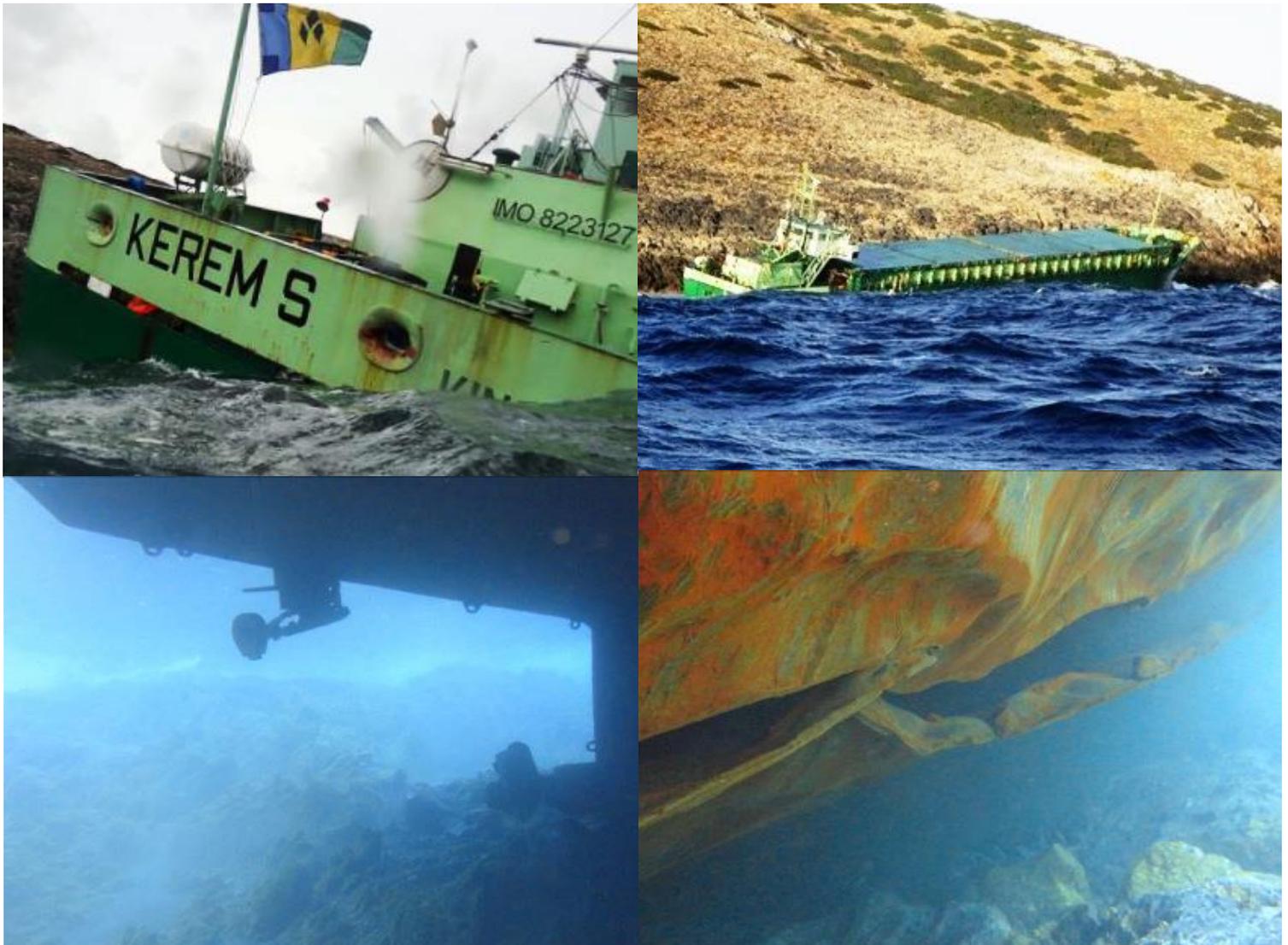




**HELLENIC REPUBLIC  
HELLENIC BUREAU FOR MARINE CASUALTIES INVESTIGATION**

**MARINE CASUALTY SAFETY INVESTIGATION REPORT  
06/2015**

**Grounding and foundering of  
M/V Kerem S at Levitha Island, Greece.**



**May 2017**

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## Foreword

The Hellenic Bureau of Marine Casualties Investigation (HBMCI) was established by Law 4033 / 2011 (Government Gazette 264 A/ 22 December 2011), within the scope of enforcement of the European Directive 2009/18 / EC.

HBMCI conducts technical investigations after marine casualties or marine incidents with main task, through the analysis of the considered incident, to identify the contributing factors that led to it, to draw conclusions and to issue safety recommendations to the parties involved in the marine casualty, aiming to prevent or avoid future marine accidents.

The purpose of investigating marine casualties and incidents is not the setting or apportioning of blame or liability.

This report has been prepared without taking into consideration any administrative proceedings, disciplinary, judicial (civil or criminal). Its purpose is the understanding of the sequence of the events that started on 20<sup>th</sup> February 2015 and resulted in the considered very serious marine casualty and aims to prevent and deter repetition.

Abstractive or partial disposal of the contents of this report, for purposes other than those for which it has been prepared, may lead to misleading conclusions.

The investigation report has been prepared in accordance with the format in Annex I of the relevant law and references to times refer to local time (UTC +2).

Under the above framework HBMCI has conducted an investigation to the grounding of the general cargo ship Kerem S, Flag of St. Vincent and the Grenadines, IMO No: 8223127 on Levitha island, West of Leros island, Greece on 20<sup>th</sup> February 2015, which resulted in hull damage, water ingress and eventual her foundering on 23<sup>rd</sup> February 2015.

This report is mainly based on information and evidence that have been acquired from the interview process and information collected from those individuals involved in the marine casualty as Kerem S was not required to carry VDR or S-VDR equipment. The positioning information prior to the foundering is based on data derived from Piraeus JRCC.

### Glossary of Abbreviations and Acronyms

1.	AB	Able seaman
2.	AIS	Automatic identification system
3.	ARPA	Automatic radar plotting aid
4.	BHP	Brake Horsepower
5.	BNWAS	Bridge Navigational Watch Alarm System
6.	°	degrees (of angle)
7.	'	minutes (of angle)
8.	DOC	Document of compliance
9.	ft	foot (1 foot = 0.3048m)
10.	GMDSS	Global maritime distress and safety system
11.	GPS	Global positioning system
12.	gt	gross tonnage
13.	HCG	Hellenic Coast Guard
14.	HNMS	Hellenic National Meteorological Service
15.	HNHS	Hellenic Navy Hydrographic Service
16.	hp	Horsepower (unit of measurement of power)
17.	IMDatE	Integrated Marine Data Environment (a technical framework that collects and combines data from EMSA's maritime applications and other external sources)
18.	IMO	International Maritime Organization
19.	ISM Code	International Safety Management Code ( Code for the safe operation of ships and for pollution prevention)
20.	IWS	In-Water Survey
21.	PanPan	A three-letter backronym, "possible assistance needed" or "pay attention now" is derived from "pan". It is used in maritime radio communications courses as a mnemonic to radio and communications operators
22.	Piraeus JRCC	Piraeus Joint Search & Rescue Coordinating Center of the Hellenic Coast Guard
23.	kW	Kilowatt
24.	LT	local time
25.	nm	nautical miles
26.	N, S, E, W	North, South, East, West
27.	OOW	Officer on the watch
28.	Olympia Radio	National Coastal Station covering the maritime safety sector (GMDSS) for receiving and transmitting distress, urgency and safety signals and commercial maritime communications world widely.
29.	OS	Ordinary seaman (deck crew)
30.	rpm	revolutions per minute
31.	Shackle	1 shackle = 90 ft or 27.42m
32.	SMC	Safety management certificate
33.	SMS	Safety management system
34.	SOLAS	Convention for the Safety of Life at Sea 1974, as amended
35.	STCW	International Convention on Standards of Training, Certification and Watchkeeping for seafarers
36.	S-VDR	Simplified Voyage Data Recorder
37.	T/B	Tug Boat
38.	UMS	Unmanned Machinery Space
39.	UTC	Universal co-ordinated time
40.	VDR	Voyage data recorder
41.	VHF	Very high frequency (radio)
42.	VRM	Variable Range Marker: an electronic mark or ring that can be placed over any target on a vessel's radar display indicating the precise range, in nautical miles, between the target and the vessel.

## 1. Executive summary

M/V Kerem S under St. Vincent and the Grenadines flag, with 06 crew members, sailed from Crete, Greece on 16<sup>th</sup> February 2015, on light condition heading for Constantza, Romania. Due to heavy weather conditions the vessel anchored at the South Coast of Ikaria Island and waited for weather improvement. On 19<sup>th</sup> February 2015 the Master decided to heave up the anchor and attempted to continue the voyage; however when the vessel exited the passage between the islands of Ikaria and Thymaina, experienced strong winds and heavy swell coming from North directions. The Master decided to turn over and head towards a bay at the South Coast of Thymaina Island where he could drop the anchor and wait for weather improvement. At approximately 00:00 on 20<sup>th</sup> February 2015, Kerem S was anchored close to the South coast of Thymaina but due to the strong winds, 7-8 Bft the vessel drifted and grounded with her starboard side aft part at the rocky coast. Due to the grounding the vessel's rudder detached from its mounting and the propeller got severely damaged.

The Master did not inform the local Authorities and decided to heave up the anchor and move the vessel from the grounding position to avoid further damages. Using the bow thruster he managed to refloat the vessel. Nevertheless Kerem S could not be maneuvered due to the propeller damages and the lost rudder and started drifting southerly due to the prevailing winds, at a speed of 2 knots.

At approximately 01:00 the Master contacted the vessel's Managing Company to report the situation. The Company by turn contacted the Owners of the Turkish flagged M/V "Sukran S" IMO 8201002 which was en route from Constantza to Beirut, in order to provide assistance. However the Master of Sukran S claimed that they were unable to approach Kerem S due to the prevailing strong winds and heavy sea. The Masters of both vessels had also direct contact via VHF.

Following, the Managing Company searched for tugboat assistance via their Agents at the ports of Cesme and Bodrum with no results. After that the ship's managers contacted a salvage company and by 03:00 they had finally confirmed assistance arrangements from the Greek flagged T/B Aegeon Pelagos. The T/B would sail from Piraeus port, which was over 160 nautical miles away from the position of Kerem S, as no other T/B of the salvage company was allocated close to the casualty area. In the meantime the vessel was still drifting southerly and neither the Managing Company nor the Master reported the situation to the local Authorities, or transmitted any distress signal via VHF.

At 06:52 Kerem S was West of Patmos Island and Olympia Radio called the vessel on the VHF. The Master reported that the vessel was drifting due to a mechanical failure and didn't request any kind of assistance. Olympia Radio reported the incident to Piraeus JRCC which issued a Pan Pan radio message.

The following hours Piraeus JRCC attempted several telephone communications with the ship's Managing Company and the Master for an update on the situation. During said communication it was reported that a tugboat was on the way and no further assistance was requested. The condition of the vessel with regard to the sustained damages to the propeller and the rudder was not reported. Nevertheless Piraeus JRCC continued to monitor the situation and engaged available means.

Following orders by the Patmos HCG Authority, at 08:25 a fishing vessel approached Kerem S while she was drifting southerly, but the Master didn't ask for any assistance as he estimated that its small size rendered the F/V unable to properly assist Kerem S. Moreover, a HCG patrol craft was deployed to monitor and report the situation of Kerem S as well as a HCG SAR vessel which had a visual contact with the ship at 11:05.

At 13:45 Kerem S was approximately 5.5 nm north of Levitha island drifting southerly with a course of 162° and a speed of 1.5 knots. Tugboat Aegeon Pelagos was 56 nm away sailing with a speed of 12 knots and she was estimated to arrive at the area approximately after 05 hrs. At 15:10 the Master of Kerem S had a VHF communication with M/T Aura, Russian flag, which was transiting the area and stated again no need for assistance.

At 16:00 Piraeus JRCC engaged available air means and ordered a SAR Helicopter to reallocate to Kos island in order to be close to the area and recover the crew of Kerem S, in case it deemed necessary. The helicopter landed at Kos island at 17:35 and remained in readiness for assistance. By that time, according to the HCG SAR vessel the prevailing wind at the area was North 7-8 Bft .

At 17:35 the Master of Kerem S reported that he had dropped the anchor North of Levitha island. At that time the tug Aegeon Pelagos was still 06 nm away from Kerem S and M/T Aura stated unable to approach Kerem S and provide assistance using a towline and turned to a safer distance.

Due to the strong wind and waves Kerem S was dragging her anchor and continued to drift until she grounded at the rocky coast NE of Levitha island, Greece with her port side at 17:40. Her bottom hull was severely damaged and sea water started entering the Engine Room compartment causing the ship to list to her starboard side.

At 17:45 the Master of KEREM S called Piraeus JRCC to report the grounding and requested assistance to abandon the vessel.

By 19:14 all 06 crew members were rescued by the SAR helicopter. They were transferred to Kos island and after a medical examination they were repatriated.

Kerem S remained at the grounding position and the progressive flooding of her Engine Compartment and her holds led to her foundering at approximately 09:05 on 23<sup>rd</sup> February 2015 at position lat: 37° 0.4800' N / Long: 26° 29.3898' E.

## 2. Factual Information

### 2.1 Ship's particulars

Name of Vessel	Kerem S
Call Sign	J8B3220
Company (ISM Code A 1.1.2)	EFE GEMI ISLANDMECILIGI SANAYI VE TICARET LIMITED SIRKETI – ISTANBUL / TURKEY
Ownership	BERDEN SHIPPING AND TRADING CO. LTD.
Flag State	St. Vincent and the Grenadines
Port of Registry	Kingstown
IMO Number	8223127
Type of Vessel	General Cargo ship
Classification Society	Turk Loydu
Year built	1983
Ship Yard	HERMANN SURKEN GMBH & KG – PAPENBURG / GERMANY
Loa (Length over all)	74.91m
Boa (Breadth over all)	10.60m
Depth (Moulded)	5.72m

Deadweight	1572 t
Summer Draught	3.38m
Gross Tonnage	1281
Net Tonnage	384
Main Engine	Deutz AG 4SA SBA 6M 528
Engine Power /Speed	441 kW / 10.0 knots
Trading Area	West Europe coasts, Mediterranean, Black Sea (including Azov Sea), 200 nm from shore
Document of Compliance	Issued on 17 March 2014 by Turk Loydu
Safety Management Cert.	Issued on 03 April 2014 by St. Vincent and the Grenadines Maritime Administration
Last PSC Inspection (prior to casualty)	Iraklion, Greece, 15 February 2015



Figure 2.1/1. M/V Kerem S with her previous name (Setlark)

## 2.2 Voyage Particulars

Port of departure	Iraklion, Greece
Port of arrival	Constantza, Romania
Type of voyage	International
Cargo information	Ballast condition
Manning	06
Minimum safe manning	06

## 2.3 Marine casualty information

Type of casualty	Very serious
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Date and time	20 <sup>th</sup> February 2014 at 00:00
Position of grounding	lat: 37° 34.50' N - long: 026° 24.00' E SW of Thymaina Island at Ikarian Sea
Position of foundering	lat: 37° 00.48' N - long: 026° 29.39' E NE of Levitha Island at Ikarian Sea
External environment	Wind force 7-8 with gales of 9 Bfts – sea state rough - visibility good - night time
Ship operation	At anchorage
Voyage segment	In passage
Damages	Total Loss

## 2.4 Emergency response

When the Piraeus Joint Search & Rescue Coordinating Center of the Hellenic Coast Guard was informed that Kerem S was drifting due to mechanical failure immediately notified the local Coast Guard Authorities.

At that time Kerem S was drifting west of Patmos Island and the Coast Guard Authority of Patmos deployed a HCG patrol boat at 07:20 as well as the Greek flagged Fishing Vessel Lagos S which had already sailed from the port a few minutes before.

The Coast Guard Authority of Leros Island deployed one HCG SAR vessel which arrived at the area of Kerem S at 11:05.

In addition the HCG Authorities of Kos and Kalymnos were notified to activate the local Emergency Response Plan.

Three more Fishing Vessels sailing at the proximate area were engaged in order to assist if deemed necessary: F/V Nikolaos A, F/V Ioannis P and F/V Asteri.

At 03:00 the vessel's managers arranged assistance with a local salvage company and the Greek flagged tugboat Aegeon Pelagos sailed from Piraeus port at 05:20 and headed towards Kerem S in order to tow her to a port for repairs.

The Russian flagged M/T Aura, which was sailing nearby the area of Kerem S was also engaged at 15:05 to provide assistance.

At 16:00 Piraeus JRCC ordered a SAR Helicopter to be on ST/BY and at 17:40 and after the ship's grounding at Levitha island it took off and recovered the crew of Kerem S. The rescue operation was completed at 19:14 and all 06 crew members were transferred to Kos Island.

<b>State's Units</b>	→ 01 HCG Patrol boat
	→ 01 HCG SAR vessel
	→ 01 SAR Helicopter
<b>Vessels in proximity</b>	→ 04 Fishing Vessels
	→ 01 Motor Tanker

## 3. Narrative

At approximately 00:00 on 20<sup>th</sup> February 2015, Kerem S carrying a crew of 06 and being in ballast condition, grounded on the rocky coast at the Southern part of Thymaina island, Greece by stern, after dragging her anchor due to the strong winds of 7-8 Bft. The ship's propeller was severely damaged by the hit, whereas her rudder shortly after was detached from its mounting. The ship was refloated and started drifting southerly at a speed of 2 knots, until she grounded again at 17:40 at the rocky coast NE of Levitha island, Greece by her port side, while the prevailing winds were 7-8 Bft N. She sustained cracks to her bottom hull and sea water started entering the Engine Room compartment. Kerem S remained at the grounding position and the progressive flooding of her Engine

Compartment and her holds led to her foundering at approximately 09:05 on 23<sup>rd</sup> February 2015 at position lat: 37° 00.4800' N / Long: 26° 29.3898' E.

### 3.1 The grounding at Thymaina

Kerem S had departed in ballast condition from the port of Iraklion, Crete – Greece on 16<sup>th</sup> February 2015, at 16:05 and was en route to Constantza, Romania. While crossing the Southeast Aegean Sea, her Master decided to proceed to the south coast of Ikaria Island for anchorage as adverse weather conditions with strong winds from north directions were forecasted for the planned voyage area.

On 19<sup>th</sup> February 2015, at approximately 22:30, Kerem S was anchored south of Ikaria Island and the Master who was the OOW performing the 20:00 – 24:00 navigational watch, assessed the prevailing weather conditions and decided to heave up the anchor and continue the voyage towards Romania. The vessel sailed with a Northeast course; however as she exited the passage between Ikaria and Thymaina Island, she experienced high waves and strong winds with gales up to 9 Bfrs from North directions. The Master decided to turn over the vessel and to proceed towards the south coast of Thymaina island for anchorage.

After almost one hour Kerem S anchored south of Thymaina with four shackles<sup>1</sup> of chain cable paid out. The Master had estimated that with a charted depth of approximately 50m, 02 shackles would remain on the seabed to increase the anchor holding power. However, after three attempts of dropping the anchor the vessel could not hold on to it due to the high waves and the strong winds of force 7-8 Bft with gales of 9 Bft acting on the vessel's exposed freeboard. The vessel kept dragging the anchor and drifting towards the coast where she grounded with her stern starboard side (**Figure 3.1/1**).

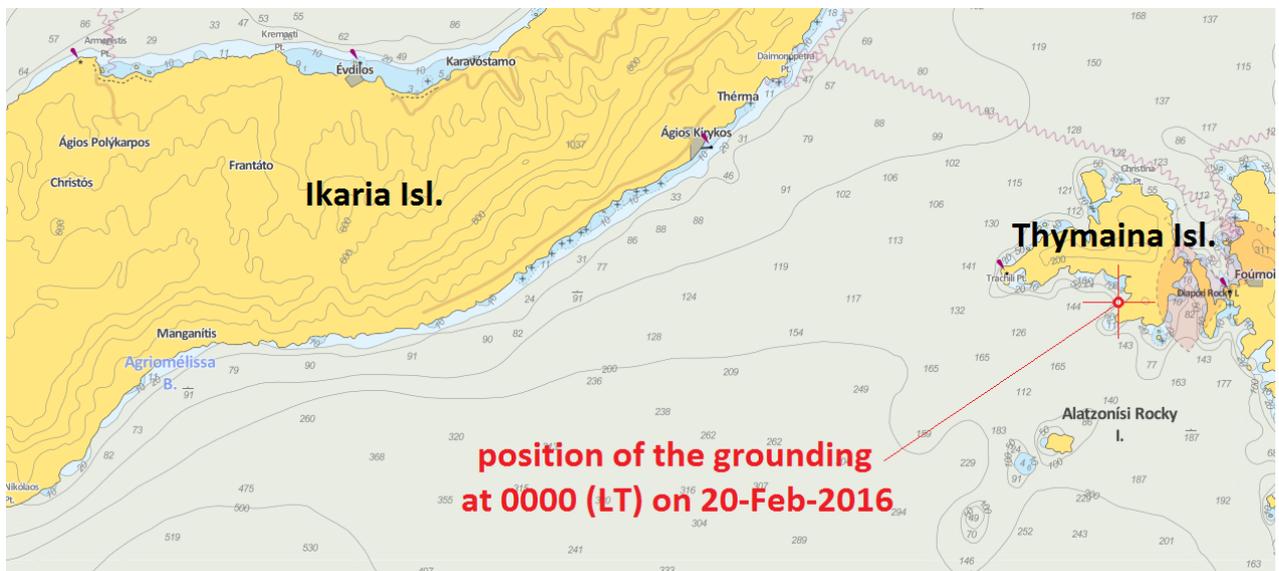


Figure 3.1/1. Extract of electronic chart HNHS<sup>2</sup> 422

### 3.2 Events after the grounding at Thymaina

After Kerem S hit the rocky shoal with her starboard side, her Master after he confirmed

<sup>1</sup> A “shackle” is a nautical unit used for measuring the lengths of the cables of anchor chains), equal to 15 fathoms, 90 feet or 27.432 meters.

<sup>2</sup> Hellenic National Hydrographical Service

that there was no water ingress from the grounding in any compartment, decided to heave up the anchor and use the main engine and bow thruster in order to remove her from the rocky shoal. As soon as the main engine was started, strong noise and vibration was noticed to the aft part of the vessel from the propeller and the rudder. In short time the rudder detached from its mounting point rendering Kerem S unable to maneuver. The ship's propeller had also sustained severe damages and the main engine could not operate due to strong vibrations of the propeller shaft.

**Figure 3.2/1.**  
Missing rudder blade after the vessel's grounding.



**Figure 3.2/2.**  
The damaged propeller after the vessel's grounding.



Despite the fact that the vessel had lost her rudder and could not operate the main engine the Master decided to heave the anchor and use the bow thruster to remove the vessel from the grounding position. When the vessel refloated she started drifting southerly at a speed of 1.5-2 knots due to the prevailing winds and the fact that she could not be maneuvered.

### 3.3 Drifting after the grounding

After the grounding at Thymaina Island, the Master did not inform the local Coast Guard Authorities neither transmitted any distress signal via VHF, despite the ship's condition. He only informed by telephone the ship's managers at approximately 01:00.

After firstly searching for tugboat assistance from Turkish ports, finally at 03:00 the Managing Company arranged for assistance with a salvage company and the tugboat Aegeon Pelagos would sail from Piraeus port, almost 160 nautical miles away.



Figure 3.3/1. The passage from Piraeus to Thymaina, approximately 160 nm.

At 06:52, almost 07 hrs after the casualty and while Kerem S was drifting west of Patmos island 15 nm south of the grounding position (**Figure 3.3/2**), Olympia Radio station called Kerem S via VHF and only then her Master reported that the ship was drifting not under command due to a mechanical failure. However, he did not provide any details regarding the actual condition of the ship and the sustained damages after the grounding and did not request any kind of assistance. Olympia Radio station reported the incident to Piraeus JRCC and a Pan Pan radio message was transmitted as appropriate.

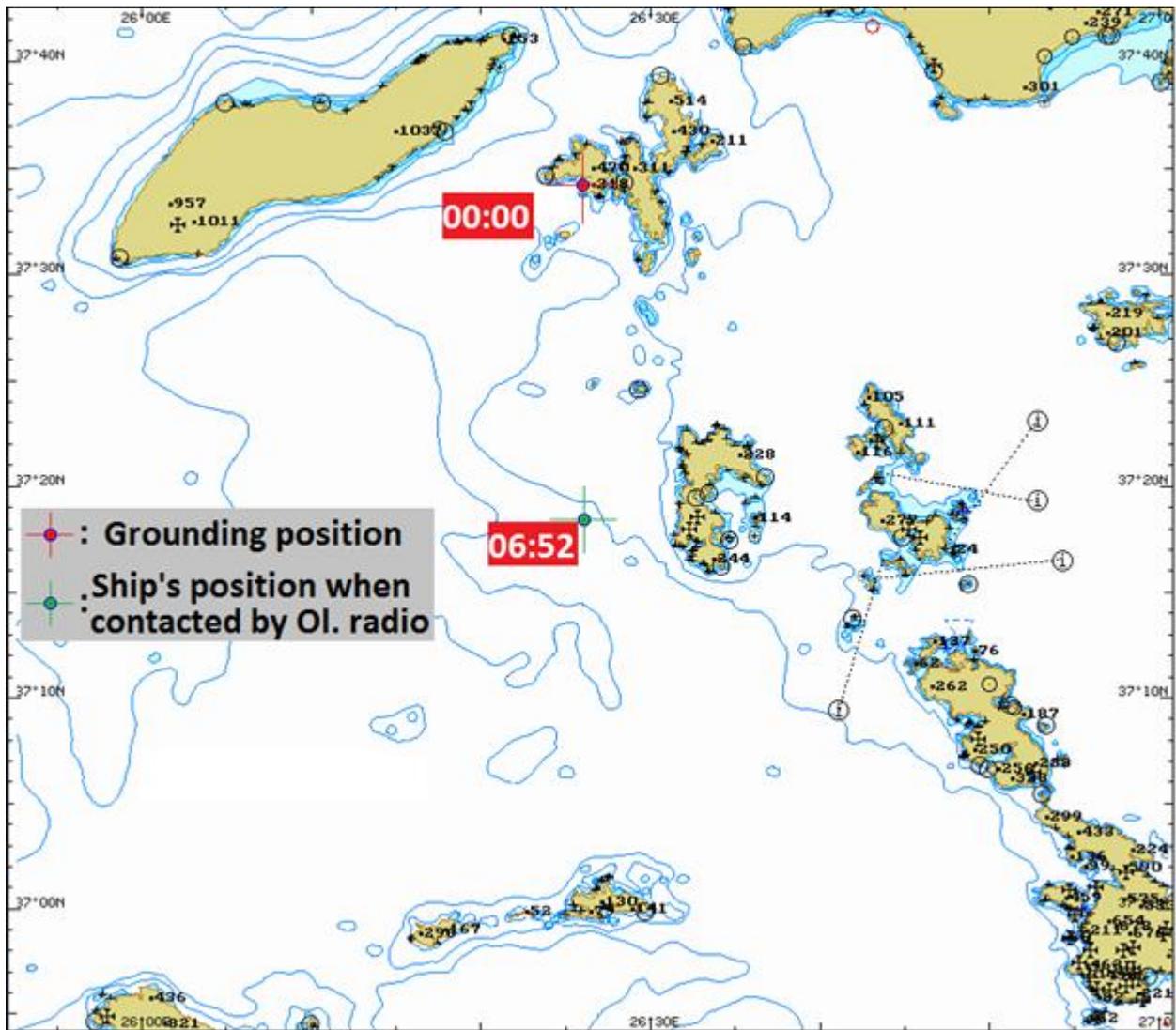


Figure 3.3/2. The position of Kerem S at 06:52 when Olympia Radio called her on the VHF.

Piraeus JRCC informed the Coast Guard Authority of Patmos at 06:50 regarding the situation of Kerem S in order to deploy the HCG patrol boat for checking the vessel's condition. They also informed Coast Guard Port Authorities of Patmos and Leros islands and attempted to establish communication with the managers' DPA by phone without any success. The deployment of a HCG SAR vessel was ordered as well.

The Greek Fishing Vessel Lagos, which had recently sailed from the port of Patmos was informed by the Coast Guard Authority of Patmos and was requested to head towards Kerem S.

At 07:04 Olympia Radio station contacted Kerem S and her Master reported that the ship had a mechanical failure related to her propeller and that no assistance was needed. He also reported that the Managing Company had already arranged for tugboat Aegeon Pelagos to sail for their safe towing and that the ship's propulsion system could not be used in case of emergency but the vessel's anchoring equipment was available and ready for use.

At 07:48 Piraeus JRCC set the Coast Guard Authorities of Kos and Kalymnos islands in readiness and at 07:55 a Pan Pan radio message was issued for the vessel's "Not under command due to mechanical failure" condition.

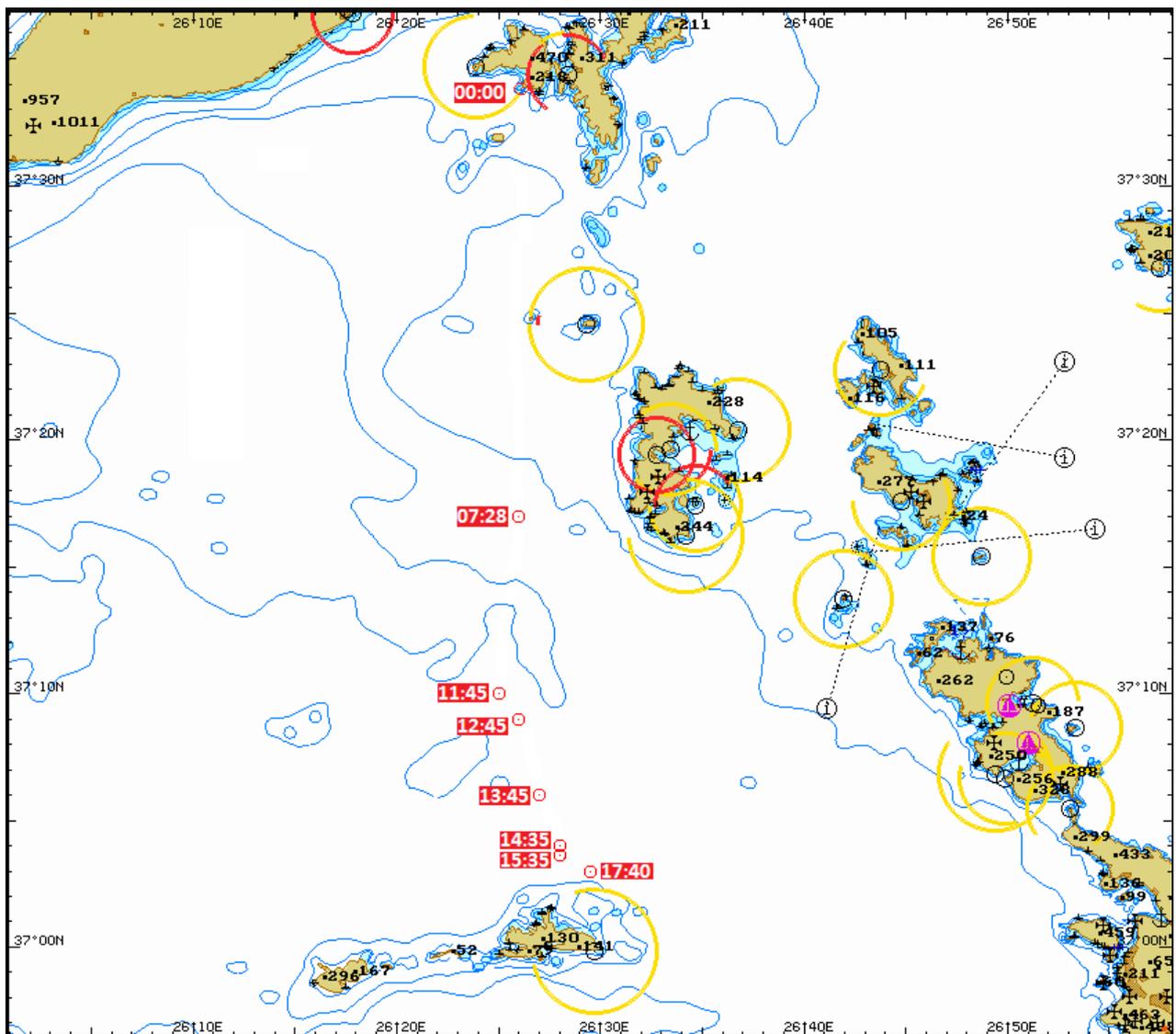
At approximately 08:25 the F/V Lagos S got close to Kerem S and asked if they needed

any support. The Master of Kerem S replied that they didn't need any assistance so the F/V left from the area.

At 08:10 Piraeus JRCC had contact with a representative of Kerem S Managing Company who confirmed that the tug Aegeon Pelagos had been arranged for towing the vessel and no further assistance was needed.

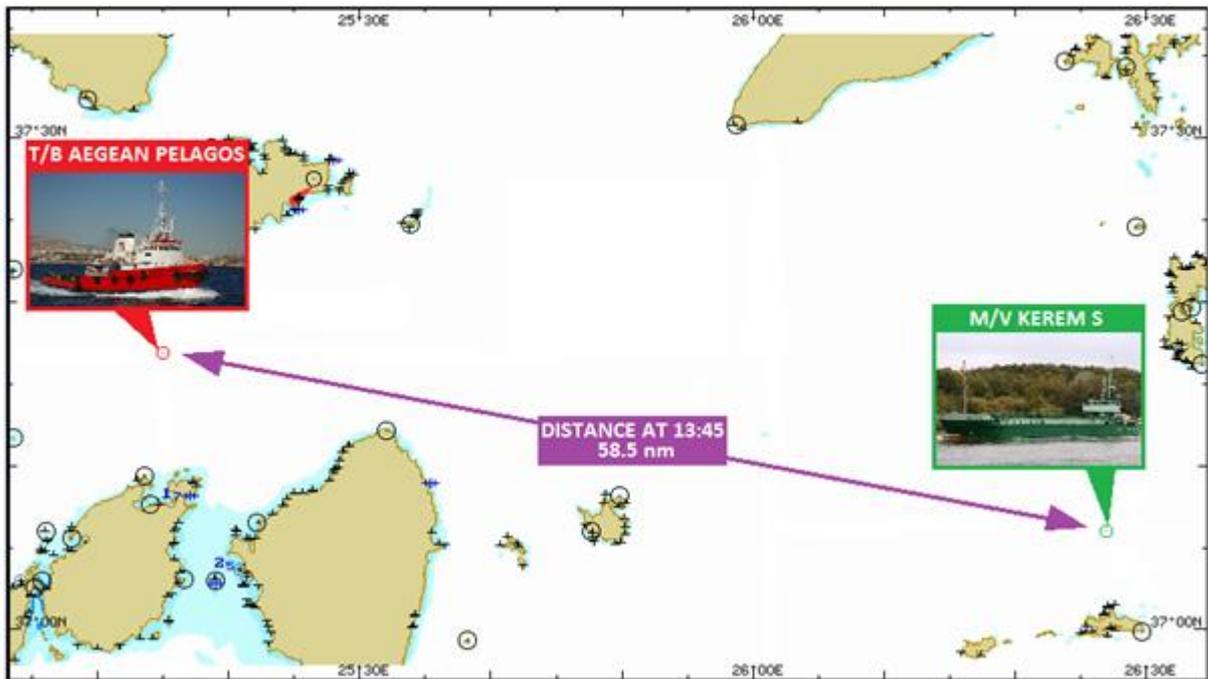
At 10:10 Piraeus JRCC had contact with the ship's Master for an update on the situation who stated that apart from the anchoring equipment, the ship's bow thruster was also available for use, if deemed necessary.

At 11:05 the HCG SAR vessel arrived at the area and spotted Kerem S. The Master was reporting her position to Piraeus JRCC and her positioning during her drifting is depicted in **Figure 3.3/3**.



**Figure 3.3/3.** The positions of Kerem S while drifting, as monitored by JRCC Piraeus from 07:28 until 17:40.

At 13:45 Kerem S was approximately 5.5 nm north of Levitha island drifting southerly at a speed of 1.5 - 2 knots and a course of  $162^{\circ}$ , whereas tug Aegeon Pelagos was more than 58 nm away sailing at a speed of 12 knots, and it was expected to arrive at the area approximately after almost 05 hrs (**Figure 3.3/4**).



**Figure 3.3/4.** The distance between Kerem S and T/B Aegeon Pelagos at 13:45.

It is noted that during the periodic communications of Piraeus JRCC with the Master of Kerem S for monitoring the situation, the grounding that occurred at Thymaina Island and the condition of the vessel regarding the sustained damages to the propeller and the loss of her rudder were never reported.

At 15:05 Piraeus JRCC contacted with the Russian flagged M/T Aura that was sailing in the area so as to be engaged in case of emergency. At 15:10 M/T Aura contacted with the Master of Kerem S who stated once more that there was no need of assistance. At that time the distance of the two ships was approximately 4.9 nm as shown in **Figure 3.3/5**.

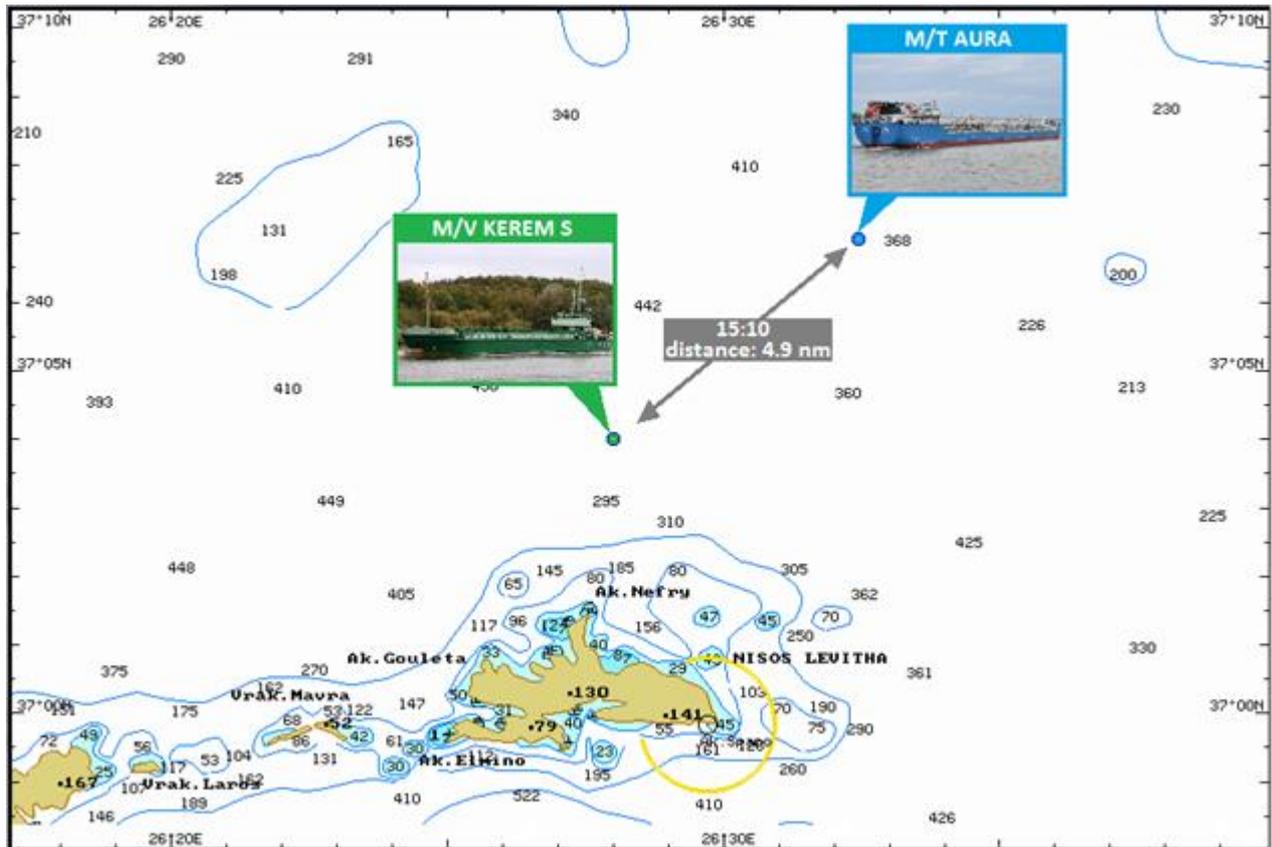


Figure 3.3/5. The distance between M/V Kerem S and M/T Aura at 1510.

At 16:00 Kerem S was close to Levitha Island and Piraeus JRCC ordered a SAR helicopter to reallocate to Kos Island in order to be close to the area to recover the crew of Kerem S, if deemed necessary. The helicopter landed at Kos Island at 17:35, where it remained on St/By. By that time, the prevailing winds at the area were North up to 7-8 Bft.

### 3.4 The grounding at Levitha

At 17:35 the Master of Kerem S reported that he had anchored North of Levitha island. At that time the tug Aegeon Pelagos was 06 nm away from Kerem S while M/T Aura stated unable to approach and provide a towline due to the weather conditions and turned to a safer distance.

Due to the strong winds and the rough sea Kerem S started dragging her anchor and drifted until 17:40 when she grounded at the rocky coast NE of Levitha island by her port side. Her bottom hull was severely damaged and sea water started to ingress the Engine Room compartment causing the ship to list to her starboard side.

At 17:45 Piraeus JRCC called the Master of Kerem S who reported the grounding and requested assistance to abandon the vessel.



Figures 3.4/ 1, 2 & 3. Kerem S grounded at Levitha Island with a starboard list.

### 3.5 Emergency response actions

After the communication with the Master of Kerem S, Piraeus JRCC ordered the SAR Helicopter from Kos to head to the vessel and recover her crew.

At 18:15 the SAR helicopter arrived at the area and started the rescue operation. By 19:14 all 06 crew members were onboard the helicopter which transported them to Kos island where they were medically examined. No injury was reported and all 06 were repatriated.



Fig. 3.5 / 1 & 2. Photos from the rescue operation by the SAR helicopter.

### 3.6 Damages

According to an “In Water Survey” report conducted by the salvage company in the morning of 22<sup>nd</sup> February 2015, the ship’s condition was as mentioned in **Table 3.6/1**.

**“INSPECTION REMARKS:**

1. *Bulbous bow, fore peak area and bow thruster no damage observed*
2. *Port Side bilge area plating was found damaged and compressed more than one meter along the double bottom cargo area with several openings various sizes.*
3. *Stbd side bilge area plating was found damaged with few small openings along the double bottom cargo area.*
4. *Rudder blade was missing and was not found on the seabed.*
5. *Propeller blades found cropped uniformly.*
6. *Engine room bilge area hull plating port & stbd found damaged and compressed with large openings up to 50cm width.*
7. *The vessel is lying to the seabed with the port & stbd bilge and flat bottom engine room area. The remaining part of the vessel has a gap up to 1m between the rocky seabed and the hull plating.*
8. *The vessel has around 10 – 15 degrees list due to the inclination of the seabed.”*

**Table 3.6/1.** Inspection remarks as mentioned in the IWS Report of 22<sup>nd</sup> February 2015.

#### 3.6.1 Photos extracted from the “In Water Survey” Report of 22/02/2015



**Figure 3.6.1/1.** The vessel listed to starboard



**Figures 3.6.1/ 2 & 3.** The bottom of the bow



Figures 3.6.1/ 4 & 5. The missing rudder and the damaged propeller.



Figures 3.6.1/ 6, 7, 8 & 9. Starboard and port cracked bottom platings.

### 3.7 The foundering

Kerem S remained at the grounding position for almost 03 days. The high waves were slamming the vessel against the rocky coast and the progressive flooding of her engine room and holds led to her foundering at approximately 09:05 on 23<sup>rd</sup> February 2015 at position lat: 37° 00.4800' N / Long: 26° 29.3898' E.



Figures 3.7/ 1 & 2. Photos showing Kerem s at her foundering position.

## 4. Analysis

The purpose of the analysis of the examined marine casualty is to determine the causal and contributing factors and circumstances of the casualty, taking into account the sequence of events and the collection of investigation information and data focusing both on specific points of the temporal evolution of these, as well as to the root causes in order to draw useful conclusions leading to safety recommendations targeted to prevent similar casualties in the future.

### 4.1 The crew

According to Kerem S Minimum Safe Manning Certificate issued by her Flag pursuant to Regulation V/14 SOLAS 1974 as amended, a minimum crew of 06 seafarers was required, since her Engine Room had been notated as Periodically Unattended Machinery Space. At the time of the casualty Kerem S was manned with 06 crew members according to her MSMC.

The Engine Department crew consisted of one Engine Officer and one rating, while the Deck department consisted of 02 Navigational Officers including Master and two Deck ratings. Navigational watch was performed on a "6 on – 6 off" basis. The Master had the 06:00-12:00 and 18:00-00:00 Watch and the Chief Officer had the 00:00-06:00 and 12:00-18:00 Watch.

#### 4.1.1 The Master

The Master was 55 years old, Turkish national and had served for the last 08 years prior to the casualty on General Cargo Ships.

In 2005 he acquired his Master Certificate and in 2013 he had his first contract with the Managing Company of Kerem S as a Master on its general cargo vessels. He had boarded Kerem S on 26<sup>th</sup> December 2014.

#### 4.1.2 The Chief Engineer

The Chief Engineer was 44 years of age, Turkish national and had served at cargo vessels for the last 15 years prior to the casualty. This was his second contract with the managing company of Kerem S and he had joined the vessel on 17<sup>th</sup> October 2014.

## 4.2 Main Navigational Aids

### a) Navigational Charts

Kerem S was navigating under standard Nautical paper Charts of British Admiralty.

### b) Echo sounder

The vessel was fitted with an echo sounder and according to crew's statements it was operating during anchorage operation, south of Thymaina island.

### c) Radars

Kerem S was fitted with 2 radars. One Furuno, X-band, FR1510MK3 with display size 15" and one Furuno, S-Band, RHRS-2005 RC. At the time of the grounding both radars were operating.

### d) Automatic Identification System

Kerem S was fitted with DEBEG 3400 AIS.

### e) Voyage Data Recorder

Kerem S was less than 3000 gt and was not required to be fitted with a VDR or a S-VDR.

## 4.3 The anchoring procedure

When the ship approached Thymaina Island she dropped her anchor and paid out 4 shackles of cable. However, the vessel could not hold on to the anchor and started

drifting. After three attempts the vessel was still drifting until she grounded on the rocky coast.

The length of the chain cable is considered as a significant factor for the holding power of the anchor. The catenary of the cable should be considered in order to allow enough length of cable on the seabed for the anchor to bite in.

There are two commonly used and accepted guidelines for the length of the chain cables:

- Number of shackles of cable =  $1.5 \times \sqrt{D}$  (D=Depth of water in metres),
- Length of cables in metres = 6 to 10 x (Depth of water in metres) or, scope of chain cable between 6 and 10, the scope being the ratio between length of chain out and water depth.

However, considering the condition of the ship (laden or ballast), the prevailing weather conditions or the exposed to the weather anchorage area, more chain cables may be required.

During the attempt to anchor at Thymaina the prevailing winds were North 7-8 Bft with gales up to 9 Bft and the Master opted to anchor the vessel with 4 shackles (approximately 110m) of anchor cable deployed in a water depth of 50m.

On the above grounds and taking also into account the high exposed windage area of the vessel as she was in ballast condition the cable length that was paid out is considered much less from the above guidelines. Resultantly, the anchor could not drag smoothly on the seabed and bite in and Kerem S started drifting. The vessel's close proximity to the shore provided insufficient time for the crew to take effective corrective actions.

With regard to the anchoring procedure, the vessel's Safety Management System Manual had incorporated specific instructions for the crew under the respective "Anchoring and anchor watch check list".

Said check list provided, inter alia, the preparation of an "anchoring plan" taking into consideration the following elements:

- the determination of the adequate anchorage area, requesting information from the port authority if deemed necessary,
- the depth, seabed quality and swinging area,
- force of wind and current,
- the effect of tidal streams when maneuvering at low speed.

Apart from the above no specific instructions were provided concerning the proper cable chain length in accordance to the commonly accepted and used guidelines and taking into consideration the prevailing winds and the exposed anchorage area.

In the absence of specific instructions the Master decided based on his knowledge and experience to use only four shackles of chain cable which was insufficient for the 50m depth.

The lack of specific instructions to the vessel's SMSM concerning the adequate chain cable length is considered as a contributing factor to the examined marine casualty.

## 4.4 Emergency preparedness

### 4.4.1 The ship's response

Kerem S held a valid Safety Management Certificate issued by the Maritime Administration of St. Vincent and the Grenadines on 03<sup>rd</sup> April 2014. The International Safety Management Code, as amended, in Chapter 8 "Emergency Preparedness" provides that:

*"8.1 The Company should identify potential emergency shipboard situations, and establish procedures to respond to them.*

*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."*

Under said provisions, Kerem S Safety Management System had incorporated "Contingency Procedures" for the emergency situations. A "Grounding damage evaluation form" had been prepared which inter alia provided the reporting of the grounding to Search and Rescue Coordination Center, the Managing Company and the Port Authorities. However, following the grounding at Thymaina island at 00:00 and despite the fact that the propeller was severely damaged and the rudder shortly after was detached from its mounting, the Master without following any procedure as per ship's Safety Management System, proceeded with heaving the anchor and used the operating bow thruster in order to remove the vessel from the grounding position.

After the vessel was refloated, he informed the Managing Company and was in constant communication with them; however he never reported the accident to the Authorities. No assistance request was made to the local Coast Guard Authorities, neither any distress signal was transmitted via VHF. At 06:52, approximately 07 hours after the grounding, when Olympia Radio station contacted Kerem S and her Master reported that the ship was not under command, the ship was already West of Patmos island, almost 15 nm south of the original grounding position.

The first grounding at Thymaina at 00:00 as well as the sustained damages to the engine and the propeller were never reported while the ship was drifting southerly and were only reported after the ship's foundering at Levitha and after the crew's rescue.

Evidently, the Master's obligation to report to the Authorities of the Coastal State the grounding of Kerem S, under the respective provisions of MARPOL 73/78 Convention/Protocol I/article I "Duty to report", was not fulfilled.

At 15:10, while Kerem S was approximately 03 nm north of Levitha coast, the Master had contact with the Master of M/T Aura and stated once more that there was no need for assistance. At that time M/T Aura was approximately 4.9 nm NE from Kerem S and could have approached her in less than 01 hour.

It is noted that in a distance of approximately 10 n.m. south from the grounding position at Thymaina there are small islands where Kerem S could have also grounded while drifting (**Figure 4.4.1/1**). However this was not assessed by the Master when he decided to attempt the refloating of the vessel from Thymaina.

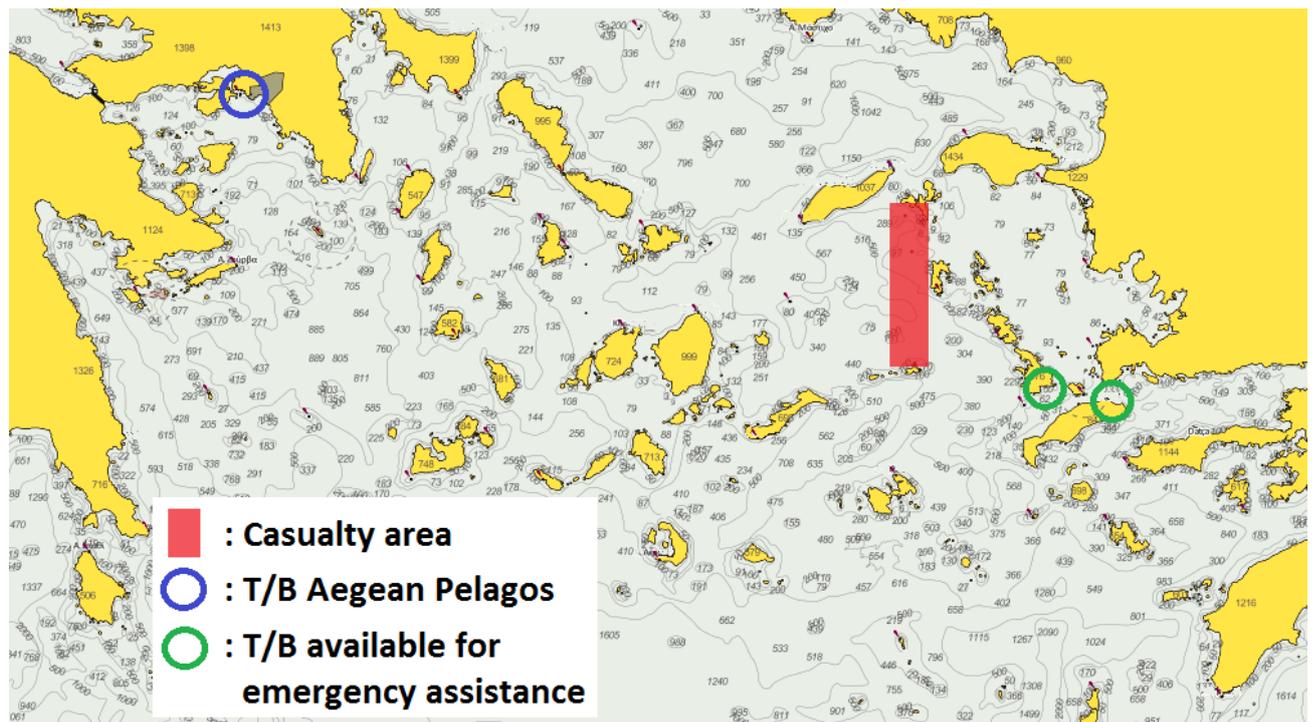


have provided assistance much earlier than Aegeon Pelagos and prevent her from drifting to Levitha, had they been notified timely regarding the emergency.

T/B Name	Registry	Trading Area	Engine Power (BHP)	Port
ANTONIOS	Piraeus, no 1062	Domestic Voyages and Towings	500 hp	Kalymnos
DIMOSTHENIS GIANNISIS	Volos, no 562	Domestic Voyages and Towings	500 hp	Kos
PANAGIA FANEROMENI	Piraeus, no 8481	Domestic Voyages and Towings	500 hp	Kos

**Table 4.4.2 / 1.** Tugboats available for emergency response on 20<sup>th</sup> February 2015, situated near the casualty area

During consecutive telephone conversations attempted by Piraeus JRCC, both the managing company's representative and Kerem S Master denied that the ship needed further assistance, apart from that expected by the tug Aegeon Pelagos.



**Figure 4.4.2/1.** Overview of the positions of the available Tugboats for emergency assistance.

Considering the available time for the search of a competent tugboat from 01:00 when the Company was firstly alerted by the Master regarding the first grounding and the emergency situation, until the grounding at Levitha, as well as the estimated 14 hours that Kerem S would be drifting not under command into an area with scattered islands, it is inferred that no proper assessment of the emergency situation was conducted by the Company's Emergency Response Team during the casualty.

The failure of the ship's Managing Company to utilize the proximate means of assistance in addition to the T/B Aegeon Pelagos that sailed from Piraeus port, is considered to have contributed to the casualty.

## 4.5 Fatigue

The effect of fatigue on the crew of Kerem S was assessed during the investigation; however no relevant documentation could be retrieved for the crew involved in the marine casualty. According to the crew's statements, the provided rest hours were abided for the Bridge personnel prior to the casualty and fatigue was considered not to be a contributory factor to the investigated casualty.

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

## 5. Conclusions

- 5.1 The Master decided to leave the anchorage south of Ikaria island and proceed for the ship's destination, despite the predicted bad weather conditions (par. 3.1).
- 5.2 The Master did not prepare an "anchoring plan" for Thymaina according to Safety Management System Manual (par. 4.3).
- 5.3 The vessel's Safety Management System Manual did not incorporate specific instructions concerning the use of the commonly used and accepted guidelines to determine the proper length of the chain cable, according to the depth of the anchorage area and other parameters (par. 4.3).
- 5.4 The length of the anchor chain cable paid out was not sufficient for the depth at anchorage area at Thymaina. Resultantly the vessel could not hold onto the anchor and drifted towards the shore (par. 3.1, 4.3).
- 5.5 Kerem S grounded by her starboard aft part at a rocky shoal of Thymaina island and her propeller and rudder were severely damaged. The rudder was detached from its mounting while the engine could not operate due to strong vibrations of the propeller shaft (par. 3.1, 3.2 & 4.4.1).
- 5.6 The Master decided to remove the ship from the grounding position at Thymaina island despite the damaged propulsion and steering systems and the small islands south from the grounding position where the vessel could have grounded after drifting (par. 3.2 & 4.4.1)
- 5.7 Kerem S due to the prevailing winds started drifting ungovernable southerly at a speed of 1.5 – 2 knots (par. 3.2).
- 5.8 The Master despite the ship's condition did not inform the local Authorities about the grounding at Thymaina and the actual condition of the ship due to the sustained damages neither he transmitted any distress signal via VHF (par. 3.3 & 4.4.1).
- 5.9 The ship's Managing Company arranged for assistance by a tugboat located approximately 160 nm away from the casualty position and needed almost 14 hours to arrive at the vessel's area (par. 3.3 & 4.4.2).

- 5.10** The Master and the Managing Company's representative did not ask for any assistance from the coastal Authorities or the nearby vessels while Kerem S was drifting for approximately 16 hrs (par. 3.3, 4.4.1 & 4.4.2).
- 5.11** The Managing Company did not arrange for assistance by the tugboats situated at the ports of Kalymnos and Kos islands, close to the sea area where Kerem S was drifting and much closer than the T/B Aegeon Pelagos which would sail from Piraeus (par. 4.4.2).
- 5.12** After drifting ungovernable for approximately 16 hrs Kerem S grounded again by her port side against the NE rocky coast of Levitha island. Her bottom hull was severely breached and sea water started ingressing her Engine Compartment. (par. 3.4 & 3.7).
- 5.13** The 06 crew members of Kerem S were rescued by a Hellenic SAR helicopter (par. 3.5).
- 5.14** Kerem S remained at the grounding position and foundered approximately 03 days after the grounding (par. 3.7).

## 6. Actions taken

No documentation regarding any actions taken after the casualty under the ISM Code or other company internal procedures was provided by the ship's Managing Company.

## 7. Safety recommendations

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

### 7.1 The Managing Company of Kerem S is recommended to:

- 42 / 2015** Amend the "Anchoring and anchor watch check list" of the Safety Management System Manual with specific instructions concerning the length of the chain cable in accordance to the commonly accepted and used guidelines.
- 43 / 2015** Establish internal procedures in order to confirm that in cases of casualties or emergency situations of their managed vessels the Master has reported the actual condition of the vessel to the local Authorities.
- 44 / 2015** Amend the internal procedures in order to confirm that in cases of casualties or emergency situations of their managed vessels communication with local Authorities is established and all available means of assistance are taken into consideration for the assessment of the emergency handling.

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Accident Investigation Report 06/2015

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