



**RIGSCO-REF NUMBER**

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# **IADC EQUIPMENT LIST**

## **LAND RIG**



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## **Equipment List**

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**A LAND RIG SUMMARY**

Item	Description	Age	Certification	
			yes/no	Expiry Date
Rig Number :	ABC #01	NEW	Yes	*see remarks below
Rig Owner :	Rigsco Drilling			
Year Built/Re-built	Built 2011			
Nominal vertical depth rating w/ DP	2,500 Meters (8200ft) w/ 5" DP 3,000 Meters (9800ft) w/ 4 ½" DP			
Mast :  Type:  Static Hook load capacity (lbs):	JJ18038 2 sections telescopic, hydraulic raising, 125 ft/ 38m height. 400,000 lbs (1800KN)	NEW	Yes	*
Draw works:  Type: Drive: Power Rating (HP): Max. designed hoisting Capacity (lbs):	JC28/11 2 x 540 hp CAT C15 Engines 1000 hp  400,000 lbs. with 10 lines 320,000 lbs. with 8 lines	NEW	Yes	*
Drilling line :  Wire type : Wire diameter (inch): Nom. Breaking Strength (lbs):	6X19IWRC EIPS 1.25" 176,100 lbs.	NEW	Yes	
Auxiliary Brake :  Type: Torque rating (ft.lbs):	Eaton, Model 324WCB 33,895 ft.lbs at 80 psi	NEW	Yes	*
Substructure :  Type: Height (m): Clear height below rotary (m): Setback load (lbs): Rotary capacity (daN):	ZZT180 6 m (or 19.7 ft.) 4.78 m (or 15.7 ft.) 400,000 lbs 1,000,000 lbs simultaneous with maximum set-back load	NEW	Yes	*
Rotary Table :  Type: Drive: Size(inch): Power Rating (HP):	ZP275 One 400 KW, motor 27.5 400 hp	NEW	Yes	*
Top drive:  Make / Type:  Capacity(tons): Power Rating (HP):	No Top Drive			

\* Inspections were conducted [ENTER DATE](#) as per API/OEM Guidelines.

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Hoisting Equipment : Crown Block : Type: TC 180 Capacity (lbs): 400,000 lbs Travelling Block : Type: YG 225 Capacity (lbs): 500,000 lbs Hook : Type: TB & Hook are integrated Capacity (lbs): 500,000 lbs Swivel : Type: XSL 225 Capacity (lbs): 500,000 lbs	NEW  NEW  NEW  NEW	Yes	* see remarks below
Rig Power : Number of Engines: 2 x Cat C18 (700 HP) Number of Generators: 2 Continuous generator power (HP): 1000 VFD system: Siemens	NEW	Yes	*
Mud Pumps : Type: RGF-1000 Number of pumps: 2 Power Rating (HP): 1000 Max. combined pump output (m3/min.): 2.46 (with 6-3/4" liner) Max. pressure at max. flow rate (psi): 3,000 psi Max. pump pressure (psi): 5,000 psi Max. combined pump output @ max press (m3/min.): 1.63 (with 5-1/2" liner)	NEW	Yes	*
Mud System : Active tank capacity (bbl): 1,380 Reserve tank capacity (bbl): 450 Water/brine tank capacity (bbl): 250	NEW	Yes	
Drill String : Drill Pipe : Size (inch): Length (m): Weight (ppf): Grade:  Size (inch): Length (m): Weight (ppf): Grade:  Drill Collars : Size (inch): No.s: Weight (ppf): Grade:  Size (inch): No.s: Weight (ppf): Grade:  Size (inch): No.s: Weight (kg/m): Grade	No drill string will be provided		
* Inspections were conducted <a href="#">ENTER DATE</a> as per API/OEM Guidelines.			

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Blow out preventers : Annular preventers: Make : Shenkai Size (inch): 13-5/8" Pressure rating : 5,000 psi Ram type preventers: Make : Shenkai Double Size (inch): 13-5/8" Pressure rating : 5,000 psi		New	Yes	*
Accumulator Unit : Total bottle capacity (gal):	Skenkai, Model FKQ640-6 157	New	Yes	*
Choke Manifold : Make : Shenkai Size (inch): 3 1/8" Pressure rating : 5,000 psi		New	Yes	*
* Inspections were conducted <a href="#">ENTER DATE</a> as per API/OEM Guidelines.				



**B GENERAL RIG SPECIFICATIONS**

**B.1 Mast & Substructure**

<b>B.1.0 Description &amp; Specifications</b>	<b>Compliance Yes/No? If No, give details under list of non-compliance</b>
a) Self supporting telescopic double mast.	Yes
b) Mast shall be capable of handling at least a dynamic load of 9 5/8" 32 Lb/ft casing in air at 270m tvd plus an overpull of 100 Klbs.	Yes
c) Mast fitted with heavy duty, vapor tight, fluorescent lighting system, certified for use in a Zone 1 or 2 area as required by IP code.	Yes
d) Maximum height with mast down when moving of 11m.	Yes
e) Substructure capable of straddling a standard cellar with adequate separation between substructure beams and/or wheels so as to clear the external walls of the cellar	Yes
f) Setback capacity of at least 1000m 4 1/2" drill pipe + BHA.	Yes
g) Substructure capacity of at least the combined loads in b) and f).	Yes
h) Clear height below rotary beams of 6.0m.	Yes
i) Casing stabbing board adjustable for range 2 & 3 tubulars. Stabbing board to have automatic stops, "dead man" controls, anchor point outside the board and be certified as a man riding device.	No Stabbing board with Rig
j) Catwalk length (min) 13.7m. Catwalk shall be provided with access stairs from ground level, have a removable pipe stop at one end and be designed to safely access and assemble wire line and tubing conveyed logging tools.	Yes
k) Drill floor c/w dog house, flush set-back area, anti-slip surface over the entire working area, a gate to close off the top of the V door ramp, pad-eye for a lower logging sheave rated to 10,000 daN, recessed into the rig-floor and the recess provided with a cover. Toeboards for all rig floor railings. Two/three access ways with none alongside the 'V' door ramp unless stairway is already in place and cannot be moved/removed because it is part of rig superstructure. Rigs with stairs alongside the 'V' door shall strictly control their access.	Yes
l) 2x rig floor winch, 1x monkey board winch – All winches to be fitted with cable guard and, if fitted by OEM, spooling devices – Pneumatic winches to be fitted with silencers	Yes
m) The man riding system (winch, cable, sheaves etc) shall be engineered to be one compatible unit complete with : - Limited max pull to 150 kg - Independent secondary braking system - Slack line shut off mechanism - Control lever returns to neutral - Crown block sheave designed for man-riding c/w safety sling - Emergency STOP facility unobstructed - Spooling device - Drum guard - Upper and lower travel switches - Emergency lowering facility The winch shall not to be used for any other purpose other than man-riding.	No man Riding Winch Available
n) Counterbalance system for rig tongs and pipe spinning tong.	Yes- Hydraulic
o) Anchor point to suspend upper logging sheave during stripping, rated to 10,000 daN.	Yes





p) Anchor point to suspend blocks during slip/cut. Block must be suspended by special dedicated sling from crown block and not via fast line clamp in front of Drawworks (does not apply to rigs with top drive).	Yes
q) Drip pan below the rotary table area to contain fluids spilled on rig floor.	Provided pan as part of riser.

	Contractor Specifications
<b>B.1.1 Mast</b>	
Make/type :	RG-JJ18038-Telescopic Double
Height (m) :	38 m
Width of base (m x m) :	3.45 x 2.16
Width of top (m x m) :	2.21 x 1.88
Max. hook load with No. of lines strung (lbs) :	400,000 with 10 lines
<b>B.1.2 Racking platform</b>	
Make/type :	RG-JJ18038-Telescopic Double
Racking platform capacity of drill pipe : Size/No.	4 1/2 inch / 3,000 Meters
Racking platform capacity of drill collar : Size/No.	9-1/2" / 5 stands
Racking platform capacity of drill collar : Size/No.	8" / 5 stands
<b>B.1.3 Substructure</b>	
Make/type :	RG- ZZT180-Foldable Six Leg
Height (m) :	6.00
Width (m) :	3.75
Setback capacity (lbs):	400,000 lbs
Rotary capacity (lbs):	400,000 lbs with maximum set-back load
Clear height below rotary table beams (m):	4.78
Substructure footprint (m x m) :	7.73 x 14.55
Catwalk (m):	16
<b>B.1.4 Rig floor winches</b>	
Make :	Litian
Quantity :	2
Type :	YJ5B & YJ3C
Capacity & S.W.L. (Lb/KN) :	11,020 lbs. & 50 KN for type YJ5B, 6612 lbs. & 30 KN for type YJ3C
Wire diameter (inches) :	5/8" for YJ5B & 9 16/" for type YJ3C
Automatic brakes :	Yes
Automatic spooling :	No
<b>B.1.5 Monkey board work winch</b>	
Make :	THERN
Quantity :	1
Type :	Series 4771 Helical Gear Winch
Capacity & S.W.L. (daN) :	40' & 1500 lbs.
Wire diameter (mm) :	8
Automatic brakes :	Yes
Automatic spooling :	No

<b>B.1.6 Rig floor man-riding winch</b>	
Make :	None Provided
Quantity :	
Type :	



Capacity & S.W.L. (daN) :	
Non-rotating wire diameter (mm) :	
Automatic brakes :	
Automatic spooling :	
<b>B.1.7 Utility winch (i.e. catwalk, sub-base winch)</b>	<b>Not provided as Crane is used for handling on catwalk and sub-base areas.</b>
Make :	
Quantity :	
Type :	
Capacity & S.W.L. (daN) :	
Wire diameter (mm) :	
Automatic brakes :	
Automatic spooling :	



<b>B.2 Drawworks and Associated Equipment</b>
---

<b>B.2.0 Description &amp; Specifications</b>	<b>Compliance Yes/No? If No, give details under list of non-compliance</b>
a) Rated to provide at least a hoisting speed of 0.38 m/sec (75 ft/min) based on the weight of a vertical string of 1,500 4 ½” drill pipe plus bottom hole assembly in 11kPa/m mud.	Yes
b) Safety device to prevent the travelling block colliding with the crown block and the rig floor.	Yes
c) Triple Disc Eaton auxiliary brake with independent air supply. Auxiliary brake should be located in a safe area or equipped and certified as suitable for use in a Zone 2 area.	Yes
d) Asbestos free brake blocks	Yes
e) Closed loop brake water cooling system for drawworks and auxiliary brake rated for 60 deg C ambient temperatures.	Yes

	<b>Contractor Specifications</b>
<b>B.2.1 Drawworks</b>	
Make/type :	RG- JC28/11
Drum type :	22” x 41”
Spinning cathead type :	Hydraulic
Breakout cathead type :	Hydraulic
Blocks safety device type/model:	Crown-O-Matic
Rated capacity (kW/HP) :	805KW/ 1080 HP
Input power continuous (kW/HP) :	805KW/ 1080 HP
Brake type :	Hydraulic Disc
Maximum Safe Hook load 10 lines (lbs) :	400,000 lbs
Maximum Safe Hook load 8 lines (lbs) :	320,000 lbs
<b>B.2.2 Draw works power</b>	
Number of engines :	2
Engine make :	Caterpillar C-15
Engine model :	Caterpillar C-15
Maximum input power continuous (kW/HP) :	1080Hp/2100 rpm
<b>B.2.3 Auxiliary brake</b>	
Make/Type :	Eaton
Model :	WCB 324
Torque Rating (ft.lbs) :	84,000 ft.lbs at 50 rpm



<b>B.3 Hoisting Equipment</b>
-------------------------------

<b>B.3.0 Description &amp; Specifications</b>	<b>Compliance Yes/No? If No, give details under list of non-compliance</b>
a) Capacity of the blocks, hook and swivel shall be suitable for the maximum designed hoisting capacity..	Yes
b) Hook to have spring assembly and locking device.	Yes
c) Jumper bars fitted on crown block.	Yes
d) Safety net below crown block.	Yes
e) Gooseneck and wash pipe min ID = 76 mm.	Yes
f) Swivel with 6 5/8" Reg left hand pin connection.	Yes
g) Fitting for wireline entry on top of Gooseneck.	Yes
h) Drilling line drum to be powered.	Yes
i) Drilling line 6 x 19 RL IWRC, IPS or EIPS (or equivalent).	Yes
j) Drilling line sized to provide minimum safety factors of 3.0 for drilling and 2.0 for running casing as per API RP 9B.	Yes
k) Dead line anchor with adequate load rating and fitted with jumper bars.	Yes

	<b>Contractor Specifications</b>
<b>B.3.1 Crown block</b>	
Make/type :	TC-180/ 5 Sheave Dual Shaft
Rated capacity (lbs) :	400,000 (1800KN)
No. of sheaves :	6
<b>B.3.2 Travelling block</b>	
Make/type :	YG-225 Integrated Block & Hook Assembly
Rated capacity (lbs) :	500,000
No. of sheaves :	5
<b>B.3.3 Hook</b>	
Make/type :	
Rated capacity (lbs) :	500,000
<b>B.3.4 Swivel</b>	
Make/type :	XSL225
API Rated bearing capacity (lbs) :	500,000 (2250KN)
Comparative dead load (lbs) :	
Test/working pressure (psi) :	5,000 psi
<b>B.3.5 Drilling line</b>	
Size (inch)/type :	1.25"
Breaking strength (daN) :	176,100 lbs.
Length (ft) :	3280
<b>B.3.6 Deadline Anchor</b>	
Make/type :	Huabei Petroleum/ JZG24
Load rating (lbs) :	500,000
Weight sensor type :	Vernier Style



<b>B.4 Rotary System</b>
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<b>B.4.0 Description &amp; Specifications</b>	<b>Compliance Yes/No? If No, give details under list of non-compliance</b>
a) Rotary table minimum opening of 698.5 mm (27 ½”).	Yes
b) Back brake fitted.	Yes
c) Soft torque rotary system fitted.	Yes
d) Rotary table static load rating of at least 300m 9 5/8" 42 Lb/Ft casing in air.	Yes
e) Driller's full adjustable torque limit switch.	Yes
f) Lock down pins for kelly drive bushing.	Yes
g) Anti-slip mat.	Yes
h) Hinged/Split type type master bushings shall be supplied.	Yes
i) Drive rollers to suit each size of kelly provided.	Yes
j) Kelly bushing safety guard installed.	Yes

	<b>Contractor Specifications</b>
<b>B.4.1 Rotary table</b>	
Make/type :	ZP275
Minimum opening (mm/inch) :	698.5 mm / 27 ½”
Static load rating (daN) :	1,000,000 lbs
Rated power (kW/HP) :	400 / 536
Maximum continuous torque (ft/lbs) :	20,265
Soft torque rotary system (Bentec Mark II or equivalent)	No
Maximum rotary speed (RPM) :	250 rpm
Emergency chain drive :	No
<b>B.4.2 Hinged/Split type master bushings</b>	
Make/type :	ZP275
<b>B.4.3 Kelly bushing</b>	
Make/type :	RG
Size :	4 ¼” & 5 ¼” Hex
Lock down assembly :	Yes
<b>B.4.4 Kelly bushing safety guard</b>	
Make/type :	None Provided
<b>B.4.5 Top drive</b>	<b>No Top Drive is installed</b>
Make & Type :	
Rated capacity (tons) :	
Test/working pressure (psi) :	
Remote operated kelly cock :	
Drive :	
Make & Type :	
Rated power (kW/HP) :	
Rated torque (daN/m) :	
Two-speed gearbox :	
Maximum rotary speed (RPM) :	
Mudline diameter (mm/inch) :	



<b>C POWER SUPPLY SYSTEMS</b>
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<b>C.1 Rig Power Plant</b>
----------------------------

C.1.0 Description & Specifications	Compliance Yes/No? If No, give details under list of non-compliance
a) Diesel electric power system.	Yes
b) Diesel engine plant c/w closed loop cooling system designed for 60 deg C ambient temperatures.	Yes
c) Engines able to run on crude.	No
d) Engine room floor to be leak tight with a provision for recovering any spilled oil.	Yes
e) Noise level outside engine room under all normal operating conditions should be below 85 dB or if not controls must be in place to manage noise.	Yes
f) In the drilling mode sufficient power must be available to control and power simultaneously mud pumps and rotary table at full load and the draw works at half load.	Yes
g) Sufficient power available to supply rig offices at peak demand.	Yes
h) Emergency shutdown switches to shutdown AC/DC power system located at the driller's position and at the power plant.	Yes
i) Provision of stable auxiliary power supply for all Company's or Company's Other Contractor(s) equipment (including but not limited to mud logging unit, MWD unit, centrifuge), when required.	Yes
j) A rig service air system with air compressors, receivers and dryers to adequately power all pneumatic rig equipment.	Yes

	Contractor Specifications
<b>C.1.1 Diesel engine plant</b>	
Quantity :	2
Make :	Caterpillar
Type :	Cat-C-18
Continuous output power available (kW/HP) each engine :	508 KW / 681 HP
<b>C.1.2 AC- Generator</b>	
Quantity :	2
Make :	Caterpillar
Type :	480 kW C-18
Continuous output power available (kW/HP) each generator :	480 kW
Output volts (Volts) :	400 VAC
<b>C.1.3 VFD system</b>	
Number of VFD bays :	1
Make :	Siemens
Type :	SIMOVERT 6SE7137-0EE62-3BA0-Z
Cable trays above ground level :	Yes
<b>C.1.4 Transformer system</b>	
Quantity :	No Transformer- AC Electric Drive
Make :	
Type :	
Output volts (Volts) :	
Frequency (Hz) :	



<b>C.1.5 Rig service air system</b>	
<b>Air Compressors</b>	
Quantity :	2
Make & Model :	Sullair / LS-12-50HH
Rated capacity :	125 PSI @ 5 m3/min
Working pressure:	kPa 861 KPa/125 psi
<b>Air Receivers</b>	
Quantity :	2
Make & Type :	Xianyang Compressor Factory
Rated capacity :	2.5m3
Working pressure:	kPa 1200 KPa/174 psi

<b>C.2 Camp Power Plant</b>
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<b>C.2.0 Description &amp; Specification</b>	Compliance <b>Yes/No?</b> If <b>No</b> , give details under list of non-compliance
a) Sufficient power available to supply camp at peak demand.	

	<b>Contractor Specifications</b>
<b>C.2.1 Diesel engine plant</b>	<b>Camp Not Supplied at this time</b>
Quantity :	
Make :	
Type :	
Continuous power (kW/HP) :	
<b>C.2.2 AC- Generator</b>	
Quantity :	
Make :	
Type :	
Continuous power (kW/HP) :	
Output volts (Volts) :	



**D DRILL STRING / HANDLING TOOLS (NO DRILL STRING & HANDLING TOOLS PROVIDED)**

**D.1 Drill String**

**D.2 Handling Tools**

	Contractor Specifications
<b>D.2.1 Hydraulic Power Tongs</b>	
Make:	RG Petro
Type:	ZQ203-100
Pipe Size Range	127mm to 203 mm
Max torque capacity	35 KN-m
Integral Back up	yes

**D.3 Fishing Equipment**

D.3.0 Description	Compliance <b>Yes/No?</b> If <b>No</b> , give details under list of non-compliance
<b>To Be provided by Fishing contractor</b>	





**E. WELL CONTROL EQUIPMENT**

**E.1 BOP Stack**

<b>E.1.0 Description &amp; Specifications</b>	<b>Compliance Yes/No? If No, give details under list of non-compliance</b>
a) All well control equipment shall comply with the API Well control Equipment specifications	Yes
b) All well control equipment shall meet NACE standard MR-01-75 sour service.	Yes
c) Only genuine OEM or approved spares/replacement parts shall be used in the maintenance of well control equipment. No alterations shall be made to any well control equipment without the written approval of the OEM or OEM approved facility.	Yes
1. Re-certification that includes repairs or modifications are to be carried out by an OEM or OEM-approved facility.	Yes
2. Any replacement parts: flanges, valves, fittings, and discharge lines used in the maintenance of choke manifold assembly should contain metals and seals in accordance with API RP 53.	Yes
3. Re-certification that does not involve repairs or modifications may be done by an API recognized facility.	Yes
4. For equipment where the OEM no longer exists, re-certification may be done by an API-recognized facility.	Yes
d) Preventers General specification is for a 13 5/8", 34,500 KPa WP BOP stack with 1 annular and Double ram preventers.	Yes
Annular, 34,500 kPa, fitted with accumulator bottle for stripping operations.	Yes
Rams to have locking mechanism.	Yes
Bottom ram cavity suitable for blind/shears that can shear all drill pipe in use (except heviwate).	Yes
Cross overs, clamps, nuts, bolts & gaskets for use on the BOP.	Yes
e) Rams Pipe rams, 4 1/2".	Yes
Shearing blind rams (fitted with tandem boosters if required by OEM)	No
Variable rams; 4 1/2" to 7".	No
A complete set of spare ram packers/seals and elements for each ram size and annular.	Yes
f) Side outlets 2 x 4 1/16" outlets for choke line, each fitted with one hydraulic valve and one manual valve.	Yes
2 x 4 1/16" outlets for kill line, each fitted with two manual valves and one NRV.	Yes
g) Kill line 2" ID (min), hard pipe or flexible hose.	Yes
h) Choke line 4" ID (min), fireproof, acid resistant, flexible hose.	Yes
i) An adaptor spool to connect BOP stack to Company supplied wellhead	Yes
j) Spacer spools (to position BOP stack) as required.	Yes
k) Lock down flanges (wear bushing housing) as required.	Yes
l) Flow riser for 13 5/8" BOP.	Yes
m) BOP stack handling system for positioning BOP along the centre line of the rig.	Yes



	Contractor Specifications
<b>E.1.1 13 5/8" 34,500 kPa (5,000 psi) WP BOP</b>	
<b>a) Bag type preventer</b>	
Quantity :	1
Make :	Shenkai
Type :	FH35-35
Size (inch) :	13 5/8
WP (psi) :	5,000
Connection top/bottom :	Studded top 13-5/8", 5,000 psi / API Flanged, 13-5/8", 5,000 psi bottom
Fitted with accumulator bottle for stripping :	No
<b>b.1) Ram type preventer</b>	
Quantity :	1
Make :	Shenkai
Type :	FS35-35
Single/double :	Double
Size (inch) :	13 5/8"
WP (psi) :	5,000
Side outlet ID (inch) :	4 1/16"
Connection top/bottom :	Flanged
Lock mechanism :	Yes
<b>b.2) Ram type preventer</b>	
Quantity :	
Make :	
Type :	
Single/double :	
Size (inch) :	
WP (psi) :	
Side outlet ID (inch) :	
Connection top/bottom :	
Lock mechanism :	

<b>E.2 BOP Control System</b>
-------------------------------

<b>E.2.0 Description &amp; Specification</b>	Compliance <b>Yes/No?</b> If <b>No</b> , give details under list of non-compliance
a) BOP control system to be in accordance with API standards.	Yes
b) General system type; an independent automatic accumulator unit rated for 20,700 kPa (3,000 psi) WP comprising control manifold, two/three air-driven pumps (50:1 ratio), one 15 kW electrically driven pump and a fluid reservoir.	Yes
c) Unit to be located remote from rig floor.	Yes
d) Unit to have low pressure and low reservoir level alarms.	Yes
e) Without recharging, the unit has to be capable of closing and opening all preventers and closing again the bag type and one ram type preventer and holding them closed against rated working pressure of the preventers. Calculations to substantiate the usable accumulator volume must be provided.	Yes



f) Drillers control panel to have; - Control over all BOP functions - Graphic panel showing all functions and controls. - Indicator lights to show function positions. - Pressure regulator for annular preventer. - Low accumulator system pressure warning. - Low reservoir level warning. - Low rig air pressure warning. - Control for bypass valve.	Yes
g) A remote panel located either adjacent to the location exit, or in proximity to the contractor toolpushers office.	No
h) Remote panel will operate the accumulator unit directly, not via the rig floor.	N/A
i) Remote panel to have indicator lights.	Yes

	Contractor Specifications	
<b>E.2.1 Accumulator unit</b>		
Make :		Shenkai
Model/type :		FKQ640-6
Installation site :		Near Generator House
System fluid capacity	liter	1120
No. of bottles installed	Qty	16
Total bottles capacity	liter	592
Bottle working pressure	psi	3,000
Control manifold model :		FKQ640-6
Low pressure/low reservoir level alarms	y/n	Yes
Serial (No.) :		11-41
<b>E.2.2 Triplex pumps</b>		
Quantity :		1
Make :		Shenkai
Model :		QB21-80
Each driven by motor of	kW	18.5
Flow rate of pump	liter	35 l/min
At max. operating pressure	kPa (psi)	20,700 kPa (3,000 psi)
<b>E.2.3 Air pumps</b>		
Quantity :		2
Make :		Shenkai
Model :		QYB40-120I
Flow rate of each pump	liter	4.5 l/min
At max. operating pressure	kPa (psi)	800 kPa (116 psi)
<b>E.2.4 Driller's control panel</b>		
Make :		Shenkai
Model :		QSZ-6
Serial No. :		11-41
Low accumulator system pressure warning		Yes
Low reservoir level warning		Yes
Low rig air pressure warning		Yes
Pressure regulator for bag		Yes
Control for by-pass valve		Yes
Quantity of pressure gauges :		4
<b>E.2.5 Remote control panel</b>		
Make :		No Remote Supplied



Model :	
Location site :	

<b>E.3 Choke Manifold &amp; Testing Equipment</b>
---

<b>E.3.0 Description &amp; Specification</b>	<b>Compliance Yes/No? If No, give details under list of non-compliance</b>
a) Choke manifold of 5,000 psi WP, sour service, in accordance with API Specifications	Yes
b) All items of equipment to have a nominal 3" ID (min).	Yes
c) One manual adjustable and one remotely operated power choke. Spare manual choke bonnet to be on site to cater for fast change out.	Yes
d) Remote control unit positioned on rig floor with view to the choke manifold.	Yes
e) No threaded connections in choke manifold.	Yes
f) Portable test pump rated to 5,000 psi complete with suitable 4 hr chart recorder.	Yes
g) Cup type testers for 13-3/8" 81.1 kg/m, 9-5/8" 53.6 kg/m, 7" 34.2 kg/m casing.	No
h) Test stump for testing BOP with adaptor.	Yes
i) Test sub for pressure testing kelly, kelly cocks and BOP's.	No

	<b>Contractor Specifications</b>
<b>E.3.1 Choke manifold</b>	
Make :	
Size inch	3 1/8"
Working Pressure (psi)	5,000
H <sub>2</sub> S service y/n	Yes
Quantity of valves :	11
Make/model :	Shenkai
Size inch	3 1/8"
Quantity of adjustable chokes :	1
Make/type :	Shenkai
Quantity of power chokes :	1
Make/type :	Shenkai
Power choke remote control panel y/n :	Yes
Make/type :	Shenkai
<b>E.3.2 Hydraulic test pump</b>	
Make :	Yangcheng Sanyi Petroleum
Model :	SKT-140
<b>E.3.3 Test stumps for BOP testing</b>	
Location :	Skid Mounted On site
Complete with test tools y/n	Yes
<b>E.3.4 BOP test sub</b>	
Type :	Pump In
Connection :	4 1/2" IF Pin x 2" 1502 Weco



**F. MUD SYSTEM**

**F.1 High Pressure Mud System**

<b>F.1.0 Description &amp; Specifications</b>	<b>Compliance Yes/No? If No, give details under list of non-compliance</b>
a) At least two (2) mechanically driven triplex mud pumps capable of maintaining a combined output of 1000 gpm at an operating pressure of 2,300 psi for 17 ½” hole, 800 gpm at an operating pressure of 2700 psi for 12 ¼” and 600 gpm at an operating pressure of 3500 psi for 8 ½” hole.	Yes
b) All components of the high pressure mud system must have a working pressure of at least equal to the maximum discharge pressure of mud pumps and a nominal ID of 4”. Test pressures shall be 1.5 times the working pressure, lines to be designed and constructed in accordance with ANSI B31.3, API 1104, ASME IX or equivalent standard.	Yes
c) Each mud pump shall be complete with :	
Dedicated centrifugal charge pump.	Yes
Adjustable / resettable pressure relief valve.	Yes
Separate suction line for each pump and manifold for either pump.	Yes
Pulsation dampeners on discharge line, same rating as HP lines. Discharge line to be dipping down from relief valve	Yes
Replaceable suction and discharge screens.	Yes
Liners and pistons to operate at the parameters specified in a)above.	Yes
Pressure gauge before isolation valve.	Yes
Dedicated closed piston cooling system.	Yes
Isolation switch and lock-out mechanism on electric drive motors.	Yes
Rigid covers to enclose all moving parts.	Yes
Manual drive mechanism to turn power end.	Yes
Individual discharge line.	Yes
Bleed-off valve with discharge to mud tanks or waste pit	Yes
Drip tray to contain spills.	Yes
d) Standpipe with gooseneck, connected to a manifold, constructed without threaded connections and designed as follows :	Yes
Lines to drill string to be nominal 4” ID (min).	Yes
Minimum working pressure equal to the maximum working pressure of the mud pumps.	Yes
Choke for bleeding off pressure complete with up stream gate valve for isolation.	Yes
A separate self-draining fill-up line to the bell-nipple joint.	Yes
Fitted with an outlet for MWD instrumentation and complete with a 2” gate valve.	Yes
Ability to simultaneously pump through the drill string with one pump and down the annulus with the other at maximum pump output.	Yes
Ability to simultaneously pump through the drill string with one pump and through the kill line with the other pump.	Yes
Line-up both pumps using steel lines to the utility standpipe on the rig floor.	Yes

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Rotary hose of API grade D, 3 ½" ID (min) complete with hammer unions at both ends. Hose to be secured with snub lines.	Yes
e) Utility standpipe, 2" ID (min) with gooseneck, connected to standpipe manifold, constructed without threaded connections and designed as follows :	No
Working pressure 5,000 psi.	No
Sufficient height to enable reciprocation of a casing string while cementing.	No
A connection to both the standpipe manifold and the HP cementing line NOTE: during normal operations the utility standpipe shall be disconnected from the standpipe manifold	No
A local pressure gauge.	No
f) Casing wash down hose, suitable also for cementing and acid service; 5,000 psi WP, 10m long, nominal 2" ID (min), API grade D, complete with hammer unions and snub lines.	Yes
g) Reverse circulation line, 2" nominal ID (min), located adjacent to the standpipe manifold and run directly to the shaker header box.	Yes
h) Cementing line, 10,000 psi WP, running from the standpipe manifold to the end of the mud tanks complete with Weco 1502 connection.	No
i) Low pressure casing fill up line.	Yes
j) Chicksan steel hoses; 2" nominal, 3.6m 6 piece integral loop, of the non-screw type w/ Weco 1502 hammer unions, suitable for sour service. Each piece must be tagged with a unique identification number, working pressure and last test date. Snub lines must be supplied. Provide two each of the following accessories (min); <ul style="list-style-type: none"> <li>- lo-torque plug valves</li> <li>- male x male subs</li> <li>- female x female subs</li> <li>- 90 deg. T-pieces</li> <li>- 60 deg. Y-pieces</li> <li>- 90 deg. Elbows</li> <li>- 3" x 2" crossovers</li> <li>- swivel with Weco 1502 connection</li> </ul>	No

		Contractor Specifications
<b>F.1.1 Mud pumps</b>		
<b>a) Mud pump No. 1</b>		
Make :		RG Petro
Model :		RGF-1000
Mud pump driven by Engines	No. Type :	CAT 3512
Continuous power rating of each Engine	kW (HP)	764 KW /1025HP
Fluid end	type	Triplex, Single Acting Piston
Cylinders/valves cover :		3 / 6
Equipped with :-		
Pump stroke counter	type	Chongyi NBN 15-E2
Liner sizes available	inch	6 ½, 6 & 5 ½
Supercharging pump	type	6 x 8 Mission Style
Independently driven by motor	kW (HP)	55 KW (75 HP)
Type :		
Discharge/suction line dia (ID x ID)	inch	4" / 12"
Working flowrate		600 gpm at 2,300 psi 400 gpm at 3,500 psi
<b>b) Mud pump No. 2</b>		
Make :		RG Petro
Model :		RGF-1000
Mud pump driven by motors	No. Type :	CAT 3512

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Continuous power rating of each motor	kW (HP)	764 KW /1025HP
Fluid end	type	Triplex, Single Acting Piston
Cylinders/valves cover :		3 / 6
Equipped with :-		
Pump stroke counter	type	Chongyi NBN 15-E2
Liner sizes available	inch	6 ½, 6 & 5 ½
Supercharging pump	type	6 x 8 Mission Style
Independently driven by motor Type :	kW (HP)	55 KW (75 HP)
Discharge/suction line dia (ID x ID)	inch	4" / 12"
Working flowrate		600 gpm at 2,300 psi 400 gpm at 3,500 psi



**F.2 Low Pressure Mud System – Tanks**

<b>F.2.0 Description &amp; Specifications</b>	<b>Compliance Yes/No? If No, give details under list of non-compliance</b>
a) Active tanks 950 bbls, reserve tanks 430 bbls, water tanks 250 bbls. The complete system to be capable of working with 12 ppg mud. System shall include a cuttings chute to collect underflows from the solids control equipment to feed into an open top pipe (chute) to the waste pit. Also all tank dump lines shall feed into a sufficiently sized trough or ditch supplied by operator to the waste pit.	Yes
b) All tanks Covered with secured grating and as free as practicable of obstructions and trip hazards (e.g. valve operating handles). Man-hole covers to be marked.	Yes
Rigid handrails with a minimum of two courses and a toe board. The layout of the tanks shall be such that tripping hazards are avoided.	Yes
Dump valves which permit the complete emptying of tanks to the waste pit via supplied trough or ditch.	Yes
Paddle agitators both sufficient in number and power rating fitted in all active and reserve tanks (excluding the sand trap and degasser settling tanks) to maintain a mud of 12 ppg in suspension. Mud agitator blades shall be angled, sized and powered in accordance with OEM specifications for the size of tanks.	Yes
c) Active tanks Dimensioned to give at least 10cm level change for 1m <sup>3</sup> volume change.	Yes
Sectioned for in-series treatment by process equipment ending at the suction tank.	Yes
Contain a setting tank (sand trap) of approx 60 bbls capacity with sloping/Flat bottom and a minimum 12" size butterfly dump valve.	Yes
d) Water tanks One tank approx 250 bbls capacity.	Yes
e) Pill tank approx 80 bbls capacity.	Yes
f) Trip tank 80 bbls capacity, calibrated for drill pipe in use.	Yes
Sized to give level change of at least 2" for each stand of open ended drill pipe.	Yes
Filled from flowline, with facility to bypass.	Yes
Served by dedicated pump to give; 6 bbls/min (min) across the bell nipple, or to fill drill pipe.	Yes
Returns from choke manifold shall be routed through degasser to the trip tank.	Yes
g) Reserve tanks Tanks shall be provided with a low pressure circulation system.	Yes
Each tank approx 220 bbls capacity.	
Return/settling tank.	Yes
Separate feedline to the mud pumps.	Yes
Separate return line from the ditch to the settling tank.	Yes
2 x Venturi type mixing hopper capable of a throughput of 15- 18 bbls./min.	Yes
Centrifugal pump to displace brine to the mud pump.	Yes
Connection from the discharge side of the mixing pump so as to be able to supply a remote unit with clean brine.	Yes
h) Mud ditch Allows for either access to or bypass of any active tank for mud being circulated in the active or reserve system.	Yes





i)	Flow line	To include fittings to install Company supplied mass flow meter for kick detection.	Yes
j)	Drill water	Offloading; reserve and water tanks shall be provided with flexible hoses and fittings required for hooking up to drill water tankers for offloading.	Yes
		Distribution; reserve and water tanks shall be fitted with 4" diameter hard-piped goose necks to the top of the tanks for the distribution of Company supplied drilling water.	Yes
k)	Transfer Pump	A low pressure transfer pump (minimum capacity 1.5m <sup>3</sup> /min) shall be provided for all the reserve/water tanks.	Yes
l)	Cement Unit Tie In	Reserve and water tanks to include a suction/discharge point for water tankers and a suction/feed point for Company supplied cementing unit. At least one water tank shall a centrifugal pump (2 x 3) to enable treatment of bacterial/H2S contaminated water and its supply to the shaker area for dilution of mud. This system shall be separate from the systems supplying water to flush the cuttings chute and wash down the rig floor.	Yes
m)	Mud mixing	Two independent mixing systems shall be provided such that the mixing pumps can discharge through either system (i.e. 2ring lines). Each system shall be able to take suction from and discharge into any or all of the active or reserve tanks. It shall be possible to use one system on any of the active tanks (including the pill tanks) at the same time the other system is being used to mix in any of the reserve tanks. Also the active mixing system shall be able to recirculate mud back across the shale shakers.	Yes
		Two venturi type mixing hoppers capable of a throughput of 15 – 18 bbls/minute.	Yes
		Two mix pumps correctly sized for 55kW.	Yes
		Pipe work diameter shall be compatible with the pump size provided; (i.e a 6 x 8 pump shall have a minimum 8" dia. suction line from the tank and a 6" dia. discharge line).	Yes
		Company approved dedicated caustic mixing area with emergency shower facilities.	Yes
		Capability of handling 1.5 Ton bags of chemicals.	Yes

		Contractor Specifications
<b>F.2.1 Mud tank system</b>		
<b>a) Active mud tanks</b>		
Quantity :		3
Total capacity	bbls	1010
Dimensions	m	12.5 x 3.0 x 2.2
Description/Capacity No. 1	bbls	Shaker Tank / 320 bbls
Description/Capacity No. 2	bbls	Settling Tank / 350 bbls
Description/Capacity No. 3	bbls	Suction Tank / 340 bbls
Capacity degasser tank	bbls	8.4 (Included in Shaker tank)
<b>b) Reserve tanks</b>		
Quantity :		2
Total capacity	bbls	370
Dimensions	bbls	12.5 x 3.0 x 3.2
Description/Capacity No. 1	bbls	Reserve Tank-1 / 80 bbls
Description/Capacity No. 2	bbls	Reserve Tank-2 / 290 bbls
Description/Capacity No. 3	bbls	
<b>c) Water tanks (Brine tanks)</b>		



Quantity :		1
Total capacity	bbls	250
Dimensions	m	9 x 3.1 x 2.8
Description/Capacity No. 1	bbls	Water Tank / 250
Description/Capacity No. 2	bbls	
Description/Capacity No. 3	bbls	
<b>F.2.2 Settling tank</b>		
Capacity	bbls	150
<b>F.2.3 Pill tank</b>		
Quantity :		1
Description/Capacity No.1	bbls	18.9 bbls
Description/Capacity No.2	bbls	
<b>F.2.4 Trip tank</b>		
Capacity	bbls	60 bbls
Level indicator make/type :		ZhenJiang Petro/ Digital
Electric pump make :		Nanyang
Model/type :		SB 3" X 4"-9 1/2"/ Centrifugal
Motor output	kW (HP)	15 kW (20 HP)
<b>F.2.5 Stripping tank</b>		
Capacity	m <sup>3</sup>	Not Supplied
Equalizing facility with trip tank	y/n	
Transfer pump	y/n	
<b>F.2.6 Mud agitators</b>		
Quantity :		9
Make :		ZhenJinag Petro
Model :		WHC-16
Driven by motor of	kW (HP)	11 kW (15 HP)
<b>F.2.7 Mixing pumps</b>		
Quantity :		2
Make/Model :		SB6X8J-12 1/2
Driven by motor:	rpm x kW (HP)	1470 x 55 kW (74 HP)
<b>F.2.8 Mud mixing hopper</b>		
Quantity/location :		2
Make/Model :		ZHP150M
Feed pump make :		Chengdoo
Type/size centrifugal pump :		Centrifugal / 6 x 8 x 11"
Driven by electric motor of	rpm x kW (HP)	1200 x 55 kW (74 HP)
<b>F.2.9 Transfer pumps</b>		
Quantity for mud tanks :		3 (including 3 x mix pump)
Quantity for water tanks :		1
Make/Model :		Chengdoo ZHP150M
Type :		Centrifugal type 6 x 8 x 11"
Driven by motor	type	Nanyang Electric, AC Induction motor
Power output	kW (HP)	55 kW (75 HP)
<b>F.2.10 Chemical mixing tank</b>		
Quantity :		1
Description/Capacity	bbls	15
Chemical mixer type :		Agitator
<b>F.2.11 Caustic Mixing Unit</b>		



Quantity :	1
Type :	Agitator



**F.3 Low Pressure Mud System – Process Equipment**

<b>F.3.0 Description &amp; Specification</b>	<b>Compliance Yes/No? If No, give details under list of non-compliance</b>
a) Cellar pump Two cellar pumps shall be provided, each with a capacity at least equal to the maximum flow rate. Complete with a discharge line to the shakers or waste pit.	Yes
b) Shakers Minimum of two, multiple screen, linear motion or balanced elliptical shakers, 5g force. Capable of processing 100% of mud returns with a 12ppg density through API 180 mesh screens at 1000 gpm. Shakers shall be no more than 5 years old at commencement of contract.	Yes
Header boxes to be of spreader type and to have dump chutes to the waste pit.	Yes
Full kit of manufacturer's recommended spare parts and listed.	Yes
Manufacturer's preventive maintenance program in place and. Records kept.	Yes
c) Screens Minimum stock of screens shall be approved (depending on type and condition of shaker).	Yes
Use only those recommended by OEM	Yes
d) Vacuum Degasser Sized to process up to 50% of the maximum flow rate.	Yes
The suction taken from a degasser tank of minimum capacity 20 bbls, located immediately downstream of the sand trap(s).	Yes
Liquids from the degasser shall discharge into a treatment tank, which shall be equipped with an adjustable high level equalization valve to the degasser tank.	Yes
Gas shall be vented to the waste pit, (min. distance from rig 150') via a dedicated line with no cut off or isolation valves and shall be routed so as to avoid any bends.	Yes
e) Desilter/ Desander Sized to process 100% of the mud returns at maximum flow rate with either 12 x 2" cones or 10 x 3" cones. Fed by a 6 x 8 centrifugal pump to produce 30- 60 psi at inlet manifold.	Yes
Suction from the settling tank (75 bbls min capacity) immediately downstream of the degasser tank.	Yes
Overflow directed to next compartment downstream but not to suction tank.	Yes
Underflow shall be discarded to the waste pit.	Yes
A pressure gauge (0-50 psi range), fitted with a diaphragm below in order to prevent blocking of the pressure gauge with seal solids, shall be installed on the feed inlet manifold.	Yes
f) Poor Boy Of 36" (min) diameter, with 8" lines in/out. Capable of processing 1.5m <sup>3</sup> /min (min) highly gas cut mud. Designed and installed in accordance with EP 2002-1500.	Yes
Discharge by the most direct route with minimal bends and without any isolation points, into the degasser tank through at least an 8" line.	Yes
One 8" vent line shall run from the mud-gas separator directly to the waste pit. At the waste pit a T-piece shall be fitted to allow diverting the flow in the direction of the location run-off. At least 100m of 8" line shall be used from this T-piece.	Yes



Vent lines to be securely anchored and fitted with snub lines across the connections.	Yes
---	-----

	Contractor Specifications
<b>F.3.1 Shale shaker</b>	
Quantity :	2
Make :	HS280-3P
Type :	Linear
Size screens :	As per F.3.0 c
Driven by No. of electric motors :	2 each 2.2KW/3HP
Combined Max. flow rate	gpm 650 gpm of 12 ppg density mud through API 180 mesh screens.
<b>F.3.2 Desander</b>	
Make :	TSC Offshore Group
Quantity of cones :	12
Cone size :	inch 2
Type/size centrifugal pump :	6 x 8, SB6X8J
Driven by electric motor of	rpm x kW (HP) 1200, 55 KW (75 HP)
Max. flow rate	m <sup>3</sup> /min 3.3
Min. operating pressure with un weighted mud	kPa 413 kpa /60 psi
<b>F.3.3 Mud/gas separator (poor boy)</b>	
Make/type :	Zhenjiang Petro
Minimum diameter ID	inch 36
Gas discharge line OD	inch 8
Gas discharge line running to :	Flare Pit
<b>F.3.4 Vacuum Degasser</b>	
Make :	TSC Offshore Group
Type :	Vacuum, Model HVV-300
Type/size centrifugal pump :	6 x 8, SB6X8J
Driven by electric motor of	kW (HP) 56 KW (75 HP)
Discharge line running to :	Tank DS2
Vacuum pump make :	TSC Offshore Group
Type :	Piston
<b>F.3.5 Centrifuge</b>	
Make/ Type:	Chengdu West Petro/ Small Bowl Centrifuge
Bowl Size (Diameter/ Length):	450mm x 1000mm
Bowl Speed	2200 rpm
Feed Pump Size:	6 x 8, SB6X8J
Serial Number:	LWB050
<b>F.3.6 Cellar pump</b>	
Quantity :	2
Make (e.g. Flygt) :	Wilden
Type :	Double Diaphragm
Capacity	gpm 230



<b>F.4 Mud Laboratory</b>
---------------------------

<b>F.4.2 Laboratory</b>	<b>Compliance Yes/No? If No, give details under list of non-compliance</b>
a) Laboratory shall be provided and furnished with a complete set of equipment and chemicals for testing of drilling fluids in accordance with API or ISO standards, including the following :	<b>To Be Provided by Mud Company</b>
- Mud balance	Yes
- True weight mud balance	Yes
- Marsh funnel viscometer with extra mud cup	Yes
- 6 speed electric viscometer, calibrated every 6 months and dated	
- Rheometer heating cup	
- Retort kit 50 mls, 2 each heating cells and condensers	
- API filter press	Yes
- High temperature/high pressure filter press	
- Sand content kit (complete)	
- pH meter (electrode type)	
- Range of pH strip paper set	Yes
- Consumables (gaskets, O rings, spares)	
- Hand centrifuge and tubes	
b) Equipment and chemicals for performing the following tests :	
- Salinity (Cl)	
- Hardness (Ca, Mg)	
- Potassium (K)	
- Alkalinity (Pm, Pf, Mf)	
- Lime pH content	
- Acidity	
- Garrett gas train for sulphide content	
- Hach sulphide kit	
- Methylene blue kit	
- Pilot testing equipment including : - Hamilton beach mixer/Waring blender - Precision balance - Hot plate(s) - General glassware	
- Tools (spanners, screw drivers, Allen keys, etc)	
- Drying oven	
- Chemical/additive quality testing – Reference material (kaolinite, etc)	
- Pyknometer (density barytes), calibrated	
- Completion Fluid Testing – Turbidimeter (NTU)	
- Stimulation Fluid Testing – Hydrometers ranging 0.7- 1.2	
c) Oil mud testing equipment and chemicals ( <b>only when OBM in use</b> ) :	
- Electrical stability meter (digital)	
- 50:50 mix of xylene and iso propanol	
- Xylene	
- Iso Propanol	
- Phenolphthalein	
- 0.1 N sulphuric acid soln	
- Potassium chromate indicator solution (5 gr/100 cc)	

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- Silver nitrate solution (0.282 N)	
- Aktaflo E	
- Calcium buffer solution	
- Calver 11 indicator	
- 0.1 M EDTA solution	
- Magnetic stirrer	
- Magnesium buffer solution	
- Magnesium indicator	



<b>G. CASING/CEMENTING</b>
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<b>G.1 Casing &amp; Tubing Equipment</b>
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<b>G.1.0 Description &amp; Specifications</b>	<b>Compliance Yes/No? If No, give details under list of non-compliance</b>
a) Casing Bowls; 13 3/8", 9 5/8", 7".	No- Operator Supplied
b) Tubing Slips; 2 7/8", 3 1/2"	Yes

	<b>Contractor Specifications</b>
<b>G.1.1 Hydraulic Casing Tongs</b>	
Make:	Jiangsu Xinxiang
Type:	TQ340-35Y
Pipe Size Range	4" to 13 3/8"
Max torque capacity	35 KN-m
Integral Back up	No
<b>G.1.2 HPU for hydraulic Casing tongs</b>	
Make:	Jiangsu Xinxiang
Type:	FYZB-120
Power	KW/HP 37 KW/ 50HP
Flowrate	gpm/L/min 30 gpm
Max pressure	MPa/psi 3000psi (20Mpa)





**H. INSTRUMENTATION**

**H.1 Drilling Instrumentation**

H.1.0 Description	Compliance <b>Yes/No?</b> If <b>No</b> , give details under list of non-compliance	
a) General alarm system	<p>The alarm shall be audible under all operating conditions throughout the drilling location, including external and all internal work spaces. It shall consist of the following characteristics :</p> <ul style="list-style-type: none"> <li>Audible signal</li> <li>Visual signal</li> <li>A flashing Light.</li> </ul>	Yes
b) At driller's console	Weight indicator.	Yes
	Stand pipe pressure gauge; Vernier 0-7,000 psi	Yes
	Rotary speed tachometer.	Yes
	Rotary torque indicator (in daNm or ft/lbs).	Yes
	Pump stroke counters; one per pump plus individual and cumulative totalizer.	Yes
	Tong torque indicator.	Yes
	Pit volume totalizer; computerized analogue system (M/D Totco Mud Watch or equivalent) comprising of the following features : Readout of total active and reserve mud volumes. Individual tank read out. Loss gain meter with an accuracy of 0.25m <sup>3</sup> . Audio and visual alarm with high and low settings.	Yes
	Mud flow indicator with high / low audio / visual alarms	Yes
	Trip tank indicator to give a read out in stands for the size of drill pipe in use plus a total tank volume indication calibrated such that a volume change equivalent to one stand of drill pipe may be detected.	Yes
	Remote choke control unit; comprising the following : Standpipe and choke manifold pressure gauge sized in accordance with equipment pressure ratings. Pump stroke indicator for each pump plus individual and cumulative totalizer. Choke control.	Yes
	Utility stand pipe pressure gauge; Vernier 0-7,000 psi.	Yes
c) Standpipe Pressure Gauge:	0-7,000 psi, mounted on standpipe. (MD type D or equivalent). To be visible from driller's position.	Yes



d) At driller's doghouse	Drilling parameter recorder; computerized monitoring or pen recorder for: WOB / string weight (daN) Rate of penetration (m/hr) Rotary speed (RPM) Rotary torque (Amps) Pump pressure (kPa) Pump rate each pump (SPM)	Yes
	Pit volume recorder; 24 hr recorder monitoring active & reserve tanks.	Yes
	Flow rate recorder; 24 hr recorder.	Yes
	Trip tank recorder; 24 hr recorder.	Yes
e) At choke manifold-	Standpipe pressure gauge; Vernier 0-7,000 psi	Yes
	Choke manifold pressure gauge; Vernier 0-10,000 psi.	Yes
	Gauges at choke manifold to be combined on one panel and be visible from choke operating position.	Yes
f) Deviation equipment	A deviation measuring device in the range 0-8 degrees c/w sinker bars and overshot.	Yes
g) General Instruments	Tri-cone bit gauge rings; 17 ½", 12 ¼", 8 ½".	Yes
	Internal / external calipers; 0-10"	Yes
	3-point calipers.	Yes
	Derrick tapes; 0-30m.	Yes

## H.2 Rig Communication System

H.2.0 Description	Compliance Yes/No? If No, give details under list of non-compliance
a) Contractor shall make provision for the siting of Company supplied communications unit adjacent to the radio operators accommodation (refer to C6). Contractor shall provide a 230Vac (±10%) and 47-65Hz (minimum load 63 Amps) power supply to Company communications unit. Contractor shall provide routine maintenance and inspection of the unit including lifting points and the air conditioning system.	No- Supplied by Mudlogging Contractor
b) Public address system at the rig site. Equipment to be explosion proof.	No- Supplied by Mudlogging Contractor
c) Intercom system: between Company office, Contractor office, Drilling Engineers office, Driller's position, Monkey board, Choke Manifold, Shale Shakers, Guard Hut and Mud Logging Unit (as and when required). Spare line to MWD cabin to be available. Equipment to be explosion proof.	No- Supplied by Mudlogging Contractor



**K. MOBILE CAMP**

<b>K.1.0 Description</b>	<b>Compliance Yes/No? If No, give details under list of non-compliance</b>
a) Mobile camp shall be designed and constructed in accordance with the standards and specifications in C6.	NO CAMP IS SUPPLIED WITH THE RIG
b) Rig site offices shall be provided for : - Company site representative - Contractor site representative - Company or Contractor drilling engineer	
c) Company site representative office to be fitted with an Uninterrupted Power Supply system (UPS) and Power Conditioner.	
d) One-man room sleeping accomodation c/w toilet and shower facilities at rig site for Company site representative, Contractor site representative, mud engineer and Company or Contractor drilling engineer.	
e) Rig site 20-man training/meeting room c/w TV and video equipment, overhead projector and screen, table, chairs, white board, notice board.	
f) Rig site 3-man prayer room for Muslim staff.	
g) Sufficient sleeping accomodation at camp site for Contractor's personnel.	
h) Two-man room sleeping accomodation c/w toilet and shower facilities and four-man room sleeping accomodation for up to twenty four (24) Company or Company's Other Contractor(s) personnel at camp site.	
i) Kitchen, mess, recreation, laundry, ablution, dry and refrigerated food storage facilities.	
j) Clinic to be situated at camp site and be furnished/equipped in accordance with Company's HSE standards in C9.	
k) Prayer room caravan, air conditioned, for Muslim staff.	



**L. SAFETY EQUIPMENT**

L.1.0 Description	Compliance Yes/No? If No, give details under list of non-compliance
a) Personal Protective Equipment for all Contractor personnel at the rig site, safety hats (non metallic), hard toed safety boots, safety overalls, ear protection (where noise levels exceed 85 dB), gloves and safety glasses.	Yes
b) Personal Protective Equipment for Contractor personnel at the rig site when necessary, rubber boots, rubber aprons, rubber gloves (elbow length for chemical handling), full face visors, eye shields (for grinding machines, etc.), dust masks. Welders safety equipment, explosion proof hand torches c/w batteries (supervisory staff only), safety belts c/w lines.	Yes
a) A chemical shower/eye wash station shall be provided at all mud mixing areas and shall be supplied by chilled water <30°C.	Yes
b) Eye wash stations, protected from the effects of solar heating, shall be provide at the rig floor, workshops, shale shakers, mixing hopper, engine house, mud pumps.	Yes
c) Derrick safety equipment: Climbing assistant, for 2 persons to reach monkey board, one person to reach crown Safety belts Derrick escape chute	Yes
d) Substructure safety equipment Fall arrestors for 2 persons mounted under substructure Working platform to nipple up/down BOP	Yes
e) Fresh air blowers; bug blowers, explosion proof.	Yes
f) Gas Monitoring Hydrocarbon in air; linked to general alarm system, sensors at bell nipple, shakers, engine intakes.	No- Provided by H2S Company
H2S in air; sensors at bell nipple, drill floor, shakers, vacuum degasser, suction tank, two tone alarm audible over all areas of location, flashing red lights visible from all areas of location	No- Provided by H2S Company
g) Portable handheld multi gas monitoring system, for H2S, hydrocarbon and oxygen c/w probes and aspirator pump.	No- Provided by H2S Company
h) Personal H2S monitors 12 (eg Compur 4100) + 1 test unit	No- Provided by H2S Company
i) Gas detectors/sniffers 2 (eg Drager MOD 21/31)	No- Provided by H2S Company
j) Explosimeters; complete with hand held probes and aspirator pump	No- Provided by H2S Company
k) Winds socks.	No- Provided by H2S Company
l) Fire pump Portable pump at rig site capable of delivering 1.3m <sup>3</sup> / min at 700 kPa, Sufficient hose to cover site area Adjustable spray discharge nozzles	Yes Yes Yes
m) Fire extinguishers dry powder type at generator rooms, mud tanks, mud pump areas.	Yes
Dry powder type at switch gear & distribution boards where temp > 40 degC	Yes
CO2 type at switch gear & electrical distribution boards where temperature < 40 degC.	Yes

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and	Pressurised H2O type at each cabin, office work area exit.	Yes
	Dry powder wheeled type at engine room and workshops.	Yes
n) SCBA equipment	Refer to Well Engineering Business Control Document for specifications.	No- Provided by H2S Company
	Minimum air capacity of 30 minutes.	No- Provided by H2S Company
	Two emergency equipment containers; one positioned at the main gate (primary briefing area) and the other positioned at the opposite end of the rig site, next to the run-off (secondary briefing area). Each container shall be equipped with a power supply, lighting, air conditioning, a wind sock on top in clear view.	No- Provided by H2S Company
Primary briefing area	6 SCBA sets + 6 spare cylinders.	No- Provided by H2S Company
	Resuscitator + 1 spare cylinder.	No- Provided by H2S Company
	Charging compressor.	No- Provided by H2S Company
	Stretcher.	No- Provided by H2S Company
	Maps of the rig site with search routes clearly marked.	No- Provided by H2S Company
Secondary briefing area	6 SCBA sets + 6 spare cylinders.	No- Provided by H2S Company
	Resuscitator + 1 spare cylinder.	No- Provided by H2S Company
	Stretcher.	Yes
	Maps of the rig site with search routes clearly marked.	Yes
Drill floor	2 SCBA sets + 8 escape packs.	No- Provided by H2S Company
Shale shakers boxes.	4 escape packs stored in clearly marked	No- Provided by H2S Company
	Company site representative office SCBA set	No- Provided by H2S Company
	Contractor site representative office SCBA set	No- Provided by H2S Company
Contractor drilling engineer office	SCBA set	No- Provided by H2S Company
Derrick	escape pack.	No- Provided by H2S Company
o) First aid equipment	first aid kits (at drill floor and Contractor site representative office)	Yes
	2 resuscitators with spare charged cylinders (at clinic)	Yes
	stretchers (Huxley or Anderson type)	Yes



**M. MISCELLANEOUS EQUIPMENT**

<b>M.1.0 Description</b>	<b>Compliance Yes/No? If No, give details under list of non-compliance</b>
a) Pipe racks Set with adequate capacity for casing, drill pipe and drill collars. Pipe racks shall be inspected and certified as fit to support the maximum expected load.	Yes
b) Ditch magnet for each shaker header box.	Yes
c) Fuel storage Diesel storage tank suitably sized plus day tank.	Yes
Transfer pump.	Yes
In line purifier (eg centrifuge).	Yes
Water Separator for Diesel Deliveries.	Yes
d) Workshop Suitable for mechanic to carry out repair work.	Yes
e) Stores Sufficient skid mounted stores and baskets for all Contractor furnished equipment, supplies and spare parts. Skids shall be designed to accommodate the maximum expected loading and shall be accessible from both sides.	Yes
f) Guard hut Positioned at entrance to location.	Yes
g) Waste lube oil tank, skid mounted with 5m <sup>3</sup> capacity.	No
h) Waste bin for scrap metal.	No
i) Vehicles Forklift, rough terrain, for handling casing, tubing and drill pipe, reversing alarm.	Yes- Rental
Crane, rough terrain mobile crane capable of all necessary day to day work, c/w crown saver, weight indicator and reversing alarm.	Yes- Rental
Sufficient 2/4WD estates or pick-ups, diesel, with air conditioning and fitted out in accordance with Company's safety specification for vehicles.	Yes
Bus, diesel, with air conditioning and fitted out in accordance with Company's safety specification for vehicles.	Yes- Rental
One 2/4WD LWB estate car available for Company site representative, diesel, with air conditioning and fitted out in accordance with Company's safety specification for vehicles.	Yes- Rental
One vehicle must be on site at all times that can accommodate and properly secure a stretcher inside the vehicle. If required, time to convert a vehicle to accommodate a stretcher shall take 20 minutes or less	Yes- Rental Ambulance
j) Welding kit, electric welding set for use anywhere on location.	No
k) Oxy/acetylene cutting torches for use anywhere on location.	No
l) High pressure cleaner suitable for use in Zone 1.	Yes
m) Floodlights, portable, stand mounted floodlights for use anywhere on location.	Yes
n) Pumps, portable water transfer pumps for use anywhere on location.	Yes
o) Casing centralizer / stop collar pneumatic nail hammer.	No
p) Thuraiya satellite phone for Company site representative.	Yes
q) Digital camera c/w zoom and flash, images in jpeg format.	Yes
r) A4 photocopier at the rig site.	Yes
s) A4 photocopier at radio room (unless already provided by Company).	Yes
t) Spares, adequate spare parts for Contractor's equipment.	Yes



<b>N. RIG MOVING</b>
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N.1.0 Description	Compliance <b>Yes/No?</b> If <b>No</b> , give details under list of non-compliance
a) Trailers shall be designed and constructed in accordance with Company's transport specifications (refer to C6).	Yes
b) Rig shall be capable of moving (i.e. rig down, move and rig up) between wells in at least the following times .	
Up to 10km in 5 days.	*Yes
Up to 50km in 6 days.	*Yes

	Contractor Specifications
c) N.1.1 Rig/Camp Moving Times	d)
<b>Rig</b>	
Rig down days	*2
10km move days (daylight hours)	*4
50km move days (daylight hours)	*5
100km move days(daylight hours)	*6
500km move days(daylight hours)	*10
Rig up days	*2
<b>Camp</b>	
Rig down days	5 hours
50km move days(daylight hours)	0.5 day
100km move days(daylight hours)	1 day
500km move days(daylight hours)	5 days
Rig up days	5 hours
<b>N.1.2 Rig/Camp Loads</b>	
Rig Loads	Refer to Attachment 1
Camp Loads	Refer to Attachment 2
Note • Rig moving is a concurrent operation with rig-down and rig-up.	



RIG LOADS							
DESCRIPTION	NO. OF LOADS	TRANSPORT REQUIRED		SKID OR TRAILER	WIDE LOAD	MAX. AXLE LOAD (TONS)	WEIGHT (TONS)
		SHORT MOVE	LONG MOVE				
Sub-base & Substructure	6	F/T	F/T	S			30 each
Mast	8	F/T	F/T	S	6 x W		15 each
Set-back	2	F/T	F/T	S	W		15 each
Drawworks spreaders	2	F/T	F/T	S			10 each
Drawworks	3	F/T	F/T	S			33, 27, & 11 Tons
Rotary table & beam	2	O/F	F/T	S			15 each
SCR House	1	F/T	F/T	S			25
Generator House	4	F/T	F/T	S			25 each
Day Tank	1	O/F	F/T	S			20
Fuel Tank	2	O/F	F/T	S			20 each
Mud Pumps	2	F/T	F/T	S			42 each
Water Tanks	3	O/F	F/T	S			15 each
Shaker Tank	1	F/T	F/T	S	W		40
Mud Tanks	4	F/T	F/T	S			23 each
Tank ladders	1	F/T	F/T	S			5
Trip / Strip Tank	1	O/F	F/T	S			15
Catwalk	2	O/F	F/T	S			10 each
V-Door	1	F/T	F/T	S			10
Floor ladders	1	F/T	F/T	S			5
Dog house	1	O/F	F/T	S			20
Rig flooring & railings	2	F/T	F/T	S			15 each
Beams	1	F/T	F/T	S			15
Grass hopper	1	F/T	F/T	S			15
Cable trays	1	F/T	F/T	S			12
Koomey unit	1	O/F	F/T	S			20
BOP Stack	1	F/T	F/T	S			30
Choke manifold	1	F/T	F/T	S			20
Drill Line spool	1	F/T	F/T	S			20
Fishing tool skid	1	O/F	F/T	S			25
Substitutes skid	1	F/T	F/T	S			25
Pipe bins	14	O/F	F/T	S			30 each



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Store containers	4	F/T	F/T	S			25 each
Rig office and Accommodation	3	F/T	F/T	S	3 x W		30 each
Primary and Secondary briefing Cabins	1	O/F	F/T	S			20
Welding shop	1	O/F	F/T	S			15
Pipe racks	2	F/T	F/T	S			6 each
Crane	1	F/T	F/T	S			30
Fork lift	1	F/T	F/T	S			15
High & Low horse	1	F/T	F/T	S			5
Miscellaneous items	10	F/T	F/T	S			10 each
TOTAL TRANSPORT REQUIRED FOR CONVOYS LOADS LISTED ABOVE							
		Short Move	Long Move				
No.of Prime Mover Loads		Nil	Nil				
No.of Oil Field Loads		30	Nil				
No.of Flat Trailer Loads		67	97				
No.of Self Driven Loads		Nil	Nil				
No.of Wide Loads		11	11				
Total No.of Loads		97	97				

**Abbreviations**

P/M = Prime Mover  
 O/F = Oil Field  
 F/T = Flat Trailer  
 S/D = Self Driven  
 T = Trailer Load  
 S = Skid Load  
 W -= Wide Load



CAMP LOADS – PERMANENT							
DESCRIPTION	NO. OF LOADS	TRANSPORT REQUIRED		SKID OR TRAILER	WIDE LOAD	MAX. AXLE LOAD (TONS)	WEIGHT (TONS)
		SHORT MOVE	LONG MOVE				
Caravans	9	F/T	F/T		9 x W		25 each
Power house	1	O/F	F/T				20
Fuel Tank	1	O/F	O/F				10
Store container	1	F/T	F/T				25
Spare motor skid	1	O/F	O/F				15
Spare tool bin	1	O/F	F/T				15

TOTAL TRANSPORT REQUIRED FOR CONVOY LOADS LISTED ABOVE

	Short Move	Long Move	
No.of Oil Field Loads	4	2	
No.of Flat Trailer Loads	10	12	
No.of Self Driven Loads	Nil	Nil	
No.of Wide Loads	9	9	
Total No.of Loads	14	14	

Abbreviations

- O/F = Oil Field
- F/T = Flat Trailer
- S/D = Self Driven
- T = Trailer Load
- S = Skid Load
- W -= Wide Load