

# Metal-to-Metal Sealing Technology Solves Challenge of Installing 3,604-m Casing in Unstable Wellbore

Operator avoids costly casing misrun to execute well design of choice and saves an estimated 5 days of rig time, North Sea

## CHALLENGE

Minimize NPT while running 3,604 m [11,824 ft] of 9 $\frac{5}{8}$ -in casing to surface in an unstable borehole in the Norwegian North Sea.

## SOLUTION

Install a liner in the openhole section and tie it back to surface using Metalmorphology\* metal-to-metal sealing and anchoring technology.

## RESULTS

Achieved the integrity of a full casing string to surface with all the advantages of running the lower section as a liner and zero NPT.

**"I've only heard good things from offshore and the job went very smoothly. We're so satisfied with how things went on the well, we'd like to see if we can run the same solution again."**

Senior Drilling Engineer  
Operating Company



## Unstable wellbore hindered installation of long casing string

A North Sea operator's well design required 9 $\frac{5}{8}$ -in casing to surface with metal-to-metal connections throughout. Wellbore instability was a common occurrence in the field, and the 3,604-m interval included 728 m [2,388 ft] of open hole that was likely to hinder access. Long, heavy casing strings require extremely high torque to rotate, making it difficult to ream with casing and increasing the likelihood of multiple attempts—interspersed with wiper trips—to run the casing string to depth.

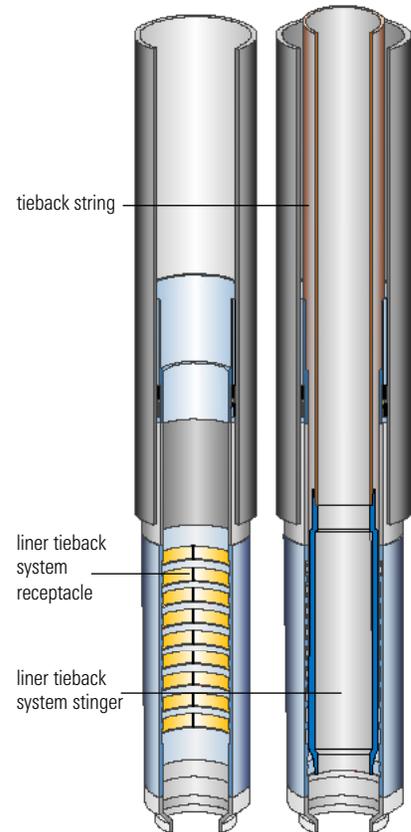
To minimize rig time and optimize costs, the alternative was to install a shorter, lighter liner across the unstable openhole section and tie it back to the wellhead with a separate tieback string. However, conventional liner equipment does not provide the metal-to-metal, gas-tight connection required.

## Proprietary sealing technology enabled use of ream-down liner

Schlumberger proposed a liner system with a setting adapter and a metal-to-metal, gas-tight liner tieback system that uses Metalmorphology sealing and anchoring technology. This full-axial-load-bearing, V0 ISO 14310-certified system connects a liner to a tieback string of casing with a permanent, durable seal.

## Operator achieved integrity of full casing string to surface with zero NPT

The proprietary technology enabled the operator to run the lower part of the casing as a liner on drillpipe, with all the advantages of push, pull, rotation, and circulation to address borehole restrictions and reach TD in one run. Subsequently, the tieback string was run in hole with the liner tieback system stinger on the bottom. The stinger was expanded into the tieback system receptacle at the top of the liner,



*The liner tieback system receptacle with metal-to-metal sealing elements (yellow) was run into the well at the top of the liner. Subsequently, the tieback string was run in with the tieback system stinger on the bottom. The stinger was expanded into the receptacle, achieving the required casing connection integrity.*

achieving the required V0-rated, metal-to-metal downhole casing connection integrity.

Compared with running a long casing string to depth and assuming at least one wiper trip to recondition the hole during the process, the innovative Schlumberger system saved an estimated 5 days of rig time. The operator plans to use this system on other wells in the field.

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