Big E Drilling repowers two of its land drilling rigs

**A RIG REPOWER INVESTMENT** by a Texas drilling contractor is expected to pay off both immediately and in the longer term.

In late 1999, when Lyle Eastham, Executive Vice President, Big E Drilling, Belhair, Tex, decided to repower two of his company’s land-based drilling rigs, almost no one in the business was buying engines.

"Day rates were low," recalls Mr Eastham. "The market was just starting to get better." Eastham’s confidence in the market and his ability to secure attractive financing convinced him to go forward.

Today, Big E’s mechanical-drive Rig 1 and SCR Rig 2 operate with new Caterpillar Cat 3500 Family diesel engines, achieving fuel savings that Mr Eastham estimates at 10-20% over the previous engines, while delivering more power and nearly 100% uptime.

Mr Eastham believes the decision to repower has paid off both for the immediate future and for the long term. Currently, rig demand is high and he said “virtually any serviceable rig is attractive to the customers. That’s driving day rates up, and our rigs are booked all through next year.

“But that’s not going to be forever. There will come a time when the market gets tighter, and that’s when the new power we have on those rigs will give us a competitive advantage.”

**A CAREFUL DECISION**

Big E Drilling bucked an industry trend to repower the company’s two oldest rigs, but the decision was not made in haste. The company is built on a history of careful, planned growth.

Big E Drilling started in 1980 with the purchase and refurbishment of Rig 1, a mechanical rig with a 1,000-hp drawworks, 750,000-lb static hook load, and 14,000-ft maximum depth.

The next year, the company ordered Rig 2, a new SCR unit, also with a 1,000-hp drawworks but with 850,000-lb hook load and a 15,000-ft rating.

When the market collapsed in the early 1980s, the company put its rigs into stor-
We were looking at $150,000 we were going to spend on those engines.”

In addition, keeping the rig in service during the overhauls would have meant buying another D398 for roughly $100,000.

On that basis, Big E decided to proceed with the repower and to purchase new generators instead of reusing the existing units.

Once the equipment was delivered, Big E staff spent a month doing preparatory work while the rig remained in service. The actual replacement was performed during a rig move, requiring only one additional day.

Repower for Rig 1 had not been in the company’s plans. However, it was going

Again, the engine replacement required only one additional day on a rig move.

An added advantage of the repower is an immediate reduction in maintenance, repairs and downtime.

“We are barely going to have to touch those new engines for two or three years,” according to Mr Eastham.

Eastham has not yet calculated the fuel savings from the repowered Rig 1 and Rig 2, but he estimates the savings at 10 to 20%. He expects to monitor Rig 2 fuel consumption for six months, then quantify the fuel efficiency improvement.

**THINKING LONG TERM**

Big E decided to repower with the company’s long-term future in mind. Just before repowering Rig 1, the company’s contract with Anadarko changed, such that the customer—not Big E—would pay for the fuel.

“It was right before we put the two new floor engines on the rig,” said Mr Eastham. “I could have reneged on putting in those two engines. I could have said, ‘It doesn’t matter any longer how much fuel they burn.’ But I didn’t see it that way. And Anadarko appreciates our efforts and the savings they will see from the work.

“We bought a new string of drill pipe and two new engines for that rig at the same time, at a total cost of $700,000.

And that shows Anadarko that we’re committed to refurbishing our rigs and providing good equipment.”

Likewise, Rig 2 is drilling for Cross Timbers Oil Co, which is pleased about the repower. “Cross Timbers is happy to see a contractor adding value to a rig, particularly with day rates going up,” said Mr Eastham.

The repowered rigs bode well for Big E’s future, especially in market downturns.

“When prices take a turn south and the market isn’t as tight as it is now, and we’re bidding against another rig that has old 399s or 398s on it, you can bet we’ll be in a strong position,” said Mr Eastham. ■

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Big E’s Rig No 5 is a 1,500-hp SCR unit with a 20,000-ft depth rating and new engines.

to be necessary to overhaul one of the two 379 engines on the floor of Rig 1, and Mustang Power Systems, the local Caterpillar dealer, had 3508 diesels in stock.

So Big E again devised a way to get the most out of its engines. The two 379s from the floor of Rig 1 went to an upgraded generator house built on the mechanical Rig 4, boosting power output from a total of 600 kW to 800 kW.

The 398 engines from Rig 2 will be overhauled as needed, then installed on the new Rig 6 as primary power.

The new 3508 engines on Rig 1 deliver 760 hp apiece, an increase of 210 hp per unit. “We have seen the benefit of having more horsepower on Rig 1’s floor, and there’s definitely more fuel efficiency,” said Mr Eastham.