MATURE FIELDS

CASE STUDY

Integrated Well Intervention Solution Helps Reduce Rig Time During Plug and Abandonment

DRILL TECH® DEBURR MILL AND RTTS® PACKER ENABLE WELLBORE CLEANOUT AND COMMUNICATION TEST IN SINGLE TRIP

OFFSHORE, CANADA

CHALLENGE

- Reduce rig time and costs of traditional P&A operations, without negatively affecting service quality

SOLUTIONS

- Deploy a combination of Halliburton wellbore cleanout and service tools to enable communication testing and cleanout in a single trip
- Deburr perforations and scrape setting area to help minimize equipment damage and enable setting of equipment inside casing

RESULT

- Integrated well intervention solution saved 20 hours of rig time equivalent to USD 300,000. Effective cleaning enabled successful setting of the RTTS packer and EZ Drill SVB squeeze packer

OVERVIEW

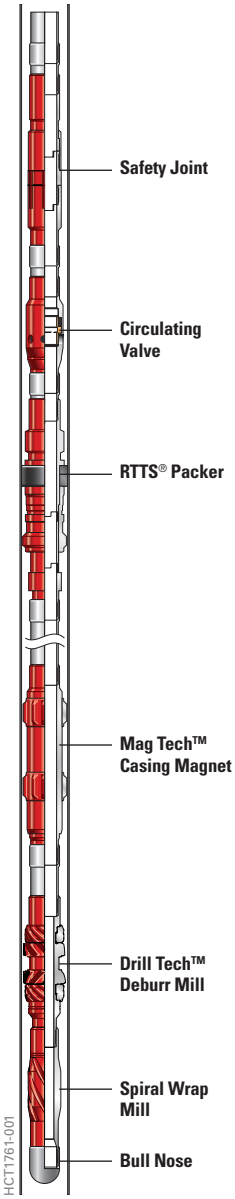
An operator planning plug and abandonment (P&A) of five offshore production wells in Canada wanted to minimize the associated rig time and costs of operations. Prior to P&A, the operator needed to evaluate the cement behind the casing and clean the wellbore, packer setting areas and perforations, which typically requires a separate run. Additionally, the cement volume needed to be calculated for a subsequent squeeze job through a drillable cement retainer.

Halliburton proposed a single-trip solution to conduct the communication test at the same time as the wellbore cleanout, which included deburring the upper perforations and scraping the packer setting areas.

CHALLENGE

The operator wanted to reduce the number of runs required to clean the wellbore, deburr perforations, clean the packer setting areas, and perform the communication test utilizing rotational and non-rotational tools.

To confirm the cement, the operator planned a communication test between two sets of perforations at 700 and 200 meters measured depth (MD), with an RTTS® packer set between the perforated zones. Pumped fluid would then be circulated up through the lower perforations to clean the annulus between the 9 5/8-inch production and 13 3/8-inch surface casing on each well. A dyed pill added to the fluid would help facilitate cement volume calculation for a subsequent cement squeeze through an EZ Drill® SVB squeeze packer.



SOLUTION

To optimize rig time, Halliburton ran a combined bottomhole assembly consisting of wellbore cleanout and service tools in the following sequence:

» 1. CleanWell® Drill Tech® deburr mill/spiral wrap string mill assembly with a CleanWell Mag Tech® casing magnet to clean the upper perforations (i.e., remove burrs).
» 2. 9 5/8-inch RTTS® packer together with a circulation valve and safety joint picked up and run in hole with the cleanout tools in the tailpipe below.

The upper perforations needed to be dressed to avoid damage to the elements of the RTTS packer and EZ Drill® SVB squeeze packer subsequently run in hole and set above the lower perforations. Keeping the deburr and spiral mill in the tailpipe also enabled scraping of both packer setting areas during this run.

Both wellbore cleanout assemblies were run in hole to the top of the upper perforations. The top drive was then made up and began rotating and reciprocating across the upper perforations, circulating debris up the annulus. Three passes were made, and no notable drag was observed.

Next, the RTTS packer/circulation valve assembly was made up and continued running in hole. The safety joint was placed a stand above the RTTS packer. The circulation valve was run in as a contingency to circulate above the RTTS packer and lift up any debris that might have fallen through the upper perforations during the communication test, which could prevent the packer from being pulled out of the hole. The safety joint was run as a second contingency to provide a means of disconnecting from the RTTS packer and pulling out of hole if the packer becomes stuck.

The RTTS packer was set above the lower perforations at 650 meters, and the communication test was successfully conducted. A dyed fluid caliper was pumped through the annulus between the production and surface casing and the volume displacement was recorded.

RESULT

Halliburton successfully plugged and abandoned all five wells in five months, helping the operator maximize asset value.

By combining the wellbore cleanout with the communication test run on each well, Halliburton saved the operator an estimated 20 hours of rig time.

9 5/8-inch Mag Tech® Casing Magnet Run Summary

	Well A	Well B	Well C	Well D	Well E
Debris on Mag Tech® Magnet (lb)	7.00	2.11	3.00	2.46	1.12
Pump Rate (m3/min)	1.50	1.50	1.30	1.50	1.00
Rotation (RPM)	50	40	40	30	40

Debris recovered from each well on the 9 5/8-inch Mag Tech® casing magnet and the rotational speed and pump rate while reciprocating across the upper set of perforations

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