

# CABOT / INGERSOLL-RAND 2550 HL

## MOBILE DESERT RIG

### EQUIPMENT LIST

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**1. GENERAL CHARACTERISTICS:**

The Drawworks, Mast, Substructure and accessories comply with the following API specifications:

- Mobile Desert Rig type 2550 HL 1500HP.
- Mast and Substructure Nominal Gross Capacity: 735,000 lbs. (334 ton).
- Capacity of rig hoisting equipment: 715,000 lbs. (325 ton).
- Capable of drilling 2500 m. with 5” drill pipe and 3700 with 3 ½” drill pipe.
- Maximum working pressure 5000 psi.
- Capable of handling Casing: 5”, 5 1/2”, 7”, 7 5/8”, 9 5/8”, 13 3/8”, 18 5/8” and 20”
- 115 ft. Double Erecting Mast and Hydraulic slingshot, fully moveable 25 ft. height Substructure.

**2. DOCUMENTATIONS:**

1. Rig Manuals and Catalogs.
2. Rig Drawings and Layouts.
3. Rig Certification Documents.
4. Rig PMS Records.
5. Rig Spare Parts Inventory.

**3. DRAWWORKS:**

One (1) ea. Drawworks type **CABOT FRANKS/** 2550 HL 1500HP, designed and rated to comply with API spec 7K for Drilling and Production Hoisting Equipment. The Drawworks is lebus grooving for drill line size 1 ¼ in. Driven by driven by Two (2) ea. EMD D79MB6 X 800HP DC traction motors,

Drawworks Features:

- Lifting points on each module and breakdown/assembly instructions are provided.
- Two (2) 800HP DC Traction Motors heavy duty sub skid
- Heavy-duty drum sized for the application and Lebus grooving for 1 1/8 in drilling line.

- Auxiliary Brake **BAYLOR/ ELMAGCO** type 6032.
- Hoisting Speed: 5 Forward and 1 Reverse,
- Maximum line pull (2 layers), 55,700 lbs.
- Crown Saver: **ACADEMY SERVICES** model 120.

### 3.1. CATHEADS:

Two (2) ea. Catheads Foster make up 665-AH, Break out 166-BAH.

## 4. MAST & SUBSTRUCTURE:

### 4.1. MAST:

**CABOT** Triple Mast model 127-715 4-LEG, Telescoping is a freestanding 127 ft. clear height, Nominal Gross Capacity 1,000,000 lbs., with 715,000 lb. hook load capacity with 10 lines (API Std. 4E). With safety, climb ladder and guards. The mast comprises of the following:

- Three (3) ea. sections consists of a base section, middle and a crown/upper section. Each base section is complete with handrails and toe plates that are designed to facilitate inspection of the latching system during the mast extension and vertical erection procedure.
- Racking Board: The racking board is 85.0 & 87.0 ft. above the drill floor and includes high hand rails and an escape platform. Racking platform capacity for 5" drill pipe 3,500m and 8 stands of 8" dill collars, or 4,500 meter of 3 ½" DP and 8 stands of 6-1/2" dill collars,
- Raising System: Two stage double acting rams,
- Casing stabbing board: CABOT Model 00-MN-CMRH. Adjustable height,
- Extending System: Truck,
- Two (2) ea. counterweight systems, two (2) ea. for the tongs,
- One (1) lot Mast ladders with safety cage from the working floor to the Crown and one (1) ea. integrated stair up the back of the each of the A-legs,
- Escape line: **GERONIMO** Escape Device,
- DRILLER'S CABIN/DOG HOUSE: Driller's cabin meets, includes:
  - ✓ One (1) ea. personnel doors
  - ✓ One (1) ea. air conditioner
  - ✓ Two (2) ea. interior lights
  - ✓ One (1) set impact resistant fixed glass windows

### 4.2. SUBSTRUCTURE HYDRAULIC ERECTING STYLE:

**DRECO** Hydraulic slingshot erecting fully moveable substructure, it is extended up and retracted down with hydraulic rams.

The drill floor height is 17.0 ft., Size is (40' - 0" long X 18' - 4" width), complete with hinged handrails complete with toe plate and a sliding gate at the V-Door.

The independent Rotary system is designed into the center drill floor section and the Drill Floor is checker plated with 3/8" plate around rotary table and drill floor.

The Base Box section size is (40' - 0" long X 21' - 2" width),

The substructure includes:

- Substructure Maximum Capacity: 1,135,000 lbs.
- Rotary Table Load (Casing Load): 735,000 lbs.
- Set back capacity: 400,000 lbs.
- Height is 17.0 ft.
- Height to underside of rotary beam: and clear height is 12.0 ft. & 8 in.
- Three (3) sets of stairs complete with handrails are standard.
- One (1) ea. Mouse-hole range II.
- One (1) set 20 T BOP 1 ea. manual chain hoist.

#### 4.3. CATWALK:

One (1) ea. Two-piece Catwalk is complete with a bumper.

#### 4.4. CROWN BLOCK:

One (1) ea. **CABOT** Crown Block assembly have 5-sheave main cluster consisting of five (5) ea. 35" diameter sheaves grooved for 1-1/8" wire line, and one (1) ea. 42" fast line sheave assembly with sheave grooved 1-1/8" sheave, high handrails and bumper blocks. The crown assembly frame will have pad eyes for a block suspension line complete with a certified wire rope and shackle assembly. The Mast assembly is supplied tugger sheaves as necessary.

#### 4.5. TRAVELING BLOCK ASSEMBLY:

One (1) ea. IRI International UTB-360-5-50, Model "B" Hook-Block Combination Assembly of 360-ton capacity complete with five (5) 50" sheaves grooved for 1-1/8" drill line, comply with API spec 8A.

#### 4.6. DEADLINE ANCHOR:

One (1) ea. **HERCULES** model "HA118T" Deadline anchor for use with 1-1/8" wire rope, 45,000 lb. Deadline pull, 16" drum diameter, and "Compression" type sensor. The Deadline Anchor is located at base of mast.

#### 4.7. WINCHES:

##### 4.8.1 PNEUMATIC DRILL FLOOR WINCH:

- a. One (1) ea. Pneumatic winch manufacturer **INGERSOLL RAND** type FA5A-24MK1 of 10,000 lbs., and 500 ft. of 3/4" cable, Located at rig floor.
- b. One (1) ea. Pneumatic winch manufacturer **INGERSOLL RAND** type K6UL of 7,000 lbs., and 420 ft. of 3/4" cable, Located at rig floor.
- c. One (1) ea. Pneumatic winch manufacturer **INGERSOLL RAND** type BU7APTAB of 7,000 lbs., and 30 ft. of 5/16" cable, Located at racking board.

##### 4.8.2 MAN-RIDING AIR WINCH:

One (1) ea. **INGERSOLL RAND** Pneumatic Man-Ridding model FA2BGULF of 4,400 lbs., and 198 ft. of 1/2" cable, Located at rig floor with throttle w/ automatic return to neutral, Auto disc brake.

### 5. ROTATING EQUIPMENT:

#### 5.1. TOP DRIVE:

One (1) ea. Top Drive unit **CANRIG 8035-E** 350 tons, with GE-752 DC motor, Continues torque 30,000 ft-lb at 180 RPM, Break-out torque 37,500 ft-lb, Maximum connection BO torque 70,800 ft-lb, Water course 3 in.

## 5.2. ROTARY TABLE:

One (1) ea. **NATIONAL** Model C-275 Rotary Table rigid box-type base cartridge type pinion shaft assembly with roller bearings turntable locking-dog and selection of permanent lock in both directions. Heat-treated spiral bevel gear, pinion precision alloy- steel main table ball bearing and upper thrust ball bearing, centralized oil, and grease lubrication. Hydraulic motor directly connected to input drive shaft, driven by Draw-works via propeller shaft.

- One (1) ea. Slit Type Rotary Master bushing. Including # 1, 2, 3 bowls.
- One (1) ea. Bowl Insert 11-3/4" - 13-3/8" Casing.
- One (1) ea. Bowl Insert 10-3/4" - 9-5/8" Casing.
- One (1) ea. Bowl Insert 2-3/8"- 8-5/8" Casing.

## 5.3. SWIVEL:

One (1) ea. **NATIONAL** Swivel Type P-500, 500-ton capacity.

## 6. MUD SYSTEM:

### 6.1. HIGH PRESSURE MUD SYSTEM:

#### 6.1.1 MUD PUMPS:

Two (2) ea. Triplex Mud Pumps 1300HP, Type **NATIONAL** Model 10P-130 Electric Drive. Each mud pump driven by Two (2) ea. EMD D79MB6 X 800HP DC traction motors,

The Mud Pumps technical specifications:

- Rated Input power: 1300HP @ 140 SPM
- Single-Acting Triplex Rated: SPM 140
- Stroke: 10.0 in.
- Gear Ratio: 2.853

The Mud Pumps are Complete with different sizes of liners and pistons, Polyurethane Valves and Seats, Suction Manifold and the following main components:

#### 6.1.1.1 PUMP SKID UNITIZATION:

The Mud Pumps are complete with structural steel three-runner skid with two (2) chain drive assembly guards and drive sheaves. Structural steel motor sub-base with one adjustable motor base plate all mounted on master skid complete with I washer pump and oil filter pump.

#### 6.1.1.2 SUCTION SYSTEM:

Suction system complete for three (2) pumps as follows:

Two (2) ea. charging pumps with Two (2) ea. 6" suction lines from suction valves in mix tank and suction tank to mud pump suction manifold. Provide suction connection for supercharger pumps from suction lines. Manifold supercharger pump discharge for charging triplex pump.

#### 6.1.1.3 SUPERCHARGING PUMP:

One (1) set Supercharging pump assembly on each pump complete with the following:

- One (1) set Supercharging pump assembly HALCO Type 2500 SPREME on each pump complete with 6x5 HALCO centrifugal pump X 75HP AC motor

#### **6.1.1.4 DRIVE MOTOR ASSEMBLY:**

Two (2) ea. 800 HP (595 kW) EMD D79MB6 X 800HP DC traction motors, with one (1) ea. blower on each mud pump.

#### **6.1.1.5 PULSATION DAMPENER:**

One (1) ea. Hydril Model K20 5000 psi on each mud pump.

- Maximum Service Pressure: 5,000 psi
- Surge Capacity: 20 gallons
- Connection: 4" API 5,000 RTJ
- With Bottom Connection Kit & Charging Hose Assembly
- Studs, nuts, ring gaskets, flanges and fittings for installing pulsation dampener, relief valve, and pressure gauge.

#### **6.1.1.6 RESET RELIEF VALVE:**

One (1) ea. **Retsco** 3 in., type "C" per mud pump, Pressure rating 1500psi x 5000psi, Mounting Bracket.

#### **6.1.1.7 PRESSURE GAUGE:**

One (1) ea. **MARTIN DECKER** Pressure gauge per mud pump, (0-5000) psi, Nuted.

#### **6.1.1.8 TOOLS SET FOR FLUID END MAINTENANCE:**

- Hydraulic Valve Seat Puller
- Tee Handle Bolt
- Driver for Valve Seat
- Wrench for Valve Cover
- Charging hose assembly with pressure gauge to charge mud pump pulsation Dampener.

#### **6.1.1.9 MUD DISCHARGE SYSTEM:**

- Two (2) set Mud pumps provide 4" schedule XXH lines complete with 2 x 2" and 3 x 4" (5) valve manifold for pump isolation with hammer unions at break points from bottom of substructure to mud pumps via vibrator hoses.
- Vibrator Hoses 3-1/2" ID x approximately 15', 5000 lb. working pressure with 4" API welded type connections for connection of mud pumps to above high-pressure mud lines.
- One (1) set Single 4" x 5,000-psi WP high-pressure mud delivery system.

### **6.1.2 STANDPIPE ASSEMBLY:**

#### **6.1.2.1 STANDPIPE LINE:**

5" Single standpipe assembly complete with clamps installed on off driller's side, including weld on type unions with schedule XXH piping

#### **6.1.2.2 STANDPIPE MANIFOLD ASSEMBLY:**

One (1) set H style 4", 5,000 lb. WP standpipe manifold assembly with connections for two (2) 2", 5000 psi pressure gauge, two (2) 3", 5000psi kill/fill line and five (5) 4" 1502 welded connections for mud pump sensors. Weld on type unions and schedule XXH piping to be utilized.

## **6.2. LOW PRESSURE MUD SYSTEM:**

### **6.2.1. MUD TANKS SYSTEM:**

The Mud Tanks total capacity 2,110 bbls. (335 m<sup>3</sup>), Active Capacity 1,676 bbls (266 m<sup>3</sup>).

The Mud System comprised of the following compartments:

#### **6.2.1.1. One (1) ea. SHAKER TANK:**

- Volume capacity: 69 m3 (434 bbl.)
- Number of sections: Two
- Sand trap volume: 1.75 m3 (11 bbl.)
- Agitators: Two (2) ea. **BRANDT** model AM10 (7.5 hp)
- Mud guns: Three

#### **6.2.1.2. One (1) ea. INTERMEDIATE TANK:**

- Volume capacity: 403 bbl. (64 m3)
- Number of sections: Two
- Agitators: Two (2) ea. **BRANDT** model AM10 (7.5 hp)
- Mud guns: Two

#### **6.2.1.3. One (1) ea. SUCTION / MIXING TANK:**

- Volume capacity: 403 bbl. (64 m3)
- Number of sections Two
- Agitators: Two (2) ea. **BRANDT** model AM10 (7.5 hp)

#### **6.2.1.4. Two (2) ea. RESERVE TANK:**

- Volume capacity: 415 bbl. (66 m3)
- Agitators: Two (2) ea. **BRANDT** model AM10 (7.5 hp)

#### **6.2.1.5. TRIP TANK / STRIP TANK:**

- 32 bbl. (5.1 m3) & 7.5 bbl. (1.2 m3)

Also, includes:

The tanks are supplied with 10 in. butterfly dump valves for clean out in each compartment, telescoping light pole, hinged starter mounting arms and bottom mud guns in each tank.

### **6.2.2. SOLID CONTROL SYSTEM:**

#### **6.2.2.1. SHALE SHAKERS:**

Three (02) ea. Shale shaker type **MI SWACO ALS II**, adjustable Shaker each shale shaker is equipped with two (2) ea. 2.3 HP vibrator motors, 60 Hz, 460 volt, 3 phase, explosion proof electrics, linear and balanced elliptical motion switchable while running.

Process each 750 GPM PPG weight and 15 to 25 CP mud viscosity fluid.

#### **6.2.2.2. DESANDER:**



One (1) ea. **NOV** Desander type “DSN10002H, 2 CONE”, 2 Cyclone, 4" Inlet, 1000 GPM.

#### 6.2.2.3. DESILTER:

One (1) ea. **NOV** type “DSL1000204C”, 20 Cyclone, 4" Inlet, 1000 GPM.

#### 6.2.3. MUD MIXING SYSTEM:

The Mud Mixing System consists of mud mixing pumps, injection hoppers, suction and discharge manifolds as per following:

Two (2) ea. mixing mud hoppers, with with access to any mud tank, independent discharge line and bottom mud gun in each tank.

- Two (2) ea. mixing mud hoppers with access to any mud tank, independent discharge line and bottom mud gun in each tank.
- 6" Mixing Funnels.
- Two (2) ea. **HALOC** 8" x 6" x 14" Centrifugal Pumps sets for circulating, processing drilling fluid and mud pump charging system must be equipped with 75 HP Electric Motor Explosion-Proof – 480 Volt 1750 RPM, 60 HZ, 3 phase and.

#### 6.2.4. OTHER MUD EQUIPMENT:

- One (1) ea. Laboratory on mud tank with working stand, sink, water loss, densimeter, air 120 psi, water, 127 v power etc. The mud laboratory is set with a complete mud measuring apparatus.

#### 6.3. BOPs HOIST UNIT:

One (1) set of two ea. Manual hoist for BOP movement model “-----” (2 x 20) ton Capacity and 5.5 m. lift, Hang on Substructure beams.

#### 7. POWER GENERATION:

##### 7.1. MAIN GENERATORS:

Four (4) set AC Engine/Generators sets especially made for desert transport operations including:

- Four (4) set **KATO** model “1030-680361111”, 1030KW- 1200 RPM-1240 AMP, 60Hz, Driven by;
- Four (4) set **Caterpillar** Engine Model D-398 DI-TA, 540 Kw. 1000 RPM.

##### 7.2. SCR DRIVE SYSTEM AND GENERATOR CONTROLS:

The system consists of four (4) ea. Bays.

###### 7.2.1. SCR GENERAL DESCRIPTION:

- Manufacturer **ROSS HILL**
- Type 1200
- Voltage 600 VAC
- Frequency 60Hz

###### 7.2.2. CIRCUIT BREAKER SECTION:

One (1) ea. 800 AMP frame Circuit Breaker of stationary type, Molded case.

### 7.3. GROUNDING SYSTEM:

Per IEEE and API Standards.

### 7.4. LIGHTING SYSTEM:

Heavy duty vapor tight explosion proof and weatherproof fluorescent and mercury vapor lighting system, using lighting fixtures for use with a land rig with related equipment as shown. All lights within 10 ft. of well center shall be explosion proof.

Lighting Fixtures to operate from 120 volts, 1 phase, 60 Hz. Power and meet or exceed American Petroleum Institute (API) specifications RP-500. Each fixture to have a Class 1 Division 1 rated plug and receptacle disconnect to allow safe and easy removal of any fixture for service or movement to another location day or night without interruption of any power of illumination.

### 7.5. GRASS HOPPER & CABLE TRAYS:

One (1) Lot Electrical cable/service trays to accommodate air, fuel, water and electrical cable. Top of trays covered to provide walkway. One (1) Grass Hopper skid assembly complete.

### 7.6. HPU:

One (1) ea. **Q-SINE** Electric/Hydraulic unit consist of:

- One (1) ea. Diesel engine **General Motors**, type GM-741,
- Industrial motor **BLADOR** type CM3548,
- Two (2) ea. Electrical motor **WGE** 460 volts, 60 Hz.
- Two hydraulic pumps,

8. Hydraulic reservoir, sight glass, thermometer, low/high level alarm, aux. connection, pressure gauges, filters and cooling radiator. Electrical enclosures are explosion proof.

### 9. AIR SYSTEM:

#### 9.1. AIR COMPRESSORS:

(2) ea. **QUINCY** Rotary screw compressor

- Type QSI-245
- Working pressure (max) 150 psi (10 bar)
- Volume flow 243 acfm each
- Emergency Stop button
- CSA/UL Wye Delta Starter 480 VAC

#### 9.2. AIR DRYER:

One (1) ea. **VAN AIR**, Model RD-250.

#### 9.3. DIESEL DRIVEN COLD START AIR COMPRESSOR:

One (1) ea. **QUINCY** Air compressor two-stage cold start compressor model QSI-390, 150 psi, (29.5 to 64) CFM (Range) with constant speed control, inlet filter, intercooler and relief valve.

#### 9.4. AIR RECEIVER:

Two (2) ea. **MANCHESTER** Air receivers, 240 gal. each on air compressor skid with pressure relief valve, gauge and piping.

### 10. INSTRUMENTATION AND DATA ACQUISITION:

- Drillers Control Console,
- Hook Load (incl. recorder), Type Martin Decker, 7 pen,
- RIG WATCH by **EPOCH WELL SERVICES INC**,
- Pump pressure Martin Decker 0-5000 psi,
- Choke manifold pressure Martin Decker 0-5000 psi,
- Rotary table torque Martin Decker type FA9-2,
- Make-up torque Martin Decker 0 – 2,500 kg,
- Pump stroke Incorporated in tank monitoring system
- One (1) set Deviation survey double recorder 2 unit x 8 degree, 1 x 16 degree Complete assy. With overshoot and sinker bar, for 8", 6-1/2", and 4-3/4" drill collars.

**11. WATER AND FUEL TANKS:**

One (1) ea. Water Tank.

One (1) ea. Fuel Tank.

