

Safety Alert

Number: 26-08

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Subject: Mooring Line in Tunnel Thruster

What Happened / Narrative

While carrying out a mooring operation in port, the vessel was using increased bow thruster power to maintain position against an astern wind of approximately 13 knots and the low-friction characteristics of the quay fenders. Following the securing of the aft moorings, the forward mooring party sent a spring line ashore using a heaving line. A second heaving line and bow line were connected in a "daisy-chain" arrangement to facilitate handling by shore linesmen.

The berth arrangement required linesmen to receive the heaving line and then move it along the shoreline to a dolphin. The shore route consisted of uneven, rocky terrain. Communication between the vessel and shore personnel was limited to verbal and visual signals.

As the bow line was being paid out, a crew member observed the attached heaving line moving towards the bow thruster area. The exact reason the line became uncontrolled could not be determined; it may have been inadvertently released, become detached, or slipped from the control of shore personnel. The heaving line entered the water and was subsequently drawn into the operating bow thruster by suction forces. The attached mooring rope was then also pulled towards the thruster.

The bridge was immediately informed, and bow thruster power was reduced. However, Thruster No. 1 tripped and shut down after ingesting the line. The vessel began to move off the berth but was safely brought back alongside using Thruster No. 2, and an additional bow line. Once safely moored, all thrusters were shut down, and it was confirmed that a rope had become lodged in Thruster No. 1.

Divers were mobilised and successfully removed the rope by hand. Inspection and operational testing identified no damage to the thruster or propeller, and the unit was returned to service.

Why Did it Happen / Cause

Immediate Cause:

A heaving line entered the water in the vicinity of an operating bow thruster and was drawn into the thruster by suction forces, resulting in the attached mooring line becoming fouled in the thruster.

Contributing Factors:

- Use of a daisy-chain arrangement for passing mooring lines ashore.
- High bow thruster loading required to maintain vessel position during mooring.
- Loss of positive control of the heaving line prior to entering the water.
- Limited communication between vessel and shore personnel.
- Shore-side line handling requiring personnel to move lines between dolphins over difficult terrain.
- Floating line characteristics combined with proximity to an operating bow thruster.
- Previous successful use of the arrangement may have reduced awareness of the associated risk.

Root Cause:

Failure to ensure positive control of mooring and heaving lines while operating a bow thruster during mooring operations allowed a loose line to enter the thruster suction zone and become fouled.

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Corrective Actions Taken / Recommendations

Actions Taken:

- Diving contractors were mobilised and safely removed the rope from the thruster.
- The thruster and propeller were inspected by divers, with no damage identified.
- Functional testing of the thruster was completed with no alarms, abnormal noise, or vibration detected.

Recommendations:

- Discontinue the use of daisy-chain mooring arrangements and pass mooring lines ashore individually wherever practicable.
- Always maintain positive control of all heaving lines and mooring lines during mooring and unmooring operations.
- Consider the effects of bow thruster suction and propulsion forces during mooring planning, risk assessments and toolbox talks, particularly when floating lines are being handled.
- Minimise the amount of loose or floating line in the water when thrusters are in operation.
- Improve communication arrangements between vessel and shore personnel during mooring operations to ensure the status and control of mooring and heaving lines are clearly understood.
- Review berth-specific mooring arrangements and associated hazards prior to operations, particularly where shore personnel are required to transport or handle lines over difficult terrain between mooring points.
- Stop operations and reassess the task if positive control of any mooring or heaving line is lost or its status becomes uncertain.
- Share lessons learned fleet-wide to raise awareness of the risk of mooring and heaving lines being drawn into operating thrusters during berthing and unberthing operations.

Photographs / Supporting Information

