Compact™ Logging Services
Enable Full Openhole Logging of Extremely Slim Exploratory Well

Objectives

- Drill the reservoir section of an extremely slim, exploratory well through a fractured, organically rich, bituminous shale formation using a 2 3/4–in. (70–mm) bit in underbalanced conditions.
- Log the well while avoiding becoming stuck in the 2 3/4-in. hole, where fishing operations are typically ineffective if not impossible.

Our Approach

- Before tool deployment, Weatherford carefully modeled each run using downhole tension software and taking into account all available job parameters.
- The uniquely small 2 1/4-in. (57 mm) Compact tools were used to provide the following logs:
  - Acoustic sonic waveforms, compressional and shear travel times, and fracture analysis
  - High-resolution nuclear logs: gamma ray, dual neutron, and photodensity
  - Array induction log, dual laterolog, shallow-focused electric, and microlaterolog
  - Deviation survey
  - The well was successfully logged in an underbalanced condition, with pressure-control equipment able to hold up to 10,000 psi (68.9 MPa) at the surface

Value to Client

- The Compact logging service enabled the operator to obtain valuable formation data from an extremely small borehole—an impossible task with conventional logging tools.
- The operator was able to drill the exploratory well on a tight budget with smaller downhole equipment and a coil tubing drilling rig.
- The ability to perform logging services in an underbalanced condition provided the operator with quality measurement of formation parameters, minimizing the total cost of the operation.
- The ability to drill a smaller rathole below the zone of interest reduced the risk of water inflow from the lower formation.

A water zone below the zone of interest and a limited rathole complicated this logging operation. To acquire a compete set of data, the operator needed all first readings to be under 19 ft (6 m).

LOCATION
Tumen Region, Western Siberia

WELL TYPE
Underbalanced exploratory

FORMATION
Fractured, organically rich, bituminous shale

RIG
Coiled tubing

BOTTOMHOLE TEMPERATURE
Actual 282°F (139°C)

EXPECTED SURFACE PRESSURE
8,000 psi (55.2 MPa)

CASING SIZE
7 in. (177.8 mm)

TUBING SIZE
3-1/2 in. (89 mm)

HOLE SIZE/ANGLE
2-3/4 in. (70 mm)/21°

LOG DEPTH
9,606 to 9,377 ft (2,928 to 2,858 m) MD

PRODUCTS/SERVICES
Compact logging services and tools

Weatherford®