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Gas Driving Changing Drilling Outlook

Editor's Note: As both a producer of natural gas and a drilling contractor focused on medium to deep drilling in the U.S. land rig market, Unit Corp. has a unique perspective on how growing natural gas demand is impacting the drilling services industry, and conversely, how drilling services could prove a critical factor in the industry's ability to meet future supply requirements.

By John G. Nikkel

DENVER–The United States currently consumes 23 trillion cubic feet of natural gas a year. Looking forward, domestic natural gas consumption is projected to grow faster than total energy consumption, increasing at an annual rate of 2.6 percent for the next 15-20 years. This will result in annual demand of 33 Tcf by 2015–a 40 percent increase over current consumption. Annual production is estimated by some to increase only about 1 percent, unless natural gas drilling is substantially accelerated. Experts generally agree that the natural resources exist to satisfy this increasing demand. The real question is, "How will the industry come together to create the infrastructure to supply the necessary demand?"

The supply will come from several sources, including more deep drilling, bypassed reserves in existing fields, continuing improvement in enhanced recovery techniques, coalbed methane reservoirs, increases in liquefied natural gas imports, and ongoing drilling in the United States–including the Gulf of Mexico–as well as Canada.

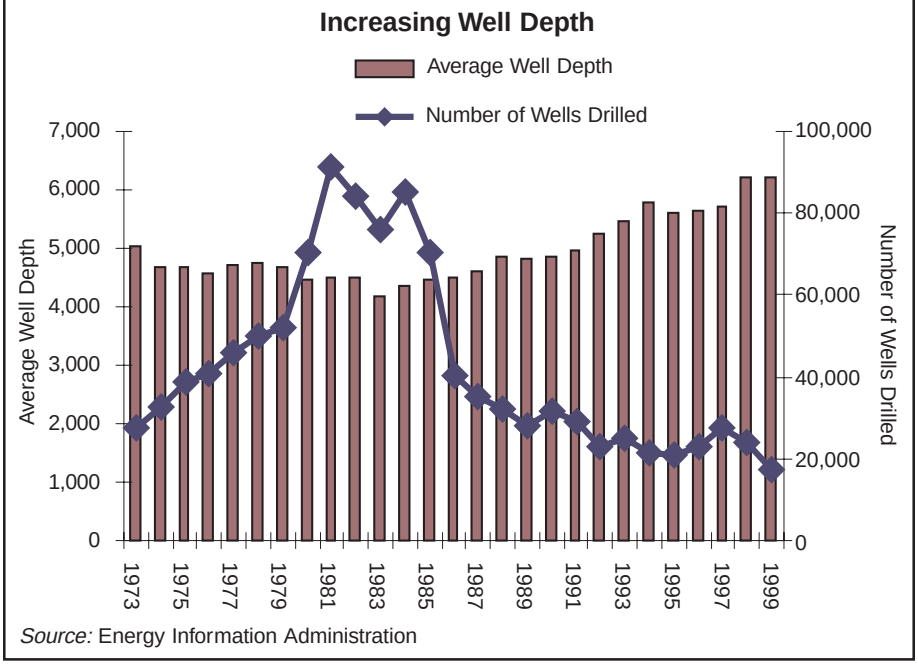
The potential of deep gas is only now beginning to be realized in areas such as the Appalachian Basin, The Gulf Coast, Rocky Mountains, Mid-Continent, and even the West Coast. Simply put, as the search for ever-greater volumes of gas continues, wells are getting deeper. The Energy Information Administration reports that average well depth has steadily climbed since 1983, reaching 6,200 feet in 1999 (Figure 1). We expect this trend to continue. In fact, 100 percent of Unit Corp.'s rig fleet is designed to drill to depths of 11,000 feet or greater.

As a service provider in each of the most prolific onshore, domestic natural gas basins, Unit has clearly benefited from increasing natural gas drilling activity. Given the depth capacity, the fleet is currently at 95 percent utilization capacity with day rates averaging $7,100–an increase of 15 percent since the fourth quarter of 1999. Unlike the previous 15 years, the challenge ahead is not excess capacity, but shortage.

JOHN G. NIKKEL

John G. Nikkel joined Unit Corp. in 1983 as president and director. From 1976 until January 1982, when he co-founded Nike Exploration Co., Nikkel was an officer and director of Cotton Petroleum Corp. Prior to joining Cotton, he was employed by Amoco Production Co. for 18 years, last serving as division geologist for the Denver division. Nikkel continues to serve as president and a director of Nike Exploration. He holds a B.S. in geology and mathematics from Texas Christian University.

FIGURE 1



Source: Energy Information Administration

Rig 201, the largest land rig operating in the United States, is shown here on location in the Madden Field in Wyoming drilling a 27,500-foot Madison Formation well that will rank as the deepest well ever drilled in the Rocky Mountain region.

Critical Shortages

There are two critical issues confronting the drilling services industry over the next decade: shortages of human and capital resources. Specifically, will the number of drilling rigs and personnel available be sufficient to supply the 33 Tcf/year the United States will be consuming within the next 15 years? If the drilling industry finds itself with a significant lack of land rigs to support the growing national demand, what kind of economics will justify the construction of new rigs? And how will a growing rig fleet be staffed? The attrition experienced by the industry and the lack of people entering the workforce has created a dearth of experienced talent to staff and manage an expanding rig fleet.

Between 15 and 20 people are needed to crew a rig, depending on the size, location, and other factors. Ideally, rig managers should be seasoned veterans with 10 or more years of experience. Under the best circumstances, drillers would have at least five years of experience and floor hands would average four to six years of experience. Unfortunately, the industry has not been in a position to attract new people in the past 20 years, and many industry veterans were forced to leave or retire as both service and producing sectors downsized.

As more rigs are built, the pool of experienced hands will be further diluted. Substantial pay increases have done much to attract new field employees and ease a critical situation, but as the demand for rigs continues to increase, training for new employees to ensure that they work safely and efficiently must be compressed into shorter time periods. A minor slip-up can become a major safety incident or can cause thousands of dollars worth of damage to the rig or the well. Therefore, attracting talented personnel and providing ongoing training is essential if the industry hopes to expand to meet the growing demand.

Considering the equipment shortage, the drilling industry has experienced significant consolidation and attrition over the last 20 years. Today, about 200 firms control the entire U.S. land rig fleet, versus more than 600 firms only a decade ago. Furthermore, as a group, the six largest drilling contractors control more than 50 percent of the rigs. The total domestic drilling rig fleet declined from 5,600 rigs in 1982 to approximately 1,600 rigs in 1999.

'Good Stuff' About Gone

Within the industry, "cannibalization" of land rigs is standard practice, but to put it bluntly, much of the "good stuff" is now gone. Where there used to be a cache of valuable parts, recycled for use on rigs needing repair or maintenance, that cache is rapidly being depleted. We are currently building a 15,000-foot rig from refurbished components, primarily from inventory. Assuming industry conditions warrant, work will begin in early 2001 to construct an additional 20,000-foot rig. However, as the inventory of quality parts diminishes, the time invested in locating necessary parts, combined with the potential cost, makes this practice less feasible.

Many believe the land rig industry is approaching maximum utilization and that new rigs must become a part of the equation. Almost 90 percent of domestic land rigs are operating in the field, up 50 percent over the last 18 months. Day rates are rapidly escalating, but even with increasing rates, production companies are finding themselves on waiting lists, suspending drilling for several months while a rig with the necessary depth capacity is made available. Furthermore, once under contract, some producers are paying for the downtime between wells in order to ensure access to a rig when it is needed.

Although more drilling is clearly needed to meet growing gas demand, drilling activity cannot keep pace given the existing rig fleet. New rig construction must take place, but what will drive new construction? Where will new drawworks, pumps and derricks come from? And when will it happen? As with any capital expenditure, an investor must expect a reasonable return on invested capital. Estimates vary, but generally, the industry will require rates significantly higher (as much as double current rates) before significant new construction will be initiated. We believe day rates will need to reach $10,000-$12,000 in order to justify the new construction of a rig with 15,000-foot capability at an estimated cost of $9 million.

Replacement Cost Economics

When will it happen? Replacement cost economics should be achieved during the next 18 months. Some firms have already placed their bets on a sustained market. However, most contractors are still taking a "wait and see" attitude, holding off on new construction projects until replacement cost economics are achieved.

Producers can pursue strategies to help ensure access to rigs and crews when the time comes to spud a well. Drilling schedules are subject to a variety of problems–such as partner approvals, title verifications and surface location issues–and each of these can cause substantial delays in the actual drilling of a well. Contractors cannot afford to keep rigs idle while such problems are resolved. Coordination between producers and drilling contractors of both the initiation of drilling and rig release must be timed to minimize rig downtime between wells. When possible, producers should develop multiwell programs with alternative drilling locations to increase the likelihood that they can keep a contracted rig working. Pre-planning is critical to minimizing delays and maximiz-

ing efficiency for both the producer and the driller.

So is there any good news for producers? When new rigs are built, they will be more efficient than the rigs that were built 30 years ago. Rigs built today will incorporate advanced technologies that will enable them to be safer, move more rapidly, and generally drill faster. Advances in three-dimensional seismic, improved drill bits and drilling fluids have improved drilling efficiency, saving both time and money. Continuing technological improvements that reduce costs, combined with strong commodity prices, will allow producers to develop reserves that have historically been uneconomic.

Demand is driving commodity prices, which in turn, is impacting drillers' economics. This will ultimately lead to replacement cost economics. One industry research report shows that current returns for exploration and production companies "more than justify a land rig new-build cycle." Given the industry outlook, we predict a new build cycle in the next two years. This new era will prove to be beneficial and profitable for drillers and producers alike. A resolution to the manpower issue is still uncertain. However, with higher salaries being offered within an industry that is on a rapid upswing, the romance of oil and gas may again lure students and workers into the oil patch. ❐