

on the petroliferous Mississippian Heath limestone they became potential hydrocarbon reservoirs.

Jim Coulee and Little Wall fields are in Ts10 and 11N, R27E, Musselshell County, Montana. These two fields are productive from six different point-bar sandstones which were deposited within one of the Pennsylvanian channel systems. Both productive areas were discovered in late 1969 and field developments still are continuing.

Jim Coulee has 25 productive wells within its present field boundaries. The average net pay is 18 ft (6 m) at a depth of 3,550 ft (1,082 m). Ultimate oil recovery is placed between four and five million bbl.

Little Wall field has eight productive wells with an average pay thickness of 30 ft (9 m) at a depth of 3,600 ft (1,097 m). Ultimate oil recovery should be in the range of 2 ½ million bbl.

The dipmeter has been used extensively throughout the area to determine water-transport direction, direction of channel center, and the type of bedding within each sand lens. This tool, coupled with other subsurface information, has helped in orderly field development and stepout extensions.

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Field Evidence for Structural Style of Laramide Traps in Rocky Mountain Forelands

By comparing many structures that crop out on the margins of the intermontane basins in the Rocky Mountain forelands, certain generalities can be made concerning structural style. Whether or not the layered rocks fault or fold is partly a function of the angle at which the deepest fault cuts the basement sedimentary rock interface. How much folding occurs and what shape it takes is a function of the sedimentary section involved.

Further, there are certain characteristics of these structures which are related uniquely to their overall geometry so that sometimes shape can be predicted from very limited data. These interrelated parameters can be carried into seismic interpretations to determine characteristics of buried structures.

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Multi-Dimensional Seismic Displays

Explorationists daily are required to interpret ever-increasing volumes of multidimensional data. Greater efficiency is available if data are presented to the interpreter in a graphically concise form.

Evaluation of seismic variables such as reflection strength, frequency content, phase, and interval velocity is simplified greatly by displaying these variables in color on the seismic sections. These displays take an even greater meaning when displayed in a 3-dimensional isometric form.

The reduction of complex data to a single display allows greatly enhanced decision-making by removing the problems of extrapolation, allowing the explorationist to concentrate on the kernel of the problem, i.e., the geologic implications of the data.

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Raft River, Idaho, Geothermal Wells: Siting, Drilling, and Testing

The area of southern and eastern Idaho is one of the most promising regions in the United States for near-surface, economically recoverable geothermal energy. This part of the state is divided between two physiographic regions. The Snake River Plain is typical of the volcanic-rift regions of the United States where approximately 8 percent of the hot wells, geothermal springs, and geysers in the western United States are located. South of this region is the Basin and Range province which covers Nevada, the western half of Utah, the southwestern half of Arizona, as well as parts of California, New Mexico, Colorado, and Montana, in addition to parts of southern Idaho. In this province are located more than a third of the known hot wells, geothermal springs, and geysers in the western United States.

In 1973, the Idaho National Engineering Laboratory (INEL) was funded by the Energy Research and Development Administration (ERDA) to pursue a program of research and development into the geothermal potential of the Raft River Valley, Cassia County, Idaho. A cooperative effort then was undertaken involving Aerojet Nuclear Co., U.S. Geological Survey, State of Idaho, and Raft River Rural Electric Cooperative. The objective of this effort is directed toward evaluating the possibility of establishing a geothermal plant in the area for the production of electricity.

The first step toward this objective, the drilling of two wells and their evaluation, has been partly completed during this last year. A review of the problems and experiences during the siting, drilling, and testing of these wells is very appropriate at this time.

The siting phase was completed with an evaluation of all geologic and geophysical data gathered, primarily by the U.S. Geological Survey, during a 1 ½-year field study. The drilling phase was conducted by INEL with a drilling rig from Reynolds Electric and Engineering Co., another ERDA contractor of Las Vegas, Nevada. The testing phase involved both INEL and the University of California Lawrence Berkeley Laboratory personnel.

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Proposed Geothermal Circulation Pattern, Corwin Springs–Gardiner Area, Montana

Hot-spring activity has persisted in the Corwin Springs–Gardiner area since the Pleistocene. The only active hot springs, LaDuke and Bear Creek, emerge at opposite ends of a 2-sq-mi (5.2 sq km) Pleistocene travertine deposit. The hot springs and travertine lie along the northwest-trending Gardiner fault, a Laramide high-angle reverse imbricate fault zone, which bounds the Beartooth crystalline rock uplift on the southwest. The post-Laramide Reese Creek and Mammoth faults are graben-forming normal faults that extend from the park upland northward into the hanging wall of the