

# **REPUBLIC OF THE MARSHALL ISLANDS** Maritime Administrator

HAPPY HIRO MARINE SAFETY INVESTIGATION REPORT

Collision with Fishing Vessel

Philippine Sea | 28 May 2022

Official Number: 7519

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HAPPY HIRO

HAJURO

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## AUTHORITY

An investigation, under the authority of the Republic of the Marshall Islands laws and regulations, including all international instruments to which the Republic of the Marshall Islands is a Party, was conducted to determine the cause of the casualty.



Maritime Administrator

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# LIST OF ABBREVIATIONS AND ACRONYMS

2/O	
3/0	
ASD	
BNWAS	Bridge Navigation Watch Alarm System
Class	
С/О	Chief Officer
COLREGs	. Convention on the International Regulations for Preventing Collisions at Sea
СР	Conning Position
СРА	Closest Point of Approach
ECDIS	Electronic Chart Display and Information System
ft	
FVSC	Fishing Vessel Safety Certificate
GHz	Gigahertz
ILO	International Labour Organization
IMO	International Maritime Organization
ISM Code	International Management Code for the Safe Operation of Ships and for Pollution Prevention
kn	Knots
LSA	Life Saving Appliances
m	
MARINA	
MLC, 2006	
mt	
NM	
No	Number
OICNW	Officer in Charge of a Navigational Watch
OOW	Officer of the Watch
РА	
PFVSRR	Philippine Fishing Vessels Safety Rules and Regulations, 2018
PMMRR	Philippine Merchant Marine Rules and Regulations, 1997

SAR	
SMS	Safety Management System
SOLAS	International Convention for the Safety of Life at Sea, 1974
STCW	International Convention on Standards of Training, Certification and Watchkeeping for Seafarers
Τ	True
UTC	Coordinated Universal Time
VDR	Voyage Data Recorder
VHF	Very High Frequency

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## PART 1: EXECUTIVE SUMMARY

On 28 May 2022, the Republic of the Marshall Islands-registered bulk carrier HAPPY HIRO, managed by Tamar Ship Management Limited (the "Company"), was underway in the Sulu Sea on a voyage from Taicang, People's Republic of China (hereinafter "China") to Kwinana, the Commonwealth of Australia (hereinafter "Australia").

The ship was proceeding on a southerly course dissecting the islands of the Republic of the Philippines (hereinafter "Philippines"), approximately 45 NM west of the Island of Panay when it encountered the fishing vessel JULITA S-2.<sup>1</sup> At about 1730,<sup>2</sup> HAPPY HIRO and the Philippine-registered fishing vessel JULITA S-2 collided. JULITA S-2, with a crew of 20, then passed down the starboard side of HAPPY HIRO before capsizing, resulting in the loss of seven crewmembers.

The marine safety investigation conducted by the Republic of the Marshall Islands Maritime Administrator (the "Administrator") identified the following:

- 1. Causal factors that contributed to this very serious marine casualty include that:
  - (a) neither vessel maintained an adequate lookout due to:
    - (i) ineffective navigational watchkeeping standards on board HAPPY HIRO while navigating in an area known to contain small conspicuous vessels;
    - (ii) inability of the OOW on board HAPPY HIRO to recognize the necessity to use all available means to maintain a proper lookout;
    - (iii) repeated deviation from Company documented procedures that required a lookout to be on duty was normalized on board; and
    - (iv) JULITA S-2 not having an assigned lookout on duty;
  - (b) of the two available radars on board HAPPY HIRO, the OOW deliberately placed the X-Band (9 GHz) radar in standby mode resulting in a reduction of detection and collision avoidance information. Simultaneously, the S-Band (3 GHz) radar was inadequately configured and set to 12 NM, preventing the OOW the opportunity to identify small conspicuous vessels such as JULITA S-2; and
  - (c) the OOW on board HAPPY HIRO limited his athwartship movement across the Bridge, denying him the opportunity to see clearly ahead of the vessel.

For the purpose of this investigation, JULITA S-2 will be referenced throughout this report.

<sup>2</sup> Unless stated otherwise, all times are ship's local time (UTC -8).

- 2. Additional causal factors that may have contributed to this very serious marine casualty include:
  - (a) the OOW on board HAPPY HIRO was distracted by the frequent use of a cellular telephone during his watch;
  - (b) the 2/O had expressed concerns surrounding his insomnia and exhaustion in the days preceding the collision. The watch routine however was maintained, contrary to the established Shipboard Working Arrangement and without adequate application of the SMS; and
  - (c) JULITA S-2 crewmembers did not hold valid certificates issued by MARINA required for their positions on board.
- 3. Additional issues that were identified but that did not contribute to this very serious marine casualty include that:
  - (a) JULITA S-2 did not exhibit the prescribed shape required by COLREGs Rule 30(a)(i); and
  - (b) JULITA S-2 did not hold a valid vessel registration certificate issued by MARINA nor was it in possession of a valid FVSC required by PMMRR.

## PART 2: FINDINGS OF FACT

The following Findings of Fact are based on the information obtained during the Administrator's marine safety investigation.

- 1. HAPPY HIRO's ship particulars at the time of the incident: *see* chart to right.
- 2. JULITA S-2 vessel particulars at the time of the incident: *see* chart on page 10.

### **Background Information**

#### Collision

 On 22 May 2022, the bulk carrier HAPPY HIRO (see figure 1) departed the port of Taicang, China in ballast condition bound for Kwinana, Australia, where upon the vessel would commence loading a cargo of aluminum oxide.

## SHIP PARTICULARS

## Vessel Name HAPPY HIRO

**Registered Owner** Happy Shipping Ventures S.A.

**ISM Ship Management** Tamar Ship Management Ltd.

Flag State Republic of the Marshall Islands

<b>IMO No.</b>	O	<b>fficial No.</b>	Call Sign
9303390		7519	V7SU3
Year of Bui	ld	Gross	Tonnage
2006		19	9,885
<b>Net Tonnag</b>	ge	Deadweig	ght Tonnage
11,140		32	2,610

Length x Breadth x Depth 169.4 x 28.4 x 14.2 m

#### Ship Type Bulk Carrier

Document of Compliance Recognized Organization Lloyd's Register

Safety Management Certificate Recognized Organization ClassNK

> Classification Society ClassNK

Persons on Board 21



Figure 1: HAPPY HIRO general arrangement.

4. On 26 May 2022, at approximately 2300, JULITA S-2 departed Estancia, Philippines, for a passage to Palawan, Philippines with a crew of 20 Philippine nationals on board (*see figure 2*). The purpose of the passage was to conduct a sea trial and to transport fish as a carrier from Palawan to Estancia.



Figure 2: Intended route of JULITA S-2, which departed Estancia on 26 May 2022 bound for Palawan before returning to Estancia.

- 5. On 28 May 2022, HAPPY HIRO was proceeding on a southerly course through the Sulu Sea. At 1200, the 2/O relieved the 3/O as OOW and the weather conditions were reported as clear, visibility in excess of 5 NM, wind from the east southeast at Beaufort Force 4, and moderate seas.
- 6. The C/O on board HAPPY HIRO was coordinating crew activities, which at the time, consisted of cleaning the

## JULITA S-2 PARTICULARS

Vessel Name JULITA S-2

Registered Owners Faustino Kaquilala and Tita Kaquilala

> **Flag State** Republic of the Philippines



cargo holds in preparation for loading cargo in Kwinana, Australia. The C/O had been stood down from bridge watchkeeping responsibilities during working hours (0800–1600) for the entire passage by the Master so he could focus on preparations for loading cargo at the next port.

- 7. The ship's navigational and communication equipment, main engine, auxiliary engines, and steering gear were all reported to be operational and working satisfactorily. Both S-Band and X-Band radars were energized but only the S-Band radar was transmitting. The X-Band radar was placed in standby mode by the 2/O upon taking the watch at 1200.
- 8. The 2/O assumed the responsibilities as OOW at 1200, having relieved the 3/O from his morning watch. On the previous two days, the 2/O had been relieved by the C/O at 1600. On the day of the collision, the 2/O remained on the Bridge until relieved by the Master immediately after the collision.
- 9. Between the time the 2/O assumed the watch at 1200, and before the Master attended the Bridge at 1708, no crewmembers visited the Bridge.
- 10. The ship proceeded along an approved<sup>3</sup> navigational track on a course of 164 T, at a speed of 13.2 kn within the prescribed cross track corridor. The approved navigation plan included a cross track safety corridor of 2 NM on either side of the ship (*see figure 3*).



Figure 3: ECDIS screenshot showing position of HAPPY HIRO at 1728 on the day of the collision.

11. Based on the VDR recording, the Master was present on the Bridge and talking with the 2/O between 1708 and 1728 while also conducting routine work on a computer located behind the S-Band radar. At no point during the

<sup>3</sup> The navigation plan was composed by the 2/O and approved by the Master.

BNVAS Heim S-Band ECDIS

Master's attendance was the location of any fishing vessel or ship discussed with the 2/O, relative to HAPPY

Figure 4: HAPPY HIRO's Bridge equipment layout.

HIRO's current or estimated position.

- 12. At 1730, the Bosun called the Bridge via handheld radio and informed the 2/O that the vessel had collided with an unknown object. The 2/O immediately called the Master, who was having dinner with the C/O, on the PA system requesting the Master's presence on the Bridge by declaring an emergency. The Master and C/O arrived on the Bridge and ordered the rudder hard to starboard.
- 13. The collision occurred at 1730,<sup>4</sup> in position 11 21.9' N, 121 16.7' E, about 45 NM west of the Panay Island.
- 14. The 2/O placed the Helm into hand control and altered course hard to starboard. According to the witness testimony, the 2/O was relieved of his duties as OICNW and assumed the position of Helmsman.
- 15. The Master and C/O looked over the Bridge Wing and observed JULITA S-2 sinking approximately 600 m astern.
- 16. An ASD was summoned to the Bridge and ordered to relieve the 2/O of the Helm. The 2/O remained on the Bridge to assist with lookout duties. The C/O proceeded to the Boat Deck and commenced rigging the rescue boat (starboard lifeboat). At the same time, the Deck Crew started rigging life rings, ropes, a pilot ladder, and nets on deck in preparation for recovery of persons in the water.
- 17. Other fishing vessels in the vicinity came to the aid of JULITA S-2. One local fishing vessel, the Philippineregistered BAP-5, commenced recovery of persons in the water. Of the 20 crewmembers on board JULITA S-2, 13 were recovered on board BAP-5, the remaining seven crewmembers remained missing.
- 18. At approximately 2050, the Philippine Coast Guard instructed HAPPY HIRO to receive the 13 survivors from the fishing vessel BAP-5 and proceed to Lipata Anchorage.

Sunset on 28 May 2022 was at 1814, therefore the collision occurred in daylight hours.

## JULITA S-2



Figure 5: JULITA S-2 prior to the collision.

- 19. JULITA S-2 was a 26 m power-driven vessel designed and operated with the purpose of transporting fish and fishing supplies to and from fishing vessels operating within the region. The vessel was not designed for the purpose of fishing with nets, lines, trawls, or other fishing apparatus which restrict maneuverability.<sup>5</sup>
- 20. On 27 May 2022 at approximately 2000, JULITA S-2 lost propulsion and, as a result, maneuverability when its transmission<sup>6</sup> failed. The Captain decided to anchor the vessel in order to assess the severity of the mechanical issue and contact the owner who was located ashore. JULITA S-2 was able to illuminate the vessel using 18 watt lamps located in various locations on the Upper Deck with the electrical power being supplied by an onboard generator. The crew then went to sleep without posting a Watchkeeper or Lookout.
- 21. On 28 May, the Master informed the crew that assistance was going to be provided and that the crew should await the arrival of another vessel.
- 22. At approximately 1725 on 28 May, while at anchor, JULITA S-2's Helmsman,<sup>7</sup> who was asleep on the Bridge, was awoken by shouting from other crewmembers, alerting one another to an approaching vessel. Moments before the collision, a number of crewmembers jumped from JULITA S-2 while others remained on board. HAPPY HIRO collided with the starboard quarter of JULITA S-2. The force of the collision ejected some crewmembers from JULITA S-2 into the sea.

#### **Consequences of the Collision**

23. HAPPY HIRO sustained minor damage in way of deformation of shell plating located at the fore-end of the bulbous bow and deformation and scratches on the starboard side in way of frames 203-204 (forepeak tank) beneath the waterline. In addition, rope was found entangled around the propeller shaft.

<sup>5</sup> COLREGs, Rule 3(d).

<sup>6</sup> Obtained through witness testimony of the Helmsman of JULITA S-2. It is not known the exact cause of the mechanical failure.

<sup>7</sup> The term Helmsman is understood to be used locally to describe the individual rather than the position that was being fulfilled at the time of the collision. This is the description the individual used during the interviews.

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24. There was no pollution, water ingress, or injuries to crewmembers reported on board HAPPY HIRO.

**Bulbous Bow** 

Figure 6: Damage sustained to HAPPY HIRO's bulbous bow and starboard side in vicinity of frames 203-204 (forepeak tank).

- 25. JULITA S-2 sank within a few minutes of the collision. Witnesses describe seeing the fishing vessel sink, stern first, before disappearing beneath the sea.
- 26. Seven crewmembers of JULITA S-2 remain missing at sea and are presumed deceased.

### Condition and Statutory Requirements

- 27. At the time of the collision, HAPPY HIRO was classed with ClassNK, and all statutory certificates remained valid.
- 28. On 31 May 2022, MARINA received a Marine Protest<sup>8</sup> from the owner of JULITA S-2 which stated that JULITA S-2, which stated JULITA S-2 was purchased by J.O.T. Trucking and Fishing Services in March 2022 from Faustino Kaquilala and Tita Kaquilala, and at the same time was renamed JOT 18. Contrary to the requirements detailed within the PFVSRR, no certificate of registry was issued to J.O.T. Trucking and Fishing Services.
- 29. An FVSC,<sup>9</sup> issued under the provisions of the PMMRR, required JULITA S-2 to undertake an annual inspection. The last recorded inspection was conducted on 26 July 2016 and was valid for a period of one year.

<sup>8</sup> A formal notarized declaration whereby an individual expresses an objection or disapproval of an act.

<sup>9</sup> PFVSRR, Rule 1, General Provisions, states that "FVSC is the certificate issued to fishing vessels engaged in domestic/international fishing operation after inspection and survey by the Administration and found to have complied with the Rules and Regulations."

30. In accordance with COLREGs, JULITA S-2 was a power-driven vessel, however, in accordance with PMMRR, JULITA S-2 was classified as a fishing vessel due to the conduct of fishing operations being undertaken.

### HAPPY HIRO and JULITA S-2 Crew

- 31. On 28 May 2022, HAPPY HIRO had a complement of 21 crewmembers, five more than required by the Minimum Safe Manning Certificate issued by the Administrator. Each crewmember held valid Republic of the Marshall Islands issued seafarer documentation required for their position on board.
- 32. The experience of the Master, C/O, 2/O, and 3/O on board HAPPY HIRO, relevant to the safe navigation of the vessel, are detailed in the following table:

RANK	TIME ON BOARD HAPPY HIRO	TIME IN RANK	TIME WITH COMPANY	TOTAL TIME AT SEA
Master	9 months	10 years	9 months	37 years
C/O	3 months	6 years	3 months	15 years
2/O	2 months	3 months	8 months	12 years
3/O	2 months	2 years, 6 months	2 months	17 years

- 33. On 28 May 2022, JULITA S-2 had a complement of 20 crewmembers, six more than the stipulated maximum on the FVSC issued by MARINA on 26 July 2016. As stipulated by the PFVSRR, JULITA S-2 must have, as a minimum, at least one qualified Skipper (Master)<sup>10</sup> and at least one qualified Chief Engine Officer<sup>11</sup> on board.
- 34. The PFVSRR, Rule 10, Training, Certification and Watchkeeping for Fishing Vessel, establishes general provisions for the safe operation of fishing vessels. These include:
  - (a) all seafarers who intend to man fishing vessels below 500 GT or engine propulsion of below 750 kW shall take the appropriate licensure examinations; and
  - (b) fishing vessel owners or operators shall ensure that their fishing vessels are manned only by duly licensed officers.
- 35. MARINA conducted a retrospective review into the competence of JULITA S-2 crewmembers which revealed insufficient records pertaining to their certificates of competence.

#### HAPPY HIRO Navigation Bridge Visibility (Vertical and Horizontal)

36. Based on SOLAS regulation V/22.1.1, the view from HAPPY HIRO's CP (*see figure 6*) of the sea surface directly ahead of the ship was required to not be obstructed by no more than 338.9 m.<sup>12</sup>

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<sup>10</sup> For vessels 50 GT and under, the skipper (Master) must hold an applicable Boat Captain 1 license.

<sup>11</sup> For vessels below 750 kw, the Chief Engine Officer must hold an applicable Marine Engine Mechanic 1 license.

<sup>12</sup> SOLAS regulation V/22.1.1 requires that the view of the sea surface not be obstructed by more than two ship lengths or 500 m, whichever is less. HAPPY HIRO has an overall length of 169.45 m.

37. The vertical obstructed view of the sea surface from the CP directly ahead of HAPPY HIRO when fully loaded and in ballast was:

LOADING CONDITION	DRAFTS	OBSTRUCTED DISTANCE
Full Load	Forward – 10.0 m Aft – 10.5 m	327.6 m
Ballast	Forward – 4.2 m Aft – 6.3 m	310.5 m
Actual Condition (28 May)	Forward – 4.5 m Aft – 6.5 m	310.5 m – 327.6 m

38. Based on HAPPY HIRO's actual ballast condition on 28 May, the sight line from the CP was in between the full load condition of 327.6 m and the ballast condition of 310.5 m *(see preceding table and figure 7)*.



Figure 7: Sight line from the CP based on the actual loading condition on 28 May.

- 39. SOLAS regulation V/22.1.2 stipulates that no blind sector, caused by cargo, cargo gear, or other obstructions outside of the wheelhouse forward of the beam which obstructs the view of the sea surface as seen from the CP, shall exceed 10°. The total arc of blind sectors shall not exceed 20°. The clear sectors between blind sectors shall be at least 5°. However, in the view described in V/22.1.1,<sup>13</sup> each individual blind sector shall not exceed 5°.
- 40. Figure 7 was generated from the Class approved Navigation Bridge Visibility<sup>14</sup> plan and demonstrates that from the centerline CP 1 the blind sector is 7.5°, and from the forward corner of the bridge (CP 2) the blind sector is 3.1°. The navigational bridge visibility from CPs 1 and 2, respectively, conforms to the statutory requirements detailed within SOLAS regulation V/22.1.2.

<sup>13</sup> SOLAS regulation V/22.1.1 states: "the view of the sea surface from the conning position shall not be obscured by more than two ship lengths, or 500 m, whichever is less, forward of the bow to 10° on either side under all conditions of draught, trim and deck cargo."

<sup>14</sup> Kanda Shipbuilding Co. Ltd. Navigation Bridge Visibility's plan approved by ClassNK on 10 February 2006.

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Figure 8: Navigational Bridge Visibility blind sectors from CP 1 (7.5°) and CP 2 (3.1°) circled in red.

- 41. Based on the departure draft, the 2/O's visual horizon from the Bridge of HAPPY HIRO was approximately 10 NM.
- 42. The location of the ECDIS terminal and BNWAS was not in vicinity of CP 2. When standing behind the S-Band radar, the view directly ahead of the vessel is restricted by the presence of the forward gantry cranes *(see figure 9)*. The location of CP 2, port and starboard respectively, provided a clear unobstructed view directly ahead of the vessel.



Figure 9: Bridge equipment and CPs 1 and 2.



Figure 10: View from behind the S-Band radar, approximately 1 m to the left of CP 1.

### HAPPY HIRO Navigation Equipment and Audit

- 43. The Bridge navigation equipment pertinent to maintaining a navigational watch and to determine a risk of collision as required by SOLAS regulation V/19.2<sup>15</sup> stipulates HAPPY HIRO to have installed, tested, and maintained a 9 GHz (i.e., X-band) radar, BNWAS, and ECDIS.
- 44. The navigation equipment installed on board HAPPY HIRO met the requirements of SOLAS regulation V/19.2 and on the day of the collision, all bridge equipment was declared operational without defect.
- 45. The S-Band and X-Band radars had been serviced by an independent service agent on 31 January 2022 and maintained regularly in accordance with the manufacturer's requirements. On 28 May 2022, both radars had, for a period, been in operation and transmitting. Similarly, both radars had been switched to standby mode<sup>16</sup> at alternating times of the day.
- 46. At the time of the collision, only the S-Band radar was transmitting. It was set to a range of 12 NM with three contacts selected, orientation north up in relative motion, and CPA<sup>17</sup> limit off.
- 47. The radar display has a significant amount of clutter surrounding the known contacts. The radar has the capability to automatically adjust clutter to account for environmental conditions in order to define contacts more clearly. Alternatively, the operator (OOW) can adjust the rain, gain, and sea functions of the radar manually (known as tuning) to enhance target identification. The radar settings selected indicate that the radar auto adjust function was deselected thereby requiring the operator to manually adjust the rain, sea, and gain for optimum performance.

<sup>15</sup> SOLAS regulation V/19.2.3 states, "all ships of 300 gross tonnage and upwards shall have a 9 GHz radar, or other means, to determine and display the range and bearing of radar transponders and of other surface craft, obstructions, buoys, shorelines and navigational marks to assist in navigation and in collision avoidance."

<sup>16</sup> Standby mode is a condition whereby the radar is not transmitting and therefore not displaying any target data.

<sup>17</sup> CPA is the occurrence of the closest point between two contacts.



Figure 11: S-Band Radar at 1728 on 28 May 2022.

- 48. On 3 June 2022, the 2/O performed a routine quarterly inspection on both radars. The inspection identified no deficiencies with either the S-Band or X-Band radars.
- 49. The last navigation audit was conducted on board HAPPY HIRO in June 2021 by an internal auditor from the Company. None of the existing bridge team participated in this navigational audit. The Company does not have a distinct and specific navigation audit requirement.

### JULITA S-2 Navigation Equipment

50. In accordance with SOLAS regulation V/19.2.1,<sup>18</sup> JULITA S-2 is required, if practicable, to have a radar reflector, or other means, to enable detection by ships navigating by radar at both 9 and 3 GHz. Based on the only image of JULITA S-2 *(see figure 4)* it cannot be determined if the vessel had installed a radar reflector or other equivalent means to enhance detection.

<sup>18</sup> SOLAS regulation V/19.2.4 states, "all ships of 300 gross tonnage and upwards engaged on international voyages and cargo ships of 500 gross tonnage and upwards not engaged on international voyages and passenger ships irrespective of size shall be fitted with an automatic identification system (AIS)."

51. In accordance with Philippine national requirements,<sup>19</sup> JULITA S-2 was not required to be fitted with a radar installation.

### JULITA S-2 Safety Equipment

- 52. In accordance with the stipulated requirements detailed within the PFVSRR, Rule 12, LSAs, the following LSAs are required to be carried on board JULITA S-2:
  - (a) one lifebuoy;
  - (b) at least one two-way VHF radiotelephone apparatus;
  - (c) one red hand flare;
  - (d) a rigid or inflatable life raft capable of carrying 100% of the total number of persons on board; and
  - (e) at least one type-approved life jacket for every person on board.
- 53. The most recent inspection, which was conducted on 26 July 2016, provided evidence that on the date of the inspection, JULITA S-2 met some of the requirements of the PFVSRR for the following LSA equipment:
  - (a) two lifebuoys;
  - (b) two red parachute flares;
  - (c) an inflatable life raft with the capacity for 20 persons; and
  - (d) twenty lifejackets.
- 54. There is no official record that at the time of the collision JULITA S-2 had on board at least one two-way VHF radiotelephone apparatus. In a post-collision statement, the Helmsman on board JULITA S-2 recalled that the Captain had called another vessel on 27 May requesting a message be transmitted ashore on his behalf. Based on this, it is probable that at least one two-way VHF radiotelephone was on board and operational.

## **COLREGs Requirements**

- 55. The requirements of COLREGs for power driven vessels were applicable to both HAPPY HIRO and JULITA S-2.20
- At the time of the collision, HAPPY HIRO was underway<sup>21</sup> and JULITA S-2 was at anchor as defined by COLREGS Rule 3(i).
- 57. Both vessels were required by COLREGs Rule 5 to "at all times maintain a proper lookout by sight and hearing as well as by all available means appropriate to the prevailing circumstances and conditions so as to make a full appraisal of the situation and of the risk of collision."
- 58. COLREGS Rule 7(a) shall be used in determining a risk of collision and requires both vessels "to use all available means appropriate to the prevailing circumstances and conditions to determine if risk of collision exists." COLREGS Rule 7(b) applies to HAPPY HIRO as it was fitted with an operational radar and therefore "proper use shall be made of radar equipment if fitted and operational, including long-range scanning to obtain early warning of risk of collision and radar plotting or equivalent systematic observations of detected objects."

<sup>19</sup> PFVSRR, Rule 12, LSAs.

<sup>20</sup> See COLREGs Rules 1(a).

<sup>21</sup> COLREGs Rule 3(i) states, "the word underway means that a vessel is not at anchor, or made fast to the shore, or aground."

- 59. COLREGs, Rule 8(a) states, when taking action to avoid a collision, that "any action to avoid a collision shall be taken in accordance with the Rules of this Part and shall, if the circumstances of the case admit, be positive, made in ample time and with due regard to the observance of good seamanship."
- 60. JULITA S-2 shall, in accordance with COLREGs Rule 30(a)(i), exhibit, where it can best be seen, an all-round white light or one black ball.

### STCW Watchkeeping Principles

- 61. STCW Code, section A/VIII, parts 3 and 4 establish general principles for watchkeeping. These include:
  - (a) establishing proper arrangements for watchkeepers in accordance with the situation;
  - (b) providing that the OICNW maintain a proper watch, making the most effective use of the resources available, such as information, installations and equipment, and other personnel; and
  - (c) providing that OICNWs are responsible for the ship's safe navigation while on watch and that they be "particularly concerned with avoiding collision and stranding."
- 62. STCW Code, section A/VIII, part 4 includes three sub-parts addressing navigational, engineering, and radio watches. Principles particular to navigation watches, include that:<sup>22</sup>
  - (a) a lookout be maintained at all times per COLREGs Rule 5;
  - (b) the OOW can serve as the sole lookout during daylight hours provided:
    - (i) the existing circumstances considering factors such as weather conditions, visibility, traffic density, and proximity to dangers to navigation make it safe to do so;
    - (ii) assistance is immediately available and can be summoned to the Bridge if the situation changes; and
    - (iii) the Master determines the composition of the navigational watch is adequate to ensure a proper lookout can be continuously maintained, taking into account the above factors, along with the ability to immediately summon assistance, when necessary, the operational status of the ship's navigation systems, and the configuration of the Bridge.<sup>23</sup>

#### HAPPY HIRO Watchstanding Requirements and Routine

- 63. Maintaining a proper lookout is an essential element of safe navigational watchkeeping, for which requirements are laid down in the STCW Code, section A/VIII, which also contains standards for keeping a proper lookout. Recommended guidance on watchkeeping arrangements and principles to be observed are given in Part B of the STCW Code. The standards and guidance had been incorporated in the SMS of the ship and considered in the documentary application of voyage planning.
- 64. As required by the ISM Code, the Company's SMS contained Navigational Watchkeeping Standing Orders, Bridge and Navigation Procedures, and Bridge Equipment Procedures and Instructions. In addition, the Master of HAPPY HIRO had issued Standing Orders that were signed by the 2/O. The Master's Standing Orders established general requirements for standing a navigational watch which included that the OOW:

<sup>22</sup> See STCW Code, section A/VIII, part 4-1 for all the principles particular to navigational watches that are addressed.

<sup>23</sup> Some of the additional factors that the Master should consider include: crewmembers' fitness for duty and their experience, current and planned operations, proximity to traffic separation schemes or other routing measures, and the ship's maneuvering characteristics. See STCW Code, section A/VIII, part 4-1, paragraphs 17 and 18 for a full list of factors that are supposed to be considered.

- (a) while keeping Bridge watch, always be alert and quick and use both sight and hearing. At all times all navigational aids to be made available on board and should be used for the safe navigation of the vessel;
- (b) both radars to be kept running at all times when the vessel is underway;
- (c) COLREGs shall be strictly adhered to;
- (d) proper lookouts shall be kept at all times. During daylight hours, the Bridge may be manned by the OOW alone, who can also perform the lookout duties; and
- (e) the ASD employed as the Lookout shall not be called upon to perform duties other than those associated with such a position. Lookouts are to be posted:
  - (i) from sunset to sunrise;
  - (ii) during reduced visibility;
  - (iii) when entering or leaving port;
  - (iv) when traffic is heavy;
  - (v) at other times specified by the Master; and
  - (vi) under the circumstances he can be assigned minor duties at, or near the navigating Bridge.
- 65. The Company Bridge Watchkeeping Standing Orders and Bridge Manning Levels of Navigation Watch Standing contained within the SMS,<sup>24</sup> recommended a qualified OOW and a lookout<sup>25</sup> to be stationed on the Bridge, standing watch when in open seas and uncongested coastal routes which are free from navigational hazards, in clear visibility.<sup>26</sup> Watch Level 1 was documented in the approved passage plan as the required manning level at the time of the collision.

### HAPPY HIRO Watchstanding Practices Observed

- 66. The 2/O maintained the afternoon watch between 1200–1730<sup>27</sup> alone on the Bridge in the capacity of OOW except for a period of 19 minutes, when the Master was on the Bridge conducting routine tasks and located at a computer.
- 67. During daylight hours, it was common practice for the OOW to be alone on the Bridge without a lookout.
- 68. On 28 May 2022, the assigned lookout<sup>28</sup> was tasked by the C/O to undertake cleaning of the holds. He was not assigned to the Bridge as a lookout between 1200–1730. Immediately after the collision, he was summoned to the Bridge to take the Helm.
- 69. Throughout the 2/O's watch on board HAPPY HIRO, he was using a cellular phone to intermittently communicate with a third party who was not located on board. In total, the 2/O was using the device for approximately 20% of the time between 1200–1730. In the 30 minutes prior to the collision, the 2/O was using the device between the periods when the Master was not on the Bridge. At the point of impact with JULITA S-2, the OOW was using a cellular phone.

<sup>24</sup> Derived from STCW which provides mandatory standards regarding watchkeeping as contained in Part A, Chapter VIII of the STCW Code.

<sup>25</sup> Nominally fulfilled by an ASD.

<sup>26</sup> Watch Level 1 is a pre-determined manning level recommended by the Company and implemented by the Master depending on the prevailing circumstances and conditions. Watch Level 1 has a minimum manning level of 3 levels.

<sup>27</sup> All times and dates have been obtained from the official deck log book, signed by each watchkeeper at the time of taking responsibility for the watch.

<sup>28</sup> The ASD.

### JULITA S-2 Watchstanding Requirements and Routine

- 70. JULITA S-2 is required under PFVSRR, Rule 9, Safe Manning to be completely manned by Filipino Skippers, Officers, and Ratings who are duly qualified, competent, certified, and medically fit.
- 71. PFVSRR, Rule 2, Registration and Documentation of Fishing Vessels requires, among others, that JULITA S-2 be safely manned with sufficient officers and ratings with appropriate skills and experience to ensure the following principles can be complied with:
  - (a) the capability to maintain a safe bridge watch at sea; and
  - (b) the capability to operate the main propulsion and auxiliary machinery and maintain it in a safe condition to enable the fishing vessel to overcome the foreseeable perils of the voyage.
- 72. PFVSRR, Rule 15, Safety of Navigation, establishes general provisions for the safe navigation of fishing vessels and requires that fishing vessels shall, so far as practicable, comply with COLREGs and the routing measures adopted by the IMO.

#### JULITA S-2 Watchstanding Practices Observed

- 73. The Company did not have Standing Orders, instructions, or procedures addressing navigational watchstanding at sea.
- 74. No crewmembers on board JULITA S-2 were assigned specific watchkeeping duties while at anchor. The only crewmember on the Bridge at the time of the collision was the Helmsman, who was asleep.

#### Fatigue

- 75. The Shipboard Working Arrangements provided by the Company documents the scheduled work hours for each member of HAPPY HIRO's crew on a daily and monthly basis. The prescribed watchkeeping periods, as detailed within Shipboard Working Arrangements, should mirror the watchkeeping duties undertaken by the crewmembers within their respective areas of responsibility as derived from STCW requirements.
- 76. In accordance with STCW Code, Section A-VIII/1, paragraphs 2 and 3 and MLC, 2006, Regulation 2.3, the mandated hours of work and rest limits shall be as follows:
  - (a) the maximum hours of work shall not exceed:
    - (i) 14 hours in any 24-hour period; and
    - (ii) 72 hours in any 7-day period.
  - (b) the minimum hours of rest shall not be less than:
    - (i) 10 hours in any 24-hour period; and
    - (ii) 77 hours in any 7-day period.
- 77. The official Deck Log Book<sup>29</sup> records who is on watch, when, and in what capacity. According to the official Deck Log Book record, the 2/O was on watch as OOW from 0400–0800 on 28 May 2022. The 2/O was then off watch between 0800–1200. At 1200, the 2/O relieved the 3/O on the Bridge as OOW until the time of the collision at 1730. On 28 May 2022, the 2/O was on watch as OOW on the Bridge for a total of 9.5 hours.

<sup>29</sup> The Republic of the Marshall Islands Maritime Act, 1990 (MI-107), Article §811(g) requires the Master "to see that the vessel's log books are properly and accurately kept."

- 78. IMO Circular on Guidelines on Fatigue (MSC.1/Circ.1598) provides all stakeholders guidelines in understanding fatigue<sup>30</sup> and mitigating and managing the risk of fatigue. The IMO guidelines state:
  - (a) 2: Fatigue has the potential to greatly increase the risk of incidents and injuries in the workplace. It adversely
    affects seafarer performance, diminishes attentiveness and concentration, slows physical and mental reflexes,
    and impairs rational decision-making capability;
  - (b) 18.1: The allocation of crewmembers to peak times and demands is a fundamental factor in minimizing the exposure to risks associated with extended duty hours; and
  - (c) 18.3: Ensure there are adequate resources, including manning, available to complete shipboard tasks safely without placing excessive demands on seafarers.
- 79. The Company's SMS provides its Masters with procedures and instructions on watchkeeping arrangements, requiring, inter alia, the Master to ensure that "the watch keeping arrangements for the ship are, at all times, adequate for maintaining safe navigational and engineering watches" and goes further, requiring the Master to ensure that the watch arrangements are such that "watchkeepers are capable and fit for duty and not suffering from fatigue."
- 80. On 27 May 2022, the day before, and 29 May 2022, the day after the collision, the 2/O undertook the following watches as OOW on the Bridge:
  - (a) 27 May 2022: 0400-0800 and 1200-1600; and
  - (b) 29 May 2022: 0400–0800 and 1200–1600.
- 81. When interviewed, the 2/O stated that this working arrangement was not conducive to maintaining adequate rest and recovery. He had also expressed concerns to the Master and C/O that he was having trouble sleeping since departing Taicang on 22 May 2022, in part due to inconsistent watches being kept, distorting any meaningful routine.
- 82. Due to the activities being conducted on board concurrently, the C/O was disposed in overseeing the cleaning of the cargo holds and as a result, did not stand watches as documented within the scheduled daily working hours.<sup>31</sup> The shipboard working arrangements precluded maintenance of a consistent watchkeeping schedule, with the 2/O standing different watches at different times of the day since departing Taicang on 22 May 2022.

## PART 3: ANALYSIS

The following Analysis is based on the above Findings of Fact.

## Collision Prevention and Loss of Life

The crew of JULITA S-2 were given very little warning of the location of HAPPY HIRO. The Helmsman was awoken to shouting by other crewmembers of HAPPY HIRO bearing down on JULITA S-2. Given the timescale involved, insufficient time was available for the Helmsman or any other crewmember to call HAPPY HIRO on the VHF radio to warn of JULITA S-2's location and to prevent a collision.

<sup>30</sup> Definition of fatigue as per MSC.1/Circ.1598, "a state of physical and/or mental impairment resulting from factors such as inadequate sleep, extended wakefulness, work/rest requirements out of sync with circadian rhythms and physical, mental and emotional exertion that can impair alertness and the ability to safely operate a ship or perform safety-related duties."

<sup>31</sup> Shipboard Working Arrangements Table.

Had the OOW been aware of JULITA S-2 prior to the collision, he would have been required, in accordance with COLREGs, to determine if a risk of collision existed and take the necessary steps to avoid a close quarters situation from developing.

The 2/O on watch as OOW on HAPPY HIRO was unable to take appropriate action required under COLREGs Rule 8(a) as he was unaware of the presence of JULITA S-2. Action taken to avoid a collision should, if the circumstances of the case admit, be positive, made in ample time, and with due regard to observance of good seamanship.

The 2/O did not make any alteration of course and/or speed in the moments prior to the collision and was only aware of the presence of JULITA S-2 after the collision, when informed by the Bosun that HAPPY HIRO had collided with an "unknown object," later determined to be JULITA S-2.

In accordance with COLREGs Rules 16 and 18, HAPPY HIRO was required to keep out of the way of JULITA S-2 as defined by COLREGs as a vessel at anchor and therefore unable to maneuver.

Had the OOW on board HAPPY HIRO been visually aware of the position of JULITA S-2, the OOW may not have been aware of the fact that the vessel was at anchor. As required by COLREGS Rule 30(a)(i), JULITA S-2 was required to display one black ball where it can best be seen. According to the statements taken from the crewmembers of JULITA S-2, it has been determined that one black ball was not used to identify the vessel's condition as a vessel at anchor and therefore not underway and not able to maneuver as required by COLREGS Rule 3(i).

Of the crewmembers on board JULITA S-2 that were recovered from the water, not one member was wearing a personal flotation device. It was reported that, as of the last inspection conducted on 26 July 2016, 20 lifejackets were available on board. During the course of the investigation, it could not be determined if the:

- (a) crewmembers had sufficient time to each don a lifejacket prior to impact;
- (b) lifejackets were serviceable and the exact number on board;
- (c) crewmembers were aware of the location of the lifejackets on board; and
- (d) crewmembers had been shown how to wear a lifejacket.

#### Watchkeeping Performance

In order to see directly ahead of the vessel visually, the OOW would have needed to position himself in the vicinity of CP 2 on either the port or starboard side of the Bridge *(see Figure 8)*.

HAPPY HIRO made one 5° alteration of course from 160°-165° T at 1718. It is estimated that, based on environmental and physical conditions, JULITA S-2 would have been visible from approximately 6 NM. Based on HAPPY HIRO's speed over the ground of 13.6 kn, JULITA S-2 would have been within visual range at 1652. At this time, HAPPY HIRO was on a course of 160° T, prior to altering to the next course of 165° T. The observed visual horizon, between the ECDIS screen and BNWAS was in the region of no more than 7.5°. Therefore, with a 5° alteration of course to 165° T, the 2/O would not have seen JULITA S-2 at any point after 1652 unless he moved from beyond the confines of the ECDIS terminal to the left or the BNWAS to the right.

As there was no CCTV present on the Bridge recording the exact movements of the OOW, it cannot be determined if the OOW walked beyond the Bridge equipment to, or near, CP 2 on either the port or starboard side of the Bridge as HAPPY HIRO approached JULITA S-2. If the OOW had walked beyond the terminals while maintaining a lookout forward any time after 1652, it is likely that, given the visible range of JULITA S-2, he may have sighted JULITA S-2 visually.

In order to maintain a proper lookout visually, either an additional person in the capacity of Lookout should have been stationed on the Bridge, or the OOW should have, at regular intervals,<sup>32</sup> positioned himself in vicinity of CP 2.

#### Fatigue

The division of labor was not equally distributed among the qualified Bridge watchkeepers.

The Company's SMS had detailed instructions designed to ensure watchkeepers are capable and fit for duty and not suffering from fatigue. The planned watchkeeping routine was designed to ensure watchkeepers do not exceed the maximum hours of work necessary to remain in compliance with the mandatory requirements contained within the STCW Code and MLC, 2006. The vessel had sufficient manning in accordance with the Minimum Safe Manning Certificate,<sup>33</sup> to ensure compliance with the STCW Code and the Company's SMS.

The division of labor was not equally distributed among the qualified Bridge watchkeepers. The 2/O described feeling tired and exhausted to the C/O and the Master in the days prior to the collision and cited the watch routine as being a contributing factor to his inability to sleep. In the knowledge that the 2/O described himself as being fatigued, the application of the Company SMS, as it relates to the management of fatigue, was not applied.

MSC.1/Circ.1598<sup>34</sup> ascertains that the effects of fatigue can impact watchkeeping performance. The Master's selfimposed strategy to prioritize cleaning of the holds ahead of maintaining a safe navigational watch conflicts with the guidelines designed to ensure there are adequate resources available to complete shipboard tasks safely without placing excessive demands on seafarers.

#### Watchkeeping Standards

The Company Bridge Standing Orders Section 12, stipulates that the "Deck Watchkeeping Officer shall ensure there are no distractions caused by the use of ... mobile phones or any other personal equipment which would interfere with the proper keeping of the watch."

The 2/O had signed the Bridge Standing Orders and confirmed that he was aware of the rules governing safety of navigation and maintaining a proper watch. It could not be established during the course of the investigation why he neglected to follow the Company's Bridge Standing Orders.

<sup>32</sup> Regular intervals would be determined by the OOW based on the prevailing circumstances and conditions at the time taking into consideration, traffic density, speed, weather, state of visibility, and proximity to dangers of navigation.

<sup>33</sup> Based on the minimum manning necessary to ensure the safe navigation of the ship and that the guidelines for determining minimum manning do not take into account tasks such as cleaning cargo holds.

<sup>34</sup> IMO guidelines on fatigue.

### **Bridge Equipment**

In determining if the risk of collision exists, COLREGs Rule 7 specifically requires that proper<sup>35</sup> use shall be made of X-Band and S-Band radars given that both were fitted and available at the time of the collision. This includes using long-range scanning to obtain an early warning of risk of collision.

The radar range scale in use (12 NM) was not effective in identifying small conspicuous contacts. In the knowledge that the OOW would likely encounter small, conspicuous contacts during the transit, it was assessed that the S-Band radar was not adequately set-up for the prevailing conditions.

At no stage during the watch did the 2/O alter the range scale of the S-Band radar in use at the time. A large quantity of scatter is displayed between the 0-3 NM range scale, which masked any contacts within this field and made it difficult to identify actual contacts over the scatter of clutter depicted *(see figure 10)*. COLREGs and the IMO Recommendation on Basic Principles and Operational Guidance Relating to Navigational Watchkeeping (Resolution A.285/VII), provides mandatory and recommendatory practices on the use of radar such that "whenever radar is in use, the OOW should select an appropriate range scale, observe the display carefully and plot effectively. The OOW should ensure that range scales employed are changed at sufficiently frequent intervals so that echoes are detected as early as possible."

The S-Band radar has a built-in auto adjust clutter function designed to provide optimum performance by adjusting rain, gain, and sea settings. At no stage did the OOW attempt to adjust the radar to improve the detection of contacts, specifically identification of conspicuous contacts, by adjusting the configuration of rain, gain, and sea settings to enhance target identification.

The advantage of having two radars on board is well established. It provides the watch keeper with an additional set of eyes, and allows for enhanced detection, particularly when both radars are operating at different range scales which is common practice and standard procedure as documented in the International Chamber of Shipping's Bridge Procedures Guide.

The Master's Standing Orders, paragraph 2, states that "both radars to be kept on and running at all times when vessel is underway or at anchor." According to statements made by the C/O and 3/O, it was known to the C/O and 3/O that the 2/O repeatedly put one radar in standby mode.

The Master, having been on the Bridge moments prior to the collision, did not observe, or if observed, did not question, the operational condition of the X-Band radar or direct the 2/O to switch the X-Band radar to transmit.

The 2/O, in the capacity of OOW, was not fulfilling the requirement of COLREGs Rule 5 by virtue of the fact that he was not maintaining a proper lookout by sight and hearing as well as by all available means, including effective systematic observations obtained through frequent radar range adjustments. In addition, he was not in compliance with the Company's SMS having only one radar in operation, when both radars were readily available.

<sup>35</sup> Proper use of radar to obtain early warning of risk of collision requires that all controls should be at their optimum settings and that the appropriate range scale should be used.

### Safe Manning JULITA S-2

Every vessel shall, in accordance with COLREGs Rule 5, "maintain a proper look-out by sight and hearing as well as by all available means." It could not be established whether a lookout was being maintained on board JULITA S-2 prior to the collision with HAPPY HIRO. The testimony of one crewmember reports being alerted to HAPPY HIRO's presence moments prior to the collision. It can therefore be considered likely that a lookout was not assigned this duty as required by COLREGs.

The exact location of crewmembers on board JULITA S-2 cannot be determined prior to the collision. It can be considered likely that many of the crewmembers were below deck at the point of impact.

An on duty lookout on board JULITA S-2 prior to the collision would likely have observed the developing situation. The opportunity would have existed whereby the lookout could attempt to raise the alarm through VHF radio to warn the OOW on board HAPPY HIRO of the risk of collision.<sup>36</sup> Further, this may have afforded the crewmembers on board JULITA S-2 valuable time to abandon ship and don personal flotation devices prior to the collision.

#### Safe Manning HAPPY HIRO

At no point during the 2/O's watch was a lookout stationed on the Bridge. The lookout had been assigned to the cargo hold to assist in cleaning in preparation for receiving aluminum oxide in Kwinana, Australia.

The Master recognized that this transit would encounter fishing vessels, as documented in the passage plan and further reinforced daily, in his Night Orders which specifically stated "keep a sharp lookout." The presence of the Master on the Bridge prior to the collision confirms that he was aware of the actual Bridge manning level at the time of the collision.

An important function of the application of the STCW Code is the assessment of safe manning as it relates to the justification of a lookout. When considering the sufficiency of the lookout, it had already been established that although the state of visibility was good, the probability of encountering other vessels, specifically fishing vessels was likely.

It was common practice on this voyage for the OOW to be on the Bridge alone, without a lookout, but maintaining a proper lookout, fulfilling the requirements of COLREGs Rule 5. At no time did the OOW request a lookout to be assigned on the Bridge or express concern to the Master or C/O that the watchkeeping arrangements deviated from the approved passage plan. It cannot be determined whether this request was even considered by the OOW. However, it may be perceived that, in noting the OOW was participating in personal telephone calls while on watch, the presence of another person may have prevented him from undertaking such activity.

The Company's SMS, derived from STCW Code and COLREGs requirements, addressed operational manning levels dependent on different navigational situations. The Watch Level determined appropriate in the approved passage plan for this aspect of the passage required an additional lookout to be positioned on the Bridge. The SMS stipulated that this should be an ASD. In the days prior to the collision, when Watch Level 1 was set in accordance with the approved passage plan, an ASD was not present on the Bridge in the capacity of lookout. This deviated from the manning levels required in the approved passage plan and normalized the fact that such deviation from documented procedures was acceptable. The Master neglected to enforce the Company's SMS despite being aware of the requirement to do so.

36 COLREGs Rule 7(a).

## **PART 4: CONCLUSIONS**

The following Conclusions are based on the above Findings of Fact and Analysis and shall in no way create a presumption of blame or apportion liability.

- 1. Causal factors that contributed to this very serious marine casualty include that:
  - (a) neither vessel maintained an adequate lookout due to:
    - (i) ineffective navigational watchkeeping standards on board HAPPY HIRO while navigating an area known to contain small conspicuous vessels;
    - (ii) inability of the OOW on board HAPPY HIRO to recognize the necessity to use all available means to maintain a proper lookout;
    - (iii) repeated deviation from Company documented procedures that required a lookout to be on duty was normalized on board; and
    - (iv) JULITA S-2 not having an assigned Lookout on duty;
  - (b) of the two available radars on board HAPPY HIRO, the OOW deliberately placed the X-Band radar in standby mode resulting in a reduction of detection and collision avoidance information. Simultaneously, the S-Band radar was inadequately configured and set to 12 NM, preventing the OOW the opportunity to identify small conspicuous vessels such as JULITA S-2; and
  - (c) the OOW on board HAPPY HIRO limited his athwartship movement across the Bridge, denying him the opportunity to see clearly ahead of the vessel.
- 2. Additional causal factors that may have contributed to this very serious marine casualty include:
  - (a) the OOW on board HAPPY HIRO was distracted by the frequent use of a cellular telephone during his watch;
  - (b) the 2/O had expressed concerns surrounding his insomnia and exhaustion in the days preceding the collision. The watch routine however was maintained, contrary to the established Shipboard Working Arrangement and without adequate application of the SMS; and
  - (c) JULITA S-2 crewmembers did not hold valid certificates issued by MARINA required for their positions on board.
- 3. Additional issues that were identified but that did not contribute to this very serious marine casualty include:
  - (a) JULITA S-2 did not exhibit the prescribed shape required by COLREGs Rule 30(a)(i); and
  - (b) JULITA S-2 did not hold a valid vessel registration certificate issued by MARINA nor was it in possession of a valid FVSC required by PMMRR.

## **PART 5: PREVENTIVE ACTIONS**

In response to this very serious marine casualty, the Company has and intends to take the following Preventive Actions:

- 1. The Company has conducted a fleetwide campaign requesting all Masters of managed ships to provide feedback on their application and best practice on the use of radars for safety of navigation and collision prevention.
- 2. Ensure Masters implement adherence to the Safety of Navigation procedures requiring range and alarm settings (audio and visual) to be switched to the on position.
- 3. Conduct regular navigational assessments of Bridge watchkeepers.
- 4. The SMS related to Safety of Navigation is to be reviewed and its application be ensured by all Bridge Teams within the fleet.
- 5. The Company is to investigate the provision of shore-based training courses for Bridge Team Management training.
- The Company has conducted an internal navigation audit on board HAPPY HIRO to assess and review the quality of Bridge watchkeeping standards.

## **PART 6: RECOMMENDATIONS**

The following Recommendations are based on the above Conclusions and in consideration of the Preventive Actions taken.

- 1. It is recommended that the Company:
  - (a) review and if necessary, revise the applicable provisions of the Company's SMS or develop a standing order to provide clear guidance regarding the Company's expectations for how Masters and OOWs must implement the STCW Code's principles for navigational watchkeeping;
  - (b) consider implementing a procedure to conduct annual navigational audits in order to verify the function of safety of navigation and ensure effective implementation of navigational procedures;
  - (c) consider the use of external navigation audit verification to test the effectiveness and application of navigational watchkeeping standards;
  - (d) review the application of the Shipboard Working Arrangement to ensure compliance with the SMS and in consideration of MSC.1/Circ.1598.

The Administrator's marine safety investigation is closed. It will be reopened if additional information is received that would warrant further review.