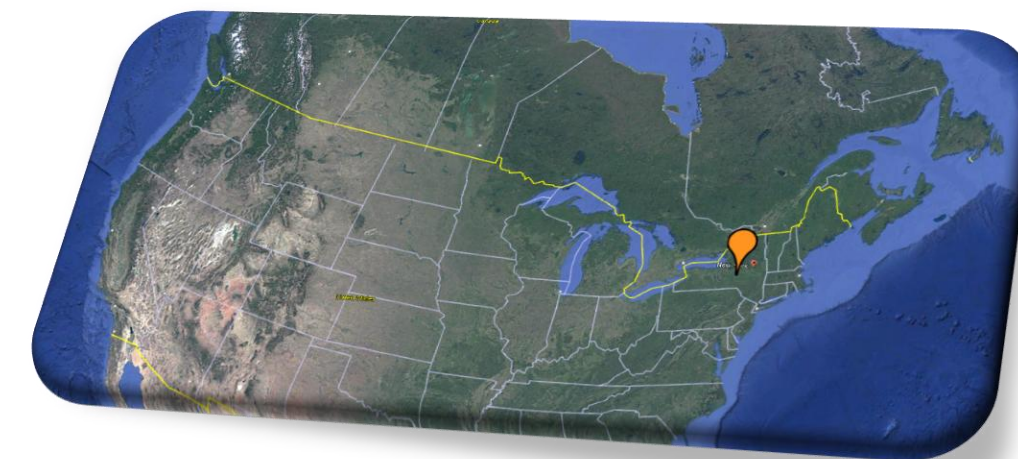


Deep Guide successfully intersects 2 wells through steel casing for salt mine.



USA, New York | True North | Solution Mine | Horizontal -Vertical well intersect | 2022

Using the Deep Guide ranging tools Hazen International was able to successfully intersect both vertical despite steel casing. Overcoming the added complexity Hazen was successful on the first attempt and completed the project on time and on budget.

Challenge:

The customer retained Hazen International to provide intersect and guidance services for two vertical wells with one horizontal well in a salt formation in New York state. The first well was completed with fiber glass casing but the second utilized steel casing. This posed a challenge to magnetic tools as steel tends to shield magnetic fields making precision difficult.

Solution: - Deep Guide tools calibrated to steel casing.

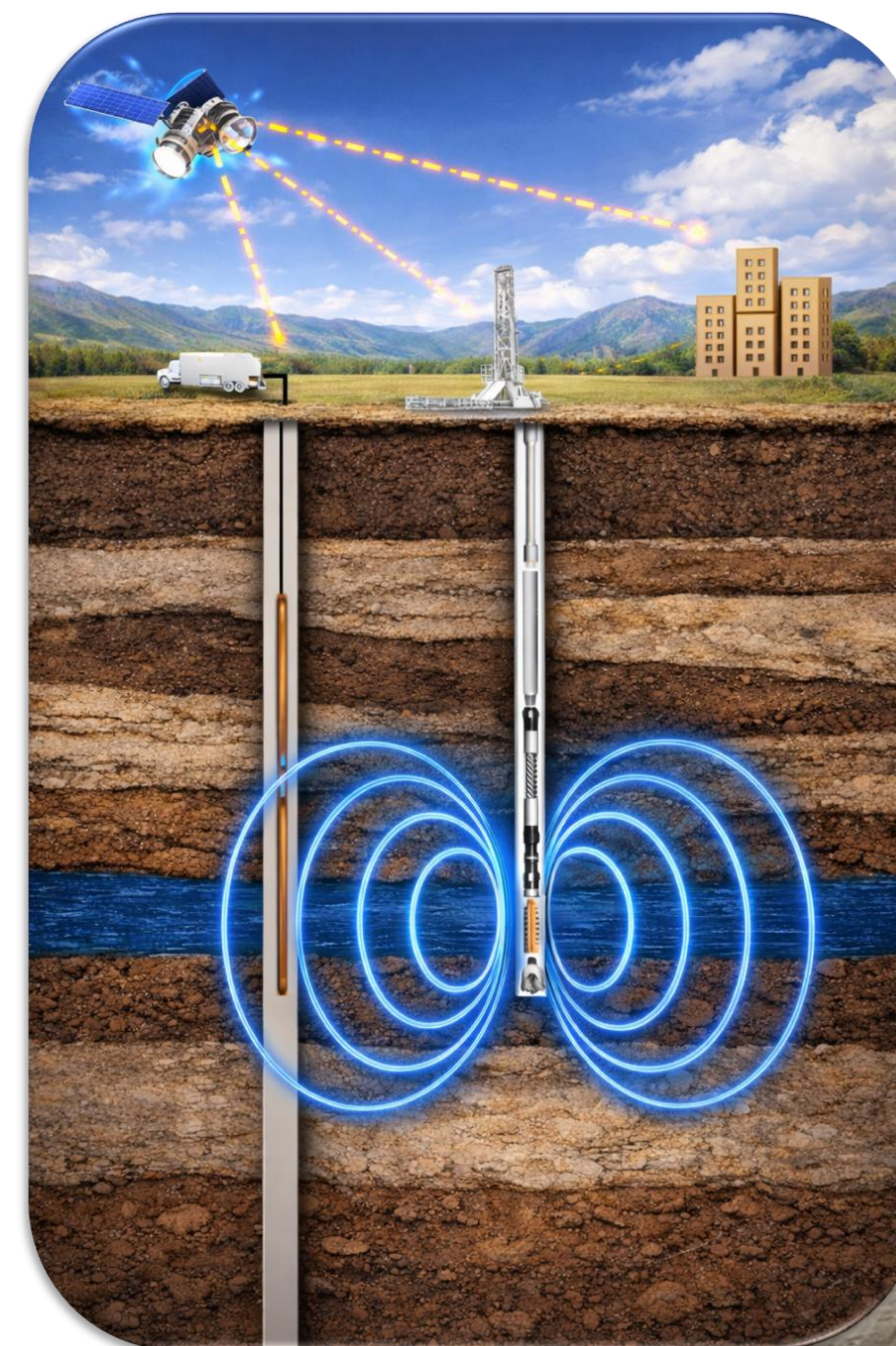
Hazen Deep Guide was deployed to site, and the drilling contractor installed it via wireline into the vertical wells. Customer installed their magnetic sub on the BHA behind the bit. A drilling rig was mobilized, and a casing window was cut using a whipstock set at ~1100ft (335m). The BHA consisted of: Bit- magnetic sub - mud motor - MWD tool.

Result:

The well was drilled to 90° inclination direction aligned to intersect the first vertical well approximately 750ft (228m) away. The Deep Guide tool was lowered on wireline to the intersect depth in the first well. Measuring the field from the magnetic sub the Deep Guide sensor detected the drilling BHA. The proximity data and direction to the magnetic sub was provided to the directional driller. The well path was then adjusted throughout the drilled section to successfully intersect the fiberglass lined well.

The second intercept was more difficult due to being fully cased with steel, which reduced the magnetic field that the Deep Guide sensor received. Hazen corrected the sensor measurement to compensate for the steel shielding and guidance services were successful resulting in communication between the horizontal and second vertical well.

The customer was pleased to have the project safely completed, successfully and on time.



Deep Guide and MagSub Ranging Services

