



## SIMPLIFIED SAFETY INVESTIGATION REPORT

201603/006

REPORT NO.: 04/2017

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The Merchant Shipping (Accident and Incident Safety Investigation) Regulations, 2011 prescribe that the sole objective of marine safety investigations carried out in accordance with the regulations, including analysis, conclusions, and recommendations, which either result from them or are part of the process thereof, shall be the prevention of future marine accidents and incidents through the ascertainment of causes, contributing factors and circumstances.

Moreover, it is not the purpose of marine safety investigations carried out in accordance with these regulations to apportion blame or determine civil and criminal liabilities.

### NOTE

This report is not written with litigation in mind and pursuant to Regulation 13(7) of the Merchant Shipping (Accident and Incident Safety Investigation) Regulations, 2011, shall be inadmissible in any judicial proceedings whose purpose or one of whose purposes is to attribute or apportion liability or blame, unless, under prescribed conditions, a Court determines otherwise.

The report may therefore be misleading if used for purposes other than the promulgation of safety lessons.

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### **MT ASKARA** **Fire in the engine-room** **In position 22° 15' N 115° 01' E** **05 March 2016**

### **Course of events**

On 01 March 2016, the Maltese registered chemical / oil tanker *Askara* departed the port of Kobe, Japan after completing her cargo discharge operations. The vessel was bound for Hong Kong for bunkers.

In preparation for the bunkering operations, and in order to avoid mixing the new parcel of bunkers with the one already on board, the chief engineer instructed the second engineer to transfer all the fuel oil from port heavy fuel oil (HFO) storage tank to starboard HFO storage tank.

The fuel oil transfer was carried out successfully as requested by the chief engineer. However, towards the end of the transfer, the second engineer noticed that the low level alarm fitted on port HFO storage tank did not activate. A manual sounding of port side HFO storage tank confirmed that the fuel oil had indeed been transferred and that

the level was well below the 0.5 m (the level which should have triggered the low level alarm).

Suspecting a fault in the low level alarm switch, the second engineer instructed the third engineer to overhaul the alarm low level alarm switch on port side HFO storage tank in order to identify and rectify the fault.

The task was also discussed between the third engineer and the chief engineer and the necessary 'Permit to Work' document was issued.

Just after 1700 (LT) on 05 March 2016, after his engineering watch, the third engineer commenced the dismantling of the low level alarm switch.

The low level alarm was a conventional float switch, fitted by means of four studs and its

removal was a relatively simple task. At about 1710, immediately after dismantling the low level alarm float switch, fuel oil escaped almost instantaneously from the opening. It was immediately evident that the tank from where the low level alarm switch had been removed contained a significant volume of fuel oil and there was enough static pressure for the leaking fuel oil to reach the main engine exhaust manifold.

The third engineer tried to mount the fuel oil low level alarm back to the tank in an attempt to stop the fuel oil leak. However, in view of the heavy flow and the high temperature of the fuel oil, he was unsuccessful. Soon after, the fuel oil coming in contact with the main engine's exhaust manifold auto ignited. Shortly after, the fire alarm sounded around the vessel.

One of the oilers, who was on duty in the engine-room, tried to extinguish the fire by using one of the portable foam applicators. He did manage to extinguish the fire on the main engine, however, another fire developed in way of the turbocharger's turbine side.

By 1713, the engine-room fire squad team members had assembled and donned their firemen's outfits and mobilised the fire fighting equipment. The engine-room ventilation was stopped and fire dampers were closed at about 1715. The chief engineer also activated the main engine emergency stop and interrupted the electrical supply to the engine-room.

In the meantime, the engine-room fire squad team had already started to tackle the fire but by 1725, the fire had spread to the generators' area and it became evident that it was beyond control. On the basis of the feedback provided from the engine-room, the master decided to activate the fixed CO<sub>2</sub> system and flood the engine-room to extinguish the fire.

Following the application of the relevant procedures, the fixed CO<sub>2</sub> system was activated at 1730. The Company was informed of the occurrence and the vessel remained adrift in a black out condition, about 50 nautical miles off the coast of Hong Kong.

By 0839 of the following day, *Askara's* engine-room had cooled enough to allow access to the crew members for an assessment of the fire damages.

### **Treatment for burn injuries**

Both the third engineer and the oiler who was assisting him suffered minor burn injuries which, however, only required medical care on board. The third engineer suffered blister wounds on his right hand and left arm. The oiler suffered minor irritation to both feet. It was established that the temperature of the leaking fuel oil was about 90 °C.

### **Damages sustained as a result of the fire**

The actual damage, as a direct result of the fire, was very limited. However, there was significant damage to equipment from direct contact with hot fuel oil, as well as heat and smoke.

Cables, light covers and other similar equipment sustained the most damage, although the damage was quite localised to the main engine area and contained within the lower platform deck and the tank top.

A number of pumps fitted on the engine-room bilge level were also damaged. Moreover, although there was no visible damage to the main engine components, a number of sensors and related cables had to be replaced. The main engine was also completely overhauled, thereby ensuring that any indirect fire damages which may have been caused were rectified.

### Cause of the fire<sup>1</sup>

It was established that the immediate cause of the fire was hot fuel oil spilling from port HFO storage tank and coming in contact with the main engine exhaust manifold.

### The fuel oil spill inside the engine-room

An inspection inside the engine-room soon after it was safe to access, revealed that the low level alarm switch that was dismantled was not actually fitted on port HFO storage tank but on port HFO settling tank. The wrong low level alarm switch had therefore been dismantled. At the time, port HFO settling tank, which was located adjacent to port HFO storage tank (Figure 1), contained about 27 metric tonnes of HFO (380 cSt).

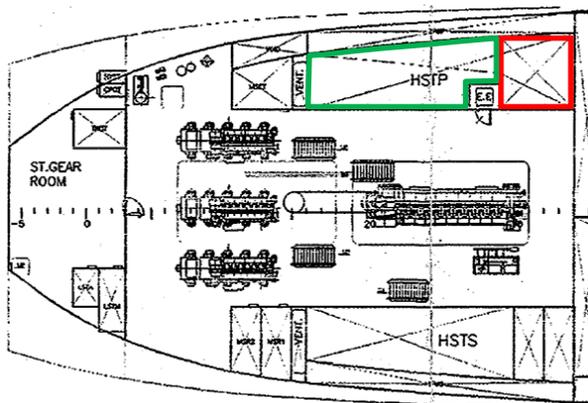


Figure 1: Location of port HFO storage tank (green outline) and HFO settling tank (red outline)

### The low level alarm

The third engineer was aware of the location of the storage and settling tanks. However, there were no markings on the low level alarm sensors and the wrong alarm was dismantled. It was unclear to the safety investigation as to whether or not the third engineer misunderstood the second engineer's instructions. However, it was concluded that the lack of markings in way

of the low level alarm, did not facilitate the matter.

Although it is being submitted that the third engineer was aware of the location of the tanks, it has to be appreciated that he had signed on board on 09 February 2016, *i.e.* just under four weeks before the accident. Although he had completed the shipboard familiarisation<sup>2</sup> on 10 February 2016, it was not excluded that in this relatively short period of time between the days of embarkation and the fire, he had not yet fully orientated himself with the location of the tanks / alarms.

### Preparatory work and monitoring of task execution

Although the necessary documents had been prepared and endorsed by the chief engineer, evidence suggested that there was no assessment of risks before the task was initiated. Although this is a requirement in the Company's safety management system, however, it was very probable that the task involved had not been seen as involving any particular risk that would have required an assessment. The fuel oil tank in question had been emptied and the removal of the low level alarm did not require any extraordinary skills or knowledge. It may be submitted that the only concern would have been the fuel oil vapours escaping from the opening after the low level alarm would have been removed.

The lack of supervision and / or direct assistance led to a situation which permitted a one-person error. It may have been possible that the presence of another crew member would have led to the identification of the error before the accident happened. However, since the task may have not been considered an onerous enough, supervision by one of the senior engineers was not deemed necessary for this task.

<sup>1</sup> The purpose of a marine safety investigation is to determine the circumstances and safety factors of the accident as a basis for making recommendations, and to prevent further marine casualties and incidents from occurring in the future.

<sup>2</sup> The Shipboard Familiarisation checklist is mainly focussed on life saving and fire fighting appliances.

## **SAFETY ACTIONS TAKEN DURING THE COURSE OF THE SAFETY INVESTIGATION<sup>3</sup>**

During the course of this safety investigation, the Company took the following safety actions:

- All bunker system components (including valves, flanges, sensors drains, *etc.*), were identified and marked with a stencil;
- A new bunker tank component checklist has now been included in the safety management system;
- Tool box meetings and risk assessments have been included in Company-run seminars for senior and junior engineers;
- An internal investigation was carried out in accordance with Section 9 of the ISM Code and the findings were distributed on board Company ships<sup>4</sup>.

## **RECOMMENDATIONS**

In view of the safety actions taken by the Company, no recommendations have been made following the safety investigation.

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<sup>3</sup> **Safety actions should not create a presumption of blame and / or liability.**

<sup>4</sup> The MSIU acknowledges the full extent of cooperation offered by the Company during the course of the safety investigation in order to prevent similar occurrences in the future.

**SHIP PARTICULARS**

Vessel Name:	<i>Askara</i>
Flag:	Malta
Classification Society:	Bureau Veritas
IMO Number:	9431886
Type:	Chemical / Oil Tanker
Registered Owner:	Askara Shipping Ltd.
Managers:	Tersan Deniz Isletmeciligi Ve Ticaret Ltd Sti
Construction:	Steel
Length Overall:	131.85 m
Registered Length:	124.21 m
Gross Tonnage:	7260
Minimum Safe Manning:	14
Authorised Cargo:	Liquid in bulk

**VOYAGE PARTICULARS**

Port of Departure:	Kobe, Japan
Port of Arrival:	Hong Kong, Hong Kong
Type of Voyage:	International
Cargo Information:	In ballast
Manning:	19

**MARINE OCCURRENCE INFORMATION**

Date and Time:	05 March 2016 at 17:10 (LT)
Classification of Occurrence:	Serious Marine Casualty
Location of Occurrence:	22° 15' N 115° 01' E
Place on Board	Engine-room
Injuries / Fatalities:	Two minor injuries
Damage / Environmental Impact:	Heat and smoke damage contained in the engine-room
Ship Operation:	In passage
Voyage Segment:	Transit
External & Internal Environment:	The wind was Easterly force 3, and the sea state was smooth. Visibility was good. Air temperature was recorded at 17 °C.
Persons on board:	19