

Offshore Sakhalin, Russia

# CleanWell® solutions help operator effectively clean up complex big-bore ERD well

Halliburton delivers unique solution with zero HSE issues or NPT

## CHALLENGE

Provide cost-efficient solution to displace and clean up complex, big-bore ERD well, avoid HSE issues and NPT

## SOLUTION

Uniquely engineer solution comprised of both wellbore cleanup tools and fluids to effectively displace and clean well in single run

## RESULT

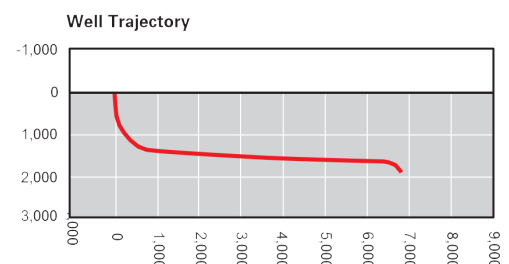
- Successfully displaced and cleaned well, achieved required specifications after circulation of 1.8 well volumes
- Completed operation with zero HSE issues or NPT

## Overview

A major operator in Sakhalin, Russia required a cost-efficient solution to displace and clean up a complex, big-bore, extended-reach-drilling (ERD) well 26,161 ft (7 974 m) deep in measured depth (MD). Halliburton provided the operator with a uniquely engineered solution comprised of both wellbore cleanup tools and fluids that are cost effective and efficient, to reduce risks and non productive time (NPT).

## Challenge

This was the longest well the operator drilled in the region and the most complex in terms of well architecture. The well construction consisted of 12,831 ft (3 911m) of mixed 13 5/8-in. and 13 3/8-in. casing and 13,330 ft (4 063 m) of 9 5/8-in. liner. The ERD lateral kicked off at 5,634 ft (1 720 m) and continued all the way to 24,507 ft (7 470 m), with inclination up to 84–87° all through the lateral. The big-bore architecture of the well, its trajectory, and its depth made it a huge challenge to displace and clean up the well effectively in a single run.



## Solution

Halliburton PSLs worked together to create robust procedures and specially designed solutions, to include a cleanup chemical pill train modeled through proprietary software, extensive torque and drag simulations, and a bottomhole assembly (BHA), which, in the end, helped the operator successfully clean up and displace the well from the oil-based mud (OBM) to seawater without any NPT. Part of the key solution to this challenge was the capability to circulate at a maximum achievable flow rate and rotate the workstring as fast as possible. CleanWell® technology tools enabled the operator to rotate the workstring up to 120 rev/min for extended periods of time, without any damage to the tools.

## Result

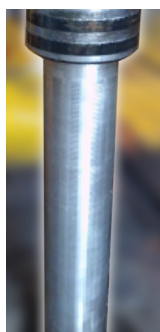
The displacement operation achieved the operator-stipulated cleanliness specification after circulation of 1.8 well volumes. It was particularly impressive that the Vali Tech® filter was empty after it was pulled out of hole, as this further proved that the well was effectively displaced and cleaned. The operation was completed as planned, with zero health, safety, or environmental (HSE) issues or NPT. These CleanWell tools were successfully pulled out of hole, and their respective debris recovery results are summarized in the table.

## Debris recovery analysis

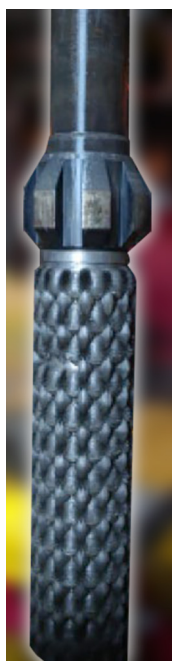
TOOLS	QUANTITY	TOOL SIZE (IN.)	RECOVERY
Vali Tech® filter	1	13 3/8	Empty
PowerMag® magnet	1	13 3/8	40
Mag Tech® magnet	2	13 3/8	20
PowerMag® magnet	1	9 5/8	30
Mag Tech® magnet	2	9 5/8	20



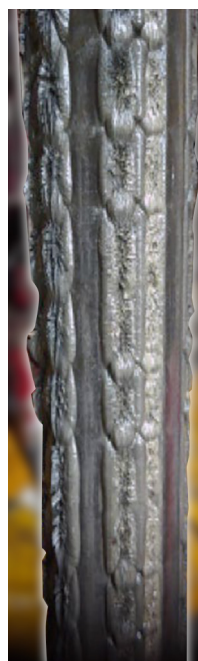
Vali Tech® filter



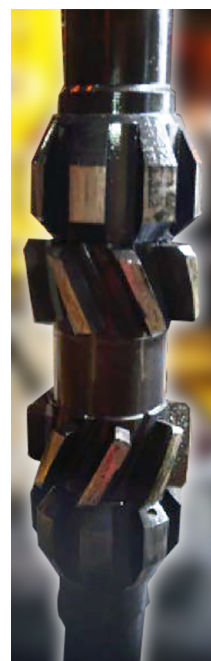
Vali Tech® filter



Mag Tech® magnet



PowerMag® magnet



DrillTech® scraper

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