

CASE HISTORY

RELIEF WELL INTERCEPT WITH ACTIVE MAGNETIC RANGING

APPLICATION

Relief Well
Relief Well Planning
Well Control
Magnetic Ranging
Wellbore Surveying

TECHNOLOGY

Magnetic Ranging
+ BlackShark Active Ranging System
Wellbore Surveying
+ URSA gyroMWD

LOCATION

Onshore,
US

CLIENT CHALLENGE

Seeking urgent mitigation to prevent a catastrophic blowout, a client approached Scientific Drilling with the requirement for a relief well intercept.

The primary objective of the relief well intercept was to relieve pressure and provide a pathway to enable well control operations for the target well. During workover operations, extensive damage occurred to the 7-inch casing of the target well. The damage prevented further workover attempts, and concerns arose regarding the potential failure of a kill plug set in a 4.5-inch liner at 9240 ft/MD.

SCIENTIFIC SOLUTION

The intercept depth was above the 4.5-inch liner plug at 9240 ft measured depth. The intercept well was spud 970 ft away from the target well on the surface.

Magnetic Ranging Technology: Scientific Drilling's BlackShark Active Magnetic Ranging was used for the intercept. A current was injected into the formation, and a magnetic field emitted from the target well casing. This magnetic field was detected by Blackshark and used to pinpoint the well position.

Advanced Wellbore Surveying Technology: Scientific Drilling's solid-state URSA gyroMWD system was used to steer the well on approach to the target well, mitigating magnetic interference challenges and ensuring accuracy in the intercept.

Environmental and Safety Measures: Extreme cold weather created hazards for transportation to and from the rig location. Health and safety procedures for safe driving and journey management were utilized, resulting in no recorded incidents or near misses for the project.

CLIENT VALUE

Accuracy and Precision of Magnetic Ranging: The BlackShark Active Magnetic Ranging System provided high-accuracy measurement of the target well position, even at distances exceeding 200 ft center-to-center distance. This enabled a precision intercept without the need for wellbore sidetracks.

Efficient Operations: The intercept occurred 30 days from the spud date. The shorter drilling duration compared to typical relief wells demonstrated the efficiency of the solutions deployed.

Successful Intercept: The well was successfully intercepted on the first attempt, showcasing the effectiveness of the chosen technologies and techniques.

Best Practices: This project demonstrated that planning and drilling an intercept relief well in a short amount of time is possible. Proper planning, accurate Magnetic Ranging technology, and adherence to safety procedures contributed to the project's success.

