MER SOLUTIONS

Inspection Results & Trends

Relating to ARCSOPT Technical Guidelines

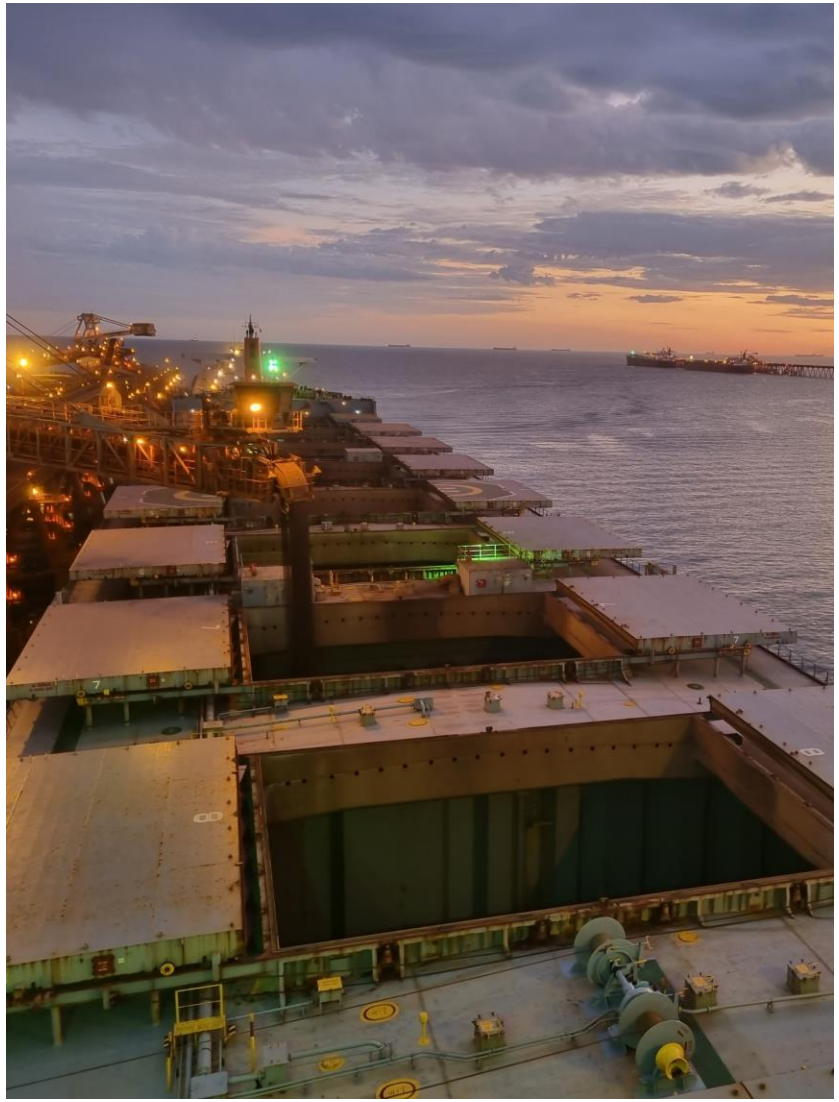
ARCSOPT In Person Meeting – 01 November 2023

MER Solutions - Who are we

Providing supply chain stakeholders specialist maritime, energy, resource, and shipping solutions both in Australia and worldwide since 2016.

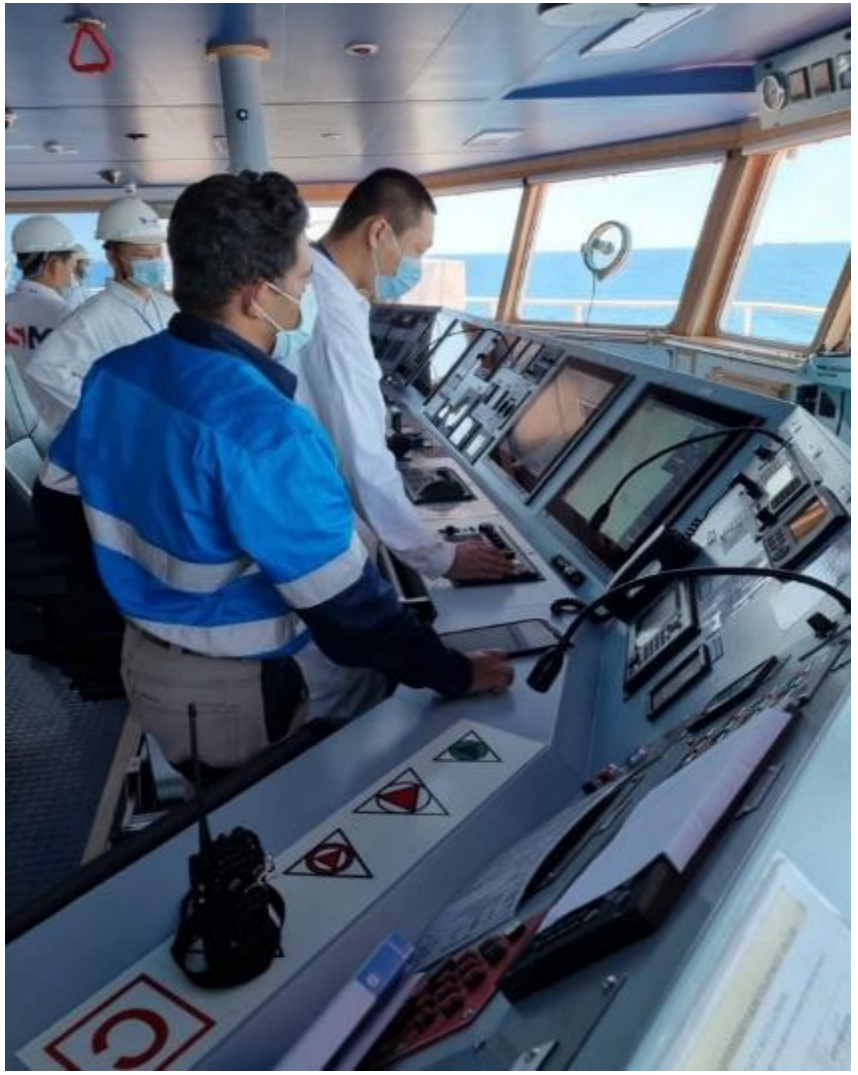
- Maritime and shipping superintendence,
- Inspection and vetting programs,
- Consultancy and project management,
- Technical assistance and support

MER Solutions is accredited and operates in accordance with ISO9001 and ISO45001 Quality and Safety standards.



Our MER Team

- Solution and people focused team of maritime safety professionals,
- Permanent representation in all major ports in Australia, New Zealand, China, Singapore, and Europe,
- Inspection and vetting services are delivered by Trained and Accredited Superintendents,
- Hold Class 1 Certificates of Competency (Deck or Engineer) and/or equivalent maritime tertiary qualifications or previous Class Surveyor experience.
- Dedicated customer service team coordinates high standards for our attendance and vetting operations across our network.



Physical BVIQ Inspection

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MER Solutions flagship product BVIQ (Bulk Vessel Inspection Questionnaire) is a standardised inspection tool for verifying the condition, operation and safety performance of vessels. This innovative digitised tool proactively identifies areas of improvement in a mutual strive towards ensuring maritime safety.

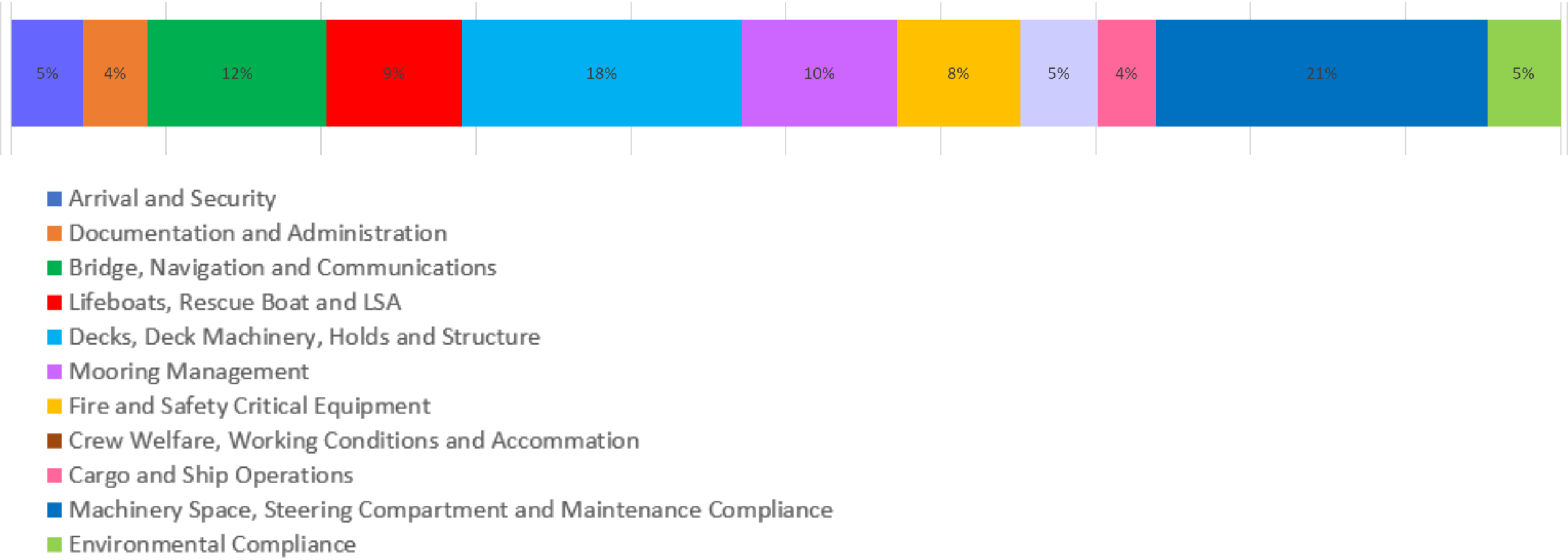
Key Focus areas:

- Channel risk (machinery, engine room, maintenance),
- Production and delay risk (deck, hydraulics hatch operation, ballast systems),
- Mooring line and mooring winch management,
- Safety of crew and terminal staff (crew familiarity, safe work practices, safety management),
- General safety and critical safety equipment on board

Request a BVIQ inspection at: bviq.net

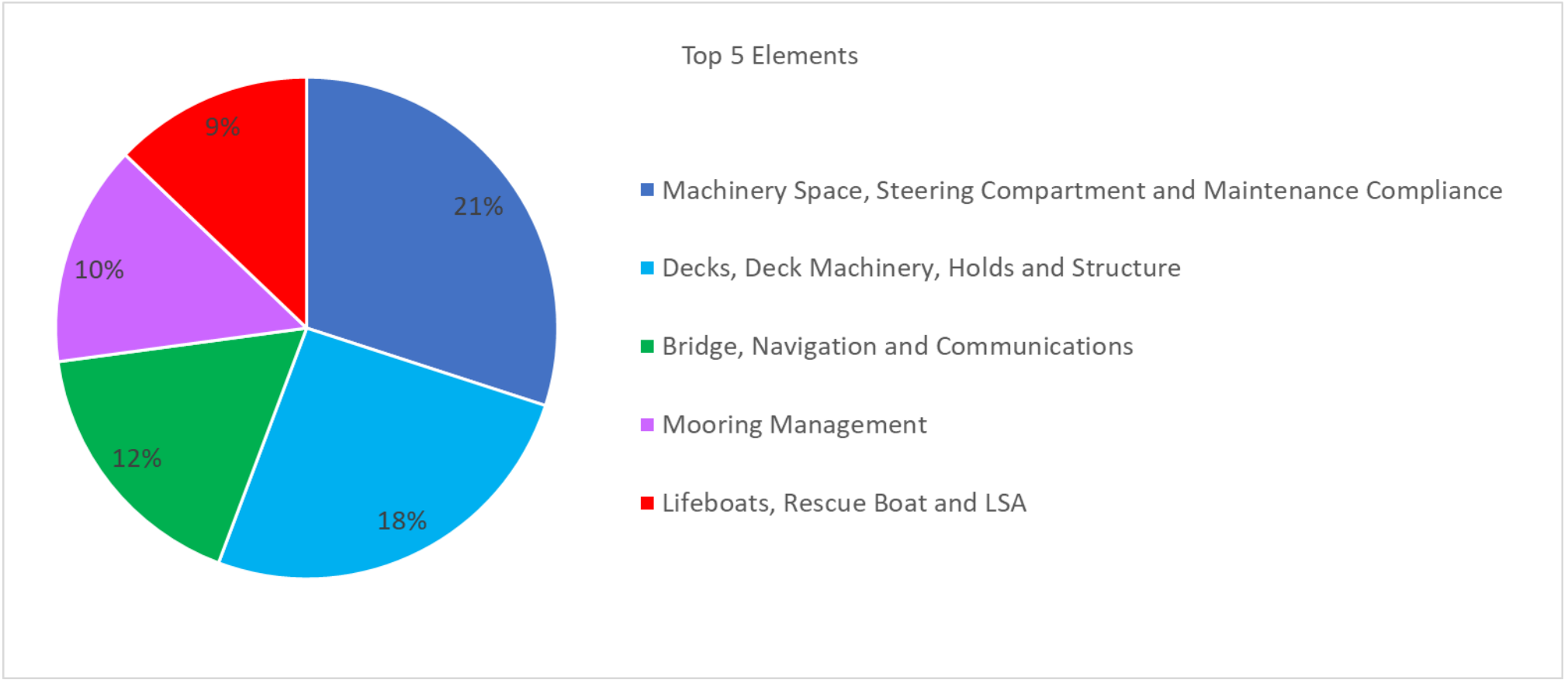
Physical BVIQ Observations

A Physical BVIQ inspection generates on average 8.7 observations per inspection (peer fleet rolling average).
MER Solutions have completed 1408 Physical BVIQ Inspections in recent years, identifying 12280 total observations fleet wide. The bar graph shows average observation (%) breakdown of all 11 elements.

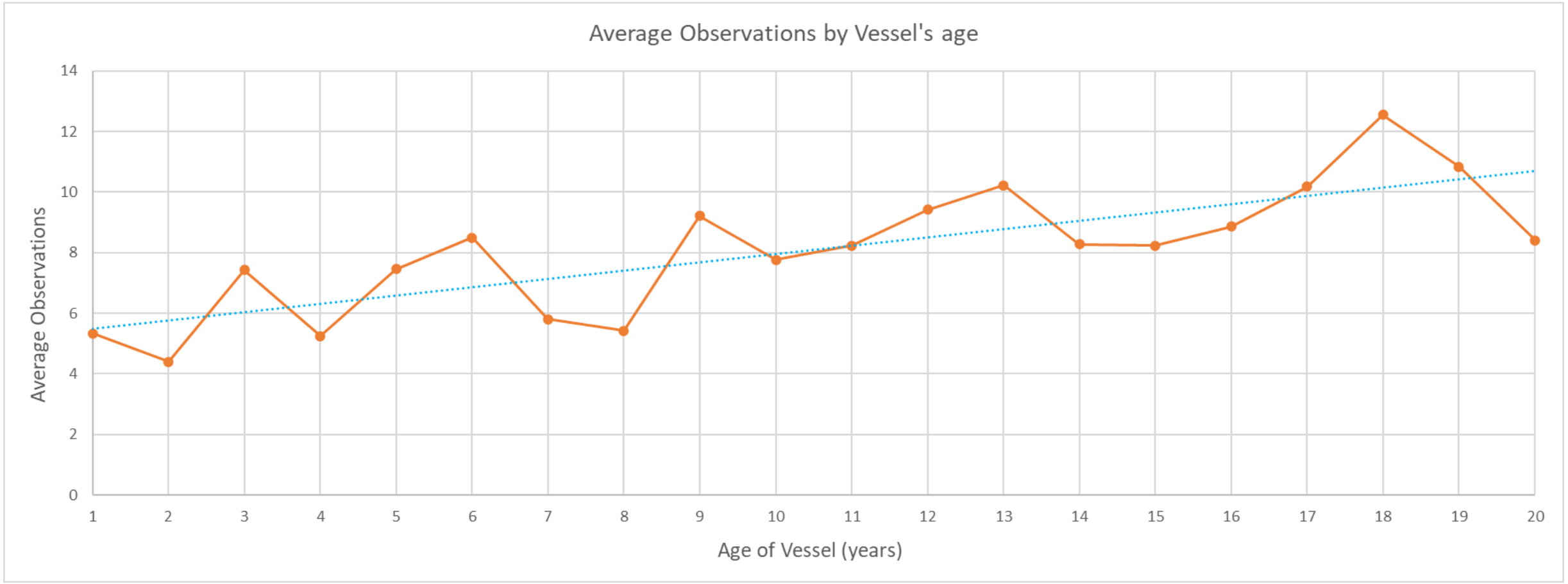


Top 5 Elements

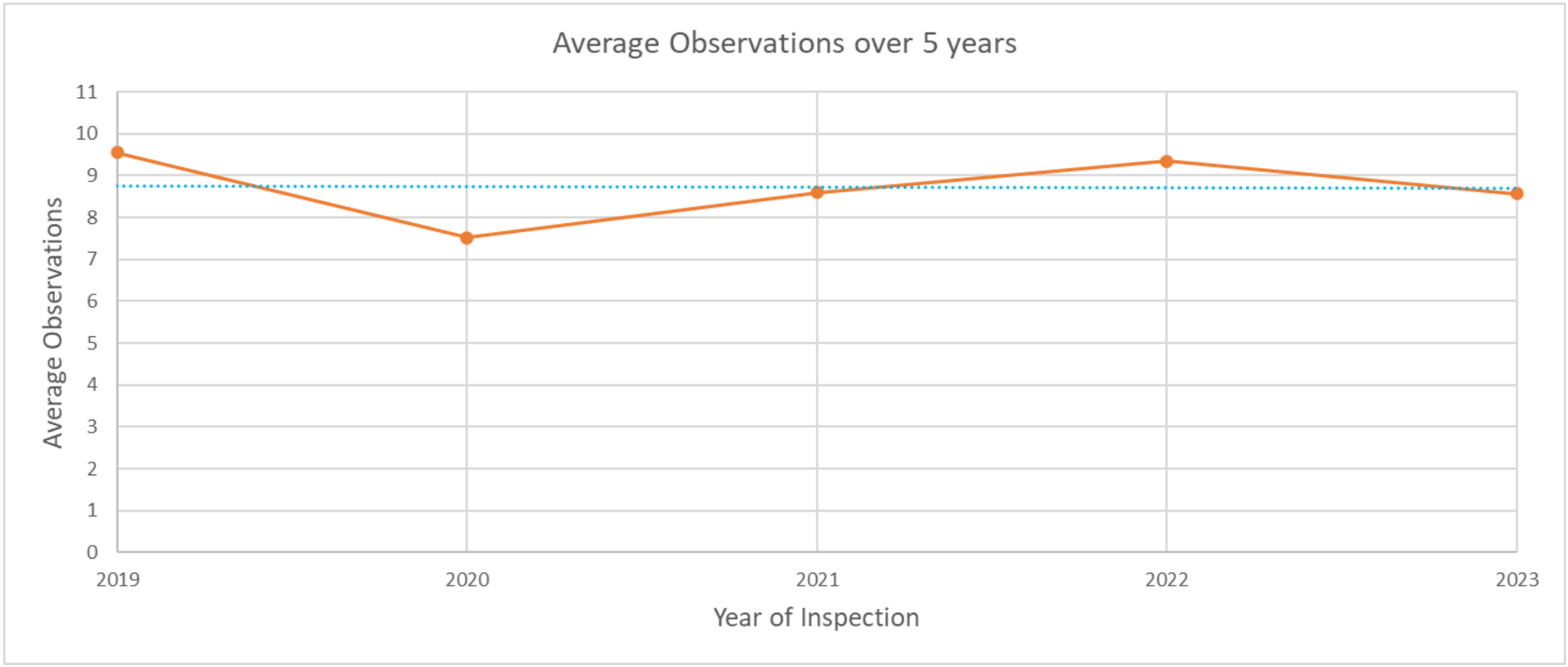
Data analysis shows the most observations are being identified in following Elements:



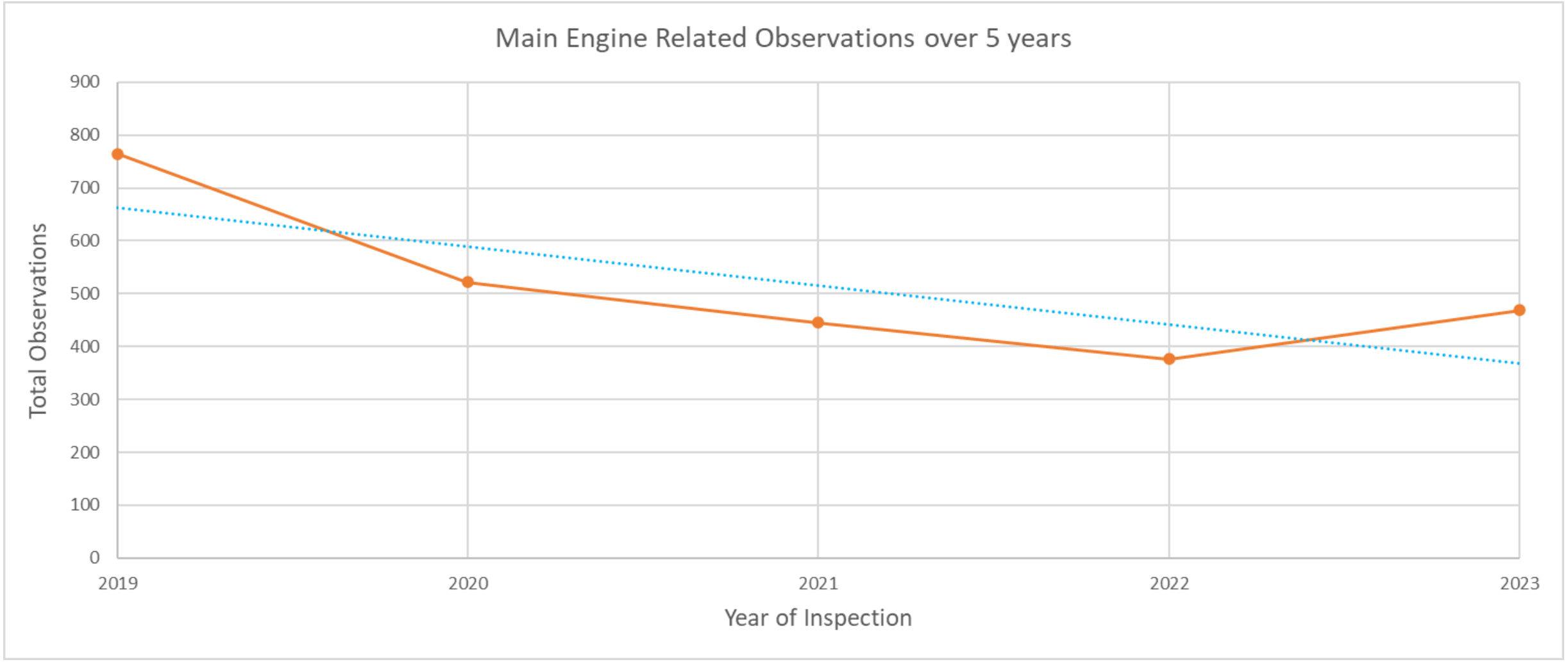
Average Observations by Vessel’s age



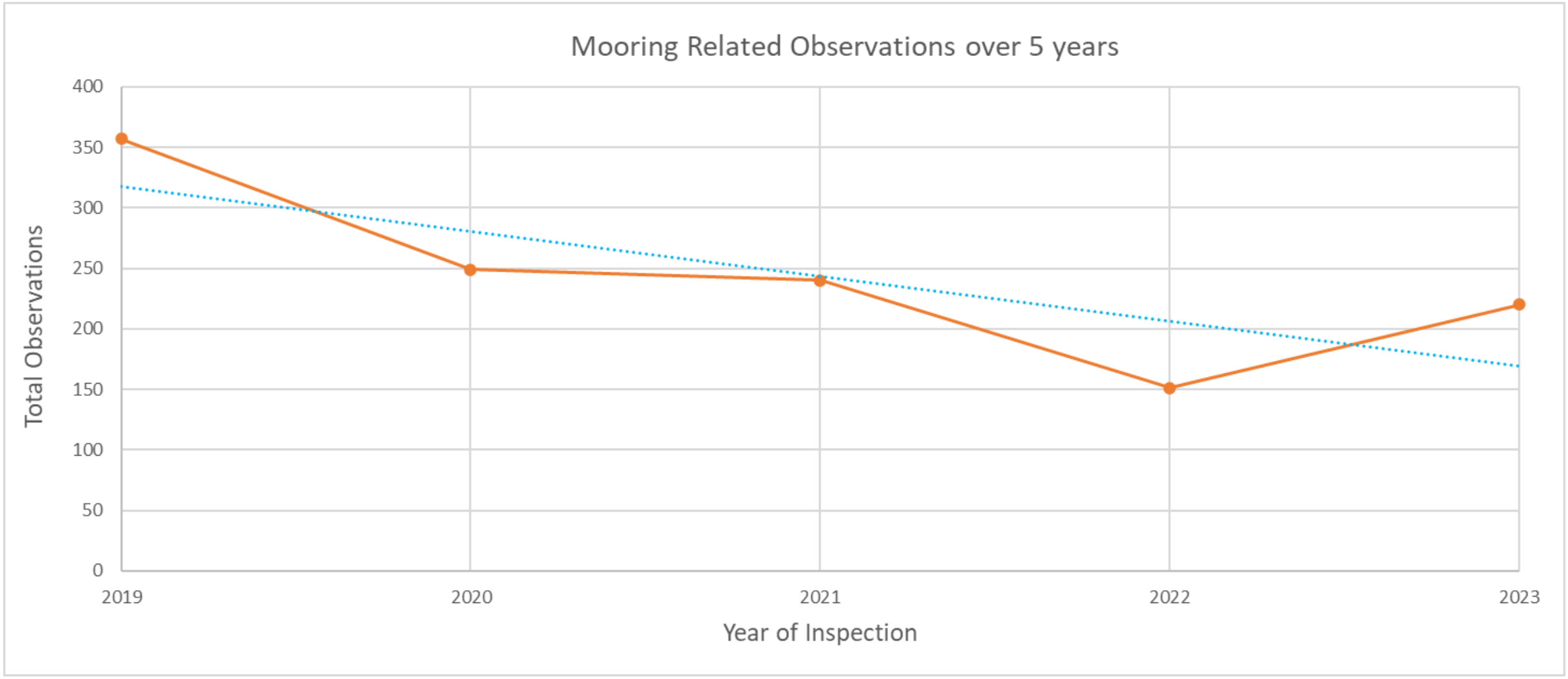
Average Observations over 5 years



Main Engine related Observations

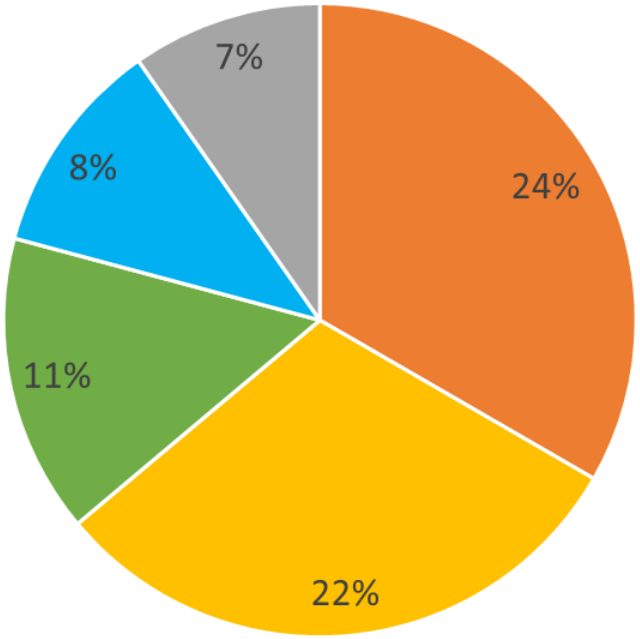


Mooring Related Observations



Mooring Management

Element 6: Mooring Management generates on average 10% of observations per inspection.
Identifying 1228 total observations fleet wide. Data analysis shows the most observations are being identified for the following Mooring questions:



Top 5 Mooring Observations

- Valid test for brake holding capacity and the mooring winches being correctly set?
- Mooring lines in good condition and regularly inspected?
- Mooring and anchor winches in good condition?
- Hydraulic mooring winch motors, pumps, controls and pipelines free of leaks?
- Mooring equipment marked with SWL?

Mooring

6.11 Do all mooring winches have a valid test for brake holding capacity and the mooring winches being correctly set?* NO ✖

Guidance: The brake spindle at the rendering position must be marked with a corresponding visual setpoint indicator. The test date should be marked on each mooring drum and a Brake render test certificate verified. Brake render test should be completed at intervals not greater than twelve (12) months. The mooring brake render pressures for conventional mooring winches should be calculated at the 3rd-4th layer of mooring lines. The mooring brake render pressures for split winches should be calculated at the first layer. For both conventional drums or split drums the mooring winch render load should not exceed the mooring winch brake capacity at the first layer. The mooring winch render point should be less than the mooring equipment/mooring furniture safe working loads. As a guide the mooring winch render point should be approximately 50% of the mooring line LDBF. Mandatory comment and photo: The inspector should record the date of the last mooring render test and a photo of the certificate and record the render test set point and the SWL of the mooring furniture.

Brake render tested record on 23 May 2023,
but no latest test report/certificate provided.
And also brake spindle at the rendering position was not marked.
Rectified during inspection:NO



6.01 Are the mooring lines in good condition and regularly inspected?* NO ✖

Guidance: The mooring lines should be in good visual condition. Mooring lines should be regularly inspected. Are all mooring lines subjected to at least one detailed inspection of the entire length at intervals not greater than 12 months these records should be maintained as per vessel's mooring management plan/SMS. The outside surface should not be worn or excessively frayed. The internal surfaces should be dry with no discoloration. The installed mooring lines should be of the same material, diameter and MBL. Mandatory comment of type, MBL and visual condition of installed lines. Mandatory photos to be included.

Observed that of the 16 installed lines, 12 were polypropylene, and 4 were nylon (the 4 stern lines).
Rectified during inspection:NO
Comments:
While all lines were observed in acceptable condition, mixed mooring line material types are not recommended due to their very different elasticity and characteristics. Recommend vessel consider replacement or redistribution.

Double braided lines
In acceptable visual conditions
88 mt MBL. All less than 18 months in use. Some newly installed.
Downgraded from high risk by Superintendent





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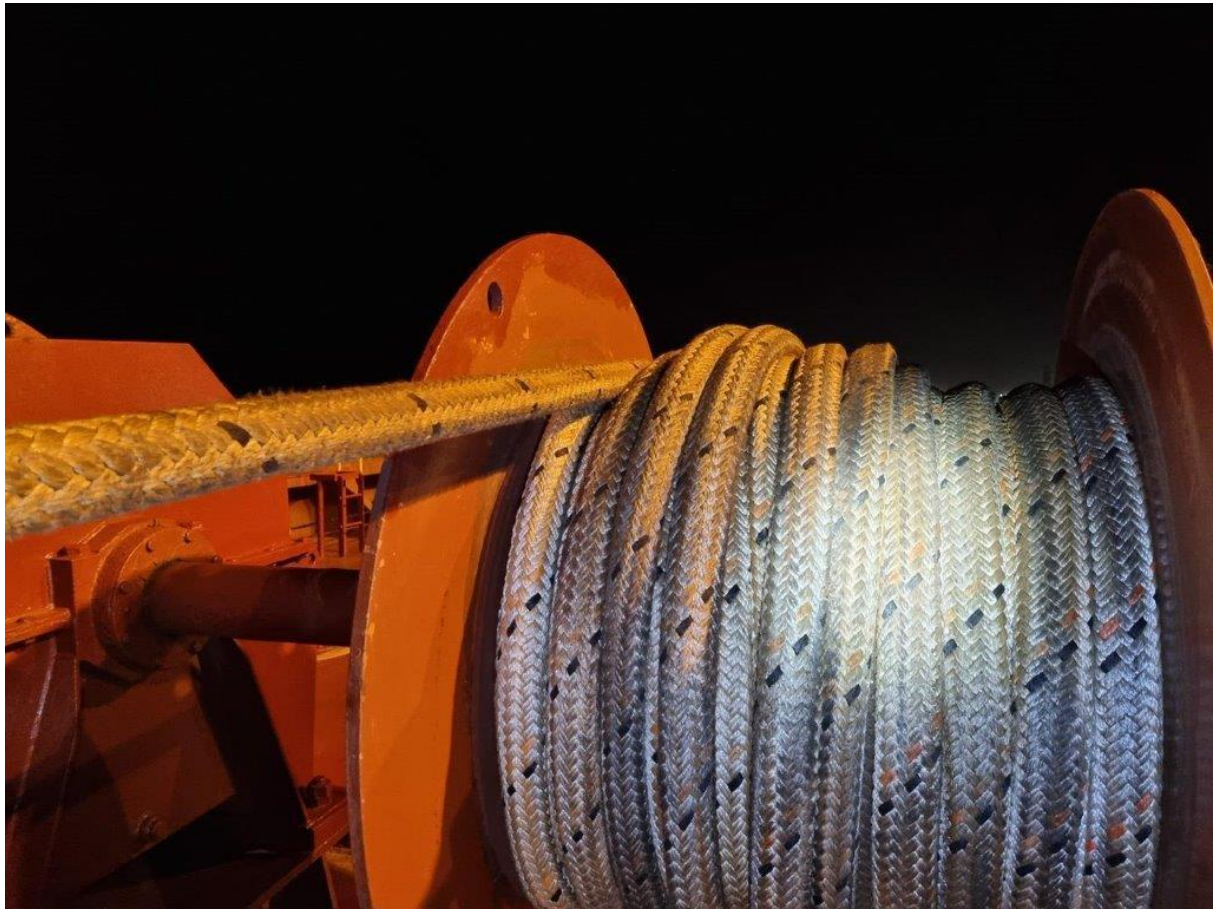


6.07 Is all mooring equipment marked with SWL?

NO ✖

Guidance: Each item of mooring equipment should be marked with it SWL. The amount should be weld in bead in tonnes or kilo-Newtons (kN).

None of the Mooring equipment had SWL markings.

Rectified during inspection:NO

Comments:

The Chief Officer communicated that maintenance is currently in progress and markings will be applied upon the completion of maintenance.

6.12 Are hydraulic mooring winch motors, pumps, controls and pipelines free of leaks?

NO ✖

Guidance: Hydraulic mooring systems should be free of leaks. Savealls should be fitted around mooring winches and hydraulic power packs. Regular inspection and maintenance of hydraulic systems should be included in PMS. Drain bungs should be fitted in savealls.

Some leakage found on the mooring winch:

1. Sightglass leakage on the poop deck (s)

2. Tube leakage on the No.8 cross deck

3. Hose leakage on the NO.1 cross deck

Rectified during inspection:NO

6.05 Are the mooring and anchor winches in good condition?

NO ✖

Guidance: Winch foundations should be in good order. The holding down bolts should be free of corrosion. The brake linings should have adequate thickness. The drum surfaces should be smooth and free of excessive surface corrosion. The mooring winches should be free deformation or damage. The gearboxes should be greased and free of damage. Brake mechanisms should be well maintained and free of corrosion. ,The windlass, anchor chains, compression bars in good order. Regular inspection and maintenance of hydraulic systems and all mooring equipment should be included in PMS.

The control lever box of aft mooring winch port side was defective.

Rectified during inspection:NO

6.05 Are the mooring and anchor winches in good condition?

NO ✖

Guidance: Winch foundations should be in good order. The holding down bolts should be free of corrosion. The brake linings should have adequate thickness. The drum surfaces should be smooth and free of excessive surface corrosion. The mooring winches should be free deformation or damage. The gearboxes should be greased and free of damage. Brake mechanisms should be well maintained and free of corrosion. ,The windlass, anchor chains, compression bars in good order. Regular inspection and maintenance of hydraulic systems and all mooring equipment should be included in PMS.

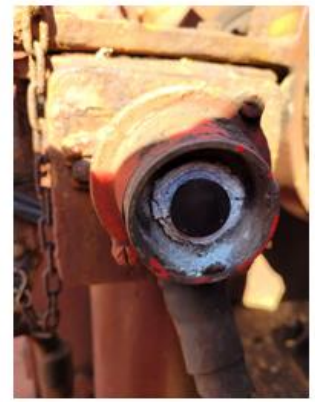
1) Turn push buttons for both port and stbd anchor winches were heavily corroded and inoperable. Rectified during inspection by replacing them with new push buttons.

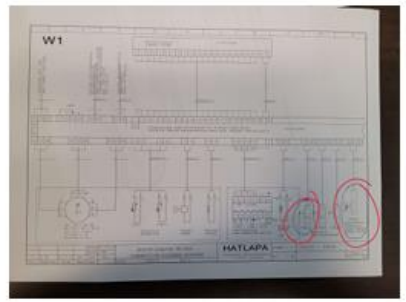
2) Limit switch cable lifters for both port and stbd anchor winches were damaged, not operational. (not rectified)

Rectified during inspection:NO

Comments:

Electrical diagram attached.






SWL480SKN

Accommodation Ladder

Accommodation ladder observations have been consistent over the previous years.

1.03 Is the accommodation ladder in good condition and correctly deployed? NO ✖

Guidance: The accommodation ladder angle should be less than 55 degrees. The accommodation ladder should be clearly marked showing restrictions on safe operations, maximum and minimum design angles, SWL and maximum persons. Inspect for corrosion and cracks that may appear in the areas of dis-similar metals (aluminium/steel)The safety net and platform stanchions must be rigged. Secondary support rigging should be described in the SMS.

Emergency operation handle for P&S accommodation ladder winch missed.

Rectified during inspection:NO

1.03 Is the accommodation ladder in good condition and correctly deployed? NO ✖

Guidance: The accommodation ladder angle should be less than 55 degrees. The accommodation ladder should be clearly marked showing restrictions on safe operations, maximum and minimum design angles, SWL and maximum persons. Inspect for corrosion and cracks that may appear in the areas of dis-similar metals (aluminium/steel)The safety net and platform stanchions must be rigged. Secondary support rigging should be described in the SMS.

Accommodation ladder deployed, but supported outboard end by bunker crane, which is not rated for the gangway load.

Rectified during inspection:NO

Comments:

Rigged outboard end to help support outboard end gangway, but greater than capacity of bunker davit. AMSA noted and request for removal.

Pilot Boarding and Access Examples

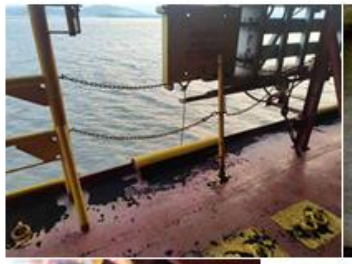
2023 inspections so far are seeing a significant increase in pilot boarding and access arrangements observations.

1.04 Are pilot boarding and access arrangements satisfactory?* NO ✖

Guidance: Where the vertical height exceeds 9 metres, a combination pilot ladder must be available. The pilot combination ladder should be in good order. Inspect for corrosion and cracks that may appear in the areas of dis-similar metals (aluminium/steel). Pilot ladders should be certified. Pilot ladders should not have been in use for greater than 30 months. Pilot ladders regular condition inspection should be implemented into the vessel's PMS or regular inspection records available.

1. Two chains / handrail for pilot boarding and access area missing (p).
2. Pilot ladder (P) certificate date on 30 Jun.2020 and was more than 30 months and two steps were deformed and cracked. Recommended replace.

Rectified during inspection:NO




1.04 Are pilot boarding and access arrangements satisfactory?* NO ✖

Guidance: Where the vertical height exceeds 9 metres, a combination pilot ladder must be available. The pilot combination ladder should be in good order. Inspect for corrosion and cracks that may appear in the areas of dis-similar metals (aluminium/steel). Pilot ladders should be certified. Pilot ladders should not have been in use for greater than 30 months. Pilot ladders regular condition inspection should be implemented into the vessel's PMS or regular inspection records available.

Pilot ladders appeared in acceptable condition, however they had been in use for more than 30 months. Their certificates dated 15 Jan 2021.

Rectified during inspection:NO



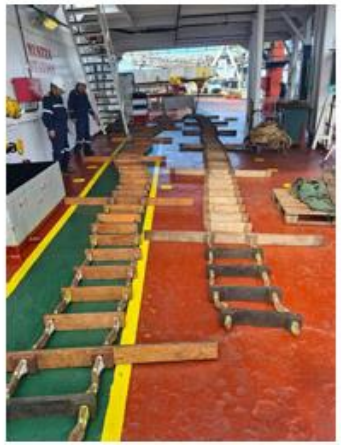
1.04 Are pilot boarding and access arrangements satisfactory?*

NO ✖

Guidance: Where the vertical height exceeds 9 metres, a combination pilot ladder must be available. The pilot combination ladder should be in good order. Inspect for corrosion and cracks that may appear in the areas of dis-similar metals (aluminium/steel). Pilot ladders should be certified. Pilot ladders should not have been in use for greater than 30 months. Pilot ladders regular condition inspection should be implemented into the vessel's PMS or regular inspection records available.

One pilot ladder has a number of loose spreaders and a damaged bottom rubber step. Splices on securing tails are taped up. Recommendation is to retire and replace.

Rectified during inspection:NO



1.04 Are pilot boarding and access arrangements satisfactory?*

NO ✖

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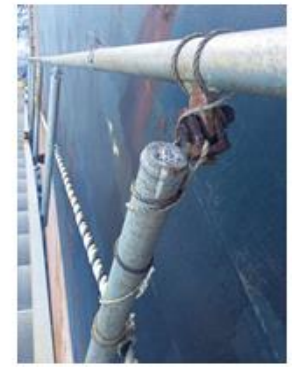
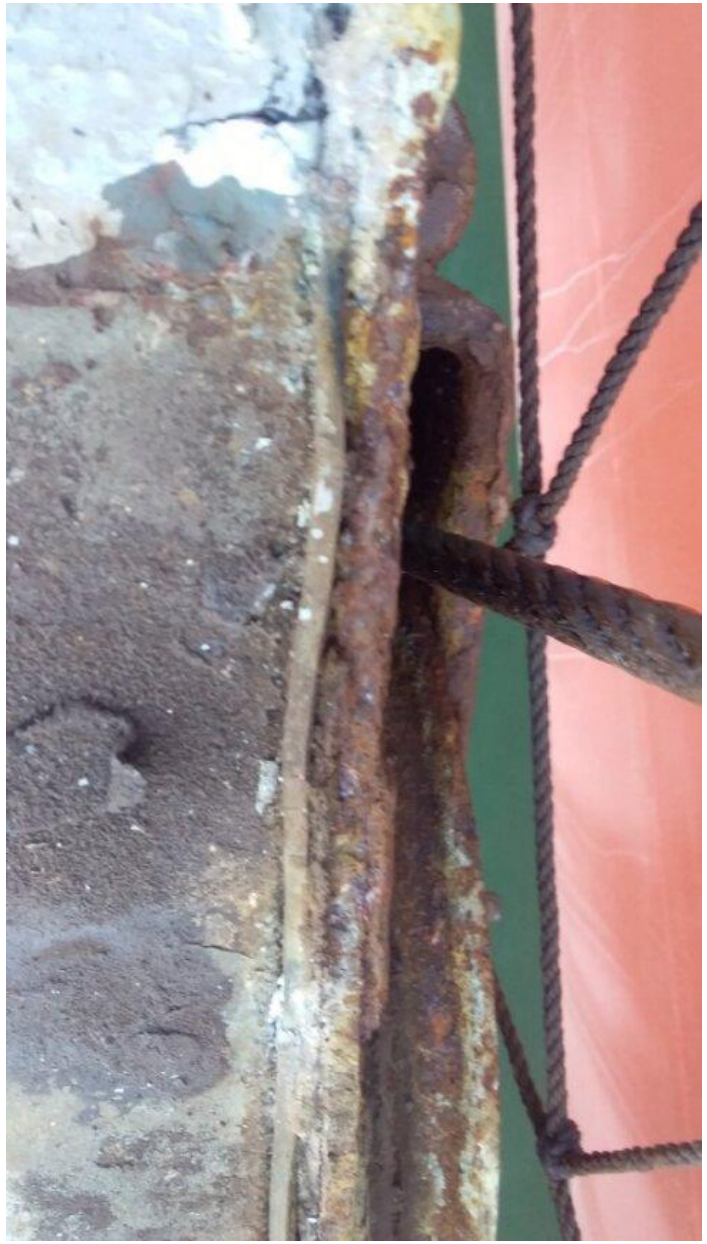
stb pilot boarding gangway is suffering alloy cracks in handrails, steps and side fitting in way of rollers. cracks and splits also noted under hand rails or at hinge fixture.

Rectified during inspection:NO





Deck Hydraulics

- A recent focus area based on concern
- Significant production risk
- General condition, fabric maintenance against corrosion
- Documented maintenance and inspection via PMS system
- Emergency mode of operation – crew fully familiar
- Critical spare parts for deck hydraulics – spare jacks and motors, temporary small hoses

Emergency Hatch Operation

- Example - Vessel in Port Hedland last year
- Electric system - Screw jack failed
- It took 8 hours to open hatch via alterative method
- Poor design and lack of full crew familiarity

Continuous Improvement

Data analysis allows us to identify areas for improvement.
Assisting and enabling our clients to focus on areas of potential improvement at the vessel level or Safety Management System.

Engine Room and Machinery Specific Inspection Launched

- Trending analysis over the years has consistently identified Engine room and Machinery within the top 3 highest element group of our observation weightings.
- Industry feedback drive to assess and improve this area of potential critical risk.

Performance Case Study

- Identifying observation trends to develop improvement plans and programs across three (3) control groups: technical, procedural and organisational.
- As a result, the DOC company performance improved with observations are trending down. This was well recognised within the supply chain.

ACRSOPT Involvement & Feedback

- Technical expertise's on Technical Proposal and Guidelines.
- Providing Inspection and Vetting Programmes to focus on safety outcomes and improving risk management for all industry stakeholders.

Thankyou, any Questions?

We value your feedback!

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