

Surge Frac Stimulation System Increases Well Production by 111% in North Sea Well

Objectives

- Perform an acid stimulation on an oil-producing well through a 4,117-ft (1,255-m) horizontal section.
- Avoid overstimulating the well heel and understimulating the well toe, and avoid stimulating high water-cut zones.

Our Approach

- Conventional bull heading was considered because it is a low-cost solution. However, it seemed likely that high frictional losses in the long horizontal section could result in only the heel of the well receiving stimulation fluids. There was also the possibility that high water-cut zones could be stimulated, which would result in increased water production.
- Weatherford used the Surge Frac system to target stimulation zone by zone. The precise selection of zones, compared to normal bull heading, significantly reduced the risk of overstimulating the well heel and understimulating the toe.
- The system also enabled setting packers multiple times in different locations and returning them to the surface.
- In a single run, the system stimulated 22 selected zones with 15% hydrochloric acid. During stimulation a maximum pressure of 7,058 psi (48.7 MPa) and a pump rate of 14.5 bpm were reached.

Value to Client

- The Surge Frac system stimulated all targeted zones while preventing water influxes.
- The capability of the system to set packers multiple times in different locations lowered costs and saved rig time by eliminating the need for additional downhole trips with the packer and plug.
- The system nearly tripled the borehole pressure, which is critical for enhanced oil recovery and optimal production.
- Oil production increased by 111% with a rise in bottomhole pressure of 191%.



The Weatherford Surge Frac stimulation system directs treatment fluids to targeted zones between packers.

LOCATION

Norway

WELL TYPE

Offshore, horizontal, oil

HOLE SIZE

5 in.

SECTION LENGTH

4,117 ft (1,255 m)

DEPTH

9,843 ft (3,000 m)

MAXIMUM TEMPERATURE

190°F (88°C)

MAXIMUM PRESSURE

7,058 psi (48.7 MPa)

NUMBER OF RUNS

1

PRODUCTS/SERVICES

Surge Frac system

