

Rig #1

1. 22 Summer Loads
2. Fuel consumption – 2000-2500 L/day
3. Clear height under sub, 4.64m, 139”
4. Superior 700 Drawworks with 12V2000 Detroit
5. 2 – EMSCO F-1000 Pumps with 3412E CATS
6. 2 – 375 KW Generators, 2 – 60 Series Detroit Power
7. TESCO 250 HMI 475 Top Drive

RIG 1 EQUIPMENT LIST

Item	Description
DEPTH RATING	- 3500 metres
TOP DRIVE	- TESCO 250 HMI 475 (250 Ton 475 HP Hydraulic Top Drive)
DRAWWORKS	- Superior Model 700 PDS Single Drum, double parmac hydromatic brake - Crownomatic Crown saver - Rated for 700 input horse power
a) ENGINE	- One fuel-efficient 12V 2000 Detroit Power set for 850 input HP
b) TRANSMISSIONS	- S6610 Allison transmission with direct drive – 6 forward gears and 1 reverse
C) RATED PULLING CAPACITY	- Low - 288,000 #(128,160 daN) - Second - 192,000 #(85,440 daN) - Third - 144,000 #(64,080 daN) - Fourth - 97,000 #(43,165 daN) - Fifth - 72,000 #(32,040 daN)
MUD PUMPS	- #1 – EMSCO F-1000 triplex pump driven by a C-27 CAT engine - #2 – EMSCO F-1000 triplex pump driven by a 3412E CAT engine
SUBSTRUCTURE	- Box type one piece Dreco sub - Floor height – 3.96 m (13 ft.) - Width at base – 4.15 m (13.6 ft.) - Length – 12.19 m (40 ft.) Rotary table support – 275,000 #(122,375 daN) - Rated casing capacity – 275,000 #(122,375 daN) with 200,000 - #(89,000 daN) drill pipe set back in derrick

Item	Description
MAST	<ul style="list-style-type: none"> - Dreco angle leg, floor mount cantilever mast base width – 4.12 m (13.6 ft.) - Rated – hook load – 151,300 daN (340,000#) - 90,000 daN (200,000#) pipe set back
ROTARY TABLE	<ul style="list-style-type: none"> - Emsco 17 ½” rotary table, type T1750 complete with split bushing.
TRAVELLING BLOCKS	<ul style="list-style-type: none"> - Ideco Shorty 200 ton.
SWIVEL	<ul style="list-style-type: none"> - N/A
MATTING	<ul style="list-style-type: none"> - 14 pieces 8’ x 40’ x 6” or 2.44 x 12.19 x .183 m; 3 pieces 8’ x 24’ x 6” or 2.44 x 7.32 x .183 m
FUEL TANK	<ul style="list-style-type: none"> - 24,000 litres
WATER TANK	<ul style="list-style-type: none"> - 63.56 m³ or 400 bbls or 63,644 litres
TANKS: Mud & Mud System	<ul style="list-style-type: none"> - Two (2) tank mud systems, total capacity 122m³ working capacity 95 m³ - Suction Tank – one 47.69m³, three-compartment, plus 4m³ pill tank with mud treatment room - Shaker tank – 55.64 m³, three-compartment plus 4m³ trip tank and desilter room.
TANKS: Con’t Mud & Mud System	<ul style="list-style-type: none"> - Mud tanks are equipped with all necessary plumbing, subsurface mud guns, easy clean out gates, walks with handrails, stairways, “bean” style mix hopper, and chemical mixing barrel.

Item	Description
	<ul style="list-style-type: none"> - Four Abcor Model AMA-50 agitators with 5 HP motor - DFTS 275 XG -S18 Linear Motion Shaker - Three Mission mixing pumps driven by 60 HP electric motors - each pump can do precharge mud pumps, mixing hoppers, desilter, desander and subsurface mixing. - One Mission 10 HP electric motor driven hole filler 1 ½” pump for trip tank -One Poor Boy Degasser - Two Ruffneck Heaters
GENERATORS	<ul style="list-style-type: none"> - Two Stewart & Stevenson 375 KW Generators with 60 Series 635 HP Detroit Power
BLOW OUT EQUIPMENT	<ul style="list-style-type: none"> - One Wagner Model 10-080-3 BN hydraulics fluid accumulator with Eight 10-gallon separator Type accumulator bottles – 210 gallons fluid Reservoir tank with 5-station remote control tri-plex hydraulic pump Driven by a 10 HP electric motor, two nitrogen bottles hooked on line. - One 279.4 mm (11”) Shaffco spherical annular bag preventer 21,000 KPA W.P. – 3000 PSI - One Shaffco single gate ram preventor with blind blocks – 21,000 KPA W.P. – 3000 PSI
BLOW OUT EQUIPMENT	<ul style="list-style-type: none"> - One Shaffco single gate ram preventor with 114.3 mm (4 ½”) pipe rams - 21,000 KPA W.P. – 3000 PSI - One 254 X 254 mm Spool with two 76 mm outlets - Three 76 mm (3”) National ball valves – 21,000 KPA or 3000 PSI - One 76 mm (3”) National hydraulic acutuator (HCR) with manual handles - One 76 mm (3”) National Check Valve - One 254 x 254 mm (10” x 10”) Galaxy spacer spool with two 76 mm flanged outlets. -Two 76 mm flange Demco Valves

Item	Description
	<ul style="list-style-type: none"> - Eight fireproof high-pressure 25.4 mm hydraulic hoses with quick hook-ups
CHOKE MANIFOLD	<ul style="list-style-type: none"> - Consists of 2 – 76 mm (3”) McEvoy gate valves and 8 – 50 mm (2”) FE McEvoy gate valves, 2 – Willis Multi-Orifice chokes, type M-2
DRILL STRING	<ul style="list-style-type: none"> - 300 Joints of (4” FH) Grade X-95, 15.7 lb premium drill pipe with internal coating and fine particle hard-banded tool joints.
BOILER	<ul style="list-style-type: none"> - One Lister Volcano boiler and tank combination building with tool room, boiler room, and storage room, 8000 Litre fuel storage, skid mounted
SAFETY EQUIPMENT	<ul style="list-style-type: none"> - Four Scott Packs -First Aid Kit - Stretcher - Escape buggy - Fire Extinguishers
DRILL COLLARS	<ul style="list-style-type: none"> - 2 – 222 mm (8 ¾”) O.D. x 76 mm (3”) x 9 m average with 7” H-90 connection - 21 – 6 ¼” x 2 ¼” I.D. drill collars 4 ½” x H - Bit sub 6 5/8” reg. Box by 7” H-90 box
MISCELLANEOUS	<ul style="list-style-type: none"> - One Totco Pump stroke counter - One Totco Rotary RPM gauge -Four sets of 101.6 mm (4”) square tubing pipe racks (triangle shape) -Two Garrett 609.6 mm (24”) bug blower fans -One Griffith upper Kelly cock - Two 50.8 mm x 76.2 mm (2” x 3”) centrifugal water circulating pumps - One high-pressure rig wash gun Model Cat 310 - Two fuel transfer pumps

Item	Description
	<ul style="list-style-type: none"><li data-bbox="570 275 987 306">- Finn Hydraulic Pipe Spinner (N/A)<li data-bbox="570 338 1036 369">- One 4 1.2/" reg. Box 4 ½ x 0 box bit sub<li data-bbox="570 401 1036 432">- One Tool Push Quarters, self-contained<li data-bbox="570 464 911 495">- One Pason automatic driller<li data-bbox="570 527 1027 558">- One Type "C" Cameron WT Indicator<li data-bbox="570 590 1125 621">- One Roto-Torque Rotary Torque System (N/A)<li data-bbox="570 653 1008 684">- Foster Model 77 Kelly Spinner (N/A)

PERFORMANCE DATA

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.

Based on 90% mechanical and 100% efficiency

Brake Horsepower – $\frac{\text{gpm} \times \text{psi}}{1714 \times 90\% \text{ Mech. Eff.}}$

Barrels per Day = Gal. Per Rev. x rpm x 34.3

1 inch = 25.4 mm Gal. Per Min = Gal. Per Rev. x rpm
 1sq. in = 6.451 6 sq cm
 1 cu. In = 0.016 386 6 litres Gal. Per Min – $\frac{\text{bpd}}{34.3}$

Gal. Per. Rev. = $\frac{\text{Area of Piston} \times (\text{Length of Stroke} \times \# \text{ ofPistons})}{231}$