

ForeSite® Sense Reservoir Monitoring

Eliminates Failures in 7 HPHT, Deepwater Wells, Provides 6 Years' Reliable Service and Counting

Objectives

- Install sensors in seven high-pressure, high-temperature (HPHT) wells within Gudrun Field and comply with its strict operating requirements for all in-well components.
- Enable reliable, long-term monitoring within HPHT wells sustaining temperatures and pressures up to 275°F (135°C) and 11,313 psi (78 MPa).

Our Approach

- After a thorough pre-job analysis, a Weatherford team recommended ForeSite Sense reservoir-monitoring solutions. This included ForeSite Sense optical pressure and temperature (P/T) sensors, which deliver real-time reservoir data and tolerate temperatures in excess of 446°F (230°C) and pressures in excess of 20,000 psi (137.9 MPa). The optical sensors eliminated the in-well electrical components, which are susceptible to failure over time in HPHT conditions.
- The Weatherford team ran the sensors downhole on the ForeSite Sense optical cable, which was clamped to the 5-1/2-in. tubing. The sensors were set at depths between 13,451 and 18,701 ft (4,100 and 5,700 m) measured depth (MD) across all seven wells.
- The team equipped all surface wellheads with ATEX-approved and API 16FB-qualified optical outlets—tested to 15,000 psi (103.4 MPa)—which transmit data from the optical in-well fiber to the surface cable. The surface cable then transmits data to the ForeSite Sense data-acquisition unit for analysis.

Value to Customer

- Since installation in 2014–2015, the ForeSite Sense reservoir-monitoring system has enabled the operator to monitor reservoir pressure and temperature continuously in real-time. This consistent stream of data helps optimize production and maintain well integrity over the life of each well.
- The optical sensors have been fully operational in the harsh, HPHT conditions with zero failures to date.



Part of the ForeSite Sense reservoir-monitoring solution, ForeSite Sense optical sensors have provided continuous monitoring of all reservoir conditions in seven HPHT North-Sea wells with zero failures to date.

LOCATION

North Sea

FIELD

Gudrun

WELL TYPE

Offshore, oil and condensate producer

NUMBER OF WELLS

7

TUBING AND CASING SIZES

5-1/2 in., 9-5/8 in.

MAXIMUM TEMPERATURE

275°F (135°C)

MAXIMUM PRESSURE

11,313 psi (78 MPa)

SETTING DEPTH

13,451 to 18,701 ft (4,100 to 5,700 m) MD

PRODUCTS

ForeSite Sense reservoir monitoring
ForeSite Sense optical sensors
ForeSite Sense optical cable
ForeSite Sense data-acquisition unit

