



## SIMPLIFIED SAFETY INVESTIGATION REPORT

201108/024

REPORT NO.: 09/2012

July 2012

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.

© Copyright TM, 2012

This document/publication (excluding the logos) may be re-used free of charge in any format or medium for education purposes. It may be only re-used accurately and not in a misleading context. The material must be acknowledged as TM copyright.

The document/publication shall be cited and properly referenced. Where the MSIU would have identified any third party copyright, permission must be obtained from the copyright holders concerned.

### ***MV OCEAN RANGER*** **Scavenge fire** **In position 15°31.6'S 38°7.1'W** **23 August 2011**

### **Course of events**

*Ocean Ranger* was enroute to Suape, Brazil from Bahia Blanca, Argentina with 26,129 metric tonnes of wheat. On 23 August 2011, at approximately 0545 (UTC), the second engineer officer was preparing to take over the engine-room watch.

Still in his cabin, he heard the main engine turbocharger surge and quickly made his way to the engine-room to investigate. By the time he entered the machinery space, the main engine had slowed down to about 40 rpm.

In spite the main engine's reduced speed, he noticed that the turbo charger was still surging. He could also observe significant smoke and sparks from the turbocharger. A few seconds after the main engine was stopped, he heard what seemed to be an explosion from the main engine.

The duty engineer explained to the second engineer that he had slowed and stopped the main engine after he heard the turbocharger surge.

In the meantime, the chief engineer had arrived at the engine-room but the smoke prevented him from further investigating the matter. He closed the door again, stopped the engine-room ventilation, and closed the fuel quick closing valves.

After consulting the master and taking account of all the crew members, he activated the foam fixed installation and waited for about one hour before entering the engine-room again. Inside the engine-room, the smoke was now less dense and there was no open fire. Eventually, power was restored, which permitted a more thorough inspection of the engine-room.

The preliminary inspection by the chief engineer revealed that a main engine scavenge fire had occurred.

### Extent of damage and reported injuries

The most severe damage was contained within the main engine and the turbocharger rotor was completely destroyed by the fire (Figure 1) as a result of overspeeding. Minor damages were identified to one of the main generators tachometer and a bilge high level alarm. The magnetrons of both radar sets were damaged as a result of the blackout. No injuries were reported.

### Probable causes

The probable causes of the scavenge fire were fouled scavenge spaces (Figures 2 and 3) and two defective fuel injectors. It was stated that the last scavenge space cleaning had been carried out on 08 August 2011, *i.e.* about a fortnight before the fire. However, an inspection of the scavenge space revealed approximately a 10 cm build-up of carbon deposit.

Moreover, the dirty and heavy gummy residues present in the scavenge space seemed to suggest that the 1,000 – 2,000 hour cleaning interval recommended by the engine maker had not been adhered to. The defective fuel injectors had not been detected. Analysis of the main engine cylinder calibration reports did not indicate excessive wear in the main engine cylinder liners and piston rings, except for a piston ring on one of the main engine units.

### Other safety issues

The main engine was fitted with a scavenge air space collector, with an individual pipe coming down from each unit and directly connected to the collector. The collector discharged to the starboard side of the main engine through one valve located close to no. 6 crankcase door. Whilst no routine draining procedure was identified on board,

the system design did not permit the engineers to check whether all the drainage pipes to the collector were free from obstructions. An inspection revealed that drains nos. 2 and 4 were blocked.



### SAFETY ACTIONS TAKEN DURING THE COURSE OF THE SAFETY INVESTIGATION

The ship's managers have taken several actions in order to prevent similar accidents. A message has been sent to all Company's managed vessels highlighting the importance of inspecting and cleaning scavenge spaces, and inspecting pistons, cylinder liners and the fuel injection system. The relevant ISM Form has been transmitted to all the Company's

managed ships for discussion during the on board Safety Committee Meeting.

The Company has also ensured that the identified issues are brought to the attention of its training centre in Vladivostok (Engineers' Engine Room Management Training Module). The safety lessons are being presented to seafarers during their pre-joining familiarisation training.

The Company has also ensured that the Fleet Superintendents focus on the identified issues during their visits on board.

## SHIP PARTICULARS

Vessel Name:	OCEAN RANGER
Flag:	Malta
Classification Society:	Nippon Kaiji Kyokai
IMO Number:	8221959
Type:	Bulk Carrier
Registered Owner:	Ocean Ranger Navigation Co. Ltd.
Managers:	Kristen Marine, Greece
Construction:	Steel
Length Overall:	179.0 metres
Registered Length:	170.0 metres
Gross Tonnage:	19146
Minimum Safe Manning:	16
Authorised Cargo:	Solid cargo

## VOYAGE PARTICULARS

Port of Departure:	Bahia Blanca, Argentina
Port of Arrival:	Suape, Brazil
Type of Voyage:	International
Cargo Information:	Wheat
Manning:	21

## MARINE OCCURRENCE INFORMATION

Date and Time:	23 August 2011 at 05:45 (UTC)
Classification of Occurrence:	Less Serious Marine Casualty
Location of occurrence:	15° 31.6'S 38° 7.1'W
Place on board	Engine-room
Injuries / fatalities:	None
Damage/environmental impact:	Damage limited to main engine. No environmental damage.
Ship Operation:	Normal Service - In passage
Voyage Segment:	Mid-water
External & Internal Environment:	Wind: South easterly light breeze Visibility: Good
Persons on board:	21