Tubing-Conveyed, Heavy-Weight Velocity Strings Deploy in 2 Cyclic Wells Via Hydraulic Workover Unit, Accelerate Production Uplift

Objectives

- Engineer, design, and manufacture tubing-conveyed velocity string hang-off systems that will augment production rates of inherently cyclic wells.
- Perform the pre-operational installation and testing of well barrier systems required to deploy velocity strings into live well conditions when deploying offshore.
- Install heavy-weight velocity strings with unique hang-off and sealing systems, providing minimal future requirements for remedial work.

Our Approach

- Weatherford experts reviewed the well information and modelling which provided the optimum velocity string choice for the customer's operations. Based on the tight well parameters, the engineering requirements for the equipment setting pressures were critical.
- The equipment selected included a combination of compression/tension-set hangers and WidePak™ packers so that the velocity strings could be installed in two parts. This would require a lower velocity string below the DHSV and an upper velocity string above the DHSV.
- The 2 7/8-in. tubing required using a hydraulic workover unit. This was performed on a well with up to 16,000 ft (4,876 m) of tubing being deployed and up to 100,000 lb (45,359 kg) hang-off weight.
- The deployment was performed under live well conditions, requiring a robust well barrier system and, following the installation, field personnel used slickline to install and pull the Weatherford 2 7/8-in. ISO plugs.
- Experienced field personnel for these installations were key to working with the hydraulic workover crews and ensured the deployment space out and equipment setting was performed flawlessly.

Value to Customer

- The customer relied on Weatherford experts' extensive experience and knowledge in velocity string installations, from the engineering through the execution phase of the operations.
- The Weatherford Well Flow program was implemented to work in conjunction with the customer's modelling system which produced the required information and the confidence to install the velocity strings back to the surface for the new flow path.

The reliable velocity string hang-off system forms an integrated hanger and packer for sealing while providing the capabilities to support excessive tubing weights within the current completion.

LOCATION
United Kingdom, Central North Sea

WELL TYPE
Gas producer

TUBING SIZES
4-1/2 in. and 5-1/2 in. with 2-3/8 in. and 2-7/8 in. coiled tubing velocity strings installed

PRODUCTS/SERVICES
- Compression/tension-set hangers deployed on jointed pipe
- WidePak packers
- Seal stingers
- Spacer subs
- Bleed subs
- ISO plugs

Weatherford®

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Value to Customer

- The two velocity string installations provided the desired uplift in production rates and removed the cyclic well flow that the customer had previously experienced.
- The customer's confidence in the effectiveness of these installations provided further opportunities for additional installations, which will further enhance the gas production within the United Kingdom continental shelf.