ENERGY DRILLING AUSTRALIA

Rig 2

Schramm TXD 200

(Sn. J135-0215)

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EQUIPMENT AND INVENTORY

Component	Description
Drilling Rig	The Schramm TXD Rotadrill is a heavy hoist, deep hole, trailer mounted top head drive drill rig with an automated pipe handling system. The TXD utilizes innovative Schramm Telemast technology to achieve range 2 drill pipe/range 3 casing length capability in an efficient, readily transportable package and ideally suited for a range of applications. The Schramm Rotadrill TXD Rig is rated for 200,000 lbs nominal pullback. Mounted on tri-axle gooseneck trailer with: • Dual 5" bore x 36" stroke front jacks mounted on trailer frame. • Dual 5" bore x 41" stroke rear jacks integral to the drilling rig main frame. • 2" SAE removable king pin • 1 x 415 litre carrier mounted fuel tank with direct feed from 20,000l bulk tank • Deck mounted rig engine & radiator. Radiator rated for 54.5 degrees C ambient temperature.
Substructure	Sub-base under rig carrier trailer. Height of sub-base 400mm clearance between rig floor and ground is 4,200mm TRAILER MUST BE SECURED TO SUB-BASE FOR PULLBACK OPERATIONS. Front of carrier is anchored to sub-base by two 6 tonne chain blocks. Mast is anchored to front of rig carrier trailer by two guy wires each with a 6 tonne chain block. Approx. 8' long x 14' wide rig floor, with non skid working surface is an integral part of the pipe handling trailer and pins to the rear of rig, providing a level surface for rig crew approximately 12 ft (4.2 m) above ground level. Pipe handling trailer sits on steel feet to stabilise the pipe handling unit. All landing legs are independently controlled to achieve a level setup. Rig trailer & rig floor elements include walkways, stairways and handrails to AS 1657 for access and egress.
Hydraulic Pull Back / Pull Down System	Hydraulic powered pull down and pull back. Traverse in either direction of 50' (15.24) achieved by hydraulic cylinders in compression telescoping the sliding mast, in or out by a 1:2 ratio 2 x 1-1/2" OD diameter traverse wire ropes over 4 x 27" PD Nylatron sheaves with a ratio wheel to rope of 18:1. Installed rope type is 8 x 26 Rope, nominal breaking strength per strand of 128.2 tons for each rope. Nominal maximum pullback force = 200,000 lbs (90,909kg) Actual Maximum Pull back force under TDS = 200,000 lbs Nominal maximum pull down force = 32,000 lbs (14,545 kg) Actual Maximum Pull down force under TDS = 32,000 lbs Pull down speed: = 200 fpm Pull back Speed: 0 – 130,000 lbs @ 100 fpm 131,000 – 180,000 lbs @ 75 fpm 181,000 – 200,000 lbs @ 25 fpm

Component	Description
Rig Engine	Detroit Diesel DDC/MTU 12V-2000TA DDEC, 760 bhp (567kW) @ 1800 rpm. Engine is fitted with remote and local ESD, air start, spark arrestor muffler, rig air strangler shutdown & lagged exhaust. Brushless 24 volt DC alternator fitted on the engine.
Rig Engine Electrical System	Power supply for use in explosion proof environment, consisting of (2) 12V gel batteries, power converter, charging circuit & LED operation indicator lights all installed in NEMA 4X enclosure. The power supply requires auxiliary power source; 6A @ 120VAC minimum (Multi voltage up to 240V, 50-60 Hz).
Hydraulics System	Ten (10) hydraulic pumps including three (3) fixed displacement type and seven (7) variable volume piston type pumps to provide hydraulic power for all rig functions. All hydraulic circuits are fully filtered, protected by relief valves and include an oil cooler. Different hydraulic circuits have different hydraulic working pressures. Maximum hydraulic system pressure is 4,800 psi. Rotation Torque limiter – control panel mounted valve to regulate hydraulic pressure to the rotation motors.
Hydraulics Supply to Remote units.	Separate hydraulic pump and controls plumbed to outlet ports with twin quick connect fittings are mounted to provide hydraulic oil supply for remote auxiliary equipment. Control is provided through an operator's panel mounted valve. Maximum oil flow: 58 gpm Maximum pressure: 5000 psi Horsepower requirement: 175 hp approx.
Mast	Schramm Telemast with 50' (15.24m) Top Head travel. Telescoping construction permits long head travel and working height, yet short overall length in the transport position. The mast scopes out raising and lowering the TDS on traverse cables anchored at deck level, which connect to the top of the TDS via crown sheaves on the top of the moving mast inner section. Mast Hoist Capacity: 200,000 lbs (90,909 kg) Pull down Capacity: 32,000 lbs (14,545 kg) @ 200 fpm. 2 x 3 stage hydraulic mast raise cylinder with burst protection (velocity fuse) on each cylinder. Mast is locked in vertical position by two wedges below the rig floor. Mast is free-standing and equipped with two 72" (1829 mm) stroke cylinder slides, all mast loads are transferred direct to the ground not back through the rig frame. Floor height currently set at 4.2m above ground level. Clearance from underside to Ground Level is 3.6m. Working clearance mast: 52' 10" (16.1 m) spindle to table (floating sub removed) 48' 10" (14.9 m) floating sub to table The mast base has a 20" (508 mm) diameter opening with all slips removed and is hydraulically retractable, with a 30 ¼" (768 mm) opening when fully retracted. Centreline of the borehole is 44 ½" back from the rear plate of the rig.
Crown Block	Two sets of two 27" PD Nylatron traverse line sheaves

Component	Description
Mast Lubrication System	Multipoint system to simplify lubrication of drill components. Provides centralized grease fitting locations for top head, crown and jib boom.
Top Head Drive Assembly	4 motor tilting (pivoting) unit. A heavy duty single reduction (3.5:1) top head design. The top head hydraulically tilts to facilitate pipe and casing handling. Includes hydraulic lock pins to retain top head in the drilling (vertical) position. The THD is equipped with bail eyes rated at 200,000 lbs. Top Drive Spindle through hole: 4.75" ID (120.6 mm) Output thread: 5 ½"API IF box. Swivel: King Capsule Type, 3,000 psi, 3" ID Four (4), two speed high torque, hydraulic motors: • Low Gear 0 - 90 rpm @ 17,500 ft-lbs, • High Gear 0 – 180 rpm @ 7,670 ft-lbs. An auxiliary rotation circuit is provided to allow slow rotation while utilizing the rapid feed circuit. Clockwise rotation only up to 25 rpm. Rotation horsepower: 367 hp (275 kw) Top Head travel: 50' (15.24 m) TDS Hoist Capacity: 200,000 lbs (90,909 kg) TDS Pull down Capacity: 32,000 lbs (14,545 kg) @ 200 fpm Manual upper kelly cock fitted for drilling operations.
Floating Sub	High capacity floating sub to remove feed cylinder and pipe weight forces from threads while making and breaking tool joints. Spline construction permits free float of 4" (102 mm), has 3 ½" (89 mm) through bore (water course). Floating sub is 5 ½" IF pin up x 4" IF box down and fitted with short double pin 4" IF saver sub.. Sub incorporates a rotation lock – A disc brake locking mechanism preventing the top head gearbox from rotating during down hole directional drilling operations.
Automated pipe handling system	Comprises tubular handling system, drill pipe storage racks and work platforms on a custom built tandem axle trailer equipped with ABS brakes, DOT lights and 2" SAE king pin. Trailer transport width is 9' 2". The trailer unit hooks to the mast area to maintain proper alignment and has two swing outside rack arms per side, each equipped with a hydraulic outrigger cylinder to level the arm and adjust for hands free pipe handling. Approximately 20 x 4 ½" OD upset R2 drill pipes can be staged in one layer, per side. Drill pipe and casing are rolled into and off the pipe handling lift cradle from the side rack arms using the outrigger hydraulic legs to raise or lower the outboard end of the arms. Drill pipe and casing handling system lifts the box end of tubulars from horizontal position to align with tilting top head and advances forward or slides back to allow clamping of the tubular in the clamp jaws and attachment to the top head. Built in clamping system on pipe handler allows for make-up or break-out of tool joints from top head spindle. Clamp can pass 30" casing with jaws removed. Clamping jaw sets available for 2⅜", 2⅞", 3 ½", 4, 4½", 4 ¾", 5", 5¼", 5½", 6¼", 6½", 6⅝", 7⅝", 8⅝" and 9⅝" OD tubulars.

Component	Description
	The main controls for the pipe handler are located in the doghouse alongside the driller's controls. Additional pipe handler control station is located at ground level under the rig floor but is only for setup purposes. Capable of handling tubular length up to 47' (14.3 m) Capable of handling tubular weight up to 2273 kg. Cradle slide travel (forward & back): 8 ft (2.4 m) Loading rack / Arm Height: approximately 1.6m above ground level.
Jib Boom	Jib boom located on the top RHS of the outer mast, with a worm gear drive to swing the boom side to side and a hydraulic cylinder to extend and retract the boom. Boom has 140 degree swing and 40" (1.016 mm) retract and extend. Boom winch line is weaved through a snatch block to increase load line flexibility. This permits the winch line to be centred over the borehole and reduces sheave wear when pulling from unusual angles. Jib Boom Capacity: 12,000 lb (5455 kg) retracted, 5000 lb (2268 kg) extended.
Winch for Jib Boom	Braden PD12C hydraulically powered winch mounted to the back of the mast. The winch is a planetary type with overrunning clutch, hydraulic brake valve and spring applied hydraulic release brake. The winch operates independently of the other drilling functions. Drum capacity: 547 ft (167 m) of ½" cable (12.7 mm) Bare drum: 9,600 lb (4354 kg), 151 fpm (46 mpm) 150 ft drum: 8,700 lb (3,946 kg), 165 ftpm (50.3 mpm) Cable fitted: 150 ft (46 m) of ½" (12.7 mm) HSLR (high strength low rotation) cable.
Survey Line Jib Boom	Slews over hole centre for running surveys and slews away for normal drilling operations. Jib Boom Capacity: 3,000 lb (1,361 kg) retracted, 1000 lb (454 kg) extended.
Survey Line Winch	Hydraulic powered auxiliary winch mounted on off driller side of bottom mast section. Drum capacity for 6000 ft of 0.092" survey line. Survey line runs over sheave hung from survey line jib boom.
Power Make Up / Break Out Unit.	Arm mounted Schramm hydraulic power make up /break out unit operated from the driller's console. Arm mounts on the RHS of the mast and swings beneath the top head by a hydraulically powered geared actuator. The lower jaws are clamp only while the upper jaws rotate to make or break the connection. No pipe spinner capability. The unit has 40" of vertical travel for height adjustment. Jaw dies to cover the range 2-3/8 " to 9-5/8" diameter. Clamping force: adjustable to 73,000 lbs Break/Make torque: 53,000 ft/lbs. The movement of the roughneck is controlled by the driller and requires the activation of a Dead-man switch by the assistant driller, which sounds an audible alarm whilst the arm moves.
Blow Out Preventers	One (1) – 11" 3000# W.P. HEC Spherical Style Annular BOP Bore: 11" Working Pressure: 3000 PSI Top Connection: 11" 3000 studded with R53 ring groove

Component	Description
	Bottom Connection: 11” 3000 flanged with R53 ring groove Packing Element: Nitrile Rubber Height: 33 ½” Weight: 6,000 Lbs. Closing Volume: 11.00 US Gal. (41.58 L.) Opening Volume: 6.78 US Gal. (25.63 L.) Certification: API 16A, NACE MR01-75, Latest Edition, ERCB 3 Year Inspection One (1) – 11” 3000# W.P HEC (LWS) Hydraulic Double Ram BOP Bore: 11” Working Pressure: 3000 PSI Top Connection: 11” 3000 studded with R53 ring groove Bottom Connection: 11” 3000 studded with R53 ring groove Outlets: None Ram Blocks: One set CSO (Blind) T70, One set Pipe Rams T70 each with Holders. Height: 29 ½” Weight: 4,350 Lbs. Closing Volume: 1.74 US Gal. (6.58 L.) per ram. Opening Volume: 1.45 US Gal. (5.48 L.) per ram. Certification: API 16A, NACE MR01-75 Latest Edition, ERCB 3 Year Inspection All BOP hydraulic hoses are Co-flexip type, fireproof.
BOP storage & transport system	Steel transport & storage frame including test stump. Handled by loader.
BOP Test Stump	1 x 11” test stump incorporate as BOP storage and travel rack.
BOP Accumulator	R & T Controls Model 80GU, 6 functions (only 4 in use), 80 Gallon BOP Accumulator Control Unit. Unit is manufactured to meet ISO 9001, API 16D. Consists of twelve 11 gallon, 3,000 Psi working pressure separator bladder type accumulators which are provided with ASME U-1A certificates. System is designed to operate in ambient temperature Classification be -10°C/+40°C Unit has one (1) pressure relief valve set at 3,300 Psi. The pressure relief valve prevents over pressuring the accumulators and pump systems, and is self-resetting. Relief valves comply with API RP 16E. Paragraphs 2 3 2 and 5 3. One (1) electric pump module model number UET10-B using triplex pump series, T-10 and equipped with 1” plungers. The triplex reciprocating plunger pump is a heavy-duty pump capable of operation even when small pieces of debris get into the system. Pump is unitized with one new 15 Hp explosion proof IEC Ex electric motor. In addition it has one (1) 8½” air driven motor coupled to 40:1 ratio plunger pump with self-adjusting packing. This assembly produces approximately 5 GPM at mid-range pressure of 2,000 psi.
BOP Remote Control Panel	One (1) air pilot operated graphic remote panel for remote display of unit pressures as well as functioning of both ram functions, and by pass regulator. This is mounted inside doghouse with umbilical connection to koomey and is fitted with annular pressure regulator, annular pressure

Component	Description
	gauge, accumulator pressure gauge, rig air pressure gauge & bypass control valve System incorporates pneumatic alarm system designed to alert driller of problems with the control unit. Visual indication is displayed by pneumatic indicators showing green if everything is ok and red when there is a fault. When a fault occurs, horn sounds. An isolation valve is provided to disable to horn if fault isn't immediately repairable. Alarms are: • Low Tank Level • Low Accumulator Pressure • Low Supply Air supply
Choke Line Valves	1 x 3⅛" 5000 psi remotely operated (HCR) valve 1 x 3⅛" 5000 psi manual valve
Kill Line Valves	2 x 2-1/16" 5000 psi manual valves 1 x 2-1/16" 5000 psi check valve
Choke Line	3" 5000 psi coflex type choke hose with 3" bore. Fitted with 3⅛" x 5000 psi flanges. 6m long hose.
Kill Line	2-1/16" 5000 psi flanged to 2" kill hose with 2" bore, 3m long.
Choke Manifold	3⅛" x 5,000 psi 4 way block located on dedicated skid housing both the choke manifold and poor boy degasser. 3⅛" 5000 psi inlet choke manifold, with single 3⅛" 5000 psi bypass valve 2-1/16" 5000 psi choke chambers leading to one adjustable manual chokes and one remote (hydraulic); each choke has a 2-1/16" 5000 psi downstream isolating valve; at the back of the manifold each line enters a 4 way block and the blocks are connected to each other by 2-1/16" 5000 psi valves. Each block has an external isolating valve down to hammer union. Test inlet is via 5 way block with a riser consisting of 3⅛" 5000 psi valve with 3 way data header for pressure point.
Flareline	3" schedule 40 pipe with figure 200 hammer unions. 45m length and anchors.
Auto Igniter	Gas fuelled auto igniter unit provided.
Mud Gas Separator	Poor boy type Degasser is manufactured by DFE New Zealand and consists of; 1 x Vertical 36" x 20' elevated mud gas separator with; 4" inlet on degasser 2" hose from choke manifold 8" mud discharge to shaker 6" vent line Design temp; 0-100 Operating temp; 0-80 Design Pressure; 150psi Operating Pressure; 100psi Hydrotest (max test pressure); 230psi Fluid density design 2.3 4' Butterfly dump valve on bottom of unit 24' inspection hatch 12.5 ft mud seal.

Component	Description
Mud Gas Separator Vent Line	6” schedule 160. 2.5m pipe vent to atmosphere.
Mud-Cross Spool	One (1) – 11” 3000# WP ACD Drilling Spool Bore: 11” Working Pressure: 3000 PSI Top Connection: 11” 3000 flange with R53 ring groove Bottom Connection: 11” 3000 flange with R53 ring groove Outlets: One (1) 3 1/8” 3000 with R31 ring groove and One (1) 2 1/16” 5000 with R24 ring groove Height: 17” Weight: 1,200 Lbs. Certification: API 16A, NACE MR01-75 Latest Edition, ERCB 3-Year Certification.
Drilling Spool Adaptor	1 x 11” 3k 600mm DSA mounted below Mud-Cross
Riser & Flow Lines	10” round enclosed riser flow-line to 9” mud return to shale shaker 1 x 14” surface hole riser
Drillers Cabin	1 x hydraulic elevated doghouse rising from within a 500bbl day water tank with full instrumentation and air conditioning. Telescopes down into day water tank for transportation. . Doghouse incorporates: Drillers console BOP remote control panel Remote mud pump controls Centralised emergency stop control Pipe handler controls Engine monitor instrumentation
Drillers control panel	AIRDRILL designed and manufactured control panel is located in doghouse with the following features and specifications: • Type: 24 Volt DC electric over hydraulic with Parker IQAN electronic control system. Zone rated. • Panel includes all necessary instrumentation and controls for drilling functions. • Water pump control • Emergency stop controls • Power Supply: 24V DC supplied by deck engine. Pipe handler controls located in doghouse. Pipe handler rig up controls are located on handler trailer Engine control panel and rig-up functions are located on the rig deck accessible from ground level.
Auto drilling system	Rig fitted with slow feed control only.
Mud Pumps	One (1) Gardener Denver PZ-8 triplex mud pump mounted on oilfield skid base. Max pressure 5,000 psi Driven by 1,000hp Detroit Diesel, MTU 12V – 2000 set to 850HP Rating. Allison Transmission Model DP8962 with electric shift control Electric driven low rpm lube pump

Component	Description
	Residential type Spark arresting muffler with all exhaust piping covered with heat blankets. 10” X 6” Suction manifold w/screens 4” discharge manifold, Type Solid Block 3” Oteco pressure relief valve 0-6,000 psi pressure gauge 4” 6000 psi rated IEW brand discharge pulsation damper and strainer cross with applicable flanges for discharge connections Maximum continuous stroke rate of 145 strokes/minute Pump is supplied with a range of liners and pistons at operator’s request. Max pressure with 4” Liners 5,000 psi (189 GPM@ 145 strokes) Max flow with 7” Liners 1,996 psi (580 GPM @ 145 strokes) One (1) National 550T7D triplex mud pump mounted on oilfield skid base. Max pressure 5000psi Driven by 600hp Detroit Diesel Allison Transmission Model 600 Series with wireless shift control. 3” Oteco pressure relief valve 0-6000psi pressure gauge 5000psi rated Smith discharge pulsation dampener Pump is supplied with range of liners and pistons at operator’s request. Max pressure with 4” Liners 4241 psi Max pressure with 6 ½” Liners 1600 psi Controls for mud pump engine throttle, gears and stop valves located at the drillers control panel in the doghouse.
Charge Pumps for Mud Pumps	Charge pump is an electrically driven SPD 6 x 5 x 14 pump with 5” discharge, 6” suction, and 14” impellor. Electric motor is a 50hp 1800rpm motor @ 50 Hz.
High Pressure Mud Lines	Air/mud fluid lines 3” schedule 160 piping. Mast plumbing is rated to 3,000 psi (206bar). Includes a 3,000 psi mud gauge, mud pump knock-off connection union, manually operated drill string vent valve back to tanks.
Standpipe manifold	Stand Pipe: 3”, 3000 psi working pressure. Fitted with welded and/or integral fig 1502 union connections. 1 x 3” hydraulic gate valve to isolate flow to mast stand pipe and 1 x 2” gate valve mounted below with T outlet to Kill Line. Manifold mounted on side of carrier with direct access from drill floor.
Standpipe Isolation Safety Valve	1 X 3000 psi hydraulically actuated ball type valve located at lowest point on rig standpipe manifold to shut in the standpipe. Valve controlled from drillers console
Mud Tank System	Active capacity 460 bbl tank Mud System mounted on hydraulic rock-over trailer for easy/fast manoeuvrability. 1 x 20bbl sand trap, 1 x 80bbl shaker tank, 1 x 80bbl settling, 1 x 130bbl suction tank, 1 x 130 bbl pill tank, 1 x 20bbl slug tank. Total 6 compartments All valves are operated from floor level using T-Handle tool Mud pump suction via 8” suction from all equalising tanks and pill tank 20bbl Trip tank is located for easy viewing

Component	Description
	Centrifugal pumps are Magnum 250 Series with mechanical seals. All electric motors are AusEx compliant. Mud guns in all bays of the mud tank.
Mud mixing equipment	Three (3) Agitators are DFE HD Heavy Duty Axial Flow. The agitators are right angle low profile helical bevel type with 4 bladed axial flow impellors. 1 x 6" Mixing hopper
Solids Control Equipment	2 x Drilling Fluid Equipment (NZ) Model SCR-HG Linear Motion Shakers with the following features; • G – Force: 4.0 – 7.3 G continuous (AWD) • Screen Area: 28.1 ft² • Deck angle Adjustment: Adjustable from -1° downhill to +5° adjustable whilst in operation • Screen Panels: 3 panels per deck. Screen are made and labelled in accordance with API recommended guidelines 13C and E.
Day Water Tank	1 x Hydraulic rock-over trailer for easy/fast manoeuvrability with 500bbl water tank with hydraulic elevated doghouse, transfer pump, high pressure wash pump and fire hydrant.
Generators	Rig (main) Generator - One (1) silenced Rig generator located in combination building with the following specifications; • Model Number: GEH275-SAE • Rating: Prime rated @ 275kVA, 200kW, 3-phase, 415v, 50Hz, 1500rpm • Engine Model: 1306C-E87TAG4 Perkins diesel engine, direct coupled to a brushless alternator • Fuel Tank: 550 litre base mounted with float switch and fuel solenoid with self bunded engine bay. • Canopy: Sound attenuated, lockable enclosure rated at 61.7 dBa@7m on full load • Spill management tray
Compressor	One (1) only Champion CSF30 Rotary screw air compressor rated at 174cfm @ 7.8bar. Air is reticulated via quick disconnect hoses and fittings to various building and engine modules for positive shutdown (strangler valves), operation of doghouse window wipers, air supply to koomey backup power pack and general use as required. Two (2) x 520 litre air receiver tanks adjacent to Compressor with one tank dedicated as a backup to the koomey.
Bulk Fuel Storage	One trailer mounted 20,000 litre capacity self bunded tank manufactured and complies with AS1692 & AS1940. Tank is fully baffled for transport and has an emergency pressure vacuum vent with rollover shutoff protection. Handrails and stairwells for access and egress comply to AS1657 Features of the units consist of; • Loop feed system circulating diesel fuel to all engines with return to tank for cooling using AusEx rated electric motor and pump with a capacity of 5 litres per minute. • Backup fuel circulating pump • High flow fill pump using AusEx rated electric motor and pump with a capacity of 30 litres per minute.

Component	Description
	• Anti-static hose reel. • Earth stake • Hi-flow fuel meter • Fast fill capacity for transfer of fuel between commercial fuel tanker and tank
Oil & Lubricant Storage	One (1) 10' bunded container mounted forward of the fuel trailer on step deck with bulk oil, packaged oil and filtration storage capability.
Dangerous Goods Storage	Storage cabinet for paints and aerosols in the Rig tool shack.
Waste Oil Storage	Dedicated 1000 litre self bunded tank located on the rear of the fuel trailer together with SULO bin for storage of old rags and filters.
Tool Shack / Fitters Store	Fitters store consists of 1 x 20' container comprising of; Bench, grinder/wire wheel, hydraulic hose crimp, vice, tools, storage cupboards and portable generator / welder. Parts storage consists of 1 x 20' container with protected shelving Both containers are located on a 48' oil field skid for handling with a winch truck
Rig lighting	Stahl 2 x 36w florescent EX rated (zone 1) light fittings are located in the following locations: 6 x rig mast, 2 x cellar, 2 x rig deck, 4 x mud tank deck including shaker, 2 x mixing pump room, 1 x choke manifold room, 1 x stairwell on mud tank, 1 x stairwell of doghouse, 1 x inside doghouse, 1 x bulk fuel tank, 1 x koomy room, 1 x compressor room, 1 x storage room and 1 x main rig generator room, 1 x emergency generator room. In addition for flood lighting we have installed several Cooper EX rated (zone 1) L.E.D lighting which feature 100V to 300V hence not affected by voltage fluctuations, instant lighting when switched on. All L.E.D lights are located as follows: 3 x top of doghouse pointing in various directions including up the mast, 2 x on the combination building pointing to strategic locations. Zone rated lighting compliant to API500-505. Two x back of pipe handler, 4 x mud tank pointing to strategic locations, 2 x fuel pointing to strategic locations. All lights are protected via earth leakage and circuit breakers, PO's have lockout (isolation) capability and all fitted with wire safety harnesses.
Rig Emergency Lighting	The lighting circuit is split into two circuits. Emergency lighting is provided by the Stahl 2 x 36 lights with internal battery backup. If power is lost through failure of the main rig generator, the following areas maintain emergency lighting: mast lights, stairwells, cellar, koomey room, inside doghouse, choke manifold room, generator, fuel pump room, compressor room and carrier. Auxiliary power is able to be provided to the above-mentioned lighting plus the koomey unit in the event the main generator needs to be shut down. Power is provided via an auxiliary generator located on the combination building near to the compressor and main rig generator.
Drill Pipe	200 joints of 4½" OD 16.6# G-105 drill pipe with 4" IF (NC 46) connection Range 2 with EU, tool joint OD 6⅜", ID 3", box tong 12" and pin tong 9"
Drill Pipe Pup Joint	Two (2) 5' pup, 4½" OD 16.6# G-105 drill pipe with 4" IF (NC 46) Two (2) 10' pup, 4½" OD 16.6# G-105 drill pipe with 4" IF (NC 46) Two (2) 15' pup, 4½" OD 16.6# G-105 drill pipe with 4" IF (NC 46) All have 6" OD tool joints

Component	Description
Drill Collars	10 x 6¼" Range 2 spiral drill collars with 4" IF (NC46) connection, OD 6¼", ID 2¼" with bore-back box and pin stress relief groove.
Heavy Weight Drill Pipe	10 x 4½" HWDP with NC46 Connection tool joint, OD 6⅜" tool joint ID: 2⅞" box & pin tong 24". Boreback box, stress relief groove pin
Tubular Storage	3 x trailer mounted pipe cradles for the storage and transport of drill pipe. Each cradle is equipped with 1 x misc. gear baskets pin locked onto front of cradles
Crossover Subs	2 x NC38 Box x NC46 Pin, 2 x NC50 Box x NC46 Pin, 1 x NC50 Box x NC38 Pin, 2 x NC46 Box x NC38 Box, 2 x NC46 Box x NC46 Pin, 2 X NC46 Box x NC50 Pin, 1 x 5 ½" FH Box x NC46 Pin 1 x 4 ½" Reg Box x NC46 Pin
Saver Subs	2 x NC46 Box x NC46 Pin 1 x NC50 Box x NC50 Pin
Lifting Subs	Lifting subs to suit all rig subs
Bit Subs	2 x NC46 Box x 6⅝" REG Box 2 x 6 5/8" Reg Box x 6 5/8" Reg Box Bored for floats
Casing Running Subs	2 x 6" OD, NC46 box to 9-5/8" buttress pin cross-over. 2 x 6" OD, NC46 box to 4-1/2" buttress pin cross-over 2 x 6" OD, NC46 box to 7" buttress pin cross-over 2 x NC38 box to 2-7/8" EUE pin cross-over 2 x NC38 box to 3-1/2" EUE pin cross-over
Power Slips	The unit has an hydraulic operated Schramm power lifter, operated from the drillers console and equipped Dencon slips and inserts to suit: 9 5/8", 7" & 4 ½" Casing, 5 ½" ,4 1/2" & 3 ½" Drill Pipe & 5 ½"-7" & 6 ¾"–8 ¼" Drill Collars Load capacity: 200,000 lbs Solid spider and adaptor bushing, slip bowl/slip box is a split unit.
Handling Tools for Casing & Tubing	Slips for 9⅝", 7" & 4 ½" casing Safety Clamps (dog collars) for 4 ½", 7" and 9⅝" casing
Cup Tester	Cup tester sub (3-1/2" IF box up, pin down) with rubber for 7" casing. Cup tester sub (4" IF box up, pin down) with rubber for 9⅝" casing.
Inside BOP	1 x NC46 IBOP
Kelly Cock	1 x NC46 Kelly Cock.
Stabbing Valve (Kelly Cock Type)	2 X NC46 stabbing valve
Drill string circulating heads	1 x NC38 Pin x Blank end x 2" 1502 Female Side Entry Sub 1 x NC46 Pin x Blank end x 2" 1502 Female Side Entry Sub 1 x NC38 Box x Blank end x ½" NPT Threaded port Test sub

Component	Description
	1 x NC46 Box x Blank end x ½" NPT Threaded port Test sub
Wellhead Installation Tool	Potato masher type for 11" Bradenhead
Handling tools for tubing	Cavins manual spider bowl and slips to suit 2 /38", 2 7/8" & 3 ½" EUE strings Power Make up / Break out Tong Dies for 2-7/8" tubulars Pipe handler grabber dies for 2⅞" tubulars
Water transfer pumps	One (1) 3 x 2 x 11 centrifugal pump fitted with a 7.5 Hp electric motor and 9" impeller water transfer pump permanently located on the end of the day tank / doghouse.
Fire Suppression System	One (1) x 65 Litre Rise Of Pressure Suppression System fitted to Schramm Drill Rig. One (1) x 65 Litre Rise Of Pressure Suppression System fitted to Gardener Denver PZ-8 pump skid. One (1) x 45 Litre Rise OF Pressure Suppression System fitted to main rig generator
Alarm system	Visual and audible alarms incorporated on doghouse.
Rig Motor Remote Emergency Shutdown System	All engines on site have the ability to be shutdown individually through use of the independent stop devices fitted at various and easy to reach locations on each piece of equipment. Shutdown can be done by fuel shut off via fuel solenoid or actuation of air operated positive shutoff intake (choke) valves fitted. In addition, we have the ability to shutdown the total site via remote control using two (2) Elsema FMR1501- 8 channel Transmitters. One is located in the doghouse at the drillers control panel and the other is located at the emergency assembly area. With distinct individual channel allotted to each piece of equipment, we have the ability to individually close the equipment down, or the total site. All engine controls are 10-28Volt AC/DC 151MHz and are hazard zone approved.

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