

NSRP SP-3 Panel Lessons Learned Project Final Report

Military Sea Lift Command

General Dynamics NASSCO

Safinah Ltd

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Scope

- ✦ Identify suitable vessels (T-AKR) built at GDNASSCO to gain lessons learned information to compare to the new T-AKE class
- ✦ To re-construct as far as possible a history of the vessel
- ✦ To identify problem areas
- ✦ To compare with proposed T-AKE vessels
- ✦ To identify some lessons learned to consider in the short, medium and long-term

Project set up

- ✦ MSC and GDNASSCO identified suitable T-AKR vessels available for survey afloat and in dock.
- ✦ Visit GDNASSCO to look at T-AKE new builds and meet with MSC and GDNASSCO personnel.
- ✦ Visit vessels in service and Maersk as managers

Summary

- ▶ The majority of areas were performing very well
- ▶ Possibly 5-10% of total surface area was causing the major problems
- ▶ This translated to 60% of crew time being used for maintenance
- ▶ Focus on solutions for these smaller areas.

Summary

- ▶ Problems fell into
 - Design
 - Specification
 - New build process
 - Maintenance management
- ▶ Support from all parties with great honesty, made the job easy.

Plan of work

- ✦ Select suitable vessels
- ✦ Assimilate new build data on T-AKE
- ✦ Assimilate in-service data on T-AKR
- ✦ Survey NB and in service vessels
 - T-AKE 1,2 and 3 on the blocks various stages of completion
 - T-AKR USNS Pomeroy and USNS Sisler
- ✦ Review of appropriate guideline documents and procedures

Concept

- ▶ Coatings are an engineering system and should be treated as such.
- ▶ Therefore should be afforded the same effort and thought as other engineering systems in design and specification
- ▶ Planned maintenance is standard for almost all other engineering systems and this has driven down man-hour effort.
- ▶ This approach offers a solution to perennial paint problems.

Guideline review

- ▶ Missing from guidelines/standards seem to be
 - Functional requirements for example life expectancy, gloss retention etc.
 - Poor updating requirements for paint schedule and provision of as coated records (IMO CPS requires a CTF - Coating Technical File).

In service data on T-AKR

- ✦ Quite a few reports were reviewed from 4 different sources and for 4 ships
- ✦ Quality of in service reports is inadequate for meaningful planned maintenance - a lot of photos but little substance
- ✦ No guidance to crew or managers as to what needs to be done

Summary of problems

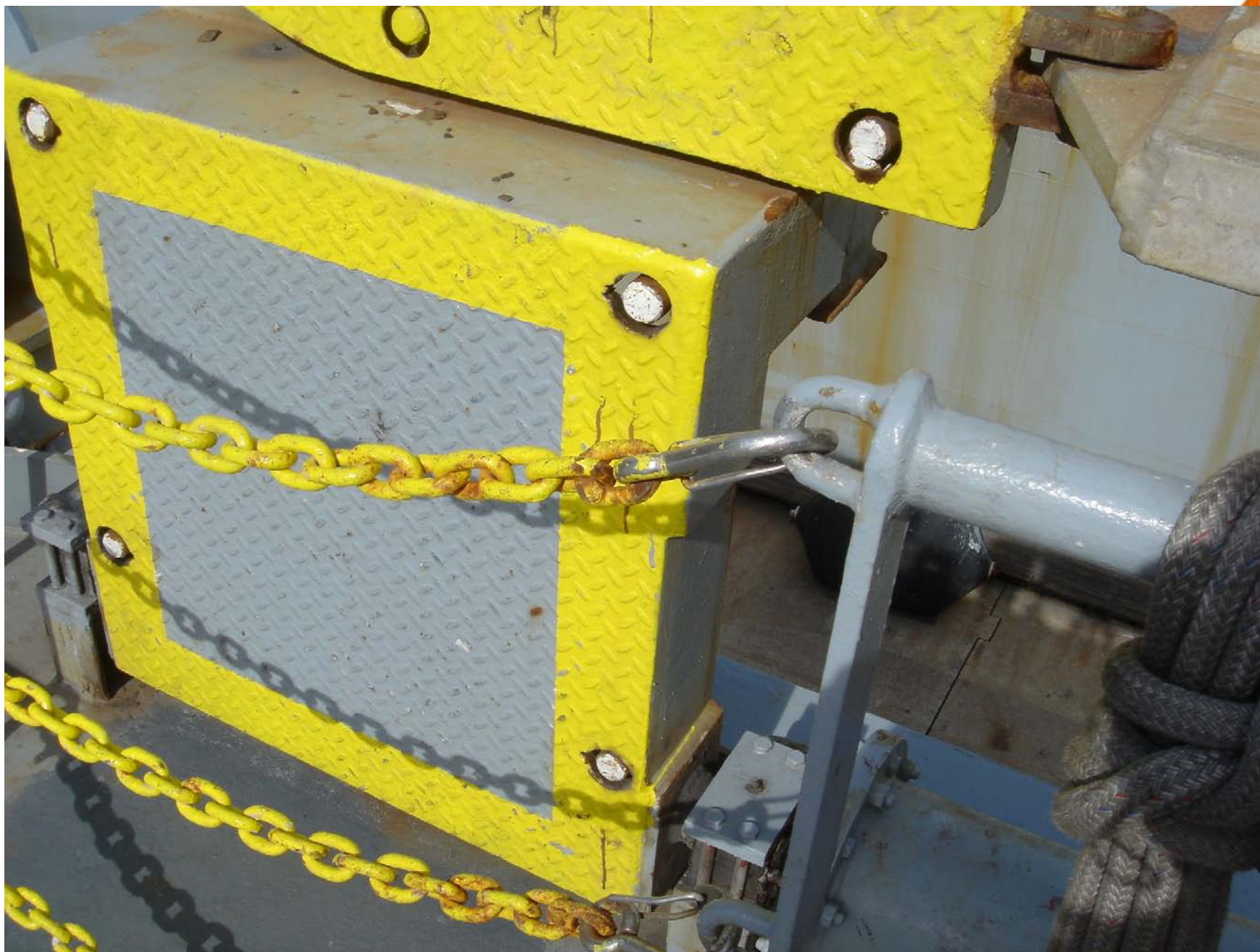
- ▶ Problems were categorised under the following headings
 - Vessel design
 - Paint specification
 - Yard processes
 - In service procedures (M&R)

Design Examples

- ▶ Clover leaf
- ▶ D-rings
- ▶ Window edge problems
- ▶ Dissimilar metals and rust tears
- ▶ Pipe fittings
- ▶ Poor use of alternative materials







Example Paint Specification

- ✦ Not taking into account the build process and timing
- ✦ Weld seams breakdown
- ✦ Performance on rudders
- ✦ Clover leaf cups/buttons
- ✦ Bow abrasion problems
- ✦ Soot problems
- ✦ Hydraulic oils







Shipyard process examples

- ✦ Control of DFT
- ✦ Poor integration of coating process into yard activities and schedule control
- ✦ Schedule/programme delays/changes
- ✦ Work sequencing problems
- ✦ As delivered report on coatings, what was put on and where and its status
- ✦ Initial planned maintenance requirements





M&R Example

- ✦ No planned maintenance
- ✦ Crew are fire-fighting
- ✦ Supervision of repairs to coatings
- ✦ Control of other activities that damage coatings and the subsequent repair.
- ✦ Updating records of what was done and when
- ✦ Use of paint contractors to assess scope of work to be done (conflict of interest).

Conclusions on ships in New Build

- ✦ GDNASSCO had already applied some lessons learned based on feedback.
- ✦ Other lessons that could have been learned were not available in any systematic format to allow the vessel to be influenced at the design stage.
- ✦ Some lessons learned were not applied for a variety of reasons
 - Edge rounding
 - Source of paint problems on welds



Conclusions on ships in service

- ✦ Small percentage of area causing most problems
- ✦ These consume time and effort
- ✦ Stem from
 - Design
 - Specification
 - New build
 - Poor maintenance

Short term recommendations for T-AKE class

- ◆ Coating of stainless steel fittings
- ◆ Build up coats to required DFT in way of touch up /repairs
- ◆ Review design detail for windows and dissimilar metals, labels
- ◆ Use of anti-stain paints
- ◆ Review paint spec for hull and decks and gloss retention and life time
- ◆ Waste disposal policy to be agreed with paint companies
- ◆ Rounding of edges on weather decks
- ◆ Weld surface preparation

Short term future ships

- ✦ Develop functional paint specification to meet operational and build programme requirements.
- ✦ Start development of planned maintenance system-computerised
- ✦ Collate design driven faults across fleet to create a design for anti-corrosion manual
- ✦ Ensure any work that damages coatings includes clause to re-instate to specification including DFT
- ✦ Standardise reporting to ensure lessons learned can be captured

Medium/long term future ships

- ▶ Produce functional paint specification
- ▶ Start planned maintenance on coatings on equal footing with other engineering systems
- ▶ Coating technical file to be maintained to track the work on a ship by area
- ▶ Put in place adequate feedback system for lessons learned
- ▶ Implement design for coating manual for next generation of ships
- ▶ Assess alternative materials