



Sakhalin Island's ERD wells adopt Blue[®] connections

The high reliability of TenarisHydril Blue[®] connections proves instrumental in the installation of challenging horizontal casing strings in the Russian Far East.

Summary

Reaching under the Sea of Okhotsk

Located around 7 km off the coast of Russia's Sakhalin Island under the freezing waters of the Sea of Okhotsk, the field is being developed from the shore using extended reach drilling (ERD) technology. A Russian oil and gas company drilling at the field required a strong connection capable of withstanding high torques and loads while running and cementing the 9 5/8" casing string into the extended horizontal section of its wells.

Challenges

Horizontal string rotation

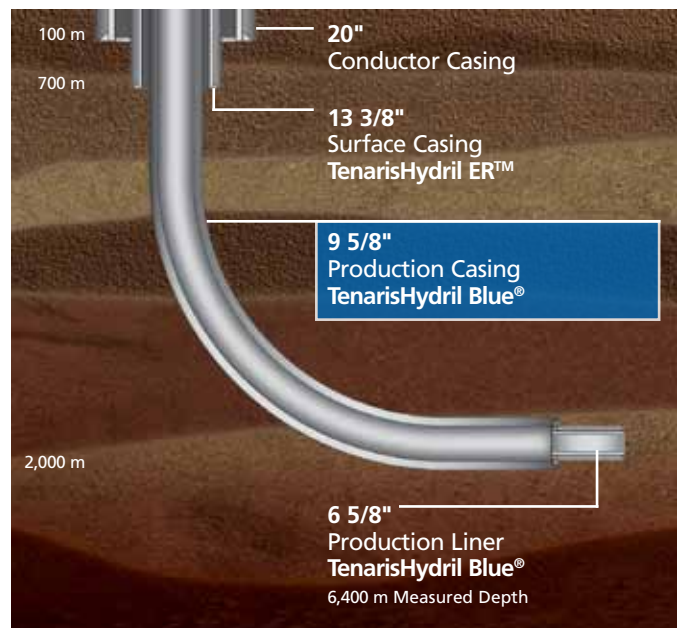
Discovered in 1977, it took over two decades for the development of the field to begin. As recently as 1994, its crude oil and gas reserves were still regarded as commercially unviable. The advent of ERD technology changed that equation and, to date, over 30 wells have been completed from two onshore pads.

The design of the operator's well specified a true vertical depth of approximately 2,000 m and a total measured depth of 6,400 m, with a deviation angle of 83.5 degrees. The most challenging drilling section of the well, which includes the build-up directional and most of the horizontal section, would be secured with a 9 5/8" casing string. In order to run this string through the long horizontal section, the operator knew that the pipes would have to be pushed and rotated into place to reach TD successfully.

All this was set to place significant stress on the pipes and – particularly – their connections. They would be subjected to high torque, bending and axial loads typical of complex ERD applications, where the weight of the string pushes it against the walls of the horizontal wellbore, introducing substantial friction and making installation difficult and complex.

PROJECT PROFILE

Location Northeastern Sakhalin (Russia)	Products highlighted • 9 5/8" casing with TenarisHydril Blue [®] connections
Well Oil	Services provided • Onsite training • Accessories design • Field inspection • Running assistance
Type Onshore to an offshore location	



Subarctic environment

While not as cold as inland Siberia, the influence of the Sea of Okhotsk on Sakhalin's eastern coastline still means winter temperatures can occasionally reach -20°C. The field is also located in a remote area of an island already characterized by difficult geographical conditions, so a well-coordinated logistics operation was necessary to supply the operator with the required products and services in a timely fashion.

Solution

Blue® connections and partial floatation

The entire casing program was implemented using Tenaris pipes and connections. For the critical, 5,500 m-long production casing, the 9 5/8" string was made up with TenarisHydril Blue® connections. Also, used in a short 6 5/8" liner, this premium connection was selected on the basis of its field-proven reliability, which had been verified by the customer in the past in demanding conditions. Its thread design combines an optimized stabbing flank angle with reduced stabbing flank gaps, which results in higher compression capacity, while a thicker negative torque shoulder provides high torque capacity.

To help reduce drag and weight in the long horizontal section, a special running technique with the 9 5/8" string completely empty (without circulating mud) was adopted.

A custom-made accessory

Following a request from the customer, Tenaris also designed and supplied an ad-hoc make-up quill, a key accessory that allows for the transfer of torsion and axial loads from a top drive to premium-threaded casing. The special crossover engineered by Tenaris for the 9 5/8" Blue® connection was less than half as heavy as the original design and donned a special coating. These improved the handling of the device and reduced the risk of accidents at the rig floor – this new design turned out to last more than 50 times longer than previous versions making a tangible contribution to a faster, safer and more reliable pipes installation operation.

Results

Reliable completion

The unique design of TenarisHydril Blue® connections allowed for the long horizontal casing string to be successfully pushed, rotated and reciprocated during running operations.



- ▲ The field is located around 7 km off the coast and is being developed from the shore using extended reach drilling (ERD) technology.

Playing an important role in the project was the early involvement of local technical sales representatives from Tenaris, who offered valuable training services and organized a series of technical forums designed to provide the customer with product information. During installation, Tenaris field service specialists were also on hand, offering 24-hour running assistance, and in the end there were no rejected make-ups throughout the operation.

Logistics prowess

The remoteness of the location and its harsh weather and terrain conditions were not an obstacle for Tenaris, whose global logistics network managed to have all pipes delivered on time.

The Russian oil and gas company has been relying on Tenaris's products and services for over three years. Having now confirmed the adaptability of Blue® technology to its demanding ERD wells, the Rosneft subsidiary is considering upgrading to the Dopeless® version of the connection in the near future.



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