



IDENTIFICATION CODE
DRILLMEC HH-200MM
LP DRILLING SRL - ITALY

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Technical Annex
Description of Drilling Rig, Related Equipment and Personnel



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EQUIPMENT LIST AND PERSONNEL

18	30.01.11	General Update	Basile A.	Perazzoli D.
17	16.11.10	General Update	Basile A.	Perazzoli D.
16	01.07.10	General Update	Basile A.	Perazzoli D.
15	10.05.10	General Update	Basile A.	Perazzoli D.
14	08.09.09	Improved Firefighting equipment	Basile A.	Perazzoli D.
13	04.06.09	Added resuscitators	Basile A.	Perazzoli D.
12	09.03.09	Reviewed diverter adapters	Basile A.	Perazzoli D.
11	20.01.09	Cup Tester - additional range for 9.5/8" + Bit Sub 4.1/2"IF x 4.1/2" Reg.	Basile A.	Perazzoli D.
10	30.10.08	Specifying subs and x-over	Basile A.	Perazzoli D.
09	11.10.08	Adding 9.5/8" tenaris blue circ. Head Reviewed Crew Composition	Basile A.	Perazzoli D.
08	03.09.08	General Update	Basile A.	Perazzoli D.
07	23.06.08	Number of chicksan	Basile A.	Perazzoli D.
06	18.06.08	Update Safety Equipment pag. 35 Update Cellar Pump	Basile A.	Perazzoli D.
05	03.06.08	General Update	Basile A.	Perazzoli D.
04	30.04.08	Update Screen Mesh	Basile A.	Perazzoli D.
03	21.04.08	General Update	Basile A.	Perazzoli D.
02	10.03.08	General Update	Basile A.	Perazzoli D.
REV	DATE	DESCRIPTION	PREPARED	APPROVED



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A GENEREAL

A.1 DRAWING

A.1.1 Rig General drawings

1 Rig general lay-out	:		Y
2 Rig civil engineer lay-out	:		Y
3 Rig skidding system lay-out	:		Not Available
4 Rig general lay-out drawing showing the hazardous areas	:		Y

A.1.2 Power Plant and Electric system

1 Power plant block diagram	:		Y
2 S.C.R/D.C. motors block diagram	:		Not Applicable
3 A.C. electrical users flow diagram	:		Y
4 Emergency generator user flow diagram	:		Y

A.1.3 Mud/Cement/Water/Bulk system

1 Low pressure mud circulating system schematic drawing	:		Y
2 Fresh water circulating schematic dwg	:		Y
3 Cleaned/Reusable water circulating schematic drawing	:		N
4 Drilling solids removal system schematic drawing	:		Y
5 High pressure mud circulating system schematic drawing	:		Y

A.1.4 Well Control Equipment

1 BOP stacks configuration drawing showing the main dimensions	:		Y
2 Choke manifold lay-out drawing	:		Y
3 Choke manifold schematic drawing showing connecting lines to BOP, to mud gas-separator and to flare pits.	:		Y
4 Choke manifold control panel drawing.	:		Y
5 BOP control system schematic drawing showing accumulator Unit, remote control panels and alarms.	:		Y
6 Diverter system schematic drawing, showing diverter control valves and diverter lines.	:		Y

A.1.5 Instrumentations

1 Instrumentation general arrangement lay-out showing all indicator and recording instruments.	:		Y
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A.1.6 Other Drawings

1 Electrical earthing schematic drawing	:		Y
2 Fire fighting equipment lay-out drawing	:		Y
3 Safety equipment lay-out drawing	:		Y
4 Accomodation camp lay-out drawing	:		=
5 Other drawing	:		=

A.2 CONTRACTOR'S DATA

A.2.1 General Data

1 Rig Owner	:		Perazzoli Drilling
2 Rig Operation Management	:		Perazzoli Drilling
3 Owner Head-office address	:		Via Salvo D'Acquisto 5
4 Management Headoffice address	:		0523835027
5 Owner Head office telephone	:		0523835027



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6 Management Head office telephone : 0523835027

B UNIT SPECIFICATION

B.1 RIG DATA & EQUIPMENT LIST

B.1.1 Rig General Data

1	Rig name	:	Drillmec HH-200MM
2	Rig type	:	Trailer mounted
3	Rig year of construction or assembly	:	2008
4	Rig nominal drilling capability with 5" OD drill Pipes	:	3500
5	Total truck trips required to move the rig between locations	no	37
6	Standard truck trips required to move the rig between locations	no	26
7	Out of standard truck trips required to move the rig between locations	no	11
8	Estimated rig up time.(days)	no	7 - 9
9	Rated hoisting capacity of crane requested to handle the heaviest load	mton	60 t
10	Actual rig status (drilling-idle-etc)	:	DRILLING
11	Actual rig location.	:	VIENNA, AUSTRIA
12	Average fuel consumption in normal drilling operation	M ³	4,5 m ³ /day

B.2 RIG STORAGE CAPACITIES

B.2.1 Diesel Fuel

1	Diesel fuel total storage tank capacity	M ³	24 m3 - w/containment basin 110% and roof
2	Diesel fuel storage tanks quantity	no	1 + 1
3	Diesel fuel storage tank capacity of each	M ³	1 x 23m ³
4	Diesel fuel storage tank to be used with mud capacity	M ³	1 x 1 m3 - w/containment basin 110% and roof
5	Diesel fuel day-tank capacity	M ³	No
6	Diesel fuel transfer pumps	no	No
7	Diesel fuel transfer pumps	type	

B.2.2 Potable water

1	Potable water total capacity	M ³	5 m ³
---	------------------------------	----------------	------------------

B.2.3 Drilling water

1	Drilling water total capacity	M ³	100 m ³
2	Drill water tanks quantity	no	2
3	Drill water tank capacity of each	M ³	50 m ³
4	Dedicated use of each tank	:	Drilling water
5	Drill water transfer pump	no	2 centrifugal pumps each tank (total 4)
6	Drill water transfer pump	type	3"x 2"

B.2.4 Liquid Mud

1	Liquid mud total capacity	M ³	187 m ³ (usable capacity)
2	Liquid mud tank quantity	no	4
3	Liquid mud tank capacity of each	M ³	46+47+47+47 available q.ty 3 corral tanks upon request

B.2.5 Bulk material

1	Silos for bulk baryte	M ³	Not Available
2	Silos for bulk Cement	M ³	
3	Covered area for sack storage dimensions	m	
4	sack storage quantity	no	
5	Pipe Rack capacity	mton	



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6 Others :

B.3 RIG SOUND PROOFING PROVISION

1	Max noise level at working sites	dBa	As per Italian Law DM277
2	Sound proofing provision around rig floor	type	N
3	Sound proofing provision around rig substructure	type	N
4	Sound proofing provision around Diesel Engines	type	All engines soundproofed
5	Sound proofing provision around air compressor	type	Yes
6	Sound proofing provision around BOP accumulator unit	type	N
7	Sound proofing provision around mud pump	type	All engines soundproofed
8	Sound proofing provision around other area	type	Q.ty 2 gen set soundproofed
9	Sound proofing provision around other area	type	=

C POWER SUPPLY SYSTEM

C.1 RIG POWER PLANT

C.1.1 Diesel Engine A.C. Generator System

1	Diesel Engine/Generator sets	no	Two (can run simultaneously)
2	Continuous power of each set	HP	545 Kw 545 Kw
3	Total continuous power	HP	1090 Kw c/w fire detectors

C.1.2 Diesel Engine

1	Diesel Engine quantity	no	1
2	make type	:	Caterpillar Caterpillar
			C18 C18
3	Diesel Engine mufflers w.spark arrestor	yes/n	Y
4	Mufflers	type	Y

C.1.3 A.C. electric generators

1	A.C. electric generator quantity	no	1
2	make type	:	Caterpillar Caterpillar
3	A.C.Generator maximum power	KVA	545Kw 545Kw
4	A.C.Generator output voltage	V	460V 460V
5	A.C.Generator frequency	Hz	60 HZ 60 HZ

C.1.4 SCR Conversion system

1	make type	:	Not Applicable
2	Number of generators can be connected in parallel on SCR	no	=
3	S.C.R. motor drivers quantity	no	=
4	Number of D.C. motors the S.C.R. system can run simultaneously	no	=
5	S.C.R. system input voltage-ampere	V-A	=
6	S.C.R. system output voltage-ampere	V-A	=

C.1.5 Electrical Transformers

1	Electrical transformers quantity	no	2
2	Electric transformers make-type	:	Elettron
3	E. transformer output voltage	V	As per utility usage
4	E. transformer output power	KVA	150 each
5	E. transformer frequency	Hz	60

C.2 RIG POWER PLANT MECHANICAL

C.2.1 Diesel Engine for Drawworks



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1 Quantity	no	2
2 Make - type	:	Caterpillar C18
3 Mufflers with spark arrestor	Y/n	Y
4 Max continuous power	hp	630 HP @ 1800RPM each
5 Connected to compound with Note	:	Gear Box
		The offered rig is hydraulic hoist type
		no drawworks is installed

C.2.2 Diesel Engine for Mud Pumps

1 Quantity	no	1 each pump
2 Make - type	:	Caterpillar 3512
3 Mufflers with spark arrestor	Y/n	Y
4 Max continuous power	hp	1250 HP each
		c/w fire detector

C.2.3 Diesel Engine for AC generators

1 Quantity	no	See C.1.2
2 Make - type	:	See C.1.2
3 Mufflers with spark arrestor	Y/n	See C.1.2
4 Max continuous power	hp	See C.1.2

C.2.4 AC generators

1 Quantity	no	See C.1.2
2 Make - type	:	See C.1.2
3 Maximum power	hp	See C.1.2
4 Output voltage	V	See C.1.2
5 Frequency	Hz	See C.1.2

C.3 ELECTRICAL POWER FOR THIRD PARTY

C.3.1 For mud logging Unit

1 Power available	KVA	8 KW
2 Output Voltage	V	230V - 60HZ
3 Output Ampere	A	32 A

C.3.2 For Decanting Centrifuges

1 Power available	KVA	As Requested
2 Output Voltage	V	400 V - 60 HZ
3 Output Ampere	A	125 A

C.3.3 For Bulk Air Transfer Compressor

1 Power available	KVA	Not applicabile
2 Output voltage	V	=
3 Output Ampere	A	=

C.3.4 For Other equipment

1 Power available	KW	mud logging see C.3.1.
2 Output Voltage	V	=
3 Output Ampere	A	=

C.4 ELECTRICAL LIGHTING SYSTEM

C.4.1 Fixed lighting system

1 Lighting system of the escape ways		Y
2 Lighting around well location	no	3
3 Lighting around well location	type	Flood
4 Lighting around shale shaker area	no	3
5 Lighting around shale shaker area	type	EEXD neon - foldable
6 Lighting on mud tanks	no	3 each tank
7 Lighting on mud tanks	type	EEXD neon - foldable
8 Lighting around mud pumps	no	2
9 Lighting around mud pumps	type	Plafoniere 400W
10 Lighting around pipe rack area.	no	2 from drillfloor + lighting towers
11 Lighting around pipe rack area.	type	=



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12 Lighting on rig floor	no	3
13 Lighting on rig floor	type	Flood
14 Lighting along the mast	no	2
15 Lighting along the mast	type	Neon EEXD
16 Lighting on derrickman platform	no	Not applicable
17 Lighting on derrickman platform	type	=

C.4.2 Portable floodlights

1 Portable floodlights antideflagrante	no	5
2 Portable floodlights power	type	2 x 2.4W

C.5 ELECTRICAL SAFETY DEVICE

1 Emergency shut down button for D.C.motors	yes/n	Not Applicable
2 Emergency shut down button location	:	Not Applicable
3 Emergency shut down button location	:	Not Applicable
4 Emergency shut down button for A.C.users:	:	Not Applicable
5 Emergency shut down button location	:	Not Applicable
6 Emergency shut down button location	:	Not Applicable

C.6 AC EMERGENCY POWER GENERATOR

C.6.1 Diesel Engine

1 Diesel Engine make-type	:	See C.1.1
2 Diesel Engine continuous power	HP	See C.1.1
3 Diesel Engine mufflers w.spark arrestor	yes/n	See C.1.1

C.6.2 Emergency A.C.Generator

1 Emergency A.C.Generator make-type	:	See C.1.1
2 A.C.Generator max.continuous power	KVA	See C.1.1
3 A.C.Generator output voltage	V	See C.1.1
4 A.C.Generator frequency	Hz	See C.1.1
5 Emergency Generator automatic start in case of main circuit failure	yes/n	Not applicable
6 Emergency Generator with its own Control Panel	yes/n	Y

Users the emergency Generator is able to feed simultaneously :

7 Emergency lighting on rig floor	yes/n	Y
8 Emergency lighting around diesel engine plant	yes/n	Y
9 Emergency lighting inside SCR barrack	yes/n	Not applicable
10 Emerg.lighting (red lights) on top of mast	yes/n	Y
11 Emergency lighting on other working area	yes/n	Y
12 Emergency lighting on the escape ways.	yes/n	Y
13 Emergency lighting on safe breathing areas	yes/n	Y
14 Electric recharging pump for BOP accumulator Unit	yes/n	Y
15 Radio Communication system in company Office	yes/n	Y
16 Electrical air compressor Unit	yes/n	Y
17 Other Users	yes/n	

C.7 RIG AIR SERVICE

C.7.1 Air compressor Electrical Driven

1 Quantity	No	1	1
2 Make-type	:	IR	IR
3 Driven by motor power	HP	30 HP	30 HP
4 Max.flow rate capacity	m ³ /m	3,11 m ³ /min	3,11 m ³ /min
5 Max.service pressure	Kg/c	10-12 bar	10-12 bar



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C.7.2 Air compressor Diesel Driven

1 Quantity	No	Not available
2 Make-type	:	
3 Driven by motor power	HP	
4 Max.flow rate capacity	m ³ /m	
5 Max.service pressure	Kg/c	

C.7.3 Air vessel

1 Quantity	No	2 + 3 emergency back up
2 Air vessel capacity of each	m ³	0.725 + 0,050
3 Air vessel location	:	Utility house + panels
4 Air vessel certified by	:	No need

C.7.4 Air Driers

1 Make-type	:	IR - Built-in TR-040
2 Air Driers flow rate capacity	m ³ /mn	Suitable for compressor delivery
3 Max. service pressure.	bar	10

D HOISTING AND ROTATING EQUIPMENT

D.1 MAST AND ASSOCIATED EQUIPMENT

D.1.1 Mast

1 Mast make-type		DRILLMEC HH-200
2 Built as per API standard	no	API Specification 4F
3 Clear height of Mast.	m	16
4 Use Single-double triple lenght.	:	Single R3
5 Maximum API rated static hook load with full setback load, wind load of 115 km/h and max. number of line strung.	mton	181
6 Max.lines strung on travelling block	No	4
7 Ladders complete with safety cages	yes/n	Not applicable
8 Upper Part of Mast painted for day signalling to Air-Navigation	yes/n	Y - Red (crown block)
9 Red lights as per Regulation on top of Mast	yes/n	Y

D.1.2 Racking Platform

1 Racking platform make-type	:	Not applicable
2 Racking platform capacity of 5" D.P	m	
3 Racking platform capacity of 6.1/2"D.C	m	
4 Racking platform capacity x D.P range.	in-in	
5 Racking platform capacity x D.C range.	in-in	
6 Height from rig floor	m	
7 Derrickman wind breaks	yes/n	
8 Wind breaks type and height	m	
9 Derrickman escape device	yes/n	

D.1.3 Casing stabbing Board

1 Casing Stabbing Board make-type	:	Not Applicable
2 Stabbing Board adjustable from to	m-m	=

D.1.4 Substructure

1 Substructure make-type	:	Drillmec HH-200
2 Substructure built as per API standard	no	API Specification 4F
3 API rated setback load capacity	mton	Not applicable
4 API rated rotary load capacity	mton	181
5 API rated simultaneously load capacity of setback and rotary	mton	Not applicable

D.1.5 Rig Floor

1 Rig floor dimensions	m-m	4 x 3.00 m
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2 Rig floor height from ground level	m	7,6
3 Clear height between Rotary beams and ground level	m	7.0
4 Rig floor drains collecting system	yes/n	Y
5 Drains discharging to	:	tank
6 Rotary Table drains collecting system	yes/n	Not applicable
7 Drains discharging to	:	=
8 Rig Floor Wind Breaks	yes/n	N
9 Wind Breaks type and Height	:	N

D.1.6 Driller's Dog Hose

1 Dimensions L-W-H	:	2.50x4.00x2.40 m
2 Complete with	:	Control panel, BOP control unit, choke manifold control panel, rig floor manifold.

D.1.7 Crown Block

1 Make and type	:	Drillmec HH-200
2 Built as per API standard	no	API Specification 8C
3 Rated load capacity	mton	181
4 Sheaves number and outside diameter	no-in	4 X 720
5 Sheaves for O.D. wire line	in	4 x 1.3/8"

D.1.8 Traveling block

1 Make and type	:	Not applicable Hydraulic Hoist
2 Built as per API standard	no	
3 Rated load capacity	mton	
4 Sheaves number and outside diameter	no-in	
5 Sheaves for O.D. wire line	in	

D.1.9 Hook Block

1 Make and type	:	Not applicable
2 Built as per API standard	no	
3 Rated load capacity	mton	

.10 Swivel Head

1 Make and type	:	Not applicable
2 Built as per API standard	no	
3 Static rated capacity	mton	
4 Rated working pressure	psi	
5 Complete with access fitting for wire line	in	

.11 Drawworks

1 make-type	:	Not applicable
2 Rated input power	HP	
3 Main Drum rated pull capacity	mton	
4 Main drum grooved for OD line	in	
5 Low speed drum clutch make-type	:	
6 L.speed drum clutch rated pull capacity	mt	
7 Main drum brake type (Band or Disc)	:	
8 Sand Line Drum capacity	ft	
9 Make up cathead make-type	:	
10 Break out cathead make-type	:	
11 Automatic drilling control make and type	:	
12 Fast line guide make and type	:	

.12 Drawworks auxiliary Brake

1 Make type	:	Not applicable
2 Rated brake capacity at 50 RPM	Kg.m	
3 Emergency Back-Up system	yes/n	

.13 Drawworks safety Device

1 Crown block safety device protection (Crown -O- matic)	yes/n	Proximity Switch
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- 2 Additional Crown Block Safety device Protection (traveling Block limit Switch) yes/n
- 3 Crown safety device c/with alarms yes/n
- 4 Rig Floor Safety device Protection (traveling Block limit Switch) yes/n

.14 Drawworks Drilling Motors

- 1 Quantity installed no power by HPU
- 2 make and type : 2
- 3 Max output power HP CAT C18 - diesel engines
- 4 Pressurized/cooling system type : 630 HP @ 1800 rpm each
- 5 Pressurized cooling air intake point : **Not applicable**

.15 Dead Line Anchor

- 1 Dead line anchor make and type : **Not applicable - weight indicator pick-up point from cylinder working pressure**
- 2 Built as per API standard no
- 3 Rated load capacity mton 181
- 4 Sensor type : Hydraulic
- 5 Location :

.16 Drilling Line

- 1 Size and length in- 1.3/8" - 34mm
- 2 Breaking strength mton 121.000 each (q.ty 4 installed)
- 3 Built as per API standard no No - CE

.17 Sand Line

- 1 Size and length in-m **Not applicable**
- 2 Sand Line type :
- 3 Breaking strength mton
- 4 Built as per API standard no

D.2 ROTATION SYSTEM

D.2.1 Top Drive Assembly

- 1 make-type : Drillmec HH-200
- 2 Built as per API standard no Y
- 3 Rated load capacity mton 200
- 4 Maximum continuous output torque kg-m 3600 kg.m
- 5 At related rotating speed RPM 80
- 6 Maximum rotating speed RPM 200

D.2.2 Top Drive Driving system

- 1 Driving motor type: Electrical/Hydraulic : Hydraulics
- 2 Motor/Main shaft gear ratio no 10:1
- 3 Gear box single or dual speed type : Not Applicable - gearing obtained via displacement changing
- 4 Motor make-type : Denison
- 5 Motor max.continuous output power HP 100 hp each (total 4 motors)

D.2.3 Top Drive Motor cooling system

- 1 Remote air cooling system : Not applicable
- 2 Closed loop air/water cooling system : =
- 3 system certified by : =

D.2.4 Top drive guidance system

- 1 Two rail beams yes/n **Integrated to mast**
- 2 Torque Tube yes/n
- 3 Are also the traveling block block and hook block guided with. yes/n



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D.2.5 Top drive pipe handler

- | | | | |
|------------------------------|--------|--|----------------|
| 1 Torque wrench make type | : | | |
| 2 Max.Output torque capacity | ft.lbs | | Not Applicable |
| 3 Jaws for O.D. connections | in-in | | |

D.2.6 Top drive Inside BOP valves

- | | | Hydraulic operated | Manual operated |
|--|--------|---------------------------|------------------------|
| 1 Quantity | no | 1 | 1 |
| 2 make-type | : | Hydril | Hydril |
| 3 Inside diameter and working pressure | in-psi | 3"-5M | 3"-5M |
| 4 Built as per API specification | : | Y | Y |

D.2.8 Top drive Saver subs

- | | | For 5" DP | For 3.1/2 DP |
|-----------------------------|----|------------------|---------------------|
| 1 Quantity | no | 2 | 2 |
| 2 Top connection type | : | NC46 | NC46 |
| 3 Bottom Connection type | : | NC50 | NC38 |
| 4 Built as per API standard | : | API Spec 7 | API Spec 7 |

D.2.9 Top drive Link Elevators

- | | | For drill pipes | for casing |
|-----------------------|-------|------------------------|----------------------------------|
| 1 size | in-in | No Need | 2.1/4"x96" |
| 2 Rated load capacity | mton | | 225 +
2.1/4" x
84" 225 ton |

.10 Top drive video camera

- | | | | |
|---|---|--|--------------|
| 1 make type | : | | Not Included |
| 2 location | : | | = |
| 3 monitor make and type | : | | = |
| 4 Location | : | | = |
| 5 Certified to be installed in hazardous area | : | | = |

.11 Top Drive wire line accessories

- | | | | |
|-------------------|--|--|---|
| 1 accessories kit | | | = |
|-------------------|--|--|---|

.13 Rotary table

- | | | | |
|--|------|--|-----------------------------|
| 1 make and type | : | | |
| 2 API rated load capacity | mton | | Drillmec HH-200 |
| 3 Maximum opening | in | | 250 |
| 4 Driven by Motor or drawworks | : | | 27.1/2" |
| 5 D.C.motor make-type (if any) | : | | Hydraulic motor - dedicated |
| 6 DC motor max continuous output power | : | | Not applicable |
| 7 Gear box single or dual speed | : | | Not applicable |
| 8 Gear ratio high/low speed | : | | Not applicable |

.14 Master Bushing

- | | | | |
|------------------------|----|--|---|
| 1 Make and type | : | | |
| 2 API Insert Bowl size | no | | Drillmec
Y - ranging 2.3/8" to 20"
- brand DENCON |

.15 Kelly Bushing

- | | | | |
|----------------------------|---|--|----------------|
| 1 Make and type | : | | |
| 2 For Kelly shape and size | : | | Not applicable |

.16 Rotary table antislipping pad

- | | | | |
|-----------------|---|--|-------------------|
| 1 make and type | : | | Y - Safety Custom |
|-----------------|---|--|-------------------|

D.3 RIG FLOOR EQUIPMENT

D.3.1 Hydraulic cathead (Ezy-Torque)

- | | | | |
|----------------------|------|--|----------------|
| 1 make and type | : | | |
| 2 Maximum rated pull | mton | | Not Applicable |

D.3.2 Kelly Spinner



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1	Make and type	:	Not applicable
2	With reverse speed	yes/n	
D.3.3 Kelly Spinner saver sub			
1	Quantity	no	Not applicable
2	Top connection type	:	=
3	Bottom connection type	:	=
4	Built as per API standard	:	=
D.3.4 Spinning Wrench			
1	Make and type	:	Not applicable
2	For O.D.tool-joints	in	Requested
D.3.5 Iron Roughneck			
1	Make - type	:	Drillmec HH-200
2	For OD tool joints	in	Tubular from 3.1/2" to 11"
3	Maximum make-up torque	Ft.lb	130.250
D.3.6 Wire Line Unit (Slick Line)			
1	Make - type	:	Not Offered
2	Complete with tension indicator	Y/N	=
3	Complete with depth indicator	Y/N	=
4	Wire line diameter and length	In-m	=
5	Wire line breaking strength	kg	=
D.3.7 Counterbalance System for Manual Tong			
1	Installed	Y/N	Y
2	Quantity	no	1
3	Air powered	Y/N	Fixed - Mechanical
D.2.8 Other rig Floor Equipment			
1	Mouse hole size	in	12.1/4"
2	Rat hole size	in	No Need
3	Mud saver bucket for OD drill Pipes	yes/n	Y - integrated
4	Mud saver bucket for OD drill pipes	in	Y - integrated
D.4 UTILITY HOIST EQUIPMENT			
D.4.1 Rig Floor Hoist Winch			
1	Quantity	no	1 service Jib crane
2	Make and type	:	Drillmec
3	Hydraulic or Air Operated type	:	Hydraulic
4	Rated Pull capacity	mton	5000 kg
5	Complete with safety Guard	yes/n	Y
6	Complete with automatic Brake	yes/n	Y
7	Complete with overload protection	Y/N	Y
8	Certified as per local Regulation	yes/n	ISPESL & UNMIG
D.4.2 Hoist Winch on derrickman Platform			
1	Quantity	no	Not applicable
2	Make and type	:	
3	Hydraulic or Air Operated type	:	
4	Rated Pull capacity	mton	
5	Complete with safety Guard	yes/n	
6	Complete with automatic Brake	yes/n	
7	Complete with overload protection	yes/n	
D.4.3 Hoist Winch inside the Substructure			
1	Quantity	no	Not Applicable - BOP handling sys through hydraulic cylinders
2	Make and type	:	=
3	Hydraulic or Air Operated type	:	=
4	Rated Pull capacity	mton	=



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- 5 Complete with safety Guard yes/n
- 6 Complete with automatic Brake yes/n
- 7 Complete with overload protection Y/N
- 8 Certified as per local Regulation yes/n

=
 =
 =
 =

D.4.4 BOP Handling System Inside the Substructure

- 1 make and type :
- 2 Electric or Hydraulic driven :
- 3 Rated Hoist Capacity mton
- 4 Max.vertical traveling stroke m
- 5 Max.Horizontal traveling stroke m
- 6 Handling System certified yes/n

DRILLMEC
 Lifting-hydraulic
 40 ton
 1
 Suitable for BOP
 positioning driller side.
 Y

E MUD CIRCULATING SYSTEM

E.1 HIGH PRESSURE MUD PUMPS

E.1.1 H.P. Mud Pumps

- 1 Total installed No
- 1 Make :
- 2 Type :
- 3 Max rated input power HP
- 4 Fluid end type :
- 5 Pulsation Dumpener make :
- 6 Pulsation Dumpener type :
- 7 Reset Relief Valve make :
- 8 Reset Relief Valve type :
- 9 Size of Liners available in

2
 MP No 1 MP No 2
 Drillmec Drillmec
 9T1000 9T1000
 Triplex 7x9 Triplex 7x9
 1000 HP 1000 HP
 Drillmec Drillmec
 Hydril Hydril
 20-5000 20-5000
 Oteco style Oteco style
 Type B Type B
 7" - 6.1/2" - 6" - 5.1/2"-
 5" - 4.1/2"

E.1.2 Mud Pump driving Motors

- 1 Quantity each mud pump no
- 2 Motor make :
- 3 Motor Type :
- 4 Motor rated Continuous Power HP

1
 Caterpillar (c/w torque
 converter)
 3512
 1250 (@ 1200rpm)
 c/w fire detectors

E.1.3 Mud Pump Surcharging pump

- 1 Quantity each mud pump no
- 2 Make and type :
- 3 Impeller Diameter in
- 4 Packing Seal Type :
- 5 Driven by motor power HP
- 6 Rotating speed RPM

1
 BAKER SPD mud hog 2.5"
 8"x6"x14"
 12"
 Mechanical
 112
 1800

E.1.4 Mud pump suction Lines

- 1 Quantity no
- 2 Suction line O.D. in

2
 8"

E.1.5 Mud pump suction Dampeners

- 1 Quantity no
- 2 make and type :

2
 Drillmec - Nitrogen type

E.1.6 Mud pump suction Filters

- 1 Quantity no
- 2 make and type :

2
 Drillmec

E.1.7 Mud pump discharge line filters

- 1 Quantity no
- 2 type :

2
 Discharge strainer

E.1.8



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1 Quantity	no	2
2 Inside Diameter	in	3.1/2"
3 Rated working Pressure	psi	5,000 psi
4 Built as per API specification	no	API Specification req.

E.1.9 Mud pump Discharge Lines rigid section

1 Quantity	no	2 in 1 sweep type
2 Inside Diameter	in	4
3 Rated working Pressure	psi	5,000 psi
4 Built as per API specification	no	5L

.10 Rig Floor mud Manifold

1 All connection ends welded or flanged	:	Y
2 Mud manifold valves quantity	no	Q.ty 1 x 4" + Q.ty 4 x 2"
3 Mud manifold valves make-type	:	Demco valve
4 Valves size and work.pressure	in-psi	4.1/16" 5M + 2.1/16" 5M
5 Bleed off Valve size	in-psi	2.1/16" - 10M
6 Bleed off Valve type	:	MCM O'Drill
7 Connection Provision for Mud logging Unit pressure Sensor	yes/n	Y independent
8 Exclusion valve size	in-psi	2.1/16" - 5,000
9 Connection Provision for MWD Sensor	yes/n	Y
10 Exclusion valve size	in-psi	2.1/16" - 5,000
11 Casing Fill-Up valve size	in-psi	2.1/16" - 5,000
12 Casing fill-up valve type	:	Gate valve

.11 Stand pipe Assembly

		Rigid Section	Flexible section
1 Stand Pipe quantity	no	1	1
2 Inside Diameter	in	4"	3"
3 Rated working Pressure	psi	5,000	5,000
4 Built as per API specification	:	API Spec 5L	API Spec 7K

.12 Rotary Hoses

1 Quantity	no	1 + 1 spare
2 Inside Diameter and length	in-m	3"
3 Rated working Pressure	psi	5,000 psi
4 Built as per API specification	no	API 7K
5 Date of Installation	:	07/2010

E.2 LOW PRESSURE MUD SYSTEM

E.2.1 Mud Tank

1 All mud tanks covered for oil base mud use	yes/n	No
2 Mud tanks covered	Type	
3 Total number of mud tanks installed	No	4 + 2 water reserve
4 Mud tanks total capacity	m ³	187+100

E.2.2 Mud tanks 1 & 2 description

		Mud tank No.1	mud tank No.2
1 Mud tank capacity	m ³	46	47
2 Divided in compartments	No	4	2
3 Capacity of each compartment	m ³	10+3x12	24+23
4 Mud tank dimensions (H-W-L)	M	2.2x2.4x12,5	2.2x2.4x12,5
5 Electric Agitator quantity	No	None	1 each comp
6 Electric Agitator make and type	:		Swaco
7 Electric Agitator driving motor	HP		20
8 Bottom guns installed quantity	No	1 each comp	1
9 Bottom guns size	In	3	3
10 Type of guns –swivel/unidirectional		Swivel	Swivel

E.2.3 Mud tanks 3 & 4 description

		Mud tank No.3	mud tank No.4
1 Mud tank capacity	m ³	47	47
2 Divided in compartments	No	3	2



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3 Capacity of each compartment	m ³		15+12+20	24+23
4 Mud tank dimensions (H-W-L)	M		2.2x2.4x12,5	2.2x2.4x12,5
5 Electric Agitator	No		1 each comp	1 each comp
6 Electric Agitator make and type	:		SWACO	SWACO
7 Electric Agitator driving motor	HP		20	20
8 Bottom guns installed	No		1 each comp	1 each comp
9 Bottom guns size	In		3	3
E.2.8 Mud Mixing system				
1 Mud Mixing Unit quantity	No		2	
2 The system allows the simultaneously operations of:				
3 Make new mud	:		Y	
4 Weighing active or reserve mud	:		Y	
E.2.9 Mud mixing pumps				
1 quantity	No		2	
2 Make and type	:		BAKER SPD MUD HOG	
3 Impeller Diameter	In		6x8x14" w/ 12" impeller	
4 Packing Seal Type	:		Mechanical seal	
5 Driven by motor power	HP		112 HP - electric	
6 Rotating speed	Rpm		1800	
.10 Mud mixing Hoppers				
1 quantity			2	
2 Make and type			Swaco	
.11 Silos For Barite				
1 Quantity	No			Not Available
2 Capacity of Each	Cu.ft			
3 Weight Indicator	Yes/N			
.12 Surge Tank For Barite/Bentonite				
1 Quantity	No			Not Available
2 Pressurized or gravity type	:			
3 Capacity of Each	Cu.ft			
4 Weight Indicator	Yes/N			
.13 HP Mud Shearing Device				
1 Quantity	No			Not Available
2 Make – type	:			
.14 Chemical Mixing Tank				
1 Capacity	Mc		1	
2 Complete with electrical mixer	Y/N		Y	
.15 Mud Return Line				
1 Bell nipple quantity	No		One - telescopic	
2 Bell nipple size	In		Suitable for 13.5/8" BOP	
3 Flow line type	:		Steel	
4 Flow line inside diameter	In		12"	
.16 Gumbo shale spool				
1 Quantity	No			Not Available
2 Top connection size	In-psi			
3 Bottom connection size	In-psi			
4 Connected with HP mud pump	Y/N			
.17 HP Jet Nozzles on the Flow Line				
1 Connected with HP mud pump	Y/N			Y (connected with HP mud pumps or trip tank centrifugal pump).
.18 Gumbo Trap Tank				
1 Gumbo shale trap installed	Y/N			Not Available



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13 Drilling cutting discharged to through : Solid collection pan

E.3.8 Decanting Centrifuges

1 Quantity No Not Available
 2 Make - type : =
 3 Drilling cuttings discharging to : =

E.3.9 Electrical agitator mounted on skid for waste pit

1 Quantity no Not Available
 2 Make and type : =
 3 Powered by motor : =

.11 Degasser Unit

1 make and type : SWACO Vertical
 2 Feed pump make-type : Baker
 3 Impeller Diameter in 6"x8"x14"
 4 Packing Seal Type : Std
 5 Driven by motor power HP 100
 6 Rotating speed rpm 1800
 7 Gas discharging line I.D. in 6
 8 Discharging Line running to : Far from Drill-floor

.12 Mud-Gas Separator

1 make and type : DRILLMEC 48"
 2 Mud-Gas Separator O.D. body in 48"
 3 Mud-Gas discharge line O.D. in 4" mud / 8" vent
 4 Mud-Gas discharge running to : Far from Drill-floor or
 choke manifold
 5 Bottom Liquid Seal height m 3 m

.13 Trip Tank

1 Capacity m³ 5 m³
 2 Linear capacity lt/cm 12 lt/cm
 3 Level indicator type : Floating
 4 Visible from driller's site yes/n Y
 5 Trip tank complete with level recorder yes/n Y
 6 Trip tank feed pump make-type : 2x3R
 7 Flow rate lt/min 400 lt/min

E.4 LINES FOR CEMENT OPERATIONS

E.4.1 High Pressure Cementing Lines

1 H.P. Fixed Line Connecting Cement Unit with Rig Floor quantity no 2 (rig floor manifold side)
 2 Inside Diameter and W.P. in-psi 2" - 10,000 psi
 3 End Connection type : Weco union

E.4.2 High Pressure Mud Lines

1 H.P. Fixed Line running from Rig Floor mud manifold to Cementing unit area no 1
 2 Inside Diameter and W.P. in-psi 2" - 10,000 psi
 3 End Connection type : Weco union

E.4.3 Low Pressure water Suppling Line

1 Water Suppling line to Cement Unit area no 1
 2 Inside Diameter and W.P. in 2" - 10 bar
 3 End Connection type : =

E.4.4 Low Pressure Mud Suppling Line

1 Mud Suppling line to Cement Unit area. no 1
 2 Inside Diameter and W.P. in 2" - 350 psi
 3 End Connection type : =



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E.4.5 Silos For Cement

1 Quantity	no	Not Available
2 Capacity of Each	m ³	=
3 Weight Indicator	Yes/N	=

E.4.6 Surge Tank For Cement

1 Quantity	no	Not Available
2 Capacity of Each	m ³	=
3 Weight Indicator	Yes/N	=

F WELL CONTROL EQUIPMENT

F.1 BOP DIVERTER SYSTEM

F.1.1 BOP Diverter

1 Make and type	:	NL SHAFFER
2 Size and working pressure	in-psi	21" 1/4- 2000
3 Top connection type	:	Studded
4 Top connection size	in-psi	21" 1/4- 2000
5 Bottom connection Type	:	Flanged
6 Bottom Connection Size	in-psi	20.3/4" - 3000 (through adapter)

F.1.2 Diverter Spool

1 Quantity	:	1
2 Top connection type	:	Flanged
3 Top connection size	in-psi	20.3/4" - 3000
4 Bottom connection Type	:	Flanged
5 Bottom Connection Size	in-psi	20.3/4" - 3000
6 Outlets	:	2
7 Outlets size	in-psi	8-1000

F.1.3 BOP Diverter Valves

1 Diverter flow line valves	no	2
2 Diverter flow line valves make type	:	Ball valve hydraulic (normal sequence)
3 Diverter flow line valves size	in-psi	8-1000

F.1.4 BOP Diverter Discharging Lines

1 Diverter flow lines	no	1
2 Diverter flow lines type	:	Steel rigid
3 Diverter flow lines size	in-psi	8" - 1,000
4 Diverter flow lines running to	:	Waste pit
5 Diverter flow lines running to	:	Mud tanks=

F.2 20" NOMINAL BOP STACK SYSTEM

F.2.1 20" Bag Preventer

1 Make and type	:	Not Available
2 Size and working Pressure	in-psi	=
3 H ₂ S service	:	=
4 Top connection type	:	=
5 Top connection size	in-psi	=
6 Bottom connection Type	:	=
7 Bottom Connection Size	in-psi	=
8 Built as per API specification	:	=

F.2.2 20" Ram preventer

		SINGLE	DOUBLE
1 Quantity	no	Not Available	Not Available
2 Make and type	:		
3 Size and working Pressure	in-psi		
4 H ₂ S service	:		
5 Ram lock Type	:		
6 Top connection type	:		



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- 7 Top connection size in-psi
- 8 Bottom connection Type :
- 9 Bottom Connection Size in-psi
- 10 Outlets no
- 11 Outlets Connection Type :
- 12 Outlets Connection size in-psi
- 13 Shear rams can be installed in any ram cavity :
- 14 Built as per API specification no

F.2.3 20" Pipe Rams

- 1 Quantity no
- 2 Size in
- 3 Ram packer type

F.2.4 20" Drilling/Spacer/Riser spool

- 1 Quantity no
- 2 H₂S service :
- 3 Top connection type :
- 4 Top connection size in-psi
- 5 Bottom connection Type :
- 6 Bottom Connection Size in-psi
- 7 Outlets no
- 8 Outlets Connection Type :
- 8 Outlets Connection size in-psi
- 10 Total Height ft
- 11 Flange 20"to weld-20 3/4"3000 PSI flgd no

F.3 13.5/8" NOMINAL BOP STACK SYSTEM

F.3.1 13.5/8" Bag Preventer

- 1 Make and type : 1
NL Shaffer
- 2 Size and working Pressure in-psi 13.5/8" - 5,000
- 3 H₂S service : Y
- 4 Top connection type : Studded
- 5 Top connection size in-psi 13.5/8" - 5,000
- 6 Bottom connection Type : Flanged
- 7 Bottom Connection Size in-psi 13.5/8" - 10,000
- 8 Built as per API specification : API Specification 16A

F.3.2 13.5/8" Ram preventer

- | | | SINGLE | DOUBLE |
|--|--------|-------------------------|-------------------------|
| 1 Quantity | no | 1 | 1 |
| 2 Make and type | : | Church | Church |
| 3 Size and working Pressure | in-psi | 13.5/8" - 10M | 13.5/8" - 10M |
| 4 H ₂ S service | : | Y | Y |
| 5 Ram lock Type | : | Y | Y |
| 6 Top connection type | : | Flanged | Flanged |
| 7 Top connection size | in-psi | 13.5/8"- 10M | 13.5/8"- 10M |
| 8 Bottom connection Type | : | Flanged | Flanged |
| 9 Bottom Connection Size | in-psi | 13.5/8"- 10M | 13.5/8"- 10M |
| 10 Outlets | no | 2 each cavity | 2 each cavity |
| 11 Outlets Connection Type | : | Flanged | Flanged |
| 12 Outlets Connection size | in-psi | 4.1/16"+
2.1/16" 10M | 4.1/16"+
2.1/16" 10M |
| 13 Shear rams can be installed in any ram cavity | : | Single | |
| 14 Built as per API specification | no | API Spec 16A | API Spec 6° |

F.3.3 Pipe Rams Available

- | | | | |
|--------------|------|---------------------|--------------|
| 1 Quantity | no | | |
| 2 Size | in | 2 | 2+1 |
| 3 Ram packer | type | 9.5/8" 7"
CamRam | 5"
CamRam |



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F.3.3 Pipe Rams Available

1	Quantity	no	2+1	1	1		
2	Size	in	3.1/2"	2.7/8	2.3/8		
3	Ram packer	type	CamRam	CamRam	CamRam		

F.3.4 Pipe Rams Available

1	Quantity	no	1	=			
2	Size	in	2.3/8"	=			
3	Ram packer	type	CamRam	=			

F.3.5 Shear/Blind Rams Available

1	Quantity	no	1 shear + 1 blind				
2		type					
	Remark		OK				

F.3.6 13.5/8" Drilling/Spacer/Riser spool

1	Quantity	no	2				
2	H ₂ S service	:	Y				
3	Top connection type	:	Flanged				
4	Top connection size	in-psi	API 13.5/8" - 10,000				
5	Bottom connection Type	:	Flanged				
6	Bottom Connection Size	in-psi	API 13.5/8" - 10,000				
7	Outlets	no	No				
8	Outlets Connection Type	:	=				
8	Outlets Connection size	in-psi	=				
10	Total Height	ft	700 mm				

F.4 WELLHEAD AND ADAPTERS

F.4.1 Company's Well Head Connections

1	Wellhead Connection	type					
2	Conductor pipe connection type	:					
3	Casing head connection type	:					
4	1st casing spool connection size	in-psi					
5	2nd casing spool connection size	in-psi					
6	Tubing spool connection size	in-psi					
7	Tubing spool connection size	in-psi					
8	Flange to be welded	In-psi	Flange supplied by Contractor. Dressing at Customer charge (q.ty 2)				

F.4.2 Adapter spool to connect BOP with Well Head Spool

1	Adapter spool studded or flanged	:	Double Studded Adapter				
1	Quantity	no	1 spare per size				
2	Top connection size	in-psi	20.3/4" - 3M				
3	Bottom Connection Size	in-psi	13.5/8"-3000				

F.4.3 Adapter spool to connect BOP with Well Head Spools

1	Adapter spools studded or flanged	:	Double Studded Adapter				
2	Quantity	no	1+1 spare per size				
3	Top connection size	in-psi	13 5/8" BOP	13 5/8	BOP		
4	Bottom Connection Size	in-psi	13 5/8 5000	13 5/8"		3000	

F.4.4 Adapter spool to connect BOP with Well Head spools

1	Adapter spools studded or flanged	:	Double Studded Adapter				
2	Quantity	no	1+1 spare per size				
3	Top connection size	in-psi	13 5/8" BOP	13 5/8	BOP		
4	Bottom Connection Size	in-psi	11" 5000	11"	10000		

F.4.5 Adapter spool to connect BOP with Well Head spools

1	Adapter spools studded or flanged	:	Double Studded Adapter				
2	Quantity	no	1+1 spare per size				



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3 Top connection size	in-psi	13 5/8" BOP	13 5/8 BOP
4 Bottom Connection Size	in-psi	9" 5000	9" 10000

F.4.6 Adapter spool to connect BOP with Well Head spools

1 Adapter spools studded or flanged	:	Double Studded Adapter	
2 Quantity	no	1+1 spare per size	
3 Top connection size	in-psi	13 5/8" BOP	13 5/8 BOP
4 Bottom Connection Size	in-psi	7.1/16" 5000	7.1/16" 3000

F.5 CHOKE AND KILL VALVES ON BOP STACK

F.5.1 Choke valves

		Hydraulic Operated	Manual Operated
1 Choke valves Quantity	no	2	2
2 Choke valves make and type	:	Array	Array
3 H ₂ S service	:	Y	Y
4 Built as per API specification	:	API Spec 6A	API Spec 6A
5 Choke valves connection type	:	Franged	Franged
6 Choke valves connection size	in-psi	4-1/16" - 10,000	4-1/16" - 10,000

F.5.2 Kill valves

		Hydraulic Operated	Manual Operated
1 Kill valves Quantity	no	2	2
2 make and type	in	Array	Array
3 H ₂ S service	:	Yes	Yes
4 Built as per API specification	:	API Spec 6A	API Spec 6A
5 Kill valves connection type	:	Flanged	Flanged
6 Kill valves connection size	in-psi	2.1/16" - 10,000	2.1/16" - 10,000

F.6 KILL AND CHOKE LINES

-

F.6.1 Kill lines from BOP outlets to kill manifold

1 Kill line	no	2
2 Kill line type	:	Chicksan
3 Built as per API specification	:	API Spec 16C
4 H ₂ S service	:	Y
5 Kill line Inside diameter-W.P.	in-psi	2" - 10,000

F.6.2 Choke lines from BOP Outlets

1 Choke line	no	2
2 Choke line type	:	Coflex
3 Built as per API specification	:	API Spec 16C
4 H ₂ S service	:	Y
5 Choke line Inside diameter-W.P.	in-psi	4" - 10,000

F.7 KILL MANIFOLD

F.7.1 Kill manifold description

1 kill manifold location	:	Cementing Unit Side
2 Kill manifold size	in-psi	2.1/16" - 10,000
3 Kill manifold valves quantity	no	4
4 Valves make type	:	Gate Valves
5 First Outlet connected with	:	Rig Floor Manifold
6 Second Outlet connected with	:	Weco 2" - 10,000 to connect to cementing unit

F.7.2 Kill line running to rig floor mud manifold

1 Quantity	no	1
2 Type	:	Rigid
3 I.D.- w.p.	in-psi	2.1/16" - 10,000



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4 H2S service : Y

F.8 CHOKE MANIFOLD

F.8.1 Choke manifold general

1 Choke manifold assembled by : MCM Oiltools
 2 Choke manifold H₂S service yes/no Y
 3 Built as per API specification : API Spec 16C
 4 All Connection ends not Threaded yes/no Y

F.8.2 Choke manifold High Pressure Section

1 Inside diameter-W.P. in-psi 3.1/16" - 10,000
 2 Inlet Points no 2
 3 Provision to connect the pressure Sensor of Mud Logging Unit yes/no Y
 4 Provision w/independent exclusion valve yes/no Y

F.8.3 Power adjustable Choke valve

1 Quantità no 1
 2 Make type : MCM Oiltools
 3 Size and W.P. in-psi 3.1/16" - 10,000

F.8.4 Manual adjustable Choke valve

1 Quantità no 2
 2 Make type : MCM Oiltools
 3 Size and W.P. in-psi 3.1/16" - 10,000

F.8.5 Valve Upstream each choke valve

1 Quantità	no	=	Hydraulic Operated	
2 Make type	:	=		Manual Operated
3 Size and W.P.	in-psi	=		2
				MCM FC type
				3.1/16" - 10,000

F.8.6 Choke manifold Lower Pressure Section

1 Inside diameter-W.P. in-psi 3.1/16" - 10,000
 2 Outlet points no 4+2
 3 each with exclusion valve size in-psi 3.1/16" - 10,000

F.8.7 Outlet to mud gas Separator

1 Quantità no 1
 2 Valve Size and W.P. in-psi 3.1/16" - 10,000
 3 Connecting Line Type : Flex. hoses 2.1/2" 1,000

F.8.8 Outlet to Flare Lines

1 Quantità no 1
 2 Valve Size and W.P. in-psi 3.1/16" - 10,000

F.8.9 Flare lines

1 Quantità no 1
 2 Flare Line OD x ID x length in-m 3" ID -10M psi WP (length in accordance with layout)
 3 Complete with remote Ignition system yes/no Y
 4 Ignition system type : Pilot flame and electronic diagnosis

.10 Outlet to Waste Pit

1 Quantità no 1
 2 Valve Size and W.P. in-psi 3.1/16" - 10,000

.11 Reverse circulating line

1 Line running from rig floor to choke manifold no 1
 2 Reverse circulating line I.D.x w.p in-psi 2" - 10,000
 3 H₂S service : Y



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5 Low flow rate gal/m 1,5 =
 n

6 Chart recorder type : Y - built-in =

.10.7 Bolt Tensioning System for BOP and WH Flanges

1 Quantity no Not available
 2 Make and type :
 3 Complete with :

.10.8 Casing Cutting and Bevelling machine

1 Quantity no Not available
 2 make and type :
 3 For Casing O.D.

F.11 BOP CONTROL SYSTEM

.11.1 Accumulator Unit

1 Make and Type : Consolidated Pressure Control
 2 Oil reservoir capacity gal 310 gallons
 3 Total bottle Installed no 24 bottles
 4 Nominal capacity of each gal 11
 5 Total nominal capacity gal Y - Close-Open-Close
 6 Max. working pressure psi Y
 7 Accumulator unit installation site : Emergency Escape

.11.2 Electrical recharging pump

1 Quantity no 1
 2 make type : Consolidated Pressure Control
 3 Flow rate gal/m 14 GPM Recharging in 15
 n min
 4 Max working Pressure psi Y
 5 Pump driving by motor power hp 25
 6 Motor driven also by emergency yes/n Y
 generator

.11.3 Air-driven recharging pump

1 Quantity no 3
 2 make type : Consolidated Pressure Control
 3 Flow rate gal/m Y
 4 Max working Pressure psi Y
 5 Air Suppling pressure psi 150
 6 Air suppling sources no 2
 7 Air Suppling from : Compressors
 8 Air Suppling from : =

.11.4 Accumulator Unit Control Manifold

1 Make and type : Consolidated Pressure Control
 2 Number of Control Valves no 9
 3 Control valve type : Y
 4 Low/High pressure by-Pass valve yes/no Y
 5 Annular Pressure regulator type : Y
 6 Manifold Pressure regulator type : Y

.11.5 BOP Control hoses

		Rigid type	Flexible type
1 Control hoses	no	16	16
2 Inside diameter	in	1	1
3 Certified Fire resistant	yes/no	Y	Y

.11.6 Diverter control hoses

1 Quantity no 2
 2 I.D. in 1"



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9 Tool Joint Inside diameter	in	2.11/16"					
10 Outside taper of Box connection	deg	18°					
11 Tool Joint hardfacing	type	NONE					
12 Tool Joint API connections	type	NC38					
13 Actual API NDE classification	type	Premium					

G.1.5 5" OD Drill Pipes Pup Joints

1 Quantity	no	2	2	2			
2 API steel grade	type	G105	G105	G105			
3 Length	m	2	3	5			
4 Nominal Weight	lb/ft	19.5	19.5	19.5			

G.1.6 3.1/2" OD Drill Pipes Pup Joints

1 Quantity	no	2	2	2			
2 API steel grade	type	G105	G105	G105			
3 Length	m	2	3	5			
4 Nominal Weight	lb/ft	15.5	15.5	15.5			

Added 20 jts of 2.7/8" for cementing purposes w/ X-over

G.1.7 Heavy Wall Drill Pipes

1 Nominal O.D.	in	5"					
2 API steel grade	type	API					
3 Quantity of Joints	no	15					
4 Length of each	m	9					
5 Nominal Weight	lb/ft	50					
6 Internal Plastic Coating	type	N					
7 Connection between pipe & tool joint	type	Welded					
8 Tool joint Outside diameter	in	6 1/2"					
9 Tool Joint Inside diameter	inc	3					
10 Outside taper of Box connection	deg.	18					
11 Tool Joint hardfacing	type	N					
12 Tool Joint API connections	type	NC50					
13 Actual API N.D.E. classification	type	PREMIUM DS1 - LEVEL 3-5					

G.1.8 Drill Collars

1 quantity	no	15	18	15			
2 Outside Diameter	in	8"	6.1/2"	4.3/4"			
3 Inside Diameter	in	2.13/16	2.13/16	2.1/4"			
4 Length of each joint	m	9	9	9			
5 Outside body	type	Spiral	Spiral	Spiral			
6 Elevator recess	Yes/N	NO	NO	NO			
7 Slip recess	Yes/N	YES	YES	YES			
8 API connection	type	6.5/8"R	NC46	NC38			
9 "Bore-back" on box	Yes/N	SI	SI	SI			
10 Stress Relief Groove on pin	Yes/N	SI	SI	SI			
11 Actual API N.D.E. classification	type	PREMIUM DS1 - LEVEL 3-5	PREMIUM DS1 - LEVEL 3-5	PREMIUM DS1 - LEVEL 3-5			

.1.10 Short Drill Collars

1 quantity	no	2	2	2			
2 Outside Diameter	in	8"	6.1/2"	4.3/4"			
3 Inside Diameter	in	2.13/16	2.13/16	2.1/4"			
4 Length of each joint	m	2	2	2			
5 Outside body	type	Spiral	Spiral	Spiral			
6 Elevator recess	Yes/N	N	N	N			
7 Slip recess	Yes/N	Y	Y	Y			
8 API connection	type	6.5/8"R	NC46	NC38			
9 "Bore-back" on box	Yes/N	Y	Y	Y			
10 Stress Relief Groove on pin	Yes/N	Y	Y	Y			



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<p>11 Actual API N.D.E. classification</p>	type		PREMIUM DS1 - LEVEL 3-5 PREMIUM DS1 - LEVEL 3-5 PREMIUM M DS1 - LEVEL 3-5
<p>.1.12 Non Magnetic Drill Collars</p> <p>1 Outside diameter</p> <p>2 Inside diameter</p> <p>3 Length of each joint</p> <p>4 Outside body</p> <p>5 Elevator recess</p> <p>6 Slip recess</p> <p>7 API connection</p> <p>8 Bore-back on box</p> <p>9 Stress relief groove on pin</p>	<p>no</p> <p>in</p> <p>in</p> <p>m</p> <p>type</p> <p>Y/N</p> <p>Y/N</p> <p>type</p> <p>Y/N</p> <p>Y/N</p>	<p>Non offerto</p> <p>=</p> <p>=</p> <p>=</p> <p>=</p> <p>=</p> <p>=</p> <p>=</p> <p>=</p> <p>=</p>	<p>Non offerto</p> <p>=</p> <p>=</p> <p>=</p> <p>=</p> <p>=</p> <p>=</p> <p>=</p> <p>=</p>
<p>.1.13 Bit Subs and Cross-Over</p> <p>1 Quantity of each X-Over to connect and run in hole all the Contractor's furnished drill and fishing strings.</p>	<p>:</p>	<p>BIT SUBS AS FOLLOWS (all c/w float bore) – q.ty2 each type:</p> <p>6.5/8”Rx8.5/8”R - 6.5/8”Rx7.5/8”R - 6.5/8”Rx6.5/8”R – NC46x6.5/8”R – NC46x4.1/2”R – NC38x4.1/2”R – NC38x3.1/2”R – NC31x2.3/8”R – NC38x2.7/8”R – NC 50 x 4.1/2R</p> <p>X-O AS FOLLOWS – q.ty2 each:</p> <p>NC46Bx6.5/8”RP - NC38BxNC46P NC50BxNC46P - NC38BxNC50P NC50BxNC31P - NC50BxNC26P NC38BxNC31P - NC38BxNC26P NC46BxNC50P - 6.5/8”RBxNC50P 4.1/2”IF N x 6.5/8” R P 2.7/8”IF B x 3.1/2”IF P 2.7/8”IF P x 3.1/2” IF B</p>	
<p>2 All X-Overs with Bore-back on box</p> <p>3 Stress Relief groove on pin</p>	<p>Y/N</p> <p>Y/N</p>	<p>Y</p> <p>Y</p>	<p></p>
<p>.1.14 Other X-overs</p> <p>1 Quantity</p> <p>2 Connection</p>	<p>no</p> <p>type</p>	<p>1</p> <p>NC50 box</p> <p>2.7/8 EU pin</p>	<p>1</p> <p>NC50 box</p> <p>2.3/8 EU pin</p>
<p>.1.15 Other X-over</p> <p>1 Quantity</p> <p>2 Connection</p>	<p>no</p> <p>type</p>	<p>1</p> <p>NC38 box</p> <p>2.7/8 EU pin</p>	<p>1</p> <p>NC38 box</p> <p>2.3/8 EU pin</p>
<p>.1.16 Other X-over</p> <p>1 Quantity</p> <p>2 Connection</p>	<p>no</p> <p>type</p>	<p></p>	<p></p>
G.2 OTHER TUBULARS			
<p>G.2.1 Core Barrel</p> <p>1 Make</p> <p>2 Type</p> <p>3 OD body</p> <p>4 ID body</p> <p>5 Body length</p> <p>6 Top connection</p>	<p>no</p> <p>:</p> <p>:</p> <p>in</p> <p>in</p> <p>ft</p> <p>type</p>	<p>Not available</p> <p>=</p> <p>=</p> <p>=</p> <p>=</p> <p>=</p> <p>=</p>	<p></p>
<p>G.2.2 Hole Opener</p> <p>1 Make</p> <p>2 Type</p>	<p>no</p> <p>:</p> <p>:</p>	<p>Not available</p> <p>=</p> <p>=</p>	<p></p>



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3 OD body	in	=	
4 ID body	in	=	
5 Body length	ft	=	
6 Top connection	type	=	
7 Bottom connection	type	=	
8 Cutters for formation	Type	=	

G.3 DRILL STRING PRESSURE CONTROL TOOLS

G.3.1 Drill String Circulating Head

1 For DP outside diameter	in	1	
2 Bottom connection	type	3.1/2"	1
3 Top connection	type	NC-38	5"
4 Top valve	type	2" Weco	NC-50
5 Working pressure	in-bar	2" Weco	2" Weco
		2"- 350	Lo-torq
			2"- 350

G.3.2 Upper Kelly Cock

1 For Kelly size	in	=	
2 make	:	=	=
3 type	:	=	=
4 Outside diameter	in	=	=
5 Working pressure	in-bar	=	=

G.3.3 Lower Kelly Cock

1 For DP connection	type	1	
2 make	:	NC38	1
3 type	:	Packard	NC50
4 Outside diameter	in	Packard	Packard
5 Inside diameter	in	4.3/4	LKV
6 Working pressure	bar	1.3/4	6.5/8
		10,000 psi	2.13/16
			10,000 psi

G.3.4 Drop-In Valve

1 Quantity	no	=	
2 For DP connection	type	=	=
3 make	:	=	=
4 type	:	=	=
5 Min. Inside drill string diameter	in	=	=
6 Landing Sub	no	=	=
7 Complete with retrieving tool	Yes/N	=	=

G.3.5 Float Valves

1 For DC connection	type	1	1	1	
2 make	:	6.5/8"R	NC46	NC38	
3 type	:	Baker	Baker	Baker	
		F	F	F	

G.4 DP/DC HANDLING TOOLS

G.4.1 Link Elevators

1 Link Elevators	no		See item D.2.9
2 Link Elevators make type	:		
3 size x length	in-in		
4 rated load capacity	mton		

G.4.2 Drill Pipe Elevators

1 Quantity	no		No Need
2 make	:		
3 type	:		
4 For O.D. Drill pipes	in		
5 Max. rating Load Capacity	mton		
6 API specification	:		

G.4.3 Drill Pipes manual Slips

1 Quantity	no	1+1 spare	1+1 spare
2 make	:	Dencon	Dencon
3 type	:	RDL XL	RDL XL



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4 For O.D. Drill pipes	in	5"		3.1/2"	
G.4.4 Drill Pipes Power Slips					
1 Make	:			Drillmec	
2 type	:			HH-200	
3 For O.D. Drill pipes	in			5" - 3.1/2"	
G.4.5 Drill Collar Quick Lift Elevators					
1 quantity	no		Lifting subs		
2 make	:		5	5	5
3 type	:		DMC	DMC	DMC
4 For OD drill collars	in	8"		Lift sub	Lift sub
5 Max rating load capacity	mt		6.1/2"	Lift sub	Lift sub
6 API specification	:		SJ	Lift sub	Lift sub
			API 7	API 7	API 7
					4.3/4"
G.4.6 Drill Collars Lift Plug Elevators					
1 Quantity	no		2		
2 For O.D. Drill Collars	in		5"DP		
3 Bottom connection	type		4.1/2"IF		
G.4.7 Drill Collars Lift Plug Elevators					
1 Quantity	no		=	=	=
2 For O.D. Drill Collars	in		=	=	=
3 Bottom connection	type		=	=	=
G.4.8 Drill Collar Slips					
1 Quantity	no		2	2	2
2 make	:		Dencon	Denco	Dencon
3 type	:		UDC	UDC	LDC
4 For O.D. Drill Collars	in	8"		6.1/2"	4.3/4"
				"	
G.4.9 Drill Collar Slips					
1 Quantity	no		=	=	
2 make	:		=	=	
3 type	:		=	=	
4 For O.D. Drill Collars	in		=	=	
.4.10 Safety Clamps					
1 Quantity	no		3		
2 make	:		Dencon		
3 type	:		MPR		
4 For O.D. range	in		4.1/2" - 8.1/2"		
.4.11 Manual Rotary Tong					
1 Quantity	no		1		
2 make	:		B+V		Only 1 is needed for bit breaker purposes
3 type	:		HT-55		
4 For O.D. Tubulars	in				
5 Max. rating Torque	ft.lbs		55.000		
.4.13 Bit Breaker					
For Bit size	in		26"	17.1/2"	16"
.4.14 Bit Breaker					
1 For Bit size	in		12.1/4"	8.1/2"	5.7/8"
.4.15 Tri-point caliper					
1 For O.D. blade stabilizers	in		17.1/2 - 16		12.1/4
2 Accuracy	in		1/64"		1/64"



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.4.16 Tri-point caliper

1 For O.D. blade stabilizers	in		8.1/2	5.7/8
2 Accuracy	in		1/64"	1/64"

G.5 FISHING EQUIPMENT

G.5.1 Overshots

1 Quantity	no			
2 make	:		Logan OilTools	
3 type	:		150	
			series	
4 O.D. Body	in		9.5/8"	8.1/8" 5.5/8"
5 Spiral/Basket Grapples	in		suitable to cover all	
6 Spiral/Basket Grapples	in		contractors DHE	
7 Spiral/Basket Grapples	in			
8 Spiral/Basket Grapples	in			
9 Spiral/Basket Grapples	in			
10 Spiral/Basket Grapples	in			
11 Oversize Guide	no			
12 Oversize Guide O.D.	in			
13 Extension sub	in			
14 Top sub Connection	type			
15 Top sub lock-ring	:			

G.5.3 Fishing Jars

1 make	:		1	1
	:		Bowen or	Bowen or
	:		equivalent	equivalent
2 type	:		Z	Z
3 O.D. body	in		8"	6 1/2"
4 I.D. body	in			
5 Connections	type		6.5/8" Reg	NC50

G.5.4 Drilling Jars

1 make	:		Not Available	
2 type	:		=	
3 O.D. body	in		=	
4 I.D. body	in		=	
5 Connections	type		=	

G.5.5 Fishing Bumper Subs

1 make	:		Not Avail.	Not Available
2 type	:		=	=
3 O.D. body	in		=	=
4 I.D. body	in		=	=
5 Connections	type		=	=

G.5.6 Bumper Sub safety Joint

1 make	:		Not Avail.	Not Available
2 type	:		=	=
3 O.D. body	in		=	=
4 I.D. body	in		=	=
5 Connections	type		=	=

G.5.7 Safety Joint

1 make	:		Not Avail.	Not Available
2 type	:		=	=
3 O.D. body	in		=	=
4 I.D. body	in		=	=
5 Connections	type		=	=

G.5.8 Junk subs

1 make	:		Logan	Logan	Logan
--------	---	--	-------	-------	-------



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2 type	:				
3 O.D. Body	in		9.5/8"	6.5/8"	4.1/2"
4 I.D. body	in			5.15/16"	4.1/4"
5 For Hole size	in		12 ¼"	8 ½"	5 7/8"
6 Connections	type		6.5/8"	6.5/8"	3.1/2"

.5.10 Junk basket (reverse circulat.)

1 make	:		Not Available		
2 type	:				
3 Mill Shoe	type				
4 O.D. Body	in				
5 I.D. body	in				
6 For Hole size	in				
7 Connections	make				

.5.12 Junk Mill

1 make	:		1	1	
2 type	:		Logan	Logan	
3 O.D. Body	in		12"	8.1/4"	
4 I.D. body	in		12.1/4"	8.1/2"	
5 Connections	type		7.5/8"	4.1/2"	
			Reg	Reg	

.5.13 Fishing Magnet

1 make	:		1	1	
2 type	:		Logan	Logan	
3 O.D. Body	in		10.1/2"	7" + 5"	
4 I.D. body	in				
5 Connections	type		6.5/8"R	4.1/2" R + 2.7/8" R	

.5.14 Taper taps

1 make	:		Not Avail.	Not	Available
2 type	:		=	=	=
3 O.D. Body	in		=	=	=
4 I.D. body	in		=	=	=
5 Connections	type		=	=	=

.5.15 Impression Block

1 make	:		Not Avail.	Not	Available
2 type	:		=	=	=
3 O.D. Body	in		=	=	=

H CASING TUBING HANDLING EQUIPMENT

H.1 CASING EQUIPMENT

H.1.1 Side Door Casing Elevators

1 Quantity	no		1	1	1
2 make	:		Dencon	Dencon	Dencon
3 type	:		SDE	SDE	SDE
4 For O.D. Casing	in		20	13.3/8	9.5/8
5 Rated Load Capacity	Mt		250 ton	250 ton	250 ton

H.1.2 Side Door Casing Elevators

1 Quantity	no		1	1	
2 make	:		Dencon	Dencon	
3 type	:		SDE	SDE	
4 For O.D. Casing	in		7	5	
5 Rated Load Capacity	Mt		250 ton	250 ton	

H.1.3 Hinged Casing Spider



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1	Quantity	no	Not Avail.	Not Available			
2	make	:	=	=			
3	type	:	=	=			
4	For O.D. Casing	in	=	=			
5	Rated Load Capacity	Mt	=	=			
H.1.5 Casing Elevator/Spider							
1	Quantity	no	Elevator Not Avail.	Spider Not Available			
2	make	:					
3	type	:					
4	For O.D. Casing	in					
5	Rated Load Capacity	Mt					
H.1.6 Casing Bushing							
1	Quantity	no	1	1			
2	make	:	Dencon	Dencon			
3	type	:	Bushing	Bushing			
4	For O.D. Casing	in	complete for 2.3/8" to 20" handling				
H.1.7 Casing Slips for Rotary table							
1	Quantity	no	1	1			
2	make	:		Dencon			
3	type	:	CL	CL			
4	For O.D. Casing	in	20	13"3/8			
H.1.8 Casing Slips for Rotary table							
1	Quantity	no	1	1	1		
2	make	:		Dencon			
3	type	:	CL	CL	CL		
4	For O.D. Casing	in	9.5/8	7	5		
H.1.9 Single Joint Casing elevators							
1	Quantity	no		No Need	No Need		
2	make	:					No Need
3	type	:					
4	For O.D. Casing	inc					
.1.10 Single Joint Casing elevators							
1	Quantity	no	No Need	No Need	No Need		
2	make	:					
3	type	:					
4	For O.D. Casing	inc					
.1.11 Casing Thread Protectors							
1	make	:		No Need	No Need		No Need
2	type	:					
3	For O.D. Casing	inc					
.1.12 Casing Thread Protectors							
1	make	:	No Need	No Need	No Need		
2	type	:					
3	For O.D. Casing	inc					
.1.13 Casing Circulating heads							
1	Quantity	no	Not Offered	Not Offered			
2	Top connection	type					
3	Bottom connection	type					
4	For O.D. Casing	in					



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.1.14 Casing Circulating heads							
1	Quantity	no			Not Offered		Not Offered
2	Top connection	type					
3	Bottom connection	type					
4	For O.D. Casing	in					
.1.15 Casing Drift							
1		no		1		1	1
		type		Stuckey		Stucke	Stuckey
2	For O.D. Casing	in				Y	
3	For Casing Nominal weighth	lb/ft		20		13.3/8	9.5/8
				94		68-61	40-53,5
.1.16 Casing Drift							
1		no		1		1	
		type		=		=	
2	For O.D. Casing	in		7		5	
3	For Casing Nominal weighth	lb/ft		23-32		15-18	
.1.17 Casing Scrapers							
1	make	:		1		1	
				Stuckey		Stuckey	
				"best"		"best"	
2	type	:					
3	For O.D. Casing	in		9.5/8"		7" - 5"	
4	For Casing Nominal weighth	lb/ft		40-53,5		23-32 / 18-	15
.1.18 Manual Casing tongs							
1	Quantity	no				(Manual tongs as back-up)	
2	make	:				2	
3	type	:				VARCO BJ	
4	For O.D. Casing	in				DB	
5	Max Rated Torque	Lb.ft				20-13.3/8"- 9.5/8- 7-5	
						55,000 ft.lbs	
.1.19 Power Casing tongs							
1	Quantity	no				Integrated in casing make-	
2	make	:				up device	
3	type	:				=	
4	For O.D. Casing	in				=	
5	Max Rated Torque	Lb.ft				=	
.1.20 Casing Circulating Head (Top Drive Use)							
1	Quantity	no				No Need	
.1.21 Sling for Conductor Pipe							
1	Quantity	no				No Need	
2	Rated Load capacity	mt					
H.2 TUBING EQUIPMENT							
H.2.1 Tubing spiders							
1	Quantity	no				1	
2	Make and -type	:				Dencon	
3	For O.D. tubing	in				2.7/8" - 2.3/8"	
4	Rated load Capacity	mton				100	
H.2.2 Tubing Elevators							
1	Quantity	no				1	
2	Make and -type	:				Dencon	
3	For O.D. tubing	in				2.7/8 - 2.3/8 EU	
4	Rated load Capacity	mton				150	
H.2.3 Manual tubing tongs							
1	Quantity	no				2	
2	Make and -type	:				K-30	
3	For O.D. tubing	in				2.7/8 - 2.3/8	



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H.2.4 Powered tubing tong

1	Quantity	no	Not available
2	Make and -type	:	=
3	For O.D. tubing	in	=

H.2.5 Tubing Slips for rotary table

1	Quantity	no	2
2	Make and -type	:	Dencon
3	For O.D. tubing	:	2.7/8 - 2.3/8

L INSTRUMENTATION

L.1 INSTRUMENTATION AT DRILLER'S CONSOLE

L.1.1 Weight Indicator

1	make	:	Drillmec + WAGNER
2	type	:	HH-200
3	Weight Indicator sensor type	:	Pressure reducer

L.1.2 Stand pipe Pressure Gauges

1	Quantity	no	1
2	make	:	WAGNER
3	type	:	Analogic
4	pressure range indicator	kg/cm	0 - 350

L.1.2 Stand pipe Pressure Transducers

1	Quantity	no	1
2	make	:	WAGNER
3	type	:	Electronic
4	pressure range indicator	kg/cm	0 - 350

L.1.3 Torque indicator

1	make	:	DRILLMEC
2	type	:	Analog
3	Range	ft.lbs	0 - 26,000
4	Torque Indicator sensor analog or digital	:	Analog

L.1.4 Speed indicator

1	make	:	Rotary Table	For Top Drive
2	type	:	N/A	OMRON
3	Range	RPM		Digital
4	Speed Indicator sensor analog or digital	:		0 - 250
				Digital

L.1.5 Hook Position Indicator

1	make	:	Drillmec
2	type	:	Integrated

L.1.6 Tongs pull indicator

1	make	:	Drillmec
2	type	:	Pressure Transducer
3	Pull indicator sensor	type	See a.m.
4	Max. rated load	Kg	55,000 ft.lb

L.1.7 Mud Pump Stroke Counter Indicator

1	Quantity	no	2 (q.ty 1 each pump)
2	make	:	Wagner
3	type	:	SPM
4	SPM Indicator sensor analog or digital	type:	Digital

L.1.8 Mud Pump Stroke Totalizer

1	Quantity	no	2
2	make	:	Wagner
3	type	:	SPM



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L.1.9 Mud Pits Volume Totalizer

1	make	:	DRILLMEC
2	type	:	HH-200 INTEGRATED
3	Monitoring any single mud tank	yes/n	YES
4	Pit level sensors type	:	Sonic
5	Pit level sensors installed in tanks	no.	2
6	Pit Volume Gain/loss alarm	type	Visual + audible

.1.10 Mud Flow rate Indicator

1	make	:	DRILLMEC
2	type	:	HH-200 INTEGRATED
3	Flow rate sensor	type	Mechanic
4	Flow rate gain/loss alarm	type	Visual + Audible / ADJUSTABLE

.1.11 Trip tank level indicator

1	make	:	DRILLMEC
2	type	:	HH-200 INTEGRATED
3	Pit Volume Gain/loss alarm	type	Sonic
4	Recorder	yes/n	Y

L.2 INSTRUMENTATION INSIDE DRILLER'S DOG HOUSE

L.2.1 Drilling Parameter recorder

1	make	:	DRILLMEC
2	Pens	type	Electronic
3	Pens quantity	no	7
4	Pneumatic or electric	type	Electronic
5	Suitable for hazardous area	:	Y
6	Parameter Recorded : ROP	:	Y
7	Parameter Recorded: Weight on hook	:	Y
8	Parameter Recorded: Rotary speed	:	Not Applicable
9	Parameter Recorded: Top Drive speed	:	Y
10	Parameter Recorded: Rotary Torque	:	Not Applicable
11	Parameter Recorded: Top drive torque	:	Y
12	Parameter Recorded: SPM Pump 1	:	Y
13	Parameter Recorded:SPM Pump 2	:	Y
14	Parameter Recorded:SPM Pump 3	:	N

L.3 INSTRUMENTATION ON CHOKE CONTROL PANEL

L.3.1 Drill Pipe Pressure Indicator

1	Quantity	no	1
2	Make and type	:	MCM Swaco Style
3	Pressure Transducer type	:	STD
4	Pressure Reading range	:	0-10,000
5	Pressure accuracy	:	±0.25%

L.3.2 Annulus Pressure Indicator

1	Quantity	no	1
2	Make and type	:	MCM Swaco Style
3	Pressure Transducer type	:	STD
4	Pressure Reading range	:	0 - 10,000
5	Pressure accuracy	:	±0.25%

L.3.3 Mud Pump Stroke Counter Indicator

1	Quantity	no	One each pump
2	Make and type	:	MCM Swaco Style
3	Display Analog or digital type	:	Digital

L.3.4 Mud Pump Stroke Totalizer Indicator

1	Quantity	no	One each pump
2	Make and type	:	MCM Swaco Style
3	Display Analog or digital type	:	Digital



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L.3.5 Power Choke Opening Indicator

1 Quantity	no	1
2 Make and type	:	MCM Swaco Style
3 Display Analog or digital type	:	Analogic

L.4 DIRECTIONAL SURVEY TOOLS

L.4.1 Drilling Deviation Measuring Device

1 Quantity	no	1
2 Make and type	:	AOI
3 Type	:	
4 Deviation Range	deg.	0° - 8° and 0° - 16°

L.5 OTHER INSTRUMENTS

L.5.1 Mud Testing Portable Unit

1 Quantity	no	1
2 Make and type	:	Baroid P/N 82100

L.5.2 Calibrated Pressure Gauges

1 Quantity	no	1
2 Make and type	:	TBA
3 Pressure Range	:	0 - 350 bar

L.5.3 Personal Computer

1 Quantity	no	1 (contractor use)
2 Make and type	:	TBA

L.5.4 Computer printer

1 Quantity	no	1 (contractor use)
2 Make and type	:	TBA

M SAFETY EQUIPMENT

M.1 GAS DETECTION SYSTEM

M.1.1 Fixed H₂S gas monitoring system

1 Make and type	:	N
2 Total sensor installed	:	=
3 Sensor Type	:	=
4 Sensor installation site	:	=

M.1.2 Fixed Combustible gas monitoring system

1 Make and type	:	N
2 Total sensor installed	:	=
3 Sensor Type	:	=
4 Sensor installation site	:	=

M.1.3 Portable H₂S gas detectors

1 Quantity	no	3
2 Make and type	:	Accuro Kit c/w hoses
3 Tube for H ₂ S measuring range	ppm	Y
4 Tube for H ₂ S measuring range	ppm	Y
5 Tube for H ₂ S measuring range	ppm	Y
6 Tube for SO-2 measuring range	ppm	1-25
7 Tube for SO-2 measuring range	ppm	20-200 + 200 - 2000

M.1.4 Personal H₂S gas detectors

1 Quantity	no	2
2 Make and type	:	Draeger Pac5000 H ₂ S (0-100ppm)

M.1.5 Portable Explosive gas detectors

1 Quantity	no	1
2 Make and type	:	Draeger Pac Ex 2 Ex



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M.2 PERSONAL PROTECTIVE EQUIPMENT

M.2.1 Escape Air Breathing Apparatus

1	Quantity	no	20
2	Make and Type	:	Saver CF10
3	Breathing time	min	10 min (2 liters)

M.2.2 Self Contained Breathing Apparatus

1	Quantity	no	10
2	Make and Type	:	Draeger PA91 plus
3	Breathing time	min	30 min (7 liters)

M.2.3 Spare breathing Bottles

1	Quantity	no	10
2	capacity	ft ³	7 liters

M.2.4 Breathing Appartus bottles recharging air Compressor

1	Quantity	no	N
2	Make and type	:	=

M.2.5 Air blowers

1	Quantity	no	N
2	Make and type	:	=
3	Air blowers blowing rate	:	=
4	Air blowers installation site	:	=

M.2.6 Personal protective Equipment

1	Fireman Suit	no	2 - flame resistant only
2	Fire-Proof blanket	no	1
3	Fire Proof Glooves	no	1 pairs
4	Safety belts	no	3
5	Safety Helmets	no	Adequate q.ty
6	Safety Helmet for visitors	no	10
7	Safety Boots	no	Adequate q.ty
8	Chemical Proof Glooves	no	2 pairs
9	Chemical Proof Boots	no	2 pairs
10	Chemical proof Apron	no	2
11	Eye shields	no	5
12	Full Face visors	no	5

M.2.7 First Aid Equipment

1	Quantity	no	2 sets
2	First aid Kits location	:	Drillfloor and contractor office

M.2.8 Oxygen Resuscitator

1	Quantity	no	5
2	type	:	Bag type

M.2.9 First Aid Stretcher

1	Quantity	no	1
2	Location	:	contractor office

.2.10 Eyes Washing Stations

1	Quantity	no	2
2	Location	:	Drillfloor and mixing unit

.2.11 Emergency Shower stations

1	Quantity	no	See M.2.10 Eye washing are suitable for showers
---	----------	----	--



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2 Location : See M.2.10

.2.12 Other safety equipment

1 Derrickman Escape Device	no	Not applicable
2 Wind socks	no	2
3 Expl.Proof Electrical lights	no	6

M.3 FIRE FIGHTING EQUIPMENT

M.3.1 Fire water pumps

1 Quantity	no	2 - see water transfer pump
2 make-type	:	Baker SPD 3" x 2"
3 Fire water pump flow rate	lt/m	=

M.3.2 Fire fighting stations diesel fuel storage area

1 Fire hoses	no	3 x 20 meters each
2 Portable extinguishers	no	One each tank
3 Portable extinguisher Capacity	kg	50 kg
4 Extinguishing material type	:	Dust

M.3.3 Fire fighting stations diesel Engine-generator area

1 Fire hoses	no	See M.3.1.1	See M.3.1.1
2 Portable extinguishers	no	2	2
3 Portable extinguisher Capacity	kg	50 kg	5 kg
4 Extinguishing material type	:	Powder	CO ₂

M.3.4 Fire fighting stations at S.C.R./Main control cabin area

1 Fire hoses	no	Not applic.
2 Portable extinguishers	no	=
3 Portable extinguisher Capacity	kg	=
4 Extinguishing material type	:	=

M.3.5 Fire fighting stations Mud tanks area

1 Fire hoses	no	See M.3.1.1
2 Portable extinguishers	no	3
3 Portable extinguisher Capacity	kg	12 kg
4 Extinguishing material type	:	Powder

M.3.6 Mud pump area

1 Fire hoses	no	See M.3.1.1
2 Portable extinguishers	no	3
3 Portable extinguisher Capacity	lbs	12 kg
4 Extinguishing material type	:	Powder

M.3.7 BOP Accumulator area

1 Fire hoses	no	See M.3.1.1
2 Portable extinguishers	no	1
3 Portable extinguisher Capacity	lbs	12 kg
4 Extinguishing material type	:	Powder

M.3.8 Rig floor area

1 Fire hoses	no	See M.3.1.1
2 Portable extinguishers	no	4
3 Portable extinguisher Capacity	lbs	2 x 12 kg + 2 x 5 kg
4 Extinguishing material type	:	2 x powder + 2 x CO ₂

M.3.9 Barracks area

1 Fire hoses	no	See M.3.1.1
2 Portable extinguishers	no	2 each barrack
3 Portable extinguisher Capacity	lbs	1 x 12 kg + 1 x 5 kg
4 Extinguishing material type	:	1 x powder + 1 x CO ₂

N MISCELLANEOUS



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N.1 RIG SITE UTILITIES

N.1.1 Portable Water pumps

1 Quantity	no	2	
2 Make and type	:	Varisco	
3 Driven by motor type		Electric	
4 Water Pump flow rate	lt/m	1'000 lt/min	
4 Motor Power	HP	15	
5 Their main use for	:	Water from ground tank to water tank - ATEX CERTIFIED	

N.1.2 Water Suppling Line

1 O.D. diameter	in	3"	
2 Total length	ft	As needed	

N.1.3 Cellar Pump

1 Quantity	no	SEE N.1.1	
2 Make and type	:		
3 Cellar Pump flow rate	lt/m		
4 Driven by motor type	:		
5 Motor Power	HP		

N.1.4 Washing Water System

1 Use Fresh water	yes/n	Y	
2 Use Reusable cleaned Water	yes/n	Y	
3 Has two separated water circuits	yes/n	Y	

N.1.5 Washing Water Hoses

1 Quantity	no	3	
2 With Selfclosing valve		Y	
3 Location		TBA	

N.1.6 Welding machines

1 Electric welding machines	no	2	
2 Electric welding machines type	:	Portable	
3 Torch oxigen-acetylene welding sets	no	1	

N.1.7 Water blast cleaning machine

1 Quantity	no	N	N
2 Make and type	:	=	=

N.1.8 Steam cleaning machine

1 Quantity	no	1	
2 Make and type	:	IPC	

N.1.9 Wooden panels

1 Wooden panel quantity	no	Not Applicable	
2 dimensions L-W-H	m		

N.2 BARRACKS

N.2.1 Company Office Barrack

1 Quantity	no	1	
2 dimensions L-W-H	:	9m x 2,5m x 2,5m (office + bedroom + WC)	
3 Complete with office furniture	:	Y	
4 Living room	Y/N	Y	
5 Toilet and shower	Y/N	Y	
6 Full Climate Control	yes/n	Y	

N.2.2 Company Bed-Room Barrack

1 Quantity	no	Optional	
2 Dimensions L-W-H	m	1	
		9 x 2,5 x 2,5 - two bedrooms	



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3 Shower Cabin yes/n Y
 4 Full Climate Control yes/n Y

N.2.3 Contractor Office

1 Quantity no 1
 2 Dimensions L-W-H : 9mx2,5mx2,5m (office +
 bedroom + WC)
 3 Complete with office furniture : Y
 4 Living Room yes/n Y
 5 Toilet and shower yes/n Y
 6 Full Climate Control yes/n Y

N.2.4 Mud Engineer Laboratory

1 Quantity no 1
 2 dimensions L-W-H : 2 x 2 x 2.4
 3 Complete with : Y
 4 Full Climate Control yes/n N

N.2.5 Dressing Barracks (for Contractor use)

(Also for company contractors)

1 Quantity no 1
 2 dimensions L-W-H : 9mx2,5mx2,5m
 3 Complete with Showers yes/n No - included in canteen
 barrack
 4 Complete with Toilets yes/n No - included in canteen
 barrack
 5 Full Climate Control yes/n Heaters only

N.2.6 Dressing Barracks (For Company Use)

1 Quantity no N
 2 dimensions L-W-H : =
 3 Complete with Showers yes/n =
 4 Complete with Toilets yes/n =
 5 Full Climate Control yes/n =

N.2.7 Workshop barracks

1 Quantity : 1
 2 dimensions L-W-H : 6 x 2.5 x 2.4

N.2.8 Warehouse barracks

1 Quantity : 2
 2 dimensions L-W-H : 6 x 2.5 x 2.4

N.2.9 Emergency Sleeping Barrack

1 Quantity no see N.2.2
 2 Dimensions L-W-H : =
 3 Complete with beds no =
 4 Complete with toilets Y/N =
 5 Full climate control Y/N =

OPTIONAL :
GEOLOGIST OFFICE
MEETING ROOM
ANY OTHER

N.3 RIG INTERCOMMUNICATION SYSTEM

N.3.1 Fixed installation

1 make and type : **NOT AVAILABLE**
 2 Company Office Commun. Point yes/n =
 3 Contractor Office Commun.Point yes/n =
 4 Rig floor Communication Point yes/n =
 5 SCR barrack Communication Point yes/n =
 6 Mud Mixing Area Comm.Point yes/n =
 7 Shale shaker area Comm.Point yes/n =
 8 Mud Pump Area Commu.Point yes/n =
 9 Mud logging unit yes/n =



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DRILLMEC HH-200MM
 LP DRILLING SRL - ITALY

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10	Other Points	yes/n	=
11	Interphone rig-floor Derrick pltf.	yes/n	=
12	Interphone rig-floor Substructure.	yes/n	=
13	Public address system	yes/n	=
N.3.2 Portable radios			
1	Quantity	no	5
2	make and type	:	Motorola or Equivalent
3	Suitable for hazardous area	:	Y
N.3.3 Tele communication for Contractor's use			
1	Fax		FAX GSM
2	Cellular phone		Y
N.4 RIG WINTERIZATION SYSTEM			
N.4.1 Winterization system			
1	Designed for an outside temperature of	°C	N
N.4.2 Rig Heater Sources			
1	Steam heaters quantity	no	N
N.4.3 Enclosed areas			
1	Rig floor	Y/N	=
2	Rig Substructure	Y/N	=
3	Mud Tanks area	Y/N	=
4	Mud pumps area	Y/N	=
5	Mud mixing area	Y/N	=
6	Pipe rack area	Y/N	=
7	Other enclosed areas	:	=
N.4.4 Heated Areas			
1	Rig floor	Y/N	=
2	Rig Substructure	Y/N	=
3	Mud Tanks area	Y/N	=
4	Mud pumps area	Y/N	=
5	Other heated areas	:	=
N.5 HOISTING & TRANSPORTATION MEANS			
N.5.1 Light vehicles			
1	Quantity	no	2+1
2	make	:	Fiat
3	type	:	Ducato+Scudo
N.5.2 Mobile Cranes			
1	Quantity	no	N
2	make and type		=
3	Rated hoist.capacity	mton	=
N.5.3 Oilfield trucks			
1	Quantity	no	=
N.5.4 Oilfield trailers			
1	Quantity	no	=
N.5.5 Water tankers			
1	Quantity	no	N
2	make and type		=
3	loading capacity		=
N.5.6 Fork lift trucks			
1	Quantity	no	1
2	make and type		Manitou HT7140
3	loading capacity	ton	14 ton minimum



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N.5.7 Telescopic service basket

- | | | | |
|---|-----------------------|-----|---|
| 1 | Quantity | no | N |
| 2 | make and type | | |
| 3 | service load capacity | ton | |



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P PERSONNEL TO BE FURNISHED BY CONTRACTOR

P.1 AT OPERATING BASE

1	Manager	no
2	Material man	no
3	Administration	no

ASSIGNED ON DUTY

1	1
Come necessario	Come necessario

P.2 AT RIG SITE

1	Rig Superintendent	no
2	Tool Pusher	no
3	Night Pusher	no
4	Driller	no
5	Assistant driller	no
6	Derrickman	no
7	Floorman	no
8	Roustabout	no

ASSIGNED AT WELL SITE
 shift Daily

	2	1
	2	1
	4	1 2
	4	1 2
	4	1 2
	4	1 2
	6	3 (nightly if requested – do not exceed 12 hours / each 24)
	=	=
	Available upon request	
	2	1
	Available upon request	
	=	=
	(*)	=
	=	=
	=	=

1) assigned: si intende il totale del personale assegnato al rig, che include quello a riposo e in turno

2) on shift: si intende il numero delle persone presenti ad ogni turno (totale 4 per squadra)

3) Daily: si intende il personale presente solo di giorno (o comunque per 12 ore) quindi non in turno giornaliero



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Personnel Skill



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Position	Minimum Certification	Type of Duty	On duty per day	Total
Toolpusher	IWCF+First Aid + Firefighting (high risk)	daily	1	2
Nightpusher	IWCF+First Aid + Firefighting (high risk)	daily	1	2
Driller	IWCF+First Aid + Firefighting (high risk)	on shift	2	4
Assistant Driller	IWCF+First Aid + Firefighting (high risk)	on shift	2	4
Derrickman*	First Aid + Firefighting (high risk)	on shift	2	4
Floorman	First Aid + Firefighting (high risk)	on shift	2	4
Roustabout**		daily	TBA	TBA

(*) the rig is not equipped with monkey board. Derrickman to take care of the mud system and mud pumps. Helping at drillfloor, if needed

(**) Roustabout are used to work daily (07,00 AM to 07,00 PM). Other arrangements can be taken at rig site