

MONTHLY SAFETY SCENARIO

DECEMBER 2021

Severely burned in an onboard explosion

It was a clear winter evening, and a Capesize bulk carrier carrying steam coal in its seven cargo holds was approaching port to anchor while waiting for a berth to be ready for discharging. During the voyage the vessel had sailed through heavy weather conditions which reached Beaufort scale 8.

On loading the coal, the Master had received the cargo declaration from the shipper which noted a risk of methane release. This is common for coal cargo.

The bosun and an AB approached the forecastle to prepare the anchor. To start the anchor windlass, they had to enter the windlass control room on the forecastle, which was slightly elevated from the main deck. A ladder had to be used to get up to the forecastle. The door to the windlass control room was then below the forecastle, facing the stern towards the cargo hatch coamings of cargo hold 1.

The hydraulic panel for the anchor windlass was inside the control room and other equipment panels. The access hatch to cargo hold 1 was also in the room.

The two crew members entered the room and approached the windlass panel. The bosun pushed the start button. At that moment there was a major explosion in the room. On the bridge they heard a large bang from the bow but could not really see what had happened because it was dark outside. The Chief Officer and another AB rushed to the bow to inspect what had happened. The Chief Officer approached the forecastle and touched the bulkhead to the windlass room. He could not feel any heat. He shouted for the bosun but got no answer and so decided to open the door. When he looked inside he could see that there was almost no smoke in the room, but there were two bodies lying on deck, not moving. He called on the radio for medical assistance and asked that two stretchers be prepared.

The Master called the VTS and asked for medical assistance. It took 10 minutes for the Second Officer to arrive at the scene with first aid equipment, and soon afterwards crew members came





with two stretchers. The bosun and the AB had severe burn injuries, and there was little that the Second Officer could do but to give first aid and ensure that both men were breathing. An hour later a coast guard cutter with paramedics arrived and the injured crew members were taken ashore. They were flown to a specialist hospital where they received help.

Both survived but had to go through painful surgery and it is unknown if they will ever be able to work at sea again. It is probable that an accumulation of methane gas occurred within the windlass control room. The gas mixed with air allowed the concentration of gas to ignite inside the hydraulic control panel through a switch or relay. The resulting ignition within the panel created an explosive flame and pressure wave that rapidly expanded into the control room. It seems likely that the methane gas entered the control room through the cargo hold access hatch.

After the incident the windlass control room was classified as an enclosed space which means that the crew must now test the atmosphere before entering to ensure it is gas-free and has enough oxygen.

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?

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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. Do we have additional spaces on board that could be considered enclosed spaces?
4. Do we test the atmosphere and ventilate all enclosed spaces before entry?
5. How could this accident have been prevented?
6. Do we have a risk assessment for this kind of job, and if so could this risk assessment be improved?
7. Is a work permit required?
8. Do we keep and share the information from the cargo declaration?
9. Do we get information from the charterer or shipper about the risks with the cargo?
10. Is our cargo testing equipment as per the IMSBC code and are all the relevant crew trained in how to use it?
11. Is there any kind of training that we should do that addresses these issues?
12. What sections of our SMS would have been breached if any?
13. Does our SMS address these risks, and if not, how could we improve our SMS to address these issues?