

# New Pioneer rigs have AC power, small footprint

**THE FIRST OF TWO** advanced land drilling rigs was unveiled in July by **Pioneer Drilling Co Ltd** at Corpus Christi, Tex. Rig #7 employs state-of-the-art technology, including the first alternating-current drive motor on a land rig to power the hoisting system.

“With this and other technological advancements, these rigs have several advantages over other rigs operating in our markets, including greater mobility; increased control, efficiency and reliability; improved safety features; and improved environmental characteristics,” said **Mike Little**, Chairman and CEO of the Corpus Christi-based contractor.

Mr Little became Chairman of San Antonio-based **South Texas Drilling & Exploration** in 1998 and grew the company’s fleet from 6 to 20 rigs. He also engineered the South Texas acquisition of Pioneer Drilling.

“Pioneer was a great acquisition,” he said. “We are on a growth path and we’re going to keep moving forward.”

The two new rigs, #7 and #8, were to be joined by a third unit in September, said Mr Little.

The rigs are manufactured by **IRI Corp**, now part of **National Oilwell**. At Rig #7’s inauguration, **Pete Miller**, National Oilwell Chairman and CEO, emphasized the rig’s environmental safeguards and small footprints.

“If the public were aware that the industry was fielding such units, it would allay concerns about the environmental impact of drilling,” said Mr Miller.

“I wish we could bring people out to see a rig like this.”

## KEY FEATURES

The new Pioneer rigs are capable of drilling wells as deep as 18,000 ft, but they are designed to be “depth flexible.”

About 70% of the wells in Texas are drilled to depths in the 9,000-18,000 ft range.

AC technology provides significantly greater control in the drilling process and improves efficiency during tripping operations to clean the borehole, change

the drill bit or come out of the hole to run casing. The AC technology also requires fewer diesel engines, resulting in fuel savings and reduced maintenance requirements.

The rig is equipped with a single-seat driller’s cabin that allows the driller to remotely control the drawworks, rotary table, mud pumps, and SCR from the comfort of an air-conditioned or heated unit via programmable logic circuits,



Visitors view Pioneer Rig #7, an advanced land rig recently unveiled in Corpus Christi, Tex.

touch screens, and joy stick. The system provides real time data for analysis, trending, processing and graphical display.

Rig #7 can be rigged up in less than 24 hours, compared with the 4 days or more required to rig up most rigs of this depth rating. It is packaged to move in only 20 truck loads, compared with 30 loads for the typical older generation rig.

## RIG #7 ADVANTAGES

The new Pioneer rigs offers the following advantages, among others, over conventional rigs. Power for the rig comes from 3 fuel-efficient **Caterpillar** Model 3512B DITA diesel generator sets with **Kato** brushless synchronous AC generators.

The power system offers a significant reduction in maintenance costs.

The National Oilwell AC drawworks has a larger drum that increases wire line life and operates at a single speed, eliminating the need for a clutch and transmission.

The AC motors are capable of holding full load at zero speed, so the disc brakes are only used for parking.

This is a first for land drilling rigs, according to Pioneer, and means lower maintenance costs and increased safety.

It is possible to power down utilizing the AC motors, decreasing tripping time. And the greater control provided by AC technology increases performance and reduces time on location.

A single joystick control for the driller makes for ease of operation and the use of fiberoptics reduces control cabling and cuts rig-up time.

Rig #7’s derrick is a NOI/IDECO 136-ft telescoping mast rated to 720,000 lb. It moves in 1 load, reducing trucking costs and mobilization time. Older generation rigs may require 3 to 4 loads.

The rig has a NOI/IDECO 22-ft high substructure rated to 1,135,000 lb. It is packaged into just 2 loads, compared with 4-6 loads for older generation rigs, further reducing trucking costs and mobilization time.

No crane is required for rig up or rig down.

Rig #7 also requires less land clearing for the rig site and for drilling operations, reducing location costs.

Rig #7’s mud system is built around two **Continental Emsco** FB-1600 triplex pumps on individual skids and 3 **Brandt** LPC-40 shale shakers.

The shakers, first developed in the



**Rig #7's mud system includes two triplex pumps on individual skids and three shale shakers. The rig's 2-tank mud system has specially designed drain lines with two mud tanks on mud pump skids.**

North Sea, have the highest solids control efficiency available, helping to reduce the cost of drilling fluids, pumps, and bits.

A skid and cantilever rig up system for

the shale shakers eliminates the need for a crane.

The two-tank mud system has specially designed drain lines with two mud tanks on mud pump skids.

The drain lines permit operation without discharging any drilling fluids or materials.

The mud tanks have rounded bottoms to reduce cleaning time.

Rig #7 includes other features that offer increased productivity and reduced cost, including:

- An automatic driller increases rate of penetration by closely monitoring weight on bit and automatically lowering the drill string to maintain a constant bit weight;
- One 2-cone Brandt desander with dedicated pump removes sand from drilling fluids, reducing pump wear and drilling fluids costs, and increasing penetration rates;
- One Brandt 16-cone desilter with dedicated pump also cuts pump wear and mud costs, and boosts penetration rate;
- One Brandt vacuum type degasser;
- One **Ross Hill** Power System (SCR house). ■