

Trends in the CT market

CT service providers adapt to a shifting landscape as oil prices decline and operators seek greater efficiencies.

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Coiled tubing (CT) has been one of the many disciplines within the upstream oil and gas industry showing aggressive growth over the years. This growth, fueled in large part by the recent shale revolution, will be faced with challenges in the current uncertain market. Growth in the North American CT market over the past decade was stimulated largely in part to the industry's trend to seek well efficiencies by increasing lateral lengths and hydraulic fracturing treatments (e.g. stages) per well. The technical requirements of these referenced wells are the primary impetus for a movement in the industry to use larger diameter CT for initial completion activities.

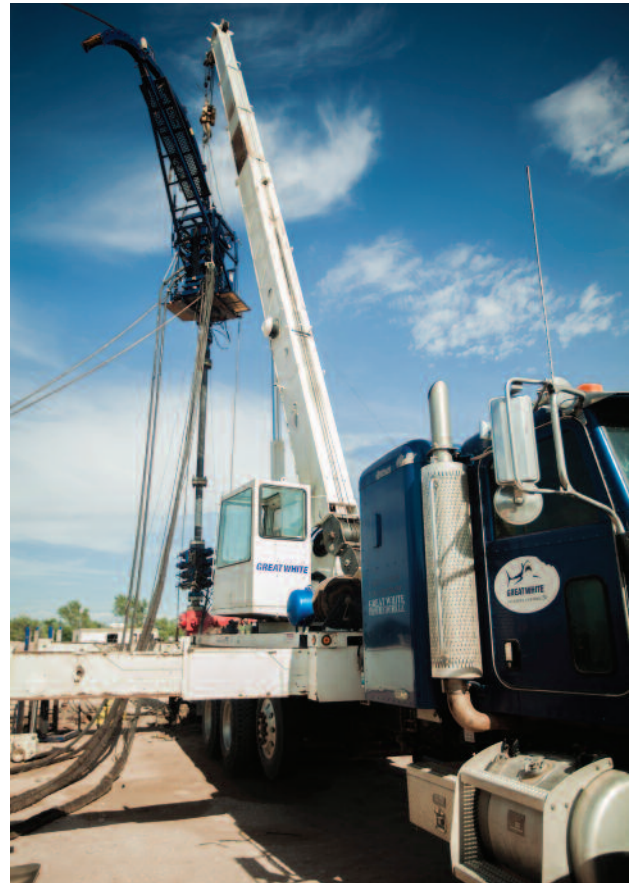
Large coil

A major trend in CT over the last few years was the drive toward larger outer diameter (OD) for work strings. CT with a 2½-in. OD now accounts for more than 30% of all strings being milled, according to several industry suppliers. Archer anticipates that in areas such as the Bakken, Eagle Ford, Eaglebine and Haynesville, operators will continue to use larger diameter coil to achieve well efficiencies in this market.

Operators driving to commercially develop unconventional fields in a safe and efficient manner will continue to extend the lateral portion of wellbores as part of this drive to improve commercial efficiencies. The extended laterals allow more stages per well as operators look to optimize productivity and drive completion efficiencies to further maximize well profitability.

These well designs typically require larger CT pipe with improved metallurgy to achieve the stiffness and strength needed for successful interventions within extended-length laterals (i.e., cleanouts, plug milling, etc.). The larger coil strings can often provide sufficient overpull at total depth, maintaining integrity with higher well pressures, etc.

Although it only represents about 1% to 3% of current milled strings, some operators have moved toward the use of 2½-in. CT, but it is still considered a niche product in most markets. One of the significant limitations of a 2½-in coil string is the size and weight of the string itself. Simply



Great White Pressure Control, a subsidiary of Archer, operates CT units capable of running from 1-in. to 2½-in. OD CT. (Source: Archer)

transporting a single string of coil this size can cause both logistical and regulatory issues.

Although the growing trend toward larger CT will most likely persist in some geographical areas, it is important to remember that this trend is largely driven by the advances in directional drilling, fracturing technologies and basins that allow extended laterals. Drilling activity has—once again—been the first segment of the industry to experience reductions in activity due to the reduction in oil prices.

According to a recent Reuters article, drilling permit applications have dropped more than 40% in the North American market and are expected to drop further. If or



Reels are capable of holding 6,858 m (22,500 ft) of 2½-in. OD CT. (Source: Archer)

when the extended-reach drilling activity declines, the demand for “larger coil” designed to service these wells could experience similar reductions. We foresee that this trend toward “larger coil” will begin to slow as the number of new wells requiring this diminishes, especially in geographic areas where over-the-road transports of oversized and overweight CT reel trailers are precluded by basic geography.

Market impact

The recent market downturn is having an impact on both CT service providers and operators. As these groups strive to “right-size” their operations, business models and operating practices will be questioned and examined in efforts to reduce costs and gain operational efficiencies. There will be pressure on CT service providers to reduce pricing to lower well costs, but there also will be an examination of the use of larger diameter coil as it relates to production results and well efficiencies.

Almost every shale region experienced an increase in larger coil use because of reliability and flow rate capabilities. However, not everyone sees the magnitude of improvement in well efficiencies to justify the additional expense of using larger diameter coil. This will be tested in the Permian and Midcontinent regions, where larger diameter coil is not as prevalent due to shorter laterals. Smaller diameter coils may be just as efficient and at a more reasonable day rate in these regions.

Other market areas that will be affected are service quality and maintenance. An obvious and natural effect of the reduction in demand for CT services is a reduction in revenue for the service providers. The reduction in pricing will drive service providers toward reducing costs, resulting in higher pressures on supply chains and maintenance. History has shown us that companies not committed to

safety and service quality have tried to extend the service life of their coil strings. When considering the elements of tubular fatigue and failure mechanisms and the pressure to get more out of each work string, the industry may see less reliable service quality in the field in contrast to recent advances in reliability and efficiency.

Return to basics?

Operators are likely to look to use smaller diameter coil for remediation work. Older wells can be reentered through-tubing and cleaned out or stimulated to maintain production vs. performing a full-scale “live-well” workover.

Servicing fracked wells (milling frack plugs and associated cleanup work) has steadily been growing to close to 90% of the work volume for CT in many prolific areas of the U.S. As the demand for this type of work diminishes, there will be a drive toward using excess CT service capacity for more traditional applications such as remedial work on existing wells. Large OD CT is normally not required for this type of work and is proportionally more expensive to acquire and more difficult to transport over the road, with an exponential reduction in usable service life due to fatigue. Large coil will be more complicated to redirect to any work other than new completions.

Alternatives

Jointed pipe systems may generally appear slower during some intervention operations (i.e., tripping and reaming/hole cleaning), but control and reliability may end up being the value-adding component of the comparison between snubbing units and CT practices. In general, snubbing operations can remove some of the sensitivities to pipe fatigue often attributed to large-diameter coil strings. In today’s market, jointed-pipe-based services will be expected to be more flexible in their pricing structures.

If there is anything intuitive in this current market, it is that operators and service providers will innovate, evolve and adapt. The CT service providers will adapt to ride out the market downcycle by pushing the limits of current units, finding new areas of innovation and efficiency and seeking alternative utilization opportunities through production maintenance and live-well service work.

Additionally, sustained low pricing may result in the thinning out of coil providers late to enter the latest upcycle or those that develop poor service quality trends, which may result in consolidation opportunities. Either way, it will be interesting to see how the market shifts and what new trends emerge, but without a doubt, the industry will continue to evolve, and CT will certainly find its place in the coming years as operators continue to exploit unconventional oil and gas subsurface assets. **E&P**