

CASE HISTORY

SHALLOW SAGD SURFACE TO SUBSURFACE ACTIVE RANGING

APPLICATION

Active Ranging, Collision Avoidance, SAGD Drilling

TECHNOLOGY

SurfaceTraC surface to subsurface active ranging technology

LOCATION

Yarega Field, Northern Russia

CUSTOMER CHALLENGE

The Yarega field in northern Russia is a challenging application for many reasons; cost control is always a prime motivator. A traditional active ranging solution requires additional equipment and personnel that add significantly to the cost when accurately placing SAGD well pairs.

This is a shallow drilling application (above 225m TVD) where high placement accuracy is required. The SAGD injector approaches the producer from the opposite vertical section direction. This makes landing the injector build on top of the producer very challenging, as the producer lateral toe has the maximum east west and TVD uncertainty at that point. When using other ranging techniques to land the build sections, this uncertainty causes multiple distance (10m+) relative displacement. This amounts to increased steering to get the injector back to a twinning the producer.

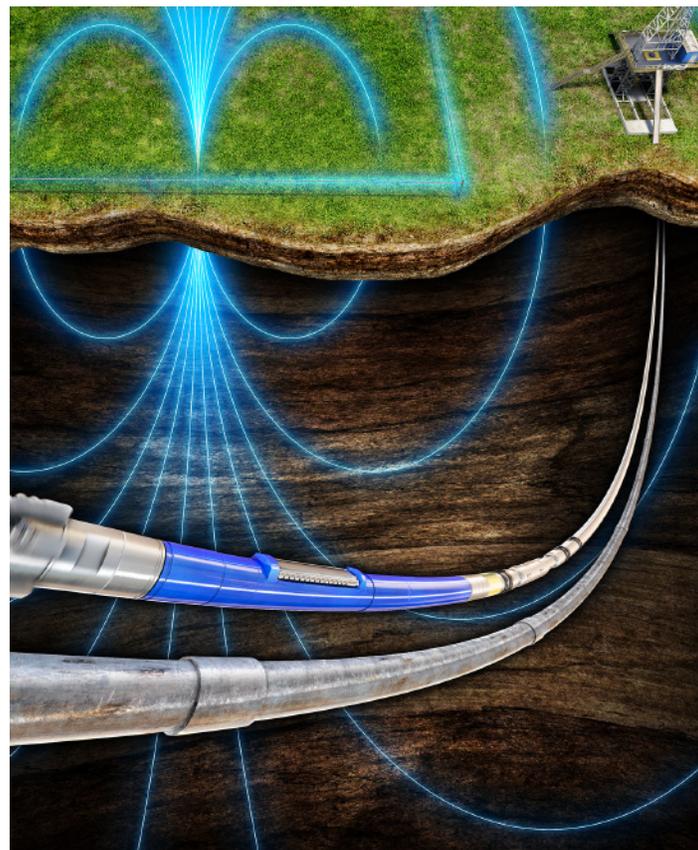
SCIENTIFIC SOLUTION

The SurfaceTraC System is the first of its kind to utilize a surface magnetic field source (with a GPS surveyed position) to accurately position the wellbore without cumulative uncertainty and avoid collisions in a congested environment. Each ranging measurement (which is recorded while drilling) is referenced back to the surface field source and does not compound errors from previous stations. When operating in highly congested environments, the SurfaceTraC System is the ultimate solution for delivering optimally placed and cost effective shallow horizontal wellbores.

The system, designed and built for well avoidance in the densely packed Canadian SAGD fields, was redesigned and rebuilt to accurately place well pairs in Northern Russia.

In addition, absolute TVD uncertainty is an issue in this area, as it is with any horizontal well. SurfaceTraC solves this problem as it provides the absolute TVD of both the producer well and the injector well relative to the GPS coordinates of the surface loop. The measurement also does not suffer from cumulative errors of other surveying techniques. By deploying SurfaceTraC, the TVD of both the injector and producer are maintained at the exact subsea position that is intended, thereby maximizing exposure to the pay zone. No other ranging or surveying system can provide this level of accuracy, keeping the horizontal well in the pay zone.

An accelerated timeline required the involvement of only the most capable of local field operators. The Russian district was fully prepared and able to provide these people to make the project a success.



CUSTOMER VALUE

The customer was able to deploy and prove a new technology, offering significant value to their business on a quickly escalated schedule.

Initially planned for a test phase of 5 wells over 6 months the same results were achieved in less than 2 months and already new capabilities are being explored to bring more value to the client.