

ENGINE ROOM FIRE

The Story

Recently, late one afternoon, a fire broke out onboard a foreign flag passenger vessel. Vessel crewmembers were in the process of testing fuel oil transfer lines in accordance with 33 CFR 156.170. These regulations require that transfer pipe systems be tested under a static liquid pressure of at least one and one-half times the maximum allowable working pressure.

The line being tested at the time of the fire was the diesel oil aft port station fill line. The line runs athwartships in the aft boiler room and is connected to the starboard filling station. On the starboard side of the vessel in the boiler room, the line is branched and valved forming two pipe runs. One run services a storage tank while the other leads forward and exits the boiler room.

An air line was connected to the port filling station and the valves at the starboard station, storage tank and forward run were secured. Air pressure was applied at approximately 5 bar, (75 psig). A leak was indicated by the fact that the pressure within the line was not increasing. The engineer performing the test began tracing the line back to the boiler room where he discovered a fire in progress.

Apparently, a small amount of diesel fuel remained in the line and the asbestos type gasket between the flanged surfaces had weakened over time. When the air pressure was applied, the diesel oil escaped and sprayed upon steam piping and the boiler drum. Once in contact with the hot surface, the fuel particles vaporized and ignited. The fire further ignited some paint, electrical wires of the boiler's combustion control, other lighting circuitry, and some insulation material.

When the fire was discovered, a coded alarm was sounded throughout the vessel. This alarm summoned the professional fire team who then fought the fire from above while a team of engineroom personnel fought it from below. Using carbon dioxide and water, the fire was extinguished in less than twenty minutes.

At the time of the fire, there were only two boilers on line serving the two main propulsion engines. The fire damaged the combustion control circuitry of the burning boiler which then caused it to trip. For reasons unknown and shortly after the fire started, the second boiler tripped. The vessel was now dead in the water, but had electrical power supplied by diesel generators. In about ten minutes, the boiler that tripped last was back online providing a slow ahead speed to the vessel. About five hours later, another boiler was placed online and the

vessel's shaft speed was increased to about 100 rpm on both main engines. The vessel proceeded safely to its next port of call without harm, injury or discomfort to passengers or crewmembers.

The investigation into this casualty indicates that the crew members of the vessel followed proper procedure in extinguishing the fire. The fact that the fire did not spread or reflash attests to the proficiency of the fire fighting teams. Furthermore, the team's ability to be quickly summoned to the site of the fire, through the use of the coded alarm indicates effective intervessel communication hardware in addition to appropriate interpersonal communication and instruction.

Lesson Learned

Management and individuals involved with the operation, maintenance, testing and repair of systems and equipment should be aware of the potential hazards and take precautionary measures when necessary. Individuals must know in advance the direct consequences of their actions when working on shipboard equipment, piping systems and related components.

Prevention Through People



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