MARINE SAFETY INVESTIGATION REPORT

Safety investigation into the grounding of the
Maltese registered bulk carrier

ROBUSTO

in position 31° 10.18’ N  029° 48.25’ E
on 22 November 2016

201611/027
MARINE SAFETY INVESTIGATION REPORT NO. 24/2017
FINAL

This safety investigation report is not written, in terms of content and style, with litigation in mind and pursuant to Regulation 13(7) of the Merchant Shipping (Accident and Incident Safety Investigation) Regulations, 2011, shall be inadmissible in any judicial proceedings whose purpose or one of whose purposes is to attribute or apportion liability or blame, unless, under prescribed conditions, a Court determines otherwise.

The objective of this safety investigation report is precautionary and seeks to avoid a repeat occurrence through an understanding of the events of 22 November 2016. Its sole purpose is confined to the promulgation of safety lessons and therefore may be misleading if used for other purposes.

The findings of the safety investigation are not binding on any party and the conclusions reached and recommendations made shall in no case create a presumption of liability (criminal and/or civil) or blame. It should be therefore noted that the content of this safety investigation report does not constitute legal advice in any way and should not be construed as such.

© Copyright TM, 2017.

This document/publication (excluding the logos) may be re-used free of charge in any format or medium for education purposes. It may be only re-used accurately and not in a misleading context. The material must be acknowledged as TM copyright.

The document/publication shall be cited and properly referenced. Where the MSIU would have identified any third party copyright, permission must be obtained from the copyright holders concerned.
## CONTENTS

LIST OF REFERENCES AND SOURCES OF INFORMATION ........................................ iv

GLOSSARY OF TERMS AND ABBREVIATIONS ............................................... v

SUMMARY ........................................................................................................ vi

1 FACTUAL INFORMATION .............................................................................. 1
  1.1 Vessel, Voyage and Marine Casualty Particulars ....................................... 1
  1.2 Description of Vessel ................................................................................ 2
  1.3 Crew ......................................................................................................... 4
  1.4 Navigational Equipment .......................................................................... 5
  1.5 Environment ............................................................................................. 8
  1.6 Narrative .................................................................................................. 8
      1.6.1 The passage plan ............................................................................. 9
      1.6.2 Inward pilotage section ................................................................. 10
      1.6.3 Refloating operations .................................................................... 12
      1.6.4 Identified structural damages ......................................................... 13

2 ANALYSIS ....................................................................................................... 14
  2.1 Purpose .................................................................................................... 14
  2.2 Passage Planning ..................................................................................... 14
  2.3 Risk Management .................................................................................... 14
  2.4 Communicating Risk ............................................................................... 15
  2.5 Actions on the Bridge ............................................................................. 16

3 CONCLUSIONS ............................................................................................... 18
  3.1 Immediate Safety Factor .......................................................................... 18
  3.2 Latent Conditions and other Safety Factors ............................................ 18
  3.3 Other Findings ......................................................................................... 19

4 RECOMMENDATIONS ................................................................................. 20
LIST OF REFERENCES AND SOURCES OF INFORMATION

Convention on the International Regulations for Preventing Collisions at Sea, 1972, as amended

International Convention for the Safety of Life at Sea, 1974, as amended

International Convention on Standards of Training, Certification and Watch keeping for Seafarers, 1978, as amended

Managers MV Robusto

Master and crew members MV Robusto
<table>
<thead>
<tr>
<th>Abbreviation</th>
<th>Full Form</th>
</tr>
</thead>
<tbody>
<tr>
<td>ABs</td>
<td>Able Seamen</td>
</tr>
<tr>
<td>ABS</td>
<td>American Bureau of Shipping</td>
</tr>
<tr>
<td>ARPA</td>
<td>Automatic radar plotting aid</td>
</tr>
<tr>
<td>BF</td>
<td>Beaufort</td>
</tr>
<tr>
<td>BRM</td>
<td>Bridge Resource Management</td>
</tr>
<tr>
<td>COLREGs</td>
<td>Convention on the International Regulations for Preventing Collisions at Sea, 1972 as amended</td>
</tr>
<tr>
<td>DNV GL</td>
<td>Det Norske Veritas – Germanischer Lloyd</td>
</tr>
<tr>
<td>DWT</td>
<td>Deadweight Tons</td>
</tr>
<tr>
<td>E</td>
<td>East</td>
</tr>
<tr>
<td>ECDIS</td>
<td>Electronic Chart Display and Information System</td>
</tr>
<tr>
<td>GHz</td>
<td>Giga Hertz</td>
</tr>
<tr>
<td>GMDSS</td>
<td>Global Maritime Distress and Safety System</td>
</tr>
<tr>
<td>GPS</td>
<td>Global positioning system</td>
</tr>
<tr>
<td>gt</td>
<td>Gross Tonnage</td>
</tr>
<tr>
<td>IMO</td>
<td>International Maritime Organization</td>
</tr>
<tr>
<td>ISM</td>
<td>International Safety Management</td>
</tr>
<tr>
<td>kW</td>
<td>Kilowatt</td>
</tr>
<tr>
<td>LT</td>
<td>Local Time</td>
</tr>
<tr>
<td>m</td>
<td>Metres</td>
</tr>
<tr>
<td>MSC</td>
<td>Maritime Safety Committee</td>
</tr>
<tr>
<td>MT</td>
<td>Metric tonnes</td>
</tr>
<tr>
<td>N</td>
<td>North</td>
</tr>
<tr>
<td>NAVTEX</td>
<td>Navigational telex</td>
</tr>
<tr>
<td>nm</td>
<td>Nautical mile</td>
</tr>
<tr>
<td>OOW</td>
<td>Officer of the Watch</td>
</tr>
<tr>
<td>RPM</td>
<td>Revolutions per Minute</td>
</tr>
<tr>
<td>SMS</td>
<td>Safety Management System</td>
</tr>
<tr>
<td>SOLAS</td>
<td>International Convention for the Safety of Life at Sea, 1974 as amended</td>
</tr>
<tr>
<td>VDR</td>
<td>Voyage data recorder</td>
</tr>
<tr>
<td>VHF</td>
<td>Very high frequency</td>
</tr>
</tbody>
</table>
SUMMARY

On 22 November 2016, at 1357 (LT), the Maltese registered bulk carrier Robusto ran aground and remained stranded in the entrance of El Dekheila Channel, Egypt in position 31° 10.18’ N 029° 48.25’ E. The vessel had completed her sea passage from Narvic, Norway, fully loaded with 163,000 metric tonnes of iron ore, with a draught of 17.5 m.

About 15 minutes prior to the grounding, two pilots had boarded the vessel and proceeded to the bridge where the master, third mate and a helmsman were already in the wheelhouse.

The vessel was proceeding towards the entrance of El Dekheila Channel, following course alternations recommended by the pilot. The pilot’s orders were given directly to the helmsman. The safety investigation revealed that the course recommended by the pilot was different from the one prepared in the passage planning. Moreover, during the navigation of the Channel, the vessel was navigated close to shallow areas, leading to the vessel running aground and remaining stranded. Soundings and subsequent in-water inspections revealed no water ingress in any of the vessel’s double bottom tanks. No injuries were reported.

Lightering operations commenced on 25 November 2016 and were completed on 27 November 2016 at 1435. Refloating operations were initiated after approximately 5,000 mt of cargo had been discharged from the vessel. The vessel refloated on 28 November and berthed safely at 1645.

As a result of the safety investigation, one recommendation has been made to the owners of the vessel with the aim of addressing Bridge Resource Management (BRM).

1 Unless otherwise stated, all times in the safety investigation report are local times.
1 FACTUAL INFORMATION

1.1 Vessel, Voyage and Marine Casualty Particulars

Name                      Robusto
Flag                       Malta
Classification Society     American Bureau of Shipping (ABS)
IMO Number                 9386512
Type                       Bulk carrier
Registered Owner           Oceanrunner Owners Limited
Managers                   TMS Dry Ltd.
Construction               Steel (Double bottom)
Length overall             289.00 m
Registered Length          280.12 m
Gross Tonnage              88,930
Minimum Safe Manning       15
Authorised Cargo           Bulk

Port of Departure          Narvic, Norway
Port of Arrival            El Dekheila, Egypt
Type of Voyage             International
Cargo Information         163,000 mt
Manning                    21

Date and Time              22 November 2016 at 13:57
Type of Marine Casualty    Serious Marine Casualty
Place on Board             Ship / Other
Injuries/Fatalities        None
Damage/Environmental Impact None
Ship Operation             In passage / Manoeuvring
Voyage Segment             Transit
External & Internal Environment Clear weather with a visibility of 10 nautical miles. The wind was around 13 knots and wave height about 1.5 m. The air and sea temperatures were 22 °C and 23 °C respectively.

Persons on Board           23
1.2 **Description of Vessel**

*Robusto* is an 88,930 gt single deck, registered bulk carrier (Figure 1), built by Shangai Waigaoqiao Shipbuilding Co. Ltd, China in 2006. The vessel’s registered owners are Oceanrunner Ownera Limited and she is under the management of TMS Dry Ltd. The vessel flies the Maltese flag and is classed by the American Bureau of Shipping (ABS). Statutory certificates were issued by ABS on behalf of the Government of Malta. Security and labour related statutory certificates were issued by Det Norske Veritas – Germanischer Lloyd (DNV-GL).

*Robusto* has an overall length of 289.00 m and a beam of 45.00 m. Her summer deadweight is 173,949 mt, corresponding to a summer draft of 18.12 m. The vessel is fitted with a double bottom configuration, deckhouse superstructure, with crew areas, bridge and engine-room located at the aft part of the vessel.

The cargo space, extending forward of the superstructure, consists of 9 cargo holds with a total grain capacity of 193,135 m³. Cargo hold hatch covers are of the side rolling type.

Propulsive power was provided by a 6-cylinder B&W 6S70MC, two-stroke, slow speed diesel engine, producing a total power of 16,860 kW at 91 rpm. This drives a single, fixed pitch propeller, enabling the vessel to reach a maximum speed of 15 knots.
Figure 1: MV Robusto GA Plan
1.3 Crew

At the time of the accident, the vessel was manned by 21 crew members. All deck and engineering officers were Romanian nationals. All the ratings were Filipino nationals, bar for the fitter, who was also Romanian. The working language was English.

The master had been on board for one month. This was his fifth year with the Company, having served as a master for the previous four years. The third mate had signed on board four months prior to the accident and had also been with the Company for five years, always working as a third mate. The able seaman (AB), who was serving as a helmsman at the time of the grounding, had been on board the vessel for four months. This was his fourth year with the Company, always serving as an AB.

The vessel’s safety management system (SMS) incorporates a policy on work and rest hours as follows, which is applicable irrespective of rank:

- a minimum of 10 hours rest in any 24 hour period;
- at least 6 hours of rest per period;
- a minimum period of 77 hours of rest in each seven day period; and
- working period not to exceed 14 hours in any 24 hour period.

The above requirements are in accordance with the minimum international requirements as prescribed in the STCW Convention. The SMS procedures on the navigational watch at sea required at least one officer to be present during the navigational watch with a normal 4-on 8-off navigational watch system (Table 1).

Table 1: Navigational watchkeeping arrangements on board

<table>
<thead>
<tr>
<th>Watchkeeping officer</th>
<th>Period</th>
</tr>
</thead>
<tbody>
<tr>
<td>Second mate</td>
<td>00:00 – 0400</td>
</tr>
<tr>
<td>Chief mate</td>
<td>0400 – 0800</td>
</tr>
<tr>
<td>Third mate</td>
<td>0800 – 1200</td>
</tr>
<tr>
<td>Second mate</td>
<td>1200 – 1600</td>
</tr>
<tr>
<td>Chief mate</td>
<td>1600 – 2000</td>
</tr>
<tr>
<td>Third mate</td>
<td>2000 – 2400</td>
</tr>
</tbody>
</table>
At the time of the accident, the bridge was manned by the master, the third mate, the helmsman and the two pilots. The chief mate, the bosun and two ordinary seamen (OS) were positioned at the foreword mooring station. The second mate and two ABs were stationed at the aft mooring station. The master and the AB serving as a helmsman had been on the bridge since noon, whereas the third mate had joined them at about 1300.

1.4 Navigational Equipment

Robusto’s bridge is adequately equipped with navigational equipment (Table 2). The vessel also has a certified Electronic Chart Display and Information System (ECDIS). The system supports layering of information, allowing the display of the vessel’s actual position and plotted course, no-go areas and planned (waypoints) with respective course and headings and indication of speed and depth and availability of setting minimum depth and of course visual / audio alarm.

Visibility from the bridge windows was considered to be good, with no navigational equipment installed in the way to obstruct the view (Figures 2a to 2f).
Table 2: List of navigational equipment and relevant positions on the bridge

<table>
<thead>
<tr>
<th>Drawing no.</th>
<th>Equipment</th>
<th>Maker</th>
<th>Type</th>
<th>Remarks</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Radar 1 – ARPA</td>
<td>JRC</td>
<td>JMA9923-7XA</td>
<td></td>
</tr>
<tr>
<td>2</td>
<td>Radar 2 – ARPA</td>
<td>JRC</td>
<td>JMA9933-SA</td>
<td>Not interphased with VDR</td>
</tr>
<tr>
<td>3</td>
<td>Gyro Compass</td>
<td>Yokogawa</td>
<td>CMZ700-S</td>
<td></td>
</tr>
<tr>
<td>4</td>
<td>Autopilot</td>
<td>Yokogawa</td>
<td>PT500A-J-K2J</td>
<td></td>
</tr>
<tr>
<td>5</td>
<td>Auto Helm Alarm</td>
<td>Yokogawa</td>
<td></td>
<td></td>
</tr>
<tr>
<td>6</td>
<td>Course Recorder</td>
<td>Yokogawa</td>
<td>KR100A</td>
<td></td>
</tr>
<tr>
<td>7</td>
<td>Magnetic Compass</td>
<td>SAURA</td>
<td>SR-165</td>
<td></td>
</tr>
<tr>
<td>8</td>
<td>GPS 1</td>
<td>JRC</td>
<td>JLR-7700MKII</td>
<td></td>
</tr>
<tr>
<td>9</td>
<td>GPS 2</td>
<td>JRC</td>
<td>JLR-7700MKII</td>
<td></td>
</tr>
<tr>
<td>10</td>
<td>Echo Sounder</td>
<td>JRC</td>
<td>JFE-582</td>
<td>Depth audio alarm not set/operating at the time of the accident</td>
</tr>
<tr>
<td>11</td>
<td>Speed Log</td>
<td>JRC</td>
<td>JLN-550</td>
<td></td>
</tr>
<tr>
<td>12</td>
<td>Weather Facsimile</td>
<td>JRC</td>
<td>JAX-9A</td>
<td></td>
</tr>
<tr>
<td>13</td>
<td>Voyage Data Recorder</td>
<td>AMI</td>
<td>VDR100-G2</td>
<td></td>
</tr>
<tr>
<td>14</td>
<td>ECDIS</td>
<td>SIMRAD</td>
<td>MARIS900</td>
<td></td>
</tr>
<tr>
<td>15</td>
<td>ECDIS (back up)</td>
<td>SIMRAD</td>
<td>MARIS900</td>
<td></td>
</tr>
<tr>
<td>16</td>
<td>Anemometer</td>
<td>FURUNO</td>
<td>FI-50</td>
<td></td>
</tr>
<tr>
<td>17</td>
<td>Navtex</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Rudder controls
Engine monitoring/controls
Helm position
Chart table
GMDSS

14  1  2

8  9  17  15  10
Figures 2a and 2b: General view of the bridge from port and starboard sides

Figures 2c and 2d: ECDIS, radar display and helm position and rudder control

Figures 2e and 2f: GMDSS Station and chart table (with GPS and ECDIS back-up equipment)
1.5 Environment

At the location of the grounding, there was an East Northeasterly fresh breeze with a 1.5 m swell from the East Northeast. The sea was moderate. The weather was clear with good visibility of approximately 10 nautical miles. Air and sea temperatures were recorded at 22 °C and 23 °C respectively.

Evidence did not indicate that the weather conditions had any direct effect on the dynamics of the accident.

1.6 Narrative

Robusto sailed out from Narvik, Norway on 06 November 2016, loaded with 163,000 mt of iron ore pellets. She arrived at El Dekheila, Egypt (end of sea passage) on 22 November 2016 at 1200 and was scheduled to berth alongside at Mineral Berth No. 90/01. The inward pilotage was planned to include the entrance to the port of Alexandria from the dedicated passage of Ad Dukhaylah, which is the only channel permitting access to El Dekheila port for vessels of Robusto’s draught (Figure 3).

Figure 3: The Ad Dukhaylah passage
1.6.1 The passage plan

Relevant passage planning was prepared following the standardised vessel’s form, which includes the following to be available:

- List of Light;
- Pilot books;
- Radio books;
- Tide tables;
- Guide to port entry; and
- Latest correction date, with relevant records to indicate that the required publications for the specific voyage were available on board.

The prepared passage plan consisted of three parts; the outward pilotage; the voyage plan and the inward pilotage, including records for arrival condition (draft, displacement, etc.), waypoint positions, course, distance, water depth, under keel clearance, remarks and expected/actual date time. The document also included records, indicating that the passage plan was reviewed by the master and all navigational bridge officers, and followed during the actual voyage with waypoint confirmation.

The passage plan was also uploaded to ECDIS and with respect to the inward pilotage part, it was also uploaded to ECDIS with a marked course for entering the designated channel at position 31° 11’77” N 029° 47’77” E, with a course of 160° and an even keel of 17.50 m (Figure 4).
1.6.2 Inward pilotage section

On 22 November, at approximately 1200, the vessel approached Alexandria outer anchorage in accordance with the inward pilotage plan. Initial communications with Alexandria port authorities were affected on VHF channel 16 following which, the vessel proceeded to position 31° 11' 905" N 029° 47' 246" E, which is in close proximity to the pilot boarding area.

As part of the pilotage / berthing operation, pre-arrival inspections / checks were carried out. The relevant checklist was completed as of 1254, including verification of the navigational equipment operation, crew notification, vessel’s arrival condition, means and lines of communication and available documentation.

At about 1330, two pilots boarded the vessel, in position 31° 11' 70" N 023° 47' 30" E. As per vessel’s standardised pilot card, dimensions, draughts, performance and navigational equipment were reviewed and signed by both the master and the pilot.
Following their boarding, the pilots briefed the master on the berthing procedures. Crew members were then assigned to their designated mooring stations.

Evidence suggests that during the master’s and the pilots’ familiarisation, a brief discussion was held on the vessel’s trim (which was zero since she had an even keel), the vessel’s draught (17.5 m), berthing position, mooring arrangement, speed table, and plotted route on charts (which was completed as of 1343). Discussions on the bridge then continued between the master and the pilots, extending to non-operational related matters. Robusto commenced her approach to the main channel, with other vessels’ traffic forbidden during the vessel’s transit. At about 1335, when the vessel was in position 31° 11 42’ N 29° 47 21’ E, with a heading of 124.4° and doing a speed of 4.9 knots, one of the pilots commenced giving navigational orders.

Eventually, the pilots informed the master that the vessel would require three tug boats for the berthing manoeuvre; one forward and one aft with the vessel lines and one for assistance and pushing.

At one point in time, about 1.5 nautical miles from the pilots’ embarkation position, the master voiced his concern to the pilots that the vessel was starboard to the position on the passage plan. The pilots reportedly acknowledged the master’s comments but replied that there was no problem since they were familiar with the specific area / waters. In the meantime, the master and the helmsman continued to follow the pilots’ instructions.

At 1355, when Robusto was in position 31° 10 15’ N 29° 48.13’ E, and heading on a course of 161.4°, at a speed of 4.7 knots, the vessel commenced decelerating and within about two minutes, she was aground and remained stranded in position 31° 10 11’ N 029° 48 15’ E.

The grounding was first noticed by the third mate, who observed that the vessel’s speed had dropped to zero. The master informed the pilots that the vessel’s speed was zero, indicating that the vessel was aground. The master recalled that the pilots excluded this possibility and instead requested the master to increase the speed. The master, however, stopped the main engine. He later requested that the engine is reversed and started astern. The engine was run astern for between five to ten
minutes. However, there was no response from the vessel, which remained stranded in this position.

At 1359, the master referred the pilots to the chart, explaining why the vessel had actually ran aground (Figure 5).

![Figure 5: ECDIS printout, with the planned course (red), actual course (black), and No Go areas marked area (green) and the grounding position (black)](image)

At 1408, following some additional attempts to refloat the vessel, the main engine was stopped. Subsequently, the master instructed the chief mate and chief engineer to proceed with inspections of double bottom tanks, cargo holds and bilges. It was confirmed that there was no hull rapture and/or leakages as a result of the grounding.

### 1.6.3 Refloating operations

Following the vessel’s grounding, the shipowners and Alexandria Port Control were notified of the situation at about 1405. The vessel resumed and continued with refloating manoeuvres by her own means until about 1600.

In the meantime, a Navy tug and a team of divers were assigned to the vessel by the local authorities. The divers boarded the vessel on the same day, at about 1630. An underwater inspection was carried out and completed about one hour later. The inspection revealed that the vessel was aground between the forward part of cargo hold no. 2 and the forward part of cargo hold no. 9.
Refloating operations continued with the assistance of four tugs but interrupted for the day on the request of the local authorities at approximately 0052 of the following day. On 23 November, an additional underwater inspection was carried out. Cargo lightering operations started on 25 November and were completed on 27 November at approximately 1830. Four tug boats were then engaged and eventually, the vessel was successfully refloated on 28 November at about 0900. Subsequently, Robusto proceeded with her own steam to position 31° 13.3’ N 029° 44.5’ E, where she dropped her anchors. The vessel was then safely berthed later during the same day.

1.6.4. Identified structural damages
A damage survey was carried out on 03 December by a Class surveyor, in order to determine the extent of damages to the bottom shell plating. Subsequently, the vessel departed Alexandria in ballast condition.

Further examination by the Class surveyor on 06 December upon arrival in Greece revealed indentations and deformation, extending to the bottom shell plating and the bottom starboard side, in way of frames 103 and 297. A number of spaces and double bottoms had also sustained internal damages.

In the majority of the damages, a recommendation was made for repairs to be affected within 24 months. It was also recommended that temporary repairs to the most severe indentations to the bottom shell plating and deformed internal structural members inside a number of double bottoms, in way of frames 270 and 279, had to be carried out within 10 days.
2 ANALYSIS

2.1 Purpose

The purpose of a marine safety investigation is to determine the circumstances and safety factors of the accident as a basis for making recommendations, to prevent further marine casualties or incidents from occurring in the future.

2.2 Passage Planning

The purpose of the passage plan is to ensure positive control over the safe navigation of the ship at all times.

Evidence indicated that although an adequate passage plan had been prepared and integrated in the ECDIS, it was not being implemented at the time of the transit. However, both the master and the navigational OOW accepted the pilots’ advice, even if it deviated from the agreed passage plan.

The pilots’ role was to engage in a professional relation with the bridge team and thereby assist in the approach to the port and the eventual berthing of the vessel. The MSIU understands that although the master expressed concern as to the actual course which the vessel was steering, he may have found himself in a situation which was not necessarily straightforward. Irrespective of the fact that the master remains responsible of his ship, pilots are considered to be the local experts and the presence of two rather than one may have convinced the master that after all, they had better control over the evolving situation.

2.3 Risk Management

In addition to its navigational value, the passage plan document per se may be seen as a risk management tool. Although the passage plan document is a central part of the vessel’s navigation, it is also essential that open and clear communication is held between the bridge team members. Effective communication ensures understanding and engagement by all, allowing decisions on whether risk exists and how to deal with it. It is the view of the MSIU that this was actually either missing or ineffective and
consequently, the justifications provided by the pilots were accepted. This was suggestive of a master who had satisfied himself of the actions of the pilots.

This is not to say that the pilots were incompetent or unskilled; rather, the point being made is that the pilots took a decision without any form of verification – possibly also because they were confident that the ship was outside any hazardous areas. The fact that the pilots sounded confident, unconcerned, and that they were in good control of the situation, prevented a thorough technical discussion with the other bridge team members. This would have been beneficial because of the concerns on the risk associated with the fact that the vessel was not on her intended course. Thus, although the vessel’s deviation from her intended course was seen by the master as a risk that he had to communicate to the pilots, no firm action was taken to tackle it.

2.4 Communicating Risk

The communication of risk was an issue for the reasons discussed above. Given that the vessel was in close proximity of no-go areas, reaffirms the importance of navigational hazards and provides a clearer indication as to the consequences. Most importantly, the vessel’s approach to the port area meant that the nature of risk was becoming more complex. The deviation of the vessel’s course also meant that uncertainty was introduced and the vessel’s exposure to hazards had increased.

As much as pilot exchange had been effected in line with the requirements of the vessel’s SMS, it seemed clear to the safety investigation that:

- the crew members forming part of the bridge team did not have access to information on the developing risk. When the master drew the attention of the pilots that the vessel was not on her planned course, the pilots did not provide any sort of facts or assumptions upon which they had reached their decision that the situation was under control, except that they were familiar with the area; and

- effective communication was not a central part of the execution of the passage plan. A decision had been taken by the pilots to maintain the vessel’s course even if they were made aware that this was not the planned course. Effective communication would have meant that each and every bridge team member would have been included in the decision-making process concerning what
eventually resulted in acceptance of risk of the vessel running into shallow waters.

2.5 Actions on the Bridge

The communication aspect discussed in sub-section 2.4 is very important because the operation of the vessel in its approach to the berth, is only successful if the pilots are integrated as part of the bridge team. This was not achieved. Then, the deactivation of the off-course alarm (i.e., the sound of a physical buzzer) did not help to reinforce the master’s concern that the vessel was off-course.

The safety investigation could not ascertain whether the pilots had verified the vessel’s position after the master had expressed his concern to them. However, it would not appear that this had actually been the case, given that the pilots’ reaction was an expression of confidence in their familiarity with the area. Since the ship had actually ran aground, it was legitimate to submit that the knowledge of the situation, which the persons on the bridge had, was inaccurate, even because there was no thorough discussion on the actual position as observed on the navigational instruments. It is considered that this incomplete knowledge played a major role in taking the persons on the bridge by surprise when the ship eventually ran aground. Naturally, no one was comprehensive of these gaps and inaccuracies; they would have otherwise taken earlier action to avoid the accident.

The safety investigation believes that prior to the accident, the attention of the pilots was elsewhere. During the transit and prior to the grounding, there was no active interaction with the master and the crew members on the vessel’s status. In order to ensure that their situation assessment was accurate, the pilots had to shift their attention to inform themselves of the vessel’s actual position and re-model the entire scenario to bring it up-to-date.

It was evident that the ship did not find itself in shallow waters; rather, it was the situation, which had evolved and the ship navigated towards the shallows. Indeed, situations evolved because they are dynamic. This required an assessment of new information which was being received on the bridge, and it was evident that this was not done.
THE FOLLOWING CONCLUSIONS AND RECOMMENDATIONS SHALL IN NO CASE CREATE A PRESUMPTION OF BLAME OR LIABILITY. NEITHER ARE THEY BINDING NOR LISTED IN ANY ORDER OF PRIORITY.
3 CONCLUSIONS

Findings and safety factors are not listed in any order of priority.

3.1 Immediate Safety Factor

.1 The immediate cause of the grounding was the vessel’s deviation from the passage plan.

3.2 Latent Conditions and other Safety Factors

.1 Although an adequate passage plan had been prepared and uploaded in ECDIS, the planned approach to the channel was not implemented;

.2 The master and the navigational OOW accepted the pilots’ advice, even if it deviated from the agreed passage plan;

.3 The presence of two pilots rather than one may have convinced the master that after all, they had better control over the evolving situation;

.4 Open and clear communication of risk between the bridge team members was either missing or ineffective;

.5 The pilots took a decision without any form of verification – possibly also because they were confident that the ship was outside any hazardous areas;

.6 Although the vessel’s deviation from her intended course was seen by the master as a risk that he had to communicate to the pilots, no action was taken to tackle it;

.7 The fact that the pilots sounded confident, unconcerned and that they were in good control of the situation, prevented a thorough technical discussion with the other bridge team members;

.8 The deviation of the vessel’s course also meant that uncertainty was introduced and the vessel’s exposure to hazards had increased;

.9 The crew members forming part of the bridge team did not have access to information on the developing risk;
.10 The deactivation of the off-course alarm (i.e., the sound of a physical buzzer) did not help to reinforce the master’s concern that the vessel was off-course;

.11 The persons on the bridge had inaccurate knowledge of the situation;

.12 Assessment of new information, which was being received on the bridge, was not being done.

3.3 Other Findings

.1 Evidence indicated that an adequate passage plan had been prepared and integrated in the ECDIS.
4 RECOMMENDATIONS

In view of the conclusions reached and taking into consideration the safety actions taken during the course of the safety investigation,

TMS Dry Ltd. is recommended to:

24/2017_R1 conduct a horizontal qualitative research on pilot/master relationship experiences on vessels under its management, analyse the findings, and disseminate the outcome across the fleet.