



seaQuest

Marine Project Management Ltd

Quality System



Why do we need a quality system?

What can go wrong at the yard?

Some of the frequent issues in a busy Far Eastern yard:

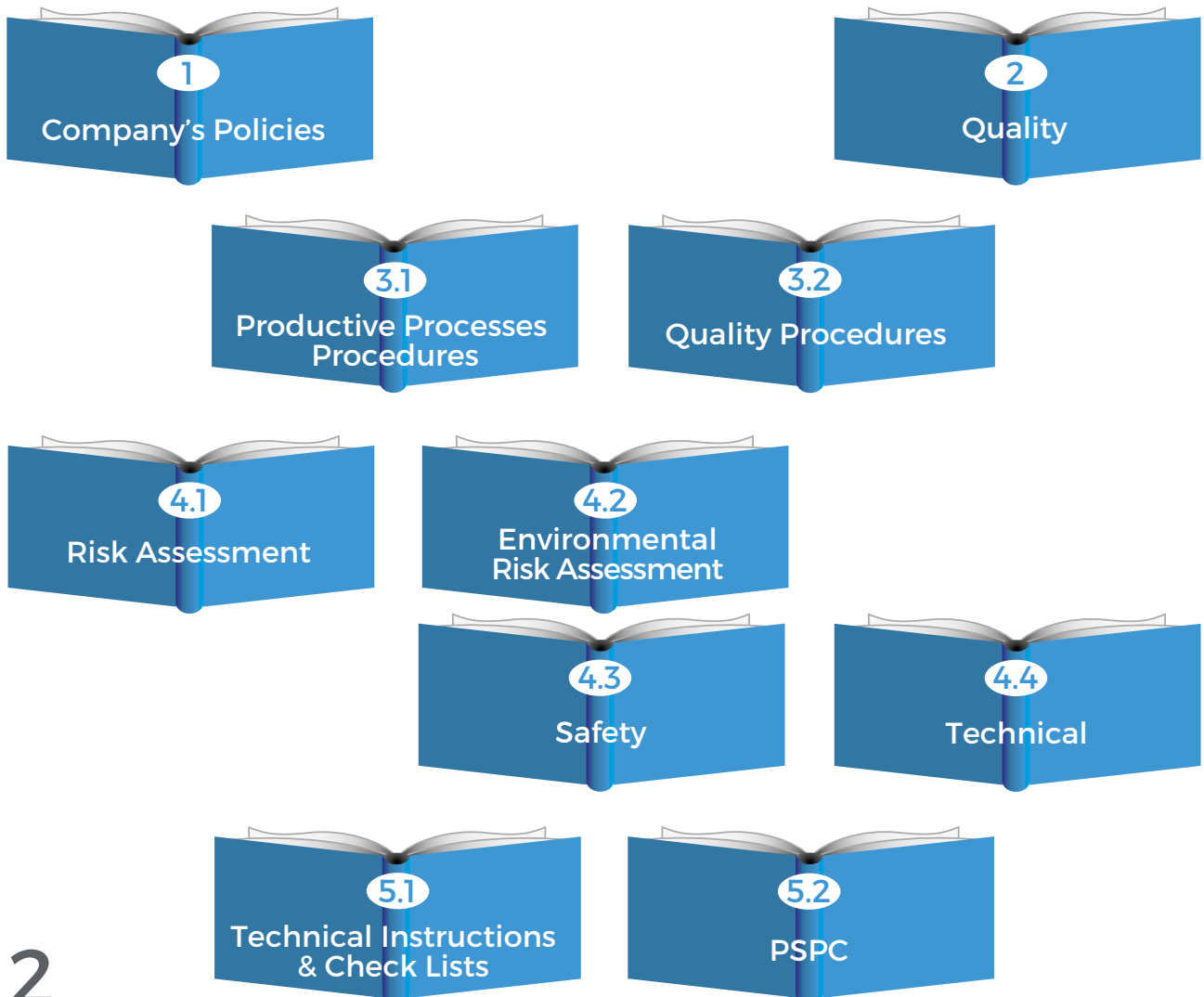
- Production schedule changes and modified overlapping (1st vessel)
- Production: grinding; flushing; rush for key events; inter-department communication; painting preparation and facilities
- Subcontractors: changes of subcontractors
- Order changes: late information; rework
- Owners' Furnished Information and Equipment: unjustified claims
- Dry dock schedule extremely tight: short cut on painting and NDT
- Post launching: safety precautions; hunting for berthing place
- Post sea trial fatigue: inattentive manpower; details left undone
- Double banking: quayside space
- Manpower shortage: sharing key manpower with other projects
- Poor finishing: additional manpower for details, cleanliness, final finish

The Quality Management System

SeaQuest Quality Management System consists of refined procedures developed through years of building and operational experience.

SeaQuest's methods are more stringent than the procedures usually implemented by shipyards, enabling us to achieve higher standards of quality.

SeaQuest Quality Manual





1 Company's Policies Manual

- Quality Policy and Objectives
- Health and Safety Policy
- Environmental Policy
- Customers First
- Drug and Alcohol Policy
- Confidentiality Policy

2 Quality Manual

- Scope
- Normative References
- Terms and Definitions
- Context of the Company
- Leadership
- Planning
- Support
- Operation
- Performance Evaluation
- Improvement
- A-1 Company Processes
- A-2 Quality Objectives

3.1 Productive Processes Procedures Manual

- Control Documentation
- General Correspondence
- Internal Communication
- Customer Enquiry Policy
- Conceptual Design
- Specification Writing
- Technical Review
- Plan Approval
- Site Supervision
- Site Office
- Declaration

3.2 Quality Procedures Manual

- Control Documentation
- Document Control and Records
- Management and Policy Review
- Resources
- Customer Requirement
- Planning Process Control
- Production Process Control
- Purchasing
- Internal Audit
- Control of Non-Conforming Product
- Corrective and Preventative Action
- Measurement and Improvement
- Service Rendering
- Company Processes
- Business Continuity Plan
- Site Staff Assessment

4.1 Risk Assessment Manual

- The Management of Health and Safety at Work
- Risk Assessment
- Categories
- Appendix 1, 2, 3

4.2 Environmental Risk Assessment Manual

- The Management of the Environment
- Risk Assessment
- Appendix 1
- Appendix 2
- Appendix 3 (Sample Calculation)

4.3 Safety Manual

- Safety Policy
- Organisation and Lines of Responsibility
- Fire Safety
- Electrical Safety
- First Aid
- Training
- Cleanliness
- Manual Handling
- Protective Clothing
- Visual Display Screen Equipment
- Machinery
- Guarding
- Visitors and Contractors
- Enclosed Spaces
- Working at Heights
- Signatures
- Accident Reporting Form
- Annex 1

4.4 Technical Manual

- Responsibility
- General Requirements
- Pipe Outfitting
- Instrumentation
- Installation Inspections of Mechanical Equipment
- Boilers
- Non Structural Tanks
- Ventilation System and Air Conditioning
- Electrical
- Painting
- Structure
- Welding
- Hull and Machinery Steel Forgings / Castings
- Non Destructive Testing
- Inclining Experiment
- Deadweight Measurement
- Sea Trial
- Planned Maintenance System
- Delivery File
- A-1 Delivery Checklist
- A-2 Cargo Tank Working Procedure
- Inspection Procedure of Coated Ballast/Cargo Pipe

5.1 Technical Instructions & Check Lists

- Pre-Arrival Checklist
- Publications, Instructions and Documentation
- Navigation and Watchkeeping
- Safety Guidance
- Cargo Handling Guidance
- Oil Pollution from Engine Room
- Inerting of Gas Free Cargo Oil Tanks
- Guidelines for Enhancing and Optimizing Discharge Operations
- Operating of Auxiliary Engine
- Instructions for Operating of the Main Engine
- Instructions for Operating of Purifier Plant
- Handling of Waste Oil and Bilge Water
- Routines of EO-Classification
- Operation of Steam Plant
- Decarbonization of Auxilliary Engines
- Ballast Water Tank Maintenance - Coating Repair Procedure
- Guidance Notes for Heated Cargoes
- Operation of Machinery at Design Capacity

5.2 PSPC Manual

- Part 0 - Design
- Part 1 - PSPC inspection procedure
- Part 2 - Painting
- Part 3 - Inspection
- Appendixes:
 - 1 - Definitions
 - 2 - Painting Inspection Flow Chart
 - 3 - Non Conformity Report
 - 4 - Adhesive Tape Test Info Sheet
 - 5 - PSP Inspection Report
 - 6 - SSP Inspection Report
 - 7 - Final Coating Inspection Report
 - 8 - Coating Inspection Report
 - 9 - Coating Technical File Minimum Contents





Construction KPI

Pre-launch

- Steel & block fabricated
- Pipe & spool fabricated
- Block blasted
- Final block painted
- Dock erection completed

Post-launch

- Tank coatings of cargo, ballast and fresh water tanks completed
- Machinery & electric outfit completed
- FAT completed
- Test and trials completed
- Defects rectified (OWC, OCR/OCRS)

Site Team KPI

- Attendance of inspections based on agreed Inspection and Test Plan (ITP)
- Timely issue of progress reports and minutes of meetings
- Effectively recognizing defects and follow up actions
- Proactive and advance warnings based on monitoring inspections and logistic requirements
- Delivery of the project with complete documentation, certification and all defects satisfactorily rectified - no conditions of class

Lessons Learned and Risk Mitigation

Case Study No.1 Suezmax Crude Oil Tanker

OWNER'S SPECIAL FOCUS ON SAFETY

- Before project kick off meeting conducted safety kick off
- Project specific safety plan prepared
- SeaQuest dedicated safety inspector employed from initial stage
- Safety audit conducted within yard and subcontractors work site prior to start of work
- Daily work site monitoring for safety issues
- All five tankers delivered with a 100% safety record

RISK MITIGATION

- Meticulous planning of project from start to completion
- Safety kick off meeting
- Project specific safety plan
- Dedicated safety inspector
- Safety audit

Case Study No.2

6,100 ceu PCTC

DESIGN STAGE

- Lessons Learnt: no side to side bulkhead in cargo region prone to vibration and fatigue cracks in short service period
- Remedial Actions: extensive 3D review and FEM analysis for 30 years life cycle; change in structural details and welding profiles; visit to existing ships for understanding vibration/fatigue issues

CONSTRUCTION STAGE

- Lessons Learnt: identification of design critical areas; inspections at sub assembly and block stage
- Remedial Actions: info relevant to critical areas release to construction sites in yard and subcontractors; monitor critical areas cut outs; strict alignment check and fit out inspections; weld profile grinding as recommended by FEM analysis

VESSEL IN SERVICE

- Lessons Learnt: cracks in decks/engine room/accommodation
- Remedial Actions: re-design accommodation area end connections, corners and cutouts; education of QM and production with follow up inspections

REPEATED SHIP: CHANGE OF BLOCK SUB CONTRACTORS

- Block fabrication shifted to China
- Education of QM and production

Case Study No.3

45k DWT CON-RO cargo carrier

LESSONS LEARNT

- Need of familiarization with vessel type among builder, Owner, SeaQuest
- Concept design
- Largest stern ramp in the world for RO-RO vessels, of semi-flexible type: need of monitoring inspections at various stages
- High number of ballast tanks leading to too many water tight boundaries in cargo hold space
- High level of automation with CPP propeller, bow and stern thrusters, shaft generator, exhaust gas cleaning system and BWTS

REMEDIAL ACTIONS / RISK MITIGATION

- Proactive approach on contract and design stage
- Construction stage early assessments and inspections
- Site team integration with Owner's expertise
- Choice of site team





Case Study No.4

Kamsarmax bulk carrier

LESSONS LEARNT

- Yard's original design with rudder area just 1.34% of lateral projected area below waterline and risk of poor maneuverability and course stability
- Design modification for inner bottom strength not incorporated in production drawings
- Yard changed production site for series vessels

REMEDIAL ACTIONS / RISK MITIGATION

- SeaQuest modified design of rudder area over 1.8% and complied with IMO standards for ship maneuverability, Resolution MSC 137 (76)
- SeaQuest management swift response and emergency action taken along with yard top management for rectification after fabrication
- SeaQuest experts quickly set up new site team and integrated with existing team for series vessels; ship quality at both shipyards matched and fully satisfied clients' requirements

Case Study No.5

LR2 product carrier

RISK MITIGATION

- Meticulous follow up from start to completion
- Information sharing
- Tri-party meeting with paint manufacturer and shipyard
- Paint maker recommendations fully explained
- Cargo tank coating procedure established by SeaQuest and seminar held by SeaQuest Project Manager for all parties involved
- Hot work, blasting, coating sequence
- Strict inspections and re-inspections



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