



# 香港商船資訊

## HONG KONG MERCHANT SHIPPING INFORMATION NOTE

### Engine Room Fire Caused by Main Engine Crankcase Explosion

*To : Shipowners, Ship Managers, Ship Operators, Masters and Officers*

#### *Summary*

A main engine crankcase explosion happened on board a Hong Kong registered ship caused severe fire, which started in the engine room and spread into the crew accommodation. The accident resulted in the death of three crew members. This note is to draw the attention of Ship Owners, Ship Managers, Ship Operators, Masters and Officers to the danger of engine crankcase explosion on board ships and the important lessons learnt from this incident.

#### **The Incident**

1. A fire accident happened onboard Hong Kong registered asphalt tanker at about 1230 on 9 January 2009 in the approximate position at lat. 31° 25.7' N long. 124° 35.8' E, about 120 nautical miles east of mouth of Changjiang, China. The accident resulted in the death of the Third Engineer and a motorman inside the engine room, and another motorman lost after falling into the sea.
2. The investigation into the accident revealed that the most probable cause of the accident was main engine crankcase explosion. It resulted into release of large quantity of hot oil mist and/or flammable vapour from the main engine crankcase into the engine room, which was ignited and caused the fire. The fire spread from the engine room into the crew accommodation and burnt out combustible materials in its path causing serious damage to the vessel.
3. The other contributory factors to the accident identified in the investigation are:
  - problems existed in the main engine and its lubrication system for a long time without attention;
  - the main engine oil mist detector was defective and failed to give out alarm before explosion occurring inside the main engine crankcase;
  - the engine room fire detection and alarm system was defective, therefore the crew members were not alerted of the fire when it started;

- the self-closing device of the port engine room entrance door might have failed or the door had not been properly closed by the crew members resulted in extensive fire damage to the crew accommodation;
- leadership displayed by the Master and senior officers was poor and crew members onboard were not adequately trained through regular and systematic drills and exercises in handling emergency situations; and
- implementation of the safety management system onboard was not effective, which resulted in major non-conformities in the areas of crew training, emergency preparedness, maintenance of ship's firefighting and life saving equipment. Also, the shipboard internal audits and master's review failed to identify and rectify these non-conformities at an early stage.

## **Lessons Learnt**

4. The lessons learnt from this accident are:

- a) both the main and auxiliary engines on board should be well maintained. Lubricating systems for diesel engines should be monitored closely by regularly sending lubricating oil samples for laboratory analysis so that engine problem could be identified and rectified at an early stage to avoid crankcase explosion;
- b) proper checking / maintenance / testing of crankcase oil mist detectors should be conducted regularly and such items should be included in the preventive maintenance program on board ships;
- c) proper functioning of fire detection system and fire fighting appliances as well as fire doors for the engine room should be ensured at all times;
- d) management ashore and masters of vessels should ensure shipboard staff are properly trained to handle emergency situations of all scenarios, including the dealing with fire inside the engine room associated with engine crankcase explosion; and
- e) management ashore and masters of vessels should conduct thorough safety audits regularly so that any deficiencies in the implementation of safety management system could be identified and rectified at an early stage.

5. The attention of ship owners, ship managers, ship operators, masters and officers is drawn to the lessons learnt above.