

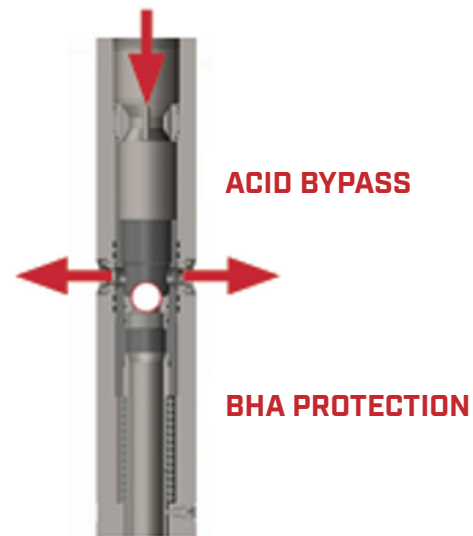
# 6 3/4" PBL Enables Multi-Lateral Acid Stimulation on a Geothermal Application.

France.



## CHALLENGE

In partnership with Enedrill, a series of geothermal doublet wells were drilled in the Paris Basin, France, targeting the Dogger formation. Each well featured a 65° inclined section transitioning into dual horizontal laterals positioned within the most productive intervals of the reservoir. The objective was to independently re-enter each lateral and perform high-volume acid stimulation treatments to enhance reservoir productivity. The key challenge was achieving accurate lateral re-entry and maintaining precise toolface orientation while ensuring complete protection of sensitive downhole components, including the MWD and lower BHA, from acid exposure throughout multiple stimulation operations.



## SOLUTION

A 3 1/2" OD drillstring equipped with a bent sub and an MWD tool aligned to the bend provided accurate toolface control. A 6 3/4" OD PBL sub positioned above the MWD enabled multi-activation in full-bypass mode, allowing acid to be spotted across multiple laterals while isolating and protecting the lower BHA and MWD during pumping.

- PBL activated to bypass the lower BHA
- Multi activation enables sequential Spotting
- Acid delivered into 3 Lateral sections.

# EXECUTION

The drill string was successfully oriented and re-entered into each targeted lateral using the bent sub and aligned MWD system, ensuring precise placement of the stimulation treatments. Once on depth, the 6.75" PBL was activated by deploying an activation ball to the tool, establishing full bypass above the MWD and lower BHA. High-volume acid stimulation treatments consisting of  $2 \times 50 \text{ m}^3$  of 15% HCl per lateral were

then pumped as planned. Throughout the operation, the PBL system diverted flow through its bypass ports, completely isolating the MWD and lower BHA from acid exposure. The tool was successfully activated and deactivated three times, enabling stimulation of three separate lateral sections while maintaining full system integrity and operational efficiency.

## “PBL was working perfectly each time”

ENEDRILL

# RESULTS & BENEFITS

The PBL performed flawlessly during all activation cycles, demonstrating exceptional reliability and robustness under demanding geothermal well conditions. Detailed procedures, effective collaboration with Enedrill, and strong real-time technical support ensured safe, efficient, and trouble-free execution of the intervention.

- Reliable multi lateral access achieved
- Effective and controlled acid stimulation delivery
- High volume treatments delivered with PBL ( $2 \times 50 \text{ m}^3$  per lateral, 15% HCl)
- Zero operational downtime
- Full MWD protection via the PBL bypass system
- Successful multi activation of the PBL tool
- Strong technical support and user friendly tool deployment
- No tool damage or integrity issues reported

# EXECUTION



## HIGH-VOLUME ACID TREATMENT

- $2 \times 50 \text{ m}^3$   
PER LATERAL



## ACID CONCENTRATION

- HCl 15%  
+ 1.6% CORROSION INHIBITOR



## TREATMENT PURPOSE

- ENHANCE RESERVOIR PERMEABILITY  
AND MAXIMIZE PRODUCTIVITY