

Rig #5

1. Loads for moving – Summer (20)
2. SUB145” Clear Height, KB to ground 189”
3. Fuel consumption – 2000-2500 L/day
4. TSM 6000 Drawworks with QSX 15 Cummins
5. EMSCO F-1000 Pump with 3412E CAT
6. 1 – 855 Generator
7. 1 – 3406 Generator
8. Hydraulic Pipe Tubs

RIG #5 EQUIPMENT LIST

Item	Description
DEPTH RATING	- 2400 metres
DRAWWORKS	- TSM 6000 S/D lebus grooved f/ 1 1/8" Line, Hyd Catheads, Hyd hoist, Hyd Wireline Device, Driller's Console, 1-Engine In-Line Compound w/Parmac 22" Hydromatic Brake, One Allison TC-955 Torque Converter; Rated for 550 HP
ENGINES	- One Cummins QSX15 Diesel Engine with Air Starter and Rig Saver
RATED PULLING CAPACITY IN POUNDS	- First – 188,000# - Second – 117,000# - Third – 76,000# - Fourth – 47,000#
MUD PUMPS	- EMSCO F-1000 Triplex driven by a 3412E CAT
SUBSTRUCTURE	- Rudd & Hodgsen 14' H x 14' W x 35' L Box Type Sub w/Rotary Beams, Safety Rails.
MAST	- Rudd & Hodgsen 105' H x 12' W Cantilever Mast, 250,000# SHL, Pin-Type, Crown Block w/ (5) 36" Sheaves, 1 1/8" Line, 4" Stand pipe, Crown Safety Platform, Racking Board, Boom, Mast Stand.
ROTARY	- Twister 175 17 1/2" x 44" Rotary Table w/ split Master Bushing
TRAVELLING BLOCKS	- Ideco Shorty 160 Ton Block/Hook Combination
SWIVEL	- TSM 150 Ton Swivel with mounted Foster Model 77 Kelly Spinner
MATTING	- 4 Pieces 8' x 40', 2 Pieces 8' x 10'
FUEL TANK	- 15 cubic meters, 15,000 litres or 3300 gallons

Item	Description
WATER TANK	<ul style="list-style-type: none"> - Capacity 240 BBLS or 383 m³
MUD TANKS	<ul style="list-style-type: none"> - One tank – 44.3 m³ capacity - 10' W x 7' H x 40' L Mud System with 7' long Mix Room c/w Internal Plumbing, Sidewinder Mix Hopper, c/w Trip Tank. - 2 5" x 6" Centrifugal Pumps Powered by 2 50 HO Electric Motors - Subsurface Mud Guns - Swaco Linear Shale Shaker - One Poorboy Degasser - One Ruffneck Steamer Heater - 44.3 Capacity Three Compartment - One 2" x3" Hole Fill Pump Powered by a 10 HP Electric Motor - One Sand Trap 1.0m³ Capacity - One Trip Tank 3 m³ Capacity - Settling Tank – 14.8 m³ Capacity - Suction Tank – 14.8 m³ Capacity - Suction Tank – 14.8 m³ Capacity
GENERATORS	<ul style="list-style-type: none"> - NT 855 G Cummins 200 KW Lima AC Gen Set with Electric Starter, Mounted in 10' x 45' long Utility House with Allen Bradley Electric Control Panel. - CAT 3306 150 KW Generator
BLOW OUT EQUIPMENT	<ul style="list-style-type: none"> - One 10-080-3BN 4 Station 80 Gal Closing Unit with Triplex Charging Pump Powered by 15 HP Electric Motor - One 9" 3000 PSI Hydril Annular Preventer - One 9" 3000 PSI Shaffer LWP with Blind Blocks - One 9" 3000 PDI Shaffer LWWP with 4 ½" Pipe Ram Blocks - 3" 3000 PSI Manifold with (2) 2" Wing Lines and (2) 2" Cameron Chokes

Item	Description
BOILER	<ul style="list-style-type: none"> - Volcano Type Boiler Manufactured by Dupre – 80 HP Diesel Fired with Water Tank – Capacity 12.47 m³ or 80 BBLS
DRILL STRING	<ul style="list-style-type: none"> - 256 Joints of 114 mm Drill Pipe 4 ½ XH Connections
DRILL COLLARS	<ul style="list-style-type: none"> - 18 158.75 MM (6 ¼) OD X 57.15 mm (2 ¼”) ID x 9.25 metre average length with slip recess and 4 ½ XH Thread - 2 111 mm (8 ¾”) O.D. x 76 mm (3”) x 9 meter average with 7” H-90 connection - One 4 ½” XH Reg. Box to 4 ½ XH box bit sub - One 4 ½” XH box to 6 5/8” reg box bit sub. - One 4 ¼ Square Kelly with Varco 4 Roller Bushings Model 4KRBM - One Upper Kelly Cock – Model Griffith - One Stabbing Valve - One inside BOP - 10 4 ½ XH pick up subs - One Bassh-Ross Dog Collar
MISCELLANEOUS	<ul style="list-style-type: none"> - Two 2” x 3” Water Pump with 10 HP Electric Motor - One Quincy 325 Air Compressor powered by 10 HP Electric Motor - One Quincy 325 Air Compressor – Compound Drive - One CAT 310 Wash Gun - Self-Contained Skidded Rig Managers Living Quarters - Safety Equipment - 4 Scott Air Packs - 2 First Aid Kits - 2 Stretchers – One fold up, One basket type - Escape Buggy - Fire Extinguishers

Performance Data Sheet F-1000 Pump (6 3/4 x 10)

SPM	HP	Liner size (in) & working Pressure (psi)						
		6 3/4	6 1/2	6	5 1/2	5 1/8	4 3/4	4 3/8
		2343	2643	3014	3457	4000	4700	4900
Flow Rate (GPM)								
150	1072	570.34	505.18	443.98	386.86	333.58	284.24	238.74
140*	1000	532.35	471.54	414.43	361.01	311.28	265.25	222.91
130	929	494.23	437.91	384.88	335.29	288.99	246.26	206.95
120	857	456.24	404.14	355.21	309.44	266.83	227.40	190.99
110	786	418.25	370.51	325.66	283.72	244.54	208.40	175.16
100	714	380.27	336.74	295.98	257.86	222.38	189.41	159.20
1		3.80	3.37	2.96	2.58	2.22	1.89	1.59

Notes

- 1) Based on 100% volumetric efficiency and 90% mechanical efficiency.
- 2) * Recommended speed and input horsepower for continuous services.

OMEGA D-750 TRIPLEX MUD PUMP

SPECIFICATIONS	
Maximum Input Horsepower	750
Stroke Length	8"
Maximum Rod Load	85,000 lbs.
Approximate Weight	11,500 lbs.
Lubrication	Force Fed
Pump Power End	Fabricated Steel
Gears	Double Helical
Gear Ratio	4.95:1
Rod Bearings	Shell Type Replaceable
Main Bearings	Straight Roller
Pinion Bearings	Spherical Roller
Crankshaft	1 pc. Forged Alloy Steel
Connecting Rod	Knuckle Joint
Crosshead Guide	Bronze Replaceable
Fluid End	Piston Type, Monoblock Design Machined From High Strength Alloy Steel, Heat Treated and Sonic Tested
Piston Size	4 1/2" to 7"
Discharge Outlet	4"
Suction Inlet	6"
Valves and Seals	Customer Specified
Piston Liners	Customer Specified

CONTINUOUS DUTY PERFORMANCE CHART											
PISTON DIAMETER	Displacement Factors @ 100% VE	PUMP SPEED IN CRANKSHAFT REVOLUTIONS PER MINUTE (RPM)									
		60		80		100		120		140 (1)	
		FLOW @ 100% VE	Max. Press. @ Flow	FLOW @ 100% VE	Max. Press. @ Flow	FLOW @ 100% VE	Max. Press. @ Flow	FLOW @ 100% VE	Max. Press. @ Flow	FLOW @ 100% VE	Max. Press. @ Flow
		US Gal. Per	US Gal. Per	US Gal. Per	US Gal. Per	US Gal. Per	US Gal. Per	US Gal. Per	US Gal. Per	US Gal. Per	US Gal. Per
Inches	GPR	GPM	PSIG	GPM	PSIG	GPM	PSIG	GPM	PSIG	GPM	PSIG
7.00	3.898	340	2211	320	2209	400	2208	480	2208	506	1952
6.50	3.448	207	2583	273	2562	345	2661	414	2660	483	2264
6.00	2.339	178	3008	235	3008	294	3005	353	3004	411	2887
5.50	2.469	148	3581	197	3579	247	3577	296	2578	346	3182
5.00	2.040	122	4333	163	4330	204	4328	245	4327	286	8826
4.50	1.652	99	5000	132	5000	165	5000	188	5000	231	4724
INPUT POWER	BRAKE HORSEPOWER @ 85% VE	364		485		606		727		750	
PINION RPM @ 4.95:1 GEAR RATIO		297		396		496		594		693	

BHP (Brake Horsepower) is based on 85% Mechanical Efficiency
 (1) - Speeds above 120 RPM are not recommended for Continuous Drilling Operations

PERFORMANCE DATA

Piston Diameter		4 ½"	5"	5 ½"	6"	6 ½"	7"
Gallons Per Rev. Barrels Per Rev. Maximum PSI		1.6524 0.0393 3.000	2.0400 0.0486 3.000	2.4684 0.0588 3.000	2.9376 0.0699 3.000	3.4476 0.0821 2.582	3.9984 0.0952 2.209
60 rpm (Pinion @ 297 RPM)	GPM	99	122	148	176	207	240
	BPM	2.36	2.91	3.53	4.20	4.93	5.71
	BHP	2.04	2.51	3.03	3.63	3.64	3.64
70 rpm (Pinion @ 347 RPM)	GPM	116	143	173	206	241	280
	BPM	2.75	3.40	4.11	4.90	5.75	6.66
	BHP	239	294	356	423	424	424
80 rpm (Pinion @ 398 RPM)	GPM	132	163	197	235	276	320
	BPM	3.15	3.89	4.70	5.60	6.97	7.82
	BHP	272	336	406	484	485	485
90 rpm (Pinion @ 446 RPM)	GPM	149	184	222	264	310	360
	BPM	3.54	4.37	5.29	6.29	7.39	8.87
	BHP	307	379	437	544	846	546
100 rpm (Pinion @ 495 RPM)	GPM	165	204	247	294	345	400
	BPM	3.93	4.88	5.88	6.99	6.21	9.52
	BHP	340	420	509	605	606	606
110 rpm (Pinion @ 545 RPM)	GPM	182	224	272	323	379	440
	BPM	4.33	5.34	6.46	7.69	9.03	10.47
	BHP	375	461	560	665	667	667
120 rpm (Pinion @ 594 RPM)	GPM	198	245	296	353	414	480
	BPM	4.72	5.83	7.05	8.39	9.85	11.42
	BHP	408	504	610	726	727	727

Based on 100% Volumetric Efficiency and 85% Mechanical Efficiency