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Casualty Circular No. 02 of 2011

Explosion in Engine Room

1. What happened?

- 1.1 A container vessel of 1981 built, in possession of valid statutory certificates, was mainly operating on Indian Coast. During a voyage from Chennai to Port Blair, while maneuvering in Port Blair, there was an incident of crankcase explosion. No one was injured.
- 1.2 While vessel was approaching Port Blair pilot station at 1824 hrs, smoke was seen coming out of engine (M/E) No. 1 crankcase relief door. Immediately thereafter a loud noise was heard in the engine room. Emergency engine stop was activated. Due to excessive smoke emitting with sign of fire in the engine room, the Chief Engineer noticed that main engine was still running. It was reported that the propeller pitch was reduced to zero from the bridge. As per contingency plan, quick closing valves and remote emergency stop were activated and engine room vents were shut down. Emergency generator was started by ship staff. At 1835, M/E finally came to stop, thereafter, ship staff tried to enter engine room but due to thick smoke, entry could not be made. Finally, at

1930 hrs C/E and Engine Rating entered the engine room, wearing the SCBA. No fire was observed. Excessive damage was noticed in way of unit no. 1 and 2, crankcase doors of the No. 2 unit were found blown out and connecting rods of these units were lying detached, on the floor plates.

2. How it happened?

- 2.1 The main engine has history of main system lube oil contamination, by water, on earlier occasion. Subsequent to the accident, Lube Oil analysis report indicated water contamination.
- 2.2 L.O purifier was observed to be very dirty and bowl filled with light / semi-hard sludge and carbonaceous product.
- 2.3 Duplex filter was observed to be substantially dirty.
- 2.4 Ship board records indicate that all units has been o/hailed about 1.5 yrs ago, at total running hours of 8164. The manufacturers recommend O'Hanlon of units within the range of 12000-15000 running hrs.
- 2.5 Following were noted from the E/R Log book, during preceding days:
 - 2.5.1 M.E.L.O bearing pressure fluctuating and caused an alarm.
 - 2.5.2 Sludge tank sounding pipe found party choked.
 - 2.5.3 L.O purifier malfunctioning
 - 2.5.4 L.O purifier opened up for cleaning. No kit on board – Job in hand.
 - 2.5.5 Around 8 cu.m of E/R sludge landed to shore reception facility at Port Blair.
 - 2.5.6 M/E L.O purifier boxed up with new seal / O-ring by Alfa Laval technician and tried out.
 - 2.5.7 The consumption of L.O for the engine was on the higher side-shown in the monthly report as 189.9 liters per day.

2.5.8 It was observed that in the L.O circuit of this engine, there were a number of sampling points located after filters or strainers, thus, sample oil would not reflect the accurate / authentic characteristics of the oil actually in the sump.

3. Why did it happen?

Most proximate cause of the incident could be attributed to following:

- 3.1 The ship staff by keeping open the by-pass valve of auto-filter throughout the passage from Chennai to Port Blair, allowed contaminated oil to pass directly to the duplex filter and thereafter to the engines.
- 3.2 L.O purifier was not continuously operated thereby increasing the quantity of contaminated oil which further caused quality of Lube Oil to deteriorate.

4. Lessons learnt:

- 4.1 High consumption and inconsistency purifier of Lube Oil needs to be investigated and corrective / preventive measures initiated.
- 4.2 Robust systems are essential for proper monitoring by shore based management under ISM provisions.



(Capt. Harish Khatri)
Dy. Director General of Shipping(Tech)