Western Instruments

Established 1965

Magnetizing Line

6 Years ago, Pathfinder Drilling (now a Division of Schlumberger) approached Western to develop a special magnetizing line for Oilwell Production Casing. Pathfinder had approached most competitive companies, who couldn't accommodate their requirements.

Western Canada has the largest proven oil reserves in the world, but they are extremely heavy, and the formations are in sand. Standard industry practice for producing Heavy Oil is SAGD (Steam Assist Gravity Drainage). An initial well is drilled to a point just above the formation, then a long curve is drilled so the well has a very long horizontal leg. A well may only be 300 or 400 meters deep, but the horizontal leg may be over 1000 meters. The well is completed with a special casing which is highly magnetized with a special magnetic field characteristic, which is considered proprietary.

This first well is steam injected (using brackish water), so the formation slowly warms and the oil begins to flow, and can be pumped out. While this first well is producing, parallel wells are drilled below the producing well. The position of these subsequent parallel wells is very important, and Pathfinder uses the special magnetic field for telemetry. Their MWD (Monitoring While Drilling) equipment monitors the position of the drill string, from the original well (or subsequent wells) by measuring this strong magnetic field. Parallel Welds may be stacked by up to 5 levels depending on the thickness of the formation.

To achieve the desired magnetic field characteristics for the well casing (4 ½ to 13 ⅜" OD), the 16 coils are control at a Remote Station, as opposed to using the operator controls on the top of the WD-Series Coils. This remote station allows the coil output to be adjusted individually, and energize the coils individually, concurrently, or sequentially.

For obvious reasons the conveyer is made from Aluminum, as steel could affect inducing the correct Magnetic Field. To accommodate various OD sizes of casing, the elevation of the Coils is adjustable via a Hydraulically controlled sub-frame contained within the conveyer. The Coils pictured above are WDV-14's.

Western Instruments has just delivered an additional 16 x WDV-16's to Pathfinder, for a new line that is currently under construction. This application for Drilling SAGD wells, may also have application in Shale Gas Wells.