Report of investigation into the fatal accident on board Hong Kong registered Bulk Carrier *"Grand Ocean"* on 26 June 2013

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

19-09-2014

Purpose of Investigation

This incident is investigated in accordance with the Code of the International Standards and Recommended Practices for a Safety Investigation into a Marine Casualty or Marine Incident (the Casualty Investigation Code) adopted by IMO Resolution MSC 255(84).

The purpose of this investigation conducted by the Marine Accident Investigation and Shipping Security Policy Branch (MAISSPB) of Marine Department, in pursuant to the Merchant Shipping Ordinance Cap. 281, the Shipping and Port Control Ordinance (Cap. 313), or the Merchant Shipping (Local Vessels) Ordinance (Cap. 548), as appropriate, 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.

The conclusions drawn in this report aim to identify the different factors contributing to the incident. They are 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

1.1 At about 0950 hours local time on 26 June 2013, a fatal accident happened on board a Hong Kong registered bulk carrier "*Grand Ocean*", when she was preparing to anchor at the pilot station of Recalada, Argentina.

1.2 The fitter was injured by an anchor chain while he was entering into the hawse pipe for the inspection of the anchor which was stuck inside there. The crew members rescued him from the hawse pipe immediately, and applied first aid to him in the ship's hospital.

1.3 The master of the *Vessel* called the shore agent for assistance. The fitter had been transferred by helicopter to the hospital, but was certified dead later.

1.4 Investigation into the accident found that the most probable causes of the accident were:

- The fitter went into a hawse pipe for freeing the anchor and chain; and
- The sudden movement of the anchor chain crushed the fitter in the hawse pipe. The fitter was badly injured.

1.5 It was unsafe to let the fitter to go into the hawse pipe to carry out the work, the Safety Management System failed to provide safe instruction to the fitter to carry out the job.

2. Description of the *Vessel*

2.1 Particulars of Bulk Carrier "*Grand Ocean*"

Port of Registry	:	Hong Kong
IMO No.	:	9609158
Call Sign	:	VRJX7
Classification Society	:	Nippon Kaiji Kyokai
Type of Ship	:	Bulk Carrier
Year of Built	:	2011
Ship Manager	:	MSI Ship Management (Qingdao) Co., Ltd.
Length	:	229.0 metres
Breadth	:	32.26 metres
Depth	:	20.2 metres
Gross Tonnage	:	45,271
Net Tonnage	:	26,966
Dead Weight	:	81,627 tonnes
Engine Power	:	10,260 kW
No. of Crew	:	22

Bulk Carrier "*Grand Ocean*" Berthed at Shanghai

"*Grand Ocean*" (hereinafter referred as the *Vessel*), is a seven-holds bulk carrier. The *Vessel* was keel laid on 17 February 2011 and built in CSSC GUANGZHOU LONGXUE Shipyard. The *Vessel* is powered by a MAN B&W5S60MC-C-C8-T11 marine diesel engine, capable of developing power of 10,260 kW. At the time of incident, the *Vessel* was manned by Chinese crew members.

3. Sources of Evidence

3.1 The Master and crew of the *Vessel.*

3.2 Investigation report of MSI Ship Management (Qingdao) Co., Ltd.

4. Outline of Events

All times are local time GMT - 4

4.1 On 23 May 2013, *Grand Ocean* (the *Vessel*) departed from the port of Singapore, and sailed to the port of Rosario at Argentina. At about 08:30 on 26 June 2013, the *Vessel* arrived at the pilot station of the port of Recalada in Argentina, and was instructed by the pilot station to proceed to anchor at the position of lat. 35°10.7'S, long. 055°17.9W.

4.2 The master called the chief officer of the *Vessel* to standby at anchor station on forecastle deck (see Fig.1) to prepare for lowering the starboard anchor. However, the chief officer found it had been stuck in the hawse pipe. The chief officer instructed the bosun to operate the windlass to tighten and release alternately the anchor chain. After several times of the operation, the anchor still remained in the hawse pipe.

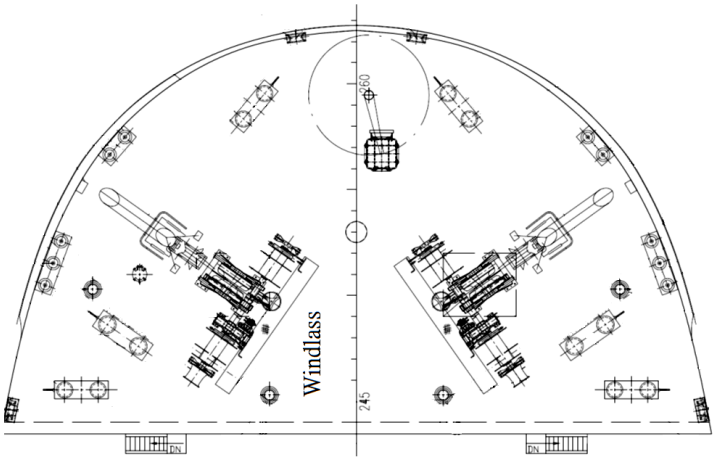

Fig.1 Forecastle Deck

4.3 The chief officer informed the master about the stuck starboard anchor in the hawse pipe. The master instructed the chief officer to prepare to lower the port anchor. When the chief officer attempted to lower the port anchor, he also found that the port anchor was also stuck and fasten in the hawse pipe.

4.4 At the same time, the master sought the chief engineer's assistance to resolve the problem. When the chief engineer reached the forecastle deck, he and the deck crew tried to put a sling wire to fix the palm of the starboard anchor. Then, they operated the winch to slack and tighten the sling wire alternately and repeatedly, trying to release the anchor, but in vain.

4.5 The chief engineer asked the fitter to get a steel pipe and a hammer from the workshop in the engine room. After obtaining the two pieces of tool, they used them to try to ease the anchors on deck but unsuccessful. The fitter then entered into the hawse pipe to check the condition of the anchor. He came back to the deck and informed the chief engineer

that the anchor seemed to have loosened slightly.

4.6 Although the chief engineer and fitter continued to use the hammer and steel pipe to hit the head of anchor, the anchor was still stuck in the hawse pipe. At the same time, the master also arrived at the forecastle deck and instructed the chief officer and the bosun to tighten and slacken the chain of the port anchor alternately by operation of the windlass.

4.7 After several attempts, the port anchor was free to release. The chief officer and the bosun operated the windlass to prepare to drop the anchor. The master went back to the wheelhouse for control the *Vessel*. The chief engineer, the fitter and other crews continued to try to loosen the starboard anchor.

4.8 After trying to release the starboard anchor several times but failed, the fitter entered into the hawse pipe again. Before the fitter went into hawse pipe to check the conditions of the anchor, the chain stopper and brake had been engaged. However, the section between the stopper and the anchor was hanging loosely. (see Fig.2).

4.9 Unfortunately, the anchor was jerk suddenly and pulled the anchor chain. Consequently, the fitter crushed between the chain and the wall of the hawse pipe. He was injured and in unconscious condition. The chief officer rescued the injured fitter from the hawse pipe immediately.

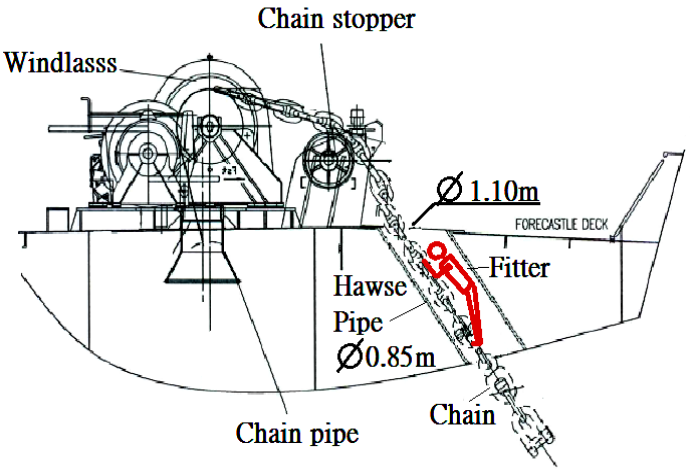

Fig.2

4.10 The fitter was unconscious. First aid was applied. The chief officer then reported the case to the master.

4.11 The injured fitter was escorted to the ship's hospital, and assisted respiration was administered by means of oxygen supply. At 1000, the master contacted ship owner /manager/local agent/Montevideo control/maritime telemedical assistance service/coast guard for urgent medical assistance and requested them to arrange a helicopter to take

the injured fitter to the hospital.

4.12 At 1030, the fitter was found to have lost breathing/pulse/heartbeat and his pupils had no response to flash, but the oxygen therapy was continued. No medication was given owing to unascertained internal injury conditions.

4.13 At 1150, a helicopter with doctor arrived and landed on the ship. The doctor checked the condition of injured fitter. At 1207, the injured fitter was taken to the hospital by the helicopter. Unfortunately, the fitter was certified dead in hospital.

5. Analysis of Evidence

Certification and experience of the officers

5.1 The master held a valid Certificate of Competency as Master issued by the Shanghai Maritime Safety Administration of the People's Republic of China and a Class 1 Licence (Deck Officer) issued by the Hong Kong Marine Department. He had served as a master on board ships since December 2009 and acted as master for about 3 years and 7 months before he joined the *Vessel* on 11 February 2013.

5.2 The chief engineer held a valid Certificate of Competency as Chief Engineer issued by the Shanghai Maritime Safety Administration of the People's Republic of China and a Class 1 Licence (Marine Engineer Officer) issued by the Hong Kong Marine Department. He had served as a chief engineer on board ships since March 2006 and worked on a number of general cargo ships, including log carriers for about 7 years and 3 months. He joined the *Vessel* on 10 October 2012.

5.3 The chief officer held a valid Certificate of Competency as chief officer issued by the Shanghai Maritime Safety Administration of the People's Republic of China and a Class 2 Licence (Deck Officer) issued by the Hong Kong Marine Department. He had served as a chief officer on board ships since December 2009 and worked on a number of general cargo ships, including log carriers for about 4 years and 6 months. He joined the *Vessel* on 11 February 2013.

5.4 The fitter had about twelve years of sea going experience and acted as a fitter since December 2010. He obtained his Able Seaman Certificate issued by Shanghai Maritime Safety Administration, China on 16 April 2001. He had worked as a fitter on board the *Vessel* since October 2012.

5.5 All of them had at least several months of working experience on board the *Vessel*, and should be familiar with the operating condition of the *Vessel*.

Physical condition of the fitter

5.6 The fitter passed medical examination before joining the *Vessel* and he just went to work at the beginning of the day. Hence, poor health state and fatigue after long working hours of the fitter did not contribute to the accident.

Forecastle deck of the *Vessel*

5.7 There are two anchor mechanisms on the forecastle deck of the *Vessel*, each consisting of a windlass, a roller-type chain stopper, anchor chain (Ø84mm, Port chain in 227.5m length, starboard chain 330m in length) and a high holding anchor (8775kg in weight).

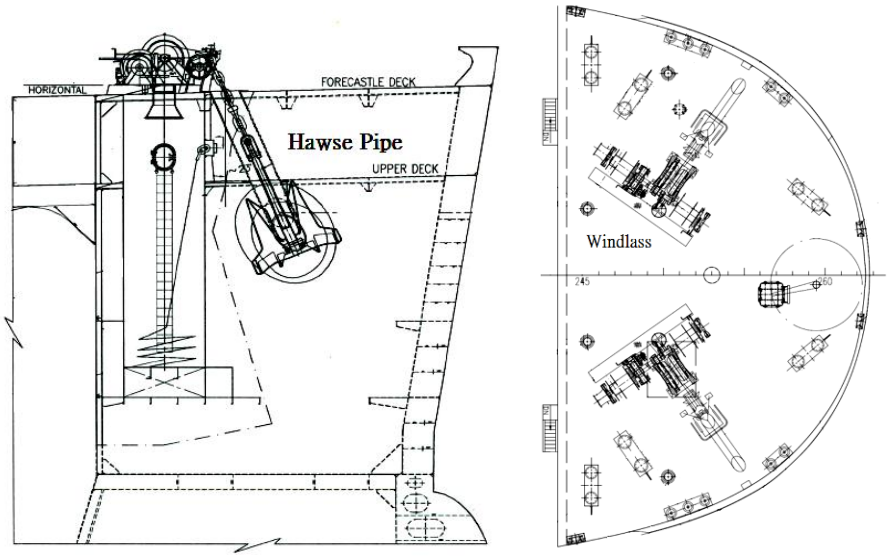

Fig. 3 General arrangement of *forecastle deck of the Vessel*

5.8 The length of tubular hawse pipe is 6.1m with 0.85m internal diameter. The hawse pipe consisted of pre-fabricated castings which were welded to the shell and deck to prevent chafing on anchor chain. Additional stiffening in way of the hawse pipe was required at the side shell.

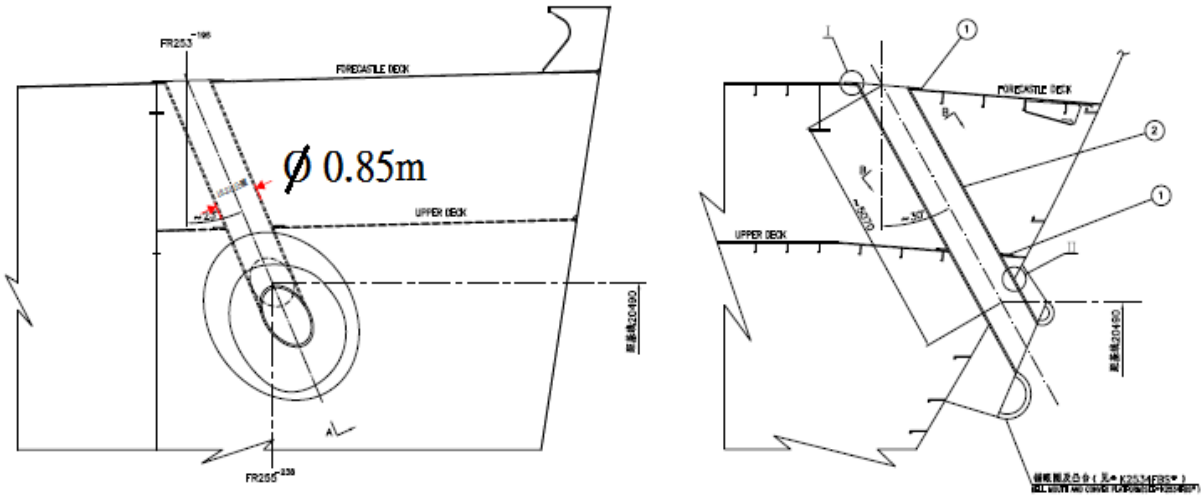

Fig. 4 Hawse pipe structure drawing

The weather condition

5.9 On 26 June 2013, the weather condition was good, wind North -West force 5 and no rain. The swell was about 1.0 meter in North-West direction. Condition of weather did not considered as contributing factor to the accident.

The autopsy report

5.10 According to the autopsy report issued by the Montevideo Municipality Social Development Department Health Division Public Health Service, the direct cause of

death was cranial fracture and multiple thoracic fractures. The injuries were consistent with crushing by heavy object.

The probable causes of the accident

5.11 Before the fitter entered into the hawse pipe, the senior officers on the scene had assessed the risk of the anchor falling down, and they had therefore locked the anchor chain by engaging the brake of the windlass and the chain-stopper. However, they failed to identify the possibility of a jerk of the anchor and its chain due to a loose hanging.

5.12 When the fitter entered into hawse pipe, with internal diameter only 0.85m, his movement was very limited. Thus, the fitter could not manage to dodge the jerk. Even though the anchor chain moved a short distance, the fitter would suffer from serious injuries in such a narrow space.

Safety management system

5.13 It was unsafe to let a person entered into the hawse pipe at sea. Although the crew members had used the stopper and windlass to lock the anchor chain, it would not guarantee to stop any movement of the anchor and its chain when the vessel afloat at sea.

5.14 One of the objectives in the safety management is to assess all identified risks and establish safeguards for the prevention of personal injury at works. The working team did not conduct any risk assessment prior allowing the fitter to work in the narrow space of hawse pipe with anchor and chain stuck inside.

6. Conclusions

6.1 At about 0950 hours local time on 26 June 2013, a fatal accident happened on board a Hong Kong registered bulk carrier "*Grand Ocean*", when she was preparing to anchor at the pilot station of Recalada, Argentina.

6.2 The fitter was injured by an anchor chain while he was entering into the hawse pipe for the inspection of the anchor which was stuck inside there. The crew members rescued him from the hawse pipe immediately, and applied first aid to him in the ship's hospital.

6.3 The master of the *Vessel* called the shore agent for assistance. The fitter had been transferred by helicopter to the hospital, but was certified dead later.

6.4 Investigation into the accident found that the most probable causes of the accident were:

- The fitter went into a hawse pipe for freeing anchor and chain; and
- The sudden movement of the anchor chain crushed the fitter in the hawse pipe. The fitter was badly injured.

6.5 It was unsafe to work in the hawse pipe with the anchor and chain stuck inside during voyage. Obviously the working team failed to conduct a risk assessment as required by ISM Code prior the work with potential hazards.

7. Recommendations

7.1 A copy of this report should be sent to the ship management company and the master of the *Vessel* advising them the findings of this accident.

7.2 The Company is required to critically review the adequacy of relevant procedures and guidelines in the Safety Management System in order to ensure:

- proper inspections and maintenance of ship equipment are carried out at all time;
- shipboard personnel are trained systematically through regular drills and exercises to enhance their competence in handling of emergency situations;
- internal audits and management reviews are conducted systematically to reveal system deficiencies for improvement in earlier stages.
- a comprehensive risk assessment to be conducted in identifying potential risks, establishing safe practices, taking appropriate measures to safeguard the life of personnel and to stop work if needed.

7.3 A copy of this report should be sent to the Shipping Division of Marine Department for their information and follow-up actions with the ship management company, if deem necessary.

7.4 A Merchant Shipping Information Note (MSIN) should be issued to promulgate the lessons learnt from this accident.

8. Submissions

8.1 In the event that the conduct of any person or organization is commented in an accident investigation report, it is the policy of the Hong Kong Marine Department that a copy of the draft report is given to that person or organization so that they have the opportunity to rebut the criticism or offer evidence not previously available to the investigating officer.

8.2 The draft report was forwarded to the following:
MSI SHIP MANAGEMENT (QINGDAO) Company Limited; and
Master of the *Vessel*.

8.3 The draft reports, in its entirety, have been sent to the ship management company and master of the *Vessel* for their comments. Nil reply or comment was received from them by the end of the consultation.