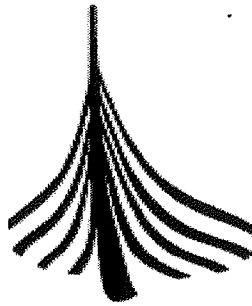



# RINGHORNE DEVELOPMENT

**ExxonMobil**





**RINGHORNE**


01	19.07.05	Issued for Project Acceptance	AES		
<small>Rev</small>	<small>Issued date</small>	<small>Reason for issue</small>	<small>Prepared by</small>	<small>Checked By</small>	<small>Approved By</small>

<p><small>Suppliers Logo</small></p> <div style="text-align: center;">   <b>HYDRALIFT</b> </div>	<p><small>Purchase Order Title</small></p> <p style="text-align: center; font-size: 1.2em;">Drill Floor Equipment</p> <p><small>Tag Numbers</small></p> <p>11BC211, 11Bc212, 11BX212, 10BC241, 11BC213, 11BJ212.</p>
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<small>Purchase Order Number</small> RH01-HD-D-604	<small>SDRL Code</small> K04,K03,P01,K06	<small>System Code</small> 10/11	<small>Area code</small> DD06
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<div style="display: flex; justify-content: space-around; align-items: center;">   </div> <p style="text-align: center;"><b>The Heerema Alliance for Drilling Facilities</b></p>	<p>For Project Use</p> <table style="margin: auto; border-collapse: collapse;"> <tr> <td style="width: 20%; text-align: center;">1</td> <td style="width: 20%; text-align: center;">2</td> <td style="width: 20%; text-align: center;">3</td> <td style="width: 20%; text-align: center;">4</td> </tr> <tr> <td colspan="2" style="text-align: center;"><small>Date</small></td> <td colspan="2" style="text-align: center;"><small>Signed</small></td> </tr> <tr> <td colspan="2" style="height: 30px;"></td> <td colspan="2" style="height: 30px;"></td> </tr> </table>	1	2	3	4	<small>Date</small>		<small>Signed</small>					
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<small>Suppliers Document No.,</small> T2410-Z-KA-001B	<small>Electronic file name</small>
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<p><b>Document Title</b></p> <p style="font-size: 1.5em;"><b>FAT Procedure Hydraulic Roughneck</b></p>
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## Description of Revision


Rev. 01

Rev. 02

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1 SIGNATURE CARD.

## Factory Acceptance Test “Equipment”

Machine Number : T.2410 - 3101

Test Location / Date : Hallen ..... 20.07.05

Representatives from:	Company name	Name (Blockletter)	Initials	Test approved (Test witnessed)
Client	PDS	EDLVE SPRENSON	<i>E. Spre</i>	<i>E. Spre</i>
Class				
Owner				
Supplier	Natoil	Are Stokke	AES	<i>Are Stokke</i>

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## 2 INTRODUCTION

### 2.1 Purpose

The purpose of this procedure is to define the test activities and acceptance criteria for the Factory Acceptance Test (FAT).

The acceptance criteria are derived from governing rules and regulations, Project specifications and Natoil internal requirements.


### 2.2 Test program

Flushing of the hydraulic system is a pre-FAT task. The flushing record will be available for examination during FAT.

The contamination level of the hydraulic oil is subject for verification during the FAT.

The following test program are covered by the factory acceptance test:


- Pressure testing / leakage testing.
- Functional tests – mechanical/hydraulic/electrical/control system.
- Load tests.
- Verification of hydraulic oil contamination.
- Weighing.
- Final inspection/Visual control/Noise test/Interface dimensional control.

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### 2.3 General

General conditions and requirements related to the test are as follows:


- The appointed test engineer is the only person that is allowed to make any changes to the test program.
- If any deviations from acceptance criteria occur during testing, this shall be recorded in the punch list.
- Before test, ensure that all calibrated test equipment have valid calibration certificates. For list of available certificates see section "Required test equipment"
- A copy of the signed test report and cleared punch list shall be filed in the Manufacturing Record Book (MRB).
- The sequence of the testing activities may be changed if more practical.
- The test includes general function tests and full load tests.
- After all test activities are completed, the Client/Owner, Class and the HL representative shall sign the factory acceptance test report.

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### 3 REQUIRED TEST EQUIPMENT

In addition to the Hydraulic Roughneck and its corresponding accessories, the following test equipment will be necessary at test site to complete the test:

- Hydraulic Power Pack ( $P_{\max} = 200$  bar,  $Q_{\min} = 160$  l/min)
- 4m Rail for Roughneck.
- Drill pipe for testing 5½” with plate (Pin & Box).
- Hydraulic Hose Loop.
- Certified Lifting Slings, Shackles etc.
- Calibrated digital manometer (HL no. 2002).
- Calibrated Weighing equipment (0 – 10 tons).
- Cleanliness measuring, HL oil sample set (sample points to be prearranged).
- Grease Gun.
- El. Control Cabinet.
- Stop Watch.
- Calculator.
- Clean and sealed oil sample bottle.
- Dope & Mud

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#### 4 SAFETY

A factory acceptance test involves activities like load testing and movement of heavy equipment and hydraulic pressure testing. To avoid any injuring incident, personnel other than the testing crew shall be attending from a safe distance.


During testing a lot of adjustments and hook up may be carried out. These activities may involve testing crew working on the machine above ground, consequently ground based test personnel shall be aware of the dropped object risk.

Before starting any internal inspection, all electrical supply shall be isolated, pressure in pneumatic and/or hydraulic systems shall be drained or released and the emergency stop push-button shall be engaged.

#### 5 REFERENCES


References is made to the following documents and drawings:

Drawing	Hydralift doc. number	Customer doc. number
General Arrangement Drawing-Roughneck	T2410-D1100-G0031	RH01-HD-D604-XD-401
General Arrangement Rails for Roughneck	T2410-D1100-G0043	RH01-HD-D604-XD-402
General Arrangement Drawing-Pipe Doper	T2410-D1100-G0047	RH01-HD-D604-XD-404
Hydraulic Flow Diagram	T2410-D1100-H0018	RH01-HD-D604-XC-401
Hydraulic Flow Diagram	T2410-D1100-H0021	RH01-HD-D604-XC-403
Principle Diagram tread Lubrication System	T2410-D1100-H0023	RH01-HD-D604-XC-404
Electrical Block Diagram	T2410-D1100-E0001	RH01-HD-D604-WF-401
Termination Diagram	T2410-D1100-E0100	RH01-HD-D604-XP-401
Termination Diagram	T2410-D1100-E0101	RH01-HD-D604-XP-402
Termination Diagram	T2410-D1100-E0102	RH01-HD-D604-XP-403
Termination Diagram	T2410-D1100-E0103	RH01-HD-D604-XP-404


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## 6 TEST ACTIVITIES

Pressure test of Roughneck						
<b>General:</b> <ul style="list-style-type: none"> <li>➤ Test pressure is the lowest pressure of the following two: System pressure x 1.5 or system pressure + 70 bar.</li> <li>➤ Test time is 5 minutes with no visible leaks.</li> <li>➤ Hydraulic motor loops are left out of the pressure testing due to the fact that the hydraulic motors can not hold the test pressure.</li> </ul>						
Act. No.	Description of activity	Acceptance criteria	OK/NA Punch list item No.	HL sign	Client/ Owner sign	Class sign
1.	Pressure Test Inlet:	Pressurised in 5 minutes with no visible leaks.				
2.	Upper Clamp on	__"__ 180 + 70 = 250 bar				
3.	Upper Clamps off	__"__ 180 + 70 = 250 bar				
4.	Lower Clamps on	__"__ 180 + 70 = 250 bar				
5.	Lower Clamps off	__"__ 180 + 70 = 250 bar				
6.	Spinner Clamps on	__"__ 210 + 70 = 280 bar				
7.	Spinner Clamps off	__"__ 150 + 70 = 220 bar				
8.	Torque wrench up	__"__ 180 + 70 = 250 bar				
9.	Torque wrench down	__"__ 180 x 1,5 = 150 bar				
10.	Spinner unit up	__"__ 40 x 1,5 = 60 bar				
11.	Spinner unit down	__"__ 40 x 1,5 = 60 bar				
12.	Tilt Forward	__"__ 180 x 1,5 = 270 bar				
13.	Tilt Backwards	__"__ 180 x 1,5 = 270 bar				
14.	Make Up	__"__ 180 + 70 = 250 bar				
15.	Break Out	__"__ 180 + 70 = 250 bar				
16.	Turn Mud Bucket CW	__"__ 50 x 1,5 = 75 bar	NA			
17.	Turn Mud Bucket CCW	__"__ 50 x 1,5 = 75 bar	NA			
18.	Open Mud Bucket	__"__ 210 + 70 = 280 bar	NA			
19.	Close Mud Bucket	__"__ 210 + 70 = 280 bar	NA			
20.	Pipe Doper Up	__"__ 20 x 1,5 = 30 bar	NA			
21.	Pipe Doper Down	__"__ 20 x 1,5 = 30 bar	NA			
22.	Others					

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Functional Test of Roughneck						
Act. No.	Description of activity	Acceptance criteria	OK/NA Punch list item No.	HL sign	Client/ Owner sign	Class sign
23.	Run Dolly Up/Down slowly	Observe the hoses run freely	OK	AS	SS	
24.	Run spinner Up/Down slowly	Observe the hoses run freely	OK	AS	SS	
25.	Tilt Forward/Backwards		OK	AS	SS	
26.	Spinner clamp On/Off	kin manuellt operiert.	OK	AS	SS	
27.	Run Spinner In/Out		OK	AS	SS	
28.	Run travel Forward/backward		OK	AS	SS	
29.	Run upper clamp In/Out		OK	AS	SS	
30.	Run lower clamp In/Out		OK	AS	SS	
31.	Run torque cylinder In/Out		OK	AS	SS	
32.	Run make up manually		OK	AS	SS	
33.	Run break out manually		OK	AS	SS	
34.	Run Sequence Make Up		OK	AS	SS	
35.	Run Sequence Break Out		OK	AS	SS	
36.	Others					

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Oil sample and Dimensional Check Etc.						
Act. No.	Description of activity	Acceptance criteria	OK/NA Punch list item No.	HL sign	Client/ Owner sign	Class sign
37.	After the tests, collect an oil sample for subsequent laboratory test.	Acceptable is NAS Class 6. <i>To be done</i>				
38.	All vital dimensions to be checked out compared to the Arrangement drawings. Use yellow marker. Check all interfaces like rails etc.	<i>To be done</i>				
39.	Others.					

