Middle East AC Rig
2000 HP

Manufactured Locally

NOV Rig Technologies


NOV
Rig
Technologies

DESIGNED TO PERFORM, BUILT TO LAST.

NOV Middle East rigs are specifically designed to work in the harsh drilling conditions and high ambient temperatures of the desert. High quality materials, heavy-duty construction, state-of-the-art design technology, and in-country manufacturing ensure **reliable performance in the desert environment**.

The design and layout of the ME 2000 allows for **fast moves** between well-sites or on a well-pad. The ME rigs are designed to improve efficiencies and **reduce transit time** by minimizing load sizes and numbers while operating in the desert.

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RUGGED AND EFFICIENT DESIGN.

Mast specifications:

- Mast clear height: 157 ft.
- Hook load: 1,000,000 lbs. with 12 lines

Raising system for mast and substructure:

- Hydraulic cylinders with wireless remote controls

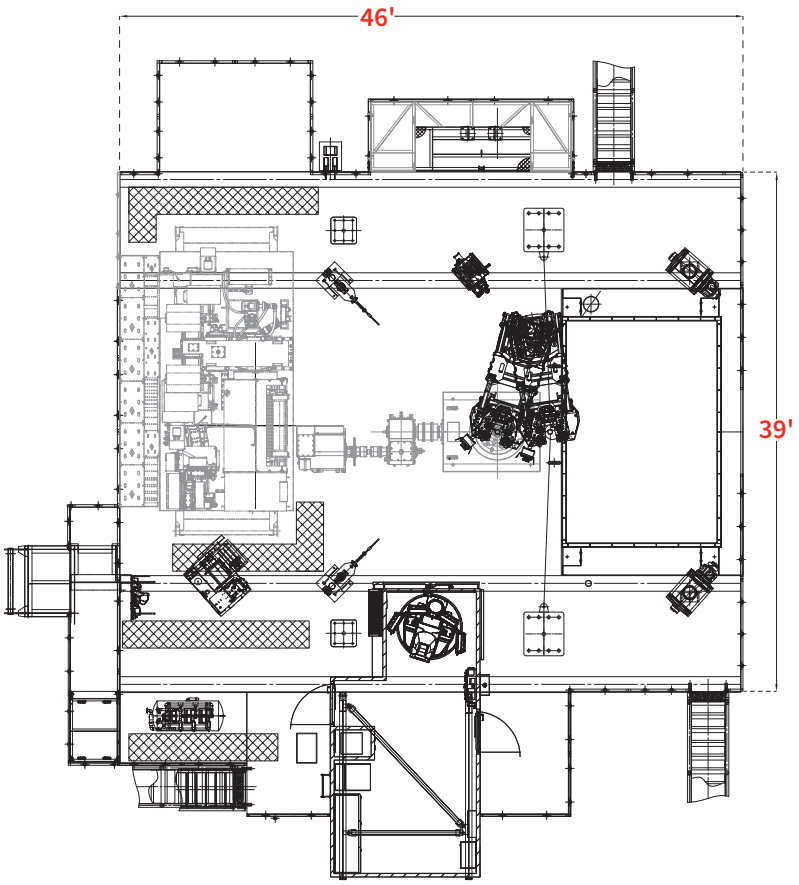
Substructure specifications:

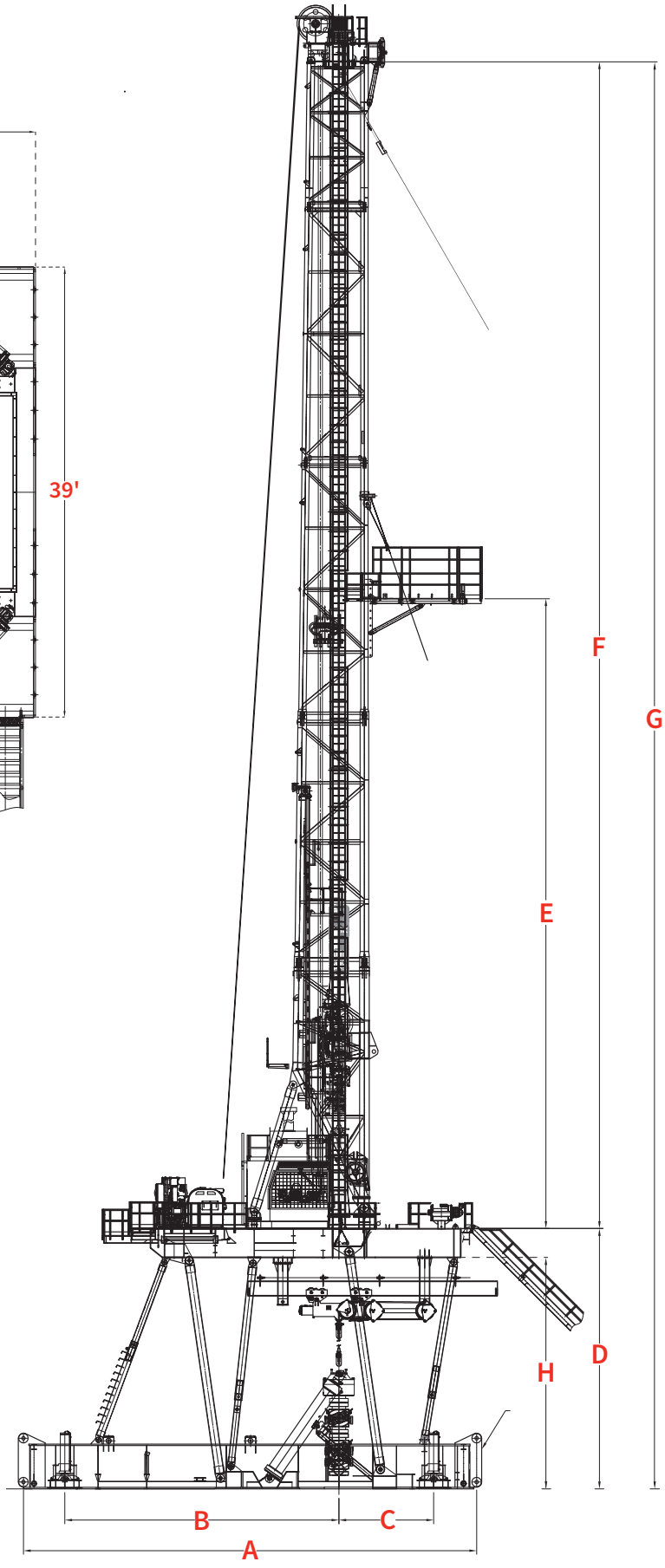
- Substructure Height: 35 ft.
- Casing capacity: 1,000,000 lbs.
- Setback capacity: 800,000 lbs.
- Combined Capacity: 1,800,000 lbs.
- Clearance from bottom of rotary beam: 30 ft.
- BOP handling system capacity: up to 150 T.
- Large drill floor: Approx. 39 x 46 ft.

Racking board capacity*:

- 240 stands of 5½ in. drill pipes
- 2 stands of 9½ in. drill collars
- 8 stands of 8¼ in. drill collars
- 6 stands of 7 in. drill collars
- 6 stands of 4¾ in. drill collars

*Standard. Alternative Configurations can be provided.





Dimension	Feet	Meters
A	61	18.6
B	47	14.3
C	14	4.3
D	35	10.7
E	82 to 87	25 to 26.5
F	157	47.8
G	192	58.5
H	30	9.1

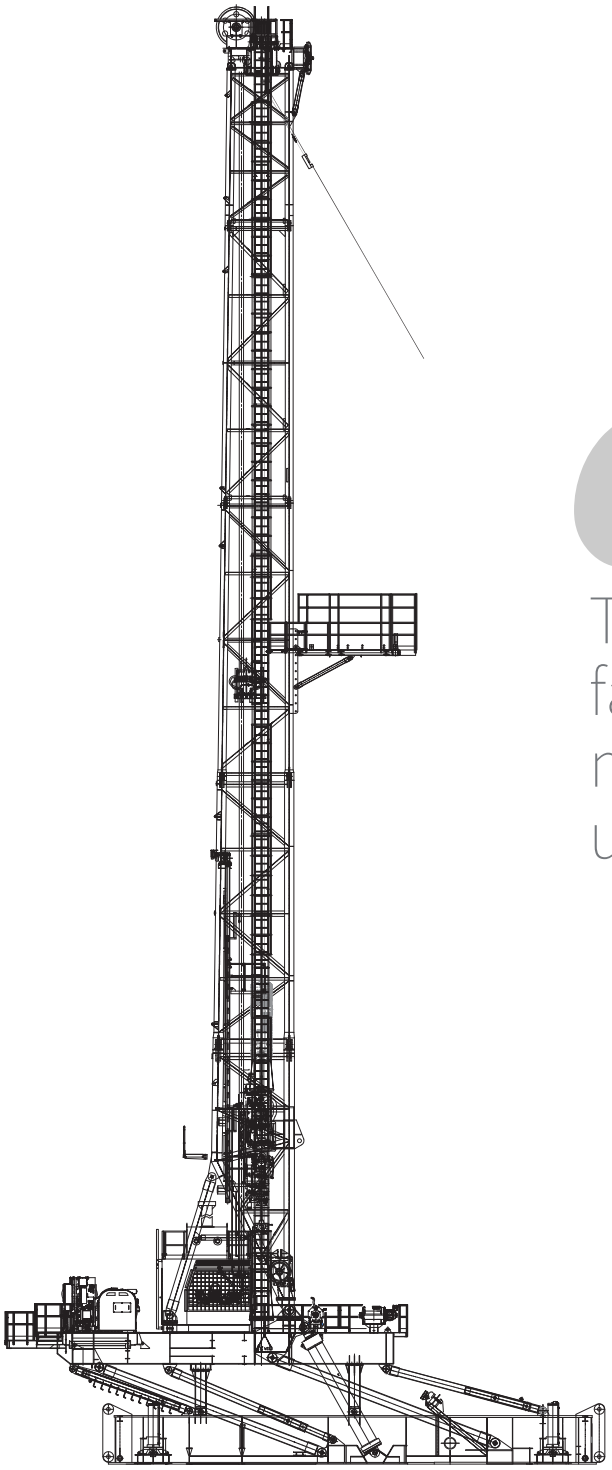
*Note: Racking board height can be adjusted within range of dimension F to accommodate varying stand heights.

FAST-MOVING CONFIGURATION.

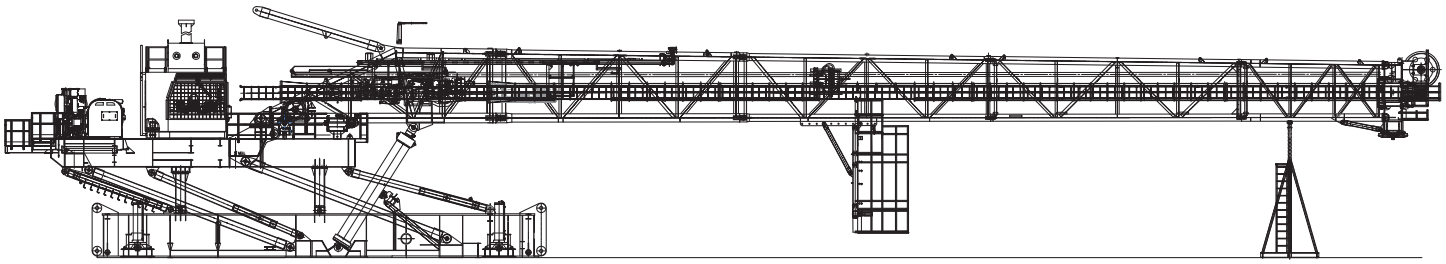
The mast and substructure are hydraulically raised by one set of two telescoping raising cylinders equipped with stroke sensor with a digital screen on the operator's panel to read each cylinder stroke separately (RCRS).

An independent Diesel driven HPU is used to operate the cylinders, making the operation of rig up and rig down independent from running the main power system on the rig. This improves rig up and rig down time, and adds flexibility to the rig move sequence.

For enhanced safety and easier operation, the rig is equipped with a Remote Controlled Raising System (RCRS) that allows the operator to raise and lower the mast and sub from a safe distance while monitoring the parameters of the raising system.



> The ME rigs are designed for fast rig-up and rig-down to move quickly and increase uptime.



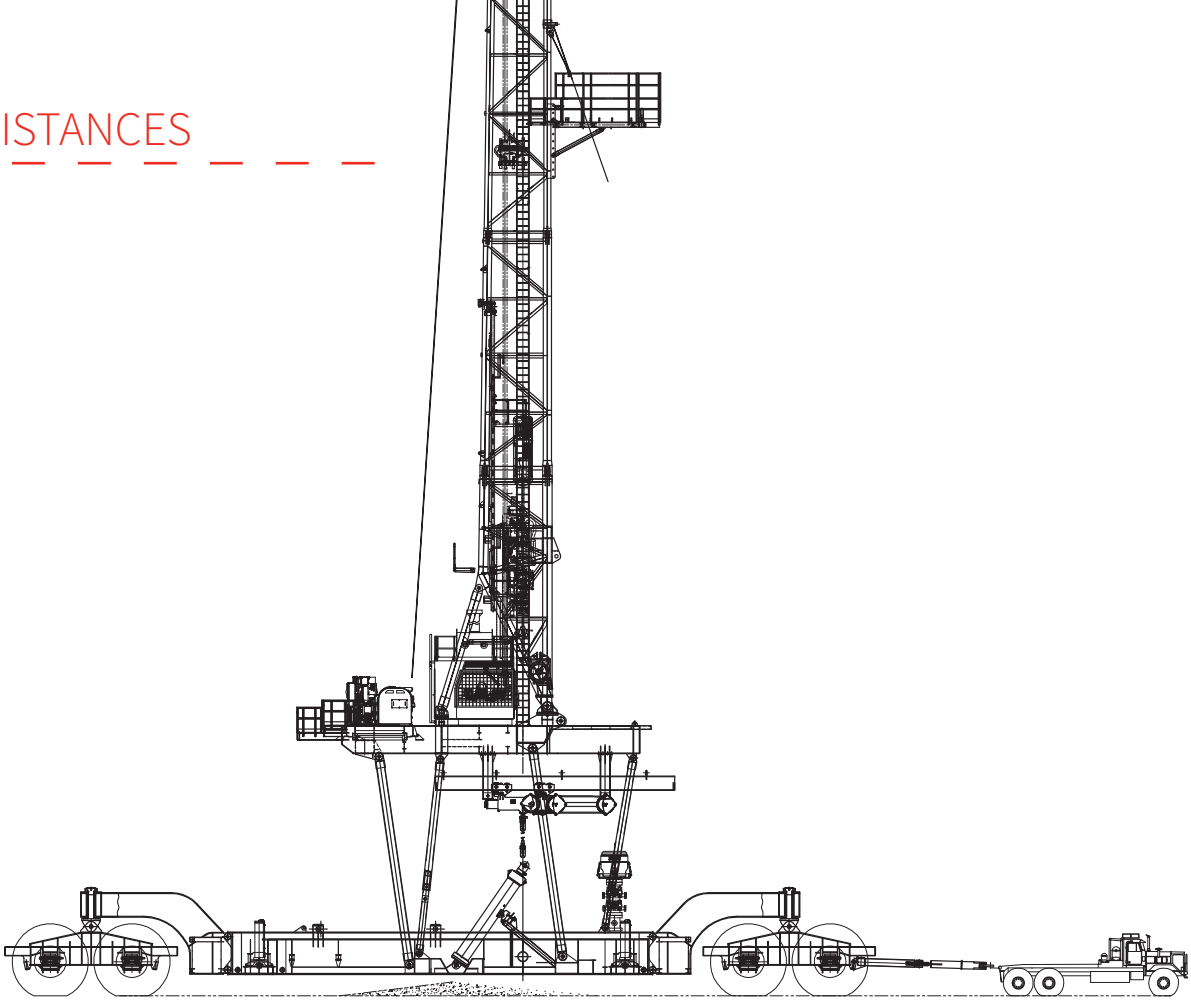
REDUCED TRANSIT TIME.

Mast and Substructure transportation.
The mast and substructure have the ability to move in the following positions:

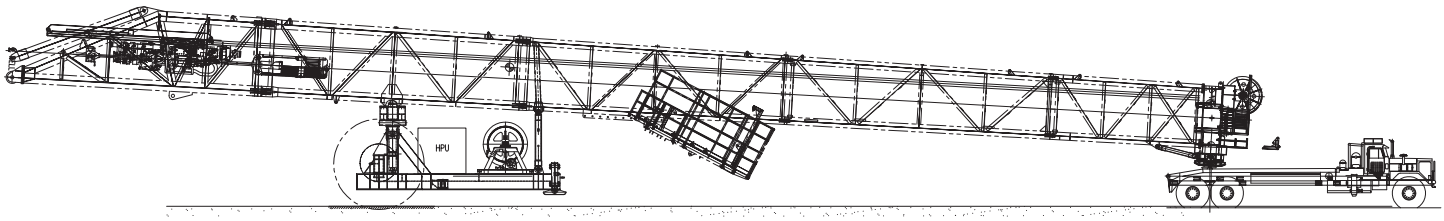
1 The substructure is raised and the mast stands on the substructure. This option is preferred when moving the rig for short distances. It minimizes rig move time tremendously (release to spud in can be done in 24hrs or less). The low pressure in the tires allows the rig in this mode to float on soft sand and cross sand dunes. The rig in this mode can be transported for long distances too, but at a slower speed than mode 2.

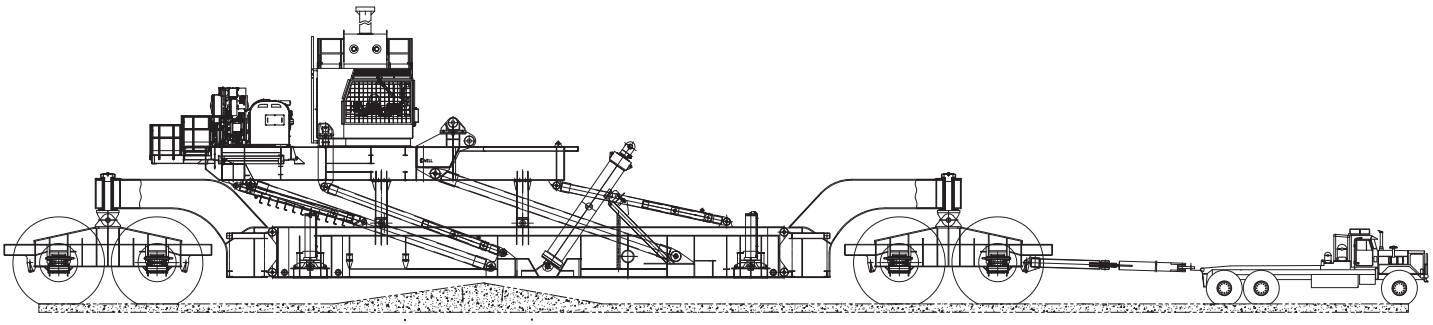
2 The mast is separate on its own dolly and the substructure is down. In this option the mast will be removed from the substructure and each will travel as one unit. This is usually preferred when moving long distances since it allows transporting the rig at a faster speed.

1 SHORT DISTANCES



2 LONG DISTANCES

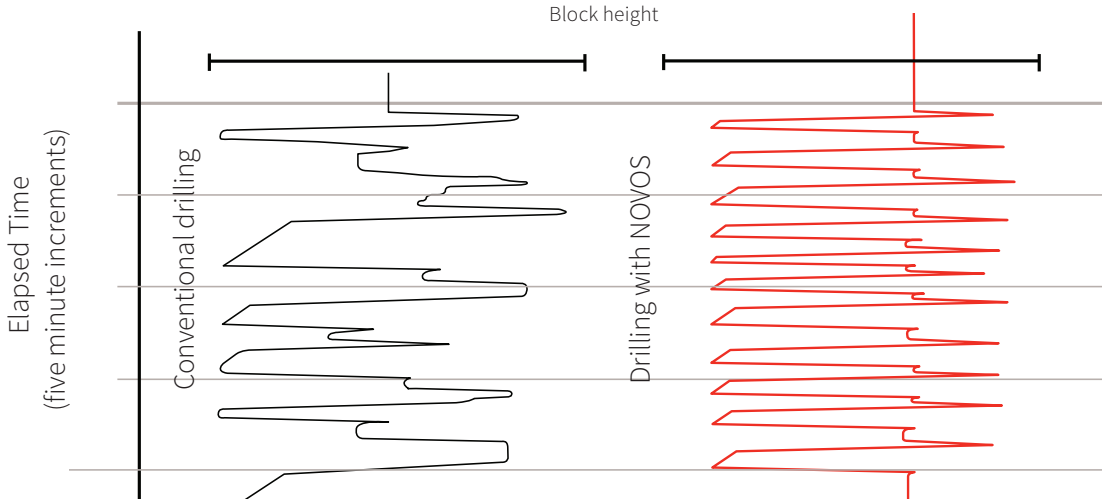




OPTIMIZE YOUR RIG PERFORMANCE.

NOVOS™ reflexive drilling system:
NOVOS provides control and consistency for any operation. It allows drillers to automate repetitive drilling activities, such as coming off and on bottom, friction tests, downlinking, taking surveys, and making fully hands-free offshore connections. The result is greater consistency, with every driller-regardless of individual experience level - able to achieve the same improved performance time and time again. Learn more at nov.com/novos

Traveling Block Height Comparison with and without NOVOS



This graph shows a sample of actual traveling block height and illustrates the more consistent NOVOS drilling (right) in comparison to conventional drilling (left). NOVOS is able to complete more cycles than conventional drilling and delivers them more consistently in the same amount of time.

NOVOS ENABLES

NOVOS is paying attention

- Performs repetitive drilling activities, allowing the driller to focus on safety and process execution
- Enhances the effectiveness of driller skill and experience, while maintaining the capability for the driller to take full control if desired
- Allows user to set operating parameters that protect your equipment from unnecessary wear and tear

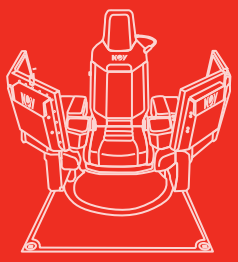
Simple integration into existing NOV Amphion and Cyberbase integrated drilling controls

- Minimal hardware and software installation extends the capabilities of NOV controls
- Easily scalable across rig fleets and integrates the best of human and equipment capabilities to execute the well program
- All new NOV rigs are NOVOS enabled, and retrofit is also available.

Optimized drilling performance

- Customized apps can be called upon for your specific drilling requirements
- Developer packages allow you to create your own personalized apps
- Advanced security measures ensure system integrity and the ability to integrate third party data feeds

POWERED BY



Amphion

TDS-11SH

Drill Force VFD

WE MAKE AND SUPPORT THE WORLD'S MOST ADVANCED DRILLING EQUIPMENT.

The ME 2000 is packaged with advanced field-proven NOV equipment such as the Top Drive, AMPHION Control System and Iron Roughneck, providing you a solid foundation of tools that ensure unmatched performance. Additionally, our NOVOS platform is available, allowing higher consistency and optimized drilling operations through process automation.

EQUIPMENT SPECIFICATIONS

Mast and Substructure

- Cylinder raised substructure
- Mast and substructure can be transported different ways: with structures reinforced and moved while erect with tires, or with substructure scoped down and mast on dolly systems designed for tough roads and desert environments
- No mast sections are disassembled and top drive remains in the mast during transport with the dolly system

Amphion and Driller's Cabin

- Integrated control system for managing, controlling, and monitoring rig floor equipment for safe and efficient operations
- Configurable control screens and a CCTV screen maximize the driller's operational efficiencies and awareness
- Touch screens are user-friendly, concise, respond quickly, and allow simultaneous monitoring of multiple equipment on one screen
- Ergonomic, adjustable, climate-controlled work station
- Multi-tool controllers, complete with battery back-up and redundant power network; protects the system against power loss
- System interlocks and zone management system increases safety on the rig

Top Drive — TDS-11SH

- Most powerful top drive for its size enables faster, deeper drilling
- AC electric VFD-controlled drilling for safer operations
- 1,100 HP
- 500 ton rotating and hoisting capacity
- 51,000 ft.-lb. continuous drilling torque at 125 RPM
- Available with Softspeed™ II to mitigate stick-slip

BOP — LXT 13⅝ in. 10,000 PSI (Optional, Subject to Specifications)

- Lightweight and compact
- Compatible with the superior low force shear ram
- Easier maintenance and assembly of LXT ram
- Only two hydraulic connections required per ram
- Boltless door locking system
- LXT ram only requires single removal of two lock rods and is a one-piece block assembly
- Optional 15¼ x 15¼ in. booster available
- 100-ton BOP hoists transport BOP to well center assembled

Mud Pumps — FD-1600, Triplex

- Quick access to fluid ends to ease maintenance
- Rugged construction and field-proven
- 1,600 HP at 120 SPM
- Dual-motor drive
- Optional Mission™ Fluid King two-piece 7,500 psi fluid ends
- Two high pressure equipment and piping options: 5,000 psi and 7,500 psi

Iron Roughneck — ST-80C

- Integrated spin and torque function and advanced controls maximize safety and efficiency
- Compact size and lightweight
- Adaptable for wide variety of applications
- 60,000 ft.-lb. makeup and 80,000 ft.-lb. breakout torque
- 4¼ in. to 8½ in. tubular connection range

Iron Roughneck — ST-100 (Optional)

- Equipped with slewing and rotating capabilities to utilize mouseholes
- Patented scissor-arm design uses the Timing Link allowing ease of maintenance and extended tool life
- 100,000 ft-lb makeup and 120,000 ft.-lb. breakout torque
- 3½ in. to 9¾ in. tubular connection range

BOP Control Unit

- Minimum triple redundancy and alarm systems to ensure safety and dependability
- Configurable to constricted dimensions, mobility restrictions, and other needs
- Field tested to ensure quality construction and maximized uptime
- Manufactured and monogrammed to API 16D
- API 16D rated alarm systems
- Designed to any specification including ATEX, all European Directives, API, GOST, NORSOK, DNV, APS and all major oil companies' specifications

EQUIPMENT SPECIFICATIONS

Pipecat Laydown System (Optional)

- Personnel removed from danger area while picking up and laying down pipe
- Need for manual handling eliminated
- Transfers tubular from catwalk level to drill floor
- Wireless radio control or local control
- Manual V-door ramp functionality

BX Elevator (Optional)

- Hydraulically actuated elevator designed to improve rig safety and efficiency
- Ability to be interlocked with PS-21 as an additional safety feature
- Double-door design provides optimal balance and performance
- Changeable bushings allow one elevator frame to handle all pipe sizes and type requirements

NOVOS (Optional)

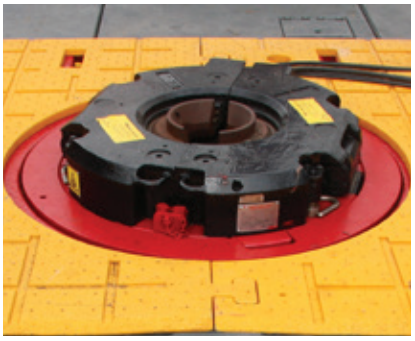
- Performs repetitive drilling activities, allowing the driller to focus on safety and process execution
- Enhances the effectiveness of driller skill and experience, while maintaining the capability for the driller to take full control if desired
- Allows user to set operating parameters that protect your equipment from unnecessary wear and tear
- Simple integration into existing NOV AMPHION Integrated Drilling Controls
- Advanced security measures ensure system integrity and the ability to integrate third party data feeds

STV, Stand Transfer Vehicle (Optional)

- Innovative technology that removes the derrickman from the fingerboard
- Primary arm quickly retains and releases the stand over well center
- Intuitive control system contains comfortable, ergonomic controls that feature a dual CCTV camera system

Drawworks — ADS-10SD

- AC motors perform main braking; motors in conjunction with the variable frequency drives are capable of stopping and holding the maximum hook load at zero speed indefinitely
- No HPU or brake water cooling system required
- Air-cooled friction-plate emergency/parking brake
- Reduced foot print compared with DC drawworks, allowing for a larger working place on rig floor
- Increased fuel efficiency compared with DC systems, and requires less maintenance



Power Slips — PS-21 (Optional)

- Manual operations at well center eliminated
- Installation flush with the drill floor creates a safer work environment
- Reacts up to 45,000 ft.-lb. of torque
- Standard equipped with a centering device
- Handles all drill pipe, collars, tubing and casing sizes up to 14 in. OD

Power System

- Efficient AC power system that reduces fuel consumption
- Rugged, robust construction
- Enhanced safety, installation and serviceability
- Isolated main bus and motor cable terminations sections
- Advanced diagnostic monitoring
- Plug in Inverter Modules

Trailers (Optional)

For faster rig moves, the following can be mounted on trailers allowing significant reduction on rig move time:

- Power system (VFD house and gensets).
- Mud pumps.

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