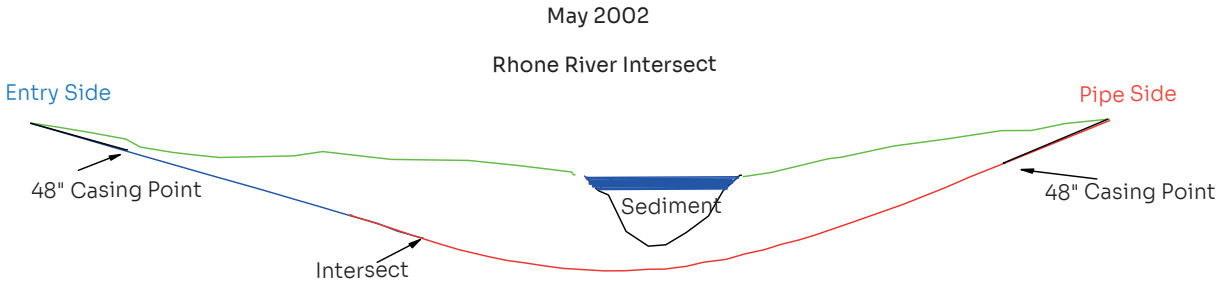
PRIMEHORIZONTAL

Case History

River Rhone Intersect



NACAP, the Dutch Directional Drilling Company, contracted with Gas de France to install a 20" gas line across the Rhone River and valley between Geneva and Lyon in SE France. The 1036 Meter crossing was through 30 meters of alluvial gravels on each side which were not drillable using conventional HDD techniques and 900 meters of limestone. In addition, the crossing was planned with a total elevation change of over 140 meters at the deepest point under the Rhone river. Gas de France chose the NACAP proposal due to its state of the art technical solution to the gravel problem.

NACAP started the project by micro tunneling a string of 48" casing on the pipe side of the crossing. Their 250 Ton HDD rig was then rigged up and drilling began through an intermediate string of 12" casing centralized inside the 48". After drilling to a point about 750 meters from pipe side with a 12 ¼" rock bit and motor, a second string of 48" casing was microtunnelled from the rig side of the crossing. After installing a 12" centralized casing inside the 48" string, a 60 Ton Hutte rig was used to drill the intersect.

The VM Rotating Magnet source was used as a bit sub on a 6 ¾ motor pushed to bottom of the 750 meter bore and while rotating, generated a magnetic target which was used by the VM steering tool sensors essentially as a homing device. Once the sensor reached a position where the magnetic field was measurable, the attitude of the two bore holes was accurately determined and approach vectors calculated. The intersect and entry were made with less than 3/4 dewas installed completely from entry to exit, reaming operations could begin.

Once again, the accuracy of ParaTrack surface cables and magnetic sources operating downhole proved the feasibility of underground intersect drilling. While drilling more than 95 meters below surface, ParaTrack consistently produced tracking results within an accuracy envelope of less than one meter.

Now, ParaTrack operations gives contractors the confidence, after installing a surface or underground cable, all the way from entry to exit, to guide the pilot hole with enough positive control to plan and achieve underground intersects, the first time!

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