

NORDIC CALISTA RIG #4 RIG INVENTORY

Derrick:

- Cassady Engineering – 140’ Triple Mast, in compliance with API 4F, includes top drive rail guidance system.
- Hook load: 700,000 lbs. with 10-line string up.
- Crown Block: Cassady Engineering 1 X 60”, 2 X 42”, 4 X 50”, in compliance with API Standard 8-C and API Standard 8-B, grooved for 1 3/8” drilling line
- Racking capacity: 500,000 lbs. Minimum, capable of racking up to 12,000’ of 5” drill pipe

Travelling Equipment:

- Travelling Block: Tri-Service Machine, 350 ton, in compliance with API standards 8-C and API RP 8B, grooved for 1 3/8” drilling line
- 2 sets of Elevator Links: 108” - 350 ton capacity, 216” – 350 ton capacity

Draw works:

- RigMaster IDE90AC, 1,500 HP rating, powered by Ward Leonard electric motor.
- Triple braking system: AC Motor (dynamic), Armature Brake (static holding), and self-energizing band brakes, spring-applied, hydraulic-released for static holding.
- Ansul crown saver toggle switch

Deadline Anchor:

- Tri-Service Machine, 100,000 single line pull load capacity, in compliance with API 8C.

Drilling Line:

- 1-3/8” x 6300’, 6 X 19 Camesa RRL EIPS IWRC

Pick Up/Lay Down Machine:

- Cassady Engineering Hydraulic Scissor Lift, with a cycle duration for loading pipe, transport to rig floor and back in under 150 seconds.
- 9,000 lb load rating for up to 9 5/8” tubulars

Prime Movers:

- 3– CATERPILLAR, Model 3512C generator set
- 1 – CATERPILLAR, Model C15, backup generator
- PECO Generator Control Center with Woodward control system

Rotary Equipment:

- Tesco 350-EXI-800, 800HP, 220RPM, capable of 37,500ft/lbs torque at 112 rpm and 18,000ft/lb at 220RPM, Max 48,000 ft/lb make up torque and 56,000 ft/lb break-out torque, integrated swivel rated 7500psi WP with 3” ID water course.
- Tesco Top Drive 360 Degree Pipe Handler complete with remote operated IBOP, and manual operated IBOP
- RigMaster ZP-275, 27-1/2” rotary table, 500 ton, 20,000 ft/lb torque rating.

Mud Pump

- 2 – RigMaster six-plex pumps, powered by 1,500 hp Amerimex AC Motor. Complete with 5-1/2” liners and pistons rated at 5,000 psi standpipe pressure.
- 2 – Mission Magnum 6 X 5 X 14 charge pump.
- 2 – Copper State Mud Pump Discharge Lines, in accordance with API STD 7K, with hub end connections, 4” ID, complete with safety clamps and wire.
- 2 - Pulsation Dampeners: RigMaster, pneumatic
- Check Valves: 4” - 5,000 psi.

**NORDIC CALISTA RIG #4
RIG INVENTORY**

- Pop-Off Valves: Each mud pump has a 3” Oteco shear pin relief valve installed.

Mud Pits: Operational Volumes

- Main Pits: 730 bbl
- Pill Pit: 63 bbl
- Trip Tank: 47 bbl
- Total Surface Volume: 840 bbls
- 4 – Spur 15hp agitators in the 4 main pits
- 1 – Spur 5 hp agitator in the pill pit
- Mix Pumps: 2 - Mission Magnum 6 x 5 x 14 centrifugal pumps, powered by 50HP electric motors.
- Pit volume indicators in each pit
- Automatic Exhaust Fans ventilation system
- 1 – Alfa-Lavel Shear Mixer

Solids Control:

- 2 - MI-Swaco Mongoose shakers, screen sizes, assorted 20-200 mesh available

Degassing Equipment:

- MI Swaco CD-1400 Centrifugal Degasser

Manifolds:

- Standpipe Manifold: Impact Industrial, 5,000 psi WP, 4” valves. Discharge lines have a minimum ID of 3”, rated to 5,000 psi WP
- Choke Manifold: PVS 3-5M nace trim, single gut choke manifold with buffer tank, rated to 5,000 psi WP

Rig Tank Capacities:

- 1 - 9774-gallon ULSD engine fuel storage tank, double-walled design
- 1 – 6736-gallon Boiler and Air Heater Diesel fuel storage tank, double-walled design
- 1 – 610-gallon diesel fuel storage tank for C-15 emergency engine
- 1 - 200 bbl fresh water tank

Fire and Safety:

- 12 - 30# A.B.C. Fire Extinguishers
- 2 - 15# Carbon Dioxide Fire Extinguishers
- 10 - 30 minute Air Packs
- 2 - No. 3 First Aid Kits
- 1 - Stretcher
- Safety Glasses, Disposable hearing protection
- 6 ea. Miller Climbing Harnesses and Lanyards
- 2 - Eye Wash Stations
- 1 – MSA 4 gas tester inc. LEL and O2 Levels
- 2 – Safety Showers, 1 located in the restroom and 1 located in pits
- 1 Restroom located on rig
- Geronimo Derrick Escape Line

Substructure:

- Substructure in compliance with API standard 4-F
- Maximum capacity: 500,000 lbs loaded setback capacity, 700,000.
- 2 – PULLMASTER PL-8 hydraulic rig floor winches
- 2 – JD Neuhaus hydraulic 72,000# rated BOP hoist system
- 1 – X301P Oilpatch personnel hoist rated for 700#.
- 1 - Sullair diesel-driven air compressor
- 1 – 30HP Sullair electrical-driven air compressor

**NORDIC CALISTA RIG #4
RIG INVENTORY**

Control Equipment:

- 3", 5,000 psi, w/ Bettis Electric choke control and actuator panel, w/annular and drill pipe pressure sensing.
- Accumulator: CTI 270gallon, built in compliance with API STD 16-D, 18 each 15-gallon bottles, 3,000 psi WP.
- BOP Test Pump: CTI 6,000 psi

Blow Out Prevention Equipment:

- HYDRIL 13-5M Compact GK annular preventer, flanged bottom and studded top, 5000 psi rating
- 1 – NOV-Shaffer 13-5M LXT Double Ram 10 MNLK with 10/10 MNLK shear booster, studded top and bottom, 5000 psi rating
- 1 – Academy 13-5M x 3-5M mud cross, 5000 psi rating
- 4 Sets Shaffer Variable Bore Rams, two sets are 4-1/2" – 7", two sets are 2-7/8" – 5"
- 2 sets of Shaffer 13-5M LFS shear rams
- Choke Manifold: PVS 3-5M nace trim, single gut choke manifold with buffer tank, 5000 psi rating
- Mud Cross Valves: 2 each 3-5M built as per API 6-A, H2S service, manually-operated, 2 each 3-5M HCR built as per API 6-A, H2S service, remotely operated with manual override, 5000 psi rating.
- Mud Gas Separator: MI Swaco Offshore Model, gas treatment capacity to 17.5 mm scfd, liquid treatment capacity to 1,500 gpm, H2S compliant.

BOP Rental Equipment:

- HYDRIL 13-5M Type V, single ram, flanged top and studded bottom, 5000 psi rating

Instrumentation:

- PECO Control System:
 - Controls and Gauges
 - Draw Works
 - Mud Pump #1
 - Mud Pump #2
 - Accumulator
 - Iron Roughneck
 - Pipe Handler/ Catwalk
 - Top Drive
 - Catheads
 - Hydraulics
 - Winches and Tuggers
 - Choke Controls
 - Generator Status
 - Hookload
 - HMI
 - Heads Up Display
 - Auto Driller
 - Power Management
 - Mud Pump Pressure Supervision
 - Zone Management System
 - Data Logger
 - 1 – Stellar Technology line scale weight indicator integrated with PECO heads up display
 - 1 – Pason line mounted secondary weight indicator
 - 1 – Pason flow show indicator
 - 1 – Pason ePVT system w/ pit volume indicators and loss/gain alarm

**NORDIC CALISTA RIG #4
RIG INVENTORY**

- 1 – GENERAL MONITOR Gas detection, 3-station, 2/ methane and H2S sensors, and alarms/exhaust system control
- 1 – Gaitronics rig phone communication system to 8 locations
- 2 – ESD Stations, on Driller’s Side and Off Driller’s Side
- 1 – Camera System for pump room, BOP cellar, mast, draw works, shakers

Electrical:

- Generator Control Center
 - (1) – 4000A Highline Incoming Breaker (3) – 2000A Generator Incoming Breakers (1) – 800A Emergency Generator Incoming
- Motor Control Center
 - 600VAC 1200A rated @ 60Hz
- Drive House Line Up
 - Converters (5) 800A continuous load, air cooled diode supply modules, incoming switch and fuses, shutdown/ lockout button Inverter
 - (1) 600V, 1740A continuous load inverter section, complete with DC isolation switch, fuses and control module. (DWKS)
 - Inverters (2) 600V, 1740A continuous load inverter sections, complete with DC isolation switch, fuses and control module. (MP1 & MP2)
 - Inverter (1) 600V, 1170A continuous load inverter section, complete with DC isolation switch, fuses and control module. (TD)
 - Inverter (1) 600V, 530A continuous load inverter section, complete with DC isolation switch, fuses and control module. (RT)
 - Choppers (2) 1200KW continuous duty 3 Phase dynamic braking units, complete with fuses and control modules. (DWKS Braking)
 - MCC Feeder (1) 600V, 1200A
 - MCC feeder breaker Moving System Feeder (1) 600V, 800A
 - Braking Resistors (2) 1200KW steel air cooled resistor banks, complete with cooling fan, thermal limit switch, pressure switch and termination enclosure (DWKS Braking)
- Lighting in designated hazardous areas are explosion proof
- Emergency lighting
- Rig-Mounted Exterior Flood Lights
- Portable Flood Lights

Handling Equipment:

Elevators:

- 1 - 2-7/8" drill pipe elevator
- 1 – 3-1/2" drill pipe elevator
- 1 – 5" drill pipe elevator

Slips:

- 1 – 2-7/8" drill pipe slips
- 1 – 3-1/2" drill pipe slips
- 1 – 5" drill pipe slips

Manual Tongs:

- 2 – BJ HT65 manual tongs, rated at 65,000 ft-lbs with lug jaws 3 1/2" – 14 3/8"

Iron Roughneck:

- Alco Iron Roughneck 2 3/8" – 10" jaw capacity, make up torque 90,000 ft-lbs, Break Out Torque 110,000 ft-lbs, Pipe Spinner is capable of 2100 ft-lbs torque at 3000psi

Hydraulic Catheads:

- 2 – RigMaster Dual Cobraheads, 20,000# Single Line Pull at 2800psi

**NORDIC CALISTA RIG #4
RIG INVENTORY**

Winterizing and Heating:

- 2 – York-Shipley 100HP Boilers, 3.3 million BTU/hr output
- 12 – 24” Hazloc Steam Heaters
- Boiler water supply tank with automatic feed system from rig water tank
- 1 - Dicks 4.2 million BTU air heater
- Enclosed and insulated from extreme arctic weather conditions

Vehicles:

- 1 – Crew Vehicle
- 1 – Rig Manager’s Truck
- 1 – Loader, CAT 950M loader with forks, extensions, snow bucket and scratcher.

Spill Containment:

- All motors and hydraulic units equipped with catch pans (drip trays) and drip lips

Moving System:

- Well to Well: Nordic-Calista Rig 4 is a single module self-propelled walking rig, capable of moving ~10’/hour.
- Pad to Pad: Nordic-Calista Rig 4 can be broken down into ~200,000lb truck-able loads for long distance and ice road travel.