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PLUS: WHY THE INDUSTRY’S HEAVY HITTERS ARE CLOSING IN ON GREENLAND’S FROZEN ASSETS
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Bryan Stamm, Schlumberger

**Express service**

Multiple zone single trip completion systems have been out there for quite some time. It wasn’t until the 1990s that Schlumberger started to invest in the time-saving aspects of single-trip multizone completions, Bryan Stamm, technology manager for Schlumberger’s sand control division, says. Schlumberger first deployed the multizone Alternate Path (MZ-APS) technology, licensed from Exxon, for single trip multizone packer technology in the late 1990s.

‘The previous way of completing the lower completion in a sand-prone environment was to perform individual frac pack or gravel pack treatments and work your way up the hole,’ Stamm says, describing this approach ‘time consuming and expensive’.

Stamm classifies the MZ-APS as unique because it completes all zones with one pumping treatment, rather than requiring the repositioning of the service tool. The gravel or frac pack is applied over all the intervals at the same time.

In 1996, the service company began deploying the paired MZ-APS technology offshore and in 2000 began deploying it in deepwater. As of the end of 2009, the company lays claim to having employed the technology globally more than 170 times, with about 40% of those applications offshore and 15 of them in deepwater.

In 2003, Schlumberger began working on a repositionable service tool similar to what the industry accepts as a single-trip multizone tool to treat lower, middle, and/or upper zones for work offshore China.

Looking to evolve the system, Schlumberger in 2007 started work on the MZ-Xpress system for performing multizone frac and gravel packs in a single trip. ‘It was designed to get us into more of the offshore deepwater market, addressing some of the limitations of the generation, both in the pump rate, testable packers,’ Stamm explains. The MZ-Xpress falls into what the industry defines as a fourth-generation tool category.

The MZ-Xpress combined an innovative anchoring system to maintain position with more debris-tolerant features and a use-testable isolation packer design. The service string can be anchored into the BHA using a device similar to that used in a hook wall packer. For debris-tolerance, the system ‘upsets and reverses out housing that allows us to expel any gravel and debris around the service tool prior to the next zone up’.

Stamm says. And finally, for testable packers, it’s possible to verify the dual element packer is set before running operations, he adds.

Currently this system, which provides a selective completion by using sliding sleeves between the screens, is available in 7in casing. Development is under way for 9½in casing, with deployment expected in 1Q 2011.

The deployment of specific technologies can make the difference in what can be done in different well environments while minimizing intervention expenses, according to Lilian Izquierdo, Schlumberger’s senior completion engineer/project manager. Different technologies can provide the ability to control and understand the reservoir, mitigate flow assurance issues, and provide well data information, she adds. With that comes the need to manage the well performance knowledge and data. ‘Everybody’s trying to develop their own technologies,’ she says.

One technology Schlumberger has in its arsenal is WellWatcher Neon, which is used as a permanent real-time reservoir monitoring system with multizone single-trip applications. In dry-tree environment, WellWatcher Neon runs a WellWatcher fiber-optic, a distributed temperature survey line with a permanent downhole electric cable, enabling simultaneous acquisition of pressure gauges data and distributed temperature data. The system expands to help improve well productivity and injectivity by using inflow and outflow temperature profiles throughout the producing life of a well or field.

‘As we get into different basins, we see the need to increase pressure ratings in all our systems, also the pumping capabilities,’ concludes Stamm. ‘Eventually we’ll have some applications in open hole, not just cased hole. Really, where the technology today has been successful is the lower-risk, lower-tier environments . . . but as we get into higher risk applications, one of the areas we’re going to get into is overall reliability.’

Installation of the MZ-Xpress gravel pack extension, and (inset) of the MZ-Xpress service tool crossover.