ABS Guidance Notes on
Management of Change for the Marine &
Offshore Industries
Guidance Notes on Management of Change: Outline

- What is Management of Change (MoC)?
- Why is MoC important to the marine and offshore industries?
- What is in the ABS Guidance Notes for MoC?
  - Recognition of Change
  - MoC Process
  - MoC Program Implementation
  - MoC Program Monitoring
- Questions
What is Management of Change (MoC)?

- Successful organizations are dynamic
- MoC is evaluation of potential impacts of proposed changes
  - No unacceptable risks
  - Minimize impacts to safety, environment, quality, reputation, security,
  - Formal MoC procedure
- Types of changes
  - Temporary and permanent
    - Equipment: e.g., machinery, materials, technology
    - Operational: e.g., procedures
    - Organizational: e.g., personnel
Why is MoC Important to the Marine & Offshore Industries?

- Uncontrolled change may result in accidents if:
  - Technically inappropriate
  - Poorly executed
  - Its risks poorly understood
  - Management fails to ensure communication to key personnel

- MoC
  - Risk Management Best Practice
  - Safety and Environmental Management Systems (SEMS)
  - Tanker Management Self-Assessment (TMSA)
  - Requirement in OSHA PSM since 1990s
Overview of ABS MoC Guidance Notes

- Key considerations for developing and maintaining a successful MoC process
  - Core principles
  - Key functions
  - Models and examples

- Audience
  - Management and personnel responsible for initiating and coordinating changes

- MoC Industry Guidance
  - Center for Chemical Process Safety (CCPS)
  - CFR Q&A for SEMS and OSHA PSM
Recognition of Changes

- Recognizing a change:
  - Equipment, e.g.:
    - Replacement or modification of equipment, ship components, infrastructure including emergency replacements when out at sea
    - New fluids used
    - Acquisition of a new ship into a fleet
  - Operational, e.g.:
    - Deviation from preventive maintenance or mechanical integrity programs
    - Trading patterns, new routes or ports, ship type, change in cargo
    - Offshore logistical change (personnel transport, supply transport, etc.)
  - Organizational, e.g.:
    - Changes to onboard management
    - Change of key shore-based staff supporting the ship or offshore facility
    - Crew turnover and crew change-out by a predetermined percentage
Recognition of Changes

- Changes that do not need to be controlled:
  - Activity or system outside the MoC program scope
  - Replacement in kind
  - Changes controlled via other management
  - Domestic activities
  - Other as defined by the company
## Recognition of Changes

<table>
<thead>
<tr>
<th>Change</th>
<th>If the Answer to Any Question is “No”, Change is to be Controlled by the MoC System</th>
<th>Yes</th>
<th>No</th>
</tr>
</thead>
</table>
| Ship/Facility Mode              | - Is the new mode of operation equivalent to a previous mode of operation that was managed successfully?  
                                      - Is the present crew familiar with this mode of operation?  
                                      - Have all shore and shore-interface modifications for the new mode of operation been carried out before?  
                                      - Does mode change require modification to procedures and manuals? |     |     |
| New equipment or software       | - Does the new equipment have same performance, functional, material, maintenance, control systems and dimensional specifications as old equipment?  
                                      - Are the existing procedures applicable to this new equipment? |     |     |
| New hazardous cargoes/hydrocarbon/chemical | Does new cargo/hydrocarbon/chemical have similar properties to previous in terms of:  
                                      - Fire and explosion  
                                      - Toxicity  
                                      - Corrosiveness  
                                      - Reactivity  
                                      - Spill response  
                                      - Physical properties (boiling and freezing points, thermal expansion, decomposition, vapor pressure)  
                                      - Chemical compatibilities with other cargos/materials handled? |     |     |
| Handling new cargoes/materials  | - Are existing equipment and crew skills adequate for safe handling, loading or unloading of the new cargo/material?  
                                      - Are procedures for handling new cargoes/materials available? |     |     |
| Personnel                       | - Does the new candidate meet the competencies, training, education, and experience requirements for the position?  
                                      - For organizational changes ashore (eliminating positions, restructuring, etc.), do reporting relationships, job responsibilities, work load, etc., remain unchanged? |     |     |
| Contractors                     | Changes to contractors working in areas or activities so designated by company or regulation, should be subject to MoCs, unless the contractor change is a “replacement- |     |     |
MoC Process

- Initial Review
- Senior Review
- Detailed Risk Assessment
- Approval
- Implementation
- Verification and Closeout
MoC Process

Step 1: Initial Review
- Responsible: Change owner (Officer / Supervisor)
- Recognition of a change
  - Replacement In Kind?
    - NO
    - Need for change justified?
      - YES
      - Complete Preliminary Impact Assessment
      - Develop implementation plan
    - NO
  - YES
  - No MoC required. Follow normal work practices.
- NO

Step 2: Senior Review
- Responsible: Approver (Master or Senior Officer, shore-side Manager, or offshore facility manager)
- Concur with basis for change?
  - YES
    - Major potential impacts or complexity warrant Detailed Risk Assessment?
      - YES
      - NO
      - NO
  - NO
- NO

Reject change and close out MoC
### Pre-Liminary Impact Assessment

<table>
<thead>
<tr>
<th>Impacts Checklist</th>
<th>Check all that apply.</th>
<th>Crew and Human Factors</th>
<th>Equipment and Instrumentation</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Organization</strong></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Can the change have an impact on:</td>
<td></td>
<td>Can the change have an impact on:</td>
<td></td>
</tr>
<tr>
<td>- Management systems</td>
<td></td>
<td>- Crew workload</td>
<td></td>
</tr>
<tr>
<td>- Responsibilities</td>
<td></td>
<td>- Workplace stress</td>
<td></td>
</tr>
<tr>
<td>- Work practices</td>
<td></td>
<td>- Crew communication</td>
<td></td>
</tr>
<tr>
<td>- Staff movement</td>
<td></td>
<td>- Crew understanding</td>
<td></td>
</tr>
<tr>
<td>- Contractors</td>
<td></td>
<td>- Crew morale</td>
<td></td>
</tr>
<tr>
<td>- Company reputation</td>
<td></td>
<td>- Crew performance</td>
<td></td>
</tr>
<tr>
<td>- Regulatory compliance</td>
<td></td>
<td>- Ergonomics</td>
<td></td>
</tr>
<tr>
<td>- Insurance</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>Environment</strong></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Can the change have an impact on:</td>
<td></td>
<td>Can the change have an impact on:</td>
<td></td>
</tr>
<tr>
<td>- Effluents – solid</td>
<td></td>
<td>- Navigation</td>
<td></td>
</tr>
<tr>
<td>- Effluents – liquid</td>
<td></td>
<td>- Recovery from blackout</td>
<td></td>
</tr>
<tr>
<td>- Effluents – gas</td>
<td></td>
<td>- Cargo operations</td>
<td></td>
</tr>
<tr>
<td>- Noise</td>
<td></td>
<td>- Ballasting operations</td>
<td></td>
</tr>
<tr>
<td>- Regulatory compliance</td>
<td></td>
<td>- Berthing</td>
<td></td>
</tr>
<tr>
<td>- Accidental spills</td>
<td></td>
<td>- Anchoring</td>
<td></td>
</tr>
<tr>
<td>- Marine eco-system</td>
<td></td>
<td>- In-port</td>
<td></td>
</tr>
<tr>
<td><strong>Safety and Health</strong></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Can the change have an impact on:</td>
<td></td>
<td>Can the change have an impact on:</td>
<td></td>
</tr>
<tr>
<td>- Personal Safety</td>
<td></td>
<td>- Station keeping</td>
<td></td>
</tr>
<tr>
<td>- Fire detection/protection/fighting</td>
<td></td>
<td>- Propulsion</td>
<td></td>
</tr>
<tr>
<td>- Means of escape</td>
<td></td>
<td>- Maneuvering</td>
<td></td>
</tr>
<tr>
<td>- Life saving equipment</td>
<td></td>
<td>- Communications</td>
<td></td>
</tr>
<tr>
<td>- Emergency procedures</td>
<td></td>
<td>- Towing</td>
<td></td>
</tr>
<tr>
<td>- Local exhaust ventilation</td>
<td></td>
<td>- Crane operations</td>
<td></td>
</tr>
<tr>
<td>- Mechanical isolation</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>Ship Systems and Operations</strong></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Can the change have an impact on:</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>Hydraulic System</strong></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>- Hydraulics</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>- Valves</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>- Pumps</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>Structural/Mechanical Integrity</strong></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Can the change have an impact on:</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>- Structure</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>- Stability</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>- Pipelines</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>- Port facilities</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>Maintenance and Inspection</strong></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Can the change have an impact on:</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>11</td>
<td>A BS</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
MoC Process

Step 3: Detailed Risk Assessment
- Identify Detailed Risk Assessment team
- Execute Detailed Risk Assessment
- Develop implementation plan

Step 4: Approval
- Responsible: Approver
- Agree with assessment and implementation plan?
- NO
  - Reject change and close out MoC or Revisit Preliminary or Detailed Assessment
- YES

Step 5: Implementation
- Responsible: Change owner
- Carry out tasks as per implementation plan
- Update all relevant information (procedures, drawings, signage, etc)
- Train and notify relevant personnel
- Execute change

Step 6: Verification and Closeout
- Responsible: Change Owner, Approver or On-board MoC Coordinator
- Verify effectiveness of change and of implementation plan
- Sign off and file away MoC form
MoC Process: Checklist

1. Initial Review
   - Is change needed and/or beneficial?
   - Is change subjected to MoC, as per MoC program criteria?
   - Is it a permanent change or temporary?
   - What are the impact(s) of the change?
   - Is the anticipated severity of the impact(s) of the change or its complexity high enough to require a detailed risk assessment?
   - Implementation plan proposed? Includes suggested actions to make risk tolerable?

2. Senior Review
   - Does impact assessment accurately estimate potential impacts?
   - Are there major impacts?
   - How extensive is the change?
   - Should a multidisciplinary team review the change?

3. Detailed Risk Assessment
   - Subject matter experts identified and available?
   - Risk assessment completed?
   - Implementation plan proposed? Includes suggested actions to make risk tolerable?

4. Approval
   - Is the assessment technically sound? Are all the assumptions reasonable?
   - Have all associated hazards/risks been identified?
   - Do actions suggested reduce risk to tolerable levels? Are they technically feasible?

5. Implementation
   - Relevant documents updated?
   - All affected personnel notified of pending change?
   - All affected personnel in all crews trained on the change?
   - All controls for identified hazards addressed according to implementation plan?
   - Change execution verified to change owner's satisfaction?
   - Implementation plan followed and completed?

6. Verification and Closeout
   - Change functioning as intended? Effective?
   - Follow-on actions completed?
   - Process documentation updated to reflect the change?
   - Has training taken place for all relevant employees (all shifts/crews)?
   - Maintenance schedule/tasks updated?
   - For temporary changes, are the time limits still valid?
   - Sign-off when all tasks are completed.
Temporary & Emergency Changes

- Temporary Changes
- Emergency Changes

Recognition of an emergency change

Verbal MoC Process (Steps 1-5)

Emergency controlled and conditions normalized

Validate and document change through formal MoC process (Steps 1-5)

Step 1: Initial Review

Is change temporary?

Prescribe time limits for reverting to normal

Step 2 - 5

Step 6: Verification and Closeout

For temporary changes, verify expiration dates

Convert to permanent change?

Revert to original state?

Provide new date for expiration of change

Sign off and file away MoC form
MoC Program: Implementation

- Roles and Responsibilities
- Program Manual
- MoC Form
- MoC Log
- Handover of MoC
- Training on MoC

Flowchart:
1. Initial Review
   - Initiator: Anyone can propose a change or identify a latent change
   - Change Owner: Officer level and above, with training in MoC and risk assessment. This officer becomes the owner of the change. Initiator and Change Owner complete Initial Review

2. Senior Review
   - Approver: Senior Officer (Master, Chief Mate, Chief Engineer), or Shore-Based Manager appraise Initial Review. For offshore, Offshore Installation Manager or Production Manager.

3. Detailed Risk Assessment
   - Subject Matter Experts: Relevant experts perform risk assessment. Needed only for very complex proposed changes or changes deemed during the Initial Review to have potential for major impacts.

4. Approval
   - Approver: Senior Officer or Shore-based manager approve assessment and implementation plan.

5. Implementation
   - Designated in the Implementation Plan or by the Approver. Execution monitored by Change Owner

6. Verification and Closeout
   - Change Owner, Onboard MoC Coordinator, or Approver
MoC Program: Monitoring & Appendices

- MoC Program Monitoring
  - Sample KPIs
- Appendix 1 – Preliminary Impact Assessment
- Appendix 2&3 – Completed MoC Examples