



OPS-OES Rig Inspection Workshop Training Course





OPS OES RIG INSPECTION TRAINING COURSE

Methodology

The OPS OES Inspection methodology is based on the IADC Rig Equipment List, Drilling Contract, and applicable Industry Publications



OPS OES ASSET CONDITION SURVEY



How we do it

A Survey consists of 7 basic segments

1. Planning
2. Determine Scope of Work (Inspection Check List)
3. Documentation Review (majority of this can be performed prior to the onboard survey)
4. Equipment / System Condition (Visual) Survey
5. Function Test
6. System Integration Test
7. Reporting





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Planning

A basic plan as below, it will change daily based upon findings and site impacts (conditions and operations).

1. Initial Communications / Meetings with the Client (determine the SOW)
2. Request and begin Review of Documents
3. Kickoff Meeting (on site)
4. Daily Meetings and Reports
5. Daily Recording of issues in the Corrective Action Report (CAR)
6. Inspect Equipment / System Condition
7. Perform System Integration Test
8. Close out Meeting
9. Issue Summary Report



The Scope of Work is based upon the following:

1. IADC Equipment List
2. Contract
3. Class / Flag (if applicable)
4. Relevant Industry Publications
5. Client Requirements



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Document Review

Document Review is guided by the below:

1. IADC Equipment List, Certificates of Compliance (CoCs) and required periodic inspections
2. Contract
3. Class / Flag requirements
4. Industry Publications
5. Client Requirements
6. Local Laws





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Document Review

A document request list is developed for issue to the Client and for tracking received documents.

1. Certificates of Compliance
2. Required inspections

MMSVS HWU Jenny Document Status 16 May 2021

Item	Description	Certificate of Manufacture	Class 1 Zone II Certified	Last CAT III Inspection	Last CAT IV Inspection	Offshore Container Certificate or Load Test	Last OEM inspection	Last UT or Pressure Test Inspection	Equipment Hours	Provided	Insulation Resistance	% Complete
Section A. Structure												100%
A1	Gin pole 10T 110102-02	Oct-11	N/A	N/A	Apr-21	Apr-21	N/A	N/A	N/A	N/A	N/A	100.0%
A3	Tong Pole 100501-07	Jan-13	N/A	N/A	Apr-21	Apr-21	N/A	N/A	N/A	N/A	N/A	100.0%
A4	Work Basket c/w Extension & Counter Balance 100203-03	Oct-12	N/A	N/A	Apr-21	Apr-21	Apr-20	N/A	N/A	N/A	N/A	100.0%
A5	Hydraulic Jack and Spreader Bar 100103-03	Sep-12	N/A	N/A	Apr-21	Feb-16	Apr-20	N/A	N/A	N/A	N/A	100.0%
A6	Stairways and extension Support 100300-07E 100300-07F 100300-07G	Oct-11	N/A	N/A	Apr-21	N/A	N/A	N/A	N/A	N/A	N/A	100.0%
A7	Sub base 160105-02	Jun-17	N/A	N/A	Apr-21	N/A	Mar-20	N/A	N/A	N/A	N/A	100.0%
A8	Skid beam (Sub base Extension) C-1S, C-2S, C-1S/T, C-	2021	N/A	New	Apr-21	N/A	N/A	N/A	N/A	N/A	N/A	100.0%
A9	A frame C-4, C-5	2021	N/A	New	Apr-21	N/A	N/A	N/A	N/A	N/A	N/A	100.0%
A10	Main Skid Beam C-3S, C-4S, C-3ST, C-4ST	2021	N/A	New	Apr-21	N/A	N/A	N/A	N/A	N/A	N/A	100.0%
A11	Skidding System N/A	2021	N/A	New	Apr-21	N/A	N/A	N/A	N/A	N/A	N/A	100.0%
Section B. Calibration												100%
B1	Jack Operating Panel / Controls Gauges	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	Apr-21	N/A	100.0%
B2	BOP Test Chart Recorder	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	Apr-21	N/A	100.0%
B3	BOP Control System gauges	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	Apr-21	N/A	100.0%
B4	Weight Indicator	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	Apr-21	N/A	100.0%
B5	High Pressure Piping and Manifolds Gauges	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	Apr-21	N/A	100.0%
B6	Torque Wrench	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	Not available	N/A	100.0%

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Visual Inspections

Equipment and Systems are visually inspected utilizing OPS OES checklists tailored and based upon relevant standards, recommendations, and regulations (API, IADC, Class, DROPS, and IEC publications, etc.).

Each non conformance finding is recorded in the Corrective Action Register (CAR):

Categorized as Critical, Major, or Minor

Identified by equipment / system / Discipline

Include a photo

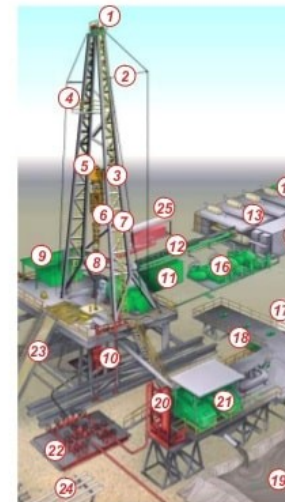
Include a Reference to the relevant governing document



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Function Tests

- All Equipment is function tested to specified operating conditions.
- Actual operation or simulation (if necessary)
- All functions tested (as per OEM)
- Capacity checked
- Results recorded



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System Integrati on Test (SIT)

1. Equipment / Systems are visually inspected, and function tested prior to the beginning of the SIT to ensure satisfactory operation
2. Equipment / Systems will be run for a predetermined duration and operate as per Class, OEM, and Client requirements
3. Operate simultaneously to interact with one another
4. If issues occur which significantly disrupt the SIT duration for more than a predetermined time, the test shall begin again from the beginning
5. Temperatures, Pressures, Flow, and other relevant Equipment / Systems data shall be monitored and recorded in SIT Data Sheets



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Issue Severity Categorization

Issues identified are categorized according to the below criteria:

I. Critical

- May lead to loss of life, a serious injury or environmental damage as a result of inadequate use and/or failure of equipment

II. Major

- May lead to damage to essential equipment or have a detrimental effect on the drilling operation as a result of inadequate use and/or failure of equipment

III. Minor

- May lead to a situation that contributes to an incident or to circumstances in which the required standards of operation are not met

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Equipment / Systems Check lists

Check Lists have been developed to include items from Class, rules, regulations, standards, and include reference to the governing document (**no opinions**).



1.4.1. MAIN SWITCHBOARDS				
1.4.1.1. DOCUMENTATION				
Item	Document Name	Reference	Result	Criticality
405.	Certificate of Conformity	ABS MODU		Major
406.	5 Year Breaker injection test certificate	ABS MODU		Critical
1.4.1.2. INSPECTIONS				
Item	Document Name	Reference	Result	Criticality
407.	Identification plates are to be provided for each piece of apparatus to indicate clearly its service. Identification plates for feeders and branch circuits are to include the circuit designation and the rating of the fuse or circuit-breaker trip setting required by the circuit.	ABS MODU		Major
408.	Breaker Injection Test (every 5 years)	ABS MODU		Critical
409.	Electrical equipment and motors should be rated for their location's ambient temperature 35°C for environmentally controlled spaces 40°C (104°F) for machinery locations outside of boiler and engine rooms 45°C (113°F) for of boiler and engine rooms 50°C (122°F) Electric for rotating machines in boiler and engine rooms	ABS MODU		Major



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Typical Day

1. Morning Meeting (record the meeting, discuss prior day's results, and plan the day's activities)
2. Carry out planned activities
3. Record activities in the Daily Report
4. Record Data in Corrective Action Register (CAR)
5. Update Final Report Content (this is built from the daily findings)
6. At the end of each day, issue an Email regarding activities and findings

OPS-Oilfield Equipment & Services Ltd.
Daily Activity Report

ANTI CORROSION SYSTEMS, ELECTRICAL SYSTEMS
EARTHING, SPM BUOY, AND FLOATING HOSE
INSPECTION
19 JAN 2020

CLIENT:	ERG ENERGY
CLIENT PROJECT TITLE:	Corrosion Issues Summary
RIG / VESSEL:	MOFU Ingerium / PSD Vantage / SPM Buoy
CLIENT REFERENCE:	
OPS REFERENCE:	
SURVEY DATE BEGIN:	15 JAN 2020
SURVEY DATE END:	
COUNTRY:	Thailand
LOCATION:	Songkhla
AUTHOR:	Mike Gordon
EMAIL:	ming@opsaes.com
TITLE:	Summary

ITEM	Criticality	Quantity
1. Critical		3
2. Major		23
3. Minor		3
4. TOTAL		29

ITEM	ACTIVITY
1.	Inspected Fuel ICCP System
2.	Inspected Bow Chafe Chain connected to the Heavier
3.	Inspected Generator No. 2 cylinder head corrosion issue
4.	Requested Borehole test status, report, and inspection information and documents
5.	Coordinating Proline Fuel Mix Trial on the MOFU
6.	Downloaded drawings and information from Bore regarding the MOFU (ongoing)

Observations, Concerns, Specific Notes (please see recommendations in the CAR report)

ITEM	DESCRIPTION
1.	Function informed we are unable to enter Ballast Tanks as a confined space entry training course certificate is required to enter
2.	Two end of A/C output voltage output waveform checked with oscilloscope, the PSU output and inputs from the reference boards were clean and matched the LDC display reading
3.	Chafe chain did have wear due to chain movement from side to side (see CAR for details and recommendation)
4.	One Cylinder head was corroded badly in the exhaust valve seat area, the other cylinder head and liners were not available for inspection as the engine had already been assembled, a sample of the water will be obtained for analysis

OPS-Oilfield Equipment & Services Ltd.
100/101, Petchaburi Road, 100/101, Petchaburi Road
Bangkok, Thailand 10330
Phone No. +66 (0) 2115 1055

Item	System	Equipment	Disciplin	Criticalit	Description	Recommendat	Referent	Photo	Date Opene	Status	Date Close	Comments
10	Well Control	Koomey Unit Model: PKQ8007	Well Control	Minor	4.3.14.6 The control station shall be equipped and maintained with measurement devices to indicate the following (where the equipment/system is installed): Flowmeter		API Std. 53 4.3.14.6		20-Feb-2020	Closed		Shell has dispensed the Flowmeter.
11	Well Control	Trip Tank	Well Control	Major	4.4.4.2 The trip tank volume readout may be visual or remote, preferably both.	A old fashion Trip Tank measuring device with Wire and pulleys will be fabricated and installed so the driller can monitor the tank. The	API Std. 53 4.4.4.2			Open		



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Daily Reporting

Upon conclusion of the Survey, a report (aligned with the IADC Equipment List and Contract) shall be issued summarizing the Survey along with a Corrective Action Register to document and monitor issues for close out.

Deliverables:

1. Daily Reports
2. Final Report
3. Corrective Action Register (CAR)
4. Photo Record (equipment & issues)
5. SIT Data Sheets
6. Data stored on an internet-based system for download





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Survey Report

We don't want to reinvent the wheel by including Equipment / System minor details from the Rig Equipment IADC list. We provide an overall summary, mandatory certifications / inspection items for all major equipment / systems listed in the IADC list without the multitude of photos. This provides for a report which is less bulky and user friendly. Photos of equipment and issues identified are stored in a separate folder and provided as per the client's requirements.

The Report is intended to be utilized in conjunction with the IADC list, Corrective Action Register, and Photos stored online for download / review.

Report Content:

1. Project Details
2. List of Regulations, Rules, Standards, and Recommendations
3. CAR Summary
4. Major Impacts
5. General Summary of all equipment / systems
6. SIT Summary
7. Equipment and Systems inspected





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Conclusion

OPS OES provides for a detailed, structured approach to performing Asset Inspections, a user-friendly Summary Report / Deliverables, and a portion of the Survey (documentation review) can be performed remotely (saving time and money).

Thank you for your time and interest.

