CRANE WIRE FAILURE AND AFTERMATH

01 February 2023

The Vessel

Vessel Particulars

- Built – 2010 Linhai, China
- Vessel Type: Handy Bulk Carrier
- GT: 20,867 tons
- Summer DWT: 32,593 tons
- LOA: 180 m
- Beam: 28 m
- Summer Draught: 10.17 m
- Cranes: 4 x 30.5 MT SWL

Location

- Port Kembla
- Port side alongside
- Berth 109 – BlueScope terminal

The Incident

Stevedore lifted steel coil from shore to vessel at 09:30hrs 1st Feb 2023

When beginning to swing across deck noises were heard that indicated possible wire failure, crane operator reversed the swing back towards the berth. The lifting wire then parted dropping the 22 tonne steel coil onto the wharf

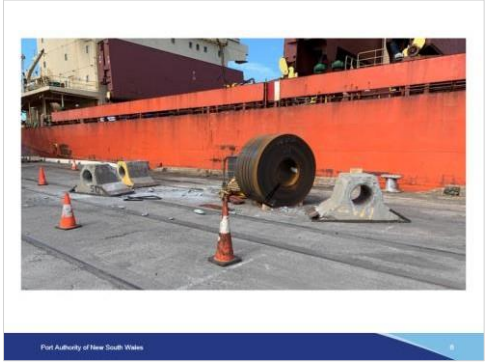
It hit the wharf after first striking a steel coil in position waiting its turn to be loaded. By first impacting the coil, substantial wharf damage was avoided

As a precaution, the underside and greater wharf structure were examined before work recommenced (by engineers)

All stevedores were following safe work practices and were outside lifting exclusion zones

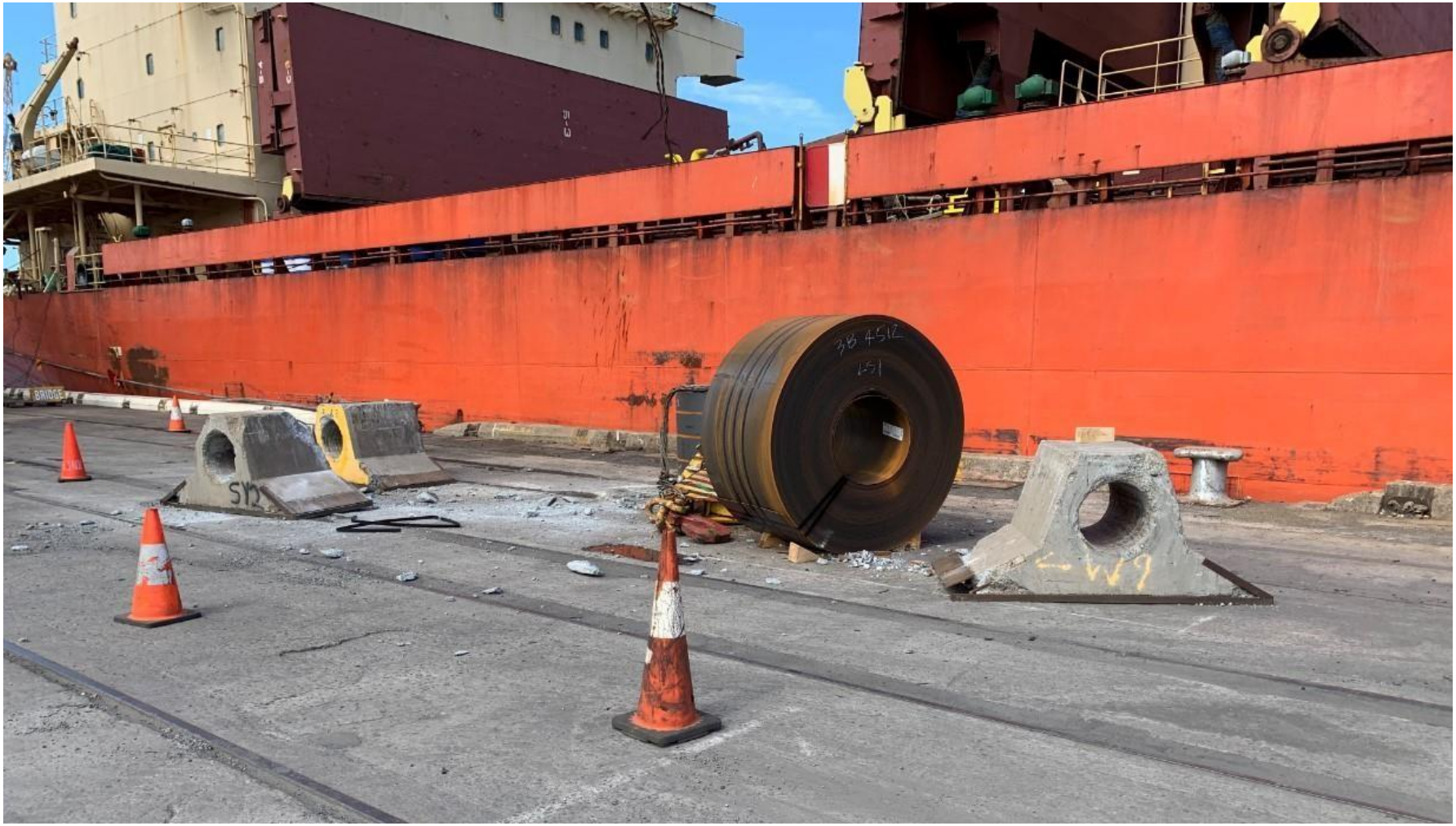
As is their standard practice, stevedores inspected all wires and cranes before first use this port

Observations by Berth Operator



- The photo shows what the arrangement should have looked like prior to the lift
- The coil on the left was the one being lifted
- It dropped onto the coil on the right, spinning it around approx. 90deg and pushing the concrete barrier away from beside it
- The coil that fell then hit the barrier that was between the coils and pushed it out in the other direction, with the coil that fell landing on its face on the berth
- Exclusion zone for personnel meant that no-one was injured


SY2



Investigation by Stevedore

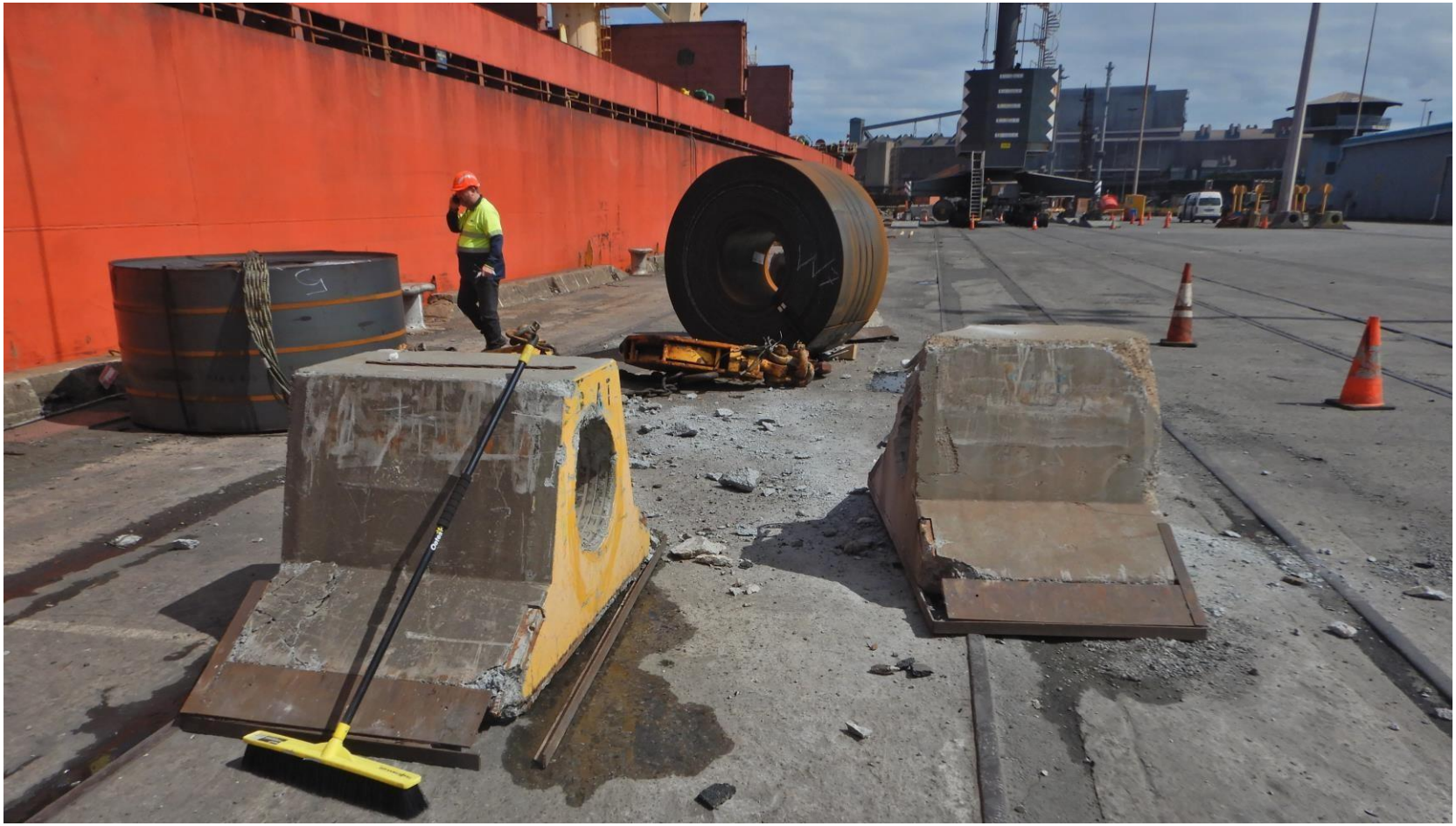
Crane Operator was in the process of lifting 21t rolled steel coil from Port Kembla berth 109 into ship's hold #4 on the vessel using ships crane #4 when the coil fell back to wharf

Visual inspections of the vessel crane and lifting wire by a competent person did not identify any defect, damage or concern prior to commencement of lifting operations

The vessel crane wire parted (failed) during normal use in line with the certified Working Load Limit of the plant

Post incident visual inspection of the broken crane wire strands is indicative of internal corrosion of the crane lifting wire

The Coil Landing on Another Coil Reduced Damage to the Wharf

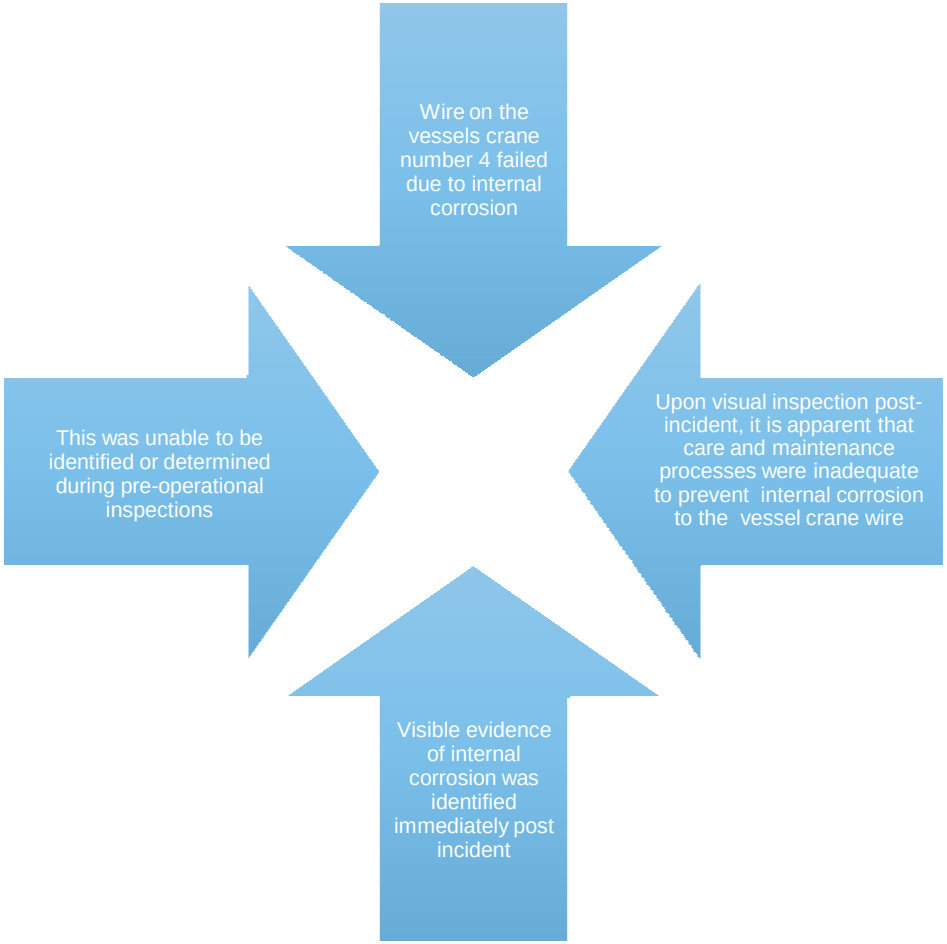


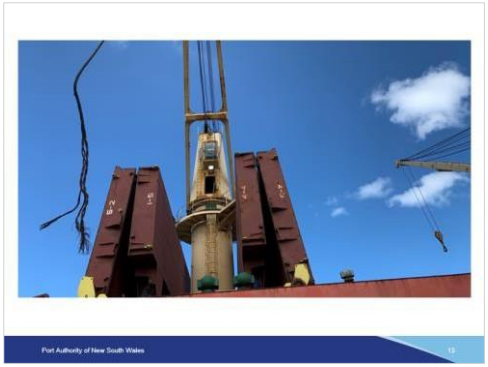
The Crane Hook and Coil Lifting Cradle Cracked Concrete

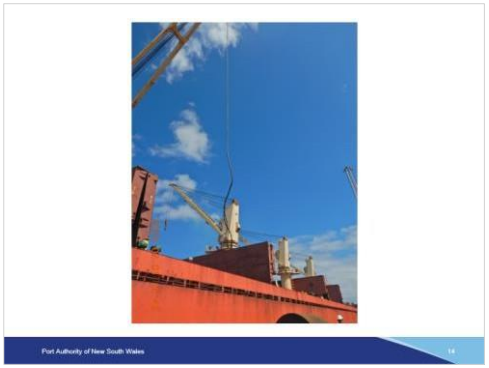

2023 02 01 15:43


SAFE ZONE
BRIDGE

Root Cause Determined by Stevedores








5-2
5-1
4-4
4-3


2023.02.01 15:42

Investigation Revealed Much More

- Vessel operator had only fairly recently taken over the vessel
- Onboard records showed the lifting wire for the 30.5 tonne rated, No.4 cargo crane was renewed July 2019 (previous vessel operator)
- Circumstances relating to the sourcing of wire and how it was stored/ stowed and cared for up until use onboard – not investigated / determined
- Cargo lifting equipment last annual Survey by Class – Sept 2022 (Incident 01 Feb 2023)
- Spec' sheet for surface lubricant indicated same lubricant was also suitable for open gear and chain drives, giving the impression it was a surface lubricant, not a penetrating grease
- Both lubricant types are used on wires, but the application from time to time of a wire penetrating lubricant is required, not just surface lubrication of wires.
- Previous operators' maintenance regime for ships cranes not determined
- Noting other factors of their intention to remove the vessel from their fleet, maintenance may not have been fully upheld, further noting not investigated/ proven

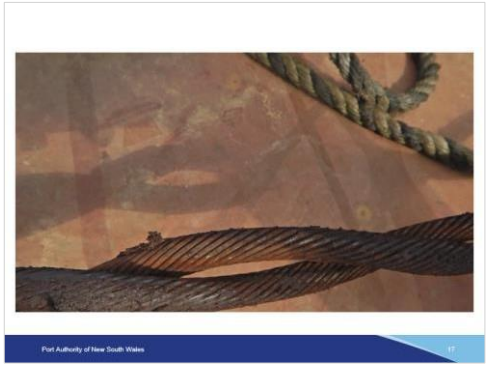
Root Cause

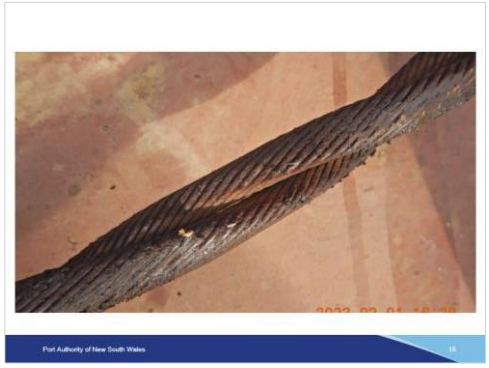
03 Feb 2023 examination of parted wire – internals/ core dry and or corroded

Onboard evidence indicated same crane wire lubricant was in use by previous vessel operator had been using as onboard records showed, at least since 2010 (identical lubricant charts from oil/ lubricant supplier with dates listed on each)

Surface lubricant on wires was plentifully applied, at a minimum

Wire's core appeared dry and surface corrosion commonplace






2023 02 01 16:28


2023.02.01 16:28


2023.02.01 16:28

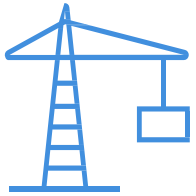
What Worked

- Presence of Mind and Quick Actions of Crane Operator
- Exclusion Zone Around Loading Operations
- Concrete Barrier Prevented Coil Roll

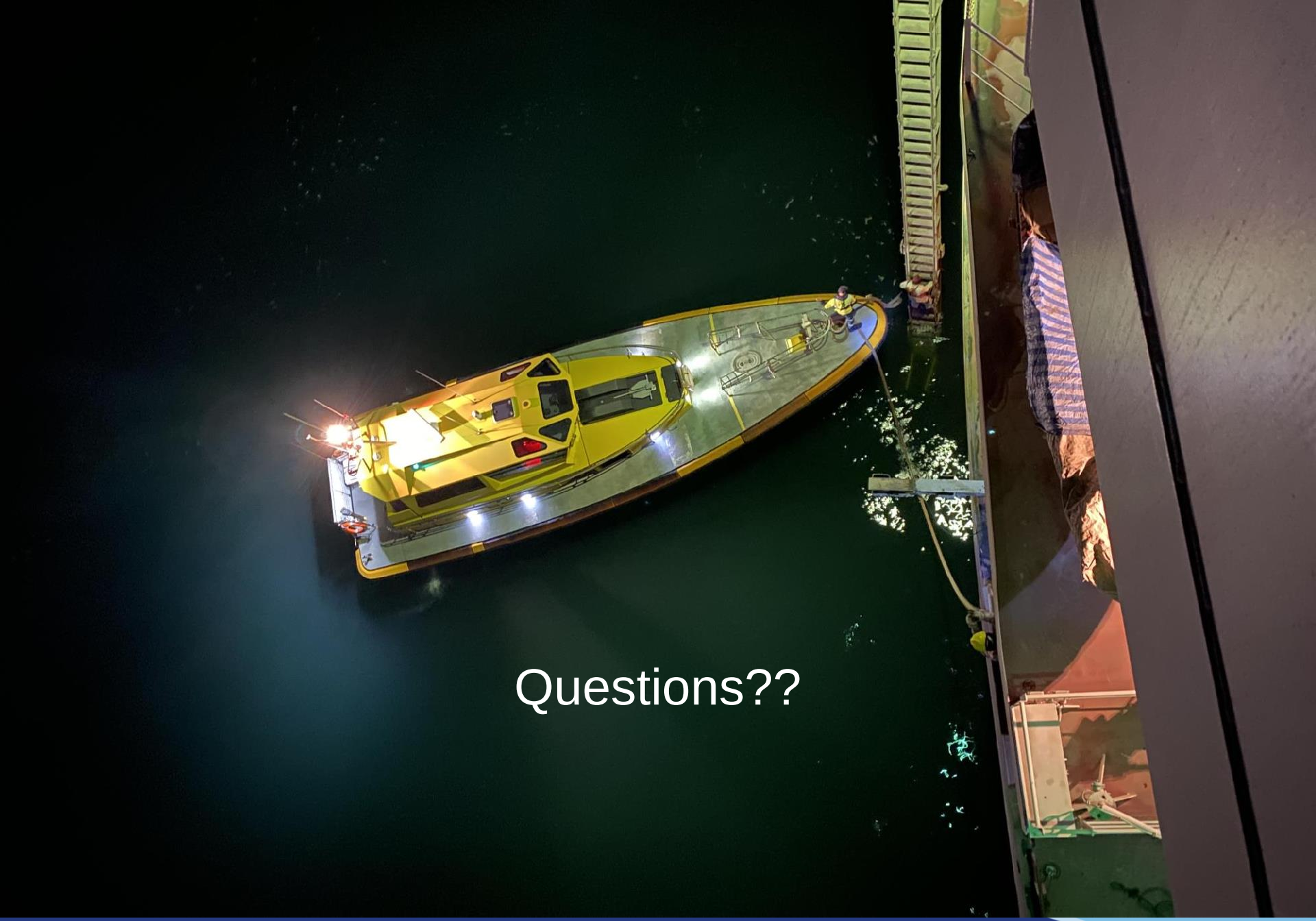
Opportunities for Improvement?

Better Inspection of Crane Wires by Stevedores Prior Starting Cargo

Vessel Planned Maintenance for Wires Including Replacement Cycle



Consideration on Ongoing Continuous Maintenance Program for Cranes


Questions??