



Report of Investigation
into the Gas-cutting Accident
Onboard the Container Vessel
M.V. "Philippine Star" Causing
One Fatality on 11 April 2005



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

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.

1. Summary

- 1.1 On 11 April 2005, the container vessel "*Philippine Star*" was anchoring at North Lamma Anchorage, Hong Kong for cargo operation. At about 1815, a fitter was reported to have been seriously burnt while he was working on the main deck to cut steel stiffeners of the hatch coaming of No. 4 cargo hold with a gas-cutting torch.
- 1.2 The Fitter was sent ashore to the hospital after the accident. However, he died three days later in the hospital. The cause of the death was severe burns over the body.
- 1.3 The investigation reveals the probable cause of the accident was due to the rupture of the rubber hoses of the gas-cutting torch after the hot molten metal oxide and sparks were generated and came into contact with the rubber hoses during the gas-cutting process. As a result, oxygen and liquefied petroleum gas (LPG) leaked out from the hoses igniting a fire that caused severe burns to the body of the deceased.

2 Description of the Vessel

Particular of M.V. "*Philippine Star*"

Port of Registry:	Valletta
IMO No.:	8408820
Official No.:	4793
Call Sign:	9HXC4
Type of Ship:	Container Ship
Year of built:	1984
Name of Builder:	Hyundai, Ulsan.
Ship Manager:	Ofer (Ships Holding) Haifa
Classification Society:	Lloyd's Register
Length:	179.35 metres
Breadth:	28.40 metres
Moulded Depth :	15.60 metres
Gross Tonnage:	22,667
Main Engine:	Hyundai B & W 6L70MC
No. of Crew:	28



Fig. 1: Photograph of container vessel "*Philippine Star*"

3 Outline of Events

- 3.1 On the morning of 11 April 2005, the container vessel "*Philippine Star*" (the Vessel) arrived at Hong Kong from Manila for cargo work. At about 0312 the Vessel dropped anchor at North Lamma Anchorage awaiting cargo work.
- 3.2 Cargo work commenced at 0815 on the same day. Loading and discharging of containers were carried out onto the dumb steel lighters that moored alongside the Vessel.
- 3.3 The Chief Officer arranged work to replace stiffeners of hatch coamings. The Fitter (deceased) and an Able Seaman were assigned to work at the forward side of the hatch coaming of No. 4 cargo hold. The work involved the use of gas-cutting torch to cut away the worn stiffeners and replacement with new ones (see Fig. 2). They started their work after lunch at about 1300.



Fig. 2: Repair work on the hatch coaming

- 3.4 They continued to work until 1815. While the Fitter was cutting a vertical stiffener at the forward hatch coaming of the No. 4 cargo hold, the rubber hoses connected to the gas-cutting torch was on fire. The fire intensified as the gases leaked out from the ruptured hoses. The clothes of the Fitter were lit up immediately.
- 3.5 The Able Seaman nearby noted the fire and ran to close the gas valves of the gas cylinders. He then shouted for help. Although a fire extinguisher and a fire hose were available at the scene, the Able Seaman said that the fire was so intense that he could not render assistance to the Fitter.
- 3.6 The fire stopped shortly after the gas valves were closed. Other crewmembers came to assist and transfer the Fitter to the top of the adjacent No. 4 hatch cover. The body of the Fitter was found severely burnt. After assessment they applied first aid paraffin and gauze to the Fitter and notified the Master of the accident.
- 3.7 The incident was then reported to the Marine Police. Rescue launches and a helicopter arrived shortly afterwards. The Fitter was taken to Queen Mary Hospital by the helicopter. However, he died three days after the accident at 2017 on 14 April 2005.

4 Findings and Analysis

- 4.1 The deceased had been working in the company in the capacity of a fitter for about 10 years. He joined the Vessel since 2 October 2004. The duty of a fitter is mainly to carry out maintenance work onboard involving gas welding and cutting. Statements from other witnesses stated that the deceased was experienced in gas-cutting work.
- 4.2 At the time of the incident the deceased and the Able Seaman were working on the main deck between the hatch coamings of No. 3 and No. 4 cargo holds (frame Nos. 114 to 116). The coamings were about 1.5 m high and about 1.3m apart. Fire fighting equipment such as a fire hose and a portable fire extinguisher were placed near the working area.
- 4.3 Natural lighting was considered adequate in the work area.
- 4.4 The oxygen and LPG bottles for the gas-cutting work were secured at the starboard guardrail of the Vessel. (See fig. 3) Two long rubber hoses were found with one end connected to the bottles and the other end connected with two couplings for fitting on the gas-cutting torch. The rubber hoses were braided with rayon reinforcements and further enclosed with rubber covering.

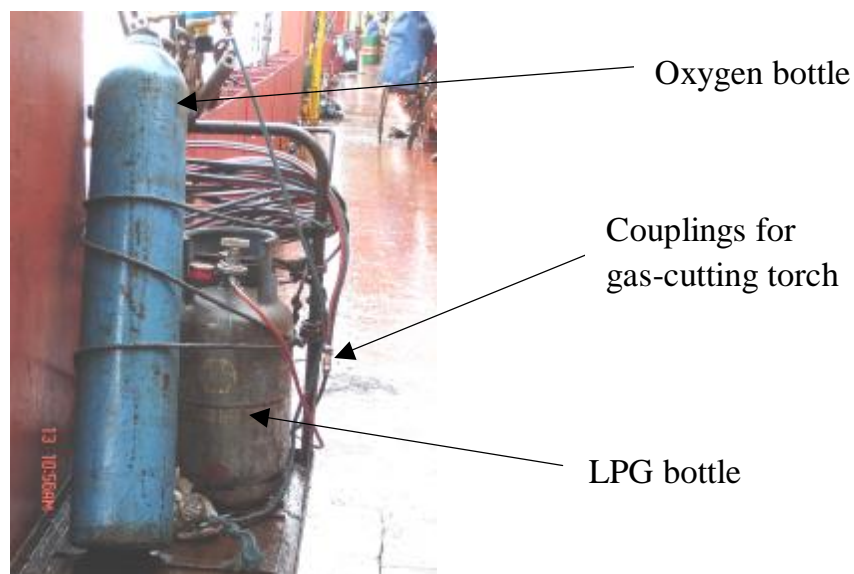


Fig. 3: Oxygen and LPG bottles for the gas-cutting work

4.5 The gas-cutting torch was found damaged with the connecting hoses seriously burnt (See fig.4 & 5). Although the origin of the hoses were untraceable, it was apparent that the hoses had been used by the crew for a considerable period of time as some minor mechanical abrasions were observed along the length of the hoses. The deck structures of the vessel had a number of sharp edges. It is deduced that the rubber hoses might have been subject to mechanical abrasions and cuts while being tensioned over the sharp edges.



Fig.4: The gas-cutting torch



Fig.5: The burnt rubber hoses

4.6 During the gas-cutting process, hot molten metal oxide and sparks would be generated. Since no shielding arrangement was made, the hot molten metal oxide and sparks would melt the rubber hoses when they scattered onto the deck and came into contact with the rubber hoses.

4.7 As the deceased was concentrating on the gas-cutting process, he might not be aware of the dangerous situation. The Able Seaman was engaged in collecting the scrapped metal at a distance of about 3 metres away from the deceased. As such he would not be able to keep a lookout on the safety of environment and alert the Fitter of the situation.

4.8 Two pieces of stiffeners had already been cut off from the hatch coaming. Hardened molten metal oxide were found accumulating on the lower part of the hatch coaming. Some of the molten metal oxide were also found scattering

on the deck. (See fig. 6)

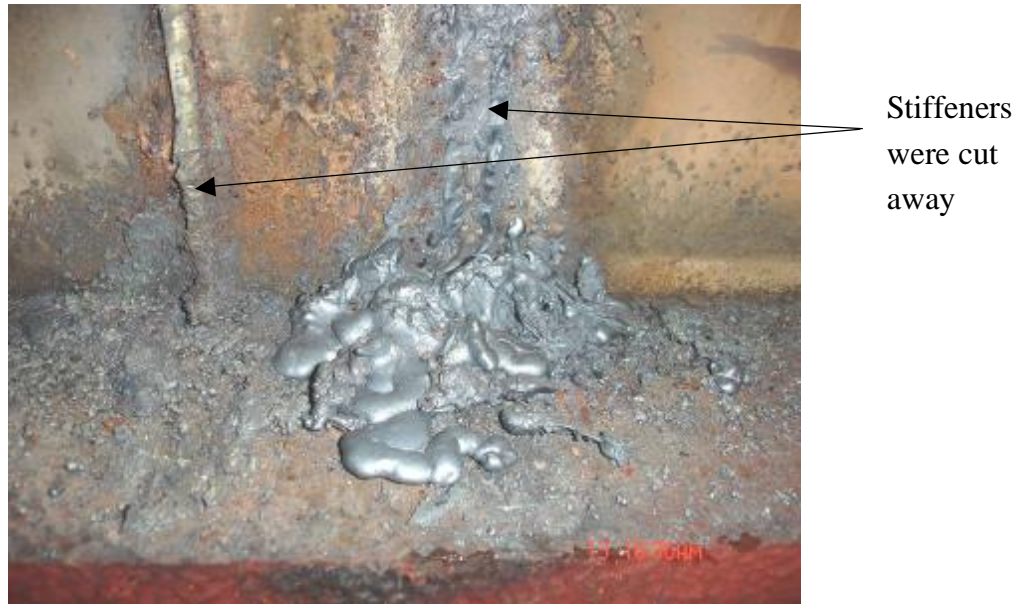


Fig.6: A pool of hardened molten metal oxide below the removed stiffener

4.9 Chapter 23 of the Code of Safe Working Practice for Merchant Seamen stipulates that during hot work, a person should be stationed to keep watch on areas not visible to the worker which may be affected. It is a safe practice that a lookout should be maintained as to the condition of equipment and the surrounding environment while the other crew is engaging in the hot work. Apparently this procedure had not been followed during the gas-cutting process.

4.10 The autopsy report of the deceased was compatible with a diagnosis that the cause of death was extensive burns of body surfaces.

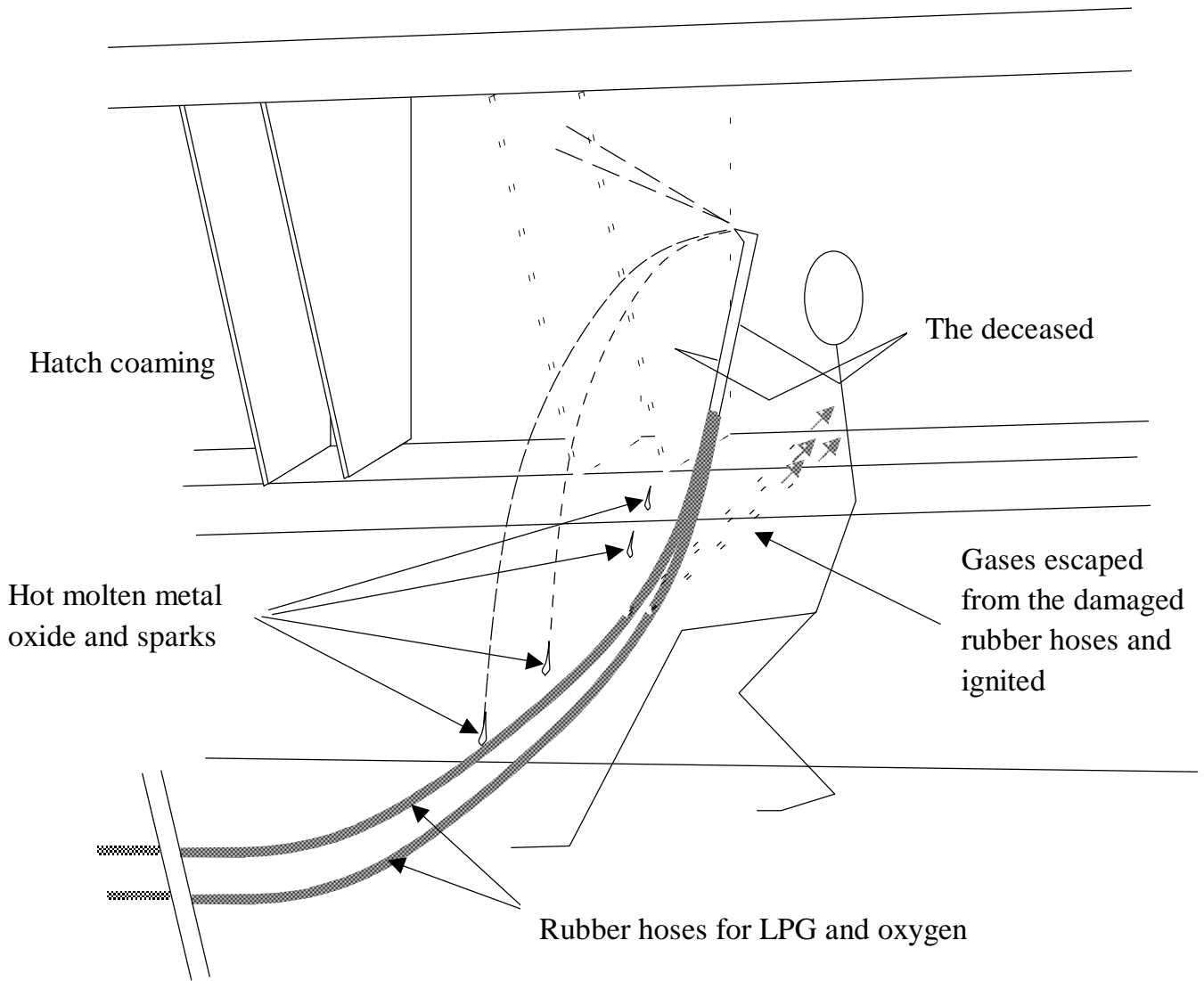


Fig. 7: Scene of the accident

5 Observations and Conclusions

- 5.1 At about 1815 hours on 11 April 2005, the Fitter of the Maltese registered container vessel “*Philippine Star*” was reported to have injured from burns at North Lamma Anchorage while he was carrying out gas-cutting work. He was sent to hospital for medical treatment. However, he died in the hospital 3 days after the accident due to extensive burns

- 5.2 The investigation establishes the probable cause of the accident was that hot molten metal oxide and sparks generated during gas-cutting process came into contact with the rubber hoses and subsequently caused a fire in the working area (see fig. 7). The body of the deceased was seriously burnt by the ignited LPG.

- 5.3 The investigation has identified that the contributory factors leading to the accident are:
 - 5.3.1 The lack of safety awareness of the crewmembers to maintain a proper fire watch during the gas-cutting process;

 - 5.3.2 No appropriate arrangements to protect the rubber hoses from contacting with the scattered hot molten metal oxide and sparks during the gas-cutting process;

 - 5.3.3 The rubber hoses for the gas-cutting had not been properly maintained.

6 Recommendations

- 6.1 A copy of the report should be sent to the Master and Owner of the Maltese container vessel “Philippine Star” drawing their attention on the findings of the accident and the lesson learnt there from.
- 6.2 The Master is recommended to enhance crew training on board to improve their safety awareness while carrying out gas-cutting work, in particular, following safety precautions should be observed:
 - 6.2.1 Fire watch should be maintained throughout the hot work process;
 - 6.2.2 Appropriate arrangements should be made to prevent rubber hoses from contacting with any hot objects during the work;
 - 6.2.3 Rubber gas hoses and equipment should be maintained properly and the hoses should avoid passing sharp edges of the vessel's structures during the work. The gas-cutting equipment should be inspected before use to ensure that it is in a safe condition.
- 6.3 A copy of the report should be sent to the Maltese Maritime Authority for their attention.

7. Submission

- 7.1 In the event that the conduct of any person or organization is commented in an accident investigation report, it is the policy of the Marine Department to send a copy of the relevant part of the draft report to that person or organization for their comment.
- 7.2 The final draft report was sent to the Master of the container vessel "Philippine Star" for comments, no submission was received from him.