



Weatherford®

REAL RESULTS

Aerated-Fluid Drilling in Hard-Rock Geothermal Well Saves Six Days of Drilling Time, Reduces Mud Costs

Objectives

- Drill to a TD of 6,090 ft (1,856 m) MD, or 4,697 ft (1,431 m) TVD, using an aerated-fluid drilling system to drill 4,903 ft (1,494 m), with a 2,738-ft (835-m) horizontal distance.
- Save drilling costs in a hard volcanic-rock formation by increasing the rate of penetration (ROP), minimizing circulation losses, and preventing or reducing pipe sticking.

Results

- Weatherford combined several technologies and services to achieve the client's objectives.
- The job was completed significantly ahead of schedule without any pipe-sticking problems, accidents, incidents, or equipment failures.

Value to Client

- The average ROP increased by more than 80%, saving money for the client by allowing the well to be completed in just 19 days—6 days ahead of schedule.
- Aerated-fluid drilling helped establish returns of up to 80% while drilling through a lost-circulation zone, yielding a significant reduction in mud costs and improving hole cleaning.

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Products/Services

- Controlled Pressure Drilling® (CPD®) services
- Williams Model 9200 rotating control device
- DataPro data acquisition hardware and software



Three Sullair® 1150/350 air compressors were used to provide feed air on this job. Two Ariel® JGJ2 primary boosters increased the feed air pressure from 350 psi to a maximum of 2,000 psi continuous pressure with a maximum volume of 3,000 scfm. Weatherford's Williams® Model 9200 rotating control device was placed on top of the blowout preventer stack, and Weatherford's DataPro™ data acquisition hardware and software were used to monitor air injection.

Location

West Java, Indonesia

Well Type

Horizontal

Hole Sizes

26 in., 17-1/2 in., and 12-1/4 in.

Depths

- 6,090 ft (1,856 m) MD
- 4,697 ft (1,431 m) TVD
- 4,903 ft (1,494 m) air-drilled

Pore Pressure

0.325 psi/ft

Injection Rates

- Gas: 300 to 2,400 scfm
- Liquid: 500 to 1,320 gpm

Bottomhole Circulating Pressures

120 to 3,000 psi (0.8 to 20.7 MPa)

Maximum Reservoir Temperature

450°F (232°C)