

1200 HP AC Hydraulic Rig



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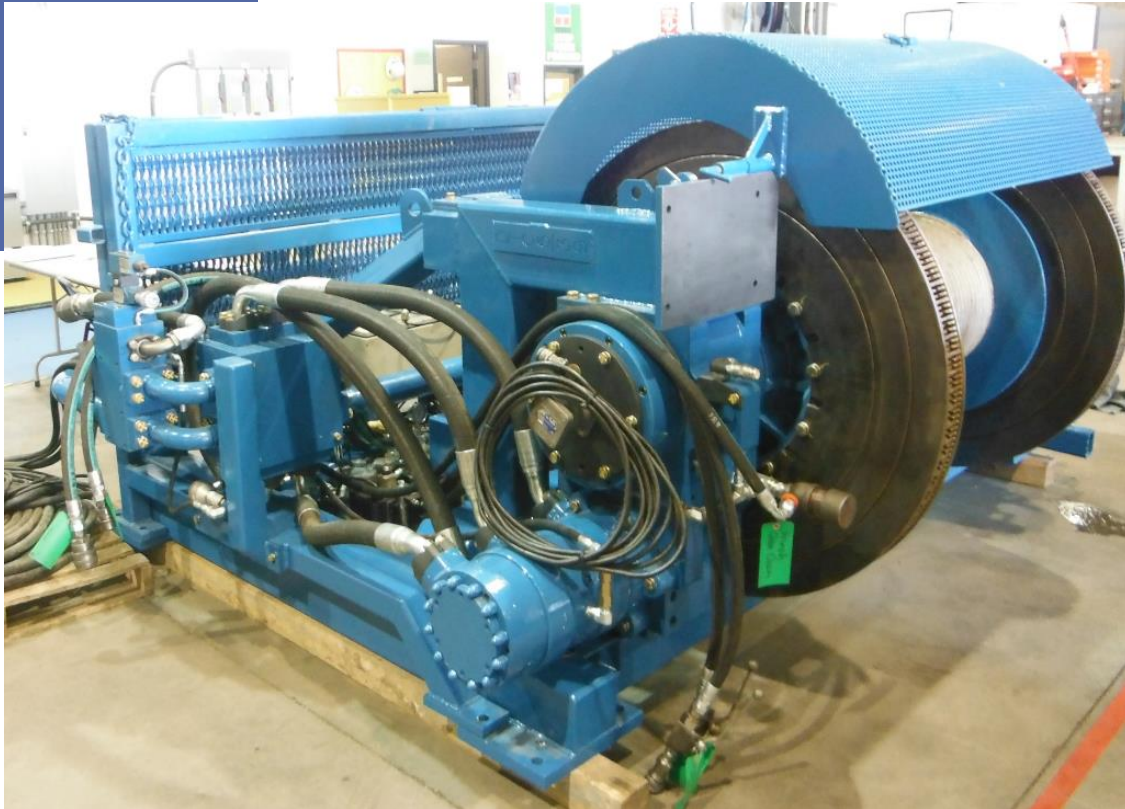


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Inventory List

- Mast
- Substructure
- Power Generation
- Hoisting Systems
- Rotary & Travelling Equipment
- Mud System
- HVAC Systems
- Blow Out Preventer Equipment (BOPE)
- Intermediate BOP System
- Instrumentation
- Handling Tools
- Miscellaneous Equipment

MAST

Item	Description	Quantity
Mast	Rostel telescoping double certified and built to API 4F specifications. Clear height 102'-3". 400,000 lbs. static hook. Capable of withstanding 81 mph wind loading with full setback and 107 mph wind loading without setback. Included winterization around the racking board with integral derrickman warmup shack.	1
Mast Trailer	Trailer to transport mast	1
Crown	Tesco 8 lines split block setup, four 36" sheaves and one 30" crossover sheave all grooved for 1-1/8" drilling line.	1
Racking Board	Racking board is enclosed with wind walls extending 12' above the board and 4' below the board.	1
<i>Setback & Racking Board Capacity</i>	12,000' of 3-1/2" or 4" DP with 5-1/4" tool joints plus BHA.	1
	9500' of 4-1/2" Drill pipe (DP) with 6-1/2" tool joints plus heavy weight DP and bottom hole assembly (BHA).	

SUBSTRUCTURE

Item	Description	Quantity
<i>Substructure</i>	Tesco Swing Up substructure with simultaneous 400,000 lbs. static rotary capacity & 200,000 lbs. setback capacity. Usable BOP height of 15' and drill floor height of 20'-6".	1
<i>Raising Skid</i>	Mast and floor raising skid with hydraulic raising rams.	1
<i>Sub DS and ODS Wings</i>	DS wing supports Water Tank, Change House, and Dog House stack up, ODS wing supports Shaker Tank, Shaker Module, and Tool house.	2
<i>Sub Rear Porch</i>	Rear Porch supports the Accumulator Module, Choke Manifold Module and Poorboy Degasser Module.	1
Water Tank	200bbl Main Rig Water Tank sits on the DS substructure frame on level 1 and supports a change room on level 2.	1
Rig Change Room	Change room with personnel lockers on level 2 supports the Rig Doghouse on level 3.	1
Dog House	The Dog house houses a PLC computer operated drillers console, the gas detection instrumentation, BOPE control panel and Super Choke controls.	1

SUBSTRUCTURE

Item	Description	Quantity
Accumulator Module	CTI 5 Station 3M BOPE accumulator with local manual controls and drill floor HMI controls. Equipped 1 electric and 3 air power pumping systems as well as with nitrogen backup accumulator system. (0 hours on API CAT IV just completed) Part of Substructure.	1
Shaker Module	This module houses two Swaco Mongoose shakers (a Pro Dual setup) capable of delivering cuttings to an attached auger house to convey cuttings to bins or tankage, or to optional Dewatering shaker unit.	1
Choke Manifold Module	3"double gut choke manifold with Tartan valves, hydraulic and manual chokes and 6k psi test pump.	1
Shakers	MI-SWACO Mongoose Dual Platform. <i>Part of Shaker Module.</i>	1
Shaker Tank	The Shaker tank sits on the ODS substructure frame on level 1 and supports the Shaker module above on level 2. This tank houses a 130bbl Sand Trap and a 26.6 bbl. Trip Tank <i>Part of Shaker Module.</i>	1
ODS Tool House	This module is two rooms that houses tools and equipment	1
Winterizing	Complete substructure is enclosed with buildings, wind walls to a height of 12' above the doghouse roof, and doors enclosing the cellar.	1
<i>Mud Gas Separator Module</i>	Mud/Gas Separator with 9' Mud Seal vented to atmosphere (<i>Poorboy Degasser</i>)	1
<i>BOP Dolly</i>	A BOP dolly capable of moving a 13-5/8" 5000 psi BOP stack through a set of outside doors on a track, and into position in the cellar over the well center.	1

POWER GENERATOR

Item	Description	Quantity
Electric Power	Two each 14 L Detroit Diesel Series 60 (600 HP each) engines. Each engine driving a “New Age” generator (producing 470 KW each) which provides AC for the rig and power the #2 Mud Pump. The system is designed with the capability to add an optional 3 rd stand alone generator and sync into the system if desired.	2
Hydraulic	Two each Series DDEC IV MTU 2000 Detroit Diesel engines. Maximum continuous power	2
Power	600 KW (800 HP); maximum 634 KW (850 HP) each. Each engine driving 6 Linde HPV135 hydraulic pumps. Total rig hydraulic power 1,200 KW (1,600 HP). These units provide power for the draw works, top drive and one mud pump.	2

HOISTING SYSTEMS

Item	Description	Quantity
<i>Draw works</i>	Tesco Hydraulic Single Drum Draw works, Lebus grooved for 1-1/8" drill line. The Draw-works mounts to the back of the mast and is equipped with two 50" disk brakes, two calipers for the working brake. The hydraulic system is used as the dynamic brake.	1
<i>Auxiliary Brake-Ing System</i>	Spring applied hydraulically activated disk brakes for parking brake function. Hydraulic draw works provides power in and out of hole. <i>This is integral to the draw works.</i>	1
<i>BOP Handling System</i>	One set of hydraulic cylinders mounted horizontally under the floor for lifting the BOP stack and moving the BOPs on or off the BOP dolly. <i>This is integral to the substructure.</i>	1
<i>Tugger Utility Winches</i>	Two each tugger utility winches, with 10,000 lbs. hoisting capacity. <i>Integral to Draw works.</i>	2
<i>Man rider</i>	One winch engineered for man-riding applications with max overpull protections.	1
<i>Winches</i>	<i>Mounted to Mast.</i>	2

ROTARY & TRAVELLING EQUIPMENT

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Item	Description	Quantity
Top Drive	Tesco model 250 HMI top drive, 250-ton capacity with integrated swivel. Maximum torque of 20,600 ft-lbs. and maximum speed of 175 rpm.	1
Travelling Block	Tesco split block 400,000 lbs. capacity, 8 lines setup.	1
Drilling Line	1-1/8" x 5000' Tuff-Flex drilling line.	2 new, 1 partial
Rotary Table	Twister 175 rotary table (hydraulically driven) with 17-1/2" opening.	2

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MUD SYSTEM

Item	Description	Quantity
<i>Mud Pump #1</i>	One each Ellis Williams WH 1000 A Triplex: 6"x10" stroke. Powered by a Haglund Hydraulic motors producing 746 KW (1000 HP). Equipped with PD 45-5000 pulsation dampener.	1
<i>Mud Pump #2</i>	One each TSM 1000 HP triplex pump. Powered by one each 1000 HP AC electric drive motor and Yaskawa 1000 hp VFD. Equipped with PD 45-5000 pulsation dampener.	1
Pits	472 BBLS active mud pits system. See drawing for tank capacities, use, and locations	2
Vacuum Degasser	Derrick Vacu-Flo Degasser	1
<i>Centrifugal Pumps</i>	6x5 Mission Magnum centrifugal pumps. Used for mud mixing, gun lines, mud transfer, charge pumps.	1
<i>Agitators</i>	7.5 HP agitators.	1
<i>Mud Mixing Hopper</i>	Venturi mud mix hoppers.	1

HVAC SYSTEMS

Item	Description	Quantity
<i>Steam Heaters</i>	Ruffneck Steam Heaters. <i>Integral to Rig throughout.</i>	

BLOW OUT PREVENTER EQUIPMENT (BOPE)

Item	Description	Quantity
<i>BOPE Accumulator</i>	CTI 5 Station 3M BOPE accumulator with local manual controls and drill floor HMI controls. Equipped 1 electric and 3 air power pumping systems as well as with nitrogen backup accumulator system. (0 hours on API CAT IV just completed) <i>Part of Substructure.</i>	1

INTERMEDIATE BOP SYSTEM

Item	Description	Quantity
<i>Choke Manifold</i>	3" 5M working pressure with super choke. <i>Part of substructure</i>	1
<i>Choke Hose</i>	3" 5M system working pressure with HCR and manual valves.	1
<i>Kill Hose</i>	2" 5M system working pressure with 2 each manual valve.	1
<i>BOP Test Pump</i>	Test pump assembly comes equipped with pressure gauges, hoses and valving required to test the BOPs to AOGCC regulation. <i>Part of Choke Manifold and Substructure.</i>	1
<i>Inside Blow Out Preventor (IBOP)</i>	This item is integral to top drive system and is included with top drive assembly.	2

INSTRUMENTATION

Item	Description	Quantity
<i>Dog House</i>	PLC/HMI controlled joystick Drillers console with integral BOP control panel and Super Choke controls. <i>Part of Substructure.</i>	1
<i>Gas Detection</i>	Otis Gen II 32-Channel hybrid monitor system, as available	1
<i>Gas Detection</i>	Otis Gen II 32-wire free OI-6900 ambient air gas sensors (LEL &H2S), as available	4
<i>Weight Indicator</i>	Integrated weight indicator in Drillers console and hydraulic dead line anchor weight indicator.	1
<i>HP Mud & Cement Pressure Gauges</i>	Local pressure gauges at the mud pumps and at the rig floor mud manifold.	1
<i>Rig Intercom</i>	Gaitronics Page/Party Communications System	1

HANDLING TOOLS

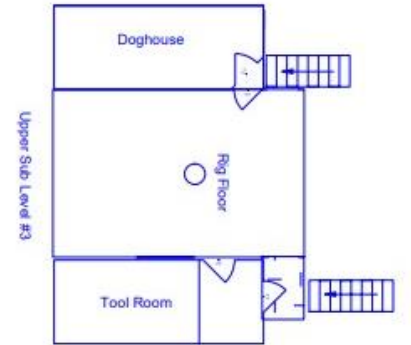
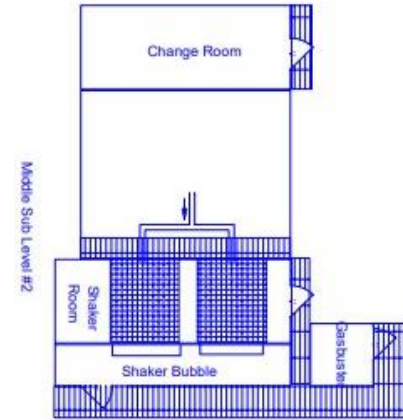
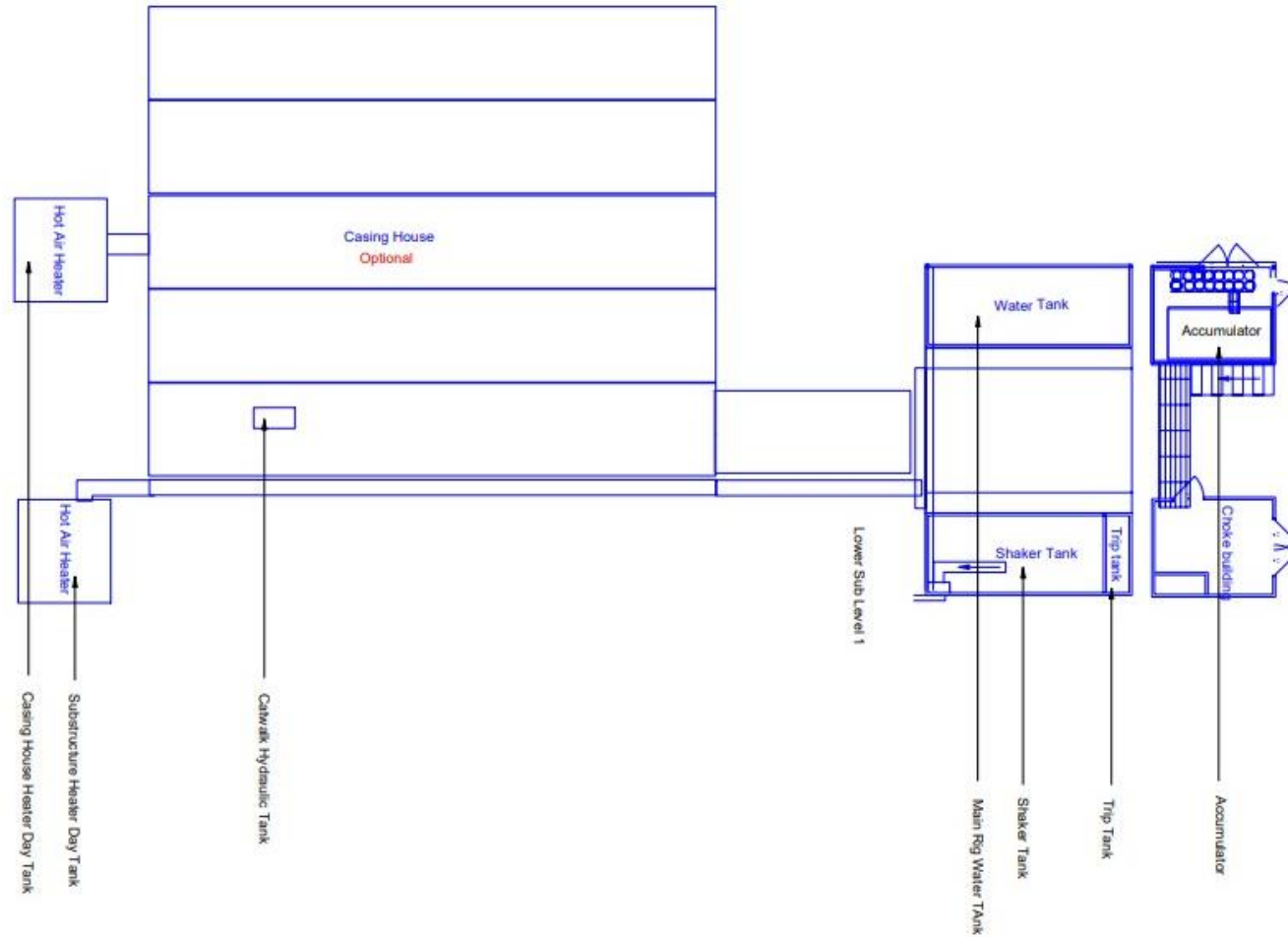
Item	Description	Quantity
<i>Lift Subs</i>		1 Lot
<i>Crossovers</i>		1 Lot
<i>Drill Pipe Slips</i>	Hand slips for 4-1/2" drill pipe.	2 Sets
<i>Drill Collar Slips</i>	Drill Collar slips for 6-1/2" collars	1 Set
<i>Power Slips</i>	Cavins air slips 2-3/8" to 5-1/2"	1
<i>Manual Rotary Tongs</i>	B&V WRT 35 Manual rotary tongs	2 Sets
<i>Manual Rotary Tongs</i>	Rostel Type B	2 Sets

MISCELLANEOUS EQUIPMENT

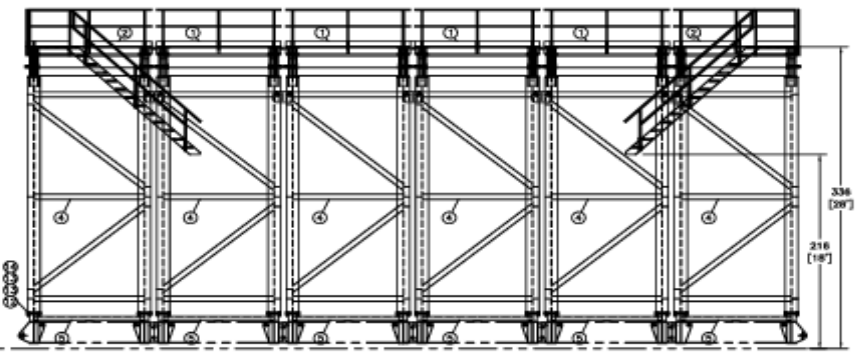
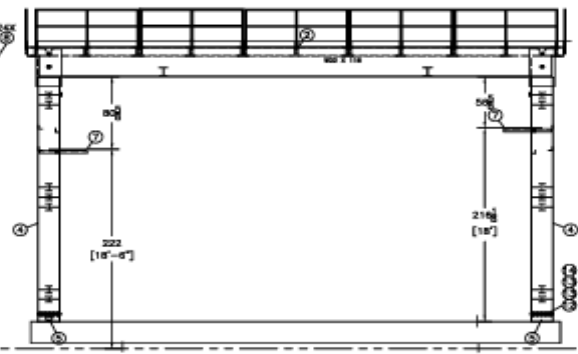
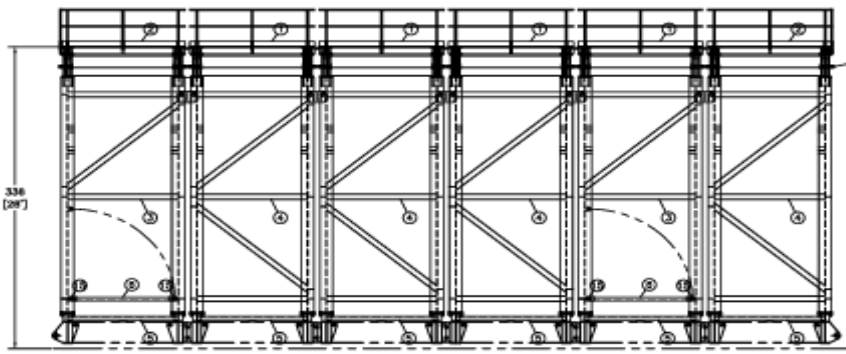
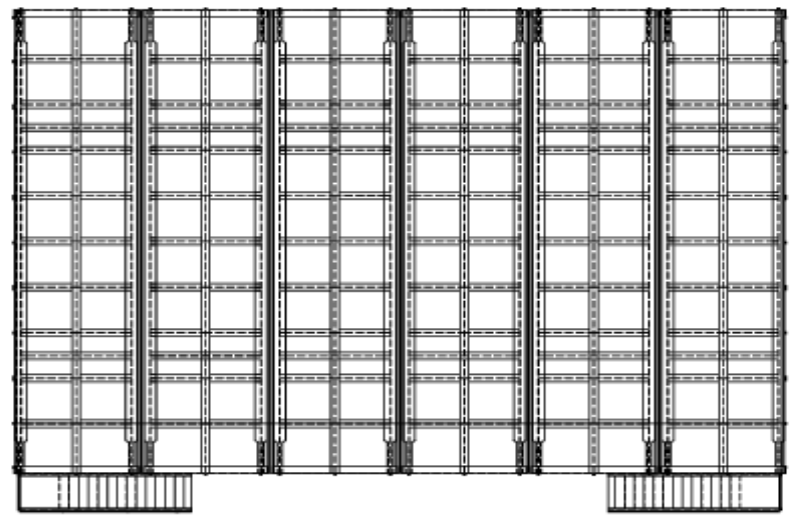
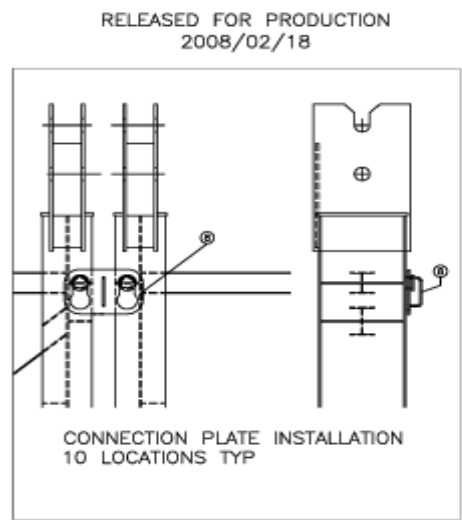
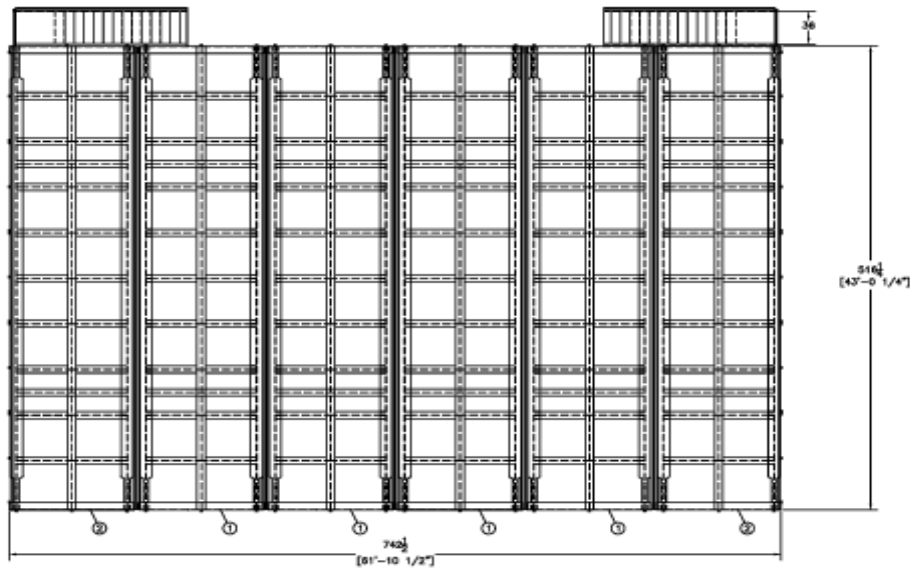
Item	Description	Quantity
<i>Portable HPU Module</i>	Cummins BT4 engine/generator, electric driven HPU pumps with manual and remote controls. <i>This HPU unit is used to raise and lower the mast and swing up rig floor.</i>	1
<i>Test joint</i>	27' long with 4-1/2" XT39 connections	1
<i>Raising Cylinder</i>	Spare Raising Hydraulic Cylinder	1
<i>Hydraulic Motors</i>	Spare Hydraulic Motors for Top Drive and Draw Works	1 Lot
<i>Hydraulic Pumps</i>	Spare Hydraulic pumps for HPU"	1
<i>Gear Box</i>	Spare HPU gear box for pump drive	1

SUBSTRUCTURE LAYOUT

Substructure and Casing house Layout



ITEM	QTY	UNIT	DESCRIPTION	NOTE
1	4	C	TOP SHD INWARD SECTION	4743
2	2	C	TOP SHD OUTWARD SECTION	4400
3	18	C	VERTICAL SUPPORT 1	8480
4	2	C	VERTICAL SUPPORT 2	12670
5	12	C	MOUSE	2280
6	2	C	SPREADER BAR	220
7	12	C	PLATFORM	2000
8	24	C	PNL LOWER	980



Rev	Description	Date	Approved

PROPRIETARY AND CONFIDENTIAL

Tolerances & Finishes (unless otherwise noted):

Decimal:	xxx ±0.006 ±0.002	6SRa
	xx ±0.010 ±0.008	12SRa
	x ±0.030 ±0.010	12SRa
Fraction:	$\frac{1}{16}$	250Ra
	$\frac{1}{8}$	250Ra
Angular:	x" ±0.5"	250Ra
	x' ±1"	250Ra

Design:	2008/01/30	Title:	PLATFORM ASSY KUUKPIK DRILLING
Drawn:	MNW	Project No.:	Lifecycle Status: RELEASED
Apprvd:		Sheet:	1 of 1
Third Angle Projection	Scale:	Drawing No.:	KU-08-020
		Rev:	A

250 HMI 475 Top Drive



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250 HMI 475 Top Drive

A compact top drive for small mast applications.

The HMI top drive system is the most compact offering in the TESCO top drive line.

Designed to fit into small masts, the HMI provides the performance and pipe handling features required for shallow drilling and workover applications.

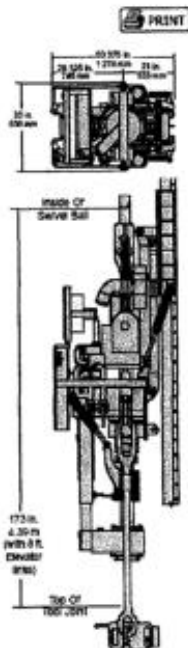
TESCO powers the HMI using industry proven prime movers and its own series of hydraulic pump drives and filtration system.

The HMI top drive is rated for 250 ton casing loads.

Alternate quill performance (torque and speed) can be configured using optional gear ratios and hydraulic motor displacements.

Operational Advantages

- The complete system including the top drive, torque system and power unit can be installed in less than one day. In most cases, no rig modifications are necessary.
- The HMI can be equipped with an independent diesel, AC or DC traction motor drive.
- The HMI offers all critical pipe-handling functions including elevator link-tilt, and an extend/retract feature (54 in.) for making mousehole connections at eye level. The HMI grabber acts as a back-up tong for making or breaking connections. The grabber will accommodate tool joints from 2-3/4 in. to 6-5/8 in. OD.
- Two speed/torque ranges are selectable from the drillers console.
- The HMI track/torque bushing configuration is simple to install and requires minimal maintenance.
- A mud saver/safety valve is incorporated into the system design.
- The entire HMI can be transported in three standard 20 ft. sea containers.



SPECIFICATIONS:

HMI (250 ton integrated swivel)

Rated Capacity	250 ton	227 tonne
Rated Power	475 hp	336 kW
Weight (with swivel)	8,000 lbs.	3 628 kg
Operating Length (incl. 8' links & elevators)	173 in.	4 390 mm
Width	33 in.	838 mm
Max. Drill Torque	21,000 ft-lb.	2 847 daN-m
Make-up Torque	21,000 ft-lb.	2 847 daN-m
Breakout Torque	23,500 ft-lb.	3 195 daN-m
Max. Speed (with 2.19:1 gears)	170 RPM	170 RPM
Quill ID	2.25 in.	57 mm

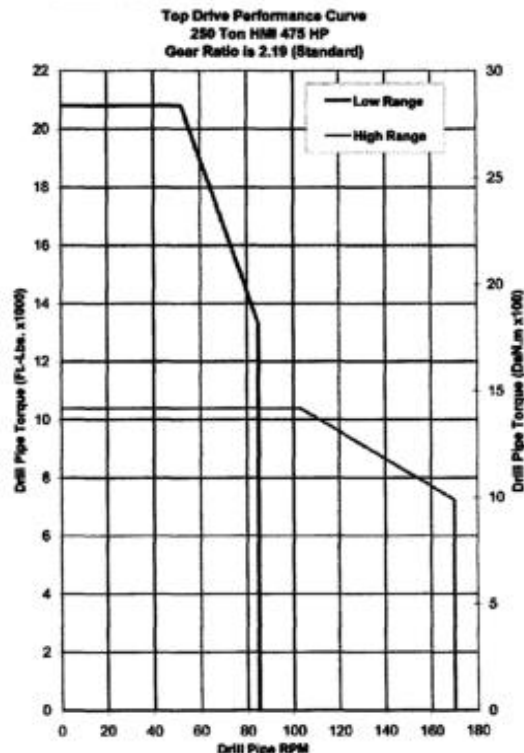
Power Unit (475 HP)

Weight (approximate)	16,200 lb.	7 370 kg
Length (c/w hose reel)	281 in.	7 200 mm
Width	56 in.	1 400 mm

Top Drive Notes:

Weight includes top drive, integrated swivel and torque bushing. The top drive can be fitted with an optional 1.64:1 gear ratio.

PERFORMANCE CURVE:





SPLIT BLOCK CERTIFICATION

for

DRILLERS TECHNOLOGY CORPORATION

DTC RIG 5

A TESCO PRODUCT DEVELOPMENT Split Block
Manufactured by Tesco Product Development, 1999

The split block specifications and ratings are as follows

Static load rating: 250 ton / 222,400 daN

The above split block has been designed and analyzed to comply with the requirements of American Petroleum Institute Specification API 8C for the above rated capacity.

TESCO PRODUCT DEVELOPMENT

Tim Popik, P.Eng.
Lead Engineer, Structural

Lou Klaver, P.Eng.
Engineering Manager

SPLIT BLOCK CERTIFICATION

TOP DRIVE CERTIFICATION

for

DRILLERS TECHNOLOGY CORPORATION

DTC RIG 5

A TESCO PRODUCT DEVELOPMENT Hydraulic Top Drive
Manufactured by Tesco Product Development, 1999

The top drive specifications and ratings are as follows

Model number: 250 HMI
Unit number: 205

Static load rating: 250 ton / 222,400 daN

The load path components of the above top drive have been designed and analyzed to comply with the requirements of American Petroleum Institute Specification API 8C for the above rated capacity.

TESCO PRODUCT DEVELOPMENT

Tim Popik, P.Eng.
Lead Engineer, Structural

Lou Klaver, P.Eng.
Engineering Manager

TOP DRIVE CERTIFICATION



SUBSTRUCTURE CERTIFICATION

KUUKPIK DRILLING RIG 5

MODEL NUMBER:	TESCO TPD-SS-17.25-400
MANUFACTURER:	QUALITY FABRICATING & SUPPLY LTD, EDMONTON, AB
SERIAL NUMBER:	TPD-SS-002
DATE OF MANUFACTURE:	FEBRUARY 2000
FLOOR HEIGHT:	20.25FT/6.17m
MAST ACCOMMODATION:	TESCO 200 TELESCOPIC DOUBLE
CASING CAPACITY:	400,000LBS/200 TON (irrespective of setback)
SETBACK CAPACITY:	200,000LBS/100 TON

On May 3rd and 4th, 2014 Blair Nelsen, P.Eng inspected **Kuukpik Drilling Rig 5** substructure in Prudhoe Bay, AK. The substructure was damaged during lowering operations. The substructure was disassembled for inspections. Damaged areas were flagged for repair. Repairs were discussed with Kuukpik Drilling personnel on site and listed in a detailed report. The substructure was transported to NANA Construction for repairs. During the repair process substructure was inspected by **Alaska Industrial X-ray Inc.** (Report No's: AIX-001 Thru AIX-015).

Based on the initial inspection and a review of photographs and **Alaska Industrial X-ray Inc.** reports, it is my opinion that the substructure has been properly repaired and is in good condition and is safe to operate within its rated capacity when used in accordance with the manufacturer's specifications and/or industry standards. It is my opinion that the inspection and repairs were completed in accordance with API RP 4G, 4th Edition. Inspections should be performed to industry standard guidelines for this certification to remain in effect. This certification is valid for 1000 operating days or until such time as the substructure is structurally damaged.

Certified this 17th day of July, 2014.



PERMIT TO PRACTICE
NELSEN TECHNOLOGIES INC.
Signature: *BN*
Date: July 17, 2014
PERMIT NUMBER: P 11377
The Association of Professional Engineers,
Geologists and Geophysicists of Alberta

Blair Nelsen, P.Eng.
File No: 356-S

The expression "certification" constitutes neither a guarantee nor a warranty, express or implied. It is an expression of professional opinion by the engineer based on his best knowledge, information and belief. Liability arising from this certification is limited to ten (10) times the amount charged to a maximum of \$50,000.00.



MAST CERTIFICATION

KUUKPIK DRILLING RIG 5

MODEL NUMBER:	TESCO 200 TELESCOPIC DOUBLE
MANUFACTURER:	ROSTEL INDUSTRIES LTD, CALGARY, AB
SERIAL NUMBER:	TPD-000-5
DATE OF MANUFACTURE:	FEBRUARY 2000
CLEAR HEIGHT:	102'-3"/31.2m
BASE WIDTH:	9 FT/2.74m
STATIC HOOK LOAD CAPACITY:	4000,000LBS/200TON – 8 LINES STRUNG
WIND LOADING:	172 kph/107mph/93knots – WITHOUT SETBACK 130 kph/81mph/70knots – WITH FULL SETBACK

On May 3rd and 4th, 2014 Blair Nelsen, P.Eng inspected **Kuukpik Drilling Rig 5** mast in Prudhoe Bay, AK. The mast was damaged during lowering operations. The mast was disassembled for inspections. Damaged areas were flagged for repair. Repairs were discussed with Kuukpik Drilling personnel on site and listed in a report. The mast was transported to NANA Construction for repairs. During the repair process mast was inspected by **Alaska Industrial X-ray Inc.** (Report No's: AIX-001 Thru AIX-015).

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