

**Fatal explosion accident on board the Hong Kong registered oil/chemical tanker “No.3 Heung-A Pioneer” during tank cleaning at sea off Penang, Malaysia on 18 April 2016**

**1. The incident**

- 1.1 On 18 April 2016, in approximate position of 5°30.89’N, 99°56.90’E in Malacca Strait whilst en route from Penang, Malaysia to Singapore, there was an explosion on the main deck of the Hong Kong registered oil/chemical tanker “NO.3 HEUNG-A PIONEER” (the *vessel*) during cargo oil tank cleaning operation, and resulted in one death and five injury of crew members.
- 1.2 The *vessel* departed in ballast condition from Penang, Malaysia where she had just completely discharged all the two grades of incompatible cargoes of Nitric Acid and Acrylonitrile. The two grades of cargoes are incompatible and would react violently if being mixed.
- 1.3 After casting off from the terminal of Penang at 1730 hours on 18 April 2016, the chief officer (C/O) led his deck crew to prepare for the cleaning operation of cargo tanks. During the preparation of the cargo piping system for tank cleaning, an elbow spool piece was wrongly fitted to connect the portside cargo common manifold which was contaminated with residue of Nitric Acid, with the cargo oil tank (COT) No.8 P (port) manifold which was contaminated with residue of acrylonitrile. As a result of this wrong connection, the residue of acrylonitrile was able to creep through a leaky manifold cut valve of COT No.8 P to mix with the nitric acid in the portside common manifold.
- 1.4 At about 2015 hours, when cleaning of the cargo oil tanks No.2 P&S (port and starboard) and No.8 P&S by water was carried out for about 8 minutes, a violent explosion occurred at the portside common manifold on main deck and metallic debris

accompanied by impulsive waves injured 6 crewmembers on deck.

- 1.5 The *vessel* then returned to Penang, Malaysia and all the injured crew were sent ashore for medical treatment. However, one of them was declared dead in the hospital on the same day.

## **2. Lessons learnt**

- 2.1 For incompatible cargoes, measures such as warning signs, chain lock / seal or barrier on the individual manifold should be used to prevent them from mixing with each other and contamination due to wrong connection in the cargo piping system and the common manifold.
- 2.2 For the incompatible cargoes, in order to avoid any violation of the compartment segregation requirements during the stowage, handling and cleaning stage of incompatible cargos, particular precautions should be taken by all crew to prevent misconnection of the cargo piping system, i.e. a double verification system (i.e. line-up checklist) including the use of elbow connection should be put in place.
- 2.3 When a leaky valve of cargo oil pipeline was discovered, particular caution should be taken by all crew, and warning placard should be put in situ and carry out the repairs as soon as possible.
- 2.4 Sufficient training should be provided to ensure the crew are familiarized with cargo manifold piping arrangements at midship, and they should exercise cautions when handling incompatible cargoes including the tank cleaning process.