DROPS Guidance & Best Practices

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DROPS Asia Chairman
• Background and scope of DROPS Guidance and Best Practice

• Overview of DROPS Guidance and Best Practice:
  – Survey and Inspection
  – Red Zones
  – PreTask Checklists
  – Tools at Height

• Q&A
• ‘Best Practice’, as agreed by general consensus of the members of the DROPS Workgroup
• Certain processes and procedures detailed in these documents may require modification to suit specific locations, activities or facilities
• Guidelines are considered best practice and are a recommended component of any integrated dropped object management scheme.
• Subject to regular review and update in response to improved methodologies and technologies.
• Best Practice - Tools at Height
• DROPS Guidance – Survey and Inspection
• DROPS Guidance – Red Zones
• DROPS Guidance – PreTask Checklist
• Applies to all subcontractor personnel conducting third party Independent Dropped Objects Surveys.

• The purpose of these Guidelines is to:
  – establish minimum requirements for subcontractor personnel with regards to Independent Dropped Objects Surveys / Inspections
  – provide guidance on the completion of Dropped Objects Survey Reports and Dropped Objects Inspection Books
  – provide templates for independent Dropped Objects Survey Reports
  – provide further supporting guidance for planning and management

• Link to document:
  http://www.dropsonline.org/index.asp?id=1&refID=155&refID2=158&contentID=158
DROPS Guidance: Survey and Inspection 2
• Basic Requirements – Specifies personnel competency requirements of 3rd party independent Dropped Objects surveyors/inspectors

• Independent Dropped Object Survey Criteria (ensures consistency in surveys)
  – Inspection Areas
  – The Survey
    • What to look out for
    • Required survey tasks
  – Deliverables
    • Dropped Objects Survey Report
    • Failed Item List
    • Dropped Objects Inspection Book

• Responsibilities for survey and inspection
Survey tasks:

- Document equipment location by Inspection Area
- Photograph each item surveyed
- Include unique identification number to each item (tag numbers)
- Describe each item surveyed
- Inspect and document Primary Securing method(s)
- Inspect and document Secondary Retention method(s)
- Record equipment condition as Pass or Fail, including comments (ie Satisfactory or Reason for Failure)
- Record inspection frequency (ie weekly, monthly) as recorded in the Equipment Family Inspection Criteria
- Generate a Failed Items List
## DROPS Guidance: Survey and Inspection

### Typical Support Vessel Dropped Object Survey Report

<table>
<thead>
<tr>
<th>Ref</th>
<th>Description / Location</th>
<th>Fixing Method</th>
<th>Condition</th>
<th>Control</th>
</tr>
</thead>
<tbody>
<tr>
<td>CWNE10</td>
<td>Crown block sheaves and pass,</td>
<td></td>
<td></td>
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<tr>
<td></td>
<td>control crown</td>
<td></td>
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<tr>
<td>CWNE12</td>
<td>Dead line deflector sheave, 4th</td>
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<tr>
<td></td>
<td>Crown</td>
<td></td>
<td></td>
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</tr>
<tr>
<td>CWNE14</td>
<td>Fast line sheaves, Fwd Crown</td>
<td></td>
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</tr>
<tr>
<td>W11005</td>
<td>Timber block crown, underside of</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>crowns</td>
<td></td>
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</tr>
</tbody>
</table>

### Inspection Report

- **Primary Security:** Bolted with lock nuts
- **Secondary Retention:** Lock wire and safety chain

### Survey and Inspection

- **Condition:** Pass / Fail
- **Commens:** Satisfactory

### Control

- **Monthly**

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**Table:**

<table>
<thead>
<tr>
<th>Photo</th>
<th>Description / Location</th>
<th>Fixing Method</th>
<th>Condition</th>
<th>Control</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Crown Block Sheaves</td>
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<td></td>
<td>and Pass, control</td>
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<td></td>
<td>Crown</td>
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<tr>
<td></td>
<td>Fast Line Sheaves,</td>
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<td></td>
<td>Forward Crown</td>
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<td></td>
<td>Timber Block Crown,</td>
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<td></td>
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<tr>
<td></td>
<td>Underside of Crowns</td>
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</tr>
</tbody>
</table>

**Survey and Inspection Details:**

- **Inspection Area:** [Image]
- **Conducted:** On [Date]

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**Notes:**

- Check all securing bolts/nuts and nuts in place. Check for signs of corrosion.
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### DROS Guidance:
**Survey and Inspection**

<table>
<thead>
<tr>
<th>Photo</th>
<th>Ref</th>
<th>Description / Location</th>
<th>Fitting Method</th>
<th>Condition</th>
<th>Reason for Failure</th>
<th>Secondary Reason / Inspection Method</th>
</tr>
</thead>
<tbody>
<tr>
<td><img src="CWM012" alt="Image" /></td>
<td>CWM012</td>
<td>Low-block hoist arm and pins, control crown</td>
<td>Primary Securing: Bolaed</td>
<td>Condition: [ ] Pass [ ] Fail</td>
<td>Reason for failure: No secondary retention, requires lock nuts / lock wire</td>
<td>Secondary Retention: None</td>
</tr>
<tr>
<td><img src="CWM012" alt="Image" /></td>
<td>CWM013</td>
<td>Dead line deflector shoring, left Crown</td>
<td>Primary Securing: Bolaed with lock nuts</td>
<td>Condition: [ ] Pass [ ] Fail</td>
<td>Reason for failure: Lock wire broken, need to replace lock wire</td>
<td>Secondary Retention: Lock wire</td>
</tr>
<tr>
<td><img src="CWM014" alt="Image" /></td>
<td>CWM014</td>
<td>Fast line sheaves, left Crown</td>
<td>Primary Securing: Bolaed with lock nuts</td>
<td>Condition: [ ] Pass [ ] Fail</td>
<td>Reason for failure: Safety chain broken, requires new chain</td>
<td>Secondary Retention: Lock wire and safety chain</td>
</tr>
<tr>
<td><img src="CTB001" alt="Image" /></td>
<td>CTB001</td>
<td>Timber block covers, underside of crown</td>
<td>Primary Securing: Bolaed with lock nuts</td>
<td>Condition: [ ] Pass [ ] Fail</td>
<td>Reason for failure: Replace 2 part shackle with 4 part shackle</td>
<td>Secondary Retention: Lock wire, safety chain and 2 part shackle</td>
</tr>
<tr>
<td>Photo</td>
<td>Rad</td>
<td>Equipment</td>
<td>Fastening Method</td>
<td>How to Inspect</td>
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</tr>
<tr>
<td>C4MK12</td>
<td>C4MK12</td>
<td>Crown block swivels and pins, central crown</td>
<td>Primary Securing: Bolted with lock nuts</td>
<td>Drop check: Check all bolts and self-locking nuts are secure, check main pin lock clips and nuts are secure and lock wired. Check condition of live guard and securing bolts.</td>
<td></td>
<td></td>
</tr>
<tr>
<td>C4MK12</td>
<td>C4MK12</td>
<td>Dead line deflector sheave, all crowns</td>
<td>Primary Securing: Bolted with lock nuts</td>
<td>Drop check: Check all bolts and self-locking nuts are secure, check main pin lock clips and nuts are secure and locked wire. Check condition of live guard and securing bolts.</td>
<td></td>
<td></td>
</tr>
<tr>
<td>C4MK14</td>
<td>C4MK14</td>
<td>Dead line sheaves, fuel crowns</td>
<td>Primary Securing: Bolted with lock nuts</td>
<td>Drop check: Check all bolts and self-locking nuts are secure, check main pin lock clips and nuts are secure and locked wire. Check condition of live guard and securing bolts and chain.</td>
<td></td>
<td></td>
</tr>
<tr>
<td>WJ1005</td>
<td>WJ1005</td>
<td>Timber block covers, underride of crown</td>
<td>Primary Securing: Bolted with lock nuts</td>
<td>Drop check: Check condition of safety chains and 4-part shackles. Check retaining bolts/knob washers/locks are in place and secure and for signs of corrosion.</td>
<td></td>
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</tr>
</tbody>
</table>

**Typical Support Vessel Dropped Object Inspection Book**

**Area: SUPERVISOR / Comments:**

- **Condition:**
  - Pass
  - Fail

- **Frequency:**
  - Daily
  - Weekly
  - Monthly

- **How to Inspect:**
  - Check all securing bolts/knob are in place. Check for signs of corrosion. Check integrity of safety chain. Remove all clips.

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**DROPS Guidance:**

Survey and Inspection
## Example Equipment Family Inspection Criteria

### AREA 1: Derrick/Mast and Traveling Equipment
Derrick Equipment Zone 1 (A-Frame / Crown / Water Table)

<table>
<thead>
<tr>
<th>Item Family</th>
<th>Frequency</th>
<th>How to inspect</th>
</tr>
</thead>
<tbody>
<tr>
<td>1. Active heave cylinder hydraulic control lines, support wires Valve block, flex hoses &amp; accumulator bottle</td>
<td>180 days</td>
<td>Hydraulic control lines pipe clamped together and secured to Active Heave Compensator with bolted flanges. Other control lines beam clamped to gin pole structure with turnbuckles and 4 part shackles Accumulator bottle pipe and support wires clamped to framework &amp; beam clamped to gin pole structure. Valve block secured with bolted flanges. Check beam clamps and bolts are secure and for any signs of corrosion, check all bolted connections and hoses are in good condition. Check support wires, turnbuckles and shackles, ensure shackles are fitted with split pins.</td>
</tr>
<tr>
<td>2. Cable trays, Cable conduit pipe runs &amp; cable clamps</td>
<td>180 days</td>
<td>Cable trays with beam clamps to derrick structure. Cables secured with stainless steel tie wraps. Other cables fed through pipe work which is beam clamped to derrick &amp; gin pole structure. Check cable tray/conduit runs are secure, ensure all brackets are tight and check for signs of corrosion.</td>
</tr>
</tbody>
</table>
• Basic Requirements – Review and risk assessment to determine drop object potential
  – Output: Green, yellow and red zones mapping, risk mitigation plan and risk assessment report
• Area Authorities appointment for yellow and red zones
• Access diagrams/zone maps
• Access to Restricted Areas
• Permission to enter Restricted Areas
• Controlling access to Restricted Areas
• Permanent changes to restriction classification
  – Management of Change process
  – Updating access diagram/zone maps
• Temporary changes to restriction classification
• Link to guidance document:
  http://www.dropsonline.org/index.asp?id=1&refID=155&refID2=159&contentID=159
- **Green Zone**: where the layout and activities of the area present little likelihood of personnel being exposed to potential dropped objects under normal circumstances.
- **Yellow Zone**: where the layout and activities of the area do present some risk of personnel being exposed to potential dropped objects under normal circumstances.
- **Red Zone**: where the layout and activities of the area present significant risk of personnel being exposed to potential dropped objects under normal circumstances.
• **Green Zones**- anyone may enter as long as no additional barriers are in place.

• **Yellow Zones**- only personnel with specific tasks in that zone may enter. All others require the Area Authority’s permission to enter or work in that zone.

• **Red Zones**- personnel may be more exposed to falling objects, the movement of remotely operated equipment, high pressure, and/or other hazards as determined by risk assessment. Personnel in Red Zone **must** be required for the current operation and **must** be authorized by the Area Authority.

• Area Authority **must** ensure an appropriate plan is in place for specific operations in a Red or Yellow Zone.
• Every effort should be made to identify and define an access route to the Area Authority’s common workplace location within the **Green Zone** to allow personnel access to Area Authority to request authorization into the **Yellow** and **Red Zones**.

• Personnel not required for current operations **must not** be permitted into **Yellow** or **Red Zones**.

• For any activities that require entry to a **Red Zone**, and for non-routine activities within a **Yellow Zone**, a documented risk assessment must be performed before permission is given.
• Access to **Red** or **Yellow** Zones **must** be controlled at all times.

• All access points should be identified and equipped with a physical barrier marking the point at which personnel cannot proceed without approval from the Area Authority.

• The physical barrier may be a chain, gate, door etc. (Emergency egress must not be impeded.)

• The barrier shall always be in place at all access points leading directly to **Yellow** and **Red** Zones, and at any other access points determined by the Area Authority.

• The physical barrier should also include a sign (in both English and the predominant local language) that communicates the zone is a hazardous area and access requires the Area Authority’s authorization

DROPS Guidance:
Restricted Access Areas (Red Zones) 6
• Scope:
  – This document details some important considerations, precautions, checks and procedures that should be covered by a DOMS.
  – They are not exhaustive and should be supplemented with additional checks and processes specific to the individual location, task and environment.

• Static and Dynamic Dropped Objects
  – Dropped Object Management System (DOMS) effective in reducing frequency of static dropped object incidents

<table>
<thead>
<tr>
<th>STATIC DROPPED OBJECTS</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Preventive Controls</strong></td>
</tr>
<tr>
<td>Preventive Maintenance Tasks (ref DROPS Campaign Workpack)</td>
</tr>
<tr>
<td>Calendar-based Dropped Objects Inspections (ref DROPS Campaign Workpack)</td>
</tr>
<tr>
<td>Primary Securing Devices (ref DROPS Reliable Securing Booklet)</td>
</tr>
<tr>
<td>Independent Dropped Object Surveys (ref DROPS Campaign Workpack)</td>
</tr>
<tr>
<td>Dropped Object Inspection (Picture) Books (ref DROPS Campaign Workpack)</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th><strong>Mitigating Measures</strong></th>
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</thead>
<tbody>
<tr>
<td>Secondary Retention (ref DROPS Reliable Securing Booklet)</td>
</tr>
<tr>
<td>Effective Use of Barriers (ref DROPS Campaign Workpack)</td>
</tr>
<tr>
<td>Restricted Access Areas (ref DROPS Guidelines for Restricted Access Areas)</td>
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</tbody>
</table>
- Behavioral factors more dominant in controlling dynamic dropped objects

<table>
<thead>
<tr>
<th>DYNAMIC DROPPED OBJECTS</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Preventive Controls</strong></td>
</tr>
<tr>
<td>Individual Awareness</td>
</tr>
<tr>
<td>Effective Task Planning (incl Lift Plans)</td>
</tr>
<tr>
<td>Collision Checklists</td>
</tr>
<tr>
<td>Pre-task Assessment and Checks (ref DROPS Prompt Card)</td>
</tr>
<tr>
<td>Observation and Vigilance (ref DROPS Training and Hazard Hunts)</td>
</tr>
<tr>
<td>Management of Change</td>
</tr>
<tr>
<td>Time Out For Safety (TOFS)</td>
</tr>
<tr>
<td>Management of Distractions</td>
</tr>
<tr>
<td>Tools Aloft Log Book (ref DROPS Guidelines for Tools at Height)</td>
</tr>
<tr>
<td><strong>Mitigating Measures</strong></td>
</tr>
<tr>
<td>Individual Awareness</td>
</tr>
<tr>
<td>Use of Approved Tools for Working at Height (ref DROPS Guidelines for Tools at Height))</td>
</tr>
<tr>
<td>PA Announcements / Warnings (eg overhead operations, crane operations, work in derrick, etc)</td>
</tr>
<tr>
<td>Effective Use of Barriers (ref DROPS Campaign Workpack)</td>
</tr>
<tr>
<td>Restricted Access Areas (ref DROPS Guidelines for Restricted Access Areas)</td>
</tr>
</tbody>
</table>
• Task planning – include assessment of dropped object risk
• Before starting work – important to check and review even though task has been planned earlier
• Working at height – ensure dropped object prevention and mitigation actions are taken. Continuous vigilance
• Tasks involving Loading or Lifting – Lifting Plan is essential
• Task Completion – Housekeeping
• Lift Plan – Consider all aspects for a safe lift
• Collision checklist – should be completed when performing any operations which may cause collision (lifting etc.)
• Appendices – Assorted checklists
• Link to guidance document: http://www.dropsonline.org/index.asp?id=1&refID=155&refID2=160&contentID=160
Driller's Collision Checklist

- Crown (Crown Saver)
- UpperPRS Racking Arms (forward)
- UpperPRS Racking Arms (aft)
- Monkeyboard
- Casing Stabbing Board
- Racking Board Fingers
- Casing Stabbing Arm
- LowerPRS Racking Arms (forward)
- LowerPRS Racking Arms (aft)
- Floor Mounted Manipulator Arm
- Iron Roughneck
- Rotary (Floor Saver)
DROPS Guidance: Pre-task DROPS Assessment, Checks and Precautions 5
• Issued in 2005, marks the first step towards implementing an appropriate Tools at Height system.
• In 2010, DROPS have initiated a special Focus Group to study the issue in more detail and develop and issue more specific and detailed guidance for the industry.
Questions?