

MAIB

MARINE ACCIDENT INVESTIGATION BRANCH

FLYER TO THE SHIPPING INDUSTRY Fatal accident to two crew members while transporting ferrous metal turnings



“Steel turnings”



Cut ventilation duct

Two able seamen on board a 75m general cargo vessel were found dead in the forward store, adjacent to the forward hold, during a voyage from northern to southern Europe. The cargo, as stated on the Bill of Lading, was “steel turnings”.

The terminal managers in both loading ports did not consider the cargo to be hazardous, and the wet cargo was loaded in rain without trimming or measuring the cargo temperature. The correct Bulk Cargo Shipping Name (BCSN) for the IMDG Class 4.2 cargo was “ferrous metal borings, shavings, turnings, or cuttings in a form liable to self heating (UN No. 2793)”. A cargo that the ship’s Document of Compliance – Special Requirements for Ships Carrying Dangerous Goods, did not permit to be carried.

Prior to arrival at the first loading port, the cargo had been identified to the master by the ship broker as an “IMO 4.2” material, without further guidance. The management company was aware of the possible carriage of the cargo, but relied on the master to confirm that the cargo was suitable for carriage.

Despite his concerns, the master accepted the cargo in both loading ports, placated by the assurances of terminal personnel and cargo agents. The ship sailed without the ability to remotely monitor the hold temperature and oxygen level.

During the voyage the ship encountered heavy weather and pitched heavily into head seas. On the morning of the accident, the master directed the two able seamen to carry out rounds of the deck due to the heavy weather. The two men reported back to the master that all was correct, and continued with their tasks inside the accommodation; they were last seen at around 1100 that morning.

At 1930, the master noticed that the two men were missing and ordered that a search be carried out. The chief officer discovered the two men collapsed at the bottom of the stairway in the forward store, and immediately entered the store to rescue the men; he narrowly escaped from the store as he became short of breath and his vision narrowed.

The two seamen had been asphyxiated; almost certainly by the oxygen depleted air, measured at 6% following the accident, caused by the self heating cargo.

To allow for the drainage of sea water and the removal of cargo residue the crew had cut the cargo vent trunking bellows pieces either side of the cargo ventilation fan motor, located within the forward store. This action had provided an air path for the cargo hold atmosphere to enter the forward store, conceivably assisted by the panting of the fore part of the ship as she pitched.

Safety Lessons

1. **Owners / Managers / Masters** should ensure:

- Crew are made aware of the location and dangers of Enclosed Spaces, including spaces adjacent to a known hazard, including the posting of appropriate signage at the entrance to these spaces.
- Crew are fully familiarised with the ship's Enclosed Space entry procedures, including the correct emergency response when persons are found collapsed in such spaces.

2. **Owners / Charterers / Managers** of vessels which may carry "Ferrous Metal, Borings, Shavings, Turnings or Cuttings in a form liable to self heating" should ensure:

- Prospective cargoes are checked against the vessel's Document of Compliance – Special Requirements for Ships Carrying Dangerous Goods (DoC).

3. **Shipbrokers / Cargo brokers** that fix cargoes of "Ferrous Metal, Borings, Shavings, Turnings or Cuttings in a form liable to self heating" should ensure:

- Cargo documentation uses the correct BCSN, IMDG Class and UN number.

4. **Shippers** of "Ferrous Metal, Borings, Shavings, Turnings or Cuttings in a form liable to self heating" should ensure:

- Cargo documentation states the correct BCSN, IMDG Class and UN number.

5. **Terminal operators** that export "Ferrous Metal, Borings, Shavings, Turnings or Cuttings in a form liable to self heating" should ensure:

- Personnel are aware of the dangers of this cargo and that it is stored and loaded in accordance with the BC Code, and that master's receive the required documentation.

6. **Masters** of vessels which have been fixed to load cargoes of "Ferrous Metal, Borings, Shavings, Turnings or Cuttings in a form liable to self heating" should ensure:

- Potential cargo is compatible with the vessel's DoC.
- Cargo is loaded in accordance with the BC Code, they receive the correct documentation; and, that all necessary precautions are taken on board prior to loading, including the briefing of the crew.
- If necessary, they should refuse to load the cargo pending further advice from their vessel's owner / manager.

This flyer and the MAIB's investigation report are posted on its website:

www.maib.gov.uk

Alternatively, a copy of the flyer and/or report will be sent on request, free of charge.

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September 2008