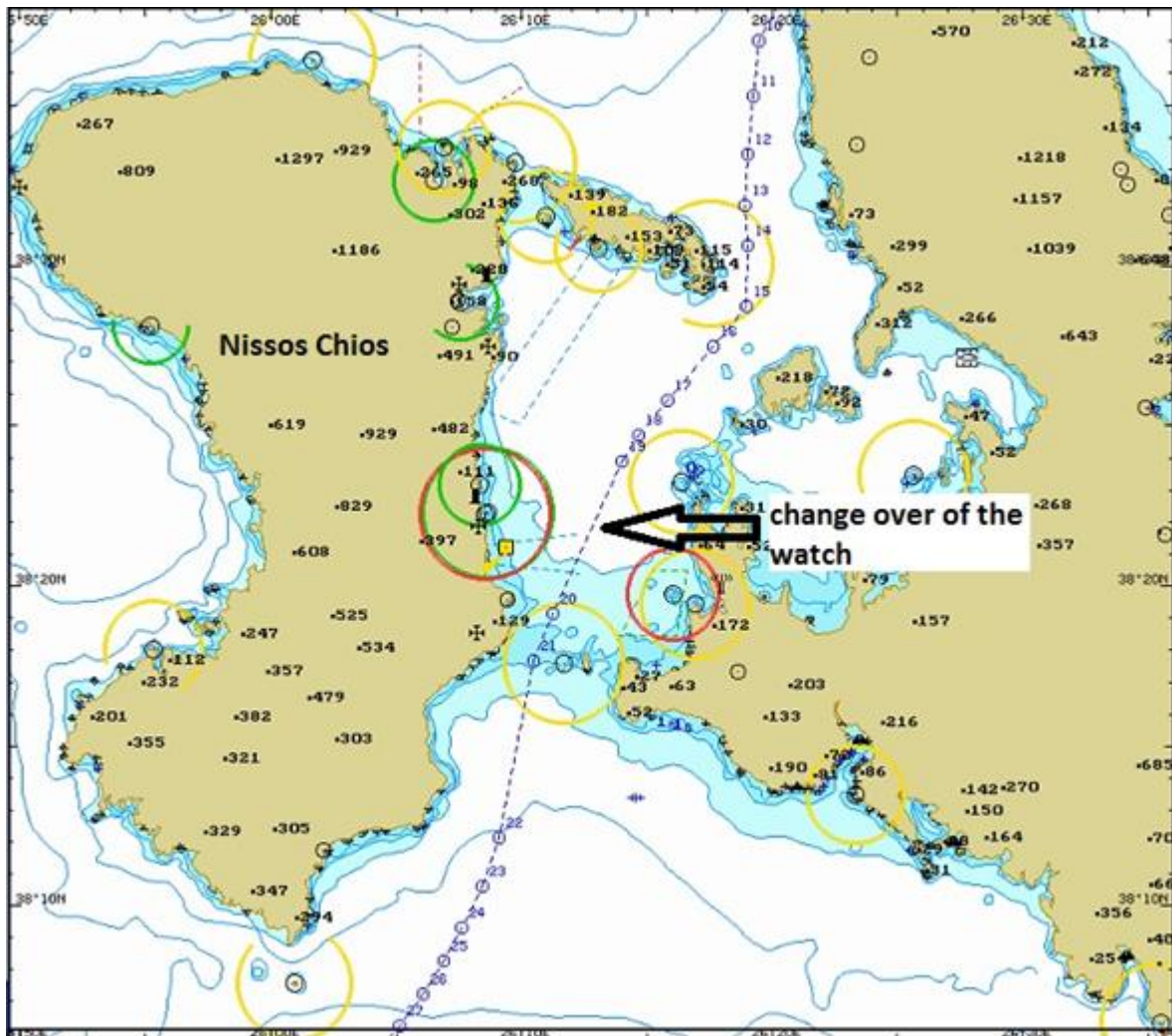


Figure 3: Crossing of Nissos Chios strait during change over of the watch.

At approximately 01:00 Yusuf Cepnioglu had cleared from Chios Strait (Figure 3, position 24) and shortly afterwards the Master left from the bridge and went to the engine room. At 02:00 he returned on the bridge and stayed with the 2nd Officer until 02:30, when he left and went to his cabin to rest. Before he left from the bridge he told to the 2nd Officer to call him in case of emergency. Until that time no lookout was posted on the bridge as the AB performing the 0000-0400 watch was allowed to stay at the mess room.

3.3 The 2nd Officer 0000-0400/1200-1600 watch

The previous day of the casualty 2nd Officer was in charge of the cargo operations from 10:00 until 16:00 when he went to rest in the mess room and had lunch. He was also on ST/BY for the departure operations which lasted from around 19:00 until 20:00 when the pilot disembarked and the vessel proceeded to her destination.

The 2nd Officer went on the bridge almost five minutes before 0000 in order to relieve the Master. Navigational watch was handed over without any noteworthy remarks, as there was not any traffic in the navigated sea area and steered course was following the voyage plan. As stated during the 2nd Officer's watch, the Master had remained on the bridge for almost one and a half hour therefore the lookout AB was allowed to stay at the

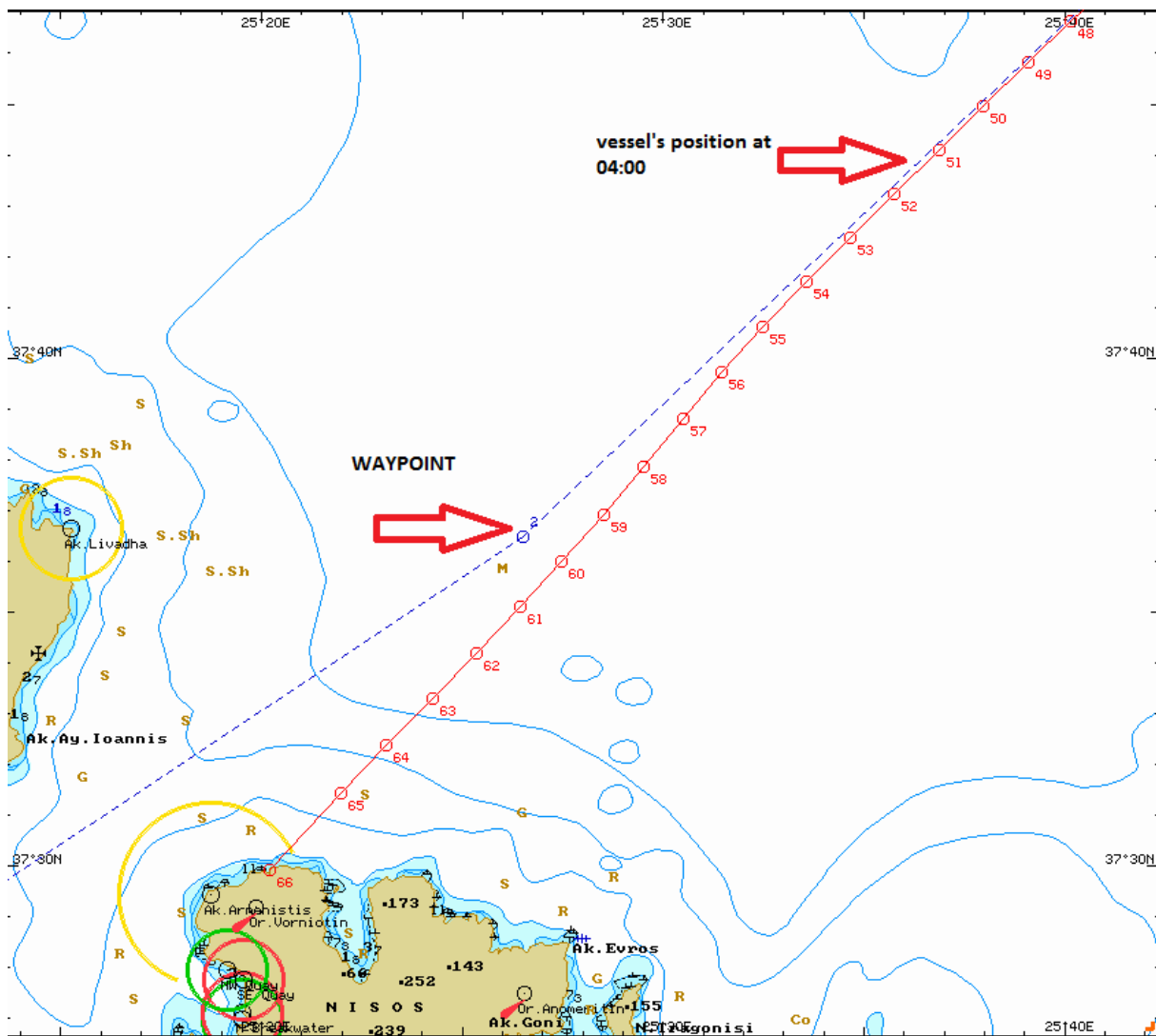


Figure 5: Yusuf Cepnioglu position shortly before 0400 sailing through the Central Aegean Sea (source HCG AIS).

3.4 The Chief Officer 0400-0800/1600-2000 watch

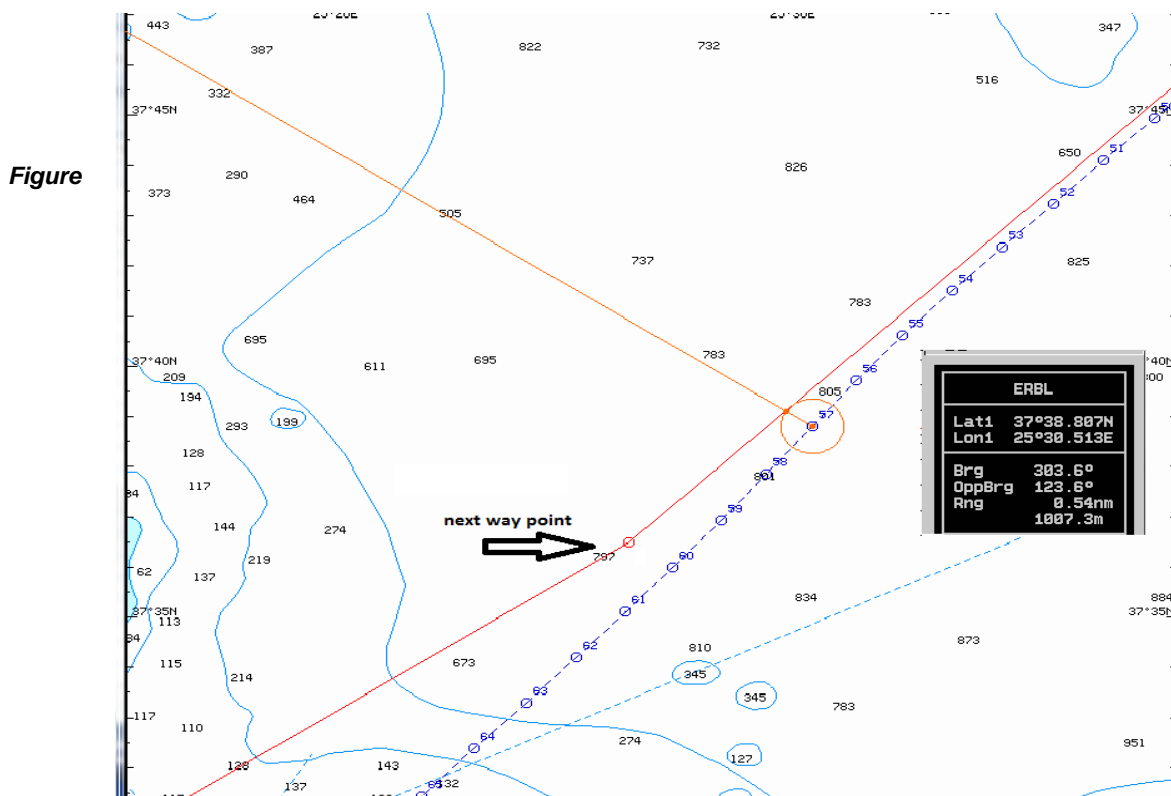
The previous day of the casualty, the C/O performed the 0400-0800 navigational watch together with a lookout AB. At 08:00 he handed over the watch to the Master and had breakfast at the mess room. Then he returned to the bridge to prepare the pre-arrival documents and the unloading plan required for the port of Nemrut bay and was on ST/BY for the arrival.

At 10:00, when the vessel was berthed alongside the dock and mooring operations were concluded he went ashore to visit his family and returned on board around 16:00. He took over his watch for cargo operations until they were finished and was involved to the ST/BY for the vessel's departure. Then he remained on the bridge to complete the respective paperwork until 21:30 when he went to his cabin and slept from approximately 23:30.

At 03:40 the 2nd Officer called the C/O to wake him up for the watch change over. In addition the C/O was called by the lookout AB who was scheduled for the 0400-0800 watch, who reported that he was ill and requested to be relieved from his duties. The C/O relieved the AB and decided not to call another AB as he felt confident to carry out the watch by himself. The C/O went on the bridge at around 04:15 and took over the watch without any lookout AB, while the 2nd Officer left the bridge at around 04:30. The operation of the BNWAS at the time of the watch handover and during the C/O navigational watch could not be established.

When the C/O took over his watch he proceeded with the standard recordings on the bridge log book and observations of the vessel's course and condition. It was reported that the monitoring of the charted course, as projected according to the passage plan, was performed by checking the vessel's position, extracted from her GPS on an hourly basis.

Furthermore, it was reported that at around 04:30, Yusuf Cepnioglu course, position and track were observed and she was found to be at a 16 to 18 nm distance, almost an hour and 30 min, far from the next way point where course should be altered for crossing the area between Tinos and Mykonos. However, said distance from the next way point was not confirmed as according to AIS data extracted from available sources, at that time Yusuf Cepnioglu was underway approximately 4 nm from the next waypoint, sailing with a speed of 12 knots. More specifically at 04:27:25 she was at position Lat. $37^{\circ} 39' 43''$ Long. $25^{\circ} 31' 28''$ sailing with COG of 221° and a speed of 12 Knots while at 04:33:26 she was at position Lat. $37^{\circ} 38' 48''$ Long. $25^{\circ} 30' 31''$ sailing with COG of 219° and the same speed. Moreover, the vessel's position was slightly off course that is 0.54 nm to port (Figure 6). However, the Chief Officer did not make any correction to the course and he sat on a chair next to the radar where he fell asleep. Consequently the vessel proceeded with the same heading towards the north coast of Mykonos.



6. Ship's position at 04:30, (position 57). VRM (Variable Range Marker) shows the extend of drifting to port.

At approximately 04:51, Yusuf Cepnioglu was almost 1 nm southeast from the next waypoint sailing at a speed of 12.3 Knots and her COG was recorded at 222° , that is 14° to port from the course of 236° which was planned for the crossing the area between the two islands. Moreover the vessel's position was at a distance of 8.35 nm from the

grounding position. Nonetheless, the C/O was asleep and did not make any alteration to the course (Figure 7).

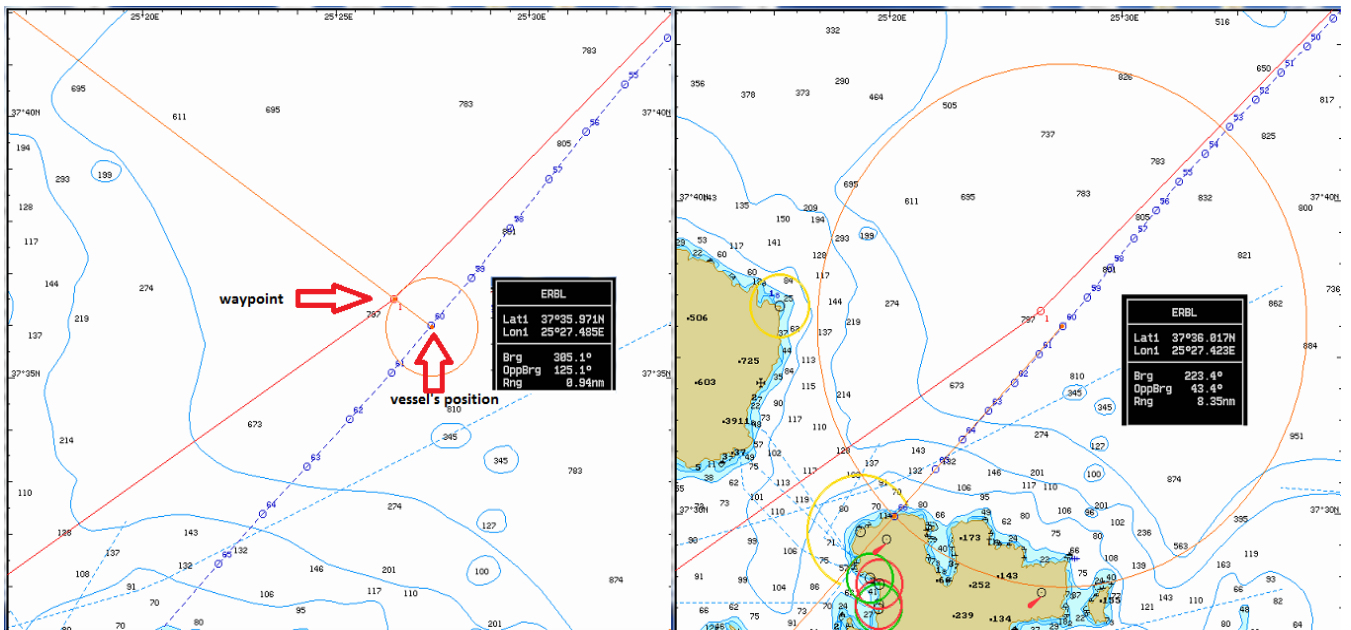


Figure 7: Ship's position at 04:51. VRM (Variable Range Marker) shows the extend of drifting to port and distance from the grounding point.

3.5 The grounding

As the C/O who was the only one on the bridge fell asleep on the chair next to the radar shortly after 04:30, Yusuf Cepnioglu kept sailing with an unattended bridge, maintaining her course towards the rocky shoal at the north coastline of Mykonos where she grounded with her fore section at 05:30 with a speed of 12.2 knots (Figure 8).

The impact was extremely heavy and awakened the Master and the rest of the crew. The C/O had not understood what had happened and got shocked due to the vibration caused by the heavy impact and ship's fore section dragging on the rocks.

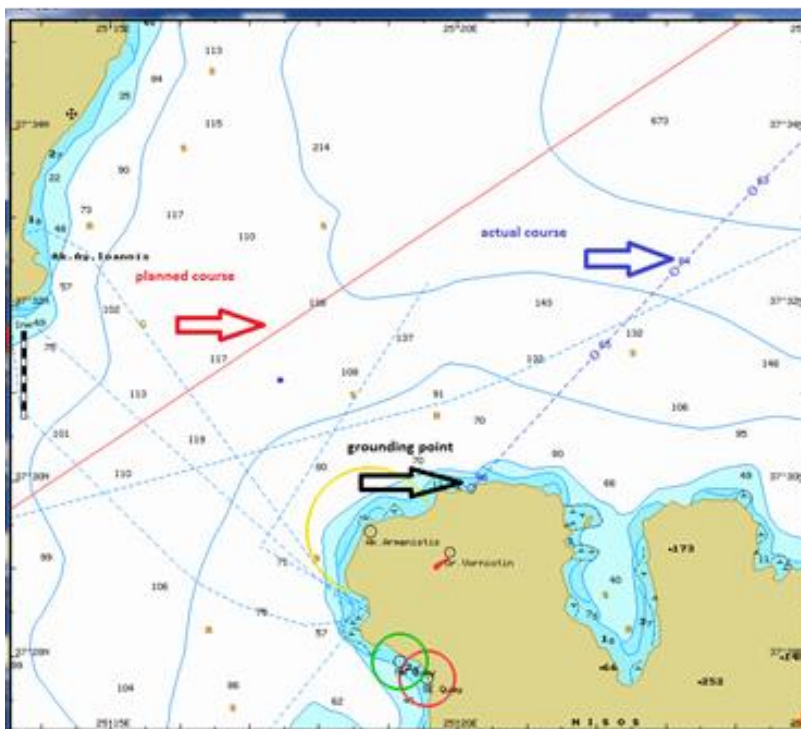


Figure 8: Vessel's course towards the grounding point while bridge was unattended at 05:10, 05:16 and 05:22.



Figure 9: Photos from the vessel grounded at the north coast of Mykonos Island.

3.6 Emergency Response

Immediately after the grounding, the Master woke up and went on the bridge. The engine was set to full astern however the vessel did not move from the grounding position and the engine tripped from overload. The Master set the propeller pitch to zero and ordered the C/O to switch on all deck lights. Consequently the vessel's aft section drifted towards the coast and touched the rocks with the port side. By that time, a few minutes after 05:30, the 2nd Officer together with the Deck cadet went on the bridge as well.

The 2nd Engineer who was at the engine control room started one auxiliary diesel generator and disengaged the shaft generator. Shortly afterwards the Chief Engineer went to the engine room and started also the emergency generator.

The Master ordered the C/O to sound the general alarm and the crew mustered at the muster station. No injuries or other health problems were reported. He also ordered the deck cadet to make a distress call to all stations and Olympia radio with the GMDSS.

The Chief Engineer checked the engine room for water ingress and went on the bridge and reported to the Master that there was no water ingress in the engine room. Then he went to the engine room again to operate the M/E turning gear and reported to the Master that the M/E was turning and the propeller was not blocked.

The Master informed the vessel's managers about the grounding and the vessel's condition. In parallel, he ordered the C/O and 2nd Officer to go around the vessel with Bosun and the AB's, to inspect and take soundings from all bunker/ballast tanks and cargo holds bilges and to check for leakages, water ingress and marine pollution. By that time the vessel was not listed and no water leakage or marine pollution were reported.

The Master also visited the forecastle, together with the Chief Officer, to check the damages and evaluate the situation. From the visual inspection and sounding of the forepeak tank it was reported that forepeak level had increased from 40mt before grounding to 110mt. In addition, the water level in the vessel's deep tank had increased from 500mt to 600 mt and inside the wings tanks from 0 mt to 100 mt. Moreover, the watertight bulkhead of cargo hold No.1 had bended and cracked and water was leaking inside the hold at a low flow rate of approximately 2-3 liters per minute. No damages to Cargo hold No.2 and no pollution to the sea were reported (Figure 10). At approximately 08:25, the crew had completed the evaluation of the vessel's damages and the Master reported the condition to Piraeus JRCC.

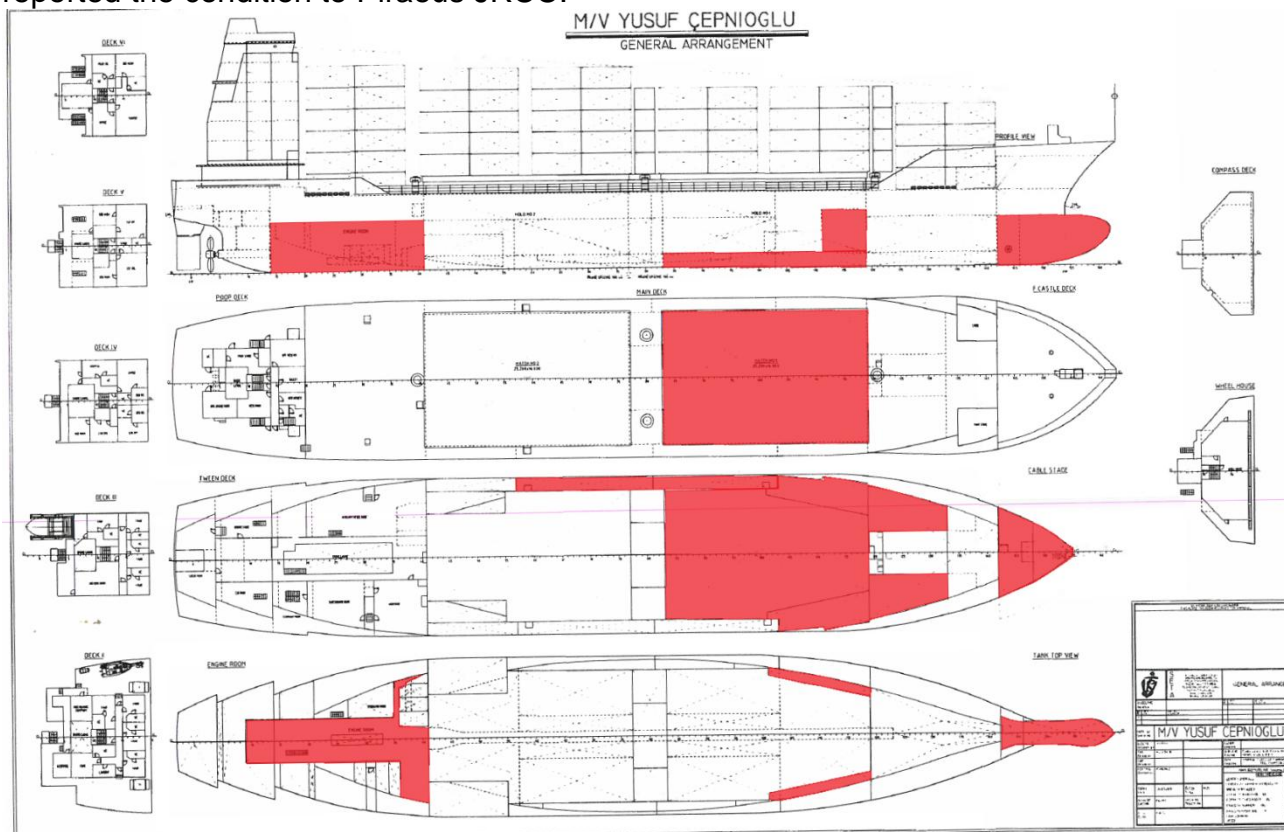


Figure 10: Indicative depiction of damaged areas of Yusuf Cepnioglu

Due to the deterioration of the weather conditions, from 4-5 bf NE to 6-7 bf N, the ship kept hitting harder against the rocks alongside her port side. As a result the water ingress inside vessel's tanks increased and the vessel listed around 5° to port. Shortly before 09:30 and after a strong hit on the rocks, the Chief Engineer informed the Master that the engine room had suddenly flooded, bilge well level was quickly rising up and fuel tanks were almost full. The vessel's list had increased to 20° portside and some containers toppled into the sea at the port side between the vessel and the rocky coast. At the same time the vessel's bunkers started to leak into the sea and an oil spill was observed.



Figure 11:
Yusuf Cepnioglu listed to portside with some containers toppled into the sea.

The Master ordered the crew to start pumping out the water from the engine room; however the massive water ingress was surpassing the pumps' capacity. The Master assessed the evolving situation and ordered the crew to prepare to abandon the vessel. At approximately 09:30 the Master reported to Olympia radio the developed condition and requested assistance for his crew stating that he would remain on board. This information was passed to Piraeus JRCC accordingly.

Following Master's orders, the crew prepared to evacuate the vessel by launching the free fall lifeboat located at her aft. However, during the necessary checks before the launch the boat's engine could not be started because the battery was dead.

Then they attempted to abandon the vessel by launching the rescue boat and the life raft located at the vessel's port side, but due to the close proximity of Yusuf Cepnioglu to the rocks and the heavy rolling of the ship, the rescue boat was capsized and smashed into the rocks, while the life raft had drifted and later was casted ashore.

Then the crew attempted to launch the inflatable liferaft situated at the starboard side. They tied the life raft with a lanyard at the ship's starboard side railings and used the accommodation ladder to board on it. Eleven crew members abandoned the vessel by means of the life raft and were recovered by a Hellenic Coast Guard SAR vessel. The Master, the C/O who decided to remain on board with the Master and the Chief Engineer who was in shock and could not board on the life raft, remained on board. The Chief Engineer abandoned the vessel later on with the assistance of a private launch boat mobilized by Mykonos Coast Guard Authority which approached the vessel and rescued him. The Master and the C/O remained on board until 11:30 when they were rescued by a helicopter.



Figure 12: Yusuf's Cepnioglu lifeboat casted ashore and life raft as was found after the evacuation procedure

3.7 Hellenic Coast Guard Response

At approximately 05:56, the casualty was reported to Piraeus JRCC by Olympia Radio. Piraeus JRCC mobilized available means and dispatched one patrol boat and one SAR vessel to the area of the casualty. In addition the local Coast Guard Authority deployed a team to monitor the situation from ashore, as well as one private launch boat which was available at that time.

When the situation developed and the Master requested assistance, Piraeus JRCC deployed a SAR helicopter, however the Master and the C/O of Yusuf Cepnioglu who had remained on board refused to abandon her although they were advised respectively several times by Piraeus JRCC as well as by the SAR helicopter crew. They were both rescued later on by a helicopter of a U.S.A. military navy ship which was sailing to the area close to the casualty.

3.8 Salvage, antipollution and wreck removal operations²

The Owners of Yusuf Cepnioglu, under the direct supervision and coordination of the competent HCG Authorities assigned a Salvage Company to carry out the necessary salvage and antipollution operations. However the following days of the casualty, the access to the area was not feasible due to the prevailing gale winds blowing from northern directions and the rough seas as well as the rocky grounding site.

Substantial quantities of debris were washed up to the nearby area of "Korfos bay" as well as the nearby islands and other inlets. More specifically at the nearby local area of "Armenistis bay" cargo debris covered with fuel oil residues were washed ashore in an area of approximately 1,000 m², as well as in the sea area forward of the vessel's bow estimated to approximately 1,000m². The cleanup operation lasted several weeks and over 500m³ of debris were collected with the assistance of volunteers. Oil booms were positioned around the vessel as well as near the local power and desalination plants to prevent any further pollution.

²Data received by the contracted salvage company.



Figure 13: Cargo debris washed up on the nearby coastline.

The wreck removal operation started on the 5th of May 2014. The first stage of the operation was completed on the 29th of May 2014 when the forward part of the vessel including the two cargo holds was removed. The second stage was completed on the 22nd September 2014 when the aft part of the vessel was removed as well.



Figure 14: Photos from the wreck removal operation and the two parts of the vessel being removed from the casualty area.

4. Analysis

The analysis of the examined marine casualty aims to identify the factors and causes that contributed to the marine casualty, taking into account the sequence of events and the collection of investigation information in order to draw useful conclusions leading to safety recommendations. It is noted that the majority of the information derived from the interviews of Yusuf Cepnioglu crew members as well as from AIS information collected from external sources as the data from the vessel's S-VDR was not saved by the Master.

4.1 The feeder liner vessel operation

Yusuf Cepnioglu was operating in the last months prior to the marine casualty as a feeder liner vessel mainly between Turkish ports in Marmara and East Mediterranean Sea (e.g Gemlik, Ambarli, Nemport), and North African ports (e.g Algiers, Algeria and Bizerte, Tunisia).

Feeder vessels or feeder ships are ships of various sizes, but mostly understood to be seagoing vessels with an average capacity of carrying 300 TEU to 1000 TEU. Yusuf Cepnioglu total carrying capacity was 398 TEU on main deck and 134 TEU in holds No.1 and 2. Feeders transfer shipping containers between different ports and central container terminals where they are transported by higher capacity container vessels. In that way the smaller vessels feed the big liners so as to avoid their calling at too many ports (Multi Port Calling – MPC). The feeder service is dynamic and flexible and feeder ships call at several smaller ports within one round trip, spending only a few hours in each of them. Moreover, worldwide standards require feeder ships to meet specific schedules.

As it can be seen in Table 1 Yusuf Cepnioglu was following a similar trading pattern consistent with the described feeder operation service.

Port	Arrival Date/Time	Departure Date/Time
February 2014		
Bizerta, Tunisia	08/02/14/ 05:44	09/02/14/ 20:14
Ambarli, Turkey	14/02/14/ 03:02	15/02/14/ 05:13
Nemport, Turkey	15/02/14/ 23:59	16/02/14/ 11:36
Bizerte, Tunisia	19/02/14/ 15:57	20/02/14/ 14:37
Algiers, Anchorage Algeria	22/02/14/ 06:46	24/02/14/ 21:50
Algiers, Algeria	25/02/14/04:43	27/02/14/ 14:40
March 2014		
Gemlik, Turkey	04/03/14/ 16:57	05/03/14, 03:49
Ambarli, Turkey	06/03/14, 00:01	06/03/14, 13:38
Nemport, Turkey	07/03/14, 09:20	07/03/14, 20:01
Bizerte, Tunisia	Casualty	

Table 1: Abstract of Yusuf Cepnioglu ports of call for the last two months prior to the marine casualty.

4.2 Yusuf Cepnioglu's positioning data from external sources

The position of the vessel and other navigational information prior to the grounding were extracted from the Integrated Marine Data Environment - IMDatE³ of the European Maritime Safety Agency (EMSA).

³ The Integrated Maritime Data Environment (IMDatE) is a technical framework that collects and combines data from EMSA's maritime applications and other external sources to provide more comprehensive and configurable services to users, source: <https://portal.emsa.europa.eu/web/imdate>

Based on the aforementioned data, the course of the casualty vessel was projected on an electronic chart, in order to reconstruct the passage leading to her grounding. An overview of the plotted positions is presented in figure 14, in contrast to Yusuf Cepnioglu’s planned course, as recorded at the navigational chart.

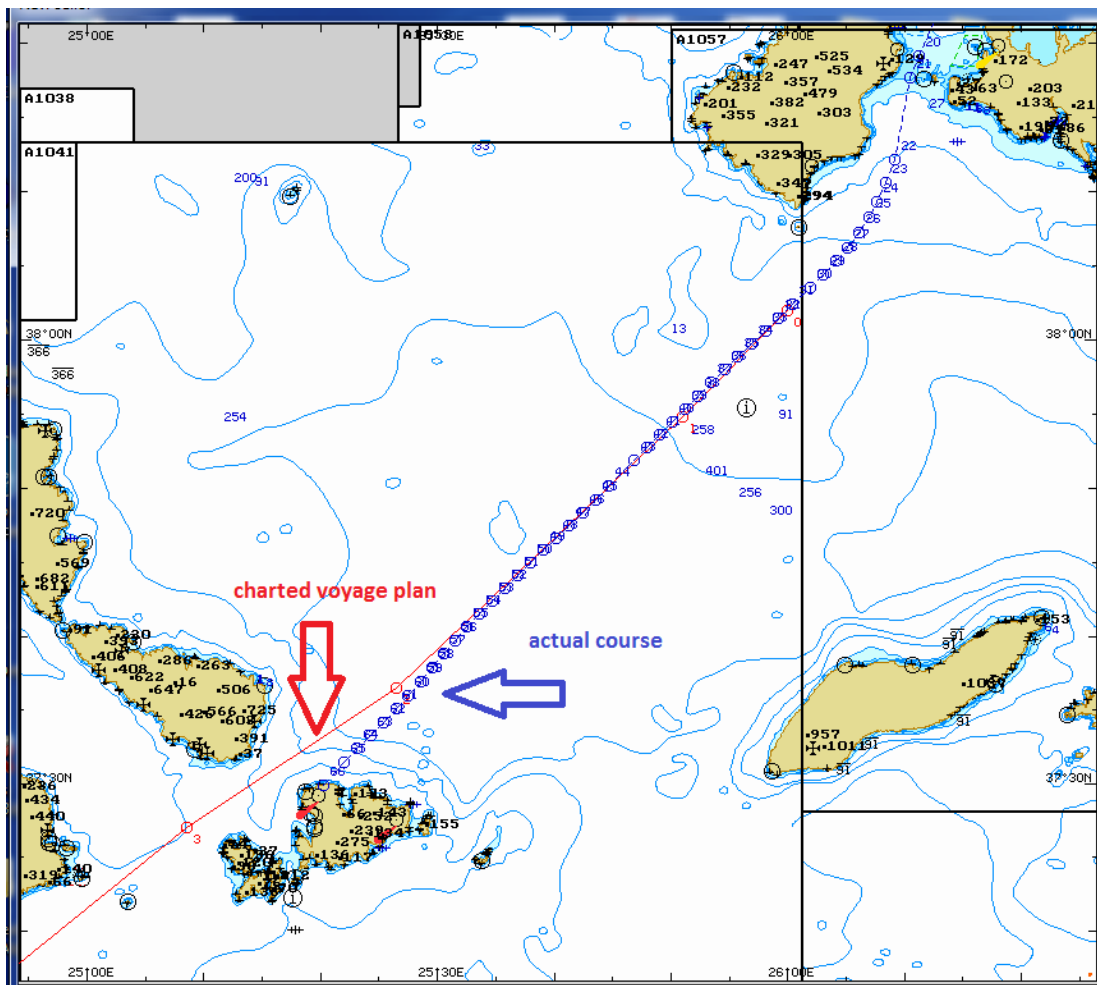


Figure 14.: Yusuf Cepnioglu voyage plan and positioning data as plotted on electronic chart.

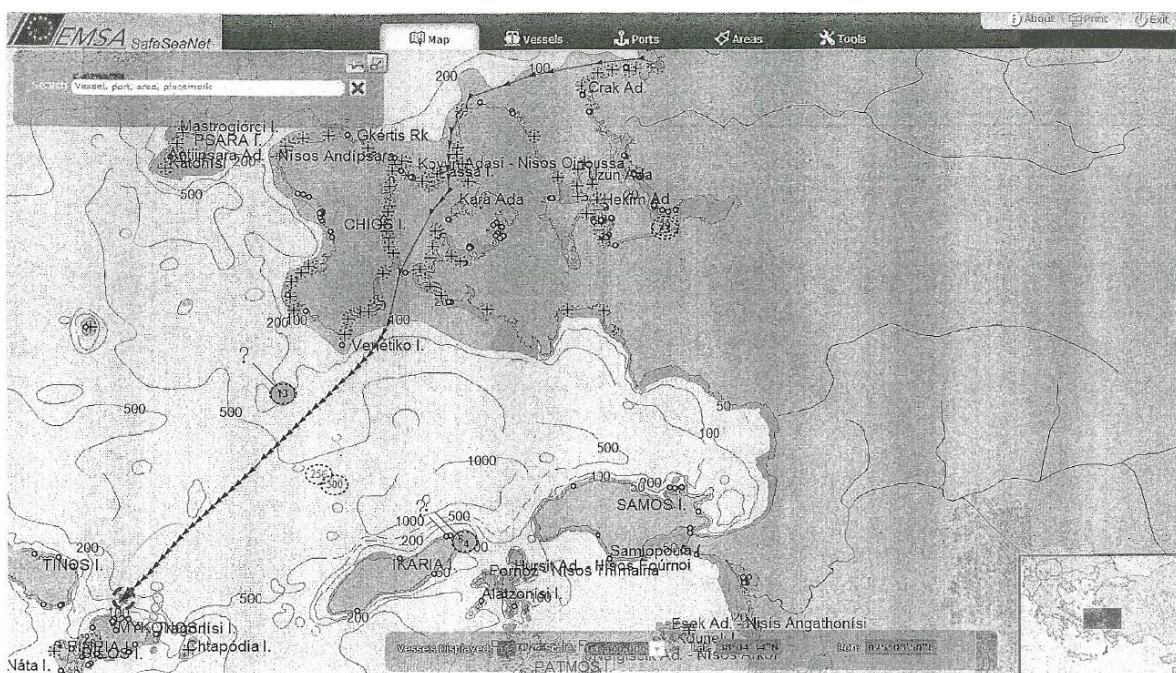


Figure 15: Overview of Yusuf Cepnioglu passage as extracted by IMDatE.

4.3 Yusuf Cepnioglu Crew

At the time of the casualty Yusuf Cepnioglu was operating under a crew complement of 14 seafarers including Master. All crew members were of Turkish nationality, and the established working language on board was Turkish.

Yusuf Cepnioglu's Minimum Safe Manning Document was issued by her Flag, pursuant to SOLAS Regulation V/14 as applied, providing a minimum crew of 11 seafarers. However, she was manned with 03 crew members in excess of the Flag requirements, that is 14 mariners in total. The super numerary crew in relation to the Minimum Safe Manning Document encompassed the positions of 01 Cook, 01 Deck Cadet and 01 Engine Cadet. For the deck department the MSMD provided one Master, one Chief Officer, one navigational Officer, three deck ratings of category "Group 1"⁴ and one deck rating of category "Group 2"⁵. Moreover the MSMD stated "Ships in which deck or engine cadet with valid STCW Certificates is employed, only one of Group 1 rating with the same department can be reduced with the cadet".

4.3.1 Deck Department

The Deck Department numbered 03 Officers, including the Master, 01 Bosun, 03 ABs, and 01 Deck Cadet. Copies of their CoCs were not provided by the vessel managers during the investigation process. However it was verified by the Turkish Accident Investigation Board that the Deck Officers were carrying the respective ocean going CoCs.

The navigational watch keeping schedule as presented in Table 2, was performed under a three-watch pattern, assigned to the Master, the Chief Officer and the 2nd Officer, while an AB was forming part of each navigational watch respectively, as a lookout watch. It was reported that sometimes while the vessel was sailing at daytime, the lookout AB was relieved from the watch keeping duties and was allowed to assist the Bosun on the maintenance and repairs activities of the deck department.

	Position/rank	Watchkeeping schedule	Non Watch keeping working hours
1	Master	0800-1200/2000-0000	-
2	Chief Officer	0400-0800/1600-2000	1300-1500
3	2 nd Officer	0000-0400/1200-1600	1600-1800
5	BOSUN	-	0800-1200/1300-1700
7	AB 1	0800-1200/2000-0000	-
8	AB 2	0000-0400/1200-1600	-
9	AB 3	0400-0800/1600-2000	-
10	Deck Cadet	-	0800-1200/1300-1700

Table 2: Yusuf Cepnioglu shipboard watch and working arrangement.

Furthermore, during the interview process it emerged that the previous day of the casualty, all ABs were working on deck during daytime. Consequently they were allowed to rest and no lookout watch was posted during the night hours before the grounding, apart from the deck cadet who remained on the bridge during the Master's navigational watch.

The "single man watch" caused by the absence of the lookout AB during the Chief Officer's navigational watch is considered to have been a contributing factor to the

⁴According to Yusuf Cepnioglu MSMD, Group 1 deck ratings are considered OS, AB or Bosun with STCW reg. II/4 Certificate of Competence

⁵According to Yusuf Cepnioglu MSMD, Group 2 deck ratings are considered Deck boys or other deck ratings.

grounding of Yusuf Cepnioglu, as the AB might have noticed the vessel's course towards the coast and his presence could have deterred the OOW from falling asleep.

4.3.2 Engine Department

Yusuf Cepnioglu's Engine Department personnel counted a total of 05 seafarers, including the Chief Engineer and 01 Engine Cadet. More specifically it was comprised of the Chief engineer, one 2nd Engineer, one Engine rating of category "Group 1"⁶, one Oiler, and one Engine Cadet as presented in Table 3.

Yusuf Cepnioglu engine room was UMS operated (engine watch was not required); however engine crew was involved in watch keeping duties at night hours following manager's request.

	Position/rank	Watchkeeping schedule	Non Watch keeping working hours
1	Chief Engineer	20:00-00:00	08:00-12:00
2	2 nd Engineer	04:00-08:00	08:00-12:00
3	Engine rating	00:00-04:00	13:00-17:00
4	Oiler	-	0800-1200/13:00-17:00
5	Engine Cadet	-	08:00-12:00/13:00-17:00

Table 3: Yusuf Cepnioglu Engine Shipboard watch and working arrangement.

The Certificates of Competency (CoCs) for both the Chief engineer and the Second Engineer of Yusuf Cepnioglu, stated some limitations for their duty assignment according to the type of vessel, the propulsion power and the trading area.

More specifically, according to the CoCs recordings the Chief Engineer could serve:

1. As Chief Engineer on ships powered by main propulsion machinery less than 3000KW propulsion power in all waters,
2. As Chief Engineer on cargo ships powered by main propulsion machinery less than 15000 KW propulsion power on near coastal voyage and,
3. As Second Engineer on cargo ships powered by main propulsion machinery at all KW propulsion power in all waters.

Similarly, the Second Engineer could serve:

1. As Chief Engineer on ships powered by main propulsion machinery less than 1250KW propulsion power on near coastal voyage,
2. As Second Engineer powered by main propulsion machinery less than 3000 KW propulsion power in all waters,
3. As Second Engineer on cargo ships powered by main propulsion machinery less than 4000 KW propulsion power on near coastal voyage.

The "near coastal voyages" definition is provided by STCW/Reg. I/1/.14 under the Title "Definitions and Clarifications" which clearly states: "Near-coastal voyages means voyages in the vicinity of a Party as defined by that Party".

In addition STCW sets out the basic principles that should be taken into account by each Flag administration for the purpose of defining the above mentioned term, bearing in mind the effect on the safety and security of all ships and on the marine environment as presented in the following Table 4:

⁶ According to Yusuf Cepnioglu MSMD, Group 1 engine ratings are considered Oilers or others with STCW reg. III/4 Certificate of Competence

Table 4:STCW Convention & Codes, Manila Amendments 2011 / CHAPTER I / Section A-I/3
Principles governing near-coastal voyages

- | |
|--|
| .1 type of ship and the trade in which it is engaged; |
| .2 gross tonnage of the ship and the propulsion power in kilowatts of the main machinery; |
| .3 nature and length of the voyages; |
| .4 maximum distance from a port of refuge; |
| .5 adequacy of the coverage and accuracy of navigational position-fixing devices; |
| .6 weather conditions normally prevailing in the near-coastal voyages area; |
| .7 provision of shipboard and coastal communication facilities for search and rescue; and |
| .8 the availability of shore-based support, regarding especially technical maintenance on board. |

It is not intended that ships engaged on near-coastal voyages extend their voyages worldwide, under the excuse that they are navigating constantly within the limits of designated near-coastal voyages of neighbouring Parties.

According to correspondence with the Turkish Accident Investigation Board, KAIK the Turkish legislation with "Bylaw for Seafarers" defines the near coastal voyages to within the following areas:

"Beyond the border of the Cabotage Voyage Area, the Black Sea, the Mediterranean Sea, the Red Sea and east of the line connecting the Finistre Cape with the Dakhla Port of Mauritania including and Spain's North shores to the French border...."

Considering Yusuf Cepnioglu trading areas, as she was calling at ports of Algeria and Tunisia located at the Southwest part of the Mediterranean Sea, it is inferred that the vessel was engaged in "near coastal voyages" as defined by the respective provisions of the STCW.

In the light of the above and taking into consideration the main propulsion power of Yusuf Cepnioglu which was 3,960 KW, it is concluded that the engine department Officers carried sufficient CoC for the intended voyage from Nempont, Turkey to Bizerte, Tunisia.

On this ground and taking into account the previous paragraph the vessel was considered to be manned in accordance to the requirements of her valid Minimum Safe Manning Document.

4.4 Crew information

4.4.1 The Master

The 38-year-old Master had graduated from a maritime academy in Turkey, in 1993. He acquired his limited Master diploma in 2000 and after 3 years of service as a Chief Officer he started his career as a Master in 2004 serving in general cargo ships all around the world. In 2006 after a total service of 13 years on board cargo ships, he joined containerships and in 2012 he joined Yusuf Cepnioglu's Company for the first time for a period of three months. This was only his second contract with the Shipping Company of Yusuf Cepnioglu. He had boarded her on 25 January 2014 and his contract was expected to last again for three months.

4.4.2 The Chief Officer

The Chief Officer was 31 years old. He graduated from a maritime academy in Turkey, in 2004 and he obtained his Chief Officer's certificate, in 2012. He had served only on

container vessels and he was experienced with their operation. He had been contracting with Yusuf Cepnioglu Shipping Company since 2013. He had joined Yusuf Cepnioglu on 22 November 2013 and he was running his second contract with the Company. In addition to his watch-keeping duties, he was tasked with the safety and environmental Officer's duties and was in charge of the cargo operations.

4.4.3 The 2nd Officer

The 54 years of age, 2nd Officer had completed his naval academic studies, in 1981. He worked on Turkish military navy ships for 3 years and 5 months and after 10 years he retired from the Turkish navy. He was a holder of the STCW II/I certificate, issued on 2012 by the Turkish Maritime Administration. His experience was limited to 6 months in total as he had served as a 2nd Officer on another cargo ship in 2013. He had joined Yusuf Cepnioglu, on January 2014 and was running the second month of his contract.

4.4.4 The Able Seamen

The ABs servicing on Yusuf Cepnioglu, were holding an STCW II/4 Certificate of Competency, enabling them to participate in navigational watches. It was reported that they had many years of sea service, mainly on cargo and container vessels and they were considered experienced enough.

Their contracts were not based on a standard service period, and they were allowed to stay for longer periods. Indicatively one of the ABs was found to be on board Yusuf Cepnioglu for 22 consecutive months.

4.5 Main Bridge equipment arrangement - Conning Position view

4.5.1 Main Bridge equipment arrangement

Yusuf Cepnioglu bridge was equipped with one main console mounted on the middle together with the steering and autopilot unit. The console was fitted with the ship's engine control lever and the intercommunication handsets. Two radars were fitted at the console, the X-Band (9 GHz) radar was installed next to the rudder unit and the S-Band (3 GHz) radar was on the other side. Both of them were featuring ARPA utilities (Figure 16).



Figure 16: General view of the bridge arrangement and the two radars at the main console

Two VHF/DSC devices were fitted also at the main console together with the GPS and AIS units. The rest of the navigational and radio telecommunication equipment like the Navtex, INMARSAT-C, and the MF/HF device were installed in a closed space located behind the main console. An S-VDR unit was also provided.

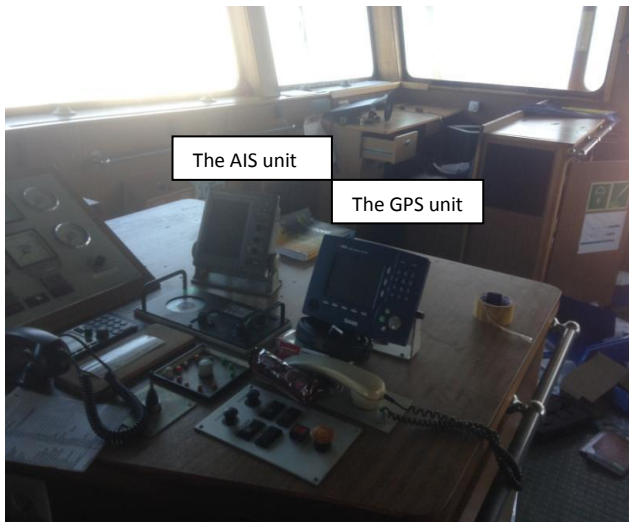


Figure 17: The AIS and the GPS units at the main console



Figure 18: The INMARSAT-, and MF/HF equipment.

4.5.2 Wheelhouse view

Yusuf Cepnioglu wheelhouse structural arrangement offered a good visibility from the conning position to the navigated sea area. The OOW could maintain a very good visual contact and monitoring of surrounding vessels and land. However, her loaded containers located at the main deck forward part created a blind sector at the imminent proximity of the bow, very common on same ship's type, which could be administered by the movement of the OOW at the bridge wings.



Figure 19: View from the starboard side wing.

4.6 Means of Navigation and Navigational Aids

4.6.1 Navigational Charts

Paper charts were the primary means of navigation on board Yusuf Cepnioglu. The navigational Chart No. 1095 (Steno Kafirea to Rhodes Channel) of British Admiralty was used during the night of the marine accident. Several corrections were recorded on said map up to week 49/13; however a more thorough examination revealed that several older corrections had not been checked and consequently had not been inserted in the above mentioned chart. These included the chart corrections No. 5812, 5814 of week 52/2012 and chart correction No.3642 of week 49/2013.

Despite the fact that the use of a chart not fully updated is not considered to have contributed to the examined marine casualty, nevertheless it highlights the lack of importance that was given by the crew to the voyage preparation and indicates insufficient procedures concerning the safe navigation.

4.6.2 Navigational practice

Basic navigational practice when using paper charts as a primary means of navigation requires the OOW to check the position of the vessel on a regularly basis, usually every hour, and record it on the chart in order to identify possible deviation from the planned course and proceed to necessary corrections.

Based on information derived from the interview process, the vessel's position had to be checked on an hourly basis by plotting GPS positions on the chart. When the vessel was navigating through a high risk area, the ship's position should be checked more frequently and recorded on the chart as well.

Examination of the used paper chart showed that the vessel's positions, prior to the casualty were not recorded on an hourly basis, and the last one was recorded at 02:40 almost three hours before her grounding. It is noted that at 04:00 when the C/O relieved the 2nd Officer and took over the watch the vessel's position was not marked on the chart as well. This indicates a systematic disregard by the OOWs to standard navigational procedures concerning the monitoring phase of the passage planning which allows the OOW to remain inactive for a period of time and it increases the potential for him to fall asleep.



Figure 20: The last position recorded on the chart by the OOW

4.6.3 Radars

As stated Yusuf Cepnioglu was equipped with two radar devices, one X-Band and one S-Band. The "X" band, providing a higher resolution and a clear image because of its higher (9 GHz) frequency, was mostly operating during day or night time under good weather conditions, usually at open sea and at 12nm range scale. The "S" band Radar, operating at 3 GHz, was mostly used during night time or under restricted visibility and in coastal passages or congested waters.

The installed radars on board Yusuf Cepnioglu were both featuring standard ARPA utilities including the "Guard Zones" function. Guard zones function offers the ability to the operator to customize zones acting as a shield to the vessel. If utilizing the function and the unit receives radar returns inside the guard zone or a target enters the guard zone, visual and audible alarms are activated to alert the OOW in order to take actions as appropriate. In that way they are considered as an additional safeguard for a vessel's safe navigation to avoid the risk of collision or grounding.

According to the information provided by the OOW, both radars were operating prior to the marine accident, one at 6nm range and the other at 12 nm range. It also emerged through the interview process that although all duty Officers were aware of the radar's utility, however they were not using it, as they were not instructed to and no initiative was taken by their part to do so mainly because their previous experience had shown that possible false targets usually could trigger the alarm.

It is suggested that had the radar guard zone feature been utilized, the alarm could have awakened the C/O so he could identify the imminent grounding risk and proceed to necessary actions to avoid it.

The followed practice by the OOWs not to utilize the radar guard zone feature is considered to have been a contributing factor in the marine accident.

4.6.4 GPS

GPS or other positioning systems enhance the safe navigation, namely by providing in accuracy the vessel's position. Moreover they offer a wide range of utilities in several display modes such as entering the planned routes and the waypoints.

They can also monitor the vessel's track on plotted routes and sound an audible alarm when the vessel is off course. Similar feature could be utilized for approaching arriving points or waypoints. The audible alarm alerts the Duty Officer in order for him to take the appropriate actions.

The above GPS "off course" or "waypoint arrival" alarm features may be an additional safeguard for the vessel's safe navigation, assisting the OOW for his course monitoring duties.

According to information derived from the interview process, the planned voyage routes were entered on the GPS however no "off course" or "waypoint arrival" alarm was set for the monitoring of the vessel's course. Said alarms, had they been set, would have sounded when the vessel's course deviated to the south from the planned course and when the vessel was approaching to the waypoint where the course should be altered for crossing the area between Tinos and Mykonos. As a result the C/O would have been alerted and he would proceed to necessary course adjustments.

The disregard to utilize the GPS "off course" and "waypoint arrival" alarms is suggested to have contributed to the examined marine casualty.

4.6.5 Bridge Navigational Watch Alarm System

According to SOLAS Chapter V, Regulation 19.2.2.3, Yusuf Cepnioglu was fitted with a Bridge Navigational Watch Alarm System which was required to be in operation whenever the ship was under way at sea.

.1 BNWAS general operation: Bridge Navigational Watch Alarm Systems monitor bridge activity in order to detect disability or incapacitation of the crew performing navigational watch which could lead to marine accidents. The system alerts the Master or other qualified crew member if for any reason the navigational watch crew becomes incapable of performing the watchkeeping duties.

This purpose is achieved by a series of indications, sensors and alarms to alert first the OOW and in case he is not responding and he is unable to reset the system during the preset timeout period (dormant period - set between 3min to 12min) to alert the Master or other qualified crew member.

BNWAS units may also offer an automatic reset function through motion or action sensors fitted on the bridge. This function may relieve the watchkeeping Officer from the burden of manually resetting the system before the timeout period is elapsed by detecting the motion or action of an individual on the bridge.

Additionally, the BNWAS may provide the OOW with a means for calling of immediate assistance if required.

.2 BNWAS performance standards: The performance standards for a BNWAS were outlined in IMO Res. MSC.128 (75) by which inter alia it is provided BNWAS should have three modes of operation:

- Automatic (Automatically brought into operation whenever the ship's heading or track control system is activated and inhibited when this system is not activated) (*should not be used*⁷);
- Manual ON (In operation constantly whenever the ship is underway at sea. (SOLAS V/19.2.2.3);
- Manual OFF (Does not operate under any circumstances).

IMO Res. MSC.128 (75) also foresees that the means of selecting the Operational Mode and the duration of the Dormant Period should be security protected so that access to these controls should be restricted to the Master only. It is furthermore provided that all items of the equipment, forming part of the BNWAS, should be tamper-proof so that no member of the crew may interfere with the system's operation.

Said technical requirements are incorporated by the International Standards of IEC⁸ 62616:2010 (E) and access to BNWAS from unauthorized personnel is protected by a password or a key-lock.

The aforementioned specific technical specifications are considered as a safeguard for the system's proper and continuous operation according to the respective legal framework in force, highlighting its contributing importance to the watchkeeping personnel for maintaining a proper and effective vigilance during bridge watch.

⁷ See reference in MSC.1/Circ.1474/ 23 May 2014

"NOTE: The Automatic mode is not suitable for use on a ship conforming with regulation SOLAS V/19.2.2.3 which requires the BNWAS to be in operation whenever the ship is underway at sea".

⁸ International Electro technical Commission - Maritime Navigation and Radio communication Equipment and Systems

.3 Yusuf Cepnioglu BNWAS: According to information received during the interview process Yusuf Cepnioglu's BNWAS was operating with motion sensors. It had an ON/OFF key to secure the controls and prevent changes to its settings. Once the unit was activated, if it would not detect any motion at the bridge during the selected timeout (dormant) period (3-12mins) a bridge visual alarm would be automatically generated. If the visual alarm was not manually cancelled by the Watchkeeping Officer, a Bridge audible alarm would automatically follow. The OOW had to acknowledge the alarm by pressing the reset button from any installed Remote Reset Unit or from the main unit, depending on his position in order to manually cancel the activated alarm. The reset action would lead to the commencement of a new timeout monitoring period. If the OOW did not reset the alarm then the Master would be alerted by an audible alarm. The BNWAS was activated when the vessel was at sea and it was switched off when in port.

Based on the information received during the interview process, there was conflicting evidence whether the BNWAS was actually in operation during navigation prior to the grounding. The fact that it was resetting the dormant period automatically when motion was detected, relieved the OsOW from manually resetting the system and therefore it could not be ascertained if it was in operation. Moreover no specific procedure during navigational watch handover concerning the operation of BNWAS was provided and therefore it was not required for the OsOW to check the system when taking over the navigational watch.

Taking into consideration the grounding position, the vessel's speed, the watch handover from the 2nd Officer to the C/O at 04:00 as well as the waypoint where the course should be altered for crossing between islands of Tinos and Mykonos it is suggested that the C/O fell asleep or became unaware of the evolving situation at least 40 minutes before the grounding.

Provided that the BWNAS was switched on after the departure from Nempton and was operating normally, during the aforementioned time period it should have detected the lack of motion and should have activated the alarm. It was stated that the possible reason for non-activation of BWNAS alarm could be that while the C/O was asleep on the chair he was performing small movements that were detected by the motion sensor close to the chair and resultantly the dormant period of the system was being reset.

In light of the above it could not be confirmed if the BNWAS was activated after the vessel's departure from Nempton and if it was operating during the time before the casualty.

However, based on the fact that it was not included to the standard checks during navigational watch hand over it is suggested that the functionality and the advantages of the system offered to safety of navigation especially during night watches and without lookout watch posted on the bridge were not fully appreciated by the Master and the OsOW.

Apart from the above, based on the collected information through the interview process, it derived that BNWAS operation was under the full responsibility of the Master. It was also clear that 2nd Officer was not very familiar with the operation of the BNWAS and he did not appreciate fully its usefulness. Said practice was actually limiting the safeguards to Navigational Officers and could have refrained them from bringing forward to Master's attention the necessity to operate the BNWAS during their watches.

It is to be noted that the performance standards and technical requirements referred in paragraph .2 above (key lock) aim to protect the system from tampering and not to hinder its operation. The described practice is considered to have created a sense of impassivity

and unconcern to the bridge teams since the OsOW was relying solely on the Master's action for the operation of BNWAS on their watch.

4.7 Bridge resource management

BRM⁹ is the effective management and integration of all resources, human and technical, available to the bridge team, to navigate the vessel in a safe and efficient manner. BRM principals, as stated in respective Table, introduce an important aspect for Masters and Officers in Charge of navigational watch. Optimized bridge resource management shields safe navigation by fully utilizing all the technical advantages of bridge navigational equipment, maintaining the situational awareness of the watchkeeping Officers as well as appropriate communication and exchange of information at all levels of the bridge team.

More specifically, under STCW Code/Part A/Chapter VIII/Part 3 "*Watchkeeping 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*".

Aforementioned provisions incorporate instructions to ensure that Masters take all the appropriate actions for the bridge watch arrangement and management, and the Navigational Officers perform their duties effectively. To that end the bridge team is assisted for the command decision making and possible failures are blocked and counteracted to avoid or lessen consequences of a likely to occur marine accident.

Yusuf Cepnioglu's navigational Officers had completed the relevant BRM training under the provisions of the revised STCW convention which was recorded accordingly in their CoC.

Considering above paragraphs 4.6.2, 4.6.3, 4.6.4 and 4.6.5 it emerged that certain obligations, duties, tasks and functions, as foreseen and emanating through STCW Code applicable standards, were disregarded by the Master and the watchkeeping personnel. An abstract of the provisions, as numbered in the respective parts of the Code, that are considered not to have been followed or implemented by Master and Navigational Officers and are pertinent to the sequence of events leading to Yusuf Cepnioglu grounding, is presented in below table 5.

STCW Code Part A/Chapter VIII/Part 3

Watch keeping Principles In general

- | |
|--|
| 8. Watches shall be carried out based on the following bridge and engine-room resource management principles: |
| .1 understanding of watchkeeping personnel regarding their individual roles, responsibility and team roles shall be established; |
| .2 the master, chief engineer officer and officer in charge of watch duties shall maintain a proper watch, making the most effective use of the resources available, such as information, installations/equipment and other personnel; |
| .7 information from the stations/installations/equipment shall be appropriately shared by all the watchkeeping personnel; |
| .8 watch keeping personnel shall maintain an exchange of appropriate communication in any situation; and |
| .9 watch keeping personnel shall notify the master/chief engineer officer/officer in charge of watch duties without any hesitation when in any doubt as to what action to take in the interest of safety. |

⁹ Bridge Resource Management (BRM) or Engine-room Resource Management (ERM) training was not required to be completed until 1 January 2017 (STCW.7/Circ.17-24 May 2011).

STCW Code Part A/ Chapter VIII/Part 4-1	
Watch keeping at sea / Principles applying to watchkeeping generally	
9.	Parties shall direct the attention of companies, masters, chief engineer officers and watchkeeping personnel to the following principles, which shall be observed to ensure that safe watches are maintained at all times.
10.	The master of every ship is bound to ensure that watchkeeping arrangements are adequate for maintaining a safe navigational or cargo watch. Under the master's general direction, the officers of the navigational watch are responsible for navigating the ship safely during their periods of duty, when they will be particularly concerned with avoiding collision and stranding.
Look out	
14.A	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.
15.	The lookout must be able to give full attention to the keeping of a proper lookout and no other duties shall be undertaken or assigned which could interfere with that task.
17.	In determining that the composition of the navigational watch is adequate to ensure that a proper lookout can continuously be maintained, the master shall take into account all relevant factors, including those described in this section of the Code, as well as the following factors: .9 the operational status of bridge instrumentation and controls, including alarm systems;
Watch arrangements	
18.	When deciding the composition of the watch on the bridge, which may include appropriately qualified ratings, the following factors, <i>inter alia</i> , shall be taken into account: .4 use and operational condition of navigational aids such as ECDIS, radar or electronic position indicating devices and any other equipment affecting the safe navigation of the ship;
Taking over the watch	
22.	Relieving officers shall personally satisfy themselves regarding the: .1 standing orders and other special instructions of the master relating to navigation of the ship; .3 prevailing and predicted tides, currents, weather, visibility and the effect of these factors upon course and speed; .5 navigational situation, including, but not limited to: .5.1 the operational condition of all navigational and safety equipment being used or likely to be used during the watch;
Performing the navigational watch	
27.	The officer in charge of the navigational watch shall not be assigned or undertake any duties which would interfere with the safe navigation of the ship.
32.	It is of special importance that at all times the officer in charge of the navigational watch ensures that a proper lookout is maintained. In a ship with a separate chartroom, the officer in charge of the navigational watch may visit the chartroom, when essential, for a short period for the necessary performance of navigational duties, but shall first ensure that it is safe to do so and that proper lookout is maintained.
36.	Officers of the navigational watch shall be thoroughly familiar with the use of all electronic navigational aids carried, including their capabilities and limitations, and shall use each of these aids when appropriate and shall bear in mind that the echo-sounder is a valuable navigational aid.
Watchkeeping under different conditions and in different areas	
In hours of darkness	
46.	The master and the officer in charge of the navigational watch, when arranging lookout duty, shall have due regard to the bridge equipment and navigational aids available for use, their limitations, procedures and safeguards implemented.

Table 5. STCW applicable standards not followed or implemented.

Taking into account the aforementioned it is concluded that instructions and procedures were not in place for an effective Bridge Resource Management on board. No specific procedures or instructions were presented pertaining to the utilization of the features offered by the bridge equipment and the navigational aids available for use (ARPA, GPS, BNWAS), by which safeguards could be set for assisting and ensuring safety of navigation.

Had Yusuf Cepnioglu's bridge navigational equipment been utilized effectively by the Master and the watchkeeping Officers, it is highly possible that the Chief Officer on the watch would have been alerted, woken up and would have taken prompt actions to correct the course and avoid the grounding.

The poor bridge resource management in relation to technical resources is considered to have been a contributing factor to the examined case.

4.8 Look-out watch

COLREGS '72, rule 5 requires that:

“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”.

Moreover, STCW/Part A/Chapter VIII / Part 4-1 states that:

“13. The officer in charge of the navigational watch is the master’s representative and is primarily responsible at all times for the safe navigation of the ship and for complying with the International Regulations for Preventing Collisions at Sea, 1972, as amended.”

Look out watch aspect is also regulated in followings par. 14 and 15 of aforementioned STCW Code, 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.*

15. The lookout must be able to give full attention to the keeping of a proper lookout and no other duties shall be undertaken or assigned which could interfere with that task.”

In addition, par. 16 of said Instrument provides the discretion to Master to decide the composition of a sole watch:

“16. ...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 light of the above it derives that a single man bridge watch is not allowed under any conditions during nighttime.

However, as already stated, look-out Abs were not posted on bridge after the vessel’s departure from Nemport/Izmir, as it was decided to relieve them from their watch duties in order to rest since they were involved to deck/cargo operations at Nemport.

The decision to relieve the ABs from their look-out watch duties indicates a clear disregard to aforesaid COLREGS and STCW principal provisions and had notably weakened the navigational bridge effective watch by removing a safeguard of paramount

importance, as it is considered that the look-out AB, if present on the bridge, would have kept the Chief Officer active and prevented him from falling asleep.

The single man bridge watch condition is considered as a contributing factor to the examined marine casualty.

4.9 Safety Management System (SMS)

In pursuance to ISM Code Chapter 7 “Shipboard operations”, procedures, plans and instructions, including checklists, as appropriate, should be established by the Company concerning the personnel’s and ship’s safety and the protection of the environment. The various tasks should be identified and assigned to qualified personnel.

On the above ground, the bridge organization should be properly supported by a clear navigation policy incorporating shipboard operation procedures, in accordance with the company’s safety management system onboard ships as required by the ISM Code.

However, as already stated, information concerning the established navigational procedures according to the SMS was not provided for the safety investigation purposes. Therefore in order to identify contributing factors related to navigation, watchkeeping, and watch handover procedure respective provisions of Commission Regulation (EU) No 1286/2011/Annex/paragraphs 4.2 & 4.3 are applied.

4.9.1 Navigational watch hand over procedure

Following the ISM provisions stated in the previous paragraph, bridge watch hand over procedure had been incorporated to vessels’ SMS under a relevant checklist that was completed and signed by the duty and the relieving Officer. Said process is mainly focusing on navigational aspects required to be controlled and evaluated by the relieving duty Officer by marking relevant fields.

A typical example of a check list concurrent with the basic directions provided by STCW Code/Part A/Chapter VIII/Part 4-1 (Taking over the watch, par. 19 to 23), is quoted below:

1. Reading of the Standing Orders, Supplementary Master’s Instructions and navigational warnings.
2. Members of the relieving watch are capable of carrying their duties.
3. The relieving Officer has been acquainted with:
 - the position, course and draught,
 - supplementary Master’s instructions,
 - prevailing/predicted tides, current, weather and visibility,
 - operational condition of all navigational and Safety Equipment on bridge,
 - gyro/magnetic compass errors,
 - movement of vessels in vicinity/effect on own ship,
 - identification of shore lights, buoys etc.,
 - conditions/hazards likely to be encountered on watch,
 - possible effect of any heel, trim, squat, etc. on under keel clearance.
4. The vision of the relieving officer adjusted to the prevailing conditions.

It is noted that the generic field of “operational condition of all navigational and Safety Equipment” may include a list with the main and critical Navigational and Safety equipment such as (radar, ARPA, GPS, AIS, BNWAS, VDR), in order for their operational status and effective utilization (alarms, warning settings, guard zones etc) to be confirmed and acknowledged each time by the relieving Officer.

Considering the above, in relation to the information provided during the interview process, it is suggested that the watch hand over procedure implemented on board Yusuf Cepnioglu was not incorporating explicit instructions to the navigational Officers for the

operational condition of the navigational and safety equipment on the bridge, including checks for the proper operation of BNWAS. Resultantly the setting of the alarm or warning features of the main navigational equipment (Radars, GPS) were up to the OsOW decision.

The lack of specific instructions to the navigational watch hand over procedure concerning the operational condition of bridge equipment is considered as a contributing factor in the marine accident.

4.9.2 Master's Standing and Night Orders

Standing Orders are a set of instructions to ensure safe ship navigation and operations whether at sea or at port. These set of directives by the Master encompasses a very wide list of aspects of navigation and rules for the Officers. Standing Orders are to be followed at all times by the Officer on duty and are duly signed by every Officer on board, making them liable to adhere to the orders.

The Night Orders are a supplement to the Standing Orders that come into force as the Master proceeds to take rest during the night. The Standing Orders are in force at all times whereas the Night Orders add specific points to the withstanding Standing Orders. The Master writes the Night Orders every night, with specific regard related to the existing state of the weather, sea and traffic. These are generally handwritten and duly signed by every OOW. One should read these orders carefully because the Master uses his experience and expertise to determine safe navigation in his absence and therefore lays down instructions as to the plotting intervals, pressure and temperature reading intervals, navigational practices and so forth.

International Safety Management Code in Part A/Chapter 5 "*Master's Responsibility and Authority*", inter alia, provides that the Company should clearly define and document the Master's responsibility with regard to issuing appropriate orders and instructions in a clear and simple manner. On this context, it is suggested that the Company, through the Safety Management Manual, had given the authority to the Master and had additionally charged him with the responsibility for issuance of his own Standing Orders.

Master's Standing and night Orders were not available for the investigation process; however based on information collected during the interview process it is suggested that they did not include any specific instructions to the OsOW for using the alarm or warning features of the main navigational equipment (Radars, GPS).

The lack of specific instructions to the Master's Standing and Night Orders concerning the usage of the alarm or warning features of the main navigational equipment is considered as a contributing factor in the marine accident.

4.10 Fatigue¹⁰

The Maritime Labour Convention and the STCW Convention have tackled the subject of resting periods of seafarers as lack of resting hours has been considered one of the main factors leading to marine accidents. The most common causes of fatigue are lack of sleep, poor quality of rest, stress and excessive workload.

"Fatigue factors in manning and Safety" have been emphasized and have called the attention to stakeholders of maritime transports by IMO Resolution A. 772(18)¹¹ adopted

¹⁰Fatigue definition as found in IMO's MSC/Circ.813/MEPC/Circ.330:

"A reduction in physical and/or mental capability as the result of physical, mental or emotional exertion which may impair nearly all physical abilities including: strength; speed; reaction time; coordination; decision making; or balance", leading to degradation of human performance.

on the 4th of November 1993. Said Resolutions set out the basic factors that should be taken into account in making operational decisions.

4.10.1 Chief Officer's fatigue¹²

As already stated, the Chief Officer after his 0400-0800 watch on the 7th of March 2014 remained on the bridge until mooring operations had been completed and the vessel was safely berthed at Nempont port at around 09:30. Then he spent most of his morning day ashore where he visited his family and returned on board around 16:00 when he took over the 1600-2000 cargo watch. He was also involved in ST/BY operations for the departure of the vessel and after that he went to his cabin and spent some time doing office work and he talked on the phone with his family for almost two hours. Then he slept for almost four hours and woke up to take over the navigational watch at 04:00.

Considering the above it derives that the C/O had been awake for almost twenty hours the previous day of the casualty.

The lack of sleep or the poor quality of rest are attributed to be main factors that result in fatigue and exhaustion, which have a direct negative impact on an individual's alertness. When an individual's alertness is affected by fatigue, his duties performance can be significantly impaired. The impairment will occur in every aspect of human performance (physically, emotionally and mentally) such as in decision-making, response time, judgment and so forth. Fatigued individuals become more susceptible to errors of attention and memory. For example, it is common for fatigued individuals to omit steps in a sequence of actions.

It was reported that when the Chief Officer took over the navigational watch at 04:00 he was feeling well and fit for his duty, nevertheless taking into consideration the fact that he fell asleep at least 40 minutes prior to the grounding it is evident that he lost his awareness during the first hour of his watch.

In view of the above and taking into account the information collected through the interview process it derives that C/O was not fit for his watch duties and his performance was directly affected by fatigue that was generated due to insufficient time of sleep and rest before taking over the watch. Consequently his self-situational awareness was

¹¹Res. A. 772 (18) provisions pertain to manning levels:

1 INTRODUCTION

1.1 The purpose of this document is to provide a general description of fatigue, to identify the factors of ship operations which may contribute to fatigue, and to classify those factors under broad categories to indicate the extent to which the factors may be related.

1.2 The objective is to increase awareness of the complexity of fatigue and to encourage all parties involved in ship operations to take these factors into account when making operational decisions.

2 GENERAL DESCRIPTION OF FATIGUE

2.1 Fatigue results in the degradation of human performance, the slowing down of physical and mental reflexes and/or the impairment of the ability to make rational judgments.

2.2 Fatigue may be induced by factors such as prolonged periods of mental or physical activity, inadequate rest, adverse environmental factors, physiological factors and/or stress or other psychological factors.

4.1 Management ashore, aboard ship, and also the responsibilities of Administrations

4.1.1 The prevention of fatigue in the areas of scheduling of shipboard work and rest periods, manning levels, watchkeeping practices and assignment of duties could largely be accomplished by sensible shore-based management and on-board management techniques. It is also recognized that Administrations have an equally important role to play with respect to legislation leading to acceptance, implementation and enforcement in those areas covered by international conventions. Guidelines and provisions should take into account the relationships between work and rest periods to ensure adequate rest. These considerations should include a review of the voyage length, length of port stay, length of service of individual crew members, periods of responsibility and watchkeeping practices.

4.1.2 It is essential that management should provide clear, concise written policy guidance to ensure that ships' crews are familiar with ships' operational procedures, cargo characteristics, voyage length, destination, internal and external communication practices and ship familiarization procedures.

4.3 Crew-specific factors

4.3.1 Thoroughness of training is considered to be important in the prevention of fatigue. Fitness for duty, including medical fitness, proper working experience and the qualifications and quality of crew members are also considered important in this context.

¹² References based on MSC/Circ.1014 (12-06-2001) Guidance on fatigue mitigation and management

seriously reduced and was depending only on his personal generating alertness and stimulation which was also reduced due to fatigue.

Moreover, the prevailing navigational conditions in relation to external environment such as the lacking of marine traffic and good weather conditions were not properly assessed by the Chief Officer and believably created a sense of complacency or relaxation.

In light of the above the Chief Officer's fatigue is considered as a contributing factor to the examined marine accident.

4.10.2 Deck crew fatigue

As already stated Yusuf Cepnioglu's cargo and ST/BY operations at Nempport lasted for the whole day before the grounding. During that time the ABs were involved to cargo operations, in addition to their look out duties as part of navigational watch.

According to information collected during the interview process, due to the vessel's short stay in ports, all deck crew, including the ABs, were involved with the cargo operations such as lashing/unlashing, checks, monitoring etc. Moreover, all deck crew were engaged to ST/BY and mooring operations, when arriving or leaving the ports as well as to maintenance activities, assisting the Bosun who was the only deck rating not engaged in navigational watch.

On this ground, it was a common practice not to overburden the ABs and to relieve them from their look out duties as part of the navigational watch allowing them to stay in their cabins or the mess room to rest, being on standby to get to the bridge if needed.

Said practice is considered as a contributing factor as it was followed on the night of the casualty which resulted to vessel's navigation on a single man bridge watch and there was no look out to prevent the OOW from falling asleep.

4.11 Crew complement

4.11.1 Minimum Safe Manning Principals

SOLAS '74/ Chapter V / Reg. 14, as applied, principally regulates vessel's manning by providing that:

"Contracting Governments undertake, each for its national ships, to maintain, or, if it is necessary, to adopt, measures for the purpose of ensuring that, from the point of view of safety of life at sea, all ships shall be sufficiently and efficiently manned."

IMO Resolution A.1047(27) introduces guidelines for applying the principles of minimum safe manning to ensure the safe operation of ships, their security and the protection of the marine environment.

The objectives of the guidelines mainly focus on the sufficiently, effectively and efficiently manning of a ship to provide:

- safety and security of the ship;
- safe navigation;
- safe operations at sea;
- safe operations in port;
- prevention of human injury or loss of life;
- avoidance of damage to the marine environment and to property;
- ensure the welfare and health of seafarers through the avoidance of fatigue;
- based on goal-base approach, standard procedures for effective implementation and effective enforcement.

Furthermore, capabilities, abilities and on board functions are highlighted as principals to be considered in determining the minimum safe manning of a ship, whilst it is stressed that the ship's crew grades and capacities should be based on the performance of the functions at the appropriate levels of responsibility, as specified in the STCW Code.

The Company, responsible for the operation of a ship, may submit its proposal of a minimum safe manning in numbers and grades/capacities to the Administration to be evaluated and accepted to its satisfaction, if the proposed ship's complement is established in accordance with the principals, recommendations and guidelines of Resolution A.1047(27) and is adequate in all respects for the safe operation and the security of a ship and for the protection of the marine environment.

4.11.2 Yusuf Cepnioglu deck resources

Yusuf Cepnioglu manning comprised of three navigational Officers, including the Master, three ABs, one Bosun and one deck cadet. When at port the navigational watch crew, that is the C/O, the 2nd Officer and the ABs were involved with cargo operations as well as with ST/BY operations for arriving or leaving ports.

According to the vessel's voyage schedule (see par. 4.1, Table 1), apart from the voyage segment between Turkey and Tunisia which lasted approximately 3 days Yusuf Cepnioglu was calling on ports frequently and she had short stays. During that time the working schedule of the OsOW and the ABs was heavier as they were performing their navigational watch duties as well as their duties for cargo and ST/BY operations.

With respect to the ABs it was apparent that when the vessel had frequent calls at port they were overburdened with their navigational watch and cargo operation duties therefore it was decided to provide more resting time by allowing them to stay at the mess room or their cabins during their navigational watch.

In view of the above and in conjunction with the vessel's feeder operation as described in par. 4.1, it is inferred that, in practical terms, Yusuf Cepnioglu deck resources were insufficient and scanty in numbers to carry out the demanding deck operations in time under the round voyage limitations and navigation to the next port.

In relation to the aforementioned safety issue, recent amendments to the ISM Code Res. that were adopted by MSC.353(92) and entered in force on 01 January 2015, introduced new requirements and conditions for determining manning levels.

More specifically the respective amendment¹³ addresses that Companies should ensure that the vessel is appropriately manned with qualified, certificated and medically fit seafarers, in order to encompass all aspects of maintaining safe operations on board based on the principals of Res. A. 1047(27). Amongst the amendments and supplements referred in said Res. MSC.353(92), a new paragraph¹⁴ is added to the foreword of the Code regarding the effect of footnotes.

¹³ IMO Resolution MSC.353(92):

"6.2 The Company should ensure that each ship is:

.1 manned with qualified, certificated and medically fit seafarers in accordance with national and international requirements; and

.2 appropriately manned in order to encompass all aspects of maintaining safe operations on board.*

** Refer to the Principles of minimum safe manning, adopted by the Organization by resolution A.1047(27)."*

¹⁴8 The following new paragraph is added to the foreword of the publication of the Code:

"The footnotes given in this Code are inserted for reference and guidance purposes and do not constitute requirements under the Code. However, in accordance with paragraph 1.2.3.2, all relevant guidelines, recommendations, etc. should be taken into account. In all cases the reader must make use of the latest versions of the referenced texts of the document specified in a footnote, bearing in mind that such texts may have been revised or superseded by updated material."

It is noted that ISM referred provision is in line with Regulation 2.7 of the Maritime Labour Convention 2006¹⁵, which also requires that all operational aspects are taken into account when reviewing manning levels.

On this ground it is enunciated that compliance with minimum safe manning may not be sufficient when taking into account the operational requirements and demands of the ship.

In the light of the above, the lack of sufficient deck personnel resources for carrying out ship borne operations at port is considered to have been a contributing factor to the examined marine accident.

4.12 Emergency response by the crew

When the crew began the preparation for launching the free fall lifeboat the boat's engine could not be started because the battery was dead. It was reported that the battery could have been discharged because it was left connected to the boat's electrical circuit after the last "abandon ship" drill that had been carried out 10 days before the casualty. However the actual reason for the inoperative condition of the lifeboat could not be established.

The readiness of lifesaving equipment is critical for the safety of the crew and the effectiveness of the response actions to an emergency. For that reason it is thoroughly regulated by the International regulatory framework as described below.

- SOLAS/Chapter III/Reg.13.1.3 "Stowage of survival craft" and Reg. 14.1 "Stowage of rescue boats" by which it is provided that all lifesaving appliances shall be in a state of readiness for launching in not more than 5 min.

- SOLAS/ CH III/Reg.20 "Operational readiness, maintenance and inspection" provides: "6. *Weekly inspection*

The following tests and inspections shall be carried out weekly and a report of the inspection shall be entered in the log-book:

...

.2 all engines in lifeboats and rescue boats shall be run for a total period of not less than 3 min, provided the ambient temperature is above the minimum temperature required for starting and running the engine. During this period of time, it should be demonstrated that the gear box and gear box train are engaging satisfactorily. If the special characteristics of an outboard motor fitted to a rescue boat would not allow it to be run other than with its propeller submerged for a period of 3 min, a suitable water supply may be provided. In special cases, the Administration may waive this requirement for ships constructed before 1 July 1986;"

¹⁵ Regulation 2.7 – Manning levels

Purpose: To ensure that seafarers work on board ships with sufficient personnel for the safe, efficient and secure operation of the ship.

1. Each Member shall require that all ships that fly its flag have a sufficient number of seafarers employed on board to ensure that ships are operated safely, efficiently and with due regard to security under all conditions, taking into account concerns about seafarer fatigue and the particular nature and conditions of the voyage.

Standard A2.7 – Manning levels

1. Each Member shall require that all ships that fly its flag have a sufficient number of seafarers on board to ensure that ships are operated safely, efficiently and with due regard to security. Every ship shall be manned by a crew that is adequate, in terms of size and qualifications, to ensure the safety and security of the ship and its personnel, under all operating conditions, in accordance with the minimum safe manning document or an equivalent issued by the competent authority, and to comply with the standards of this Convention.

2. When determining, approving or revising manning levels, the competent authority shall take into account the need to avoid or minimize excessive hours of work to ensure sufficient rest and to limit fatigue, as well as the principles in applicable international instruments, especially those of the International Maritime Organization, on manning levels.

3. When determining manning levels, the competent authority shall take into account all the requirements within Regulation 3.2 and Standard A3.2 concerning food and catering.

- The International Safety Management Code, as applied, in Chapter 8 “Emergency Preparedness” provides that:
 - “8.1 The Company should establish procedures to identify, describe and respond to potential emergency shipboard situations.
 - 8.2 The Company should establish programmes for drills and exercises to prepare emergency actions.
 - 8.3 The safety management system should provide for measures ensuring that the Company’s organization can respond at any time to hazards, accidents and emergency situations involving its ships.”

Considering the above it is inferred that the implemented maintenance and inspection system concerning the readiness of the lifesaving appliances did not ensure the operational condition of the life boat when it was required for the vessel’s abandonment after the grounding.

4.13 Similar cases

In 2004 MAIB published a report “Bridge Watch keeping Study”¹⁶ after analyzed accidents involving merchant vessels greater than 500gt, underway and without a pilot, which had been the subject of either a “Full Investigation” or a “Preliminary Examination” between 1994 and 2003.

Initially, a review of the data examined, identified three principal areas of concern:

- One third of all groundings involved a fatigued officer alone on the bridge at night.
- Two thirds of vessels involved in collisions were not keeping a proper look-out.
- One third of all accidents that occurred at night involved a sole watch keeper on the bridge.

An analysis of data for 23 cases that involved grounding incidents showed a striking resemblance to that of Yusuf Cepnioglu:

- ✓ Nearly 50% (11 cases) occurred between 00:00 and 06:00 and out of these, fatigue was considered a contributing factor in 9 cases.
- ✓ In 8 out of the 9 fatigue related accidents, the vessels among others:
 - had not posted a look-out;
 - were being steered by autopilot;
 - were not fitted with, or were not using a watch alarm;
 - had an unaccompanied watch keeper who had fallen asleep.

The Study has highlighted that although the bridge watchkeeping composition of 19 vessels was manned in accordance with the provisions for look-out, as set out in STCW 95, yet still failed to maintain a proper look-out. In those cases contributing factors addressed the issue of lack of competency whilst fatigue was laterally observed. On many ships, although ratings are usually available to provide an additional look-out, they are rarely used for this duty during daylight.

A common view supported is that ratings are generally of little value on the bridge, especially when the Master or other Officers are also present and their disposal for deck tasking and working is considered more beneficial for the ship’s operation. As a result, ratings working during daytime are usually relieved from their night time bridge watch, in order to rest.

¹⁶ https://www.gov.uk/government/uploads/system/uploads/attachment_data/file/377400/Bridge_watchkeeping_safety_study.pdf

Considering the causal and contributing factors of the examined marine casualty as presented to the analysis of the report it is inferred that same issues referred to the MAIB's study have also been identified to the Yusuf Cepnioglu marine casualty. These issues have been identified to two more similar type of casualties that HBMCI had been involved with conducting a safety investigation and more specifically to the grounding of the Turkish Bulk Carrier "Ince Inebolu"(Published Investigation Report No. 02/2014)¹⁷, as well as to the grounding of the Turkish Ro-Ro Cargo vessel "Saffet Bey", which is under investigation.

In light of the above it derives that MAIB's study and HBMCI's recent experience have highlighted that watch keeper manning levels, fatigue and poor lookout, result to marine accidents, and are considered as major causal factors to collisions and groundings.

5. Conclusions

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

- .1 Yusuf Cepnioglu was operating as a feeder line vessel engaged in voyages between port in Turkey, Algeria and Tunisia ([§4.1](#)).
- .2 The vessel was considered to be manned in accordance to the requirements of her valid Minimum Safe Manning Document. ([§ 4.3.1](#), [4.3.2](#)).
- .3 The navigational chart that was been used was not fully updated which highlights the lack of importance that was given by the crew to the voyage preparation and indicates insufficient procedures concerning the safe navigation ([§4.6.1](#)).
- .4 The vessel's positions, prior to the casualty were not recorded on an hourly basis, indicating a systematic disregard by the OOWs to standard navigational procedures concerning the monitoring phase of the passage planning ([§4.6.2](#)).
- .5 The operation of Radars and GPS without utilizing the course or guard zone alarm features is considered to have been a contributing factor in the marine accident ([§4.6.3](#), [§4.6.4](#)).
- .6 It could not be confirmed if the BNWAS was operating during the time before the casualty. However, its importance to the safety of navigation was not fully appreciated as it was not included to the standard checks during navigational watch hand over ([& 4.6.5](#)).
- .7 There were no instructions and procedures for an effective Bridge Resource Management concerning the utilization of the features offered by the bridge equipment and the navigational aids available for use (ARPA, GPS, BNWAS) ([§4.7](#)).
- .8 The vessel was navigating under a single man bridge watch condition as the lookout AB's were not posted on bridge after the vessel's departure from Nempport/Izmir ([&4.8](#)).
- .9 The watch hand over procedure did not implement instructions to the navigational Officers for the operational condition of the navigational and safety equipment on the bridge, including checks for the proper operation of BNWAS ([§4.9.1](#)).

¹⁷ <http://hbmci.gov.gr/js/investigation%20report/final/02-2014%20INCE%20INEBOLU.pdf>

- .10 Master's Standing and night Orders did not include any specific instructions to the OsOW for using the alarm or warning features of the main navigational equipment (Radars, GPS) (§4.9.2).
- .11 C/O was not fit for his watch duties and his performance was directly affected by fatigue that was generated due to insufficient time of sleep and rest before taking over the watch (§4.10.1).
- .12 It was a common practice not to overburden the ABs and to relieve them from their look out duties as part of the navigational watch allowing them to stay in their cabins or the mess room to rest, being on standby to get to the bridge if needed (§4.10.2).
- .13 Yusuf Cepnioglu deck personnel was insufficient for carrying out ship borne operations at port when the vessel was calling at ports frequently (§4.11.2).
- .14 The implemented maintenance and inspection system concerning the readiness of the lifesaving appliances did not ensure the operational condition of the life boat when it was required for the vessel's abandonment after the grounding (§4.12).
- .15 The analysis of Yusuf Cepnioglu casualty highlighted similar contributing factors to other casualties involving grounding or collisions and have been examined by MAIB and HBMCI (§4.13).

6. Actions Taken

According to information from the Turkish Accident Investigation Board the owner/operator company of the vessel ceased to function.

7. Safety Recommendations

Taking into consideration the analysis and the conclusions derived from the safety investigation conducted, the following recommendations are issued¹⁸:

7.1 The Turkish Maritime Administration is kindly invited to:

- | | |
|---------|--|
| 59/2014 | Circulate to ship-owners / operators of Turkish Flagged vessels the similar causal and contributing factors derived from this investigation report and HBMCI investigation report concerning the grounding of M/V INCE INEBOLU, as presented in par 4.13, highlighting the importance of a dedicated watch look-out at all times and especially at night in order to avoid similar accidents in the future. |
| 60/2014 | Consider the need to propose to the ship-owners / operators of Turkish Flagged vessels that when a vessel's trading pattern or other ship borne operation produces an increased workload for the navigational watch crew and affects the navigational watch standards repeatedly, to review their minimum safe manning documents in co-operation with the competent Authority of the Turkish Administration, as foreseen by the provisions of Res. A.1047(27) for establishing Minimum Manning Levels. |

¹⁸Safety recommendations to owners/managers of Yusuf Cepnioglu have not been issued, since the company has ceased to function.

Produced and edited by the Hellenic Bureau for Marine Casualties Investigation (HBMCI), under the provisions of the article 16 of Law 4033/2011 (Government Gazette A' 264)

This report was written solely for the purposes of the investigation and is uploaded on the website of HBMCI (see below).

Accident Investigation Report 08/2014
Hellenic Bureau for Marine Casualties Investigation
150 Grigoriou Lambraki Str.,
Postal Code: 18518, Piraeus, Greece
Tel.: +30 213 1371970
FAX: +30 213 1371269
E-mail: hbmci@yna.gov.gr
Website: <http://hbmci.gov.gr>