FPSO STEEL RENEWALS PROJECT
No Dry Dock – Safely

By

Peter Gresty

Project Manager & Manager QHSE

RoSPA 2011 GOLD Award

2011 Safe Way Achiever Award Winner GOLD

ISO 9001:2008
Cert No 35924

JAS-ANZ DNV Certification Pty Ltd SAFETY SYSTEM AS/NZS 4801

JAS-ANZ DNV Certification Pty Ltd Safety System OHSAS 18001:2007

NATA ACCREDITED FOR TECHNICAL COMPETENCE
No. 15521

FPAL Verify empowered by Achilles Verified

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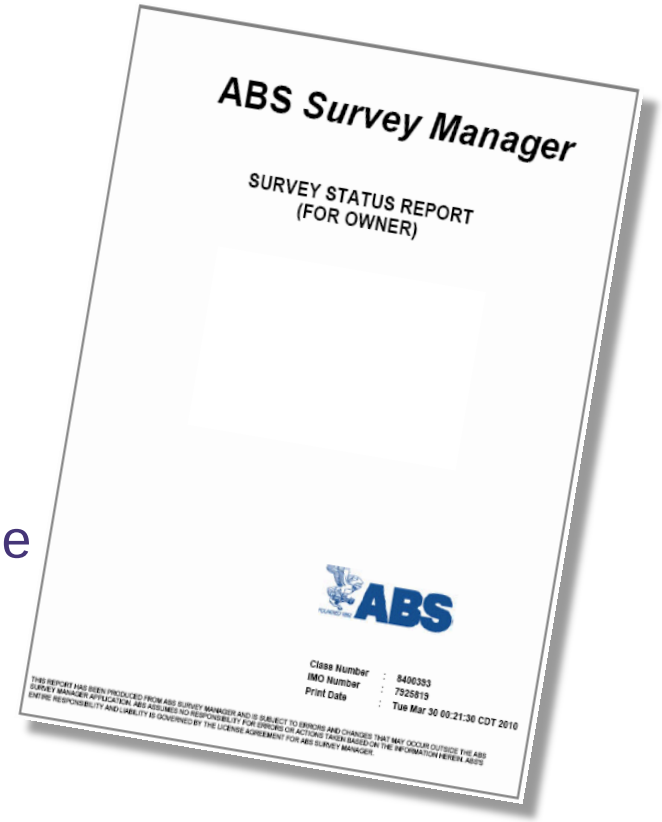
PROJECT SCOPE

- The scope originated from the outstanding Recommendations from the ABS continuous survey
  - There were a total of 33 Outstanding Recommendations
  - EM&I were contracted to review the scope and to provide specialist repair and inspection services



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PROJECT SCOPE

- Ballast Tank Repairs
- Sea Chest Repairs
- Engine Room Repairs
- Deck Penetration Repairs

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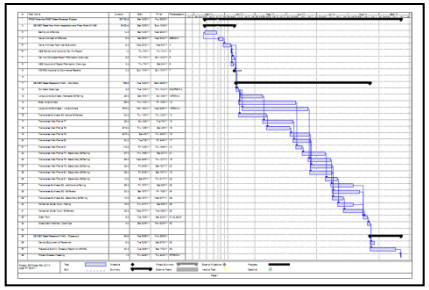
EM&I PROJECT RESPONSIBILITIES

- Project Management
- Safety Supervision
- Class Liaison
- Naval Architect Services
- Repair Methodology
- Inspection Services
- Rope Access Services
- Drawing Preparation
- Planning
- Documentation
- Personnel Resources



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PROJECT PREPARATION

- Pre-Mobilisation Site Visit
  - Safety Management System
  - Access & Lifting Plan
  - Tank Preparation Plan
  - Equipment Requirements
  - Operational Issues
  - Manning Levels
  - Timelines
  - Approvals – Class, Operator, NOC

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DOCUMENTATION

- Project Manual
- HSE Plan
- Quality / Audit Plan
- Work Packs
- Cutting Plans
- Steel Weight Calculations
- CTRs
- Project Timelines
- Timesheets

- Risk Register
- Repair Drawings
- Equipment Manifests
- Inspection Reports
- Daily Progress Reports
- Rigging Plans
- Certification / Approvals
- Budget vs Actual Reports
- Close-out Reports

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PROJECT MANAGEMENT

- Appoint Project Team
- Kick-off Meeting
- Review Stakeholders' Objectives
- Agree Workscope
- Agree Interfaces (HSE, Ops, Maintenance, Onshore, Class etc)
- Review Data/Document Requirements
- Develop Project Manual, HSE Plan, Quality Plan, Comms Plan etc
- Select & Brief Site Team

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PROJECT MANAGEMENT

- Visa, Work Permits, Customs
- Mobilise Equipment & Site Team
- Daily Site Team Briefings, Toolbox Talks etc
- Daily Progress Reports
- Variation Orders
- Data Collection
- Documentation, Approvals, Certification etc
- Close-out & Lessons Learned

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ENGINEERING SPECIFICATION

- Steel Renewal Survey
  - Class Surveyor in attendance
- Structural Assessment – Naval Architect
- Work Pack Development
  - Drawings
  - Welding Procedures
  - Steel Weight Calculations
  - Hot Work Habitat Procedure
  - Inspection Requirements

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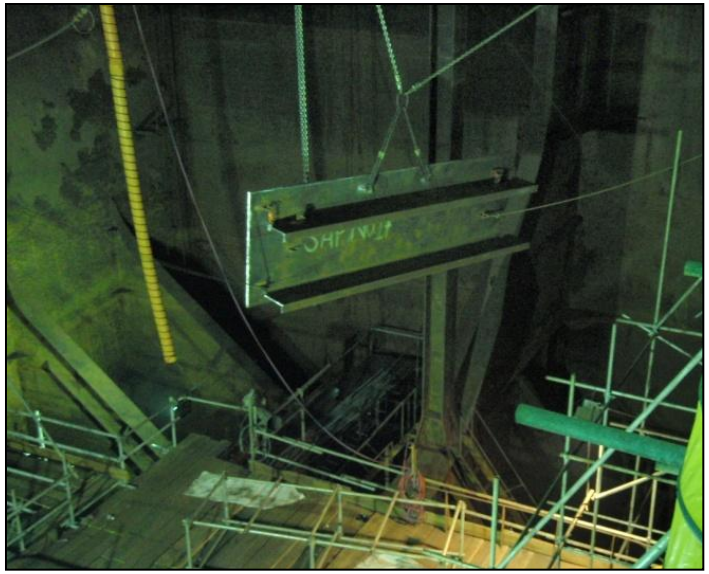
PROJECT INNOVATION

- Manpower Coordination
  - Split Shifts, Site Safety Management, Language
- Working Environment Challenges
  - Working within Confined Space
  - Lifting and Rigging Operations
  - Structural Integrity during repairs
  - Sea State, weather conditions
  - Accommodation Vessel



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PROJECT INNOVATION

- Repair Methodology
  - Side Shell Impact Damage – re-engineer repair methodology to avoid crop and renew below the water line
- Welding Practices and Equipment
  - Flux Cored Arc Welding versus Conventional MMAW Procedures
- Material Handling
  - Steel plating and stiffening elements
  - Utilities – Generators, Compressors, Welding Machines
  - Ventilation Equipment

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PROJECT STATISTICS

- Total Offshore Manhours
  - Port Auxiliary Sea Chest 1,819 hours
  - No. 1 Port and No.1 Starboard WBT 172,845 hours
  - No. 3 Starboard WBT 122,127 hours
  - Deck Repairs & Penetrations 80,000 hours
- Total Steel Tonnage
  - No.1 Port and No.1 Starboard WBT 88 tonnes
  - No. 3 Starboard WBT 68 tonnes
  - Deck Penetration Repairs – Including replacement of 106 Butterworth hatches, stub piping, level alarms, manholes. 4 Tonnes

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Key Performance Indicators

- Safety Management Performance
- Impact or interruption to production
- Project delivered to maximise local manpower content
- Transfer of technology for Inspection, Repairs and Maintenance (IRM) projects to local partners
- Further development of IRM management systems for local projects

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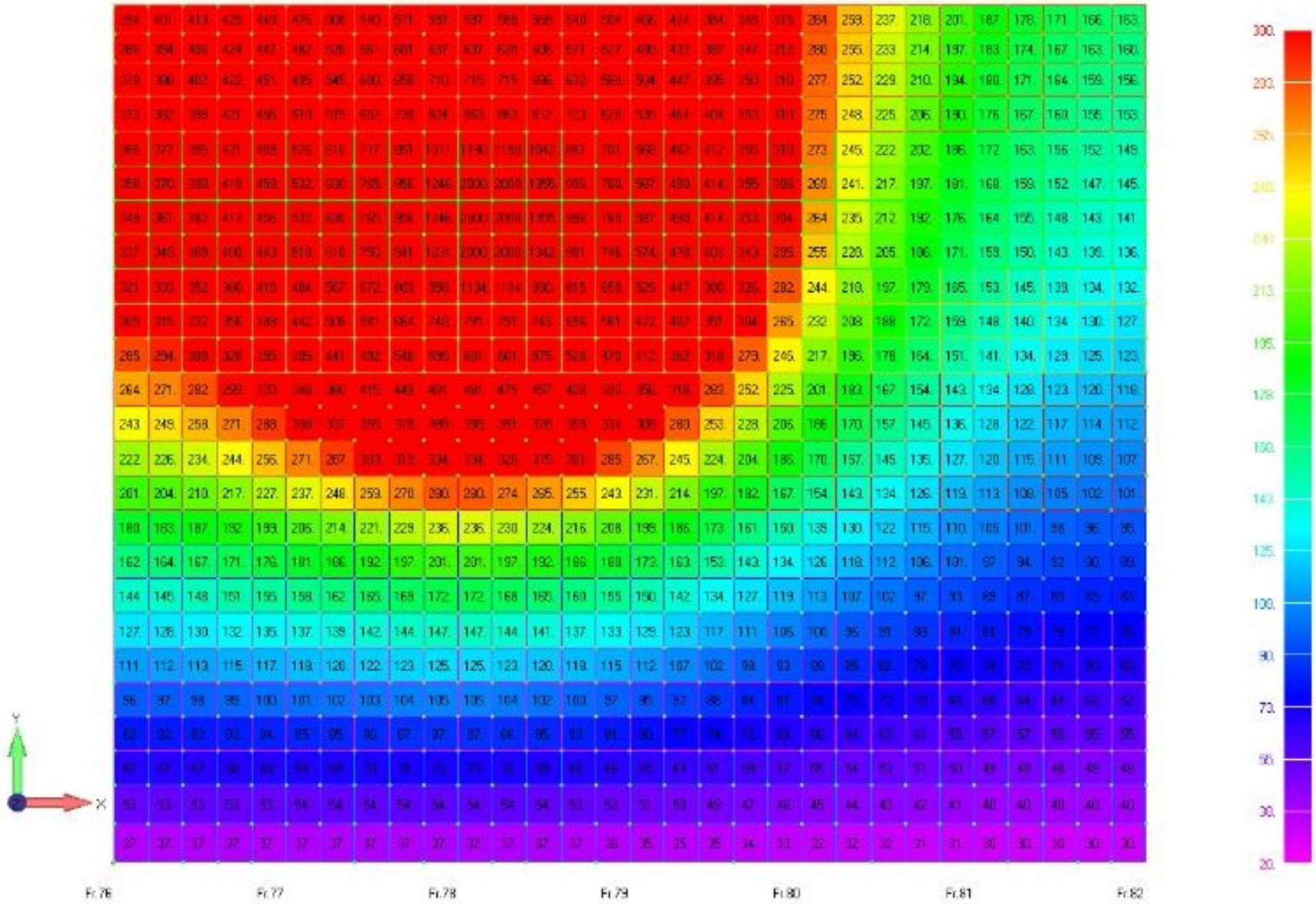
PROJECT SCOPE

- Water Ballast Tank Repairs
  - No.1 Port Water Ballast Tank
  - No.1 Starboard Water Ballast Tank
  - No.3 Starboard Water Ballast Tank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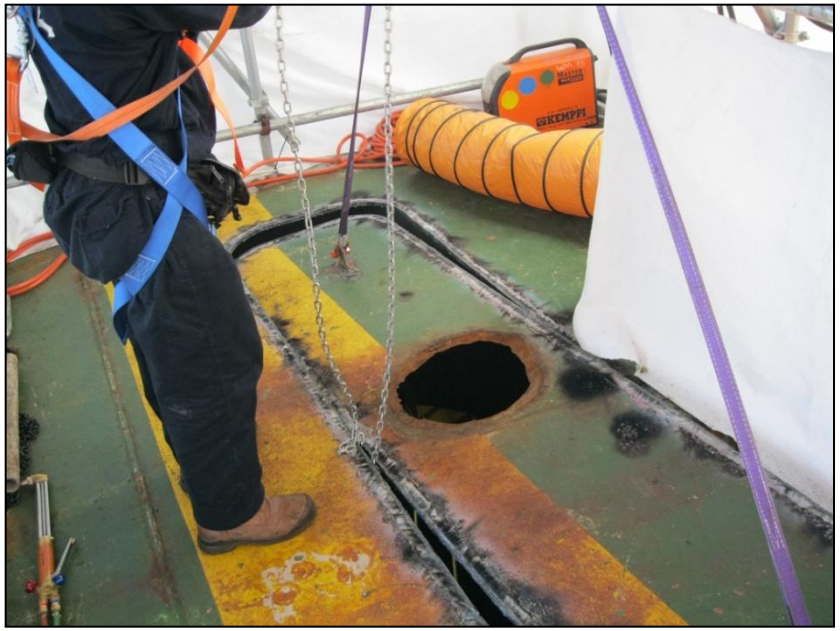

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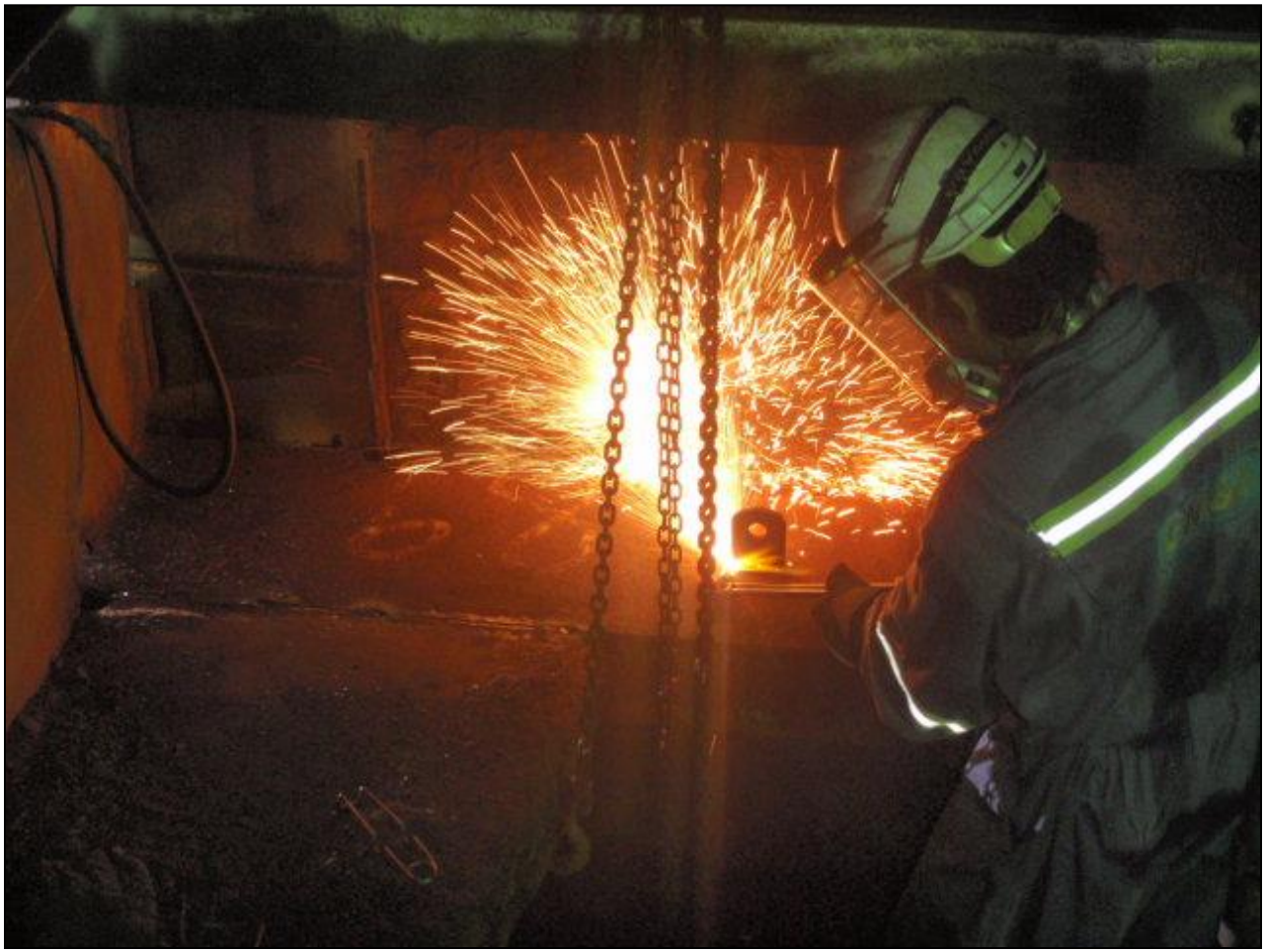

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PROJECT SCOPE

- Sea Chest Repairs
  - Auxiliary Sea Chest Port
  - High Sea Chest Starboard

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PROJECT SCOPE

- Deck Repairs

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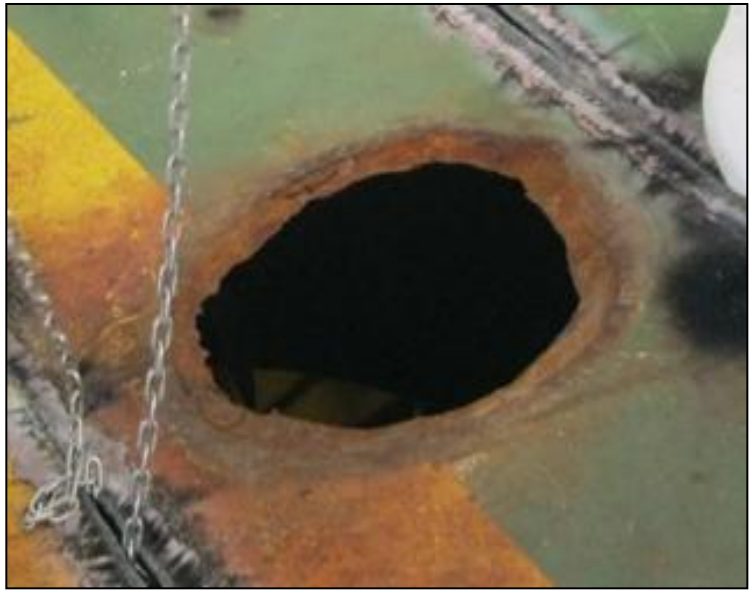

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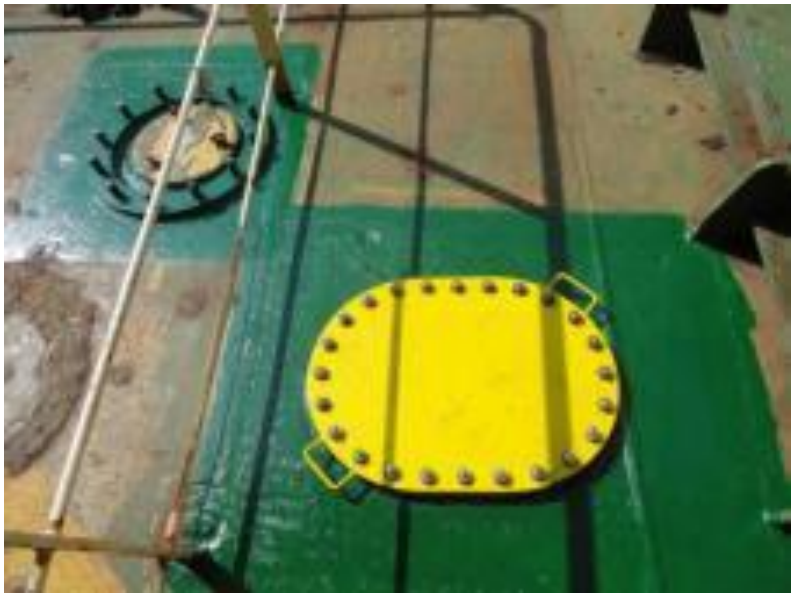

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PROJECT SCOPE

- Engine Room Structural Renewals

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SUMMARY

- Over 380,000 manhours without injury of any sort
- 160 Tonnes of Steel replaced
- Work carried out on station
- No production downtime
- No disruption to offload schedule
- Maximised local content
- Technology transfer/knowledge sharing to local company
- Reduced repair scope
- Completed to agreed timescales and within budget

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Any Questions

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