

**Marketing & Contracts Management (MCM)  
Rig General Description & Equipment List  
- Beta**

**ATLANTICA**

**INTEGRITY MANAGEMENT SYSTEM (IMS)**

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**Note:**

The output ratings of the equipment listed in this document are maximum performances. They are provided to allow user to determine the suitability of the equipment. The operating limits of the equipment shall be set according to the good oilfield practices.

Should any discrepancies be found between the drawings the equipment list and any other documents, the equipment list shall prevail.

Where manufacturer's names and models are specified, they represent a standard of quality. CONTRACTOR reserves the right to supply equipment from other manufacturers.

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**REVISIONS**

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# TABLE OF CONTENTS

<b>SYMBOLS AND ABBREVIATIONS.....</b>	<b>12</b>
<b>SECTION A - UNIT SPECIFICATION .....</b>	<b>14</b>
<b>A.1 Main Dimensions / Technical Description.....</b>	<b>14</b>
<b>A.2 Storage Capacities.....</b>	<b>14</b>
<b>A.3 Propulsion Thrusters.....</b>	<b>15</b>
A.3.1 IN-LINE PROPULSION .....	15
A.3.2 THRUSTERS.....	15
<b>A.4 Operational Capabilities .....</b>	<b>15</b>
<b>A.5 Variable Load .....</b>	<b>15</b>
<b>A.6 Environmental Limits.....</b>	<b>15</b>
A.6.1 OPERATION .....	15
A.6.2 SURVIVAL .....	15
A.6.3 DRAUGHTS .....	16
<b>A.7 Mooring System.....</b>	<b>16</b>
A.7.1 ANCHOR WINCHES.....	16
A.7.2 FAIRLEADS .....	17
A.7.3 HAWSER WINCHES .....	17
A.7.4 ANCHORS.....	17
A.7.5 ANCHORS LINES .....	17
A.7.6 ANCHORS LINES RUNNING & RETRIEVAL SYSTEM.....	18
- NONE.....	18
A.7.7 TOWING GEAR.....	18
A.7.8 SUPPLY VESSEL MOORING LINES .....	19
<b>A.8 Positioning System.....</b>	<b>19</b>
A.8.1 OPERATOR STATIONS.....	19
A.8.2 REFERENCE SYSTEM .....	19
<b>A.9 Marine Loading Station .....</b>	<b>19</b>
THE HOSES ARE FITTED WITH FLOTATION MODULES TO PREVENT THE LINES FROM SINKING DURING BULK / FLUID TRANSFER. ....	19
A.9.1 POTABLE WATER HOSES.....	19
A.9.2 DRILLING WATER HOSES.....	20
A.9.3 GAS OIL HOSES.....	20
A.9.4 MUD BULK HOSES .....	20
A.9.5 CEMENT HOSES.....	20
A.9.6 LIQUID MUD HOSES .....	20
A.9.7 BRINE HOSES .....	21
A.9.8 BRINE HOSES .....	21
A.9.9 SLUDGE HOSES.....	21
A.9.10 SEWAGE HOSES .....	21
<b>A.10 Hose Station between Vessel and Drilling Equipment Set.....</b>	<b>21</b>
A.10.1 PORTABLE WATER SUPPLY .....	21



Document Title: <b><u>Rig General Description &amp; Equipment List – Beta</u></b>	Document Ownership: <b>MCM</b>
--	-----------------------------------

A.10.2	COMPRESSED AIR SUPPLY .....	22
A.10.3	FUEL SUPPLY .....	22
A.10.4	MUD SUPPLY – LOW PRESSURE .....	22
A.10.5	DRILL WATER SUPPLY .....	22
A.10.6	SEA WATER SUPPLY .....	23
A.10.7	DRAINAGE .....	23
A.10.8	MUD RETURN .....	23
A.10.9	MUD HIGH PRESSURE .....	23
A.10.10	CEMENT HIGH PRESSURE .....	24
<b>A.11</b>	<b>Cranes Hoists and Material Handling .....</b>	<b>24</b>
A.11.1	MAIN CRANE.....	24
A.11.2	AUXILIARY CRANE .....	24
A.11.3	FORKLIFT .....	25
A.11.4	OVERHEAD / GANTRY CRANES .....	25
A.11.5	PERSONNEL TRANSFER BRIDGE .....	25
A.11.6	HOIST WINCHES / MULTI-PURPOSE CRANES .....	25
<b>A.12</b>	<b>Helicopter Landing Deck .....</b>	<b>27</b>
A.12.1	HELICOPTER REFUELING SYSTEM.....	27
<b>A.13</b>	<b>Auxiliary Equipment .....</b>	<b>27</b>
A.13.1	WATER MAKER .....	27
A.13.2	NOT USED .....	27
A.13.3	WELDING SETS.....	27
A.13.4	HIGH PRESSURE CLEANER.....	27
A.13.5	PERSONNEL TRANSFER BASKET .....	27
<b>SECTION B - GENERAL MAST EQUIPMENT PACKAGE SPECIFICATION.....</b>		<b>28</b>
<b>B.1</b>	<b>Mast and Substructure .....</b>	<b>28</b>
B.1.1	MAST .....	28
B.1.2	RACKING PLATFORM .....	28
B.1.3	PIPE HANDLING SYSTEM .....	28
B.1.4	CASING STABBING ARM.....	29
B.1.5	SUBSTRUCTURE.....	29
B.1.6	WEATHER PROOFING.....	29
B.1.7	DERRICK TV CAMERA SYSTEM .....	29
<b>B.2</b>	<b>Drawworks and Associated Equipment .....</b>	<b>29</b>
B.2.1	DRAWWORKS.....	29
B.2.2	NOT USED .....	30
B.2.3	SAND LINE .....	30
B.2.4	AUTOMATIC DRILLER.....	30
<b>B.3</b>	<b>Derrick Hoisting Equipment.....</b>	<b>30</b>
B.3.1	CROWN BLOCK .....	30
B.3.2	TRAVELING BLOCK.....	30
B.3.3	HOOK.....	30
B.3.4	SWIVEL .....	30
B.3.5	DRILLING LINE .....	30
B.3.6	DEADLINE ANCHOR .....	31
B.3.7	BLOCK GUIDANCE SYSTEM.....	31
B.3.8	RETRACTABLE DOLLY .....	31
<b>B.4</b>	<b>Rotating System.....</b>	<b>31</b>
B.4.1	ROTARY TABLE.....	31

B.4.2	MASTER BUSHING / ADAPTER BUSHING .....	31
B.4.3	KELLY BUSHING .....	31
B.4.4	TOP DRIVE .....	31
B.4.5	RAISED BACKUP SYSTEM .....	32

**SECTION C – POWER SUPPLY SYSTEM..... 32**

<b>C.1</b>	<b>Rig Power Plant.....</b>	<b>32</b>
C.1.1	DIESEL ENGINE.....	32
C.1.2	NOT USED .....	32
C.1.3	AC GENERATOR .....	32
C.1.4	VFD SYSTEM .....	33
C.1.5	TRANSFORMER SYSTEM.....	33
C.1.6	EMERGENCY SHUTDOWN .....	33
C.1.7	NOT USED .....	33
C.1.8	COMPRESSED AIR SYSTEM .....	34
<b>C.2</b>	<b>Vessel Emergency Generator .....</b>	<b>34</b>
C.2.3	EMERGENCY BATTERIES .....	35
<b>C.3</b>	<b>MEP Emergency Generator.....</b>	<b>35</b>
<b>C.4</b>	<b>Main Hydraulic Power Unit.....</b>	<b>35</b>

**SECTION D – DRILL STRING EQUIPMENT..... 35**

<b>D.1</b>	<b>Tubulars .....</b>	<b>35</b>
D.1.1	KELLYS .....	35
D.1.2	KELLY SAVER-SUBS.....	35
D.1.3	DRILL PIPES .....	36
D.1.4	DRILL PIPES PUP JOINTS.....	36
D.1.5	DRILL PIPE CASING PROTECTORS .....	36
D.1.6	HEAVY WEIGHT DRILL PIPE .....	36
D.1.7	DRILL COLLAR .....	37
D.1.8	SHORT DRILL COLLAR.....	38
D.1.9	NON-MAGNETIC DRILL COLLAR .....	38
D.1.10	CORE BARREL .....	38
D.1.11	STABILIZERS.....	38
D.1.12	ROLLER REAMER.....	39
D.1.13	NOT USED .....	39
D.1.14	DRILLING JAR.....	39
D.1.15	INSIDE BOP VALVES .....	39
D.1.16	FAST SHUT OFF COUPLING .....	39
D.1.17	HIGH PRESSURE CIRCULATING HEAD.....	39
D.1.18	KELLY COCKS.....	39
D.1.19	CIRCULATION SUB .....	39
D.1.20	CUP TYPE TESTER.....	39
D.1.21	PLUG TYPE TESTER .....	40
D.1.22	DROP-IN VALVES .....	40
D.1.23	BIT SUBS / FLOAT VALVES.....	40
D.1.24	CROSSOVER SUB.....	41
D.1.25	DRILLING BUMPER SUB.....	44
D.1.26	HOLE OPENER.....	44
D.1.27	UNDER REAMER .....	45
<b>D.2</b>	<b>Handling Tools.....</b>	<b>45</b>
D.2.1	DRILL PIPE ELEVATOR.....	45



Document Title: <b><u>Rig General Description &amp; Equipment List – Beta</u></b>	Document Ownership: <b>MCM</b>
--	-----------------------------------

D.2.2	DRILL PIPE LIFTING PLUG.....	46
D.2.3	TUBING ELEVATOR.....	46
D.2.4	DRILL PIPE HAND SLIPS.....	46
D.2.5	POWER SLIPS.....	46
D.2.6	DRILL COLLAR SLIPS.....	47
D.2.7	DRILL COLLAR SAFETY CLAMP.....	48
D.2.8	TUBING SPIDER.....	48
D.2.9	TUBING SLIP.....	48
D.2.10	DRILL COLLAR LIFTING SUB.....	48
D.2.11	DRILL COLLAR LIFTING PLUG.....	49
D.2.12	TRICONES BIT BREAKER / TRICONE BIT GAUGE.....	49
D.2.13	ELEVATOR LINKS.....	50
D.2.14	KELLY SPINNER.....	50
D.2.15	DRILL PIPE SPINNER.....	50
D.2.16	MUD SAVER BUCKET.....	50
D.2.17	HYDRAULIC CATHEAD.....	50
D.2.18	ROTARY TONG.....	50
D.2.19	MANUAL TUBING TONG.....	51
D.2.20	POWER TUBING TONG.....	51
D.2.21	IRON ROUGHNECK.....	51
<b>D.3</b>	<b>Fishing Equipment.....</b>	<b>52</b>
D.3.1	OVERSHOT.....	52
D.3.2	HYDRAULIC FISHING JAR.....	53
D.3.3	JAR INTENSIFIER.....	53
D.3.4	SURFACE JAR.....	54
D.3.5	FISHING BUMPER SUB.....	54
D.3.6	SAFETY JOINT.....	54
D.3.7	JUNK BASKET (REVERSE CIRCULATION).....	54
D.3.8	JUNK SUB.....	55
D.3.9	MILLING TOOL.....	55
D.3.10	MAGNET FISHING TOOL.....	56
D.3.11	TAPER TAP.....	56
D.3.12	DIE COLLAR.....	56
D.3.13	IMPRESSION BLOCK.....	56
<b>SECTION E – WELL CONTROL.....</b>		<b>57</b>
<b>E.1</b>	<b>Diverter.....</b>	<b>57</b>
E.1.1	DIVERTER.....	57
E.1.2	DIVERTER FLOW LINES.....	57
E.1.3	DIVERTER CONTROL PANEL.....	57
E.1.4	ADAPTER FLANGE.....	57
<b>E.2</b>	<b>Blowout Preventer Stack N°1.....</b>	<b>57</b>
E.2.1	RAM PREVENTER.....	57
E.2.2	RAMS CONFIGURATION.....	58
E.2.3	ANNULAR PREVENTER.....	59
E.2.4	KILL LINE VALVES.....	59
E.2.5	CHOKE LINE VALVES.....	59
<b>E.3</b>	<b>Hydraulic Quick Type Connector.....</b>	<b>60</b>
<b>E.4</b>	<b>Not Used.....</b>	<b>60</b>
<b>E.5</b>	<b>BOP Control System.....</b>	<b>60</b>
E.5.1	BOP HYDRAULIC POWER UNIT.....	60

E.5.2	DRILLER'S CONTROL PANEL .....	60
E.5.3	REMOTE'S CONTROL PANEL .....	60
<b>E.6</b>	<b>Choke Manifold .....</b>	<b>60</b>
<b>E.7</b>	<b>FLEXIBLE CHOKE &amp; KILL LINES (BOP To MANIFOLD) .....</b>	<b>61</b>
E.7.1	FLEXIBLE CHOKE LINE .....	61
E.7.2	FLEXIBLE KILL LINE .....	61
<b>E.8</b>	<b>Flexible BOP / Diverter Control Hoses .....</b>	<b>61</b>
<b>E.9</b>	<b>BOP Testing Equipment .....</b>	<b>61</b>
E.9.1	HYDRAULIC BOP TEST PUMP .....	61
E.9.2	BOP TEST STUMP .....	62
<b>E.10</b>	<b>BOP Handling .....</b>	<b>62</b>
E.10.1	BOP HOIST SYSTEM .....	62
E.10.2	NOT USED .....	62
<b>E.11</b>	<b>Risers / Spools / Adapters .....</b>	<b>62</b>
E.11.1	RISERS .....	62
E.11.2	SPOOLS .....	62
E.11.3	ADAPTER SPOOLS .....	62
E.11.4	DOUBLE STUDDED ADAPTERS .....	62
E.11.5	MUD CROSS .....	62
<b>SECTION F – MUD SYSTEM / BULK SYSTEM .....</b>		<b>63</b>
<b>F.1</b>	<b>High Pressure Mud System – Transfer System .....</b>	<b>63</b>
F.1.1	MUD PUMPS .....	63
F.1.2	TRANSFER / MIXING PUMPS .....	63
F.1.3	NOT USED .....	63
F.1.4	STANDPIPE AND CEMENT MANIFOLDS .....	63
F.1.5	ROTARY HOSES .....	64
F.1.6	CEMENT HOSES .....	64
F.1.7	CHIKSAN HOSES .....	64
<b>F.2</b>	<b>Low Pressure System – Mud Treatment System .....</b>	<b>64</b>
F.2.1	MUD TANKS .....	64
F.2.2	SAND TRAPS / TREATMENT TANKS .....	72
F.2.3	SLUG / PILL TANKS .....	73
F.2.4	TRIP TANK .....	73
F.2.5	STRIPPING TANK .....	74
F.2.6	CHEMICAL TANK .....	74
F.2.7	GUMBO BOX / FLOW DIVIDER / SCALPING SHAKERS / SHALE SHAKERS .....	74
F.2.8	DESANDER STAND ALONE .....	74
F.2.9	DESILTER STAND ALONE .....	74
F.2.10	MUD CLEANER .....	74
F.2.11	MUD GAS SEPARATOR .....	75
F.2.12	VACUUM SEPARATOR .....	75
F.2.13	AGITATOR .....	75
F.2.14	CENTRIFUGE .....	75
F.2.15	MUD HOPPER .....	75
F.2.16	CUTTING MANAGEMENT SYSTEM .....	75
F.2.17	MUD LABORATORY AND EQUIPMENT .....	75
<b>F.3</b>	<b>Bulk System .....</b>	<b>76</b>
F.3.1	BARITE / BENTONITE SILOS .....	76

F.3.2	CEMENT SILOS .....	76
F.3.3	SURGE TANK FOR BARITE / BENTONITE .....	76
F.3.3	SURGE TANK FOR CEMENT .....	76

**SECTION G – CASING / CEMENTING EQUIPMENT ..... 76**

<b>G.1</b>	<b>Casing Equipment .....</b>	<b>76</b>
G.1.1	API CASING DRIFT .....	76
G.1.2	CASING THREAD PROTECTOR .....	76
G.1.3	SIDE DOOR CASING ELEVATOR .....	77
G.1.4	SINGLE JOINT CASING ELEVATOR .....	77
G.1.5	SLIP TYPE ELEVATOR / SPIDER .....	78
G.1.6	CASING SLIPS .....	78
G.1.7	CASING BOWL .....	79
G.1.8	CASING TONGS .....	79
G.1.9	POWER CASING TONGS .....	79
G.1.10	HYDRAULIC POWER UNIT .....	79
G.1.11	CASING CIRCULATING HEAD .....	80
G.1.12	CASING SPEAR .....	80
G.1.13	CASING CUTTER .....	80
G.1.14	CROSSOVER TO HANDLE CASING WITH DRILL PIPE .....	80
G.1.15	CASING SCRAPER .....	80
<b>G.2</b>	<b>Cementing Unit .....</b>	<b>80</b>
<b>G.3</b>	<b>Riser Tailing Arm .....</b>	<b>80</b>

**SECTION H – INSTRUMENTATION / COMMUNICATION ..... 80**

<b>H.1</b>	<b>Drilling Instrumentation At Driller's Position .....</b>	<b>80</b>
H.1.1	WEIGHT INDICATOR .....	80
H.1.2	STAND PIPE PRESSURE GAUGES .....	80
H.1.3	CHOKE MANIFOLD PRESSURE GAUGES .....	80
H.1.4	ROTARY SPEED TACHOMETER .....	81
H.1.5	ROTARY TORQUE INDICATOR .....	81
H.1.6	NOT USED .....	81
H.1.7	PUMP STROKE COUNTER .....	81
H.1.8	TONG TORQUE INDICATOR .....	81
H.1.9	PIT LEVEL SENSORS .....	81
H.1.10	MUD FLOW / MUD TEMPERATURE INDICATORS .....	81
H.1.11	TRIP TANK INDICATOR .....	81
H.1.12	NOT USED .....	82
H.1.13	ROP INDICATOR .....	82
H.1.14	REMOTE CHOKE CONTROL PANEL .....	82
H.1.15	CALIBRATED FLOW METERS .....	82
<b>H.2</b>	<b>Drilling Parameter Recorder .....</b>	<b>82</b>
<b>H.3</b>	<b>Instrumentation At Choke Manifold Location .....</b>	<b>82</b>
H.3.1	STANDPIPE PRESSURE GAUGES .....	82
H.3.2	CASING PRESSURE GAUGES .....	82
H.3.3	TEMPERATURE GAUGES .....	82
<b>H.4</b>	<b>Standpipe Pressure Gauge [Standpipe Location] .....</b>	<b>82</b>
<b>H.5</b>	<b>Remote Well Control Panel .....</b>	<b>82</b>
<b>H.6</b>	<b>Not Used .....</b>	<b>83</b>



<b>H.7</b>	<b>Rig Communication System.....</b>	<b>83</b>
H.7.1	TELEPHONE SYSTEM.....	83
H.7.2	PUBLIC ADDRESS SYSTEM .....	83
H.7.3	TALKBACK SYSTEM .....	83
H.7.4	HAND HELD VHF-UHF RADIO.....	83
<b>H.8</b>	<b>Environmental Instrumentation .....</b>	<b>83</b>
H.8.1	TEMPERATURE INDICATOR.....	83
H.8.2	BAROMETRIC INDICATOR .....	83
H.8.3	HUMIDITY INDICATOR .....	83
H.8.4	WIND SPEED / DIRECTION .....	83
<b>H.9</b>	<b>Additional Modu Specific Instrumentation.....</b>	<b>84</b>
H.9.1	ROLL, PITCH AND HEAVE INDICATORS .....	84
H.9.2	COMPASS.....	84
H.9.3	ECHO SOUNDER .....	84
H.9.4	CURRENT INDICATOR .....	84
H.9.5	WEATHER FACSIMILE .....	84
H.9.6	RADAR .....	84
H.9.7	AUTOMATIC IDENTIFICATION SYSTEM (AIS).....	84
<b>H.10</b>	<b>Radio Equipment .....</b>	<b>84</b>
H.10.1	GMDSS.....	84
H.10.2	SATELLITE COMMUNICATION SYSTEM .....	85
H.10.3	AERONAUTICAL COMMUNICATION SYSTEM .....	85
H.10.4	VHF / UHF PORTABLE EQUIPMENT .....	85
H.10.5	OTHER EQUIPMENT.....	85
H.10.6	VHF RADIO TELEPHONE .....	85
H.10.7	VHF / UHF RADIO TRANSCEIVER .....	85
H.10.8	WATCH RECEIVER .....	85
H.10.9	SCRAMBLER .....	85
H.10.10	TELEX.....	85
H.10.11	SHIP SECURITY ALERT SYSTEM (SSAS).....	85
<b>H.11</b>	<b>CCTV System .....</b>	<b>86</b>
H.11.1	CCTV MARINE .....	86
H.11.2	CCTV DRILLING .....	86
<b>SECTION I – PRODUCTION TEST EQUIPMENT .....</b>		<b>86</b>
<b>I.1</b>	<b>Burners.....</b>	<b>86</b>
<b>I.2</b>	<b>Burner Booms.....</b>	<b>86</b>
<b>I.3</b>	<b>Not Used.....</b>	<b>86</b>
<b>I.4</b>	<b>Sprinkler System.....</b>	<b>87</b>
<b>I.5</b>	<b>Fixed Lines For Well Testing.....</b>	<b>87</b>
<b>I.6</b>	<b>Not Used.....</b>	<b>87</b>
<b>SECTION J – WORKOVER TOOLS .....</b>		<b>87</b>
<b>SECTION K – ACCOMMODATION .....</b>		<b>87</b>
<b>K.1</b>	<b>Offices .....</b>	<b>87</b>
K.1.1	COMPANY REPRESENTATIVE’S OFFICE.....	87
K.1.2	OIM’S OFFICE .....	87

K.1.3	OTHER OFFICES .....	87
K.1.4	HOSPITAL ROOM.....	87
<b>K.2</b>	<b>Living Quarters .....</b>	<b>87</b>
K.2.1	BEDROOMS.....	87
K.2.2	GALLEY .....	87
K.2.3	MESS.....	87
K.2.4	MEETING ROOMS.....	87
K.2.5	RECREATION ROOMS .....	88
K.2.6	OTHER ROOMS.....	88

<b>SECTION L – SAFETY .....</b>	<b>88</b>
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<b>L.1</b>	<b>General Safety Equipment .....</b>	<b>88</b>
L.1.1	NOT USED .....	88
L.1.2	EYE WASH STATIONS.....	88
L.1.3	DERRICK SAFETY EQUIPMENT .....	88
L.1.4	NOT USED .....	88
L.1.5	BLOWERS .....	88
<b>L.2</b>	<b>Gas / Fire Detection System.....</b>	<b>89</b>
L.2.1	H <sub>2</sub> S MONITORING SYSTEM .....	89
L.2.2	COMBUSTIBLE GAS MONITORING SYSTEM.....	89
L.2.3	H <sub>2</sub> S PORTABLE DETECTOR.....	89
L.2.4	CO <sub>2</sub> PORTABLE DETECTOR .....	89
L.2.5	O <sub>2</sub> PORTABLE DETECTOR.....	89
L.2.6	EXPLOSIMETER.....	90
L.2.7	FIRE / SMOKE DETECTORS .....	90
<b>L.3</b>	<b>Fire Fighting Equipment.....</b>	<b>90</b>
L.3.1	FIRE PUMPS .....	90
L.3.2	HYDRANTS AND HOSES.....	90
L.3.3	PORTABLE FIRE EXTINGUISHERS.....	90
L.3.4	FIRE BLANKETS .....	90
L.3.5	FIXED FOAM SYSTEM .....	90
L.3.6	HELIDECK FOAM SYSTEM .....	91
L.3.7	FIXED FIRE EXTINGUISHING SYSTEM.....	91
L.3.8	MANUAL WATER DELUGE SYSTEM ON THE DES.....	91
L.3.9	WATER SPRINKLER SYSTEM IN ACCOMMODATION .....	91
<b>L.4</b>	<b>Breathing Apparatus .....</b>	<b>91</b>
L.4.1	GENERAL SETS.....	91
L.4.2	DERRICK ESCAPE SETS .....	91
L.4.3	CASCADE STATIONS.....	91
L.4.4	BREATHING AIR RECHARGE COMPRESSOR .....	92
L.4.6	AIR PURITY TEST EQUIPMENT.....	92
<b>L.5</b>	<b>Emergency First Aid Equipment.....</b>	<b>92</b>
L.5.1	FIRST AID KIT .....	92
L.5.2	BURN KIT .....	92
L.5.3	RESUSCITATOR.....	92
L.5.4	STRETCHER.....	92
<b>L.6</b>	<b>Helideck Rescue Equipment .....</b>	<b>92</b>
L.6.1	STORAGE BOXES .....	92
L.6.2	EQUIPMENT .....	92
<b>L.7</b>	<b>Rig Safety Store .....</b>	<b>92</b>



Document Title: <b><u>Rig General Description &amp; Equipment List – Beta</u></b>	Document Ownership: <b>MCM</b>
--	-----------------------------------

<b>L.8</b>	<b>Emergency Warning Alarms .....</b>	<b>92</b>
<b>L.9</b>	<b>Survival Equipment .....</b>	<b>93</b>
L.9.1	LIFEBOATS.....	93
L.9.2	LIFE RAFTS.....	93
L.9.3	FAST RESCUE BOAT .....	93
L.9.4	LIFE JACKETS .....	93
L.9.5	LIFE BUOY .....	93
L.9.6	WORK VEST .....	93
L.9.7	ESCAPE LADDERS / NETS.....	93
L.9.8	DISTRESS SIGNALS .....	93
L.9.9	IMMERSION SUITS .....	93
L.9.10	LINE-THROWING DEVICE .....	93
L.9.11	EPIRB (EMERGENCY POSITION INDICATING RADIO BEACON).....	94
<b>SECTION M – POLLUTION PREVENTION EQUIPMENT.....</b>		<b>94</b>
<b>M.1</b>	<b>Sewage Treatment .....</b>	<b>94</b>
<b>M.2</b>	<b>Garbage Compactor .....</b>	<b>94</b>
<b>M.3</b>	<b>Garbage Grinder .....</b>	<b>94</b>
<b>M.4</b>	<b>Holding Tanks .....</b>	<b>94</b>
<b>M.5</b>	<b>Incinerator .....</b>	<b>94</b>
<b>M.6</b>	<b>Oily Water Separator .....</b>	<b>95</b>
<b>M.7</b>	<b>Sewage Holding Tank.....</b>	<b>95</b>
<b>M.8</b>	<b>Grey Water Collection Tank .....</b>	<b>95</b>
<b>M.9</b>	<b>Sludge Tank .....</b>	<b>95</b>
<b>M.10</b>	<b>Bilge Tank.....</b>	<b>95</b>

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## SYMBOLS AND ABBREVIATIONS

<b>°:</b>	Degree [angle]
<b>°C:</b>	Degree Celsius
<b>°F:</b>	Degree Fahrenheit
<b>A:</b>	Ampere
<b>bar:</b>	Bar
<b>bbl/d:</b>	Barrel of oil per day
<b>bbl:</b>	Barrel of oil
<b>daN.m:</b>	Decanewton meter
<b>ft.lb:</b>	Feet pound
<b>ft:</b>	Foot
<b>ft<sup>2</sup>:</b>	Square foot
<b>ft<sup>3</sup>:</b>	Cubic foot
<b>gal:</b>	US gallon
<b>gpm:</b>	US gallon per minute
<b>hp:</b>	Imperial horsepower
<b>HP:</b>	Metric horsepower
<b>hz:</b>	Hertz
<b>in:</b>	Inch
<b>kg/m:</b>	kilogram per meter
<b>kg:</b>	Kilogram
<b>knot:</b>	International knot
<b>kVA:</b>	Kilo voltampere
<b>kW:</b>	Kilo watt
<b>l/min:</b>	Liter per minute
<b>L:</b>	Liter
<b>lb @ ft:</b>	pound at radius [ft]
<b>lb/ft:</b>	Pound per foot
<b>lb/ft<sup>2</sup>:</b>	Pound per square foot
<b>lb:</b>	Pound
<b>m:</b>	Meter
<b>m<sup>2</sup>:</b>	Square meter
<b>m<sup>3</sup>/d:</b>	Cubic meter per day
<b>m<sup>3</sup>:</b>	Cubic meter

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Document Title: <b><u>Rig General Description &amp; Equipment List – Beta</u></b>	Document Ownership: <b>MCM</b>
--	-----------------------------------

- MEP:** Mast Equipment Package  
**mm:** Millimeter  
**mmscfd:** Millions of standard cubic feet per day  
**psi:** Pound per square inch  
**rpm:** Rotation per minute  
**s:** Second  
**SCF/min:** Standard cubic foot per minute  
**SG:** Specific Gravity  
**Sm<sup>3</sup>/min:** Standard cubic meter per minute  
**t @ m:** Metric ton at radius [meter]  
**t/m<sup>2</sup>:** Metric ton per square meter  
**t:** Metric ton  
**ton:** Short ton  
**V:** Volt  
**W:** Watt

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Document Number: <b>MCM-3-REF-007.2</b>	Revision: <b>0</b>	Appendices <b>0</b>	Date: <b>23-May-2017</b>	Page(s) <b>13 of 95</b>
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## SECTION A - UNIT SPECIFICATION

Rig type	Column-Stabilized Semi-Submersible
Design / Shape	BT 3500 TSV
Flag	Panama
Year of construction	2013
Construction yard	DSIC
Classification Society	<b>✘ A1 Column Stabilized Unit, Drilling Tender</b>
Classification	ABS
Rules & Regulations	IMO MODU CODE 1989 updated 2001, Flag State

### A.1 Main Dimensions / Technical Description

Displacement at load line	[t]	21,530	@ 16.00 m draft
Overall length of unit	[m]	83.00	(272.33 ft)
Overall width of unit	[m]	77.35	(253.75 ft)
<u>Main deck</u>			
Length – excluding platforms	[m]	63.70	(209.00 ft)
Width – excluding platforms	[m]	64.35	(211.08 ft)
Elevation above base line	[m]	31.20	(102.33 ft)
<u>Columns</u>			
Number of main column	-	Four (4)	
Dimension main column	[m]	12.35 x 13.65	(40.50 x 44.75 ft)
<u>Draft</u>			
Drilling	[m]	16.00	
Transit	[m]	7.65	
Survival	[m]	12.50	
<u>Pontoon</u>			
Length	[m]	76.70	(251.64 ft)
Breadth	[m]	13.65	(44.75 ft)
Height	[m]	7.80	(25.58 ft)

### A.2 Storage Capacities

Fuel <sup>(1)</sup>	[m <sup>3</sup> ]	1,558	(9,798 bbl)
Drilling water <sup>(1)</sup>	[m <sup>3</sup> ]	2,176.2	(13,686 bbl)
Potable water <sup>(1)</sup>	[m <sup>3</sup> ]	727.1	(4,572 bbl)
Liquid mud <sup>(1)</sup>	[m <sup>3</sup> ]	1,213.3	(7,630 bbl)
Reserve Mud Tanks <sup>(1)</sup> - Pontoon	[m <sup>3</sup> ]	454.5	(2,858 bbl)
Base oil storage - Pontoon	[m <sup>3</sup> ]	166.6	(1,047 bbl)
Maximum S.G. admissible	[kg/l]	1.80	(15 ppg)

Brine storage	- Pontoon	[m <sup>3</sup> ]	166.6	(1,047 bbl)
Maximum S.G. admissible		[kg/l]	1.80	(15 ppg)
Bentonite / Barite (bulk) <sup>(1)</sup>		[m <sup>3</sup> ]	296	(10,453 ft <sup>3</sup> )
Cement (bulk) <sup>(1)</sup>		[m <sup>3</sup> ]	296	(10,453 ft <sup>3</sup> )
<u>Sack storage</u>				
Surface area		[m <sup>2</sup> ]	232	(2,497ft <sup>2</sup> )
<u>Pipe Rack</u>				
Surface area		[m <sup>2</sup> ]	635	(6,835 ft <sup>2</sup> )
Load bearing capacity		[t/m <sup>2</sup> ]	2.5	(512 lb/ft <sup>2</sup> )

<sup>(1)</sup> Maximum volume

### A.3 Propulsion Thrusters

#### A.3.1 In-Line Propulsion

- None

#### A.3.2 Thrusters

- None

### A.4 Operational Capabilities

Water depth				
Max. value on self-contained mooring	[m]	250		(820ft)
Minimum value	[m]	30		(98 ft)
Drilling depth capability	[m]	9,144		(30,000 ft)

### A.5 Variable Load

Deck & Column payload (*)	[t]	3,600		
Total payload (*)	[t]	4,500		
Total payload, transit	[t]	2,350		

(\*) operation/survival conditions

### A.6 Environmental Limits

#### A.6.1 Operation

Significant wave height	[m]	4.50		
Maximum wave period	[s]	7.2-9.8		
Maximum wind velocity (10 min)	[knot]	22.90		
Maximum current velocity	[knot]	1.00		
Average wave period	[s]	6.0		
Maximum wind velocity (1 hr)	[knot]	33		
Maximum current velocity	[knot]	2.6		

#### A.6.2 Survival

Significant wave height	[m]	8.00		
Maximum wave period	[s]	10.30		
Maximum wind velocity (10 min)	[knot]	31.60		
Maximum current velocity	[knot]	1.26		

**A.6.3 Draughts**

The draughts given are measured from base line.

Normal operation draught <sup>(*)</sup>	[m]	16.00	(52'-6")
Survival draught	[m]	12.50	(41'-0")
Transit draught	[m]	7.65	(25'-1")

(\*) the operation draught range is between 15.00 m and 17.70 m

**A.7 Mooring System**
**A.7.1 Anchor Winches**

Quantity	-	Four (4)
Make	-	<b>OIL STATES</b>
Model	-	Double Drum Traction Winch
Motors per winch	-	One (1)
Motor type	-	AC
Total power per winch	[hp]	500
Quantity	-	Eight (8)
Make	-	<b>OIL STATES</b>
Model	-	storage winch
Spooling capacity	[m]	1,725 m wire rope 80 mm

Quantity	-	Two (2)
Make	-	<b>OIL STATES</b>
	-	One at each aft column connected to traction winches. The drum winches are equipped with dual compartment, one with a capacity of 600 meter 80 mm wire and another for 250 m of 69.9 mm wire rope + 30 m of 76 mm chain

Traction Winches

Pulling rated capacity (operating single drum)			
At 40 m/min	[t]	46	(103,000 lb)
At 10 m/min	[t]	186	(412,000 lb)
Stalling load (low gear)	[t]	224	(494,700 lb)
Braking system			
Dynamic braking 100 m/min	[t]	91	(202,312 lb)
Brake holding capacity	[t]	578	(1,274,200 lb)
Control location	-	Local control at each winch location Remote display from the bridge	
Emergency release	-	Yes at the bridge	



**A.7.2 Fairleads**

Quantity	-	Eight (8)
Make	-	<b>OIL STATES</b>
Type	-	Wire rope
Grooving	-	for wire rope 80 mm
Additionally, two wire/chain combined type fairlead:		Installed on most forward port and starboard side of column, for both 80 mm wire and 76 mm chain passing

**A.7.3 Hawser Winches**

Quantity	-	Four (4)
Make	-	OIL STATES SKAGIT SMATCO
Model	-	5485-HBW-175Te
Power	-	Hydraulic
Holding capacity	[t]	515 on the second layer or 400 on the top of the 5 <sup>th</sup> layer
<u>Wire lines</u>		
Quantity	-	Four (4)
Type	-	Steel wire rope
Diameter	[mm]	76
Length	[m]	120 each
Control location	-	Local control Remote display at the control room

**A.7.4 Anchors**

<u>Primary Anchors</u>		-	<b>Not with the Rig – Left with the Shipyard</b>
Quantity	-	Two (2)	
Make	-	<b>Stevepris</b>	
Type	-	Mk6	
Weight	[t]	12.00	(26,455 lb)
<u>Spare Anchors</u>		-	None

**A.7.5 Anchors Lines**

<u>Wire</u>			
Quantity	-	Eight (8)	
Type	-	Steel wire rope	
Diameter	[mm]	80.00	
Length (nominal)	[m]	1,750	(5,741 ft)
Weight per unit length	[kg/m]	29	(19.5 lb/ft)
Minimum Breaking Load	[t]	578	(1,274,200 lb)

**A.7.6 Anchors Lines Running & Retrieval System**

- None

**A.7.7 Towing Gear**

Towing Brackets

Quantity - Four (4)  
 Type - SMIT towing bracket  
 Minimum Breaking Load [t] 520  
 Location - on each pontoon, aft and forward side

Towing Bridle

Quantity of set - Two (2)  
 Minimum Breaking Load [t] 430  
 Each set made up of chafing bridle chain

Quantity - Two (2)  
 Length [m] 9  
 MBL [t] 460

Long bridle wires

Quantity - Two (2)  
 Length [m] 35  
 MBL [t] 460

Long main towing wire

Quantity - One (1)  
 Length [m] 40  
 MBL [t] 430

Flounder plate

Quantity - One (1)

Towing retrieval wire

Quantity - One (1) + 1  
 Length [m] 70 (130)  
 MBL [t] 50

Handling over rope

Quantity - Two (2)  
 Length [m] 30  
 MBL [t] 20

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Towing Retrieving Winches

Quantity	-	Two (2) – bridle retrieving winches
Type	-	Air driven
SWL	[t]	10
Location	-	aft and forward side
Quantity	-	Two (2) – towing wire retrieval winches
Type	-	Air driven
SWL	[t]	2.5
Location	-	aft and forward side

**A.7.8 Supply Vessel Mooring Lines**

-	Four (4) mooring brackets, one on each column, SWL of 75 t
---	--

**A.8 Positioning System**

**A.8.1 Operator Stations**

-	None
---	------

**A.8.2 Reference System**

Gyro Compass

-	Refer to H.9.2
---	----------------

Wind Sensors

-	Refer to H.8.4
---	----------------

Motion Reference Units

-	Refer to H.9.1
---	----------------

Differential Global Positioning System

-	One (1)
---	---------

Acoustic System

-	None
---	------

Acoustic Riser Angle

-	None
---	------

Electric Riser Angle

-	None
---	------

**A.9 Marine Loading Station**

The hoses are fitted with flotation modules to prevent the lines from sinking during bulk / fluid transfer.

**A.9.1 Potable Water Hoses**

Quantity of set	-	Two (2)
Size	[mm]	101.60 (4 in)
Total length of each seat	[m]	45.7 (150 ft)
Color coding	-	Yes
Connection type	-	4" CAMLOK
Flow meter	-	Refer to H.1.15
Location	-	Port side & Starboard side

**A.9.2 Drilling Water Hoses**

Quantity of set	-	Two (2)
Size	[mm]	101.60 (4in)
Total length of each seat	[m]	45.7 (150 ft)
Color coding	-	Yes
Connection type	-	4" CAMLOK
Flow meter	-	Refer to H.1.15
Location	-	Port side & Starboard side

**A.9.3 Gas Oil Hoses**

Quantity of set	-	Two (2)
Size	[mm]	101.60 (4 in)
Total length of each seat	[m]	45.7 (150 ft)
Color coding	-	Yes
Connection type	-	4" TODO
Flow meter	-	Refer to H.1.15
Location	-	Port side & Starboard side

**A.9.4 Mud Bulk Hoses**

Quantity of set	-	Two (2)
Size	[mm]	101.60 (4 in)
Total length of each seat	[m]	45.7 (150 ft)
Color coding	-	Yes
Connection type	-	4" CAMLOK
Location	-	Port side & Starboard side
Rock Catcher	-	Yes

**A.9.5 Cement Hoses**

Quantity of set	-	Two (2)
Size	[mm]	101.60 (4 in)
Total length of each seat	[m]	45.7 (150 ft)
Color coding	-	Yes
Connection type	-	4" CAMLOK
Location	-	Port side & Starboard side
Rock Catcher	-	Yes

**A.9.6 Liquid Mud Hoses**

Quantity of set	-	Two (2)
Size	[mm]	101.60 (4 in)
Total length of each seat	[m]	45.7 (150 ft)
Color coding	-	Yes
Connection type	-	4" TODO
Location	-	Port side & Starboard side

**A.9.7 Brine Hoses**

Quantity of set	-	Two (2)
Size	[mm]	101.60 (4 in)
Total length of each seat	[m]	45.7 (150 ft)
Color coding	-	Yes
Connection type	-	4" TODO
Location	-	Port side & Starboard side

**A.9.8 Brine Hoses**

Quantity of set	-	Two (2)
Size	[mm]	101.60 (4 in)
Total length of each seat	[m]	45.7 (150 ft)
Color coding	-	Yes
Connection type	-	4" TODO
Location	-	Port side & Starboard side

**A.9.9 Sludge Hoses**

Quantity of set	-	
Size	[mm]	101.60 (4 in)
Total length of each seat	[m]	45.7 (150 ft)
Color coding	-	Yes
Connection type	-	4" TODO
Flow meter	-	Refer to H.1.15
Location	-	Port side & Starboard side

**A.9.10 Sewage Hoses**

Quantity of set	-	Two (2)
Size	[mm]	101.60 (4 in)
Total length of each seat	[m]	45.7 (150 ft)
Color coding	-	Yes
Connection type	-	4" CAMLOK
Flow meter	-	Refer to H.1.15
Location	-	Port side & Starboard side

**A.10 Hose Station between Vessel and Drilling Equipment Set**

**A.10.1 Portable Water Supply**

Quantity of set	-	One (1)
Size (I.D.)	[mm]	50.8 (2 in)
Working pressure	[psi]	150
Total length of each set	[m]	54.00
Connection type		
Vessel Side	-	Hammer union fig. 200
Derrick Set Side	-	Hammer union fig. 200
Location	-	Aft side

**A.10.2 Compressed Air Supply**

Quantity of set	-	Two (2)
Size (I.D.)	[mm]	50.8 (2 in)
Working pressure	[psi]	150
Total length of each set	[m]	54.00
Connection type		
Vessel Side	-	Hammer union fig. 200
Derrick Set Side	-	Hammer union fig. 200
Location	-	Aft side

**A.10.3 Fuel Supply**

Quantity of set	-	One (1)
Size (I.D.)	[mm]	50.8 (2 in)
Working pressure	[psi]	150
Total length of each set	[m]	54.00
Connection type		
Vessel Side	-	TODO dry break
Derrick Set Side	-	TODO dry break
Location	-	Aft side

**A.10.4 Mud Supply – Low Pressure**

Quantity of set	-	One (1)
Size	[mm]	152.4 (6 in)
Working pressure	[psi]	150
Total length of each set	[m]	54.00
Connection type		
Vessel Side	-	Hammer union fig. 200
Derrick Set Side	-	Hammer union fig. 200
Location	-	Aft side

**A.10.5 Drill Water Supply**

Quantity of set	-	One (1)
Size	[mm]	102 (4 in)
Working pressure	[psi]	150
Total length of each set	[m]	54.00
Connection type		
Vessel Side	-	Hammer union fig. 200
Derrick Set Side	-	Hammer union fig. 200
Location	-	Aft side

**A.10.6 Sea Water Supply**

Quantity of set	-	Two (2)
Size	[mm]	152.4 (6 in)
Working pressure	[psi]	150
Total length of each set	[m]	54.00
Connection type		
Vessel Side	-	Hammer union fig. 200
Derrick Set Side	-	Hammer union fig. 200
Location	-	Aft side

**A.10.7 Drainage**

Quantity of set	-	One (1)
Size	[mm]	76.2 (3 in)
Working pressure	[psi]	150
Total length of each set	[m]	54.00
Connection type		
Vessel Side	-	Hammer union fig. 200
Derrick Set Side	-	Hammer union fig. 200
Location	-	Aft side

**A.10.8 Mud Return**

Quantity of set	-	One (1)
Size (I.D.)	[mm]	304.8 (12 in)
Working pressure	[psi]	150
Total length of each set	[m]	54.00
Connection type		
Vessel Side	-	12 in flange, class RTJ 300
Derrick Set Side	-	12 in flange, class RTJ 300
Location	-	Aft side

**A.10.9 Mud High Pressure**

Quantity of set	-	Two (2)
Size (I.D.)	[mm]	101.60 (4 in)
Working pressure	[psi]	7,500
Total length of each set	[m]	54.00
Connection type		
Vessel Side	-	Hammer union 5 in fig. 1002
Derrick Set Side	-	Hammer union 5 in fig. 1002
Location	-	Aft side

**A.10.10 Cement High Pressure**

Quantity of set	-	Two (2)
Size (I.D.)	[mm]	63.50 (2 ½ in)
Working pressure	[psi]	10,000
Total length of each set	[m]	54.00
Connection type		
Vessel Side	-	Hammer union 3 in fig. 1502
Derrick Set Side	-	Hammer union 3 in fig. 1502
Location	-	Aft side

**A.11 Cranes Hoists and Material Handling**

**A.11.1 Main Crane**

Quantity	-	One (1)
Make	-	Seatrax
Model	-	S12648
Location	-	Aft ship, Starboard side
Type	-	Diesel-hydraulic, King-Post pedestal crane
Boom length	[m]	61 (200 ft)
Load @ minimum radius (*)	[t @ m]	171.00 @ 13.00 (376,984 lb @ 42.65 ft)
Load @ maximum radius (*)	[t @ m]	92.00 @ 64.00 (202,500 lb @ 210 ft)
Whip line capacity	[t @ m]	27.50 @ any radius (60,500 lb @ any radius)
Alarm	-	Yes
Automatic brake	-	Yes
Safety latch on hook	-	Yes
Crown saver (limit switch)	-	Yes
Camera	-	Yes
Boom illumination	-	Yes
Standards	-	API SPEC 2C – 7 <sup>th</sup> Edition

(\*) Offboard (Platform lifts) – 2.5 m Hsig, Windspeed 18 m/sec

**A.11.2 Auxiliary Crane**

Quantity	-	One (1)
Make	-	Seatrax
Model	-	S7226
Location	-	Aft ship, port side
Type	-	Electro-hydraulic
Load @ minimum radius	[t @ m]	45.4 @ 9.00 (100,088 lb @ 29.53 ft)
Load @ maximum radius	[t @ m]	9.36 @ 50.00 (20,648 lb @ 164 ft)
Whip line capacity	[t @ m]	10.6 @ any radius (23,300 lb @ any radius)
Boom Length	[t @ m]	49 (160ft)
Alarm	-	Yes
Automatic brake	-	Yes



Safety latch on hook	-	Yes
Crown saver (limit switch)	-	Yes
Camera	-	Yes
Boom illumination	-	Yes
Standards	-	API SPEC 2C – 7 <sup>th</sup> Edition

**A.11.3 Forklift**

Quantity	-	One (1)
Type	-	Electrical
Rated capacity	[t]	2.50 (5,510 lb)

**A.11.4 Overhead / Gantry Cranes**
Sackroom overhead cranes

Make		Jiangsu Jiali Hoisting Machinery Manufacturing Co. Ltd
Model		2Tx7.5M Sack Room Overhead Bridge Crane
Quantity	-	One (1)
Rated capacity	[t]	2.0 (4,400 lb)

**A.11.5 Personnel Transfer Bridge**

Quantity	-	One (1)
Make	-	Marine Aluminium
Maximum length <sup>(1)</sup>	[m]	45.50 m
Minimum length <sup>(1)</sup>	[m]	30.50 m
Free width of gangway (inside)	[m]	1.20 m
Free height of gangway (inside)	[m]	2.10 m
Maximum lifting angle	[°]	+24.0
Maximum luffing angle	[°]	-16.5
Free rotation angle	[°]	360
Operating criteria		
Maximum wind speed	[m/s]	36.00
Normal operating length <sup>(1)</sup>	[m]	38.00 +/- 4.50 m
Ready to disconnect <sup>(1)</sup>	[m]	38.00 +/- 5.50 m
Emergency lift off <sup>(1)</sup>	[m]	38.00 +/- 7.00 m

*(1) Distance measured from the center of the pedestal to the center of the landing cone*

**A.11.6 Hoist Winches / Multi-Purpose Cranes**
Rig Floor Winches [Non Man-Riding]

Quantity	-	Two (2)
Make	-	Ingersoll Rand
Type	-	Hydraulic
Rated capacity	[t]	5 (11,000 lb)
Automatic brake	-	Yes
Overload protection	-	Yes



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Drum guard	-	Yes
Automatic spooling	-	No
<u>Rig Floor Man-Riding Winch</u>		
Quantity	-	One (2)
Make	-	Ingersoll Rand
Type	-	Pneumatic
Rated capacity	[t]	0.15 (330 lb)
Non twist wire	-	Yes
Automatic brake	-	Yes
Overload protection	-	Yes
Automatic spooling	-	No
Certified for man-riding	-	Yes
<u>Racking Board Winches</u>		
Quantity	-	Two (2)
Make	-	Ingersoll Rand
Type	-	Pneumatic
Rated capacity	[t]	1 (2,200 lb)
Remote control	-	Yes
<u>Substructure Man-Riding Winch</u>		
Quantity	-	Two (2)
Make	-	Ingersoll Rand
Type	-	Pneumatic
Rated capacity	[t]	0.15 (330 lb)
Non twist wire	-	Yes
Automatic brake	-	Yes
Overload protection	-	Yes
Automatic spooling	-	No
Certified for man-riding	-	Yes
<u>Substructure Utility Winches [Non Man-Riding]</u>		
Quantity	-	Two (2)
Make	-	Ingersoll Rand
Type	-	Pneumatic
Rated capacity	[t]	5 (11,000 lb)
Automatic brake	-	Yes
Overload protection	-	Yes
Drum guard	-	Yes
Automatic spooling	-	No

Mast Scoping Winches

Quantity	-	Two (2)
Make	-	TWG
Type	-	Hydraulic
Rated capacity	[t]	39.89 (87,949 lb)

**A.12 Helicopter Landing Deck**

Dimension	[m]	22.80 x 22.80
Perimeter safety net	-	Yes
Load capacity	[t]	15.60 (34,300 lb)
Design for helicopter type	-	Sikorsky S-92
Covered by foam fire system	-	Yes
Compliant CAP 437	-	Yes

**A.12.1 Helicopter Refueling System**

- None

**A.13 Auxiliary Equipment**

**A.13.1 Water Maker**

Quantity	-	Two (2)
Make	-	Danfoss – Sea Recovery
Type	-	Tasman Sea 60 m <sup>3</sup> T-2 Basic2
Production capacity [each]	[m <sup>3</sup> /d]	60

**A.13.2 Not Used**

**A.13.3 Welding Sets**

Quantity	-	Two (2)
Type	-	Fixed electrical welding unit – 400 A
Quantity	-	Two (2)
Type	-	Diesel driven – 400 A

**A.13.4 High Pressure Cleaner**

Quantity	-	One (1)
Working pressure	[bar]	276 (4000 psi)
Hot water	-	Yes
Steam	-	No

**A.13.5 Personnel Transfer Basket**

Quantity	-	One (1)
Make	-	BILLY PUGH
Model	-	X-871-ABS
Maximum number of passenger:	-	4 persons
Quantity	-	One (1)
Make	-	VEGA
Model	-	UNICA
Maximum number of passenger:	-	8 persons

## SECTION B - GENERAL MAST EQUIPMENT PACKAGE SPECIFICATION

The Mast and the Substructure are designed to operate on dynamic structures under the simultaneous accelerations listed below:

Operating conditions:

Vertical accelerations	[g]	0.05
Horizontal accelerations	[g]	0.15

Storm conditions:

Vertical accelerations	[g]	0.10
Horizontal accelerations	[g]	0.22

### B.1 Mast and Substructure

#### B.1.1 Mast

Make	-	Superior Derrick Service
Wind speed rating		
With full setback	[knot]	70
With empty setback	[knot]	93
Clear height	[m]	46.32 or 56.08 (152 ft) or (184 ft)
Static hook load	[t – lines]	591 - 12 (1,300,000 lb – 12 lines)
Hook load under dynamic & operating cond		
Setback emptied	[t – lines]	575 - 12 (1,267,000 lb – 12 lines)
Maximum number of lines	-	12
Vent line diameter	[mm]	200 (8 in)
Design standards	-	API SPEC 4F – 3 <sup>rd</sup> Edition

#### B.1.2 Racking Platform

Upper Racking board		
Racking	-	Manual
Racking capacity	-	197 stands of 5 7/8 in DP 7 stands of 9 1/2 in DC 7 stands of BHA
Lower Racking board		
	-	210 Stands of 10 3/4" CSG

#### B.1.3 Pipe Handling System

Off-line activity centre

The off-line activity centre is designed to spin and torque-up complete stands of drill pipes, heavy weight drill pipes and casing up to 10 3/4. The off-line activity center is made-up of:

Overhead bridge crane

Quantity	-	One (1)
Type	-	Local control
Maximum lifting capacity	[t]	5.4
Iron Roughneck	-	Refer to Section D.2.21

Mouse Hole					
Quantity	-				One (3)
Watertight	-				Yes
Shock absorber	-				Yes
Rat Hole					
	-				None
<b>B.1.4 Casing Stabbing Arm</b>					
Quantity	-				One (1)
Type	-				Mast mounted
Adjustable height above rotary	-				Yes, adequate for range II & III tubular
Tubular range (pipe OD)		[in]			2 <sup>7/8</sup> to 22
Luffing angle		[°]			90 from vertical storage position
<b>B.1.5 Substructure</b>					
Length (E-W)		[m]			23,009 (75' 5 7/8")
Width (N-S)		[m]			14,033 (46' 1/2")
Dry weight		[t]			1,460 <i>approximate value</i>
Maximum setback load		[t]			575 (1,267,000 lb)
Maximum hook load / rotary load		[t]			591 (1,300,000 lb)
Substructure combined load under dynamic & operating conditions (drilling)					
Setback load		[t]			500 (988 lb)
Hook load or rotary load		[t]			591 (1,300,000 lb)
Piping service module dry weight		[t]			TBC <i>approximate value</i>
Skidding systems					
Substructure	-				Lift & roll hydraulic system
Drill floor	-				Steel-on-steel system
<b>B.1.6 Weather Proofing</b>					
Rig floor windbreaks height		[m]			None
Racking board windbreak height		[m]			None
<b>B.1.7 Derrick TV Camera System</b>					
	-				Refer to H.11

**B.2 Drawworks and Associated Equipment**

<b>B.2.1 Drawworks</b>					
Make	-				ALTA
Type	-				AC gear driven
Power rating		[hp]			3,000
Drum grooved	-				Yes
Brake	-				Dynamic braking achieved by use of regenerative braking using AC motors as generators.
					Emergency stop brake and parking brake is achieved by means of two (2) redundant disc brakes

Drilling line diameter	[in]	1 5/8
Motors	-	Two (2)
Crown block safety device	-	KEMS System
Maximum hoisting capacities		
12 lines	[t]	590 (1,300,000 lb)
<b>B.2.2</b>	<b><u>Not Used</u></b>	
<b>B.2.3</b>	<b><u>Sand Line</u></b>	
	-	None
<b>B.2.4</b>	<b><u>Automatic Driller</u></b>	
	-	Yes
<b>B.3 Derrick Hoisting Equipment</b>		
<b>B.3.1</b>	<b><u>Crown Block</u></b>	
Make	-	Superior Derrick Services
Rated capacity	[ton]	591
Sheaves		
Quantity	-	Seven (7) sheaves, two (2) fast line sheaves (5 working sheaves)
Diameter	[in]	60
Sheave grooved for line	[in]	1 5/8
<b>B.3.2</b>	<b><u>Traveling Block</u></b>	
Make	-	Cameron
Rated capacity	[ton]	750
Sheaves		
Quantity	-	Seven (7)
Diameter	[in]	60
Sheave grooved for line	[in]	1 5/8
<b>B.3.3</b>	<b><u>Hook</u></b>	
	-	None
<b>B.3.4</b>	<b><u>Swivel</u></b>	
	-	Refer to B.4.4
<b>B.3.5</b>	<b><u>Drilling Line</u></b>	
Diameter	[in]	1 5/8
Make	-	Union
Type	-	27744 1-5/8 6x26WS-IWRC XXIP U
Original length	[m]	2,286 (7,500 ft)
Minimum breaking load	[t]	134 (296,316 lb)
Support frame for reel & cover	-	Yes
Powered support frame	-	Yes
Design standards	-	API SPEC 9A

**B.3.6 Deadline Anchor**

Make	-	Crown Oilfield Instrumentation
Maximum dead line load	[ton]	68 (150,000 lb)
Weight sensor	-	50sq in. compression type

**B.3.7 Block Guidance System**

Rated capacity (continuous torque)	[ft.lb]	62,000
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**B.3.8 Retractable Dolly**

-	No
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**B.4 Rotating System**

**B.4.1 Rotary Table**

Make	-	NOV Varco
Model	-	D-495
Maximum opening	[mm]	1257.3 (49 1/2 in)
Static Load capacity	[ton]	800
Maximum torque	[ft.lb]	18070 (24500 Nm)
Maximum speed	-	300 rpm
Independent motor	-	Yes, hydraulic
Dry pan/mud collection system	-	Yes
Rotary table safety pad	-	Yes

**B.4.2 Master Bushing / Adapter Bushing**

Master Bushing

Quantity	-	One (1)
Make	-	NOV
Type	-	Pin drive hinged master bushing
Model	-	MPCH
Insert bowls	-	Refer to G.1.7

Adapter bushing

Quantity	-	One (1)
Make	-	NOV
Type	-	49 ½ in to 37 ½ in is a split adapter bushing.

**B.4.3 Kelly Bushing**

-	None
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**B.4.4 Top Drive**

Make	-	VARCO
Type	-	AC drive
Model	-	TDS-8SA
Hoisting rated capacity	[ton]	750
Soft torque system	-	Yes

Motor		
Type	-	AC motor
Continuous rated power	[hp]	1,150
Maximum continuous	[lb.ft]	62,250
Maximum intermittent torque	[lb.ft]	95,000
Maximum speed rate	[rpm]	0 - 270
Swivel working pressure	[psi]	7,500
IBOP working pressure	[psi]	15,000
Wire line entry	-	Yes
Cooling system	-	Remote blower
Wireline adaptor (bicycle)	-	Yes
<u>Pipe handler</u>		
Model	-	PH-100
Tool-joint range [OD min. – OD max.]	[in.]	4.75 in to 8.62
Maximum breakout torque	[ft.lb]	100,000

**B.4.5 Raised backup system**

- None

**SECTION C – POWER SUPPLY SYSTEM**

**C.1 Rig Power Plant**

Number of engine room(s) - One (1)

**C.1.1 Diesel Engine**

Quantity	-	Five (5)
Make	-	Caterpillar
Model	-	3516C-HD
Maximum continuous power	[BKW]	2,350
Rotation speed	[rpm]	1,800
Equipped with spark arrestor	-	Yes

**C.1.2 Not Used**

**C.1.3 AC Generator**

Quantity	-	Five (5)
Make	-	AVK
Continuous power rating	[kVA]	2,750
Current	[A]	2,301
Power factor	-	0.8
Rotation speed	[rpm]	1,800
Frequency	[Hz]	60
Voltage	[V]	690
Number of phase	-	3



**C.1.4 VFD System**

Number of AC Drives	-	Sixteen (16)
Make	-	YASKAWA
Output	[V]	0 – 690
Voltage	[V]	690

**C.1.5 Transformer System**

Quantity	-	Two (2)
Location	-	STAD
Make	-	BEMAG
Continuous power [each]	[kVA]	5,000
Input voltage – out put voltage	[V]	690 - 690
Frequency	[Hz]	60

Quantity	-	Two (2)
Location	-	STAD
Make	-	TRASFOR
Continuous power [each]	[kVA]	3,000
Input voltage – out put voltage	[V]	690 - 480
Frequency	[Hz]	60

Quantity	-	Two (2)
Location	-	STAD
Make	-	Shunze
Continuous power [each]	[kVA]	250
Input voltage – out put voltage	[V]	480 - 480 - 208
Frequency	[Hz]	60

Quantity	-	Two (2)
Location	-	STAD
Make	-	<b>Shunze</b>
Continuous power [each]	[kVA]	150
Input voltage – out put voltage	[V]	480 - 208 - 120
Frequency	[Hz]	60

**C.1.6 Emergency Shutdown**

Abandon ship level		
Location	-	Life boat stations 1 & 2 Helideck Engine Control Room
DES equipment level		
Location	-	Personnel transfer bridge

**C.1.7 Not Used**

**C.1.8 Compressed Air System**

Rig Air System

Working pressure	[bar]	8.6	(125 psi)
Compressor			
Quantity	-	Two (2)	
Make	-	Ingersoll-Rand	
Model	-	screw compressor, water cooled	
Rated capacity	[m <sup>3</sup> /hr]	25.63	
Air dryer			
Quantity	-	two (2) – Bulk & air service	
Type	-	Desiccant	
Rated capacity	[m <sup>3</sup> /min]	1000/28.3	
Air pressure vessel			
Quantity	-	Two (2) air service system	
Capacity	[L]	2500	(88 ft <sup>3</sup> )
Quantity	-	Four (4) Control air system	
Capacity	[L]	300	(10 ft <sup>3</sup> )
Quantity	-	Three (3) Winch Receiver	
Capacity	[L]	1500	(53 ft <sup>3</sup> )
Derrick set			
Quantity	-	Two (2)	
Capacity	[L]	2725	(96 ft <sup>3</sup> )

Bulk Air System

Working pressure	[bar]	60 – reduced from main rig air
Air pressure reducing station		
Quantity	-	One

Well Test Compressor

- None

Harbor Compressor

Quantity	-	One (1)
Type	-	Screw compressor, air cooled
Rated capacity	[m <sup>3</sup> /hr]	20 (12 ft <sup>3</sup> /min)

**C.2 Vessel Emergency Generator**

Quantity	-	One (1)
Make	-	Caterpillar
Model	-	C32
Starting devices	-	Electrical driven starter on batteries Pneumatic starter
Maximum operating angle	[°]	as required by rules and regulations
Power rating	[bkW]	634
Rotation speed	[rpm]	1,800

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Frequency	[Hz]	60
Voltage	[V]	480
Number of phase	-	3
List of equipment fed	-	Four (4) ballast pumps One (1) fire water pump One (1) Sea Water Booster Pump One (1) fuel Oil Service Pump BOP control unit (electrical pump) Navigation & radio equipment UPS system Exhaust and Supply fans (mud pits, battery room) Harbour compressor Emergency lighting

**C.2.3 Emergency Batteries**

-	As required by Rules and Regulations BOP control panels (up to 24 hrs)
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**C.3 MEP Emergency Generator**

Quantity	None
----------	------

**C.4 Main Hydraulic Power Unit**

Quantity	-	One (1)
Equipment fed	-	Substructure skidding system, Rig floor skidding system, Top drive auxiliary systems, Rotary table, Rig floor catheads, Power slips, Iron roughnecks (at well center & offline activity center), Casing tongs, Casing stabbing / manipulator arm, Racking board bridge crane

**SECTION D – DRILL STRING EQUIPMENT**

**D.1 Tubulars**

**D.1.1 Kellys**

-	None
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**D.1.2 Kelly Saver-Subs**

-	Four (4)
---	----------

**D.1.3 Drill Pipes**

Drill pipe O.D.	[in]	5 7/8
Grade	-	S-135
Nominal weight	[lb/ft]	23.4
Connection type	-	GPDS55
Range	-	III (Three)
Total length	[m]	8,000 (26,240 ft)
Tool joint O.D.	[in]	7
Tool joint I.D.	[in]	4
Tapered shoulder tool joint box	[°]	18
Type of hardfacing	-	TCS Ti
Hardfacing fitted on	-	Box and Pin
Internal coating	-	TK 34XT
Type of protectors	-	Heavy duty plastic
Standards	-	API

**D.1.4 Drill Pipes Pup Joints**

Pup joint O.D.	[in]	5 7/8
Type	-	Integral
Quantity	-	One (1) for each length
Length	[ft]	20, 15, 10, 5
Tool joint O.D.	[in]	7
Pup joint I.D.	[in]	4
Internal coating	-	TK 34XT
Type of protectors	-	Heavy duty plastic

**D.1.5 Drill Pipe Casing Protectors**

- None

**D.1.6 Heavy Weight Drill Pipe**

Quantity	-	Thirty (30)
Nominal O.D.	[in]	5 7/8
Type	-	Slick
Connection type	-	GPDS55
Range	-	II
Tool joint O.D.	[in]	7
Tool joint I.D.	[in]	4
Tapered shoulder tool joint box	[°]	18
Type of hardfacing	-	TCS Ti
Hardfacing fitted on	-	Wearpad, Pin & Box tool-joint
Type of protectors	-	Heavy duty plastic

**D.1.7 Drill Collar**

Quantity	-	Fifteen (15)
Nominal O.D.	[in]	9 ½
Nominal I.D.	[in]	3
Nominal length	[ft]	31
Type	-	Spiral grooved
Connection type	-	7 5/8 Reg
Recess for slips	-	Yes
Recess for elevator	-	Yes
Stress relief pin groove	-	Yes
Boreback on box	-	Yes
Type of protectors	-	Heavy duty plastic
Quantity	-	Twenty four (24)
Nominal O.D.	[in]	8
Nominal I.D.	[in]	2 13/16
Nominal length	[ft]	31
Type	-	Spiral grooved
Connection type	-	6 5/8 Reg
Recess for slips	-	Yes
Recess for elevator	-	Yes
Stress relief pin groove	-	Yes
Boreback on box	-	Yes
Type of protectors	-	Heavy duty plastic
Quantity	-	Thirty (30)
Nominal O.D.	[in]	6 ¾
Nominal I.D.	[in]	2 13/16
Nominal length	[ft]	31
Type	-	Spiral grooved
Connection type	-	NC-50
Recess for slips	-	Yes
Recess for elevator	-	Yes
Stress relief pin groove	-	Yes
Boreback on box	-	Yes
Type of protectors	-	Heavy duty plastic

**D.1.8 Short Drill Collar**

Quantity	-	One (1) for each length
Nominal O.D.	[in]	9 ½
Nominal I.D.	[in]	3
Nominal length	[ft]	15, 10, 5
Connection type	-	7 5/8 Reg
Recess for slips	-	Yes
Recess for elevator	-	No only for 5 ft joint
Stress relief pin groove	-	Yes
Boreback on box	-	Yes
Type of protectors	-	Heavy duty plastic

Quantity	-	One (1) for each length
Nominal O.D.	[in]	8
Nominal I.D.	[in]	2 <sup>13</sup> / <sub>16</sub>
Nominal length	[ft]	10, 5
Connection type	-	6 5/8 Reg
Recess for slips	-	Yes
Recess for elevator	-	Yes
Stress relief pin groove	-	Yes
Boreback on box	-	Yes
Type of protectors	-	Heavy duty plastic

Quantity	-	One (1) for each length
Nominal O.D.	[in]	6 ¾
Nominal I.D.	[in]	2 <sup>13</sup> / <sub>16</sub>
Nominal length	[ft]	10, 5
Connection type	-	NC-50
Recess for slips	-	Yes
Recess for elevator	-	Yes
Stress relief pin groove	-	Yes
Boreback on box	-	Yes
Type of protectors	-	Heavy duty plastic

**D.1.9 Non-Magnetic Drill Collar**

-

None

**D.1.10 Core Barrel**

-

None

**D.1.11 Stabilizers**

Near Bit Stabilizers

-

None

String Stabilizers

-

None

**D.1.12 Roller Reamer**

*Near Bit Roller Reamer*

- None

*String Roller Reamer*

- None

**D.1.13 Not Used**

**D.1.14 Drilling Jar**

- None

**D.1.15 Inside BOP Valves**

Quantity

- Two (2)

Make

- M&M International

Working pressure

[psi] 10,000

Connection type

- GPDS55 box up x pin down

**D.1.16 Fast Shut Off Coupling**

- None

**D.1.17 High Pressure Circulating Head**

- None

**D.1.18 Kelly Cocks**

*Upper Kelly Cocks*

- Refer to B.4.4 for the upper Kelly cock used with the Top Drive

*Lower Kelly Cocks*

- Refer to B.4.4 for the lower Kelly cock used with the Top Drive

*Full Opening Safety Valves*

Quantity

- Two (2)

Make

- M&M International

Model

- Canister Guard

Working pressure

[psi] 10,000 psi

Connection type

- GPDS55 box up x pin down

**D.1.19 Circulation Sub**

Quantity

- One (1)

Union

- 2" 1502 Female Weco

**D.1.20 Cup Type Tester**

Quantity

- Two (2)

Connection

- 5 ½ FH

OD

[in] 9 ¼

WP

[psi] 15,000

**D.1.21 Plug Type Tester**

Quantity	-	One
OD	-	3 ½"
Quantity	-	One
OD	-	7 5/8"

**D.1.22 Drop-In Valves**

- None

**D.1.23 Bit Subs / Float Valves**

Bit Subs

Quantity	-	Two (2)
Top connection type	-	7 5/8 Reg - Box
Bottom connection type	-	7 5/8 Reg - Box
Bored for float valve	-	5F-6R
Baffle Plate	-	Yes – Two (2)
Quantity	-	Two (2)
Top connection type	-	6 5/8 Reg - Box
Bottom connection type	-	6 5/8 Reg - Box
Bored for float valve	-	5F-6R
Baffle Plate	-	Yes – Two (2)
Quantity	-	Two (2)
Top connection type	-	4 ½ IF - Box
Bottom connection type	-	4 ½ Reg - Box
Bored for float valve	-	4R
Baffle Plate	-	Yes – Two (2)

Float Valves

Quantity	-	Two (2)
Type	-	4R, type FA
Quantity	-	Two (2)
Type	-	5R, type FA
Quantity	-	Two (2)
Type	-	5F-6R, type FA
Quantity	-	Two (2)
Type	-	5F-6R, type FA

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**D.1.24 Crossover Sub**

Quantity	-	Three (3)
Top connection type	-	6-5/8" Reg. Box
Bottom connection type	-	7-5/8" Reg. FF Pin
OAL	in	48
Quantity	-	Two (2)
Top connection type	-	4-1/2" IF Box
Bottom connection type	-	6-5/8" Reg. Pin
OAL	in	48
Quantity	-	Two (2)
Top connection type	-	GPDS 55 Box
Bottom connection type	-	6-5/8" Reg. Pin
OAL	in	48
Quantity	-	One (1)
Top connection type	-	7-5/8" Reg. FF Pin
Bottom connection type	-	7-5/8" Reg. FF Pin
OAL	in	36
Quantity	-	One (1)
Top connection type	-	6-5/8" Reg. Pin
Bottom connection type	-	6-5/8" Reg. Pin
OAL	in	36
Quantity	-	Two (2)
Top connection type	-	4-1/2" IF Pin
Bottom connection type	-	4-1/2" IF Pin
OAL	in	36
Quantity	-	Two (2)
Top connection type	-	GPDS 55 Pin
Bottom connection type	-	GPDS 55 Pin
OAL	in	36
Quantity	-	Two (2)
Top connection type	-	6-5/8" Reg. Box
Bottom connection type	-	7-5/8" Reg. FF Box
OAL	in	48
Quantity	-	Two (2)
Top connection type	-	4-1/2" IF Box
Bottom connection type	-	6-5/8" Reg. Box
OAL	in	48
Quantity	-	Two (2)
Top connection type	-	GPDS 55 Box
Bottom connection type	-	6-5/8" Reg. Box
OAL	in	48

Document Number: <b>MCM-3-REF-007.2</b>	Revision: <b>0</b>	Appendices <b>0</b>	Date: <b>23-May-2017</b>	Page(s) <b>41 of 95</b>
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Document Title: <b><u>Rig General Description &amp; Equipment List – Beta</u></b>	Document Ownership: <b>MCM</b>
--	-----------------------------------

Quantity	-	Two (2)
Top connection type	-	4-1/2" IF Pin
Bottom connection type	-	6-5/8" Reg. Box
OAL	in	48
Quantity	-	Two (2)
Top connection type	-	GPDS 55 Pin
Bottom connection type	-	6-5/8" Reg. Box
OAL	in	48
Quantity	-	One (1)
Top connection type	-	6-5/8" Reg. Pin
Bottom connection type	-	7-5/8" Reg. FF Pin
OAL	in	48
Quantity	-	One (1)
Top connection type	-	6-5/8" Reg. Pin
Bottom connection type	-	7-5/8" Reg. FF Box
OAL	in	48
Quantity	-	Two (2)
Top connection type	-	6-5/8" Reg. Pin
Bottom connection type	-	4-1/2" IF Box
OAL	in	48
Quantity	-	Two (2)
Top connection type	-	6-5/8" Reg. Pin
Bottom connection type	-	GPDS 55 Box
OAL	in	48
Quantity	-	Three (3)
Top connection type	-	4-1/2" Reg. Pin
Bottom connection type	-	6-5/8" Reg. Pin
OAL	in	48
Quantity	-	Two (2)
Top connection type	-	4-1/2" IF Box
Bottom connection type	-	4-1/2" IF Box
OAL	in	36
Quantity	-	Two (2)
Top connection type	-	GPDS 55 Box
Bottom connection type	-	GPDS 55 Box
OAL	in	36
Quantity	-	Two (2)
Top connection type	-	GPDS 55 Pin
Bottom connection type	-	4-1/2" IF Box
OAL	in	48

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Document Title: <b><u>Rig General Description &amp; Equipment List – Beta</u></b>	Document Ownership: <b>MCM</b>
--	-----------------------------------

Quantity	-	Two (2)
Top connection type	-	4-1/2" IF Pin
Bottom connection type	-	GPDS 55 Box
OAL	in	48
Quantity	-	Three (3)
Top connection type	-	3-1/2" IF Pin
Bottom connection type	-	4-1/2" IF Box
OAL	in	48
Quantity	-	Three (3)
Top connection type	-	3-1/2" IF Pin
Bottom connection type	-	GPDS 55 Box
OAL	in	48
Quantity	-	Two (2)
Top connection type	-	3-1/2" IF Box
Bottom connection type	-	4-1/2" IF Pin
OAL	in	48
Quantity	-	Two (2)
Top connection type	-	3-1/2" IF Box
Bottom connection type	-	GPDS 55 Pin
OAL	in	48
Quantity	-	Two (2)
Top connection type	-	4-1/2" Reg.Std.Pin
Bottom connection type	-	4-1/2" IF Box
OAL	in	48
Quantity	-	Two (2)
Top connection type	-	3-1/2" Reg. Std. Pin
Bottom connection type	-	4-1/2" IF Box
OAL	in	48
Quantity	-	Two (2)
Top connection type	-	3-1/2" Reg. Std. Pin
Bottom connection type	-	GPDS 55 Box
OAL	in	48
Quantity	-	Two (2)
Top connection type	-	3-1/2" IF Box
Bottom connection type	-	3-1/2" Reg. Std. Box
OAL	in	36
Quantity	-	Two (2)
Top connection type	-	4-1/2" IF Pin
Bottom connection type	-	4-1/2" Reg. Std. Pin
OAL	in	36

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Document Title: <b><u>Rig General Description &amp; Equipment List – Beta</u></b>	Document Ownership: <b>MCM</b>
--	-----------------------------------

Quantity	-	Two (2)
Top connection type	-	GPDS 55 Pin
Bottom connection type	-	4-1/2" Reg. Std. Pin
OAL	in	36
Quantity	-	Two (2)
Top connection type	-	3-1/2" IF Pin
Bottom connection type	-	3-1/2" Reg. Std. Pin
OAL	in	36
Quantity	-	Two (2)
Top connection type	-	3-1/2" IF Box
Bottom connection type	-	3-1/2" Reg. Std. Pin
OAL	in	36
Quantity	-	Two (2)
Top connection type	-	4-1/2" EUE 8rd.B
Bottom connection type	-	4-1/2" IF Pin
OAL	in	24
Quantity	-	Two (2)
Top connection type	-	4-1/2" EUE 8rd.B
Bottom connection type	-	GPDS 55 Pin
OAL	in	24
Quantity	-	Two (2)
Top connection type	-	GPDS 55 Box
Bottom connection type	-	4" IF Pin
OAL	in	36
Quantity	-	Two (2)
Top connection type	-	GPDS 55 Box
Bottom connection type	-	4-1/2" IF Pin
OAL	in	36
Quantity	-	Two (2)
Top connection type	-	GPDS 55 Box
Bottom connection type	-	6-5/8" Reg. Pin
OAL	in	48
Quantity	-	Two (2)
Top connection type	-	GPDS 55 Box
Bottom connection type	-	7-5/8" Reg. FF P
OAL	in	48

**D.1.25 Drilling Bumper Sub**

- None

**D.1.26 Hole Opener**

- None

Document Number: <b>MCM-3-REF-007.2</b>	Revision: <b>0</b>	Appendices <b>0</b>	Date: <b>23-May-2017</b>	Page(s) <b>44 of 95</b>
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**D.1.27 Under Reamer**

- None

**D.2 Handling Tools**

**D.2.1 Drill Pipe Elevator**

Quantity	-	One (1)
Drill pipe size	[in]	2 3/8" – 9 5/8"
Make	-	Blohm & Voss
Type	-	Hydraulic operated
Model	-	VES-SD-500
Rated capacity	[ton]	500
Bushings:		
Drill pipe size	[in]	4 ½ EU, 18 DEG Shoulder
Rated capacity	[ton]	500
Max Tool Joint OD	[in]	6 5/8
Drill pipe size	[in]	5" IEU, 18 DEG Shoulder
Rated capacity	[ton]	500
Max Tool Joint OD	[in]	6 5/8
Drill pipe size	[in]	5 ½" IEU, 18 DEG Shoulder
Rated capacity	[ton]	500
Max Tool Joint OD	[in]	7 ½
Drill pipe size	[in]	5 7/8" IEU, 18 DEG Shoulder
Rated capacity	[ton]	500
Max Tool Joint OD	[in]	7
Quantity	-	One (1)
Drill pipe size	[in]	2 7/8" – 7"
Make	-	Blohm & Voss
Type	-	Manual operated
Model	-	VES-CL-500
Rated capacity	[ton]	500
Bushings:		
Drill pipe size	[in]	4 ½ EU, 18 DEG Shoulder
Rated capacity	[ton]	500
Max Tool Joint OD	[in]	6 5/8
Drill pipe size	[in]	5" IEU, 18 DEG Shoulder
Rated capacity	[ton]	500
Max Tool Joint OD	[in]	6 5/8
Drill pipe size	[in]	5 ½" IEU, 18 DEG Shoulder
Rated capacity	[ton]	500
Max Tool Joint OD	[in]	7 ½

Drill pipe size	[in]	5 7/8" IEU, 18 DEG Shoulder
Rated capacity	[ton]	500
Max Tool Joint OD	[in]	7
Quantity	-	One (1)
Drill pipe size	[in]	5" – 5 7/8"
Make	-	Blohm & Voss
Type	-	Center Latch Slip Type Single joint Elevator
Model	-	SJ – 3/1
Rated capacity	[ton]	3
Bushings:		
Drill pipe size	[in]	5", 18 DEG Shoulder
Rated capacity	[ton]	3
Drill pipe size	[in]	5 1/2", 18 DEG Shoulder
Rated capacity	[ton]	3
Drill pipe size	[in]	5 7/8", 18 DEG Shoulder
Rated capacity	[ton]	3
<b>D.2.2 <u>Drill Pipe Lifting Plug</u></b>	-	None
<b>D.2.3 <u>Tubing Elevator</u></b>	-	None
<b>D.2.4 <u>Drill Pipe Hand Slips</u></b>	-	Two (2)
Quantity	-	Two (2)
Drill pipe size	[in]	5 7/8
Make	-	Blohm & Voss
Model	-	LRS
Quantity	-	Two (2)
Drill pipe size	[in]	5 1/2
Make	-	Blohm & Voss
Model	-	LRS
Quantity	-	Two (2)
Drill pipe size	[in]	5
Make	-	Blohm & Voss
Model	-	LRS
<b>D.2.5 <u>Power Slips</u></b>	-	One (1)
Quantity	-	One (1)
Tubular range (Min. – Max.)	[in]	2 3/8 to 7
Type	-	Air Operated Power Slip
Make	-	Blohm & Voss

Document Title: <b><u>Rig General Description &amp; Equipment List – Beta</u></b>	Document Ownership: <b>MCM</b>
--	-----------------------------------

Quantity	-	One (1)
Tubular range (Min. – Max.)	[in]	2 3/8 to 22
Type	-	Hydraulic power slip for running casing, drill pipes, drill collar and tubing
Rated capacity	[ton]	750
Make	-	Blohm & Voss
Model	-	PS 750
Slip inserts		

Casing	[in]	20
Rated capacity	[ton]	750
Casing	[in]	14
Rated capacity	[ton]	750
Casing	[in]	10 3/4
Rated capacity	[ton]	500
Casing	[in]	7
Rated capacity	[ton]	500
Casing	[in]	6 5/8
Rated capacity	[ton]	500
Drill Collars	[in]	9 1/2
Rated capacity	[ton]	150
Drill Collars	[in]	8
Rated capacity	[ton]	150
Drill Collars	[in]	6 3/4
Rated capacity	[ton]	150
Drill Pipes	[in]	5 7/8
Rated capacity	[ton]	500
Drill Pipes	[in]	5 1/2
Rated capacity	[ton]	750
Drill Pipes	[in]	5
Rated capacity	[ton]	750

To fit into rotary table adapter - 49 1/2

**D.2.6 Drill Collar Slips**

Quantity	-	Two (2)
Make	-	Blohm & Voss
Tubular size	[in]	9 1/2 - 8
Model	-	DCL
Quantity	-	Two (2)
Make	-	Blohm & Voss
Tubular size	[in]	7 – 5 1/2
Model	-	DCM

**D.2.7 Drill Collar Safety Clamp**

Quantity	-	One (1)
Make	-	Blohm & Voss
Model	-	Type “C”
Tubular range (Max. – Min.)	[in]	19 ½ - 22
Quantity	-	One (1)
Make	-	Blohm & Voss
Model	-	Type “C”
Tubular range (Max. – Min.)	[in]	9 ½ - 10 5/8
Quantity	-	One (1)
Make	-	Blohm & Voss
Model	-	Type “C”
Tubular range (Max. – Min.)	[in]	8 ½ - 9 5/8
Quantity	-	One (1)
Make	-	Blohm & Voss
Model	-	Type “C”
Tubular range (Max. – Min.)	[in]	7 ½ - 8 5/8

**D.2.8 Tubing Spider**

None

**D.2.9 Tubing Slip**

- None

**D.2.10 Drill Collar Lifting Sub**

Quantity	-	Two (2)
Drill collar O.D.	[in]	9 ½
Connection type	-	7 5/8 Reg pin
Quantity	-	Two (2)
Drill collar O.D.	[in]	8
Connection type	-	6 5/8 Reg pin
Quantity	-	Two (2)
Drill collar O.D.	[in]	6 ¾
Connection type	-	NC-50 pin



**D.2.11 Drill Collar Lifting Plug**

Quantity	-	Two (2)
Drill collar size	[in]	9 ½"
Make	-	Blohm & Voss
Type	-	SDL 150/2
Model	-	Side Door Elevator
Rated capacity	[ton]	150
Quantity	-	Two (2)
Drill collar size	[in]	8"
Make	-	Blohm & Voss
Type	-	SDL 150/1
Model	-	Side Door Elevator
Rated capacity	[ton]	150
Quantity	-	Two (2)
Drill collar size	[in]	6 ¾"
Make	-	Blohm & Voss
Type	-	SDL 150/1
Model	-	Side Door Elevator
Rated capacity	[ton]	150

**D.2.12 Tricones Bit Breaker / Tricone Bit Gauge**

Bit size	[in]	26
Bit breaker – Quantity	-	One (1)
Bit Gauge – Quantity	-	One (1)
Bit size	[in]	17 ½
Bit breaker – Quantity	-	One (1)
Bit Gauge – Quantity	-	One (1)
Bit size	[in]	16
Bit breaker – Quantity	-	One (1)
Bit Gauge – Quantity	-	One (1)
Bit size	[in]	14 ¾
Bit breaker – Quantity	-	One (1)
Bit Gauge – Quantity	-	One (1)
Bit size	[in]	12 ¼
Bit breaker – Quantity	-	One (1)
Bit Gauge – Quantity	-	One (1)
Bit size	[in]	9
Bit breaker – Quantity	-	One (1)
Bit Gauge – Quantity	-	One (1)
Bit size	[in]	8 ½
Bit breaker – Quantity	-	One (1)
Bit Gauge – Quantity	-	One (1)

Bit size	[in]	6 1/8
Bit Gauge – Quantity	-	One (1)
Bit size	[in]	6
Bit Gauge – Quantity	-	One (1)
Bit size	[in]	5 7/8
Bit Gauge – Quantity	-	One (1)
<b>D.2.13 <u>Elevator Links</u></b>		
Quantity of set	-	One (1)
Size	[in]	3 ½
Length	[in]	216
Rated capacity	[ton]	500
Quantity of set	-	One (1)
Size	[in]	3 ½
Length	[in]	132
Rated capacity	[ton]	500
Quantity of set	-	One (1)
Size	[in]	2 ¾
Length	[in]	216
Rated capacity	[ton]	350
<b>D.2.14 <u>Kelly Spinner</u></b>		
	-	None
<b>D.2.15 <u>Drill Pipe Spinner</u></b>		
Quantity	-	One (1)
Model	-	Grayspin Mark 10
Tubular range	[in]	7 - 3 ½
<b>D.2.16 <u>Mud Saver Bucket</u></b>		
Quantity	-	One (1)
Model	-	Mud guard MG-800
Drill pipe range	[in]	6 5/8 – 2 3/8
<b>D.2.17 <u>Hydraulic Cathead</u></b>		
Quantity	-	Two (2)
Make	-	Texas International Oilfield Tools Ltd
Maximum line pull	[lb]	35343
<b>D.2.18 <u>Rotary Tong</u></b>		
Quantity	-	Two (2)
Make	-	Blohm & Voss
Model	-	BV-100
Lug jaws		
Tubular range	[in]	18 5/8 - 21
Torque rating	[ft.lb]	50,000



Document Title: <b><u>Rig General Description &amp; Equipment List – Beta</u></b>	Document Ownership: <b>MCM</b>
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Tubular range	[in]	12 - 15
Torque rating	[ft.lb]	100,000
Tubular range	[in]	8 ½ - 12
Torque rating	[ft.lb]	100,000
Tubular range	[in]	8 ½ - 12
Torque rating	[ft.lb]	100,000
Tubular range	[in]	4 – 8 ½
Torque rating	[ft.lb]	100,000
Quantity	-	Two (2)
Make	-	Blohm & Voss
Model	-	WRT-55
Lug jaws		
Tubular range	[in]	14 3/8 - 11 ½
Torque rating	[ft.lb]	55,000
Tubular range	[in]	11 ½ - 8
Torque rating	[ft.lb]	55,000
Tubular range	[in]	8 ¼ - 3 ½
Torque rating	[ft.lb]	55,000
<b>D.2.19 <u>Manual Tubing Tong</u></b>		
	-	None
<b>D.2.20 <u>Power Tubing Tong</u></b>		
	-	None
<b>D.2.21 <u>Iron Roughneck</u></b>		
Well center		
Model	-	WR-120 or equivalent
Tubular range (Min. – Max.)	[in]	3 ½ - 10
Maximum make-up torque	[ft.lb]	100,000
Maximum break-out torque	[ft.lb]	120,000
Off-line activity center		
Model	-	WR-80 or equivalent
Tubular range (Min. – Max.)	[in]	2 7/8 - 10
Maximum make-up torque	[ft.lb]	60,000
Maximum break-out torque	[ft.lb]	80,000

### D.3 Fishing Equipment

#### D.3.1 Overshot

Quantity	-	One (1)
Make	-	Bowen (NOV)
Type	-	A
Series	-	150
Overshot O.D.	[in]	11 ¼
Overshot standard guide	-	Yes
Overshot special long guide	-	Yes
Extension sub length	[in]	36 (One), 42 (One)
Flush cutlip guide	-	Yes
Spiral grapple & grapple control	[in]	9 5/8, 9 ½, 9 3/8, 9 ¼ - Two (2) of each size
Basket grapple & mill control	[in]	8, 7 7/8, 7 ¾, 7 5/8, 7, 6 ¾, 6 5/8, 6 ½, 6 3/8, 6 ¼, 5 7/8, 5 3/8, 5, 4 7/8 – Two (2) of each size
Mill Extension for OD	[in]	6 3/8, 5 7/8, 5 – One (1) each size
Type “C” Mill Guide for OD	[in]	6 3/8, 5 7/8, 5 – One (1) each size
Basket Mill Control Packer	[in]	8, 7 7/8, 7 ¾, 7 5/8, 7, 6 ¾, 6 5/8, 6 ½, 6 3/8, 6 ¼, 5 7/8, 5 3/8, 5, 4 7/8 – Two (2) of each size
Top sub connection type	-	6 5/8 Reg box up top sub
Quantity	-	One (1)
Make	-	Bowen (NOV)
Type	-	A
Series	-	150
Overshot O.D.	[in]	9 5/8
Overshot standard guide	-	Yes
Extension sub length	[in]	42, 60
Oversize cutlip guides O.D.	[in]	21, 15, 11
Wall hook Guide	-	Yes
Spiral grapple & grapple control	[in]	8, 7 7/8, 7 ¾, 7 5/8, 7 ½ – Two (2) of each size
Basket grapple & mill control	[in]	6 ¾, 6 5/8, 6 ½, 6 3/8, 6 ¼, 5, 4 7/8 – Two (2) of each size
Basket Mill Control Packer	[in]	6 ¾, 6 5/8, 6 ½, 6 3/8, 6 ¼, 5, 4 7/8 – Two (2) of each size
Top sub connection type	-	6 5/8” Reg box up top sub

Document Title: <b><u>Rig General Description &amp; Equipment List – Beta</u></b>	Document Ownership: <b>MCM</b>
--	-----------------------------------

Quantity	-	One (1)
Make	-	Bowen (NOV)
Type	-	A
Series	-	150
Overshot O.D.	[in]	8 1/8
Overshot standard guide	-	Yes
Extension sub length	[in]	42, 36
Oversize cutlip guides O.D.	[in]	15, 11
Wall hook Guide	-	Yes
Spiral grapple & grapple control	[in]	6 3/4, 6 5/8, 6 1/2, 6 3/8, 6 1/4, – Two (2) of each size
Basket grapple & mill control	[in]	6 1/8, 5, 4 7/8, 4 3/4, 4 5/8, 4 1/2, 4 3/8, 4 1/4, 4 1/8, 3 3/4, 3 1/2, 3 3/8 – Two (2) of each size
Basket Mill Control Packer	[in]	6 1/8, 5, 4 7/8, 4 3/4, 4 5/8, 4 1/2, 4 3/8, 4 1/4, 4 1/8, 3 3/4, 3 1/2, 3 3/8 – Two (2) of each size
Type “C” Mill Guide for OD	[in]	5 – One (1)
Top sub connection type	-	4 1/2 IF box up top sub

**D.3.2 Hydraulic Fishing Jar**

Quantity	-	One (1)
Make	-	NOV
Type	-	Z
Body O.D.	[in]	7 3/4
Minimum I.D.	[in]	3 1/16
Connection type	-	6 5/8 Reg pin x box
Quantity	-	One (1)
Make	-	NOV
Type	-	Z
Body O.D.	[in]	6 3/4
Minimum I.D.	[in]	2 3/8
Connection type	-	4 1/2 IF pin x box

**D.3.3 Jar Intensifier**

Quantity	-	One (1)
Make	-	NOV
Body O.D.	[in]	7 3/4
Minimum I.D.	[in]	3 1/16
Connection type	-	6 5/8 Reg pin x box
Quantity	-	One (1)
Make	-	NOV
Body O.D.	[in]	6 3/4
Minimum I.D.	[in]	2 3/8
Connection type	-	4 1/2 IF pin x box

**D.3.4 Surface Jar**

- None

**D.3.5 Fishing Bumper Sub**

Quantity	-	One (1)
Make	-	NOV
Body O.D.	[in]	7 ¾
Minimum I.D.	[in]	3 ½
Stroke	[in]	60
Connection type	-	6 5/8 Reg pin x box
Quantity	-	One (1)
Make	-	NOV
Body O.D.	[in]	6 ¾
Minimum I.D.	[in]	2 ¾
Stroke	[in]	60
Connection type	-	4 ½ IF pin x box

**D.3.6 Safety Joint**

Quantity	-	One (1)
Make	-	NOV
Body O.D.	[in]	7 ¾
Minimum I.D.	[in]	3 ½
Connection type	-	6 5/8 Reg pin x box
Quantity	-	One (1)
Make	-	NOV
Body O.D.	[in]	6 ¾
Minimum I.D.	[in]	3 ¾
Connection type	-	4 ½ IF pin x box

**D.3.7 Junk Basket (Reverse Circulation)**

Quantity	-	One (1)
Make	-	Bowen <b>(NOV)</b>
Body O.D.	[in]	11 ¾
Connection type	-	6 5/8 Reg box up top sub
Junk Catcher Assembly	-	Yes
Mill shoes	-	Type 'A', Type 'B', Type 'C'
Quantity	-	One (1)
Make	-	Bowen <b>(NOV)</b>
Body O.D.	[in]	8 ¼
Connection type	-	4 ½ IF box up top sub
Junk Catcher Assembly	-	Yes
Mill shoes	-	Type 'A', Type 'B', Type 'C'

Quantity	-	One (1)
Make	-	Bowen ( <b>NOV</b> )
Body O.D.	[in]	6 <sup>5</sup> / <sub>8</sub>
Connection type	-	3 ½ IF box up top sub
Junk Catcher Assembly	-	Yes
Mill shoes	-	Type 'A', Type 'B', Type 'C'
Junk Basket (Kangaroo style)		
Quantity	-	One (1)
Make	-	Logan
Body O.D.	[in]	9 <sup>5</sup> / <sub>8</sub>
Connection type	-	6 <sup>5</sup> / <sub>8</sub> Reg box up
Junk Pouches	-	Three (3)
Quantity	-	One (1)
Make	-	<b>Logan</b>
Body O.D.	[in]	7
Connection type	-	4 ½ IF box up
Junk Pouches	-	Three (3)
Quantity	-	One (1)
Make	-	Logan
Body O.D.	[in]	5 ½
Connection type	-	3 ½ IF box up
Junk Pouches	-	Three (3)
<b>D.3.8 <u>Junk Sub</u></b>		
Quantity	-	One (1)
Make	-	NOV
Type	-	Standard
O.D. of Body (Top connection)	[in]	9 <sup>5</sup> / <sub>8</sub>
I.D. of cup	[in]	8 <sup>17</sup> / <sub>32</sub>
Diameter of bore	[in]	3 ½
Connection type	-	6 <sup>5</sup> / <sub>8</sub> Reg pin top x box down
Quantity	-	One (1)
Make	-	NOV
Type	-	Standard
O.D. of Body (Top connection)	[in]	6 <sup>5</sup> / <sub>8</sub>
I.D. of cup	[in]	5 <sup>15</sup> / <sub>16</sub>
Diameter of bore	[in]	2 ¼
Connection type	-	4 ½ Reg pin top x box down
<b>D.3.9 <u>Milling Tool</u></b>		
	-	None

**D.3.10 Magnet Fishing Tool**

Quantity	-	One (1)
Make	-	NOV
Body O.D.	[in]	10 ½
Connection type	-	6 <sup>5/8</sup> Reg pin
With wire line adapter	-	None
Quantity	-	One (1)
Make	-	NOV
Body O.D.	[in]	7
Connection type	-	4 ½ Reg pin
With wire line adapter	-	None

**D.3.11 Taper Tap**

Quantity	-	One (1)
Make	-	Logan
Body O.D.	[in]	7 ¾
Non-fluted wickers	[in]	3 – 4 ¾
Connection type	-	6 <sup>5/8</sup> Reg Box top connection
Quantity	-	One (1)
Make	-	Logan
Body O.D.	[in]	6 1/8
Non-fluted wickers	[in]	3 ¼ – 4 ¾
Connection type	-	4 ½ IF Box top connection

**D.3.12 Die Collar**

- None

**D.3.13 Impression Block**

Quantity	-	One (1)
Make	-	<b>NOV</b>
Size (OD of lead)	[in]	11 ½
Connection type	-	6 <sup>5/8</sup> Reg - Pin
Quantity	-	One (1)
Make	-	Logan
Size (OD of lead)	[in]	8
Connection type	-	4 ½ Reg – Pin

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## SECTION E – WELL CONTROL

### E.1 Diverter

#### E.1.1 Diverter

- None

#### E.1.2 Diverter Flow Lines

- None

#### E.1.3 Diverter Control Panel

- None

#### E.1.4 Adapter Flange

- None

### E.2 Blowout Preventer Stack N°1

 All appropriate components are H<sub>2</sub>S rated - Yes

#### E.2.1 Ram Preventer

Quantity - One (1)

Bore size [in] 18 3/4

Working pressure [psi] 10,000

Make - Church Energy

Model - Type 50

Type - Single

Locking system - Hydraulic Wedgelocks

Top connection type - Studded – Ring number BX 164

Bottom connection type - Flange 6BX – Ring number BX 164

Side outlet

Quantity - Two (2)

Size [in] 4 1/16 10M

Connection type - Flange 6BX – Ring number BX 155

Bonnet type - Standard bore

Shear ram boosters - No

Quantity - One (1)

Bore size [in] 18 3/4

Working pressure [psi] 10,000

Make - Church Energy

Model - Type 50

Type - Double

Locking system - Hydraulic Wedgelocks

Top connection type - Studded – Ring number BX 164

Bottom connection type - Studded – Ring number BX 164

Side outlet		
Quantity	-	Four (4)
Size	[in]	4 1/16 10M
Connection type	-	Flange 6BX – Ring number BX 155
Bonnet type	-	Standard bonnet upper cavity Large bore bonnet lower cavity
Shear ram boosters	-	No

**Sets of Rams**

Type	-	Shear Blind Rams
Quantity	-	Three (3)
Type	-	Variable Bore Rams
Quantity	-	Three (3)
Size	[in]	7 5/8 to 3 1/2
Type	-	Pipe Rams
Quantity	-	One (1)
Size	[in]	5
Type	-	Pipe Rams
Quantity	-	One (1)
Size	[in]	5 1/2
Type	-	Pipe Rams
Quantity	-	Two (2)
Size	[in]	5 7/8
Type	-	Pipe Rams
Quantity	-	One (1)
Size	[in]	6 5/8
Type	-	Pipe Rams
Quantity	-	One (1)
Size	[in]	7
Type	-	Pipe Rams
Quantity	-	One (1)
Size	[in]	10 3/4
Type	-	Pipe Rams
Quantity	-	One (1)
Size	[in]	14

**E.2.2 Rams Configuration**

Top rams	-	VBR
Middle rams	-	Blind shear rams
Lower rams	-	VBR

**E.2.3 Annular Preventer**

Size	[in]	18 ¾
Working pressure	[psi]	5,000
Make	-	Church Energy
Model	-	Type 52
Top connection		
Type	-	Studded 6BX – Ring groove BX 163
Working Pressure	[psi]	5,000
Bottom connection		
Type	-	Flange 6BX – Ring number BX 164
Working Pressure	[psi]	10,000
Fitted with stripping bottle	-	Yes

**E.2.4 Kill Line Valves**

No. of side outlet(s)	-	Two (2)
Quantity of valve on each outlet(s)	-	Two (2)
Make	-	Church Energy
Type	-	HCR – hydraulic operated gate valve
Model	-	Type 47
Bore size	[in]	3 1/8
Working pressure	[psi]	5,000
Connection type	-	Flange 6B– Ring number RX 35
Quantity of adaptors on each outlet(s)	-	One (1)
Type	-	Studded Cross
Bore size	[in]	(2) 4 1/16 10M x (2) 3 1/8 5M
Working pressure	[psi]	5,000

**E.2.5 Choke Line Valves**

No. of side outlet(s)	-	One (1)
Quantity of valve on each outlet(s)	-	Two (2)
Make	-	Church Energy
Type	-	HCR – hydraulic operated gate valve
Model	-	Type 47
Bore size	[in]	3 1/8
Working pressure	[psi]	5,000
Connection type	-	Flange 6B– Ring number RX 35
Quantity of adaptors on each outlet(s)	-	One (1)
Type	-	Studded Cross
Bore size	[in]	(2) 4 1/16 10M x (2) 3 1/8 5M
Working pressure	[psi]	5,000

**E.3 Hydraulic Quick Type Connector**

Quantity	-	One (1)
Type	-	Hydraulic RBC Connector
Working pressure	[psi]	5,000
Make	-	Dril-Quip
Top connection type		
Type	-	Flange 6BX, 18 3/4" – Ring number BX 164
Working Pressure	[psi]	10,000
Bottom connection type		
Type	-	RBC, 18 3/4" min ID – Ring number DX-1
Working Pressure	[psi]	5,000

**E.4 Not Used**
**E.5 BOP Control System**
**E.5.1 BOP Hydraulic Power Unit**

Make	-	Axon Pressure Products
Location		Substructure
Design standards	-	API RP 16D – 2 <sup>nd</sup> Edition

**E.5.2 Driller's Control Panel**

Make	-	Axon Pressure Products
BOP functions	-	All

**E.5.3 Remote's Control Panel**

Make	-	Axon Pressure Products
Locations	-	Drillers Cabin, OIM's office, PTB
BOP functions	-	All

**E.6 Choke Manifold**

All appropriate components are H <sub>2</sub> S rated	-	Yes
Make	-	Axon Pressure Products
Minimum I.D. (except choke valves)	[in]	3 1/16
Working pressure	[psi]	10,000
Fixed choke	-	None
Manual adjustable choke		
Quantity	-	One (1)
Make	-	Church Energy
Model	-	Type 31

Remote operated choke		
Quantity	-	Two (2)
Make	-	Mi Swaco
Model	-	E-Choke
Glycol injection	-	Yes
Remote control panel	-	Refer to H.1.14
Instrumentation	-	Refer to H.3

**E.7 FLEXIBLE CHOKE & KILL LINES (BOP To MANIFOLD)**

**E.7.1 Flexible Choke Line**

Quantity	-	One (1)
Make	-	Contitech
Type	-	Bonded
I.D.	[in]	3
Working pressure	[psi]	5,000
H <sub>2</sub> S service	-	Yes
Length	[ft]	44
End connection A	-	Flange 6BX, 3 1/8" 5M – ring groove RX 35
End connection B	-	Flange 6BX, 3 1/16 10M – ring groove BX154
Design standards	-	API SPEC 6A

**E.7.2 Flexible Kill Line**

Quantity	-	One (1)
Make	-	Contitech
Type	-	Bonded
I.D.	[in]	3
Working pressure	[psi]	5,000
H <sub>2</sub> S service	-	Yes
Length	[ft]	44
End connection A	-	Flange 6BX, 3 1/8" 5M – ring groove RX 35
End connection B	-	Flange 6BX, 3 1/16" 10M – ring grove BX 154
Design standards	-	API SPEC 6A

**E.8 Flexible BOP / Diverter Control Hoses**

Quantity	-	As required
Fire resistant	-	Yes

**E.9 BOP Testing Equipment**

**E.9.1 Hydraulic BOP Test Pump**

Quantity	-	One (1)
Pressure rating	[psi]	10,000
Chart recorder	-	Yes

**E.9.2 BOP Test Stump**

- None

**E.10 BOP Handling**

**E.10.1 BOP Hoist System**

Make	-	Ingersoll-Rand
Quantity of hoist	-	Four (4)
Number of lift points on BOP	-	Four (4) using lifting hook
System safe working load	[t]	120

**E.10.2 Not Used**

**E.11 Risers / Spools / Adapters**

**E.11.1 Risers**

- None

**E.11.2 Spools**

- To be advised

**E.11.3 Adapter Spools**

- To be advised

**E.11.4 Double Studded Adapters**

- None

**E.11.5 Mud Cross**

Quantity	-	One (1)
Top connection type	-	Flange 18 ¾ 10M – Ring number BX 164
Bottom connection type	-	Flange 18 ¾ 10M – Ring number BX 164
Side outlet		
Quantity	-	Two (2)
Size	[in]	4 1/16 10M
Connection type	-	Flange 6B – Ring number BX 155

FOR INFORMATION ONLY

**SECTION F – MUD SYSTEM / BULK SYSTEM**

**F.1 High Pressure Mud System – Transfer System**

**F.1.1 Mud Pumps**

Quantity	-	Three (3)
Make	-	<b>Cameron</b>
Model	-	Triplex mud pump – 2,200 hp
Motors		
Quantity	-	Two (2)
Type	-	Electric AC motor
Input rating	[hp]	1,100
Drive system	-	Belt
Maximum working pressure	[psi]	7,500
Suction pulsation dampener	-	Yes
Discharge pulsation dampener	-	Yes
Reset relief valve	-	Yes
Suction strainer	-	Yes
Discharge strainer	-	Yes
Liner sizes	[in]	9, 8 ½, 8, 7 ½, 7, 6 ½, 6, 5 ½ & 5
Supercharging pump		
Quantity	-	Three (3)
Make	-	Forum
Model	-	Centrifugal 8 x 6
Motor	[hp]	100

**F.1.2 Transfer / Mixing Pumps**

Transfer Pumps

Quantity	-	Two (2)
Make	-	Forum
Type	-	Centrifugal
Motor	[hp]	125

Mixing Pumps

Quantity	-	Two (2)
Make	-	Forum
Type	-	Centrifugal pump 8 x 6
Motor	[hp]	125

**F.1.3 Not Used**

**F.1.4 Standpipe And Cement Manifolds**

Standpipe Manifold

Working pressure	[psi]	7,500
Standpipe I.D.	[in]	4
H type	-	Yes

Cement Manifold

Working pressure	[psi]	10,000
Standpipe I.D.	[in]	3
H type	-	Yes

Acid / Well Service Manifold

Working pressure	[psi]	5,000
Standpipe I.D.	[in]	3
H type	-	Yes

**F.1.5 Rotary Hoses**

Quantity	-	Two (2)
Working pressure	[psi]	7,500
I.D.	[in]	4
Length	[ft]	20 + 85
Snubbing lines	-	Yes

**F.1.6 Cement Hoses**

Quantity	-	One (1)
Working pressure	[psi]	10,000
I.D.	[in]	2 ½
Length	[ft]	17 ft
Snubbing lines	-	Yes

**F.1.7 Chiksan Hoses**

Chiksan Steel Hose

Quantity	-	Seven (7)
Type	-	Swivel integ loop
Working pressure	[psi]	10,000
Size	[in]	2
Length of each loop	[ft]	10
Connection	-	Hammer union fig. 1502
H <sub>2</sub> S service	-	Yes

Pup Joint

- None

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

**F.2.1 Mud Tanks**

Maximum admissible S.G. - 2.16 (18 ppg)

**Tank N°1 - T319**

Total capacity	[m <sup>3</sup> ]	84.1	(529 bbl)
Usable capacity	[m <sup>3</sup> ]	66.3	(417 bbl)
Tank type	-	Storage / Reserve	
Tank covered	-	Yes	



Agitators	-	Yes	
Quantity	-	One (1)	
Make	-	Mi Swaco	
Motor	[hp]	40	
Mud gun low pressure	-	Yes (2 EA)	
Mud gun high pressure	-	None	
Quick barite system	-	None	
Drill water fill up line	-	Yes	
Sea water fill up line	-	Yes	
Mixing line	-	Yes	
Mud fill up line	-	Yes	
Base oil fill up line	-	Yes	
Brine fill up line	-	Yes	
Diesel fill up line	-	None	
<b><u>Tank N°2 - T318</u></b>			
Total capacity	[m <sup>3</sup> ]	84.1	(529 bbl)
Usable capacity	[m <sup>3</sup> ]	66.3	(417 bbl)
Tank type	-	Storage / Reserve	
Tank covered	-	Yes	
Agitators	-	Yes	
Quantity	-	One (1)	
Make	-	Mi Swaco	
Motor	[hp]	40	
Mud gun low pressure	-	Yes (2 EA)	
Mud gun high pressure	-	None	
Quick barite system	-	None	
Drill water fill up line	-	Yes	
Sea water fill up line	-	Yes	
Mixing line	-	Yes	
Mud fill up line	-	Yes	
Base oil fill up line	-	Yes	
Brine fill up line	-	Yes	
Diesel fill up line	-	None	
<b><u>Tank N°3 - T320</u></b>			
Total capacity	[m <sup>3</sup> ]	86.6	(544 bbl)
Usable capacity	[m <sup>3</sup> ]	68.3	(430 bbl)
Tank type	-	Storage / Reserve	
Tank covered	-	Yes	
Agitators	-	Yes	
Quantity	-	One (1)	
Make	-	Mi Swaco	
Motor	[hp]	40	

Mud gun low pressure	-	Yes (2 EA)
Mud gun high pressure	-	None
High rate mixer	-	None
Drill water fill up line	-	Yes
Sea water fill up line	-	Yes
Mixing line	-	Yes
Mud fill up line	-	Yes
Base oil fill up line	-	Yes
Brine fill up line	-	Yes
Diesel fill up line	-	None

**Tank N°4 - T317**

Total capacity	[m <sup>3</sup> ]	86.6	(544 bbl)
Usable capacity	[m <sup>3</sup> ]	68.3	(430 bbl)
Tank type	-	Storage / Reserve	
Tank covered	-	Yes	
Agitators	-	Yes	
Quantity	-	One (1)	
Make	-	Mi Swaco	
Motor	[hp]	40	
Mud gun low pressure	-	Yes (2 EA)	
Mud gun high pressure	-	None	
Quick barite system	-	None	
Drill water fill up line	-	Yes	
Sea water fill up line	-	Yes	
Mixing line	-	Yes	
Mud fill up line	-	Yes	
Base oil fill up line	-	Yes	
Brine fill up line	-	Yes	
Diesel fill up line	-	None	

**Tank N°5 - T321**

Total capacity	[m <sup>3</sup> ]	89.1	(560 bbl)
Usable capacity	[m <sup>3</sup> ]	70.3	(442 bbl)
Tank type	-	Storage / Reserve	
Tank covered	-	Yes	
Agitators	-	Yes	
Quantity	-	One (1)	
Make	-	Mi Swaco	
Motor	[hp]	40	
Mud gun low pressure	-	Yes (2 EA)	
Mud gun high pressure	-	None	
Quick barite system	-	None	

Drill water fill up line	-	Yes
Sea water fill up line	-	Yes
Mixing line	-	Yes
Mud fill up line	-	Yes
Base oil fill up line	-	Yes
Brine fill up line	-	Yes
Diesel fill up line	-	None

**Tank N°6 - T316**

Total capacity	[m <sup>3</sup> ]	89.1	(560 bbl)
Usable capacity	[m <sup>3</sup> ]	70.3	(442 bbl)
Tank type	-	Storage / Reserve	
Tank covered	-	Yes	
Agitators	-	Yes	
Quantity	-	One (1)	
Make	-	Mi Swaco	
Motor	[hp]	40	
Mud gun low pressure	-	Yes (2 EA)	
Mud gun high pressure	-	None	
Quick barite system	-	None	
Drill water fill up line	-	Yes	
Sea water fill up line	-	Yes	
Mixing line	-	Yes	
Mud fill up line	-	Yes	
Base oil fill up line	-	Yes	
Brine fill up line	-	Yes	
Diesel fill up line	-	None	
Diesel fill up line	-	None	

**Tank N°7 - T310**

Total capacity	[m <sup>3</sup> ]	69.2	(435 bbl)
Usable capacity	[m <sup>3</sup> ]	54.7	(344 bbl)
Tank type	-	Active	
Tank covered	-	Yes	
Agitators	-	Yes	
Quantity	-	One (1)	
Make	-	Mi Swaco	
Motor	[hp]	40	
Mud gun low pressure	-	Yes (2 EA)	
Mud gun high pressure	-	None	
Quick barite system	-	None	
Drill water fill up line	-	Yes	
Sea water fill up line	-	Yes	

Mixing line	-	Yes
Mud fill up line	-	Yes
Base oil fill up line	-	Yes
Brine fill up line	-	Yes
Diesel fill up line	-	None

**Tank N°8 - T305**

Total capacity	[m <sup>3</sup> ]	69.2	(435 bbl)
Usable capacity	[m <sup>3</sup> ]	54.7	(344 bbl)
Tank type	-	Active	
Tank covered	-	Yes	
Agitators	-	Yes	
Quantity	-	One (1)	
Make	-	Mi Swaco	
Motor	[hp]	40	
Mud gun low pressure	-	Yes (2 EA)	
Mud gun high pressure	-	None	
Quick barite system	-	None	
Drill water fill up line	-	Yes	
Sea water fill up line	-	Yes	
Mixing line	-	Yes	
Mud fill up line	-	Yes	
Base oil fill up line	-	Yes	
Brine fill up line	-	Yes	
Diesel fill up line	-	None	

**Tank N°9 - T311**

Total capacity	[m <sup>3</sup> ]	73.2	(460 bbl)
Usable capacity	[m <sup>3</sup> ]	57.8	(363 bbl)
Tank type	-	Reserve	
Tank covered	-	Yes	
Agitators	-	Yes	
Quantity	-	One (1)	
Make	-	Mi Swaco	
Motor	[hp]	40	
Mud gun low pressure	-	Yes (2 EA)	
Mud gun high pressure	-	None	
Quick barite system	-	None	
Drill water fill up line	-	Yes	
Sea water fill up line	-	Yes	
Mixing line	-	Yes	
Mud fill up line	-	Yes	
Base oil fill up line	-	Yes	

Brine fill up line - Yes  
 Diesel fill up line - None

**Tank N°10 - T304**

Total capacity [m<sup>3</sup>] 73.2 (460 bbl)  
 Usable capacity [m<sup>3</sup>] 57.8 (363 bbl)  
 Tank type - Reserve  
 Tank covered - Yes  
 Agitators - Yes  
     Quantity - One (1)  
     Make - Mi Swaco  
     Motor [hp] 40  
 Mud gun low pressure - Yes (2 EA)  
 Mud gun high pressure - None  
 Quick barite system - None  
 Drill water fill up line - Yes  
 Sea water fill up line - Yes  
 Mixing line - Yes  
 Mud fill up line - Yes  
 Base oil fill up line - Yes  
 Brine fill up line - Yes  
 Diesel fill up line - None

**Tank N°11 - T309**

Total capacity [m<sup>3</sup>] 53.7 (337 bbl)  
 Usable capacity [m<sup>3</sup>] 42.4 (267 bbl)  
 Tank type - Active  
 Tank covered - Yes  
 Agitators - Yes  
     Quantity - One (1)  
     Make - Mi Swaco  
     Motor [hp] 30  
 Mud gun low pressure - Yes (2 EA)  
 Mud gun high pressure - None  
 Quick barite system - None  
 Drill water fill up line - Yes  
 Sea water fill up line - Yes  
 Mixing line - Yes  
 Mud fill up line - Yes  
 Base oil fill up line - Yes  
 Brine fill up line - Yes  
 Diesel fill up line - None

FOR INFORMATION ONLY

**Tank N°12 - T306**

Total capacity	[m <sup>3</sup> ]	56.2	(353 bbl)
Usable capacity	[m <sup>3</sup> ]	44.4	(279 bbl)
Tank type	-	Active	
Tank covered	-	Yes	
Agitators	-	Yes	
Quantity	-	One (1)	
Make	-	Mi Swaco	
Motor	[hp]	30	
Mud gun low pressure	-	Yes (2 EA)	
Mud gun high pressure	-	None	
Quick barite system	-	None	
Drill water fill up line	-	Yes	
Sea water fill up line	-	Yes	
Mixing line	-	Yes	
Mud fill up line	-	Yes	
Base oil fill up line	-	Yes	
Brine fill up line	-	Yes	
Diesel fill up line	-	None	

**Tank N°13 - T313**

Total capacity	[m <sup>3</sup> ]	69.2	(435 bbl)
Usable capacity	[m <sup>3</sup> ]	54.7	(344 bbl)
Tank type	-	Reserve	
Tank covered	-	Yes	
Agitators	-	Yes	
Quantity	-	One (1)	
Make	-	Mi Swaco	
Motor	[hp]	40	
Mud gun low pressure	-	Yes (2 EA)	
Mud gun high pressure	-	None	
Quick barite system	-	None	
Drill water fill up line	-	Yes	
Sea water fill up line	-	Yes	
Mixing line	-	Yes	
Mud fill up line	-	Yes	
Base oil fill up line	-	Yes	
Brine fill up line	-	Yes	
Diesel fill up line	-	None	

**Tank N°14 - T312**

Total capacity	[m <sup>3</sup> ]	69.2	(435 bbl)
Usable capacity	[m <sup>3</sup> ]	54.7	(344 bbl)
Tank type	-	Reserve	
Tank covered	-	Yes	
Agitators	-	Yes	
Quantity	-	One (1)	
Make	-	Mi Swaco	
Motor	[hp]	40	
Mud gun low pressure	-	Yes (2 EA)	
Mud gun high pressure	-	None	
Quick barite system	-	None	
Drill water fill up line	-	Yes	
Sea water fill up line	-	Yes	
Mixing line	-	Yes	
Mud fill up line	-	Yes	
Base oil fill up line	-	Yes	
Brine fill up line	-	Yes	
Diesel fill up line	-	None	

**Tank N°15 - T315**

Total capacity	[m <sup>3</sup> ]	67.3	(423 bbl)
Usable capacity	[m <sup>3</sup> ]	53.1	(334 bbl)
Tank type	-	Reserve	
Tank covered	-	Yes	
Agitators	-	Yes	
Quantity	-	One (1)	
Make	-	Mi Swaco	
Motor	[hp]	40	
Mud gun low pressure	-	Yes (2 EA)	
Mud gun high pressure	-	None	
Quick barite system	-	None	
Drill water fill up line	-	Yes	
Sea water fill up line	-	Yes	
Mixing line	-	Yes	
Mud fill up line	-	Yes	
Base oil fill up line	-	Yes	
Brine fill up line	-	Yes	
Diesel fill up line	-	None	

**Tank N°16 - T314**

Total capacity	[m <sup>3</sup> ]	67.3	(423 bbl)
Usable capacity	[m <sup>3</sup> ]	53.1	(334 bbl)
Tank type	-	Reserve	
Tank covered	-	Yes	
Agitators	-	Yes	
Quantity	-	One (1)	
Make	-	Mi Swaco	
Motor	[hp]	40	
Mud gun low pressure	-	Yes (2 EA)	
Mud gun high pressure	-	None	
Quick barite system	-	None	
Drill water fill up line	-	Yes	
Sea water fill up line	-	Yes	
Mixing line	-	Yes	
Mud fill up line	-	Yes	
Base oil fill up line	-	Yes	
Brine fill up line	-	Yes	
Diesel fill up line	-	None	

**F.2.2 Sand Traps / Treatment Tanks**

Sand Trap

Number of tanks	-	Two (2)	
Total capacity	[m <sup>3</sup> ]	4.58	(28 bbl)

Treatment Tank N° 1

Tank type	-	Degasser tank	
Capacity	[m <sup>3</sup> ]	5.73	(35 bbl)
Agitator	-	None	
Mud gun low pressure	-	Yes	
Cleaning system	-	No	

Treatment Tank N° 2

Tank type	-	Desander tank	
Capacity	[m <sup>3</sup> ]	5.73	(35 bbl)
Agitator	-	None	
Mud gun low pressure	-	Yes	
Cleaning system	-	No	

Treatment Tank N° 3

Tank type	-	Desilter tank	
Capacity	[m <sup>3</sup> ]	5.73	(35 bbl)
Agitator	-	None	
Mud gun low pressure	-	Yes	
Cleaning system	-	No	



**F.2.3 Slug / Pill tanks**

**Slug tank N°T308**

Total Capacity	[m <sup>3</sup> ]	13	(81 bbl)
Usable Capacity	[m <sup>3</sup> ]	10.3	(65 bbl)
Agitators	-		
Quantity	-	One (1)	
Make	-	Mi Swaco	
Motor	[hp]	7.5	
Mud gun low pressure	-	Yes	
Drill water fill up line	-	Yes	
Sea water fill up line	-	Yes	
Mixing line	-	Yes	
Mud fill up line	-	Yes	
Base oil fill up line	-	Yes	
Brine fill up line	-	Yes	
Diesel fill up line	-	None	

**Slug tank N°T307**

Total Capacity	[m <sup>3</sup> ]	13	(81 bbl)
Usable Capacity	[m <sup>3</sup> ]	10.3	(65 bbl)
Agitators	-		
Quantity	-	One (1)	
Make	-	Mi Swaco	
Motor	[hp]	7.5	
Mud gun low pressure	-	Yes	
Drill water fill up line	-	Yes	
Sea water fill up line	-	Yes	
Mixing line	-	Yes	
Mud fill up line	-	Yes	
Base oil fill up line	-	Yes	
Brine fill up line	-	Yes	
Diesel fill up line	-	None	

**F.2.4 Trip Tank**

Quantity	-	Two (2)	
Capacity	[m <sup>3</sup> ]	4.91	(30 bbl)
Sensitivity	[bbl/in]	0.5	
Pump	-		
Quantity	-	Two (2)	
Make	-	<b>Forum</b>	
Type	-	Centifugal pump	
Model	-	4 x 3 x 11	
Motor	[hp]	50	

**F.2.5 Stripping Tank**

- None

**F.2.6 Chemical Tank**

- None

**F.2.7 Gumbo Box / Flow Divider / Scalping Shakers / Shale Shakers**

Gumbo Box

- One (1)

Scalping Shakers

- None

Flow Divider

- One (1)

Number of outlets

- Five (5)

Shale Shakers

Quantity

- Four (4)

Make

- MiSwaco

Type

- Balanced elliptical motion fitted with scalping decks

**F.2.8 Desander Stand Alone**

- Yes  
Forum, Mud Hog SPD  
100HP

**F.2.9 Desilter Stand Alone**

- Yes  
Forum, Mud Hog SPD  
100HP

**F.2.10 Mud Cleaner**

Quantity

- One (1)

Make

- Mi Swaco

Type

- Balanced elliptical motion

Desander

Number of cones & size

- 3 X 12 in

Maximum flow rate

[gpm] 1,500

Desilter

Number of cones & size

- 10 Twin x 4 in

Maximum flow rate

[gpm] 1,200

Centrifugal pump

**Make**

- **SPD**

Type

- centrifugal pump

Model

- 8 x 6 x 14

Motor

[hp] 100

**F.2.11 Mud Gas Separator**

Quantity	-	One (1)
O.D.	[in]	48
Height	[ft]	23' 3"
Mud seal height	[ft]	10

**F.2.12 Vacuum Separator**

Quantity	-	One (1)
Make	-	Burgess Magna-Vac
Maximum flow rate	[gpm]	1,000

**F.2.13 Agitator**

- Refer to F.2.1 – F.2.2 – F.2.3

**F.2.14 Centrifuge**

- COMPANY's subcontractor

**F.2.15 Mud Hopper**

Quantity	-	Two (2)
System	-	Bulk Bentonite/Barite
Location	-	Sackroom
Quantity	-	One (1)
System	-	Brine mixer
Location	-	Sackroom
Quantity	-	One (1)
System	-	Big bag
Location	-	Sackroom

**F.2.16 Cutting Management System**

Screw Conveyor - COMPANY's subcontractor

Cutting Transfer System - Auger One(1)

Cutting Dryers - COMPANY's subcontractor

Cutting Containers - COMPANY's subcontractor

**F.2.17 Mud Laboratory and Equipment**

Location	-	
Size	[m <sup>2</sup> ]	24 (258 ft <sup>2</sup> )
Utilities		
Power supply	-	Yes
Air conditioning	-	Yes
Compressed air	-	Yes
Drill water	-	Yes
Phone	-	Yes

**F.3 Bulk System**
**F.3.1 Barite / Bentonite Silos**

Quantity	-	Four (4)
Capacity of each silo	[ft <sup>3</sup> ]	2,613
Load cell	-	Yes
Pressure rating	[psi]	60
Relief valve	-	Yes
Dust collector fitted on vent line	-	Yes

**F.3.2 Cement Silos**

Quantity	-	Four (4)
Capacity of each silo	[ft <sup>3</sup> ]	2,613
Load cell	-	Yes
Pressure rating	[psi]	60
Relief valve	-	Yes
Dust collector fitted on vent line	-	Yes

**F.3.3 Surge Tank For Barite / Bentonite**

Quantity	-	Two (2)
Capacity of each silo	[ft <sup>3</sup> ]	175
Gauging system	-	Load cell
Pressure relief valve	-	Yes
Dust collector fitted on vent line	-	Yes

**F.3.3 Surge Tank for Cement**

- COMPANY's subcontractor

**SECTION G – CASING / CEMENTING EQUIPMENT**
**G.1 Casing Equipment**
**G.1.1 API Casing Drift**

- None

**G.1.2 Casing Thread Protector**

Quantity	-	Four (4)
Type	-	KLAMPON
Casing O.D.	[in]	20
Quantity	-	Four (4)
Type	-	KLAMPON
Casing O.D.	[in]	13 <sup>3</sup> / <sub>8</sub>
Quantity	-	Four (4)
Type	-	KLAMPON
Casing O.D.	[in]	10 <sup>3</sup> / <sub>4</sub>
Quantity	-	Six (6)
Type	-	KLAMPON
Casing O.D.	[in]	7

Quantity - Six (6)  
 Type - KLAMPON  
 Casing O.D. [in] 6 <sup>5</sup>/<sub>8</sub>

**G.1.3 Side Door Casing Elevator**

Quantity - One (1)  
 Make - Blohm & Voss  
 Casing O.D. [in] 20  
 Model - SDS – 250/3  
 Rated capacity [ton] 250

Quantity - One (1)  
 Make - Blohm & Voss  
 Casing O.D. [in] 14  
 Model - SDS – 250/2  
 Rated capacity [ton] 250

Quantity - One (1)  
 Make - Blohm & Voss  
 Casing O.D. [in] 10 <sup>3</sup>/<sub>4</sub>  
 Model - SDS – 250/1  
 Rated capacity [ton] 250

**G.1.4 Single Joint Casing Elevator**

Quantity - One (1)  
 Make - Blohm & Voss  
 Casing O.D. [in] 20  
 Model - SJS – 6/6  
 Rated capacity [ton] 6

Quantity - Two (2)  
 Make - Blohm & Voss  
 Casing O.D. [in] 14  
 Model - SJS – 5/5  
 Rated capacity [ton] 5

Quantity - Two (2)  
 Make - Blohm & Voss  
 Casing O.D. [in] 10 <sup>3</sup>/<sub>4</sub>  
 Model - SJS – 5/4  
 Rated capacity [ton] 5

Quantity - One (1)  
 Make - Blohm & Voss  
 Casing O.D. [in] 7  
 Model - SJS – 5/3  
 Rated capacity [ton] 5

Quantity - One (1)  
 Make - Blohm & Voss  
 Casing O.D. [in] 6 5/8  
 Model - SJS – 5/3  
 Rated capacity [ton] 5

**G.1.5 Slip Type Elevator / Spider**

Quantity - One (1)  
 Make - Blohm & Voss  
 Type - BVE/S-500-2  
 Model [in] 24 1/2 - 12 3/4  
 Rate capacity [ton] 500  
 Slips for casing O.D. [in] 20

Quantity - Two (2)  
 Type - Blohm & Voss  
 Model [in] 14 – 4 1/2  
 Rate capacity [ton] 500  
 Slips for casing O.D. [in] 14 – Two (2) sets  
 10 3/4 – Two (2) sets  
 7 5/8 x 7 – Two (2) sets  
 7 5/8 x 6 5/8 – Two (2) sets

Quantity - One (1)  
 Make - Cavins  
 Type - MDL  
 Model [in] 8 5/8 – 2 3/8  
 Rate capacity [ton] 180  
 Slips for casing O.D. [in] 5

**G.1.6 Casing Slips**

Quantity - One (1)  
 Casing size [in] 20  
 Make - Blohm & Voss  
 Model - CSL

Quantity - One (1)  
 Casing size [in] 14 & 13 5/8  
 Make - Blohm & Voss  
 Model - CSL

Quantity - One (1)  
 Casing size [in] 10 3/4  
 Make - Blohm & Voss  
 Model - CSL

Quantity	-	One (1)
Casing size	[in]	7
Make	-	Blohm & Voss
Model	-	CSL
Quantity	-	One (1)
Casing size	[in]	6 5/8
Make	-	Blohm & Voss
Model	-	CSL
<b>G.1.7 <u>Casing Bowl</u></b>		
Quantity	-	One (1)
Model	-	CB-20
Casing O.D. (Min. – Max.)	[in]	18 5/8 – 20
Quantity	-	One (1)
Model	-	Insert bowl for casing bushing CB-20
Casing O.D. (Min. – Max.)	[in]	14 – 16
Quantity	-	One (1)
Model	-	Master Bushing insert bowl N° 1
Casing O.D. (Min. – Max.)	[in]	11 3/4 - 13 3/8
Quantity	-	One (1)
Model	-	Master Bushing insert bowl N° 2
Casing O.D. (Min. – Max.)	[in]	9 1/2 - 10 3/4
Quantity	-	One (1)
Model	-	Master Bushing insert bowl N° 3
Casing O.D. (Min. – Max.)	[in]	2 3/8 - 8 5/8
<b>G.1.8 <u>Casing Tongs</u></b>	-	Refer to D.2.18
<b>G.1.9 <u>Power Casing Tongs</u></b>		
Quantity	-	Two (2)
Make	-	<b>Eckel</b>
Model	-	4-14 or equivalent
Maximum output torque	[ft.lb]	35,000
Torque indicator	-	Yes
Back up arm	-	Yes
Jaws for casing	[in]	
<b>G.1.10 <u>Hydraulic Power Unit</u></b>	-	Refer to C.3

**G.1.11 Casing Circulating Head**

Quantity	-	One (1)
Type	-	Casing circulating swedge
Casing O.D.	[in]	14
Top connection	-	2 in Weco union fig. 1502
Bottom connection	-	14" VAM Pin
Quantity	-	One (1)
Type	-	Casing circulating swedge
Casing O.D.	[in]	10 ¾
Top connection	-	2 in Weco union fig. 1502
Bottom connection	-	10 ¾ Buttress Pin

**G.1.12 Casing Spear**

- None

**G.1.13 Casing Cutter**

- None

**G.1.14 Crossover To Handle Casing With Drill Pipe**

- None

**G.1.15 Casing Scraper**

- None

**G.2 Cementing Unit**

- COMPANY's subcontractor

**G.3 Riser Tailing Arm**

Quantity	-	One (1)
Riser size	[in]	46 with buoyancy modules
Make	-	OilTech Group
Max design load	[kg]	14,000 (30,870 lbs)

**SECTION H – INSTRUMENTATION / COMMUNICATION**

**H.1 Drilling Instrumentation At Driller's Position**

**H.1.1 Weight Indicator**

	-	Yes
Make	-	<b>Totco</b>
Type	-	Computerized control/monitoring system

**H.1.2 Stand Pipe Pressure Gauges**

	-	Yes
Make	-	<b>Forum</b>
Type	-	Computerized control/monitoring system

**H.1.3 Choke Manifold Pressure Gauges**

- Refer to H.1.14



**H.1.4 Rotary Speed Tachometer**

	-	Yes
Make	-	<b>NOV</b>
Type	-	Computerized control/monitoring system

**H.1.5 Rotary Torque Indicator**

	-	Yes
Make	-	<b>NOV</b>
Type	-	Computerized control/monitoring system

**H.1.6 Not Used**

**H.1.7 Pump Stroke Counter**

	-	Yes
Make	-	<b>Cameron</b>
Type	-	Computerized control/monitoring system
Stroke counter for each pump	-	Yes
Cumulative stroke counter	-	Yes

**H.1.8 Tong Torque Indicator**

	-	Yes
Make	-	<b>Forum</b>
Type	-	Computerized control/monitoring system

**H.1.9 Pit Level Sensors**

	-	Yes
Type	-	Ultrasonic
Quantity	-	Two (2) over mud tanks 1 to 16 One (1) over slug pits One (1) over treatment tanks
Loss gain indicator	-	Yes
Alarm	-	Audio and visual

**H.1.10 Mud Flow / Mud Temperature Indicators**

	-	Yes
Make	-	Forum
Type	-	Computerized control/monitoring system

**H.1.11 Trip Tank Indicator**

	-	Yes
Make	-	Siemens
Type	-	Ultrasonic
Chart recorder	-	Yes
Alarm	-	Yes
Second level indicator	-	Yes – Manual

**H.1.12 Not Used**

**H.1.13 ROP Indicator**

	-	Yes
Make	-	Axon
Type	-	Computerized control/monitoring system

**H.1.14 Remote Choke Control Panel**

Quantity	-	Two (1)
Location	-	Drill Floor, Driller's cabin
Make	-	MI Swaco
Back-up power supply	-	Yes

**H.1.15 Calibrated Flow Meters**

Quantity	-	Two (2)
Location	-	Loading stations port side & starboard side
Flow measured	-	Fuel

**H.2 Drilling Parameter Recorder**

	-	Yes
Make	-	Axon
Type	-	Computerized control/monitoring system

**H.3 Instrumentation At Choke Manifold Location**

**H.3.1 Standpipe Pressure Gauges**

Quantity	-	Two (2)
Range	[psi]	0 – 7,500

**H.3.2 Casing Pressure Gauges**

Quantity	-	Two (2)
Range	[psi]	0 – 10,000

**H.3.3 Temperature Gauges**

-

None

**H.4 Standpipe Pressure Gauge [Standpipe Location]**

Quantity	-	Two (2)
Pressure range	[psi]	0 – 7,500

**H.5 Remote Well Control Pannel**

Quantity	-	One
Includes:		

3-off 8" Choke Finescale Pressure gauges, 0-1000, 0-5000, 0-15,000 psi  
 3-off 8" Kill Finescale Pressure gauges, 0-1000, 0-5000, 0-15,000 psi  
 2-off 8" Standpipe Finescale Pressure gauges, 0-1000, 0-5,000psi OR 0-7,500 psi

**H.5.1 Measuring Device**

None

**H.5.2 Wireline Winch**

COMPANY'S subcontractor

**H.6 Not Used**

**H.7 Rig Communication System**

**H.7.1 Telephone System**

- Number of stations - 110
- Explosion proof - as required per hazardous area classification

**H.7.2 Public Address System**

- Yes

**H.7.3 Talkback System**

- Number of stations - Sixteen (16)
- Location - Driller's cabin (MEP)
- Drill floor (MEP)
- Racking board (MEP)
- Substructure, 3 stations (TSV & MEP)
- Hi-Line operator location(s) (TSV & DES)
- OIM office (TSV)
- Company man office (TSV)
- Cranes (TSV)
- Radio room (TSV)

Four (4) dedicated hands free portable radios integrated with drillers talk back system only.

**H.7.4 Hand Held VHF-UHF Radio**

- Refer to H.10.4

**H.8 Environmental Instrumentation**

**H.8.1 Temperature Indicator**

- Air temperature - One (1)
- Indication - Radio room & Control room

**H.8.2 Barometric Indicator**

- Air temperature - One (1)
- Indication - Radio room & Control room

**H.8.3 Humidity Indicator**

- Air temperature - One (1)
- Indication - Radio room & Control room

**H.8.4 Wind Speed / Direction**

- Air temperature - One (1)
- Indication - Radio room & Control room

**H.9 Additional MODU Specific Instrumentation**

**H.9.1 Roll, Pitch And Heave Indicators**

Model - SMC IMU 108  
 Recorder - None

**H.9.2 Compass**

Gyro compass

Quantity - One (1)

Repeteater compass

- None

Magnetic compass

Quantity - One (1)

**H.9.3 Echo Sounder**

Quantity - Two (2)

**H.9.4 Current Indicator**

- None

**H.9.5 Weather Facsimile**

Quantity - One (1)

**H.9.6 Radar**

Quantity - One (1)

Bandwidth - 3 cm RM, X-band

**H.9.7 Automatic Identification System (Ais)**

Quantity - One (1)

**H.10 Radio Equipment**

**H.10.1 GMDSS**

Coverage zone 1 - Yes

Coverage zone 2 - Yes

Coverage zone 3 - Yes

Coverage zone 4 - No

Digital Selective Calling Equipment (DSC)

VHF radio transceiver

Quantity - As required by Regulations

NAVTEX Equipment

Quantity - One (1)

Satellite Equipment

Quantity - One (1)

E.P.I.R.B.

Quantity - As required by Regulations

S.A.R.T.

Quantity - As required by Regulations

**H.10.2 Satellite Communication System**

*(different from GMDSS system)*

Quantity	-	One (1)
Transmission of data	-	Yes
Transmission of voice	-	Yes
Transmission of video	-	Yes

**H.10.3 Aeronautical Communication System**

Beacon Transmitter

Quantity	-	One (1)
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VHF Transceiver

Quantity	-	One (1)
----------	---	---------

VHF Handset

Quantity	-	To be advised
----------	---	---------------

**H.10.4 VHF / UHF Portable Equipment**

VHF Handset

Quantity	-	To be advised
----------	---	---------------

Make

Model

**H.10.5 Other Equipment**

SSB Radio Telephone

Quantity	-	To be advised
----------	---	---------------

Make

Model

**H.10.6 VHF Radio Telephone**

VHF Radio Telegraph

- One (1)

**H.10.7 VHF / UHF Radio Transceiver**

- One (1)

**H.10.8 Watch Receiver**

- Replaced by GMDSS

**H.10.9 Scrambler**

- Replaced by GMDSS

**H.10.10 Telex**

- Replaced by GMDSS

**H.10.11 Ship Security Alert System (SSAS)**

- Yes

**H.11 CCTV System**
**H.11.1 CCTV Marine**

Camera			Fourteen (14)
Quantity	-		
Location	-		Three (3) on top of emergency gen. Rm, one (1) to cover Helideck, Two (2) to cover deck operations
	-		One (1) On top of weldshop
	-		One (1) Outside acc. Port Bulkhead
	-		One (1) Outside Acc FWD Bulkhead
	-		One (1) On Top Of Cement Unit
	-		One (1) Gang way AFT
	-		One (1) Gang Way FWD
	-		Four (4) On Traction Winches
	-		One (1) Mud Pump Room
Monitor stations	-		Eight (8)
	-		Two (2) Radio room
	-		One (1) ECR Room
	-		One (1) OIM Office
	-		One (1) Petrobras Office
	-		One (1) Engine Control Room
	-		One (1) Barge Eng/Rig Maintenance Office

**H.11.2 CCTV Drilling**

Camera			Eight (8)
Quantity	-		
Location	-		One (1) at the racking board
	-		One (1) at crown
	-		Two (2) at the drill floor
	-		One (1) in the substructure
	-		One (1) Shale Shakers
	-		One (1) TSV Gangway
	-		One (1) on the Festoon

**SECTION I – PRODUCTION TEST EQUIPMENT**
**I.1 Burners**

- None

**I.2 Burner Booms**

- None

**I.3 Not Used**

**I.4 Sprinkler System**

**I.5 Fixed Lines For Well Testing**

- None

**I.6 Not Used**

**SECTION J – WORKOVER TOOLS**

NOT USED

**SECTION K – ACCOMMODATION**

**K.1 Offices**

**K.1.1 Company Representative’s Office**

Quantity - One (1)  
 Unrestricted view to drill floor - Yes

**K.1.2 OIM’s Office**

Quantity - One (1)  
 Unrestricted view to drill floor - Yes

**K.1.3 Other Offices**

Two (2) men office - Three (3)  
 Ten (10) men office - One (1)

**K.1.4 Hospital Room**

Number of beds - Two (2)  
 Wash basin - Yes

**K.2 Living Quarters**

Maximum person on board - One hundred and forty (140)

**K.2.1 Bedrooms**

Number of one person bedroom - Ten (10)  
 Number of two person bedroom - Sixty five (65)

**K.2.2 Galley**

Number - One (1)

**K.2.3 Mess**

Number - One (1)  
 Seating capacity - Eighty (80)

**K.2.4 Meeting Rooms**

Number - One (1)

**K.2.5 Recreation Rooms**

Number - One (1)

**K.2.6 Other Rooms**

Laundry - One (1)  
 Dry food storage - One (1)  
 Refrigerator, cold - One (1)  
 Refrigerator, freeze - Two (2)  
 Changing room - Two (2)  
 Heli-lounge - One (1) – capacity 20 persons  
 Reception room - One (1)  
 Smoking room - None (0)  
 Day room - One (1)  
 Prayer room - One (1)  
 Quiet room - One (1)  
 Coffee room - One (1)

**SECTION L – SAFETY**

**L.1 General Safety Equipment**

**L.1.1 Not Used**

**L.1.2 Eye Wash Stations**

Quantity - Four (4)  
 Locations - Drill Floor  
 - Mud Pump room  
 - Fabrication area  
 - Mud Treatment tanks

**L.1.3 Derrick Safety Equipment**

Derrick escape chute  
 Quantity - One (1)

**L.1.4 Not Used**

**L.1.5 Blowers**

Quantity - Three (3)  
 Model - B-250 or equivalent  
 Explosion proof - Yes



**L.2 Gas / Fire Detection System**
**L.2.1 H<sub>2</sub>S Monitoring System**

- |                                  |   |   |
|----------------------------------|---|---|
| Detectors location               | - | Bell Nipple                             |
|                                  | - | Drill Floor                             |
|                                  | - | Shale Shaker                            |
|                                  | - | Mud Pit Room                            |
|                                  | - | Air intake for the Driller's cabin      |
|                                  | - | Air intake for the Local Equipment Room |
|                                  | - | Engine room                             |
|                                  | - | Electrical room                         |
| General alarms                   | - | Yes                                     |
| Type of alarm                    | - | Audible and visual                      |
| Location of mimic panels         | - | Radio room                              |
|                                  |   | OIM's office                            |
| Location of control alarm panels | - | Engine control room                     |
|                                  |   | Driller's cabin                         |

**L.2.2 Combustible Gas Monitoring System**

- |                                  |   |   |
|----------------------------------|---|---|
| Detectors location               |   | Bell Nipple                             |
|                                  |   | Drill Floor                             |
|                                  |   | Shale Shaker                            |
|                                  |   | Mud Pit Room                            |
|                                  |   | Air intake for the Driller's cabin      |
|                                  |   | Air intake for the Local Equipment Room |
|                                  |   | Engine room                             |
|                                  |   | Electrical room                         |
|                                  |   | Living quarter                          |
| General alarms                   | - | Yes                                     |
| Type of alarm                    | - | Audible and visual                      |
| Location of mimic panels         | - | Radio room                              |
|                                  |   | OIM's office                            |
| Location of control alarm panels | - | Engine control room                     |
|                                  |   | Driller's cabin                         |

**L.2.3 H<sub>2</sub>S Portable Detector**

- |                             |   |                  |
|-----------------------------|---|------------------|
| Quantity                    | - | Four (4)         |
| Measuring gas concentration | - | H <sub>2</sub> S |
|                             |   | LEL              |
|                             |   | Oxygen           |
|                             |   | CO <sub>2</sub>  |

**L.2.4 CO<sub>2</sub> Portable Detector**

- Refer to L.2.3

**L.2.5 O<sub>2</sub> Portable Detector**

- Refer to L.2.3

**L.2.6 Explosimeter**

- Refer to L.2.3

**L.2.7 Fire / Smoke Detectors**

Fire detectors - Yes  
 Smoke detectors - Yes  
 Location of mimic panels - Radio room  
 OIM's office  
 Location of control alarm panels - Engine control room  
 Driller's cabin

**L.3 Fire Fighting Equipment**

**L.3.1 Fire Pumps**

Quantity - Two (2) main pumps  
 Type - Centrifugal  
 Flow rate [m<sup>3</sup>/h] 350  
 Differential pressure head [bar] 13.0  
 Pumps location - One (1) in each aft pontoon pump room  
 Quantity - One (1) jockey fire pump  
 Type - Centrifugal  
 Flow rate [m<sup>3</sup>/h] 350  
 Differential pressure head [bar] 13.0  
 Pumps location - One of aft pontoon pump room

**L.3.2 Hydrants And Hoses**

Quantity - Sixty (60)

**L.3.3 Portable Fire Extinguishers**

Quantity - Seventy five (75)  
 Thirty two (32) of 5KG CO2 fire extinguisher  
 Sixteen (16) of 9L foam fire extinguisher  
 - Forty seven (47) of dry powder fire extinguisher  
 One (1) of 20KG wheeled CO2 fire extinguisher  
 Four (4) of 50L wheeled foam fire extinguisher  
 - Two (2) of 25KG wheeled dry powder fire extinguisher

**L.3.4 Fire Blankets**

Quantity on the TSV - Two (2)  
 Quantity on the MEP - Two (2)

**L.3.5 Fixed Foam System**

Location - Over active, reserve, storage and mud treatment tanks

**L.3.6 Helideck Foam System**

Quantity of foam agent [m<sup>3</sup>] 0.5  
 Fire monitor - Three (3)

**L.3.7 Fixed Fire Extinguishing System**

Type - Water mist  
 Location Engine room (total flooding protection)  
 Above each engine (local application)  
 Above fuel oil separator (local application)  
 Above cement unit (total flooding & local application)  
 Emergency generator room (total flooding protection)  
 VFD room (total flooding protection)  
 Electrical switchboard rooms (total flooding protection)  
 Transformers rooms (total flooding protection)

Small fixed fire systems for

Location - Galley hood/ventilation duct  
 Type - Gas  
 Release system - Independent manual remote release

Location - Deep fat fryer  
 Type - Water mist  
 Release system - Independent manual remote release

Location - Paint locker  
 Type - Gas  
 Release system - Independent manual remote release

**L.3.8 Manual Water Deluge System On The DES**

Protected area - Electrical rooms  
 Machinery spaces

Water supply from fire main line - Yes

**L.3.9 Water Sprinkler System In Accommodation**

- None

**L.4 Breathing Apparatus**

**L.4.1 General Sets**

Quantity - Ten (10)  
 Model - PSS100  
 Bottle autonomy [min] 30

**L.4.2 Derrick Escape Sets**

- None

**L.4.3 Cascade Stations**

- None

**L.4.4 Breathing Air Recharge Compressor**

Quantity	-	Two (2)
Model	-	MARINER 320-E
Working pressure	[psi]	3,200
Flow rate	[CFM]	678

L.4.5 Not Used

**L.4.6 Air Purity Test Equipment**

Quantity	-	One (1)
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**L.5 Emergency First Aid Equipment**

**L.5.1 First Aid Kit**

Quantity	-	One (1) in Hospital/Treatment Room
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**L.5.2 Burn Kit**

Quantity	-	As required by Rules and Regulations
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**L.5.3 Resuscitator**

Quantity	-	One (1) dual cylinders
Charged [spare] oxygen bottle	-	Eight (8)
Portable defibrillator	-	One (1)

**L.5.4 Stretcher**

Quantity	-	Three (3)
Type	-	Two (2) Baskets, One (1) apart scoop
Location	-	One (1) apart scoop in fire equipment room on 3rd ACC DECK
	-	One (1) Basket in Hospital
	-	One (1) Basket on MEP

**L.6 Helideck Rescue Equipment**

**L.6.1 Storage Boxes**

Quantity	-	One (1)
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**L.6.2 Equipment**

Aircraft axe	-	Yes
Large fireman rescue axe	-	Yes
Heavy duty hacksaw	-	Yes
Grapple hook	-	Yes with 30 ft of wire attached
Quick release knife	-	Yes
Bolt croppers	-	Yes

**L.7 Rig Safety Store**

Quantity	-	One (1)
----------	---	---------

**L.8 Emergency Warning Alarms**

Approved system	-	One (1)
-----------------	---	---------

**L.9 Survival Equipment**

**L.9.1 Lifeboats**

Quantity	-	Four (4)
Make	-	Alexander Ryan
Capacity [each]	-	Seventy five (75) persons
Fire protection	-	Yes
Radios	-	Yes
Flares	-	Yes
Food	-	Yes
First aid kit	-	Yes

**L.9.2 Life Rafts**

Quantity	-	Six (6)
Maker	-	RFD
Capacity [each]	-	Twenty five (25) persons

**L.9.3 Fast Rescue Boat**

Quantity	-	One (1)
Make	-	Alexander Ryan
Type	-	Water-jet propelled
Capacity	-	Six (6) persons

**L.9.4 Life Jackets**

Quantity	-	As required by Rules and Regulations
----------	---	--------------------------------------

**L.9.5 Life Buoy**

Quantity	-	Two hundred and ninety six (296) One (1) for each berth in cabins Seventy (70) at each lifeboat station Six (6) at the MOB boat Five (5) in Radio Control Room Five (5) in Engine Control Room
----------	---	---

**L.9.6 Work Vest**

Quantity	-	Twelve (12)
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**L.9.7 Escape Ladders / Nets**

Quantity	-	Two (2) circumferential stairways on each of fwd column Two (2) escape ladder on each of aft column
----------	---	--

**L.9.8 Distress Signals**

Quantity	-	Twelve (12) Rocket Parachute Flares at Radio Control Room
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**L.9.9 Immersion Suits**

Quantity	-	One hundred and forty nine (149) One (1) for each berth in cabins Five (5) in Radio Control Room Four (4) in Engine Control Room
----------	---	---

**L.9.10 Line-Throwing Device**

Quantity	-	One (1) stored in Radio Control Room
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**L.9.11 EPIRB (Emergency Position Indicating Radio Beacon)**

Quantity	-	Five (5)
	-	One (1) in each lifeboat
	-	One (1) in Radio Control Room

**SECTION M – POLLUTION PREVENTION EQUIPMENT**
**M.1 Sewage Treatment**

Quantity	-	One (1)
Make	-	RVZ
Capacity	-	140 persons
Effluent treated	-	Black & Grey waters

**M.2 Garbage Compactor**

Quantity	-	One (1)
Make	-	USON Marine
Dry general waste volume	[L]	160
Plastic waste volume	[L]	160
Cardboard volume	[L]	160
Metal tins & cans volume	[L]	80

**M.3 Garbage Grinder**

Quantity	-	One (1)
Make	-	USON Marine
Volume	[L]	80

**M.4 Holding Tanks**
TSV

Quantity	-	Two (2),
Capacity each	[m <sup>3</sup> ]	10.3 + 14
Area drained	-	Non-hazardous areas
Quantity	-	One (1),
Capacity each	[m <sup>3</sup> ]	24.3
Area drained	-	Hazardous areas

MEP

Quantity	-	One (1)
Capacity	[m <sup>3</sup> ]	6.3

**M.5 Incinerator**

- None

**M.6 Oily Water Separator**

Quantity	-	One (1)
Make	-	JOWA
Capacity	[m <sup>3</sup> /hr]	2.5
Volume	[L]	450

**M.7 Sewage Holding Tank**

Quantity	-	One (1)
Capacity	[m <sup>3</sup> ]	59.5

**M.8 Grey Water Collection Tank**

Quantity	-	One (1)
Capacity	[m <sup>3</sup> ]	2.2

**M.9 Sludge Tank**

Quantity	-	One (1)
Capacity	[m <sup>3</sup> ]	13

**M.10 Bilge Tank**

Quantity	-	One (1)
Capacity	[m <sup>3</sup> ]	19.5

FOR INFORMATION ONLY