

Compact™ Logging Technology Easily Passed Through Collapsed Section in Geothermal Injection Well, Enabled Operator to Develop Forward Plan

Objectives

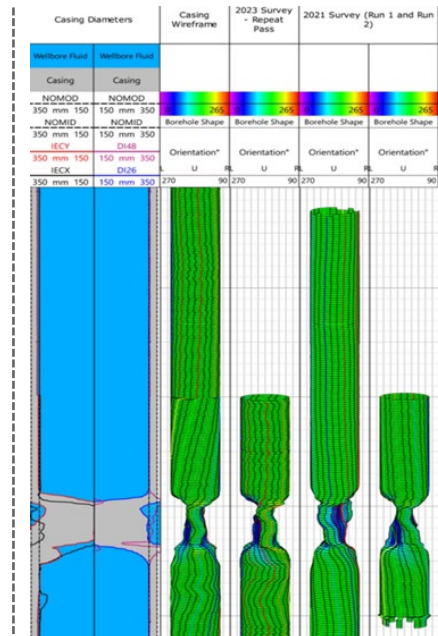
- Deploy a logging tool that could pass through a collapsed section of casing, measure the inside diameter, and evaluate the cement bond in the 10 3/4-in. section of the well.

Our Approach

- The well consisted of four sections: a 9 5/8-in. openhole section followed by sections of 10-3/4, 13-3/8, and 18-5/8 in.
- Based on a strong creative technical proposal, field-proven logging technology, and bolstered by an existing presence in the region, Weatherford was selected to perform four logging operations:
 - Dummy run with gauge ring and casing collar locator (CCL)
 - A caliper run in the 10 3/4-in. and 13 3/8-in. sections
 - A run with a cement bond log (CBL) tool and variable density log (VDL) tool in both sections
 - An ultrasonic run in the 13 3/8-in. section
- Due to the collapsed casing, over-body centralizers could not be used. Calipers were used as powered centralizers above and below the collapse.
- Weatherford used its field-proven Compact logging technology including openhole logging technology and a creative application in the cased-hole environment.
- The Compact powered centralizer was chosen for its high-strength capability to centralize a toolstring in deviated wells.
- For the CBL/VDL run, Weatherford opted for the Compact compensated sonic tool.
- The Compact borehole geometry tool was the optimal choice to determine the openhole azimuth, inclination water-based mud imaging, and cased-hole inclination.

Value to Customer

- Weatherford field personnel logged up from the bottom of the 10 3/4-in. section to the surface and confirmed the collapsed section was in the 13 3/8-in. casing.
- The run also confirmed the presence of scaling in the 10 3/4-in. injection tubing, forcing the cancellation of the ultrasonic log.



Weatherford logging technology delivered actionable information about a section of collapsed casing in a geothermal well that enabled the operator to revise the overall well plan.

LOCATION

South of Munich, Bavaria, Germany

WELL TYPE

Geothermal injector

HOLE SIZE

9-5/8 in., open hole

LINER SIZE AND TYPE

10-3/4 in. casing L-80 55.5 ppf, TC II

TEMPERATURE

258°F (126°C)

MEASURED DEPTH

14,763 ft (4,500 m)

PRODUCTS/SERVICES

- Compact logging technology
- Compact powered centralizer
- Compact compensated sonic
- Compact borehole geometry tool



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Value to Customer (continued)

- The Compact borehole geometry tool (8-arm caliper) was used for multi-fingered caliper logging along the collapsed section.
- Using the Compact powered centralizers made it possible to run the CBL/VDL tool for the entire length of the wellbore.
- The collaborative cooperation between the operator and Weatherford created a unique solution to pass through the collapsed section and allowed the operator to develop a forward plan.



Based on thirty years of expertise and innovation, Weatherford offers a complete portfolio of wireline products, so you have everything you need for your wireline operations in one place.

