Case study for onboard safety meeting
Case study no. 3: Bunkering

Please read the following story of an incident which took place during an inspection of a vessel's tanks. We will be discussing the incident and the factors which led to it occurring. Please keep our procedures in mind while reading to compare with the actions of the crew below.

M/V "Container" was bound for Shanghai, China to load a cargo. The vessel arrived at the pilot station off Shanghai at about 2300 LT and made all fast at 0500 LT. Cargo operations commenced at 0600 LT.

As per charterers' instructions, the vessel were to receive 350 MT of heavy fuel oil (HFO). The vessel was designed with 4 HFO tanks. Before bunkering the Chief Engineer reported that tank nos. 1C and 3C were empty and only a small amount of fuel oil was left in tank no. 2S.

Prior to commencement of the bunkering operations all inspections were carried out strictly in accordance with the oil transfer checklist. Deck scuppers and all save-alls were plugged. A bunker barge was contracted to supply the vessel.

After connecting the hose, the vessel started HFO bunkering at 1220 LT. The inlet valves of HFO tank nos. 1C and 2S were fully opened and the inlet valve of tank no. 3C was half opened due to the small capacity of this tank and its close proximity to the bunkering station. The verbally agreed pumping rate between the parties was 150 MT per hour. During bunkering the Chief Engineer and Electric Engineer were on duty in the engine control room and the 2nd Engineer was on duty at the portside bunkering station, with an Oiler and an AB patrolling the main deck.

During the first 15 minutes the manifold pressure was low (1.2 bar). No one was requested to take manual soundings because the automatic gauge measurements were monitored on the computer in engine control room by the CE. After 15 minutes the CE ordered the 2nd Engineer to speed up the bunkering operation. The 2nd Engineer forwarded the message to the bunkering barge – telling the barge to increase the pressure. The bunker barge increased the pressure to 2.8 bar. During bunkering, the tanks' gauges always showed the following figures: no. 3C-35cm-15m³, no. 1C-10cm-10m³, no. 2S-10cm-17m³. At 1240 LT the Chief Engineer ordered the 2nd Engineer to send the Oiler to take soundings of tank no. 3C. Before being able to take the sounding of tank no. 3C the oiler noticed HFO coming out of the ventilation pipe at 1245 LT. The Oiler was not equipped with a handheld VHF and had to run over to the 2nd Engineer to raise the alarm. Heavy fuel oil was still overflowing through the ventilation pipe of tank no. 3C. The 2nd Engineer immediately closed the inlet valves of tank no. 3C. The CE was informed and it was decided that the bunkering of the two remaining tanks should continue.

The oil had spilled over the save-all and flowed along the main deck. At the time of the spillage, no. 6 ballast wing tank was being filled and the water had overflowed onto the deck. A mixture of oil and water was now running overboard on top of the fish-plate at the aft end.

Following the oil spill the 3rd Engineer was scrambled and was responsible for the oil clean-up together with the Oiler and the AB whose previous tasks were to patrol the deck. A total of about 6 jerry cans of fuel oil were collected. The bunkering was completed at 1345 LT.

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Risk assessment form

Based on the case, we will now perform an onboard risk assessment of the incident and the factors which led to it. Bearing in mind our own procedures, please consider the following:

Hazard Identification

Based on the case description, what are the hazards involved, i.e. the potential dangers that can arise from this activity?

Risk Assessment

Could these hazards be present onboard our ships?
Frequency: How often (daily, monthly or annually) can the hazards possibly occur?
Severity: How bad are the worst possible outcomes of these hazards?

Risk Acceptance

Are the risks identified above acceptable in our company or should any of the identified risks be reduced?

Risk Treatment

How can the identified risks be reduced? (Both frequency and severity of a hazard should be assessed to determine the risk. Consider factors such as equipment, procedures and training.)
Which procedures do we have onboard that must be followed during an activity like this?