

CASE HISTORY

MULTILATERAL WELL INTERSECTION

APPLICATION

Horizontal to Horizontal Intersection, Precise Relative Placement, Multilateral, Geothermal, HDD

TECHNOLOGY

SDI's Lodestone: Long-Distance At-Bit While-Drilling Active Magnetic Ranging System

LOCATION

Alberta, Canada

CUSTOMER CHALLENGE

The client needed an accurate downhole navigation to overcome MWD positional uncertainty, provide an accurate relative position between wellbores, and connect two multilateral wells spudded 2350m (7700ft) apart at 2400m (7870ft) vertical depth.

SCIENTIFIC SOLUTION

Each well consisted of two lateral wellbores. The average length of each well was 3440m (11280ft) with 2350m (7700ft) lateral separation between target well and intercept well surface locations which caused a significant MWD positional uncertainty at the planned intersection points. Because of this uncertainty, the wells were drilled towards each other with the intention of aligning the opposing laterals axially as much as possible using conventional MWD systems until a predetermined separation distance remained between target and intercept wellbores.

When this predetermined distance between the first set of opposing lateral wellbores was reached, the SDI Lodestone magnetic ranging system was deployed to pinpoint the intercept well location with respect to the target well, reset the MWD uncertainty, and correct the intercept well plan for the first intersection. The system's magnetic field source was included into the intercept well BHA right above the bit, and the system's receiver was pumped down to the bottom of the target well on wireline through the drill pipe. A similar approach was followed during the second intersection.

CUSTOMER VALUE

Utilizing the well intersection service and Lodestone technology from SDI, the client was able to connect all wellbores, safely and successfully completing the World's first of its kind multi-lateral horizontal drilling intersection.

