Weatherford®

REAL RESULTS

Thru-Tubing Gas-Lift Straddle Diverts Gas Lift Deeper in Wellbore, Revives, Enhances Productivity on Well Killed by Water Coning

Objectives

- Deepen the gas injection point in the wellbore to divert the existing gas-lift gas to a point deeper in the well than the liquid loading point.
- Selectively isolate the zone with access for the gas-lift mandrel and the column water.
- Inject gas through the casing annulus to unload the liquid through a concentric gas-lift mandrel integrated within the mechanical straddle packer bottomhole assembly (BHA).

Results

- Weatherford deployed a gas-lift straddle assembly consisting of two mechanical packers separated by 2,000 ft (609.6 m) of 2 3/8-in. tubing with an integrated concentric gas-lift mandrel.
- The upper WidePak™ packer was set 18 ft (5.4 m) above an opened sliding sleeve door (SSD). The lower compression-set CT packer was set 800 ft (243.8 m) above the top interval, at the point between the produced oil and the fluid, which hydrostatically killed the well.
- Gas was pumped into the casing annulus, through the open SSD, and into the straddle/tubing annulus.
- When the pressure had built up sufficiently to enable the comingled gas and coned water to enter the concentric gas-lift mandrel, the liquid was then circulated out of the tubing and up to the surface. To compensate for a weak formation pressure, the gas injection was continued even after all the liquid had been unloaded.
- The well began to flow the week after the operation with 78 BOPD (12.4 m^3/day), a positive indication that the liquid was effectively unloaded with the gas-lift straddle assembly.

Value to Client

- Using Weatherford's gas-lift straddle assembly saved the operator a considerable amount of cost by preventing a workover or other alternative options to enhance the formation pressure, such as drilling an injection well nearby.
- The most recent well survey indicated the well is currently producing with the following data: tubing hanging pressure (THP) - 170 psi (1.17 MPa); casing hanger pressure (CHP) - 760 psi (5.24 MPa); gross rate - 106 BLPD (16.8 m^3/day); net oil - 78 BOPD (12.4 m^3/day).

Weatherford's Thru-Tubing Straddle is a one-trip mechanical straddle-packer system that incorporates a Weatherford 2.72-in. *WidePak* packer and a 2.72-in. CT compression-set packer. The installation of this system aided liquid unloading by diverting the gas-lift point to deeper in the well, using existing gas lift to revive and enhance productivity on a water-coned killed well that had low formation pressures with a liquid level below the lowest gas-lift mandrel.

Location
Offshore Balikpapan, Indonesia

Well Type
Offshore, oil producer

Tubing Size
3 1/2-in., 9.2 lb/ft (13.7 kg/m)

Tubing ID
2.92 in. (74.17 mm)

Deviation
53.65° at 2,874 ft (875 m)

Setting Depth (Measured Depth)
- Upper packer: 7,030 ft (2142 m)
- Lower packer: 9,136 ft (2784 m)

Products/Services
- Thru-Tubing Intervention
- *WidePak* packer (top packer)
- Concentric gas-lift mandrel
- CT packer (bottom packer)

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