STATEMENT OF QUALIFICATIONS

Rig Capabilities, Specifications, Specialty Equipment & Key Personnel

RIG CAPABILITIES

- Hoist, Cooper 550 HP is capable of 250,000 LBS pulling power. We have achieved 6,000 ft. with 4.5 drill pipe setting 7 inch casing and a maximum hook load of 180,000 LBS with ease.
- The concept of the rig and its setup would best be served by standard or limited access sites with wells / horizontal wells up to 6,500 ft. in depth.
- Being equipment with an NOV high torque top drive system and optional hydraulic rotary table, puts this rig in the horizontal / directional oil well drilling rig category.
- Its floor design allows it to be separated for limited access operations with full depth power capacity.
- This rig typically moves onto sites and picks up all of its drill pipe and places it in the tower on difficult or limited access locations allowing the pipe racks to then be removed for other equipment to access the location and for faster more efficient directional drilling operations. This is re-writing the book on land rig tight access locations.
- The system consists of a hydraulic catwalk and optional sludge pump boxes to mud pit pumping system that allow us to setup in what would be normally considered previously un-achievable foot print scenarios and allows us to run our own casing strings engineering out hazards, increasing safety and performance.
- The rig comes fully equipped with all casing running tools from 2-3/8” to 16” pipe diameters and all members of the crew have been trained in casing running operations extensively. This saves time call out & stand by call out charges from casing running companies and allows cementers to be ready to perform their services in a timely manner.
- The rig also comes with a complete set of work over and completion tools as to provide all services in one mobilization at the customer’s disposal, complete with 16,000 ft. of sand line tubing and rod tools and injectable manifold for gas diversion operations and 11”- 5000 BOP stack with 11” – 3000 annular bag and a 7” BOP work over stack with accumulator system.
- The rig carries all top of line types of makeup breakout equipment on board, from an Iron Roughneck with 87,000 LBS of makeup/breakout torque and 16 inch by 30,000 ft. lbs. hydraulic tongs, as well as bull tongs with 87,000 ft. lbs. breakout rams and of course pipe spinners.
- The rig comes with a beefy ¾ inch high lining system that can rig up our own NOV 250Ton top drive by itself with ease, no cranes necessary.
- The rig comes equipped with a posi-stop crown-o-matic breaking system and an on-board forum operational computerized system with trailer to trailer dispersal.
- Also included is our 20x21.5 hydraulically folding and variable height limited or regular access sub-structure. Not only does it brake in half for limited access but can work at varying heights between 11 ft. and 15 ft.

PUMP CAPABILITIES

- Our 2-1137 HP F-1000 Triplex pumps are a work horse and easily drives 8” mud motors to the desired depth. Its 6 ½” liner setup allows us to run comfortably at 559 gallons or 13.30 barrels per minute each and is backed up by our RSF 440 pump running at 500 HP puts out an additional 235.2 or 5.6 barrels per minute when needed, giving us a total comfortable maximum pump rate of 26.60 barrels per minute with our standard set up.
- The hard lining system that comes with our pumps allows us to leave pumps stationary while progressively drilling with the rig in farther positions, allows us to perform multiple well installations while leaving the pumps and pit stationary.
- Our pump systems come with a manifold that attaches and detaches giving us variable flow options as well as injection into the mud stream options and can double as our choke manifold with separable and measureable pressure gauge options. This unit attaches and detaches from the rear of our main pump with quick pins and is always provided free of charge.

RIG SPECIFICATIONS

Main Technical Parameters:

Service Depth	20,000 ft (2-1/2” tubing)
Max. static hook load	250,000 lbs (8 lines) 225,000 lbs (6 lines)
Clear height, mast	104’
Working Platform Max Height	14'
Rated horsepower, engine	500 hp / 2,100 rpm
Height, tubing board to ground	55’-10” and 65’
Height, rod board to ground	70’
Carrier	6 axle—three steer, three drive axles
Diameter, wireline	1”
Road Traveling dimensions	64’-2” long x 10’ wide x 14’ high
Maximum speed	55 mph
Traveling weight	110,600 lbs maximum gross weight including drill line, sand lines, tools, block, etc.

Diesel Engine Specifications:

Model	Cummins ISX 15—2010 on highway, CARB certified
Rated horsepower	500 hp
Displacement	15 L

Transmission Specifications:

Model	Allison M-5610					
Gear Ratio	1	2	3	4	5	6
	4.0:1	2.684:1	2.013:1	1.351:1	1:01	.671:1
Drop box	Integrated					

Carrier:

Axles	Six [three steer, three drive]
Rating-Steering axles [three]	10.5 ton capacity [each]
Tire size—steering axles	445/65/R22.5 Duplex [6 reqd]
Rating-Rear drive axles [two]	11.5 ton capacity [each]
Tire size—drive axles	315/80R22.5 [12 reqd]
Fuel tank capacity	165 gal
Integrated carrier access stairs	One [drillers side]
Folding walkways with aluminum access stair	Drillers side and off drillers side

Power Transfer System:

Drop box to Right angle drive gear box	Spicer 1810 dynamically balanced drive shaft
Drop box to rear drive axles	Spicer 1710 dynamically balanced drive shaft
Right angle gear box → Sand Drum	1-3/4” double row chain
Sand drum → Main drum	1-3/4” double row chain

Drawworks System:

Right Angle Drive	[integrated torque tube]
Ratio	2.5:1
Main Drum	
Brake rim diameter x width	42” dia x 12” wide
Barrel diameter x width	16” dia x 38” wide [excluding lebus]
Model, clutch	WPT PO-324
Maximum fastline pull	45,000 lbf
Sandline Drum	
Brake rim diameter x width	42” dia x 8” wide
Barrel diameter x width	16” dia x 43” wide
Model, clutch	WPT PO-224
Sand drum capacity	16,000’ of 9/16” cable
Spray brake water tank capacity	80 gal
Assist brake	Air cooled disc brake
Brake caliper model	Kobelt 5028
Brake rotor measurements	48” dia x 10” braking surface x 4” thick
Maximum torque	36,500 lbf
Deadline anchor	
Contruction	Fabricated
Features	Equipped with ability to permit feed through of drill line or to accept a smelted button.

Dragon Products 104-250-8-T
Mast:

Manufacturing criteria	Manufactured/licensed to API 4F, 3rd edition
Clear height	104’
Maximum static load	250,000 lbs on 8-lines 225,000 lbs on 6-lines
Slant angle	3°30’, adjustable
Capacity, tubing board	28,396 ft—2 3/8” EUE tubing [3.063 dia] 24,800 ft—2 3/8” DP [3.375 dia] 22,816 ft—2 7/8” EUE tubing [3.668 dia] 16,864 ft—2 7/8” DP [4.125 dia] 10,540 ft—3 1/2” DP [4.75 dia] 11,780 ft—3 1/2” EUE tubing [4.50 dia]
Tubing board finger position	Perpendicular to mast face
Rod Board Capacity	288 stands [17,280’]—1/2” sucker rod 216 stands [12,960’]—5/8” sucker rod 192 stands [11,520’]—3/4” sucker rod 168 stands [10,080’]—7/8” sucker rod 144 stands [8,640’]—1” sucker rod 120 stands [7,200’]—1 1/8” sucker rod
Maximum wind rate	57 knots (66 mph)

Light Work Floor:

Dimensions	12’ wide x 7’ long [with wings folded out
Construction	3” square tubing
Adjustable heights	2’-6” to 14’ [other options available]
Access Stairs	Aluminum and adjustable height
Tubing board finger position	Perpendicular to mast face

Hydraulic system:

Hydraulic oil tank capacity	210 gal
Hydraulic filtration	Suction screen in Hydraulic tank and return fluid 10 micron parker filter.
Hydraulic pump	Parker P37X [40 gallon per minute]
Service Winch	Pullmaster PL-8 [7,000 lb capacity]
Hydraulic controls	Located at rear of carrier and protected by heavy duty cover

PUMP # 1 CAPACITIES

RSF-1000 Performance specifications

Liner Diameter:	6-3/4"	6-1/2"	6-1/4"	6"	5-1/2"	5"	4-1/2"
Discharge pressure:							
(PSI)	2378	2552	2770	3002	3567	4322	5003
SPM GPM							
140	650	602	558	513	431	356	288
130	**603**	**559**	**518**	**477**	**400**	**331**	**268**
120	557	516	441	440	369	305	247
110	510	473	438	403	339	280	226
100	464	430	398	367	308	255	206

Gear Ratio is 4.207:1

PUMP # 2 CAPACITIES

W-440	**HP**	260	320	380	440
	SPM	510	660	810	960
LINER SIZE	**MAX PSI**	**GPS**	**GPM**		
3	5000	0.18	94	121	149
3 1/2	4045	0.25	127	165	202
3 3/4	3523	0.29	146	189	232
4	3130	0.33	167	215	264
4 1/4	2740	0.37	188	243	299
4 1/2	2451	0.41	211	273	335

THE LATEST TIER 3 & 4 EQUIPMENT AND TECHNOLOGY

NOV 250 TDH TOP DRIVE SYSTEM ADVANTAGES

- A high torque full feature top drive is capable of rotating and circulating while pulling pipe and breaking out up at the top tool joint in tight or problematic hole.
- It allows drilling down 60 ft. plus length stands of pipe while reaming or directionally sliding to build angle more effectively saving time, reducing connections and increasing overall performance and productivity.
- A top drive allows you to accurately control the rotation of the pipe while directional drilling, working tool face alignment or making or breaking special and standard threads.
- Top drives control down hole torque conditions and release torque in a safe and effective manner.
- It allows you to drill through boulders and poor or sticky formations with stability and provides effective speed management in all conditions.
- A top drive removes block swing and provides a safe and stable rotating tool environment.
- A properly tooled and operated top drive allows for much less handling tool usage during the drilling process therefore making the entire process much safer and less fatiguing to rig employees.
- This top drive system has a built in I.B.O.P. saving time in the event of flow and preventing accidental pressure release during connections.

CUSTOM SUB STRUCTURE ADVANTAGES

- After review of the available sub structure market we understood that we simply wanted more from our sub structure than the current manufacturing companies are producing. We set out to develop, engineer and manufacture our own design that we feel leaves all others lacking, our design delivers options that make us invaluable given the parameters of today's typical oilfield.
- Our sub structure can operate at variable heights ranging from 11 to 15 feet actuated hydraulically with a load capacity of 428,000 lbs. It allows us to accommodate most B.O.P. configurations and additionally supports room for any type of rotating head, stripping or pipe jacking implements to be used.
- The system allows for mechanized separation of the lower cat walk end of the sub structure through a heavy duty dowel pin configuration thus allowing this unit to be separated and utilized in varied layout patterns, this opens up a completely different realm of possible set up scenarios up to and including wall, well equipment and roadway avoidance patterns. We are becoming recognized as California's only limited access oil well drilling professionals with the ability to develop and provide reliable engineering stamp approved plans to those troublesome sites when needed.

- We have the ability to maneuver our sectional sub structure in place with our loader forklift for those locations that have many obstacles or very tight conditions, we have engineered a hitch attachment that allows for very tight access and rotational ability after catwalk disconnection. I has been stated as remarkable by our current and former clients.

IRON ROUGHNECK ADVANTAGES

- Today's specifications for make-up and break out leave some drilling companies behind the times regarding proper tooling, with our specially designed Iron roughneck we meet and exceed tooling requirements with up to 85,000 lbs. breaking power and 54,000 lbs. make up power rolling in to operating position on tracks from a foot controlled station, we are proud of our JT4 International Iron roughneck and the way it is installed for use.

- From 2 3/8 inch diameter to 8 5/8 diameter we have a system that works very well, the iron roughneck has been modified to roll out on tracks below the torque board of our top drive and therefore does not hang on wire rope making it safer and easy to work with.

- We of course have bull tongs as well that work independently on breaking rams subliminally hidden inside of the sub structure tubulars, they run up and down on winch operated chain hoists and are perfect for those hard to get to or large diameter breaks and makes.

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.PIPE HANDLER ADVANTAGES

- Our hydraulic pipe pick up and lay down machine is of the finest quality and has been the benchmark tool to enhance our sectional sub structure, not only does it lift and scoot all pipe and collars with ease but along with the 3 degree lean out in our rig mast it has allowed us to work from any direction to serve our needs at the hole, we often run it at 45 or 90 degree angles to the rig to support our limited access operations. Imagine being able to work with full tool usage 20 feet from a wall on 2 sides, "yes it can be done" we have done it to 6,000 ft with 4.5 drill pipe and ran 7 inch 23 lb. casing to bottom.

- If you want superior pipe handling tool capabilities for a special brand of pipe with timidity in threads or screening you would like to protect, you can rely on our hydraulic pipe handler to perform flawlessly.

HARDLINING ABILITY ADVANTAGES

- We have constructed rated pipe and flow ditch configurations that allow our teams to set up on a well pad and move forward to new well conductors leaving our pumps pits and tanks in the initial position, this is helpful for those multiple horizontal well pad configurations. We can also tie our pumps and tanks into either side of the rig as there are junctions for tie in on both sides, this configuration also allows for additional pump and or other equipment access into the fluid stream while rigged up for service.

NO CRANES TO MOVE THE RIG

- This rig was carefully designed to move without cranes, even our hydraulic power drive unit and hose bundle was constructed so that unless there are special site circumstances no cranes will be required.

TDH 250 BY NOV
3X HYD MOTORS
750 H.P.
13.5 FT. LG.
13,200 LBS
18.71 TO 1 RATIO
230 RPM
25,000 FT LBS CONTINUOUS
40,000 FT LBS MAX TORQUE FOR DRILLING
STATIC BRAKE 25,000 LBS
2 ¾ INNER DIAMETER
5,000 PSI
50,000 LBS BREAK OUT
D.P. RANGE 2 7/8 TO 5 1/2
IBOP RATING 10,000 LBS
ROTATION UNLIMITED
CRT READY- YES
LIFT 250 TON