

General description:

Single module, self-propelled, cantilevered workover rig, capable of rigging up on 10 ft well spacing. The rig structure is fully winterized for Arctic operations.

Years in service:

The rig was started up in 1996. The rig was converted to a CTD hybrid rig in summer of 2002. During 2020 a rig maintenance program was completed including the re-installation of the triple derrick and topdrive upgrade.

Overall dimensions & weight:

- Length : 151' Height : 170' (derrick up)
 Width : 50'
 Weight : 2,450,000 lbs
- Cellar dimensions 15' x 15'
 - Minimum well spacing 10'
 - Maximum height to underside of table beams: 26'

Moving System:

- 8 - 40:00 x 57 tires and axles w/ 22" x 32" hydraulic jacks (Drivers)
- 64 - 11:00 x 22R Support Tires w/ 8 - 10" x 36" hydraulic jacks & controls
- Self-propelled w/ maximum speed of 2.0 mph

Derrick:

- Drecto Jack knife, Model M-133-18700 - 142' Triple
- Hook Load: 464,000 lbs w/ 10-line string up, 433,000 lbs w/ 8-line string up
- Wind resistance: 100 mph, no setback, 80 mph w/ setback
- Racking capacity: 16,000' x 4" drill pipe

Hoisting:

- Superior, Model 700 UE, 700 hp rating, makeup and breakout Quick Torques. Powered by a GE 752 DC Electric Motor.
- 2 - Pullmaster M-7 hydraulically operated winch rated for 2 tons
- 1 - Gear Matic Man rider winch rated for 3 tons regulated to 500lbs.

Prime Movers:

- 2 - Caterpillar, 3412 DISTA, 725 kw, with Kato generator, 600 V
- 1 - Caterpillar, C-18, T/A, 545 kw with Kato generators, 600 V, 750 kva.
- (External) 1 – Caterpillar, 3508 with CAT SR4B generator 600V, 800 kva
- Allen Bradley switch gear control system with load sharing.

Rotary Equipment:

- Tesco EXI 600 AC topdrive
 - 30,000 lbf-ft continuous drilling torque at 100 RPM
 - 45,000 lbf-ft maximum torque
 - 220 RPM maximum speed
 - Powered externally by a 900HP powerpack
- Continental Emsco T-2750 rotary table w/ 17-1/2" table bushing.
- Max. capacity: 750,000 lbs with 350,000 lbs on table and 400,000 lbs setback.

Mud Pumps:

- 2 - Emsco, F-800 hp, 5,000 psi working pressure
F-800 Triplex Pump (6-3/4" x 9") Performance Data

Strokes per minute	Horse-power rating	Liner size and pressure rating				
		6-3/4" 1,968 psi	6" 2,490 psi	5-1/2" 2,965 psi	5" 3,590 psi	4" 5,585 psi
		Volume - Gallons per minute				
160	853	669	529	444	367	235
150	800	627	496	416	344	221
140	747	585	463	389	321	206
130	693	543	429	361	298	191
120	640	502	397	333	275	176
110	587	459	363	305	252	162
Gallons Per Revolution		4.18	3.30	2.78	2.29	1.47

- Table is based on 100% volumetric efficiency and 90% mechanical efficiency rating
- Powered by GE Model 752 DC motor.
- 4" liners are included.
- The pumps can be operated continuously at no more than 80 % of published pressure rating and 90% of published strokes per minute rating.
- Hydril K-20 pulsation dampener installed on high pressure side of each mud pump.
- Relief Valves, Emsco - 3" 5000 psi

Mud system:

- 670 bbl total capacity
- 2 - 200 bbl working pits with 7.5HP agitators
- 1 - 100 bbl shaker tank
- 1 - 70 bbl pill pit with 7.5HP agitator
- 1 - 30 bbl trip tank
- 1 – MI-Swaco Mongoose PT Dual Motion shaker, 500-gpm.
- 2 – Alfa Lava; 418 Centrifuge high speed PLC controlled, with feed pumps
- 1 - Demco 5 x 6 transfer/pre-charge pump
- 2 - Mission 60 hp mixing pumps, 5 x 6
- 1 - Hole fill pump 3 x 4
- 1 - Transfer pump 5 x 6, 75 hp
- Triflow, compact 600GPM vacuum degasser

Tank Capacities:

- 1 - 200 bbl Cuttings Bin (Double-walled)
- 1 - 7,500-gallon ULSD fuel capacity (Double-walled)
- 1 – 7,500-gallon LSD or ULSD fuel capacity (Double-walled)
- 1 - 225 bbl freshwater tank

Well Control:

- Blow Out Preventer - Upon request 11" or 13-5/8"
- 13 valve choke manifolds, 3", 5,000 psi w/ Cameron 2" manual choke, 3" 10,000 psi Quality Oil Tools hydraulic choke and actuator panel, w/ annular and drill pipe pressure sensing, and stroke counter and totalizer.
- 160-gal, 7 station Accumulator
- Cat Model 3507 9 GPM @ 5,000 psi BOP Test Pump
- Mud Gas Separator: 15' high vessel, 36" ID with 6" inlet, 10' U-tube and 10" vent line. Includes internal baffle plates, clean out drain and siphon breaker on u-tube.

Instrumentation:

- Gas (methane and H₂S) detection system with sensors installed in the cellar, at the shale shaker and at the rig floor. Audible and visual alarms at designated areas around the rigs.
- Martin Decker hydraulic weight indicator, 8 line
- Pason, or equivalent, PVT system.
- Remote cameras in the pump rooms, shaker and BOP cellar
- 5-station Gaitronics Rig phone communication system

Electrical:

- National Oilwell/IPS SCR System, 1000-amp, 600 vac, 3 Bay
- Allen Bradley switch gear control system with load sharing.
- Emergency lighting in designated areas
- Adequate outside lighting to illuminate working areas.

Handling Equipment:

- Availability of elevators slips and tongs upon request.

Winterizing and Heating:

- 2 – Cleaver Brooks boilers, 80 hp w/ blowdown tank
- 1 - Dicks air heater, 4.2 mm BTU
- 19 - Roughneck steam heaters. 4 in reelhouse, 2 in cellar, 3 on rig floor, 7 on second level, 1 in pump room #1, and 2 in pump room #2.
- Enclosed and insulated from extreme arctic weather conditions.
- The overall rig is insulated and heated to a consistent 50 degrees Fahrenheit. The heating system comprises of a combination of boilers, Ruffneck heaters, Hot air heater with ducting system, and small electric heaters spread throughout the rig.

Coiled Tubing Drilling:

The rig has the capability to accommodate a full coiled tubing spread. A coiled tubing spooler can be installed in the reelhouse which is fully enclosed and equipped with an 120,000 lbs SWL overhead crane that can load/unload 180" shipping spools through a "bomb bay" door in the floor.

Coiled Tubing Drilling Well Control equipment:

- Hydril 7-1/16", 5,000 psi Working Pressure, Type Compact GK annular preventer
- Texas Oil Tools 7-1/16" 5,000 psi Working Pressure. Workover Hydraulic Operated Double Ram Blowout Preventer.
- Texas Oil Tools 7-1/16" 5,000 psi Working Pressure. Workover Hydraulic Operated Double Ram Blowout Preventer with Shear Ram Operators w/ boosters
- Flow cross 7-1/6" with 3-1/8" outlets.
- Pipe/slip rams for 1.315", 1.660", 2", 2.375", 2.875", 3.5"
- Variable bore rams 2.375" – 3.5"
- Shear/seal rams
- Flanged Risers 7-1/16" 5,000 psi Working Pressure, 2', 3' and 5' in length.
- FOSV valves: Two (2) H₂S Trim 2-1/2" x 5/16" w/ 1-1/2" MT connections

Instrumentation

- 2 - Micro Motion mass flow meters. One meter positioned to measure flow from well to shaker, mud gas separator and pits. One meter positioned to measure flow to coiled tubing reel.

Elevators:

- 1 - 100 ton 2 3/8" tubing elevators
- 1 - 100 ton 2 7/8" tubing elevators
- 1 - 75-ton YT 2 7/8" tubing elevators, dies 3 1/2" x 3 1/16", 3 1/2" x 2 7/8", 3 1/2 x 3-1/4"
- 1 - 65 ton 2 3/8" tubing elevators
- 1 - 45-ton MYT 1" – 1 1/4" tubing elevators

Slips:

- 1 - TSM 100 slips and Spider:
- Slip Dies for 1", 1-1/4", 2-3/8", 2-7/8", 3-1/16", 3-1/4" and 3-1/2"
- 2 - Varco type T Safety clamps

Tongs:

- 1 - Kelco K-30 tongs with 1 1/4" jaws.
- 1 - National Oilwell "Little Jerk" tubing make up / break out tong, 4,000 ft-lbs 1 11/16" to 3 1/2"

Tubulars:

Liner Clean-Out Strings:

- 4,000' of 1 1/4" 3.02 lbs/ft L-80 CS Hydril Pipe, including handling equipment
- 4,000' of 1" 2.3 lbs/ft L-80 CS Hydril Pipe, including handling equipment