



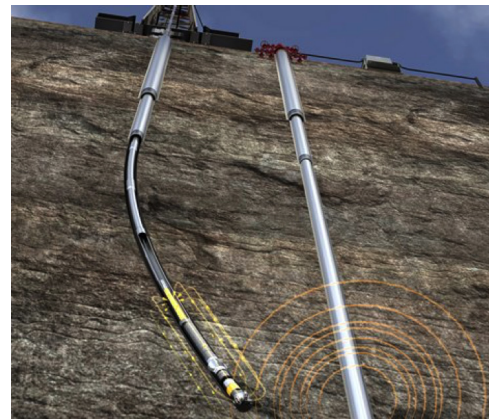
Measurement/Logging While Drilling

Sperry 'No-Access Active Ranging' Intercepts a Troubled Well for Plug and Abandon and Saves USD 2.5 Million and over 25 Days for Customer

Location: United States

Overview

After five sidetracks and subsequent failed attempts at a wellbore intersection, an operator with a plug and abandon operation called on Sperry to intervene and deploy a solution with a proven track record of success. Sperry Proximity Ranging & Interception group used access-independent active ranging to successfully intercept the well. Damaged casing in the well resulted in the need for the operator to plug and abandon (P&A) the well. The P&A operation required a new well to be drilled at a well bore separation of between two and four feet to a depth from 780 feet (238 meters) down to interception point at 1350 feet (411 meters). After interception of the wellbore, the plan called for a milling operation to open the casing with an 8-1/2 inch mill to allow re-entry of the 5-1/2 inch casing by a 2-7/8 inch coiled tubing.



WellSpot™ RGR helped to successfully plug and abandon a customer's troubled well

CHALLENGES	SOLUTIONS	RESULTS
Well Intersection. With current ranging technologies, a third party company was unable to intersect the well below the damaged casing. The application required greater ranging capabilities than what they could provide.	Access-Independent Ranging. The Sperry WellSpot RGR No-Access Active Ranging tool.	Successful Plug and Abandon. Accurately located, followed, and intercepted the drilling well to the target well and successfully completed the job.
Time-Consuming Operations. The third party's goal was to intercept the target well for P&A operation, but failed to locate the target well with timely and costly sidetracks.	Precision Efficiency. Sperry Proximity Ranging & Interception used an active "no access" ranging solution.	Cost and Potential Time Savings. Intersected the target well using just one wellbore and landed precisely on target in approximately 26 days, whereas the third party spent over 50 days to attempt the operation with multiple sidetracks.
Difficult Detection. Multiple wells within detection range and the distance from the target well are challenges to passive ranging services.	WellSpot Active Magnetic Ranging. Excite and detect a specific magnetic field at a greater detection distance.	Located the Target Well. Surface excitation magnetically "lit up" the target well, allowing WellSpot receiver to accurately locate the correct position despite the distance from the target well and interference from offset wells.

To achieve the precision and efficiency required for the distance and direction between wellbores, Sperry ran the WellSpot™ Radial Gradient Ranging (RGR) Access Independent tool for a total of 16 ranging runs over three phases of the operation of locate, follow, and interception. The initial ranging phase located the target well at 754 feet (228.5 meters) Measured Depth (MD), showing a distance of 8.2 feet (2.5 meters) at a high side to target of -45 degrees.

In the following phase, WellSpot RGR guided the drilling well and sustained an accurate alignment to the target well until the interception phase. To ensure the well path remained on target and within the gradient detection range, WellSpot RGR runs were made every 30 feet (9 meters) during the follow phase, then decreased the drilling interval to every 10 or 15 feet (3.0 or 4.6 meters) in the interception phase until edge to edge contact was made at 1,370 feet (418 meters), where the milling operations began.

WellSpot RGR Access Independent Active Ranging enabled Sperry Drilling to accurately locate, follow, and intercept the target well for milling without a sidetrack. Afterwards, tubing was run and the well was plugged back and abandoned, achieving the customer's main objective with zero NPT or HSE incidents.

Benefits

Full Access-Independent Ranging Capabilities Indicated Sperry Drilling as a Preferred Solution Provider

Sperry Proximity Ranging & Interception faced a damaged well that had eluded detection by a third party, who had drilled five sidetracks without success. Considering the time and cost already involved, the operator emphasized that the goal was to drill a smooth wellbore while staying within two to four feet (0.6 to 1.2 meters) of the target well to correctly align and have a simplified milling operation so that tubing could be re-entered to plug and abandon the damaged well.

Because the ability to use both passive and active technologies vastly improves the likelihood of a successful intersection, Sperry deployed both active and passive ranging tools to the job. Using WellSpot RGR active ranging exclusively in this case, Sperry intercepted the lower casing with a single wellbore and performed a successful milling operation to open up the lower casing, and then ran tubing to plug and abandon the well.

The results exceeded expectations as the main objective was completed without NPT or any HSE incidents. By providing an efficient and successful solution, Sperry's Active Magnetic Wellspot Ranging System saved the operator an estimated \$2.5 million by eliminating additional time to drill costly extra sidetracks as had been previously recommended by a third party.