MAIB
MARINE ACCIDENT INVESTIGATION BRANCH

FLYER TO THE SHIPPING INDUSTRY

Wah Shan: Fatal injuries to a crewman while securing a tug's tow wire

Narrative

On 2 October 2012, the carpenter on board the capesize bulk carrier *Wah Shan* was struck and killed by a messenger line while he was attempting to secure a tug's tow wire in preparation for the vessel berthing. His neck was fractured by the blow. The investigation found that: the configuration of the aft mooring deck did not provide an obvious method of using a winch to heave up the towline safely **(Figure 1)**; the risks involved in securing the tug's tow wire had not been properly considered; and the aft mooring party used poor line-handling practices and did not function as an effective team. These factors resulted in the crew using an unsafe method to heave the tow wire on board, and led to the messenger line slipping under tension and causing fatal injuries to the carpenter.

Photograph courtesy of Humberside Police

Figure 1: Layout of mooring equipment on the aft deck

Wah Shan arrived at Humber light float at 0430 in the morning. Two pilots joined the vessel there and at 0630 the master announced arrival stations. The carpenter arrived at the aft mooring station first, followed by the second officer and three other crew members. At 0655 four tugs met the vessel to assist it to berth alongside. The carpenter lowered the ship's messenger line through the aft centreline Panama fairlead to the stern tug. The tug crew tied it to their messenger line which attached to the steel tow wire. Both vessels maintained approximately 6.4 knots speed. There was approximately a 13m drop from the ship's aft deck to the tug.

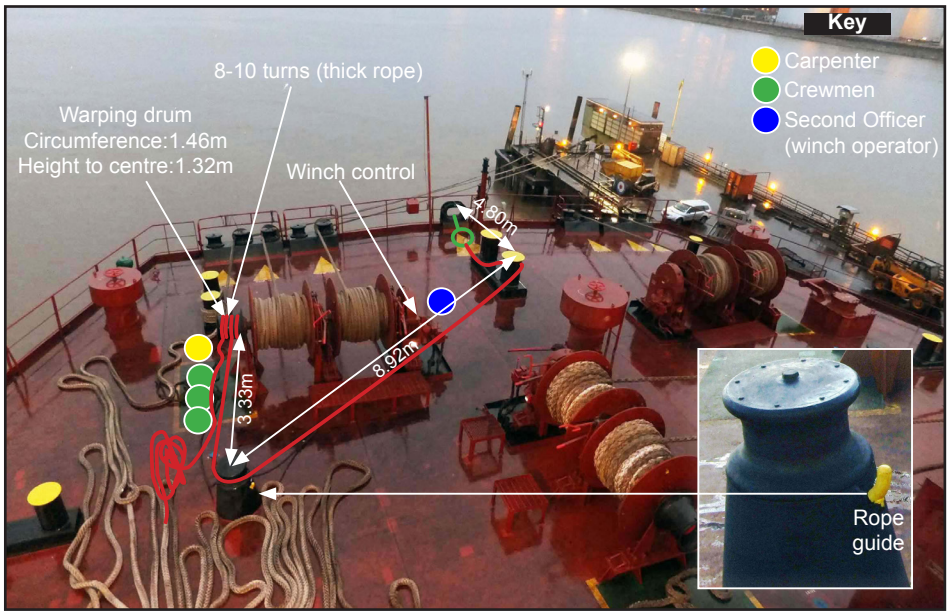

Figure 2: Layout of mooring equipment and messenger line routing at the time of the accident

The ship's crew initially tried to hoist the tow wire by hand, but the tug's mate asked them to use their winch. The carpenter took the messenger on to the warping drum on the port side as indicated in **Figure 2**.

He wound the messenger on to the warping drum from the underside leading it back towards the pedestal fairlead. Around eight to ten turns of the messenger were taken on the drum and due to the unfavourable angle of the lead onto the drum the rope was bunched towards its outboard end. As the drum rotated riding

turns developed, causing the excess length of the messenger line which was coiled on deck to be pulled back into the drum. The messenger line slipped off the outer end of the drum several times causing the tow wire, which was nearly at the aft bitts, to drop back several metres down to the tug.

The carpenter asked the other crewmembers to help him push the messenger line back on to the drum while the second officer operated the winch. In order to do this, the carpenter stood close to the warping drum with his head a few centimetres away from the outboard end **(Figure 2)**. Suddenly, he was heard to cry out. He was found slumped forward onto the messenger line. The coastguard was informed and it was decided to berth the vessel as soon as possible to let an emergency medical team board the vessel. At 0804 the vessel came alongside at Immingham; the paramedics who examined the casualty were unable to revive him and he was declared deceased.

Safety lessons

Heaving up a tug's tow wire is a relatively simple task on a vessel with well laid out mooring equipment. However, the arrangement of the equipment on the aft mooring deck of *Wah Shan* did not provide an obvious safe method of carrying out this task. This resulted in the mooring team adopting an inefficient and dangerous method of attaching the messenger line to the winch drum. As there may be other vessels similar to *Wah Shan,* either in operation or under construction, it is extremely important that ship yards, vessel operators and ships' crew recognise this risk and take steps to mitigate it. The role of each party in controlling the risks can be summarised as follows:

a. **Ship builders**: When designing the layout of equipment, ensure that it is ergonomically efficient and naturally encourages people to work safely. Poor equipment layout and design invariably results in people taking short cuts and making errors.
b. **Ship operators**:
    i. Ensure their crews understand and follow the instructions in the safety management system to assess and control the risks involved in mooring and towing operations
    ii. Strive to achieve an environment on board their ships where all the crew, irrespective of rank, are encouraged to spot and report hazards.
    iii. Improve leadership and team-working skills among their crews.
    iv. Provide on-board learning aids for safe mooring and towing operations.
c. **Senior officers on board**:
    i. Display, in an easily accessible location, the arrangements for rigging the safest leads for mooring and towing lines.
    ii. Insist that the mooring teams carry out a dynamic risk assessment of the tasks they plan to do, especially if they are unusual, or the nature of the task changes part way through.
    iii. Carry out familiarisation training for new crew members and demonstrate correct operating practices when there is a change of personnel in mooring teams.
d. **Individual crew members**:
    i. When things go wrong, stop the operation and consider alternative approaches. Discuss the issues with other team members and be prepared to listen to others, especially when they identify hazards.
    ii. No job is more important than your safety. It is always better to delay a job than risk your life to complete it in time.

This flyer and the MAIB's investigation report are posted on our website: www.maib.gov.uk

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