

# MAIB

MARINE ACCIDENT INVESTIGATION BRANCH

## FLYER TO THE SHIPPING INDUSTRY

### *THE CALYPSO:* FIRE - 6 MAY 2006



#### **Narrative**

A cruise ship suffered a serious engine room fire when on passage from a UK port to the Channel Islands with over 700 passengers and crew on board. The duty engineer's initial actions on discovering the fire included stopping the main engines and stopping the fuel supply pumps. He then evacuated the engine room as heavy smoke filled the space. Additionally, the chief engineer closed the fuel system quick closing valves and stopped the engine room ventilation from a remote location.

The fire was intense and the decision was taken to flood the engine room with CO<sub>2</sub>. Despite the muster sheets indicating that the release of CO<sub>2</sub> was the duty of a third engineer, on this occasion, the chief engineer delegated the task to the chief electrician who went to the main CO<sub>2</sub> space and opened the control levers. He also manually opened the distribution valves and opened, what he believed to be, the pilot cylinder valves. He then left the space and confirmed to the ship's safety officer that the system had been operated.

A short time later, the chief engineer and the electrician entered the engine room with BA sets on. The staff captain also entered the space from another door on his own, breathing through a damp cloth, and without informing the chief engineer. They independently informed the master that the fire had reduced.

About an hour later, the chief engineer re-entered the engine room and found the fire to be nearly out. While inside, he removed his BA mask to test the atmosphere, and found that he could breathe safely. Shortly afterwards, he gave the order to open the engine room ventilation.

The disabled vessel had suffered extensive damage in the engine room and was towed safely into harbour. There were no injuries to either the crew or passengers.

The MAIB investigation found that the fire had been caused by the failure of a two-bolt flange in a low pressure fuel pipe on one of the main engines. Both bolts securing the flange had failed due to fatigue. The engine manufacturer had been aware for over a decade of the design fault which caused the two-bolt flanges to fail due to high fluctuating back pressures from the fuel injection pump and it had issued safety bulletins through its worldwide service network. However, the managers of this ship were not aware of the bulletins.

The day after the fire, the CO<sub>2</sub> room was being examined by an independent fire investigator and the chief engineer when CO<sub>2</sub> was inadvertently released into the engine room from a bank of cylinders. The chief engineer raised the alarm to evacuate the space, however, the duty engineer and a watch assistant were engulfed in CO<sub>2</sub> and had to feel their way out of the space. Another watch assistant was also affected before he could escape from the engine room. All three were taken to hospital for checks but later released.

The CO<sub>2</sub> system was inspected and tested the following day and it was discovered that one bank of cylinders was empty but the other bank was still full. It was concluded that in fact, unbeknown to anyone on board, no CO<sub>2</sub> had been released to fight the fire which had been extinguished purely due to the early actions of the engineers.

## Safety Issues

1. Owners and/or chief engineers should ensure that they have a complete set of manufacturer's safety bulletins which are relevant to the main engines of their ships. Better to be pro-active than wait for something to go wrong.
2. It is commonly believed that fuel fires on engines occur due to leaks on high pressure lines only. That is not the case, spray or fuel mist from a low pressure line can also be dangerous. When inspecting engine fuel systems, it is worthwhile paying special attention to low pressure as well as the high pressure systems.
3. The chief engineer chose to ignore the muster list and the routines that had regularly been practised when he delegated a critical task to the electrician. This could have proved disastrous. The routines practised in drills should always be followed when the real thing occurs.
4. The electrician mistook the timer bottles for pilot cylinders. During the investigation, it was discovered that this mistake could have been made by others as the timer and pilot bottles looked very similar. Know YOUR system; don't be caught out in an emergency.
5. After the fire-fighting efforts, the officers were convinced that the CO<sub>2</sub> had put out the fire and that the CO<sub>2</sub> bottles were all empty. No attempt was made to secure the CO<sub>2</sub> system; distribution valves were left open; control levers on; and, the system was left in a very unstable condition. Always check the system and make it safe after use.
6. The senior officers on this ship demonstrated some very poor practices in respect of CO<sub>2</sub> operations and enclosed space entry. Don't be tempted to have a look at the fire or ventilate too soon, and never enter such a space on your own and without BA. To take your mask off to "test the atmosphere" is foolhardy in the extreme.

Further details on the accident and the subsequent investigation can be found in the MAIB's investigation report, which is posted on its website: [www.maib.gov.uk](http://www.maib.gov.uk)

Alternatively, a copy of the report will be sent on request, free of charge.

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