

# Lack of insulation caused fatal fire in the engine room

The vessel was sailing smoothly in open sea towards the next port, in fine weather. Two weeks earlier the engineers had removed a section of the fuel pump pipe, which was in poor condition. They only carried out a quick visual inspection, assuming that the rest of the pipe was in good condition. Unfortunately, cracks on the pipe, concealed by dirt and oil, went unnoticed.

Below the cracked fuel pipe there was another fuel pipe, which had damaged insulation, exposing the pipe, and providing no protection.

It was morning and an oiler was carrying out his rounds. When he approached the main engine he could see smoke and flames close to the fuel pumps by the main engine. There was an explosion with fire spreading fast and it was soon out of control. The fire alarms sounded but the automatic hi-fog system did not start. This was because the hi-fog system was set to manual instead of automatic, deviating from the vessel's SMS.



The Second Engineer and the motorman, who were in the engine workshop at the time of the explosion, could not escape without entering the engine room, as there was no separate emergency escape route from the workshop. Running past the spreading fire, they made their way to the exit.

Black smoke was spreading throughout the engine room and they could see the Chief Engineer running in the opposite direction to help the oiler who had passed out near the fire. The Chief Engineer shouted that he was right behind them and that they should escape and start the hi-fog system.

The Second Engineer and motorman reached the emergency escape in the aft part of the engine room. Suffering from heat injuries and smoke inhalation they climbed the ladder, at which point the vessel blacked out. The main and auxiliary engines had stopped. The emergency generator kicked in, but shortly afterwards it too



stopped, as the fire dampers to the emergency generator room had failed and closed, delivering insufficient air. This resulted in loss of power to the emergency switchboard with fire water pumps and other electrical equipment becoming inoperative.

At this time the air supply and fuel supply had not been stopped. It was the Chief Engineer's duty to shut them off but he was still in the engine room.

All crew mustered but the Chief Engineer and oiler were still missing. The Master ordered the fire teams to suit up and enter the engine room to locate the missing engineers. He also ordered the fire dampers to be opened for the emergency generator room.

The Master would not release the CO<sub>2</sub> until the engineers had been accounted for. He ordered the engine room fire dampers to be closed and the ventilation to be stopped from the remote control station outside the machinery spaces.

Shortly after the fire team had entered the engine room the Second Engineer managed to start the emergency generator and the hi-fog system. They located the missing engineers who had been seriously burned and were lifeless, they were removed from the engine room and the CO<sub>2</sub> system was started.

The Chief Engineer and oiler had suffocated. The fire was eventually extinguished.

## Questions

When discussing this case please consider that the actions taken at the time made sense for all involved. Do not only judge but also ask why you think these actions were taken and could this happen on your vessel?

1. What were the immediate causes of this accident?
2. Is there a risk that this accident could happen on our vessel?
3. Why do you think cracks had developed on the pipe?
4. When a section of a pipe is replaced, is the entire pipe inspected and will the pipe be pressure tested after work has been carried out?
5. Do we have sufficient escape routes?
6. Are our procedures for the fire-extinguishing system sufficient?
7. Do we have procedures that ensure that important duties are completed by a back-up position if key personnel are injured?
8. Are the back-ups trained as well as the primaries?
9. Do we inspect the insulation in the engine room? How do we ensure that it is adequate?
10. When maintenance has been completed do we inspect to see that the insulation is in place and not contaminated?
11. How often do we have fire drills in the engine room (as this is generally where fires start)?
12. Are our firefighting drills effective enough to address the problems in this case?
13. Do our procedures make sense to the work we actually do?
14. What sections of our SMS were breached, if any, and is our SMS sufficient to prevent this accident?
15. If procedures were breached, why do you think this was the case?
16. What can we learn?