



Report of investigation
into the fatal accident of
a stevedore on board
m.v. "Aladdin Dream"
at Western Anchorage No.3
on 7 December 2007



Purpose of Investigation

This incident is investigated, and published in accordance with the IMO Code for the Investigation of Marine Casualties and Incidents promulgated under IMO Assembly Resolution A.849(20). 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.

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 An industrial accident happened onboard the Hong Kong registered ro-ro cargo ship "*Aladdin Dream*" at Western Anchorage No.3 on 7 December 2007. While unloading bulky granite blocks in the cargo hold, a stevedore was crushed by a granite block and sustained fatal injuries.
- 1.2 The investigation revealed that the accident was caused by the failure to take adequate safety measures to prevent sudden shift of bulky cargo in cargo handling.
- 1.3 The following contributing factors were identified in the investigation:
 - a) dunnage had not been placed and the cargo was not properly stowed at the loading port; and
 - b) the stevedores did not have adequate knowledge of the risks in handling bulky and heavy granite blocks.

2. Description of the Vessels Involved

2.1 "Aladdin Dream"

Port of Registry	:	Hong Kong
IMO No.	:	8811699
Official No.	:	HK- 1515
Call Sign:	:	VRAY7
Classification Society	:	Bureau Veritas
Type of Ship	:	Ro-Ro Cargo Ship
Year of Built	:	1989
Built At	:	Warnewerft Warnemuende, Germany
Ship Manager	:	Eurasia International (China) Limited Partnership
Length	:	162.03 metres
Breadth	:	23.05 metres
Depth	:	13.70 metres
Gross Tonnage	:	16,075
Net Tonnage	:	8,022
Engine Power	:	9,540 kW
No. of Crew	:	31



Fig. 1: M.V. "Aladdin Dream"

"Aladdin Dream" (hereinafter referred as the "OGV") (see Fig.1), is a four-hold ro-ro cargo ship. The OGV is powered by a Sulzer 6RTA58 marine diesel engine, capable of developing engine power of 9,540 kW.

2.2 "Hoi Lung No.988"

Certificate of Ownership No.:	B22342Y
Certificate Issuing Authority :	Hong Kong Marine Department
Type of Vessel	: Class II, Dumb Lighter, Cat.B
Year of Built	: 1987
Built At	: Wuzhou Shipyard, Guangxi
Owner	: Lung Kee Ship Management Limited
Length	: 39.22 metres
Breadth	: 15.51 metres
Depth	: 4.58 metres
Gross Tonnage	: 1,144.39
Net Tonnage	: 801.07
Engine Power	: N.A.



Fig. 2: Dumb Lighter "Hoi Lung No.988"

"Hoi Lung No.988" (hereinafter referred as the "Lighter") (see Fig.2), is a locally licensed single-hold dumb steel lighter. It is fitted with a derrick crane of safe working load ranging from 7 to 60 tons to facilitate cargo handling operations. It usually engages in transporting general cargo in Hong Kong waters.

3. Sources of Evidence

- a) Master of the *OGV*
- b) Crane operator of the *Lighter*
- c) The Chief Foreman and stevedoring workers of Lung Kee Stevedoring Heavy Transport Company Limited
- d) Weather report from the Hong Kong Observatory
- e) Autopsy report of the deceased

4. Outline of Events

- 4.1 On the morning of 7 December 2007, *the OGV* was anchored at Western Anchorage No.3. Two gangs of stevedores of Lung Kee Stevedoring Heavy Transport Company Limited led by the Chief Foreman came on board for discharging cargo. Each gang of stevedores was led by a ganger (i.e., the team leader).
- 4.2 The cargo handling work was commenced at about 0800. One gang of stevedores led by the Chief Foreman was assigned to work in No.3 cargo hold of the *OGV*.
- 4.3 Another gang of stevedores was assigned to No.4 cargo hold to unload granite blocks. The *Lighter* was alongside at the starboard side of the No.4 cargo hold to provide craneage.
- 4.4 There were about 3 to 4 tiers of granite blocks stowed in a disorder manner in the No.4 cargo hold. Four stevedores led by a ganger were to engage two pieces of slings, which were lowered by the derrick crane of the *Lighter*, to a granite block (granite block “A”) of about 25 tons located near the aft bulkhead of the hold. There was a signaller on the deck of *OGV* to co-ordinate the lifting operation since the crane operator could not have an unobstructed view inside the cargo hold.
- 4.5 To lift the granite block “A”, one of the stevedores passed a sling through the gap between the block and the bulkhead. The ganger climbed down into a space underneath the granite block to catch the sling and drag it around the bottom of the block towards the forward side. Another two stevedores were stand-by at the forward side of the granite block to pick up the sling.
- 4.6 At about 0820, the granite block “A” suddenly started to slide towards starboard side in the hold. The stevedores shouted to escape. Within seconds the granite block crushed the ganger’s head.
- 4.7 Then a stevedore tried to reach him through the space between the granite blocks and found that he was trapped (see Figs.3, 4 & 5). He shouted for help and the Police was informed.
- 4.8 The ganger was found to show no sign of life in the hold by the rescue team from the Fire Services Department.

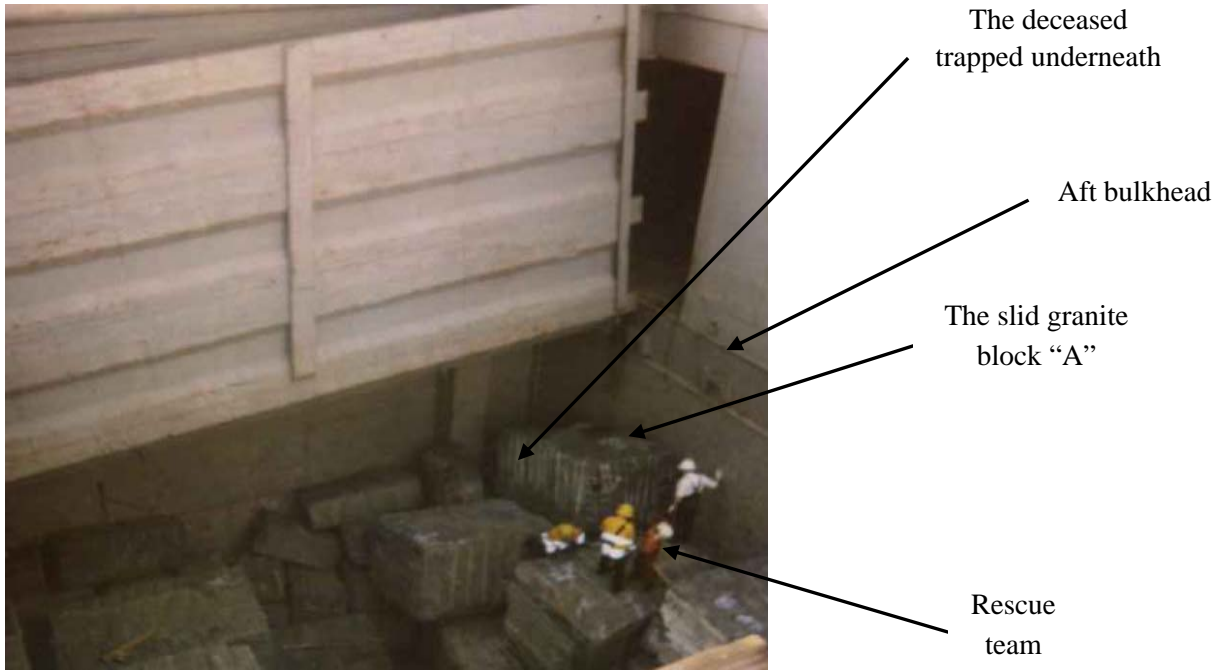


Fig. 3: The Slid Granite Block "A" in No.4 Cargo Hold on "Aladdin Dream"

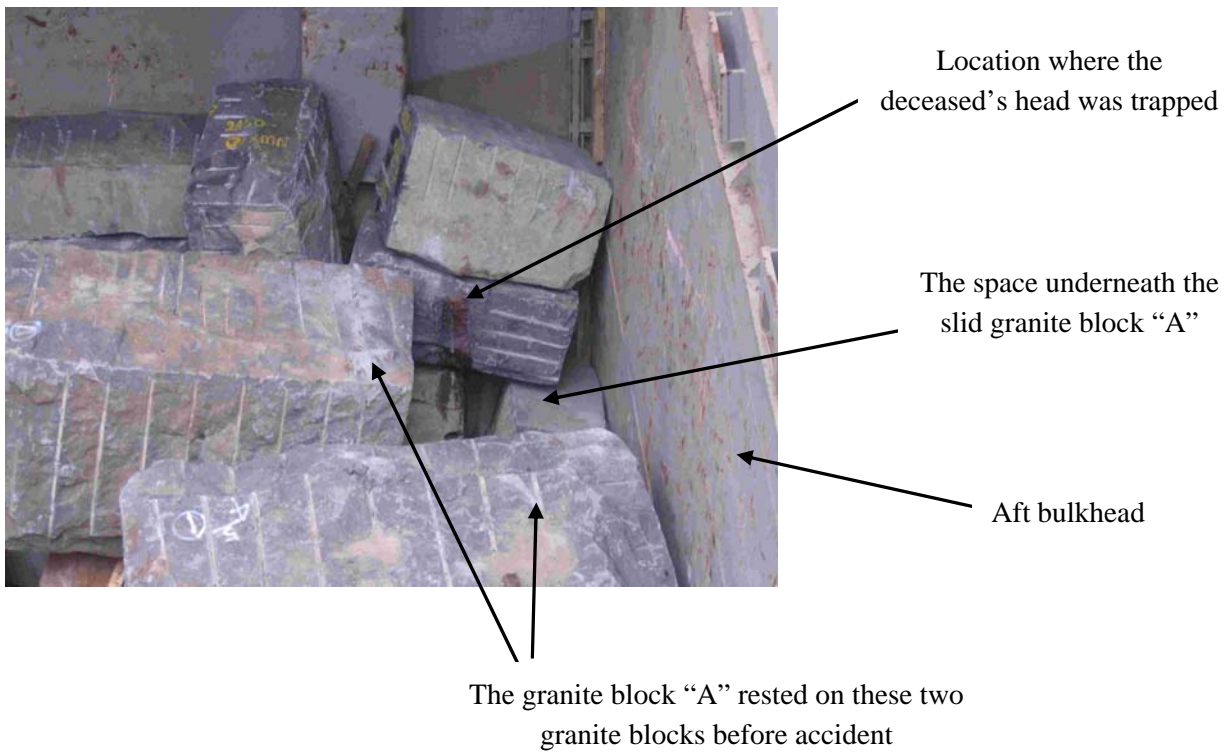


Fig. 4: In No.4 Cargo Hold on "Aladdin Dream" (the Slid Granite Block "A" removed)



Fig. 5: The Granite Block “A” which Slid in No.4 Cargo Hold on "Aladdin Dream"

5. Analysis of Evidence

Working experience & training

- 5.1 The Chief Foreman, as a person in charge of works, had more than twenty years experience in shipboard cargo handling. He had completed the mandatory basic safety training of cargo handling and the works supervisor safety training course as required under the Shipping and Port Control (Works) Regulation. He had experience in handling granite blocks.
- 5.2 The deceased and the stevedores of his gang had many years of experience in shipboard cargo handling. They had completed the mandatory basic safety training of cargo handling as required under the Shipping and Port Control (Works) Regulation. They also had experience in handling granite blocks.
- 5.3 Though the deceased and his stevedores had experience in handling granite blocks, the accident suggested that they were not fully aware of the associated risks in handling this bulky and heavy cargo.
- 5.4 The associated risks in handling bulky and heavy granite blocks have not been included in the course content of the mandatory basic safety training of cargo handling.

Fatigue

- 5.5 On the day before occurrence of the accident, the deceased and stevedores of his gang commenced cargo handling work on the *OGV* at about 1700 and finished at 2100. There was no evidence to show that the deceased had suffered from fatigue.

The granite blocks

- 5.6 The granite blocks in the No.4 cargo hold were not properly stowed in the loading port in India. The blocks were of varying dimensions. Some blocks were not leveled and many were not properly dunnaged and chocked. To facilitate the slinging of granite blocks during unloading, it is a normal practice to provide dunnage during loading cargo at the loading port. To prevent the collapse or shift of stacked granite blocks, it is also a normal practice that the small gaps between the blocks are properly chocked and wedged with timber at the loading port.
- 5.7 The granite block “A” that shifted at the time of accident was rectangular in shape with dimensions of about 3.1 m in length, 1.9 m in width and of height 1.57 m. The weight of the granite block was about 25 tons.

- 5.8 The surfaces of the granite block “A” were rough. There was no dunnage placed underneath the block and it just sat on two other granite blocks (granite block “B” and granite block “C”) near the aft bulkhead (see Fig.6).
- 5.9 The top surface of the granite block “B” was not leveled, with a depression angle of about 20 degrees towards starboard side. Hence before occurrence of the accident, the slid granite block “A” would have probably sat at an angle close to 20 degrees towards starboard side (see Fig.7).

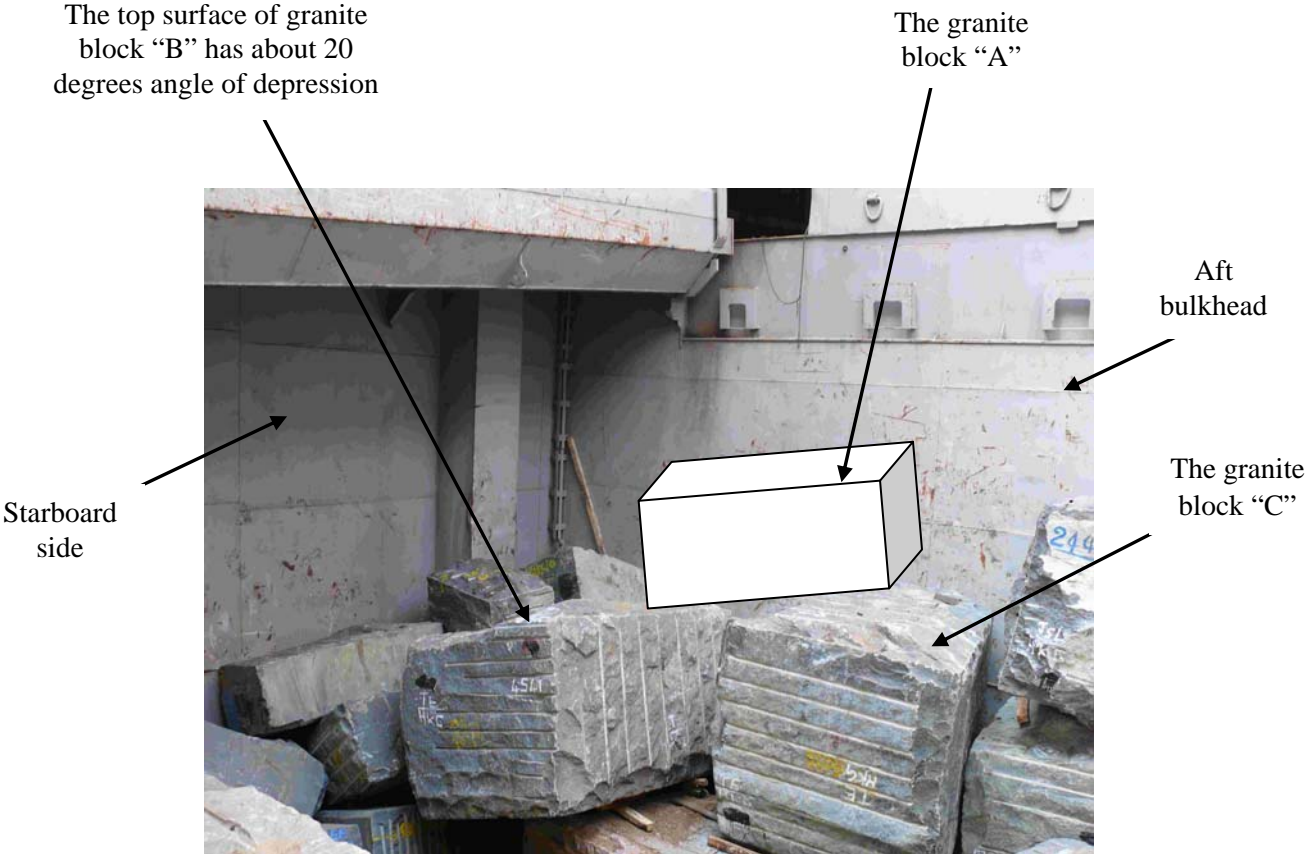


Fig. 6: The Granite Blocks in No.4 Cargo Hold on "Aladdin Dream" (Before Sliding Occurred)

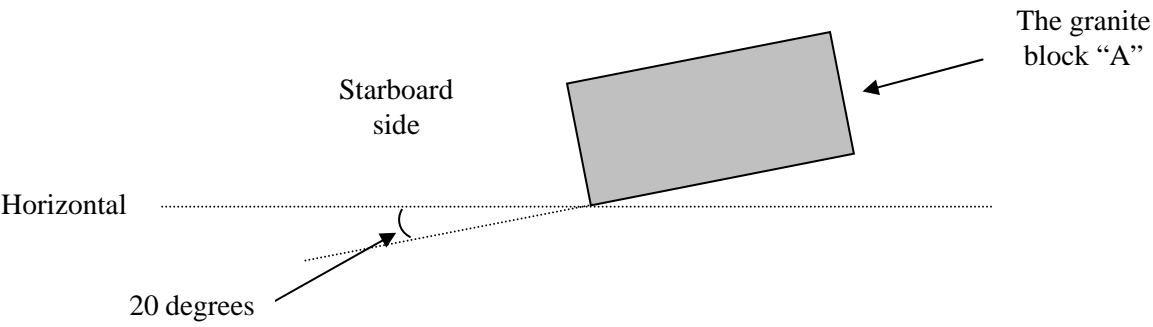


Fig. 7: The Granite Block “A” Sat at a Depression Angle Before Sliding Occurred

5.10 The coefficient of static friction between granite surfaces is about 0.43 and hence the angle of inclination (depression) for a granite block just before sliding occurred would be about 23 degrees. Evidence suggested that the granite block “A” was close to start shifting just before the accident.

The environment

5.11 At the time of accident there was gentle breeze, hence there should be some waves at the sea of Western Anchorage. The *OGV* could be swaying slightly due to the actions of the waves. The swaying motion of *OGV* might trigger the sliding movement (see Fig.8).

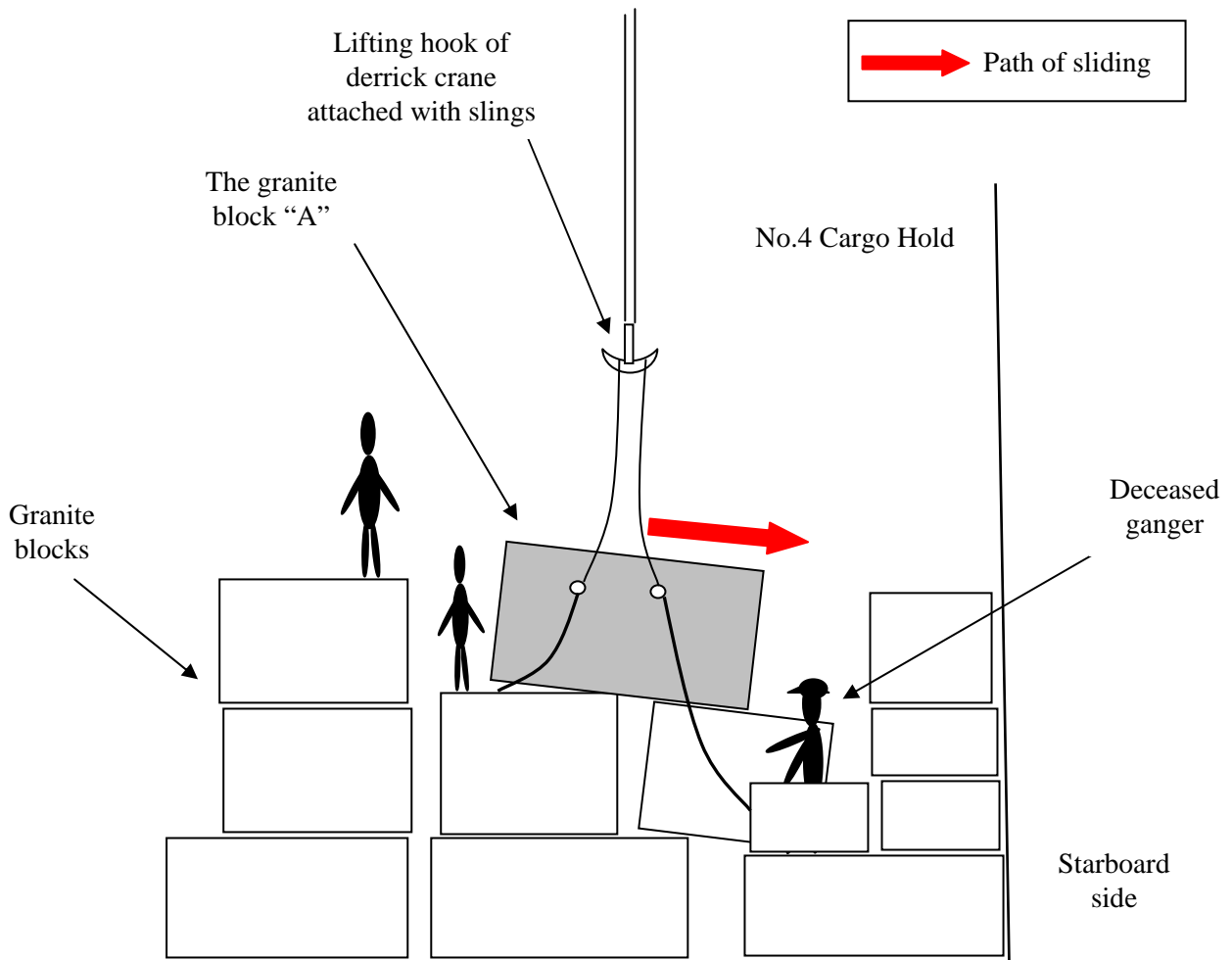


Fig. 8: The Granite Block “A” Commenced to Slide in No.4 Cargo Hold on "Aladdin Dream"

Safe working practices of unloading

5.12 When unloading stacked cargo, it is a common practice that effective measures should be taken at all times to prevent the collapse/shifting of cargo. Such safe working practice is stipulated in the Shipboard Cargo Handling Safety Guide issued by Hong Kong Marine Department. The Shipping and Port Control (Works) Regulation also requires the provision of proper shoring to guard against accident during unloading stacked cargo.

Personal protective equipment

5.13 The deceased had worn a safety helmet at work. The impact force of the granite block “A” was so large that his safety helmet was broken and could not protect his head from injury (see Fig.9).

Autopsy report

5.14 According to the autopsy report of the deceased furnished by the Department of Health, the cause of death was head injury.



Fig. 9: The broken safety helmet of the deceased

6. Conclusions

- 6.1 An industrial accident happened onboard the Hong Kong registered ro-ro cargo ship "*Aladdin Dream*" at Western Anchorage No.3 on 7 December 2007. While unloading bulky granite blocks in the cargo hold, a stevedore was crushed by a granite block and sustained fatal injuries.
- 6.2 The investigation revealed that the accident was caused by the failure to take adequate safety measures to prevent sudden shift of bulky cargo in cargo handling.
- 6.3 The following contributing factors were identified in the investigation:
- a) dunnage had not been placed and the cargo was not properly stowed at the loading port; and
 - b) the stevedores did not have adequate knowledge of the risks in handling bulky and heavy granite blocks.

7. Recommendations

- 7.1 A copy of this report should be sent to the Master of "*Aladdin Dream*", stevedoring company and the consigner advising them the findings of this accident.
- 7.2 A Merchant Shipping Information Note (MSIN) should be issued to draw the attention of all masters of Hong Kong registered ships to the lessons learnt in this accident in particular the importance of proper stowage of cargo at the loading port.
- 7.3 A Marine Department Notice should be issued to promulgate the lessons learnt from the fatal accident, drawing the industry's attention on the recommendations stipulated in the Shipboard Cargo Handling Safety Guide and requirements under the Shipping and Port Control (Works) Regulation.
- 7.4 The course content of the safety training course of cargo handling and the cargo handling safety guide compiled by Marine Industrial Safety Section should be enhanced with the lessons learnt from this fatal accident.

8. Submissions

- 8.1 In the event that the conduct of any person or organization is criticized in a casualty 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:
- Lung Kee Stevedoring Heavy Transport Company Limited.
- 8.3 No submission was received from the above-mentioned party.