Case study for onboard safety meeting
Case study no. 21: Mooring operations

Please read the below story of an incident. Keep our vessel's procedures in mind while reading to compare with the actions of the crew below as we will discuss the factors which led to the incident occurring.

A ro-ro ferry was making preparations to leave her usual berth for a scheduled sailing from Italy. Wind and tidal conditions were benign. One OS and four ABs were assigned to the aft mooring deck to assist the Second Officer in charge of the aft mooring deck. The first to arrive was the OS who, following accepted practice, started the ramp and mooring winches and heaved in the slack on both the stern ramp wires and aft breast lines. The Second Officer was the last person to arrive as he had been assisting the chief officer in supervising the cargo loading and had thereafter shut down the ballast anti-heeling system in preparation for departure.

Once at the aft mooring deck, the Second Officer had to stand in the 'snap-back' zones near the fairleads, so that he could relay orders to the line handlers ashore and the deck crew. The Second Officer received instructions from the bridge to close the stern ramp and to "let go". This order was passed to the OS, who operated the ramp winch to heave in the two steel wire ropes and to close the stern ramp.

The winch operator - the OS - was attempting to control two winches at the same time, one heaving up the stern ramp and the other veering the stern line. The operator had previously controlled the winches, and he knew that the controls of the mooring winch operated in the opposite direction to that of the ramp winch. However, he was distracted during his operation of the winches and pushed the stern winch control away from him when intending to veer the rope. This caused the winch to heave in. Before the effect of this was realised the mooring line had parted.

The stern line parted with a loud crack and snapped back, striking the legs of the Second Officer. His left leg was severly injured and both legs were broken. The recoil of the line also dislocated the shoulder and elbow of a shore worker.

The vessel's first-aid team and master quickly arrived at the scene to treat the Second Officer. His injuries were severe and it was difficult to control the bleeding. The second officer was evacuated to hospital, where his left leg had to be amputated.

Analysis of the mooring line after the accident showed that it had deteriorated and its breaking load having been reduced from a certified 60 tonnes to 35 tonnes, largely due to exposure to ultraviolet radiation from sunlight. The age of the rope was not known. Although the vessel's mooring ropes were required to be inspected, the onboard procedures were informal and no records were kept.

How to improve by lessons learnt

Based on the case and the keywords, you should now perform an onboard risk assessment of the incident and the factors which led to it. Bear in mind our vessel's procedures.

You can also discuss the keywords below in order to determine onboard areas/topics for increased awareness:

– The danger involved in having several roles during mooring operations
– Being in the 'snap-back' zone; is it acceptable for a mooring station to be in a snap zone?
– Commencing the operation before the officer in charge arrives
– Communication with the bridge, officer in charge
– Mooring operation a part of Safe job Analysis?
– Inspection of mooring ropes part of maintenance system
– Mooring operation - An important part of onboard risk assessments

1 What factors contributed to the incident in the above case?

2 Risk Assessment: Could some of the factors identified be present on board your ship? (How frequent could they be present? How severe could it be if they are present?)

3 In the risk transfer zone (yellow and red), what would you suggest as measures to control the risk? Any additional barriers that could be introduced?