

DEEP DRILLING DATA, RAFT RIVER GEOTHERMAL AREA, IDAHO
RAFT RIVER GEOTHERMAL PRODUCTION WELL #4

T 15 S, R 26 E, sec. 23cd Elev. 4843'

by
H. R. Covington
1979

SCALE
meters feet

DISCUSSION

The southern Raft River Valley near Bridge, Idaho has long been known as a thermal area (Gardner and others, 1980). In 1971, an area southwest of the town of Raft River was designated as a geothermal resource area (GSA) by the U.S. Geological Survey (Gardner and others, 1971). A geothermal resource area is an area designated by the U.S. Geological Survey (Gardner and others, 1971) in 1972 (Young and Mitchell, 1973) indicating a reservoir temperature near 250° F (121° C) for the Raft River geothermal system.

The U.S. Energy Research and Development Administration (ERDA, now the U.S. Department of Energy, DOE), as a result of proposals by the Raft River Rural Electric Cooperative, became interested in the Raft River Valley as a potential site for an experimental binary-fluid geothermal power plant. During the summer of 1973 the ERDA, in cooperation with ERDA, began a geothermal resource study of the Raft River Valley. This study was part of a geothermal resource study program in southern Idaho. This program was designed to provide a scientific basis for the evaluation of a geothermal resource and to test the applicability of various geological, geophysical, geochemical, and hydrological techniques in the study of geothermal resources. Williams and others (1978) summarize the early results of this program.

In order to obtain the physical data necessary to evaluate these resources, a drilling program was begun in the spring of 1974. Thirty-four major holes were drilled to depths from 2 ft to 10,000 ft in 1974, 1975, and 1976 (Covington, 1978). In 1975, to measure the temperature and flow of the near surface geothermal fluid, the ERDA drilled 3 continuously cased wells to depths ranging from 250 ft (176 m) to 1,425 ft (434 m) (Covington, 1978) in order to test geophysical interpretation of the subsurface geology and to provide hydrological, petrological, and geochemical data on the shallow part of the geothermal system.

During the early stages of the ERDA-DOE integrated geothermal exploration program three petroleum test borholes were being drilled in the Raft River Valley by Standard American Oil Company. Shortly after completion of the petroleum test borholes and just prior to deep geothermal drilling by ERDA, Standard American Oil Co. provided the ERDA with cuttings and well logs from three test borholes (Hoff and others, 1978). The information from these borholes was used for initial interpretation of geophysical data and of the deep subsurface geology of the Raft River basin.

The first Raft River geothermal exploration borehole (RBCE #1), drilled in early 1975 (RBCE, 1975; Covington, 1978a), initially confirmed the existence of hot water (257° F, 126° C) at about 300 feet below the surface (flow) suitable for a medium-temperature experimental binary-fluid geothermal power plant. Drilling of RBCE #2 (RBCE, 1976; Covington, 1978a) and RBCE #3 (Covington, 1977; Covington, 1978) followed in rapid succession with both producing more than 300 gallons (22.7 liter) sustained steam flow with temperatures above 250° F (121° C).

SIDETRACK-A DATA SUMMARY

Drilling period: October 4-October 28, 1978
General drift direction: West-Northwest
Maximum Temperature: 130° F

Kick-off point: 3,130 ft (958 m)
Total depth: 5,411 ft (1,649 m)
no directional survey below 3,130 ft (958 m)

Top of Formation

Formation	measured depth	depth
Quartzite of Tan	4,590 ft	1,399 m
Schist of the Upper Narrows	4,620 ft	1,416 m
Flint Quartzite	4,760 ft	1,450 m
Quartz monzonite	5,050 ft	1,539 m

SIDETRACK-B GEOPHYSICAL LOGS

LOG	Date	Logged Interval
Caliper	10-20-78	3,445-5,196
Temperature	10-20-78	3,445-5,196
Compressed Neutron	10-20-78	3,445-5,196
Gamma	10-20-78	3,445-5,196
Compressed Neutron	10-20-78	3,445-5,196
MC Neutron	10-20-78	3,445-5,196
Dual Induction	10-20-78	3,445-5,196

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