DROPS SURVEY & IMPROVING THE IMPLEMENTATION OF DROPS

SPECIAL OILFIELD SERVICES Co. LLC
The INITIATIVE

- SOS Management took initiative and challenge to develop, establish a DROPS Survey team as part of the inspection services.

- The Divisional Heads of Inspection and Lifting Equipment Inspection were sent to DROPS Train the Trainer Course.

- In the subsequent DROPS forums conducted inside and outside OMAN, we were able to register our participation and presently we are having 7 specialists who can perform the DROPS survey.

- The Competence of Each DROPS Survey is Evaluated by Feedback from Customer Representative and Divisional Head.

- Each Report is compiled after discussing both satisfactory & Potential Hazard condition, in our in-house DROPS Forum, including Specialists who performed the job and Divisional Heads.
DROPS SURVEY

SOS DROPS Survey is driven by a Standard operating procedure.

Established, maintained and documented. [Doc. No. SOS/SOP/7.8 Rev.1]

Based on the DROPS Guidance for Survey and Inspection.

Identifying procedure for quantitative analysis of Risk of Dropped Objects [in line with Potential Consequence triangle] derived from Product of

i. Severity Rating [DROPS calculator] and

ii. Probability of Dropping and Object [from the Survey].
DROPS SURVEY- Improvements

- In the beginning Reports generated are Custom-built with more photographs to provide better understanding of the Dropped Objects & status

- Each component identified by
  - Photographs
  - Identification number
  - Location
  - Main Assembly
  - Sub Assembly
  - Status of Primary retention &
  - Status of secondary retention

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<table>
<thead>
<tr>
<th>LO No.</th>
<th>Description of the Equipment</th>
<th>Location</th>
<th>Status/observation</th>
<th>Condition/Recommendation</th>
</tr>
</thead>
<tbody>
<tr>
<td>C-12</td>
<td>Coil Line sheave wire rope jam protection rod</td>
<td>Crown</td>
<td>Condition of the Rod &amp; Fittings with M/C hoist eye with appropriate lattices found normal.</td>
<td>Satisfactory</td>
</tr>
<tr>
<td>C-13</td>
<td>Fast line sheave plus flange mounting bolt and fittings</td>
<td>Crown</td>
<td>Flanges fitting &amp; bolt head With safety wire loop.</td>
<td>Satisfactory</td>
</tr>
<tr>
<td>C-14</td>
<td>Fast Line Sheave mounting fasteners &amp; Brackets welding condition</td>
<td>Crown</td>
<td>All the bolt mounting with sufficient thread length With spring washers &amp; Welding found normal</td>
<td>Satisfactory</td>
</tr>
<tr>
<td>C-15</td>
<td>Fast Line Sheave wire rope groove condition</td>
<td>Crown</td>
<td>Smooth wear and safe Groove path With fine lubrication</td>
<td>Satisfactory</td>
</tr>
<tr>
<td>C-16</td>
<td>Fast line wire rope jam protection frame &amp; welding conditions</td>
<td>Crown</td>
<td>Found with out deformities &amp; welding found satisfactory.</td>
<td>Satisfactory</td>
</tr>
</tbody>
</table>
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DROPS SURVEY - Improvements

As the Client’s representatives, who review and use the report had more awareness, DROPPED OBJECT REGISTER is now modified with...

Survey identifies each component by:
- Identification number
- Location
- Main Assembly
- Sub Assembly
- Status of Primary & Secondary Retention

Plus

- QUANTITATIVE RISK RATING
DROPS SURVEY- Improvements

As SOS Dropped Object Survey procedure addresses DROPS Survey and Reports as part of Client’s Dropped Object Prevention Scheme[DROPS], the revised formats provide Client’s representative at site,

A ready reference of each component’s previous satisfactory status, to compare with present status
And classify the Risk accordingly.
As a second phase of our implementation part we provide the DROPS Survey data with Quantitative Risk Classification Plus A generic DROPS CHECK LIST with Severity Rating & Recommended Frequency.
**DROPS SURVEY - Implementation**

<table>
<thead>
<tr>
<th>Component</th>
<th>Location</th>
<th>Inspection Details</th>
<th>Severity Rating</th>
<th>Recommended Frequency</th>
</tr>
</thead>
<tbody>
<tr>
<td>1. Sheave Primary Base mounting condition of the sheave, Fastener tight / length / Stopper plate or Positioner.</td>
<td>9</td>
<td>1 1 1</td>
<td></td>
<td></td>
</tr>
<tr>
<td>2. Secondary retention self lock nut or split cotter pin</td>
<td>8</td>
<td>1 1 1</td>
<td></td>
<td></td>
</tr>
<tr>
<td>3. Primary sheave pin, both end flange fittings / Fastener tightness.</td>
<td>8</td>
<td>1 1 1</td>
<td></td>
<td></td>
</tr>
<tr>
<td>4. Secondary retention bolt head lock system condition (Both side if applicable).</td>
<td>7</td>
<td>1 1 1</td>
<td></td>
<td></td>
</tr>
<tr>
<td>5. Sheave groove smooth wear, wire rope impregnation mark if any and sheave shoulder condition</td>
<td>7</td>
<td>1 1 1</td>
<td></td>
<td></td>
</tr>
<tr>
<td>6. Primary fitting of Wire rope jump prevention support condition</td>
<td>7</td>
<td>1 1 1</td>
<td></td>
<td></td>
</tr>
<tr>
<td>2. Sheave assembly</td>
<td>6</td>
<td>1 1 1</td>
<td></td>
<td></td>
</tr>
<tr>
<td>1. Lubrication and condition of grease nipples</td>
<td>6</td>
<td>1 1 1</td>
<td></td>
<td></td>
</tr>
<tr>
<td>2. Grease hose condition, acceptable style of lined up, free from obstruction and proper clamping</td>
<td>6</td>
<td>1 1 1</td>
<td></td>
<td></td>
</tr>
<tr>
<td>3. Flat form / Walk area must be free from dry grease / Oil spill</td>
<td>6</td>
<td>1 1 1</td>
<td></td>
<td></td>
</tr>
<tr>
<td>4. Sheave wire rope running Path [Inlet and Outlet]</td>
<td>6</td>
<td>1 1 1</td>
<td></td>
<td></td>
</tr>
<tr>
<td>3. Sheave assembly</td>
<td>7</td>
<td>1 1 1</td>
<td></td>
<td></td>
</tr>
<tr>
<td>1. Sheave Primary Base condition and safety lock of the sheave, Fastener tight / length / Stopper plate or Positioner. (If applicable).</td>
<td>8</td>
<td>1 1 1</td>
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<td>1 1 1</td>
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<td></td>
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DROPS SURVEY- Statistics

DROPS SURVEY Results of first Six Rigs [2010-2012]

- RIG-1
- RIG-1
- RIG-2
- RIG-2
- RIG-3
- RIG-3
- Rig-4
- RIG-5
- RIG-6

Satisfactory Condn.   Potential Hazard
DROPS SURVEY Results of first Six Rigs [2010-2012]
The survey at second time at same Rig or First Survey at recent time shows an apparent increase in areas of Satisfactory Condition.

Significant drop in potential Hazard condition.

Results from INCREASE IN AWARENESS
DROPS SURVEY - Challenges

- Despite the increase in awareness, the following challenges need to be addressed to achieve the set goals

  - Some serious thinking process shall be incorporated from the design stage of each rig as per the
    - Working conditions
    - Assembly and Disassembly during each rig move
    - Methods of Primary attachments and Secondary retention

  - DROPS Awareness and Communication to various levels of the Rig Crew.
Location: Mast Light fitting base (All Light DS & ODS Side)

Observed status:
The light fitting base grip type, square head screw tighten on plain flat which is holding the tube light (with A secondary retention)

Recommendation:

The Mast is more prone to vibration during operations, thus the grip fitting is not suitable,

Bolt and Nut fitting through hole is safer and will hold against vibration
Location: DS Mast Ladder side

Recommendation:
Separate Electrical Cable Tray fitting, On telescopic mast joint with Detachable male female plug points.

Location: DS Ladder side,

Observed Status: Electrical cable and air hose tied on the mast ladder side
DROPS SURVEY- Challenges

Location: Tong line sheave, Both side ODS &DS

Observed Status: Snatch block fitted, Without secondary retention Provision. The fitted safety line will not fulfill the purpose of secondary retention.

Recommendation: Sheave block with secondary retention with provision of slot hole (Oilfield service block-Tower/ Derrick hoist block). Secondary retention to be fitted and secured to separate point away from the sheave hanging.
SPECIAL OILFIELD SERVICES Co. LLC.
P.O Box : 880, Postal CODE: 112
RUWI, Sultanate of OMAN
Tel: 00968 24942102
00968 24942103
Fax: 00968 24942111
Email: sos@specialoildfield.com
Web Site: www.specialoildfield.com
SOS has been established in March 1986. The main field of activity is providing specialized services and equipment to the oil & gas industry, electricity, water, chemical and other process industry in Oman.

SOS Inspection Service provide Inspection, Certification and Maintenance services of Exploration, Drilling, Production and Well Control Equipment as part of the Equipment / Asset Management system for all Oil Companies, Drilling Contractors and Specialized Service providers in Oman since 1986.
SOS currently employs 400 personnel, of whom there are 3 Contract Managers, 5 Site Managers, 10 Site Supervisors, 5 Sales & Application Engineers, 4 Petroleum Engineers, 5 Senior Pump Maintenance Supervisors, 50 NDT / Lifting Engineers including 25 QA/QC Surveyors.

SOS Production Chemical Integrated Services providing maintenance to the Production Pipe Lines [main asset of any Oil Operating Company], a integrated service incorporated with monitoring and measurements of corrosion data.
SOS Inspection Services providing inspection of
i. Drilling Tubular - Drill stem Components
ii. Production Tubular - Tubing and Casing
iii. Hard Band Re-Application Services
iv. Lifting Equipment Inspection and Certification
v. DROPS – Dropped Object Prevention Survey

To all Drilling Contractors, Oil Companies and Other Oil & Gas Production Support Servicing Companies working in Oman.

Inspection Division currently employs 200 Inspection Professionals certified to ASNT and LEEA.

Managed by One Corporate QHSE Manager, One Technical/Training Manager, Two Site Managers, Three Inspection Superintendents, Two HSE Advisors.
The COMPANY

API-QR REGISTRATION
Special Oilfield Services Co. LLC has acquired API-QR Registration from American Petroleum Institute for
☆ API-Q1 Reg. No:Q1-1699 for API Spec Q1
The COMPANY

SOS INTEGRATED MANAGEMENT SYSTEM

Special Oilfield Services Co. LLC Management system is certified to

- **ISO 9001-2008** for Quality
- **ISO 14001-2004** for Environment
- **OHSAS 18001-2007** for Occupational Health and Safety.
The COMPANY

- We are Corporate Member of American Society of Nondestructive Testing (ASNT)
- We are a Full Member of Lifting Equipment Engineers Association (LEEA)
- We are the Bronze Award Winner of 2012 Contractors CEO Excellence Award for Commitment of Safety
CORE ACTIVITIES

Services to the Petrochemical Industries in Oman

Supply of materials to the Oil and Gas and Petrochemical Industry

Major services:
1. Wireline services (slickline)
2. Well testing services
3. Mud engineering services
4. Inspection services
5. Corrosion management services

Major classification of products:
1. Well head equipment
2. Downhole and completion Equipment
3. Production chemicals
4. Instrumentation
5. Process equipment
6. Pumps and gas compressors
INSPECTION SERVICES

TUBULAR INSPECTION SERVICES (TIS)

OIL COUNTRY TUBULAR GOODS (OCTG) INSPECTION
[ C31-0836 - Contract with PDO since 2002 ]

LIFTING EQUIPMENT INSPECTION & CERTIFICATION

TUBULAR INSPECTION SERVICES:
1. Drill Pipe Inspection
2. Bottom Hole Assembly (BHA) Inspection
3. Drilling Jar/Motor/MWD/LWD/Specialty Tools Shop Inspection
4. Handling and Hoisting Equipment Inspection
5. Mast & Substructure Inspection
6. Well Control Equipment Inspection

HARD BAND RE-APPLICATION SERVICES

LIFTING EQUIPMENT INSPECTION:
1. Loose Lifting Gear Inspection
2. Crane Inspection
3. Proof Load Test and Certification
4. DROPS Survey
OUR LOCATION

INSPECTION SERVICES BASE

SPECIAL OILFIELD SERVICES OPERATIONS BASE IS LOCATED INSIDE

Area: 5000 Sq. Meters
NIZWA INDUSTRIAL AREA - NIZWA