

Subsea Completion Design for HP/HT Wells

Benefits

- New design created that will be applicable for other HP/HT subsea and jack-up reservoirs
- Provides access to previously unattainable reservoirs
- First North Sea subsea high-angle HP/HT well to be completed using a semi-submersible rig
- High operating efficiency achieved
- Zero HS&E incidents

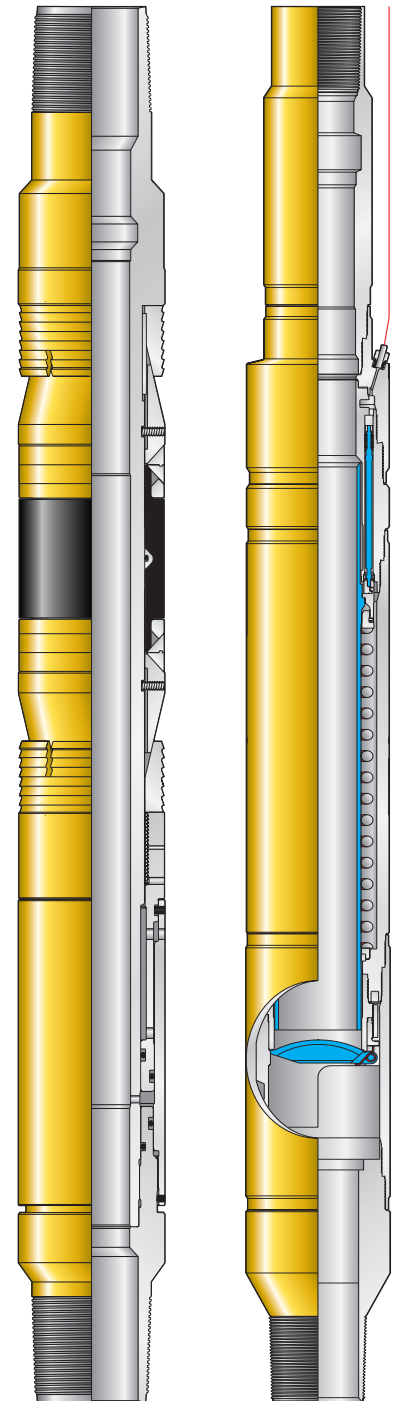
Background

The operator wanted to drill, complete, and produce high-pressure/high-temperature (HP/HT) standard and extended-reach wells with zero HS&E incidents. The Statoil-operated Kristin HP/HT subsea development is 240 km off Norway in 1,115 ft (340 m) water depth with a 380°F (170°C) bottomhole temperature, 13,195 psi (910 bar) bottomhole pressure gas condensate reservoir.

Baker Hughes Solution and Results

The Baker Oil Tools equipment used included TSM-13.5 downhole safety valve, SB-3™ completion packer, DAB barrier packer, EOFH-ET slickline plugs, and FLEX-LOCK™/ZXP™ screen/liner hanger. The tool design and procedures evolution is an important piece of a larger integrated system that enables the operator to produce wells that would not have been possible if the technology advancement had not been made. This completion design is applicable for future HP/HT subsea and jack-up wells.

Kristin was the first North Sea subsea HP/HT high-angle well to be drilled and completed using a semi-submersible rig. Since September 2002, the goal was to deliver a subsea completion solution based on existing and new HP/HT technology. From there, the completion design, quality assurance plan, and operating procedures evolved, resulting in high operation efficiency and zero HS&E incidents during the completion installations.



SB-3 completion packer

REALM™ series safety valve