Tenaris

Dopeless® technology saves big time in Patagonia

The multifunctional dry coating that makes connections rig ready helps Petrobras achieve faster and more reliable running jobs, while a 13% Chromium alloy proves a perfect match for tubingless completions.

Summary

Drilling for gas in Patagonia

The Neuquina Basin in West-Central Argentina is one of the country's most prolific locations in terms of hydrocarbon production. In the second half of 2010, Petrobras Argentina drilled a series of new wells targeting gas reserves in the area. The project had very specific tubular requirements, particularly related to material selection. The well design specified a tubingless completion, which meant that the long-string casing would be subjected to severe CO_2 conditions. The operator overcame this challenge by installing OCTG manufactured with a corrosion-resistant alloy (CRA). Petrobras and Tenaris saw the project as a good opportunity to prove the field performance of Dopeless® technology. A simultaneous trial was set up, which showed a nearly 30% reduction in average running time and a significant potential to improve HSE performance.

Challenges

The carbon dioxide dilemma

The well design specified by Petrobras called for a 7" intermediate casing set above the gas reservoir, followed by a 3 1/2" tubingless completion. Unlike conventional well designs, tubingless completions use the final, small-diameter casing section (also known as the "long-string casing") directly as the conduit through which reservoir fluids are brought up to the surface.

Typical advantages of tubingless designs are an improvement in the flow rate of low-pressure gas reservoirs and operational cost savings (due to the lack of an inner production tubing). However, they also have associated operational challenges that must be carefully considered.

Reservoirs in the region are characterized by high levels of carbon dioxide (CO_2). Under such conditions, OCTG material selection becomes a critical element. Given that the production casing in this well needed to be cemented into the pay zone – and, therefore, unable to be easily replaced as would have been possible with production tubing – the string had to be able to resist CO_2 corrosion.

PROJECT PROFILE

Operator
Petrobras Argentina

Location
Neuquén, Argentina

Type of well
Onshore, vertical

Expected production
Gas

Products highlighted
- 3 1/2" CRA production casing with TenarisHydril Blue™ Dopeless® connections

Services provided
- Field inspection
- Running service

▲ Petrobras tested Dopeless® technology at its gas field in the Neuquina Basin located in Argentina.

Seeing is believing

Having recently attended a Tenaris presentation about the engineering behind Dopeless® connections and their growing use around the world, Petrobras Argentina decided to run a parallel trial of the technology for their gas project, to verify in the field the operational benefits that had been discussed during the presentation.

Solution

An effective barrier against corrosion

Previous experience in the region indicated that carbon steel tubular products would not be able to resist the highly corrosive environment. Instead, Petrobras along with the technical sales team that Tenaris has at its Neuquén base defined the use of pipes manufactured with a 13% chromium steel grade resistant to CO_2 corrosion.

This alloy was used in the 190 joints that were needed to assemble and run the 3 1/2" production casing string to target depth. They were fitted with TenarisHydril Blue™ connections. Thanks to the unique toroidal design of its metal-to-metal seal, this premium connection provides a stable sealing behavior for all combined-load conditions – a crucial feature in gas production applications.

Dry connections

The parallel trial set up to evaluate the performance of Dopeless® technology consisted of the drilling of two wells. Both shared identical profiles. However, while the tubingless casing run in the first well was made up with standard TenarisHydril Blue™ connections, in the second well it used Blue™ Dopeless® connections.

Dopeless® technology is a multifunctional dry coating applied right after pipe threading. Engineered by Tenaris, it fully replaces the use of storage and running compounds in the field, which significantly reduces the amount of time, effort and resources required to prepare and run pipe.

Additionally – since this coating is uniformly applied at the mill in a controlled industrial process – it provides increased make-up stability and optimum connection performance, even after several make-ups and break-outs.

Onsite technical support

Field inspection of all OCTG used throughout the project as well as the actual running jobs were carried out by a team of Tenaris field service specialists with vast experience in the Patagonian oil and gas market.

▲ Petrobras achieved faster and more reliable running jobs with Dopeless® technology.

Results

Faster, more reliable running jobs

Average running speed for the string with the TenarisHydril Blue™ Dopeless® connections was 20 joints per hour. At peak performance, up to 28 joints per hour were achieved, with no rejected pipes. Compared with the standard version of the same connection, this represented a total rig time reduction of nearly 30%.

The performance improvement verified by Petrobras was a direct consequence of the fact that there were no rejects or re-runs during the trial. Dopeless® connections showed more uniform make-up results, thus increasing the operation reliability and dramatically reducing the need of re-assemblies.

Also, as pipes arrive at the site "rig-ready", time-consuming operations, such as cleaning and drying thread protectors and connections, or applying running compound, became completely unnecessary.

Local expertise

From their accurate advice on material selection to their help inspecting and running the pipes, the local technical sales and field services teams played a key role supporting Petrobras.

Following the successful experience, the customer has decided to upgrade its entire supply of premium connections for the rest of its 2011 Neuquén drilling campaign to incorporate the revolutionary dry coating technology engineered by Tenaris.

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For contact information, please visit our site:
www.tenaris.com