Report of Investigation into the fatal accident on board bulk carrier "*HONY FUTURE*" in heavy weather on 29 February 2016

The Hong Kong Special Administrative Region
Marine Department
Marine Accident Investigation Section

18 January 2018

Purpose of Investigation

The purpose of this investigation conducted by the Marine Accident Investigation and Shipping Security Policy Branch (MAISSPB) of Marine Department is to determine the circumstances and the causes of the incident with the aim of improving the safety of life at sea and avoiding similar incident in future.

It is not intended to apportion blame or liability towards any particular organization or individual except so far as necessary to achieve the said purpose.

The MAISSPB has no involvement in any prosecution or disciplinary action that may be taken by the Marine Department resulting from this incident.

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1. Summary

All the times stated in this report are local time (UTC+8).

1.1 On 29 February 2016, a fitter and an engine cadet of a Hong Kong registered bulk carrier "*Hony Future*" (*the vessel*) were smashed by heavy waves washing over the main deck and seriously injured while *the vessel* was en-route from port of Bandar Abbas, Iran to Caofeidian, China at South China Sea in position of 09°10'N, 109°20'E under adverse weather and sea conditions.

1.2 The fitter and the engine cadet were assigned by the second engineer to clean oil stain nearby port side bunkering station on the main deck. At about 0815 hours, when they stepped out from the port side accommodation entrance and stood at the port-quarter main deck, they were smashed by heavy waves and hit heavily against deck fixtures.

1.3 Both the fitter and the engine cadet sustained serious injuries and were rescued by other crew members to ship's hospital for immediate first aid treatment. *The vessel* was detoured immediately to the nearest port of Vung Tau, Vietnam for the earliest shore hospital medical treatment. The engine cadet unfortunately died at about 1000 hours on the same day. The fitter was safely evacuated and admitted to shore hospital in Vietnam at 1755 hours on 1 March 2016. He recovered after about one-month's medical treatment and hospitalization.

1.4 The investigation had identified the contributory factor to this incident that the senior officers of both the deck and engine departments of *the vessel* had failed to discharge their diligent duties to carry out proper risk assessment before assigning crew to work on open deck under heavy weather and sea conditions.

1.5 The investigation also revealed that the implementation of the shipboard Safety Management System was a total failure.

2. Description of the vessel

Particulars of Hony Future (Figure 1)

Flag	:	Hong Kong, China
Port of registry	:	Hong Kong
IMO No.	:	9583823
Type of ship	:	Bulk Carrier
Year built, shipyard	:	2012, Xiamen Shipbuilding Industry Co., Ltd
Gross tonnage	:	32,987
Net tonnage	:	19,214
Summer deadweight	:	56,689 metric tonnes
Length overall	:	189.90 metres
Breadth (Moulded)	:	32.26 metres
Main engine power, type	:	9,480 kW, 1 x Hyundai MAN B&W 6S50MC-C Engine
Classification society	:	Lloyd's Register (LR)
Registered owner	:	Minsheng Jiade (Tianjin) Shipping Leasing Co., Ltd
Management company	:	MSI Ship Management (Qingdao) Co., Ltd

Figure 1-M.V. *"Hony Future"*

3. Sources of Evidence

3.1 Information provided by the ship management company of "*Hony Future*".

4. Outline of Events

4.1 *The vessel* arrived at port of Fujairah, United Arab Emirates (UAE) on 12 February 2016 for bunkering, and sailed to her destination port of Caofeidian, China on the same day. *The vessel*'s departure draft was about 12.8 meters and the freeboard was about 5.2 meters.

4.2 In the evening of 26 February 2016, *the vessel* passed Singapore Strait and entered into South China Sea encountering adverse weather. On 27 February 2016, the northeast wind strengthened to force 7 on the Beaufort scale, and the height of sea waves was about 3 meters. In accordance with the shipboard safety procedure, the checklist "NVG17 – Navigation in Adverse Weather" was completed by officers on watch and necessary measures were arranged accordingly except rigging of deck safety lines which was an item of the checklist. All crew members were ordered to pay attention to the "forthcoming heavy weather" and keep all loose parts properly secured.

4.3 As *the vessel* headed against strong wind and rough sea, her speed was reduced to 7 knots in the morning of 28 February 2016. In the afternoon on the same day, weather forecast indicated that the north-northeast wind would be increasing to force 9 on the Beaufort scale with rough to high sea for the next 24 hours from 2100 hours. The height of sea waves was anticipated to be 7 to 10 meters which would be much higher than *the vessel*'s freeboard of 5.2 meters.

4.4 In the midnight on 28 February 2016, *the vessel* was sailing on a course of 032° against the north-northeast wind with force 8 on the Beaufort scale and encountered very rough sea (Figure 2). She rolled from side to side covering a range of about 20 to 40 degrees and pitched heavily. Sea waves washed on deck from port side forward and splashed around the area of cargo hatch No.2. The speed of *the vessel* was dropped to 5 knots.

4.5 At about 0635 hours on 29 February 2016, the chief officer and duty able seaman (AB) from the bridge noticed a small area of black oil stain on the main deck near the port side bunkering station in front of the accommodation block. The chief officer informed the second engineer (the duty engineer in engine room) of his finding immediately by telephone and reminded him that "wind and waves outside of the accommodation are little

bit stronger". The second engineer orally acknowledged that warning.

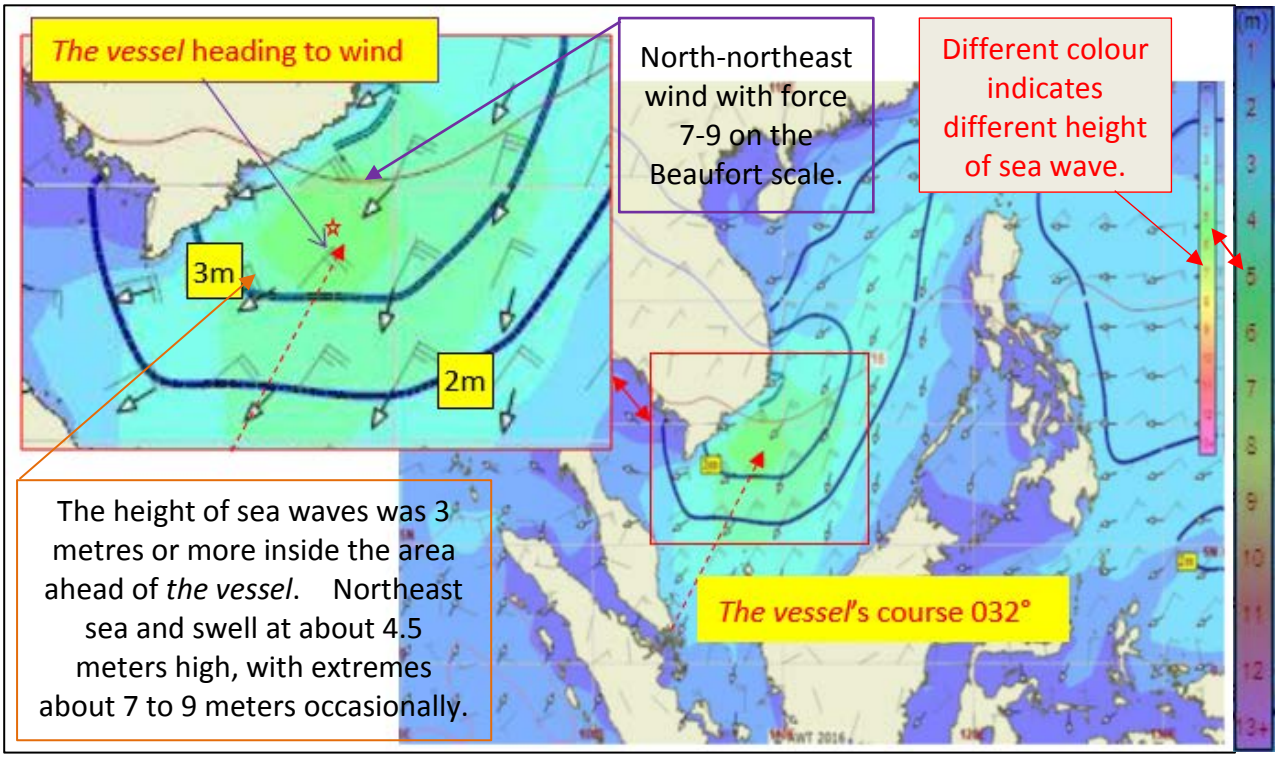

Figure 2- The weather forecast received in the afternoon on 28 February 2016 showing the wind and sea wave conditions in the area ahead of *the vessel*.

4.6 About five minutes later, the second engineer went to the main deck through the port side accommodation entrance weather-tight door to check the location of the oil stain. However, he turned back before reaching the oil stain location due to insufficient illumination and wet deck. In the meantime, the carpenter came on the bridge to discuss day work plan with the chief officer as usual. Both the carpenter and the chief officer noticed the movement of the second engineer on the main deck.

4.7 After the sky got bright at about 0700 hours, the second engineer went to the location of the oil stain again. He confirmed that a 4-liter capacity plastic fuel oil sample bottle was toppled to the deck due to ship movement or strong wind effect. Fuel oil sample leaked from the toppled bottle and spread to an area of about four square meters on the deck near the port side bunkering station (Figure 3). Being on the deck twice, the second engineer did not experience any sea waves washing over the port quarter bunkering station area.

4.8 At about 0745 hours, the second engineer assigned the fitter and the engine cadet to clean the oil stain. The fitter questioned about the assignment viewing that the weather was bad and waves might wash over the deck raising safety concerns. The second engineer explained that he had checked the sea condition twice a moment ago and he did not experience any sea waves washing on deck. Nevertheless, he reminded the fitter and the engine cadet to keep monitoring the sea condition and pay attention on safety when working on deck. Following the second engineer's instruction, the fitter and the engine cadet went to prepare materials for oil cleaning.

Figure 3 –the toppled fuel oil sampling bottle and the sketch map of the oil stain location on the main deck

4.9 Meanwhile, the chief officer handed over the bridge watch to third officer and left the bridge for breakfast. At the handover briefing, he did not inform the third officer of the oil stain found on the main deck.

4.10 At about 0800 hours, *the vessel* was still maintaining her course of 032° against the gale wind. The sea condition was very rough with heavy swell. Sea waves washed over the main deck from the portside at about eleven o'clock direction. The carpenter went to the main deck from the port side accommodation entrance weather-tight door for taking sounding of ballast water tanks and cargo hold bilges. He felt that the wind was strong and saw sea waves washing over forward area of cargo hold No.2 only. After taking sounding of the port side ballast water tank No.5 and the bilge of cargo hold No.5, he went to the starboard side.

4.11 At about 0815 hours, when the carpenter shifted to starboard side aft of cargo hold No.5, he heard a violent wind noise from the port side and noticed that *the vessel* was shaking. A very high sea wave washed over the deck from the middle of cargo hold No.5 to afterward deck. The carpenter was fully soaked by sea water due to waves flushing over him from the port side.

4.12 Almost at the same moment, the fitter opened the port side accommodation entrance weather-tight door and stood on the main deck trying to close the door from outside. The engine cadet, also on the main deck, was behind him carrying a bucket with cleaning materials inside. Suddenly, a heavy sea wave washed over the aft main deck with large amount of sea water flooded the deck area around the doorway. The fitter and the engine cadet were floated by the sea water flushing on the deck. The fitter tried to keep his balance by holding the weather-tight door's doorknob and a steel bar of a short ladder which was fitted on the bulkhead behind the door, but in vain. Both the fitter and the engine cadet were smashed immediately by another heavy sea wave and lost their balance. The fitter and the engine cadet hit heavily on deck fixtures. Their helmets and safety shoes were washed away. They were injured seriously and were unconscious. (Figure 4)

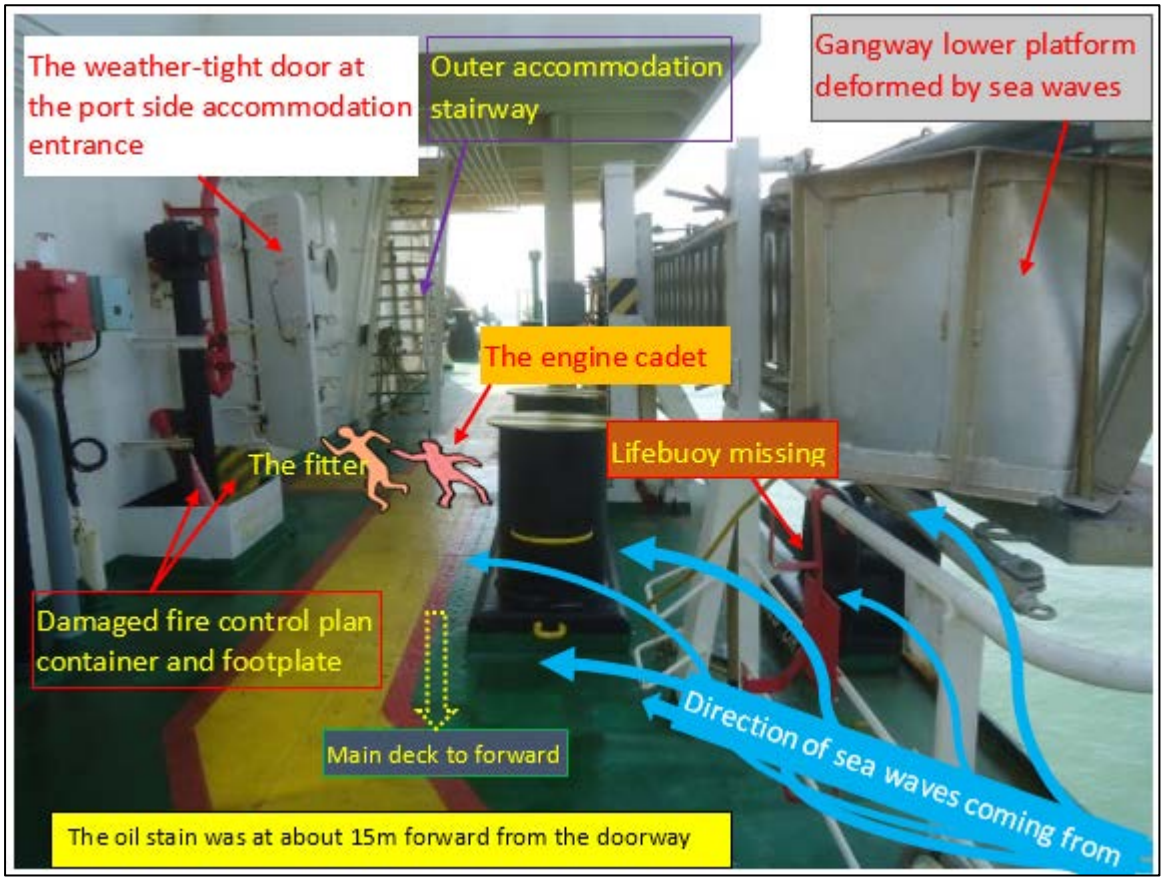

Figure 4 -the sketch showing the scene of the incident

4.13 When the fitter regained his consciousness, he found that he and the engine cadet were lying on the main deck close to the lower end of the outer accommodation stairway with their heads against it. The fitter could not stand up or move.

4.14 When the carpenter entered the accommodation area through the starboard side accommodation entrance weather-tight door to change his wetted suits, he found that the port side accommodation entrance weather-tight door was opened. He went to close the door, but discovered that the fitter and the engine cadet were seriously injured lying on the main deck. The fitter was groaning painfully. The engine cadet was bleeding and groaning weakly.

4.15 The carpenter immediately called other crew members for help to rescue the fitter and the engine cadet. At about 0820 hours, an emergency broadcast through public address system was made to alert all crew members regarding the accident and rescue operation was activated. The master went to the bridge immediately.

4.16 At about 0822 hours, the fitter and the engine cadet were shifted to ship's hospital for first aid treatment. It was found that the engine cadet bleeding with deep cuts at the vertex of his head. His right chest was wounded and swollen. There were also wounds on various parts of his body. The fitter felt painful on his hips and buttock and was unable to move.

4.17 The master reported the accident and the situation to the company. Guidance was received from the company and the master also called the Radio Medical Assistant provider-Comité International Radio-Maritime (CIRM) Italia via telephone for emergency medical guidance. The master was then advised that there was no helicopter service available in Vietnam. *The vessel* diverted her course immediately to the nearest port of Vung Tau, Vietnam at full speed in order to evacuate the two victims for shore emergency medical treatment.

4.18 At about 1000 hours on 29 February 2016, the master declared the death of the engine cadet. The condition of the fitter was stable. The fitter was transferred to shore after *the vessel* arrived at the Vung Tau anchorage at about 1230 hours on 1 March 2016, and admitted to FV hospital of Vung Tau, Vietnam at about 1755 hours on the same day. The fitter recovered after about one-month's medical treatment.

5. Analysis

Ship certificates and manning of *the vessel*

5.1 *The vessel* was manned by 22 Chinese crew members including the master and met the minimum safe manning requirements.

5.2 The master, chief engineer, second engineer and the fitter had served on board cargo ships on their respective posts for more than five years. They possessed valid Certificates of Competency and valid licenses appropriate to their capacity respectively. All of them joined *the vessel* more than three months before the accident happened.

5.3 The engine cadet had no seagoing experience before he joined *the vessel* on 20 November 2015.

5.4 All the statutory certificates of *the vessel* were valid at the time of the accident.

Working hours and alcohol abuse

5.5 Both of the fitter and the engine cadet took day work only. The accident occurred at the commencement of the day work after a night break. There was no evidence to show that either the fitter, the engine cadet or any other crew members suffered from fatigue at work.

5.6 As the master reported, there was neither indication nor evidence of alcohol/drug abuse of the fitter and the engine cadet.

Weather and sea conditions

5.7 The vessel had encountered rough sea after she entered South China Sea on 26 February 2016. The master, officers and crew members clearly noted that the weather condition would get even worse on the vessel's forthcoming passage as revealed by Navtex weather forecast received onboard one day before the accident happened. The forecasted sea waves would be 7 to 10 meters high which were much higher than the freeboard 5.2 meters of the vessel. The master and second officer had tried to improve *the vessel*'s rolling and pitching condition by altering course and reducing her speed before the accident happened, but in vain.

5.8 At the time of the accident, the wind was north-northeast of force 8, gusts 9 on the Beaufort scale. Sea condition was very rough with northeast sea and swell at about 4.5 meters height, with extremes about 7 to 9 meters occasionally. (Figure 2)

5.9 *The vessel* was sailing on course of 032° as per passage plan, against the wind and seas. She rolled from side to side covering a range of about 20 to 40 degrees and pitched heavily. Sea waves were washing on deck from portside forward. When the fitter and the engine cadet passed the port side accommodation entrance weather-tight door and stepped on the main deck, they were knocked heavily against deck fixtures by sudden heavy sea waves which washed over them. The sudden extreme heavy sea waves caused the serious injuries to the fitter and the engine cadet. They had even no time to react to escape when the unexpected extremely heavy sea waves suddenly attacked.

Actions to be taken under adverse/heavy weather conditions

5.10 In accordance with Hong Kong legislation Chapter 478M (Merchant Shipping (Seafarers) (Code of Safe Working Practices) Regulation), all seagoing ships, in which a master and more than 14 other seafarers are employed, are required to carry not less than one copy of "Code of Safe Working Practices for Merchant Seamen" (the Code). The purpose of the Code is to provide guidance on safe working practices to seafarers in order to secure the safety of ships and those on them. The safe working practices given by the Code with regard to the safe movement under adverse weather are:

- "no seafarers should be on deck in conditions that the master considers adverse weather unless it is considered necessary for the safety of the ship, passengers and crew, or the safety of life at sea. Where possible, work should be delayed until conditions have improved, e.g. until daylight, or until the port of call"; and
- "work on deck during adverse weather should be authorized by the master and the bridge watch should be informed. A risk assessment should be undertaken, and a permit to work and a company checklist for work on deck in heavy weather completed."

5.11 The company had also established a "Heavy Weather Guidelines" (the Guidelines) under MMS/Health & Safety Manual Section 9.0 on the same principle as a shipboard safety procedure to ensure the safety of the work under adverse weather. Relevant sections of the Guidelines are:

"a. In extreme rough weather conditions, no one shall go on deck without the Master's explicit orders.

b. Lifelines, as appropriate, shall be rigged prior onset of bad weather."

…

" e. Following points shall be adhered to:

…

ii. Both Master and Chief Officer must make a very careful evaluation of the situation, before sending people on deck. The above evaluation shall include the urgency and necessity of the work to be done, in relation to the safety of the vessel.

…

UNDER NO CIRCUMSTANCES SHALL A SINGLE PERSON EVER BE SENT OUT ALONE ON DECK IN ROUGH WEATHER.

…

xv. It must be appreciated that waves may crash on any part of the deck and caution must be exercised even while working in the after part of the vessel."

5.12 According to the shipboard safety procedure, the checklist "NVG17 – Navigation in Adverse Weather" was completed by officers on watch and necessary measures were taken accordingly to ensure safety of navigation, except rigging of deck lifelines. All crew members were reminded to pay attention to the "forthcoming heavy weather" and keep all loose parts properly secured.

Actions taken by master and senior officers

5.13 Despite the master and officers were well aware of the heavy weather condition and with the checklist completed, they failed to follow the safety procedures. Contrastingly, being a senior officer with years of sea experience, the second engineer himself went out to open deck alone twice under adverse weather condition without taking any precaution measures. Also being a senior officer with years of sea experience, the chief officer assigned the carpenter to go out to open deck alone to perform duty under adverse weather condition.

5.14 Further to the above, both the second engineer and the chief officer did not report the oil stain case to the master and the chief engineer in accordance with the established shipboard safety procedure. It was obvious that the second engineer and the chief officer showed no respect at all to the shipboard Safety Management System.

Implementation of Shipboard Safety Management System

5.15 Further to paragraph 5.14, *the vessel* received a Hong Kong Merchant Shipping

Information Note (MSIN[1]) No. 18/2016 on 23 February 2016. The MSIN addressed lessons learnt from a fatal accident about closing weather-tight door at rough sea. The ship's record indicated that all crew members had studied the case in the shipboard safety meeting on 24 February 2016 and a specific training on safe working in heavy weather had been conducted on 27 February 2016. However, this similar accident occurred on board *the vessel* just two days later.

5.16 Quoted from the onboard training records (Appendix I) of *the vessel* between the end of 2015 and early of 2016, two training sessions for adverse weather safety, i.e. the training of "Navigation under adverse weather" and "Heavy Weather Guidelines" were conducted. Additionally, those two training sessions also included various other training elements with respect to the procedures, policies, guidelines of the Safety Management System and regulations of SOLAS convention. With such a wide scope of elements to be addressed in each session, however, each training was completed in one hour. The training effectiveness was in doubt and furthermore, there was no evidence to show any assessment, feedback or comments of the training sessions being carried out or recorded in accordance with the established procedures.

5.17 The shipboard "Bunker delivery, sampling & survey procedure" stipulated that a bunker sample "is to be retained on board in a safe place outside the accommodation (such as the protected paint locker)". The bunker oil sampling bottle of *the vessel* was left on open deck near the bunkering station for more than two weeks. The fuel oil sampling bottle had not been properly stored in an appropriate location in accordance with the shipboard procedure.

5.18 Given the discussion presented from paragraphs 5.13 to 5.17, it was concluded that the implementation of the shipboard Safety Management System was a total failure.

[1] MSIN: A notice regarding marine safety information which has been issued by Marine Department to all Hong Kong registered ships. It is published for public and can be accessed through: http://www.mardep.gov.hk/en/msnote/msin.html.

6. Conclusions

6.1 On 29 February 2016, *the vessel* was sailing in South China Sea under adverse weather and sea conditions. At about 0815 hours, when a fitter and an engine cadet went to the port quarter deck from the accommodation block to clean oil stain on deck, they were smashed by heavy waves. The engine cadet died in two hours later due to serious injury on his head. The fitter was safely evacuated and admitted to shore hospital in the nearest port Vung Tau, Vietnam the next day. He recovered after about one-month's medical treatment.

6.2 The investigation had identified the contributory factor to this incident that the senior officers of both the deck and engine departments of *the vessel* had failed to discharge their diligent duties to carry out proper risk assessment before assigning crew to work on open deck under heavy weather and sea conditions.

6.3 The investigation also revealed that the implementation of the shipboard Safety Management System was a total failure.

7. Recommendations

7.1 The ship owner / ship management company of *the vessel* should arrange to carry out an additional audit in order to verify the effectiveness of the implementation of the Safety Management System on board, in particular of the followings:-

(a) when moving or working on open deck under adverse weather condition, the requirements of the shipboard safety procedures and the "Code of Safe Working Practices for Merchant Seamen" must be strictly followed. Particularly, a risk assessment should be undertaken;

(b) the effectiveness of shipboard training must be improved and verified/monitored; and

(c) bunker sample must be retained properly in accordance with the shipboard procedure of handling bunker samples.

7.2 The Ship Safety Branch of the Marine Department should consider to carry out a company audit to the ship management company in order to verify that the company has the capability to implement their Safety Management System effectively.

7.3 A Hong Kong Merchant Shipping Information Notice (MSIN) is to be issued to promulgate the lessons learnt from the accident.

8. Submission

8.1 Copies of the draft report had been sent to the following parties for their comments:

a） the ship owner / ship management company and the master, chief officer, chief engineer and second engineer of *the vessel*; and

b） the Ship Safety Branch of the Marine Department.

8.2 During the consultation, there was no comment received from them.

Appendix I - Quoted from records of on board training

SFT 26 – RECORD OF ON BOARD TRAINING 船舶培训记录表

Ships Name 船名: HONY FUTURE call sign 呼号: VRKM7

Date/time 日期/时间	Details of Training Carried out 培训课题描述(时间、地点、内容或过程简述，评估及反馈，改进意见等)	Attendees 受训人员（注明受训人员职务姓名，也可附上签字页）	Trainer 培训人	Comments 注述
21/NOV/2015 1600-1700	SPM-SHIP PROCEDURES,NAVIGATION UNDER ADVERSE WEATHER. HSM-HEAVE WEATHER GUIDELINE HSM-HEALTH SAFETY MUNAL : TRAINING THE PROCEDURES OF ENTRY INTO CLOSED SPACE	ALL CREW	Master	SATISFACTORY
21/NOV/2015 1600-1700	SSP , SHIP SECURITY LEVEL , DP, CSO, SSO' COMPANY POLICY, GANGWAY WATCH ,TERRORIST/ANTI-PIRACY.DAVIT-LAUNCHED LIFERAFT. Operational spill Technical breakdown Serious injury / medical emergency	ALL CREW	MASTER & C/E & C/O	SATISFACTORY
21/NOV/2015 1600-1700	LEARNING THE ECM SECTION 6.0-9.0, SOLAS CHAPTER 3.19, LR ONBOARD TRAINING DRILLS AND INSPECTION OF FIRE APPLIANCES&LIFE-SAVING APPLIANCES.	ALL CREW	MASTER & C/E & C/O &3/O	SATISFACTORY
21/NOV/2015 1600-1700	FAMILIARIZE WITH THE USE OF FIRE FIGHTING EQUIPMENTS,AND THE PROCEDURES OF FIREMAN ENTERING SPOTS ON FIRE	ALL CREW	3/O	SATISFACTORY

For adverse/heavy weather

Record of on board training conducted on 21 November 2015

Signed _____ Master

SFT 26 – RECORD OF ON BOARD TRAINING 船舶培训记录表

Ships Name 船名: HONY FUTURE call sign 呼号: VRKM7

Date/time 日期/时间	Details of Training Carried out 培训课题描述(时间、地点、内容或过程简述，评估及反馈，改进意见等)	Attendees 受训人员（注明受训人员职务姓名，也可附上签字页）	Trainer 培训人	Comments 注述
17/JAN/2016 1500-1600	SPM-SHIP PROCEDURES,NAVIGATION UNDER ADVERSE WEATHER. HSM-HEAVE WEATHER GUIDELINE HSM-HEALTH SAFETY MUNAL : TRAINING THE PROCEDURES OF ENTRY INTO CLOSED SPACE	ALL CREW	Master	SATISFACTORY
17/JAN/2016 1500-1600	SSP , SHIP SECURITY LEVEL , DP, CSO, SSO' COMPANY POLICY, GANGWAY WATCH ,TERRORIST/ANTI-PIRACY.DAVIT-LAUNCHED LIFERAFT. Operational spill Technical breakdown Serious injury / medical emergency	ALL CREW	MASTER & C/E & C/O	SATISFACTORY
17/JAN/2016 1500-1600	LEARNING THE ECM SECTION 6.0-9.0, SOLAS CHAPTER 3.19, LR ONBOARD TRAINING DRILLS AND INSPECTION OF FIRE APPLIANCES&LIFE-SAVING APPLIANCES.	ALL CREW	MASTER & C/E & C/O &3/O	SATISFACTORY
17/JAN/2016 1500-1600	FAMILIARIZE WITH THE USE OF FIRE FIGHTING EQUIPMENTS,AND THE PROCEDURES OF FIREMAN ENTERING SPOTS ON FIRE	ALL CREW	3/O	SATISFACTORY

For adverse/heavy weather

Record of on board training conducted on 17 January 2016

Signed _____ Master