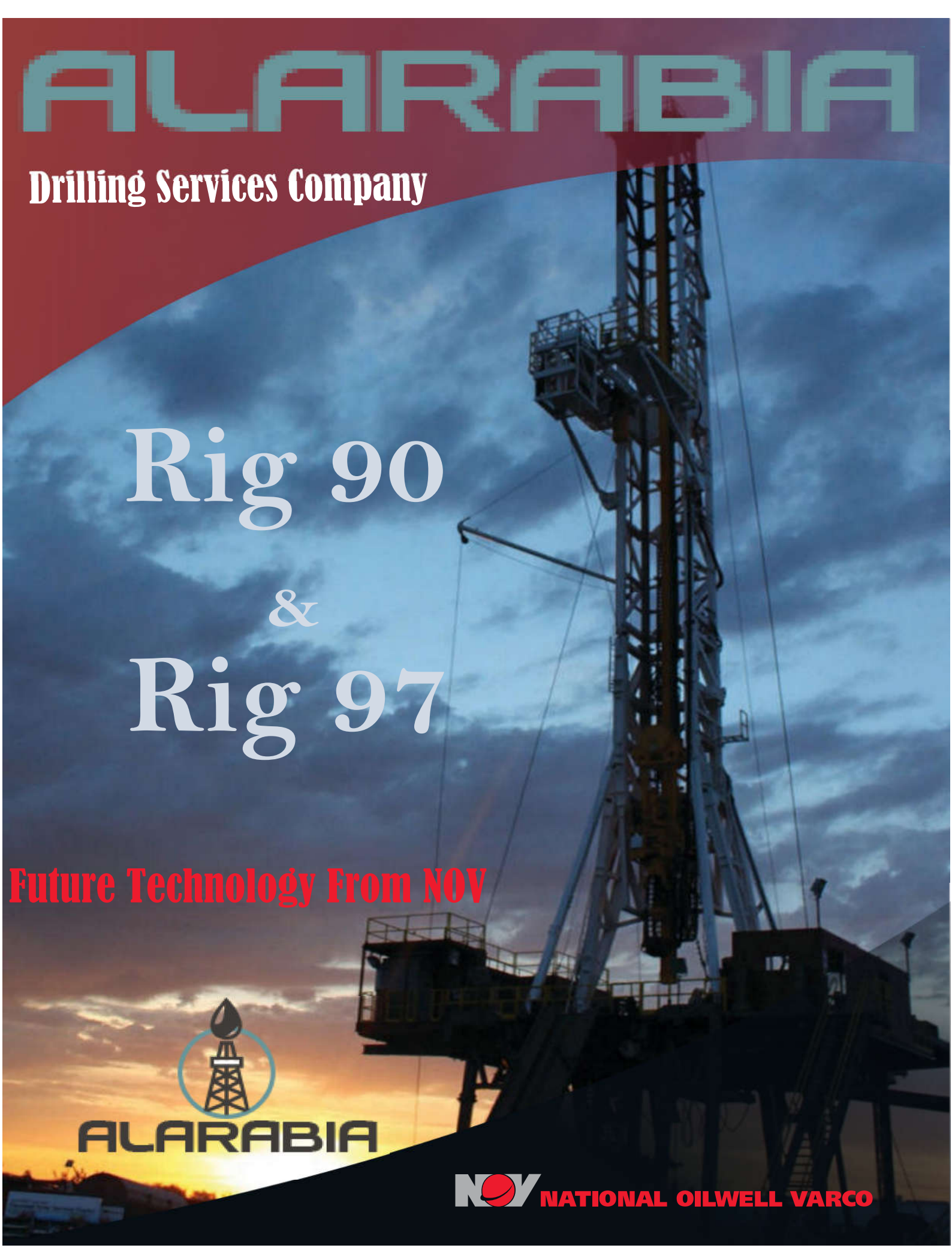
ALARABIA

Drilling Services Company



Rig 90

&

Rig 97

Future Technology From NOV

ALARABIA

NOV NATIONAL OILWELL VARCO

ALARABIA

Drilling Services

RIG 90

RIG 97

New Technology and High Quality Equipment Rigs

Safer, Faster and Smarter Rigs - - - - We Work in The Future

Masts

- 750,000 lbs hook load capacity, upper and lower section. Crown block mounting points, Climb Assist, Jib, ladder & racking board included. Upper section to contain crown block, traveling block, drill line spooler w/5000ft of 1-3/8"of drill line while in transit, lower section to contain top drive while in transit.

- Racking board capacity of 208 stands of 5-1/2" O.D. drill pipe and 8 stands of 8" drill collars and upgraded to 9-1/2" drill collars. Fingers are non-adjustable. Side racking type with adjustable center diving board and hinged extension. Adjustable 82'11" to 88' 11" above drill floor level complete with safety chains on all fingers.

- Crown Block contains five (5) 50" diameter sheaves grooved 1-3/8" with tapered bearings. Shaft drilled with grease fitting for each bearing with grease seals. One (1) 60" diameter fastline sheave, grooved 1-3/8", complete with bearing shaft and grease seals.
  Two (2) 42"deadline sheaves. One (1) 55 ton hang-off lug for travelling block and top drive.

Mast Specifications:

Mast clear height:	**142**	**ft**
Base width:	**12 ft x 12**	**ft**
Hook load rating:	**750,000**	**lbs**

The mast is built in accordance to API 4F, 3rd edition.

Substructures

- 25' overall height slingshot substructure, hydraulically raised with two (2) cylinders and contains 3 sets of stairs, 3'-6" handrails and a zero discharge environmental containment system.
- Drill floor is made up of 4 sections, One (1) covered off-drillers side equipment skid, One (1) off-drillers side box. One (1) center drill floor section containing setback area, mast pedestals, rotary table and Independent Rotary Drive. One (1) driller's side box.
- Built in spreaders and jacking beams in lower side boxes
  Integrally welded flooring

Substructure Specifications:

Substructure overall height:	**25**	**ft**
Clear height under rotary beams:	**21'-8"**	
Overall floor dimension:	**32' X 32'**	
Setback capacity:	**500,000**	**lbs**
Rotary capacity:	**750,000**	**lbs**

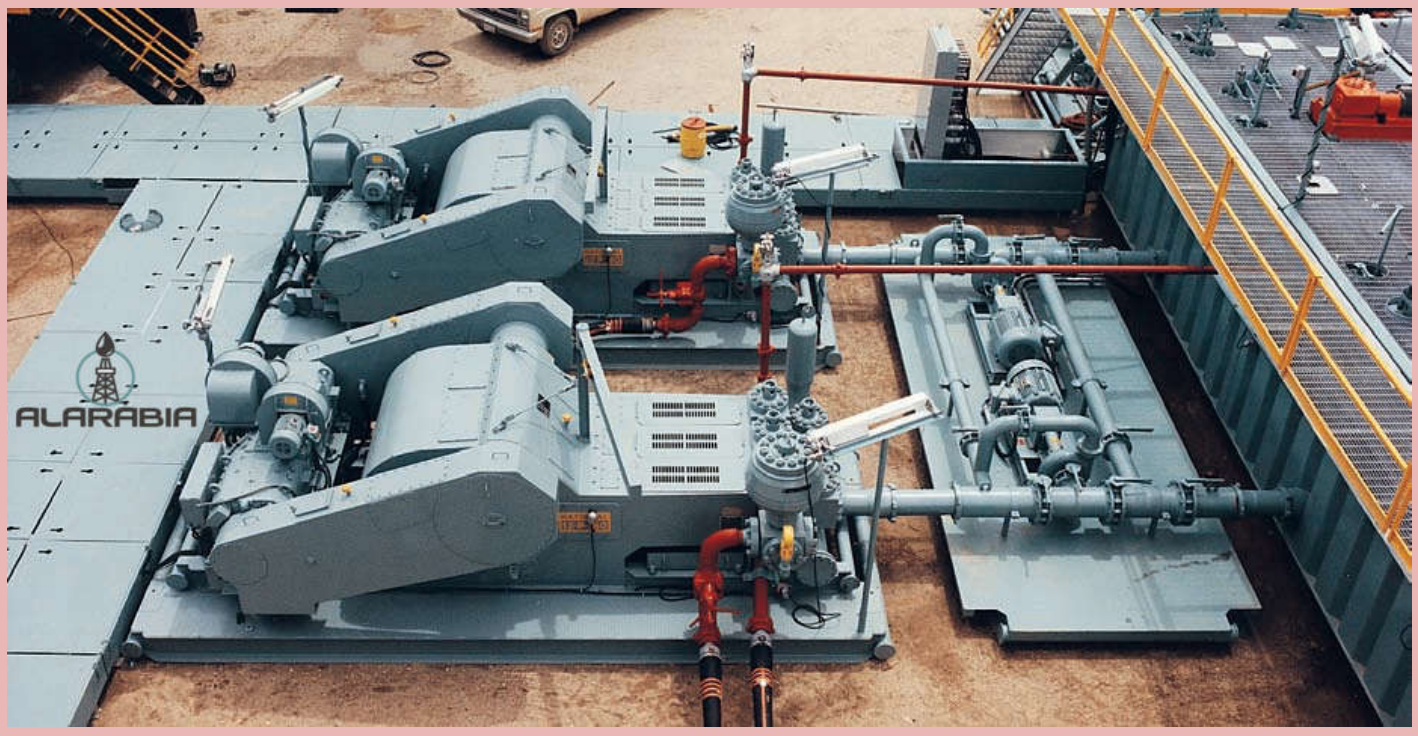
- **The substructure is built in accordance to API 4F, 3rd edition.**

MODEL 12-P-160 TRIPLEX MUD PUMP

12-P-160 Triplex Mud Pump

National Oilwell Varco's 12-P-160 Mud Pump is rated at 1600 input horsepower (1193 kw) at 120 strokes per minute, with a 12-inch (304.8 mm) stroke.

Multiple liner sizes allow pressures and volumes to handle circulation requirements in deep drilling applications.



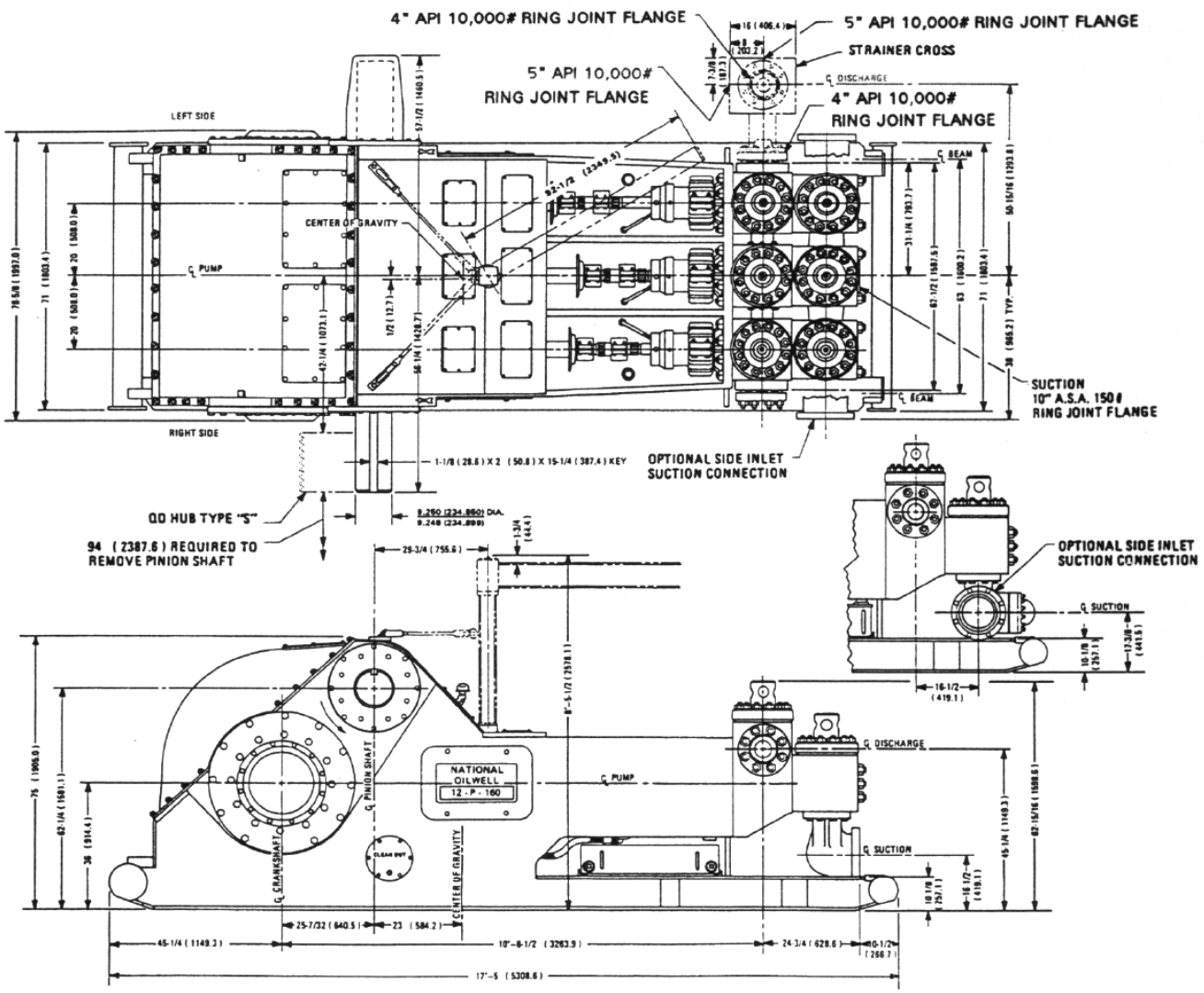
PERFORMANCE DATA

Liner size, inches (mm)			7 ¼" (184.2)	7" (177.8)	6 ¾" (171.5)	6 ½" (165.1)	6 ¼" (158.8)	6" (152.4)	5 ¾" (146.1)	5 ½" (139.7)	5" (127)	4 ½" (114.3)
Max. Discharge Pressure, psi (kg/cm^2) with high pressure Fluid End†			3200 (225)	3430 (241.1)	3690 (259.4)	3980 (279.8)	4305 (302.7)	4670 (328.3)	5085 (357.5)	5555 (390.5)	6720 (472.4)	7500 (527.2)
Pump Speed spm	**Input HP, HP (kW)**	**Hyd.** HP, HP (kW)**	**GPM** (LPM**)**	**GPM** (LPM**)**	**GPM** (LPM**)**	**GPM** (LPM**)**	**GPM** (LPM**)**	**GPM** (LPM**)**	**GPM** (LPM**)**	**GPM** (LPM**)**	**GPM** (LPM**)**	**GPM** (LPM**)**
120*	1600* (1193*)	1440 (1074)	***	***	669 (2533)	621 (2349)	574 (2172)	529 (2002)	486 (1840)	444 (1682)	367 (1389)	297 (1124)
100	1333 (994)	1200 (895)	643 (2435)	600 (2270)	558 (2111)	517 (1958)	478 (1810)	441 (1668)	405 (1533)	370 (1401)	306 (1158)	248 (938)
80	1067 (796)	960 (716)	515 (1948)	480 (1816)	446 (1689)	414 (1566)	383 (1448)	353 (1334)	324 (1226)	296 (1121)	245 (927)	198 (750)
60	800 (597)	720 (537)	388 (1461)	360 (1362)	335 (1267)	310 (1175)	287 (1086)	264 (1001)	243 (920)	222 (841)	184 (697)	149 (564)
40	533 (397)	480 (358)	257 (974)	240 (908)	223 (844)	207 (783)	191 (724)	176 (667)	162 (613.1)	148 (561)	122 (462)	99 (375)
Volume/Stroke, gal. (Liters)			6.433 (24.35)	5.997 (22.70)	5.576 (21.11)	5.171 (19.58)	4.781 (18.10)	4.406 (16.68)	4.046 (15.32)	3.702 (14.02)	3.060 (11.58)	2.478 (9.38)

*Rated maximum input horsepower and speed
**Based on 90% mechanical efficiency and 100% volumetric efficiency
***Operation over 675 gpm could result in reduced valve life
†5,000 PSI Fluid End configuration available

Dimensions	
Height, floor to center of front inlet suction, inches (mm)	16 ½ (419)
Height, floor to center of discharge, inches (mm)	45 ¼ (1149)
Overall length over skids, inches (mm)	209 (5309)
Width over frame, inches (mm)	78 5/8 (1997)
Width over pinion shaft, inches (mm)	113 ¾ (2889)
Height, floor to top of gear case, inches (mm)	75 (1905)
Height over fluid cylinders, inches (mm)	62 15/16 (1599)
Weight-complete, less sheave, lbs. (kg)	54,700 (24,810)
Fluid Connections	
Suction connection	10" ASA-150 lb. R.J. flange
Discharge connection, cross	6" API-5000 lb. R.J. flange
Capacity Data	
Maximum liner bore, inches (mm)	7 ¼ (184.2)
Stroke, inches (mm)	12 (304.9)
Maximum input horsepower (kW)	1600 (1193)
Rated pump speed, spm	120
Pinion speed, rpm	413
Hydrostatic test pressure of fluid cylinders, psi (kg/cm^2)	11,250 (791)
Mechanical Data	
Fluid cylinder	Steel, 2 piece interchangeable modular design
Valves, API number	MOD. 7
Valve seats	Bottom shouldering, modified for high pressure
Piston rod-piston connection	Piloted and shouldered, National CB-4
Piston rod-intermediate rod connection	Piloted and shouldered, metal-to-metal lock
Type of gears	Relieved herringbone
Gear ratio	3.439:1
Gear and pinion	Through hardened alloy
Type of crosshead pin	Tapered
Number and type of pinion shaft bearing	2 self aligning roller
Number and type of main bearing	2 double row tapered roller
Number and type of crosshead bearing	3 double row needle
Number and type of crankshaft-connecting rod bearing	3 cylindrical roller
Double extension on pinion shaft, inches (mm)	9 ¼ Dia. x 18 ½ Long (234.95 x 469.9)
Sprocket with QD Hub Type S-Dual Electric Motor Drive (Drive sprocket 1200 RPM max.)	Two- 75T 1½" pitch quint.
Ind. or rig drive-drive sprocket 1000 rpm max.	75T 1½" pitch octuple
Ind. or rig drive-drive sprocket 1100 rpm max.	75T 1½" pitch tenwide
Sheave, QD Hub Type S	53" OD 24-8V Section belts

General Dimensions



NOTE: Center of Gravity is for complete pump less sprocket

ADS-10SD Drawworks

ADS-10SD
Automated Drawworks System

Size and Weight:

Width (OA)……..119" [3023 mm]
Length (OA)…….248" [6299 mm]
Height (OA)……..110" [2794 mm]
Skid……108" [2743 mm]
Wide x 247" [6274 mm] Long
Weight……..65,000 lbs [29,483.5 kg]

- **Land, Structural Oilfield Steel Skid**

  Provides main load bearing capability of ADS, self-supporting frame. Mounting platform for hoisting motor(s), ADS load frame, and brake assemblies. Also includes provision for J-boxes, lubrication system, brake control system and cable routing.

- **Drum Assembly - ADS10SD**

  The LeBus drum requires wire rope to have no more than 2.5% maximum oversized condition. LeBus 30" dia. x 55" wide [762 mm x 1397 mm] wireline drum with keyed hubs onboth ends. Includes grooved sleeve and wear plates for specified wire; anchored using a wireline clamp.

  A crown saver toggle valve is located above the drum. The valve islocated where it can be activated by the wire rope, just short of the point at which a crowncollision would occur. When the valve is activated it sends a signal to a crown saver pressure switch which alerts the control system to stop the drum.

- **Drum Grooving for Wireline Size: 1-3/8"**

  Specifications:

  *1-3/8" wire rope

  *Continuous or intermittent use of the motors

  *Zone 2 (hazardous area) installation

- Maximum Continuous or Intermittent Horsepower: 1800 HP - for use in 0C to +55C environment

  12 lines... 967,000 lbs

  10 lines... 827,000 lbs

  8 lines... 680,000 lbs

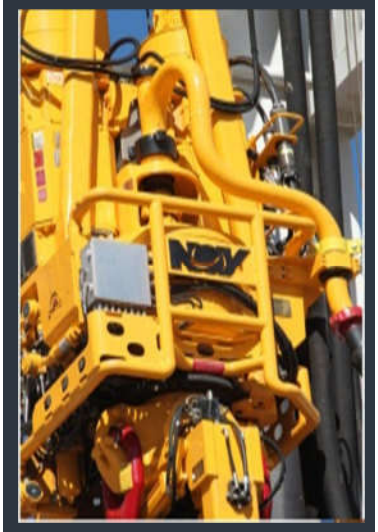
  Maximum block speed (12 lines / 3rd layer): 221 ft/min

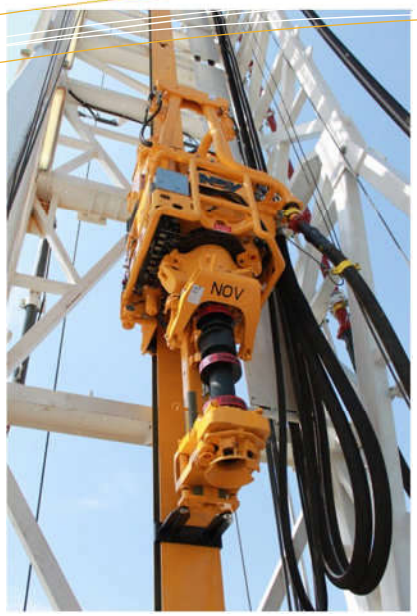
- **Sensor Module**

  The ADS is equipped with the necessary skid mounted sensors that are required to achieve the performance stated in the functional design specification. These are installed and terminated and ready for connection to the control system. These will typically be differential pressure switches, absolute encoders, air pressure switches, servo valves, pressure transmitters, RTD's, solenoid valves, flow transmitters and proximity sensors. Sensors mounted off skid are to be provided as part of the drilling instrumentation package.

- **Electrical Rating**: 1230HP (917kW), 3pH, 600 to 690 Volts

TDS-11SA Top Drive





The Drilling Unit complete with the following:

Motor Housing,
Motor Housing Guard,
Onboard Hydraulic Power Unit,
Roller-style Carriage,
Bail, Pipe Handler (model PH-75),
Integral Swivel with Gooseneck and 7500 psi "S-Pipe" assembly,
Drilling Fluids path pressure limit is 7,500 psi.

- The unit equipped with a 7,500 psi Wash Pipe assembly. Rotary Hose rating and method of connection to Rotary Hose will determine overall system pressure rating.
  The TDS-11SA Drilling Unit features two forced air cooled 400HP AC Drilling Motors (800 HP Total), a 10.5:1 Double Reduction, Helical, quiet Gear Drive, Hydraulic Disc Brakes, Powered Rotating Head, Bail, and Counterbalance with Stand Jump.

- **TDS-11SA Output Characteristics**

Torque, ft-lbf	Torque, N-m	RPM	Operation
55,000	74570	0	Intermittent
37,500	50842	110	Continuous
18,250	24743	228	Continuous

- The on-board Pipe Handler (model PH-75) is complete with 500 ton rated Link Adapter Assembly (Solid Body Elevator), remote operated, dual crank Upper IBOP Safety Valve, manually operated Lower IBOP Safety Valve, Lower Gripping Jaw (Torque Back-Up), and Hydraulic Link Tilt assembly. The Pipe Handler will be dressed for operation with an NC50 tool joint. Other tool joints can be accommodated and required kits are to be quoted separately.

- The PH-75 provides for mechanized break-out of the Lower and Upper IBOP valves, and heavy duty rotating head motor for more consistent operation. The PH-75 will accommodate tool joints with up to 8-1/2 inch OD.

Hydraulic Iron Roughneck System
MODEL ST-80CL

ST-80CL Hydraulic Iron Roughneck System

ST-80CL (Manual) AC or DC

Compact, socket mounted unit combines spinning and torque functions into one wrench for safe, fast, and controlled make-up and break-out of tubular connections. The tool handles drill pipe, drill collars, and most stabilizers from 4 1/4 to 8 1/2 inch outside diameter, and can produce up to 80,000 ft-lbs of torque.

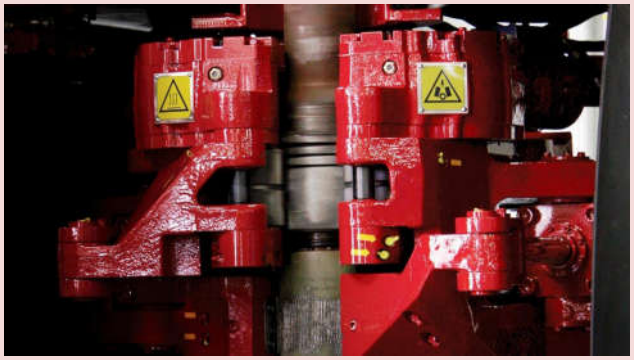
The ST-80CL is easily installed on virtually any rig floor utilizing a single, floor mounted socket for support; no hanging cables or overhead equipment is involved. The basic tool comes complete with 25 foot long connection hoses, floor socket, connection hardware, and all installation instructions.

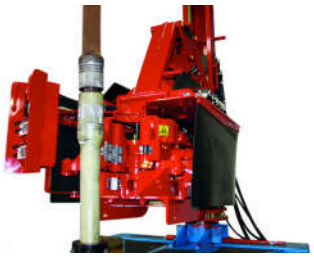
A hydraulic supply filter and manual shutoff valve is mounted on the pedestal column for easy access. Controls for the tool are hydraulic-over-hydraulic. These controls provide for positioning, make, break, spin-in and spin-out. Cylinders on the arm and pedestal accurately position the ST-80CL horizontally and vertically, at well center or the mousehole, and the tool can easily be rotated +/- 180° about the pedestal for storage. This offers additional working space on the drill floor.

An arm that connects to the pedestal guide suspends the carriage. Through use of this arm

system the ST-80CL can be extended to well center and mousehole locations while missing the rotary chain drive cover on typical mechanical rigs.

Includes quick-release skid and frame to ease handling and transport.





Technical Specifications	
Weight: ST-80CL Assembly	9,000 lbs [4082 kg]
Hydraulic Requirements	2000 psi [138 bar] input pressure minimum 28 GPM [106 LPM] @ 1000 psi [69 bar] minimum 40 GPM [151 LPM] maximum
Connection OD Range	4-1/4" to 8-1/2"(108-216 mm)
Nominal Drill Pipe	3-1/2" to 6-5/8" (89-168 mm)
Spin Speed	100 RPM (nominal on 5")
Spin Torque	1,750 ft-lbs (2373 Nm)
Max. Make-up Torque	60,000 ft-lbs (81500 Nm)
Max. Break-out Torque	80,000 ft-lbs (108500 Nm)
Horizontal Adjustment	100" (2540 mm)
Vertical Adjustment	42" (1067 mm)
Nominal Connection Height	23" to 65" (584 – 1651 mm)
System Control	Hydraulic - over- Hydraulic

PipeCat

PipeCat

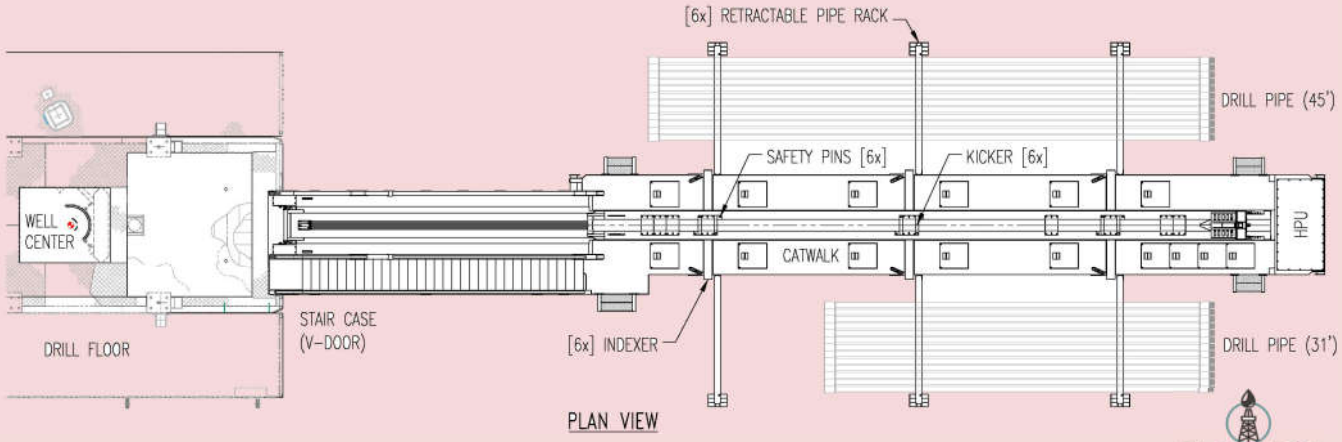
The PipeCat machine provides delivery of drill rig tubulars from the Catwalk level to the Drill Floor and positions the box end of the tubular approximately 3 feet above the Mousehole to allow the elevators to be manually latched, but is close enough to Well Center to allow heavy tubulars to be manually pushed off of Well Center when laying down.

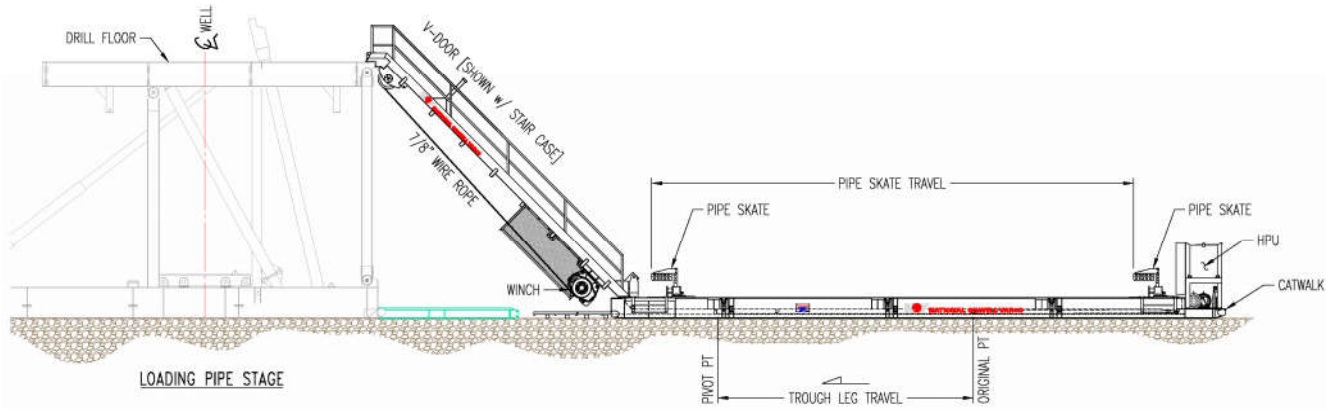
The machine consists of a Catwalk, Ramp and Trough assemblies including a series of positioning and monitoring sensors integrated with a Hydraulic Power Pack mounted on the Catwalk Assembly. Operator movement controls are from either a Wireless Radio Control or a Local Control station paddle controls, which have been integrated with a Computer Control System (CCS) processor to allow finite tubular position control.

PipeCat manufactured to temperature rating -20 C to +55 C.

MAJOR COMPONENTS
The major components of Catwalk assembly consist of following: See Figure 1 below for overview of the Catwalk Assembly

- Catwalk Frame
- HPU Power Pack
- Trough Lift Winch
- Trough
- Rear Leg
- V-Door Ramp
- Skate
- Pipe Racks (6)
- Indexers (6)
- Safety Pins (6)
- Kickers (6)
- Computer Control System
- Wireless Radio Control
- Local Control Station




DRILL FLOOR
WELL
V-DOOR (SHOWN W/ STAIR CASE)
7/8" WIRE ROPE
WINCH
PIPE SKATE TRAVEL
PIPE SKATE
PIPE SKATE
HPU
CATWALK
PIVOT PT
ORIGINAL PT
TROUGH LEG TRAVEL
LOADING PIPE STAGE

Drilling Control System

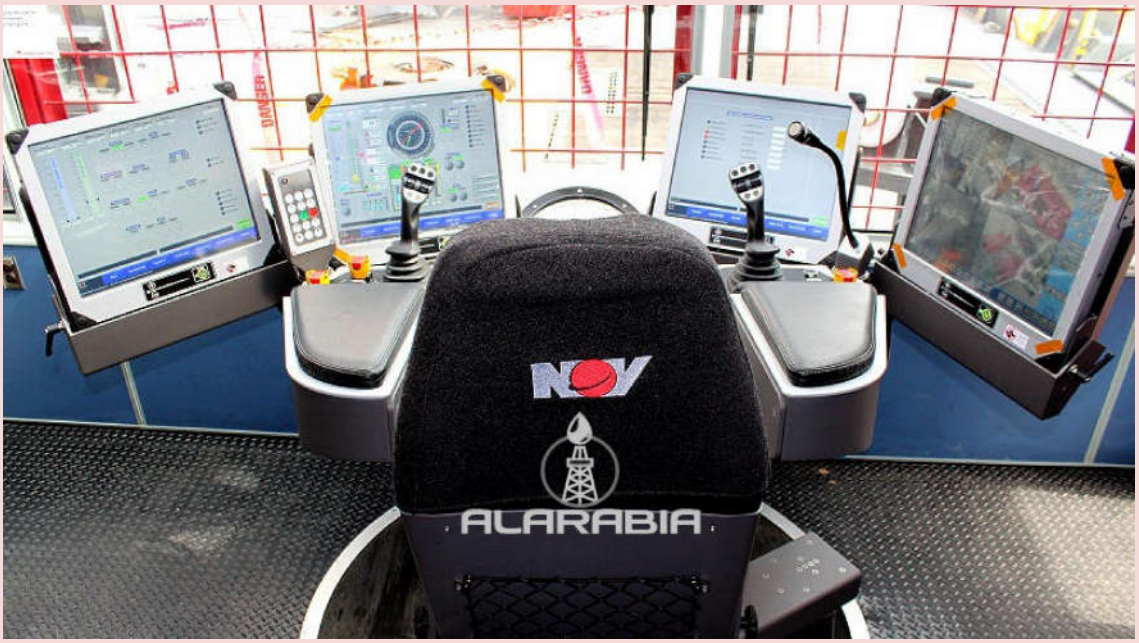
International Driller's Cabin
Amphion Integrated System

The Amphion Integrated System is a high-availability integrated rig control system for managing, controlling, and monitoring rig floor equipment in independent and activity-based operations. The system is designed to allow operators to focus on Drilling, Tripping, Stand- Building and Casing processes by providing an efficient and intuitive rig floor command center.

The Amphion Integrated System is interactive through the use of color-graphic data and control screens viewed on any of the Amphion Touchscreens integrated into the operator workstations. Touchscreens allow the Driller to supervise and control all drilling-related functions. Standard screen layouts are included unless custom screens are specifically offered in this quotation.

The main elements of the Amphion Integrated System are the Multi-Tool Control Cabinet, which houses control modules and network devices, one or more operator workstations, and one or more control
modules to drive the rig equipment. Amphion Tool Control modules interface with and control NOV tools. All modules include an Amphion Tool Controller, communication hardware, and user software interface functionality. The design avoids single point failures through a robust network with redundant touchscreens running in parallel.

The Amphion modules connect via the network to touchscreens and/or to workstation hardware (such as joysticks) to provide monitoring and control of each tool, plus local and remote access to integrated diagnostics, maintenance and documentation. These modules are rack-mount designed and installed in the Amphion Multi-Tool Control Cabinet (MTC).



Electronic Drilling Feature

The EDS Electronic Drilling Control Algorithms help drillers significantly reduce drilling costs and improve rig safety. This plug-in software module enhances standard Amphion based drawworks control systems to provide unique automatic drilling functionality. Superior drilling
performance is delivered by precisely controlling line payoff, monitoring or maintaining up to four parameters simultaneously - WOB, ROP, Drilling Torque and Delta-P (differential downhole motor pressure.) These patented design features provide very consistent steady state control at the bit. This module requires precise and proportional drawworks braking capability, such as AC variable frequency drives with regenerative braking, or pneumatically controlled friction plate disc brake, such as the V-series disc brakes provided by National Oilwell Varco. These braking systems are controlled to ensure very continuous feed of the drill line from very slow drilling rates to up to 1000 feet/hour.

EDS Drilling Control Algorithms provide significant economic benefits:

· Constant steady state control at the bit.
· Longer bit life, optimum bit performance, reducing bit usage and bit trips.
· Maximized Rate of Penetration, reducing drilling time and days on location.
· Controlled drilling (constant ROP) greatly improves directional drilling control and accuracy

AC Drives

Drill Force™ VFD Systems

The Drill Force™ VFD Systems is highly configurable for the smallest drilling machinery requirements or expandable to the largest drilling requirements.

Description

- **Drill Force™ VFD Systems** are air cooled and is Type tested to internationally recognized EC 61493-1 specifications. The Drill Force product line is designed to meet the requirements of all rig types.
- **Types:** The Drill Force System is offered as the Drill Force LT (Air Cooled Land Type), the Drill Force AC (Air Cooled), or the Drill Force WC (Water Cooled). The Drill Force VFD Systems are extremely reliable and integrate seamlessly with NOV control systems and machinery.
- **Generator Controls and Switchgear:** The generator control system is built with flexibility and can utilize the Ross Hill control module or the Woodward generator control module, depending on the needs of the rig. The cubicle design is accessible through the front in land applications and can be outfitted for rear access in marine applications.
- **Aftermarket Suport:** As the Original Equipment Manufacturer (OEM), NOV provides comprehensive aftermarket service solutions to support the lifetime of your equipment through an integrated network of stratigically located facilities worldwide.

Features/Benefits

- Rugged, robust construction
- Enhanced safety, installation, and serviceability
- Isolated main bus and motor cable terminations sections
- Design optimized for integration with oilfield/marine machines and controls
- Advanced diagnostic monitoring
- Centralized on board documentation system
- All pilot lights are push to test lights
- Plug in Inverter Modules
- System is IP41 with doors closed; IP20 with doors open
- All control fuse holders have LED indication

RIG 90 & RIG 97

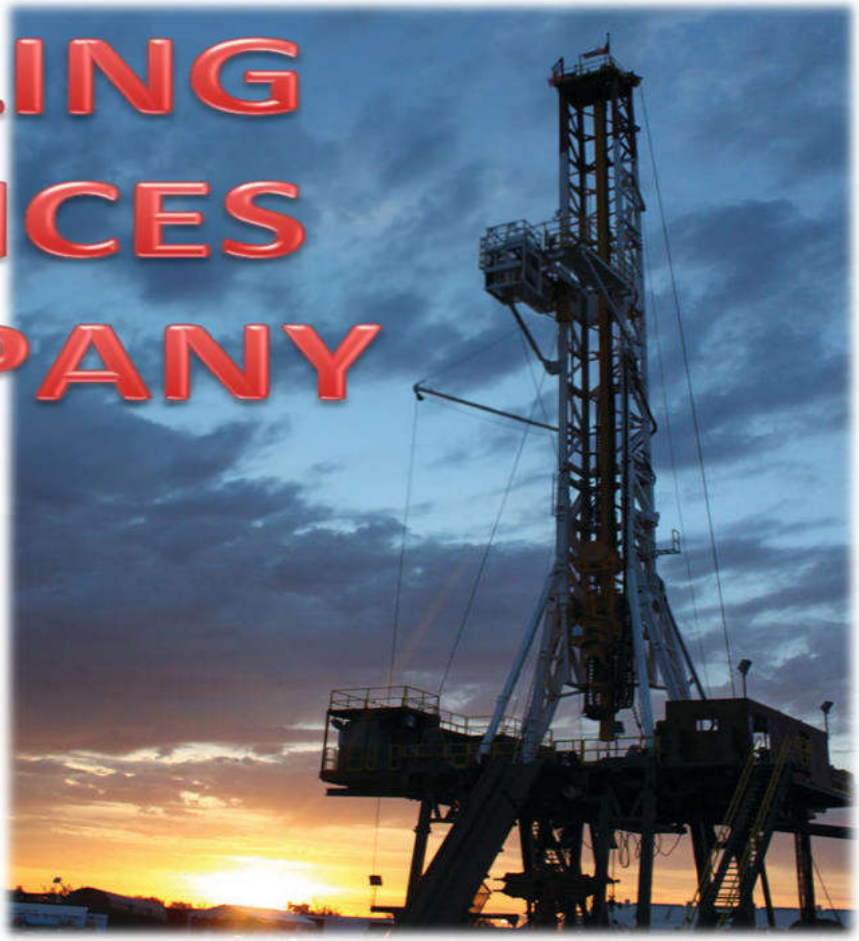
Specifications

AC Ideal™ Rigs System from National Oilwell Varco is a safe, efficient, and fast-moving land rig.

AC Ideal RIG	RIG 90 & RIG 97
SPECIFICATION	**1500HP HA AC Ideal Rig**
Typical model	1500HP HA AC Ideal Rig
Mast	Mast clear height: 142 ft, Base width: 12 ft x 12 ft, Hook load rating: 750,000 lbs
Substructure	Substructure overall height: 25 ft. Clear height under rotary beams: 21'-8" Overall floor dimension: 32' X 32' Setback capacity: 500,000 lbs Rotary capacity: 750,000 lbs
Nominal drilling depth	4500m with 5" drill pipe;
Max. hook load of hoist system	750,000 lbs
Floor Height	25ft
Substructure clearance	Clear height under rotary beams: 21'-8"
Max. input power of drawworks	1800 HP
Drive of drawworks	2 each**1230HP** (917kW), 3pH, 600 to 690 Volts DC motor
Rotary table	37 1/2"
Drive of rotary table	400 HP, Independently driven by one each DC motor
Size and quantity of drill line	1 3/8", 12 lines max.
No. and power of mud pump	2 x TPAO RMBD - 12-p-160 triplex mud pump 1600 HP
Drive of mud pump	2 each**1150 HP** continuous, 3pH, 600V, 1100 amps continuous DC motor
Main rig generator sets	3 each CAT 3512C, engines driving a 600VAC, 60Hz, 1750kVA generator.
High pressure mud manifold	5"OD, 5000psi, dual standpipe
Mud Tank System	Two Tanks, Total Capacity of 1314 bbls
Solids control	2 x shale shaker, 1 x Degasser, 1 x Desander, 1 x Desilter,
Choke and kill system	1x Choke Manifold, 4-1/16" 10,000 psi WP kill/choke manifolds and lines
Well Control, and BOP Stacks	NOV BOP Control Unit Model L240-M7EA50CE2 rated for 3000 PSI WP and designed to meet API 16D sizing requirements for13-5/8" 10000 PSI BOP Stack comprising of one (1) 13-5/8"10000 PSI Annular BOP, three(3) 13-5/8" 10000 PSI Ram BOPs and two HCR valves. 1x Accumulator Module Model C240-11ST
Electrical Controls, Power	3x CAT 3512C, engines driving a 600VAC, 60Hz, 1750kVAgenerator. 1x 1800HP Drawworks driven by two (2) AC motors 1x 800HP TDS-11SA Top Drive driven by two (2) AC motors 1x 400HP Rotary Table driven by one (1) AC motor 2x 1600HP Mud Pumps driven by two (2) AC motors each
Tubular Handling Equipment	1x ST-80CL Hydraulic Iron Roughneck System Package, High technology PipeCat.
Top Drive System	1x TDS-11SA Drilling Unit - 500 Ton Rated w/ 7500 psi Mud Path
Drilling instrument, Driller's Cabin	Amphion Integrated System (interactive through the use of color-graphic data and control screens with high-availability integrated rig control system)
Drill Pipe and Collars	**5.0"** Drill Pipe Qty. 3,500m G-105, **3.5"** Drill Pipe Qty. 3,500m **5.0"** HWDP Qty. 15 EA, **9.5"** Slick DC Qty. 4 ea, **8.0"** Spiral DC Qty. 25 ea, 6.5" Spiral DC Qty. 25 ea,
Capacity of water	1x Water Tank - **400** BBL +1x Additional Reserve Tank **685** BBL
Capacity of fuel tank	Cylindrical Fuel Tank **400 bbl** with Fuel Filtration System

ALARABIA

DRILLING SERVICES COMPANY



Latest Model
High Quality

New Technology
Professional Crew

ALARABIA