Broken valve causes pollution

The vessel was loading in port and had also planned to bunker fuel using shore trucks. The chief engineer completed the bunkering checklist.The plan was to load the fuel into port tank 2 and fill it 96%. However the chief engineer changed this just before loading and instead wanted to load port and starboard 3 tanks. The plan was to fill these tanks 90%. The number 3 tanks were half the size of the port and starboard 2 tanks.

The bunker system was lined up to bunker the port 3 tank. Deck scuppers were put in place on deck. The chief engineer then met the truck driver to agree on basic hand signals before connecting the hose to the ship's manifold.

The plan was to have the 3rd engineer taking manual soundings from the deck, as the chief engineer didn't think the automatic sounding system in the engine control room was accurate enough. An oiler assisted the 3rd engineer. A deck fitter and oiler were standing by the manifold, so they could visually see the truck driver from their position. The chief engineer was on deck monitoring the operation and in the engine room only one oiler was present.

The sounding pipe for the port 3 tank was by the superstructure and the 3rd engineer was told by the chief engineer to change tank when it reached 80% and then switch to the starboard tank. The 3rd engineer measured the soundings every 6 minutes.

When the port 3 tank was about 80% full as per the 3rd engineer's calculations, he went to the engine room and opened the valves for starboard tank 3 and then closed the valve for the port 3 tank. He did not inform anybody else on deck about what he was doing or inform the truck driver that he would switch tanks.

The hydraulic butterfly valves in question are located in the engine room but are controlled from a computer in the engine control room. The 3rd engineer did not verify the valve indicators on the valves themselves to ensure that port tank 3 was closed but verified that bunkers were being transferred into starboard tank 3 by noting that the

automatic sounding system showed the level of bunker in the tank to be increasing.

The 3rd engineer went back on deck and started taking soundings in the starboard tank. He did not take any more soundings in the port tank. Suddenly the chief engineer, who was on deck, saw oil coming out of the air vent of the port 3 tank. He shouted and waved to the truck driver to stop the bunkering.

Before the truck driver managed to stop the bunkering some of the oil overflowed into the harbour water.

The chief engineer called the master who sounded the general alarm to get all hands on deck to deal with the pollution. The port authorities were also informed immediately.

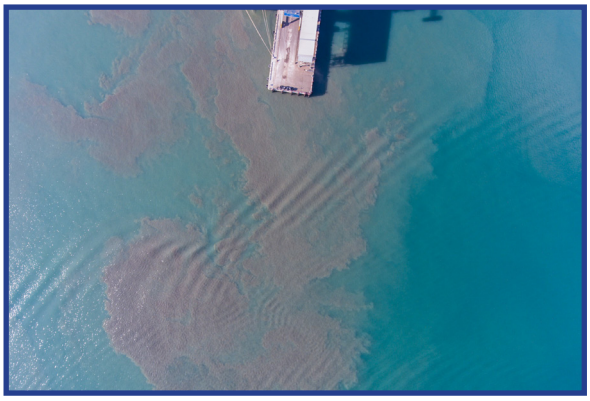
The 3rd engineer rushed to the engine room to check the valves. He opened the valves to the settling tank and started to pump oil from port tank 3 to the settling tank.

It was later found that the valve to port tank 3 was not completely shut and oil had entered the tank until it overflowed. ■

Discussion

Go to the “File“ menu and select “Save as...“ to save the pdf-file on your computer.

You can place the marker below each question to write the answer directly into the file.



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 kind of accident could happen on our vessel?

3. What could you have done to prevent this accident?

4. Do we stop the bunkering when shifting tanks?

5. Is it a requirement to inform all involved parties when a fuel tank is switched?

6. How do we ensure that valves are closed?

7. Do we check the valves in person during bunker operations?

8. What sections of our SMS would have been breached if any?

9. Does our SMS address these risks?

10. How could we improve our SMS to address these issues?

11. What do you think was the cause of this accident?

12. Is there any kind of training that we could do that addresses these issues?

Issues to consider

- Always ensure that all involved parties are informed when tanks are switched. Reduce the flow from shore or stop the bunkering when switching tanks.
- It is essential to verify that the valves are completely shut and in working condition. This should preferably also be done manually to verify that the valve is closed.
- It is also essential that the tank system is working correctly and that it can be monitored with confidence in the engine control room. Just trusting manual soundings is not appropriate. It would also have been appropriate to sound the port tank when returning to deck to ensure the level was not increasing.