

A second unit is being installed to boost the capacity to 28,000 kw.

From 1956 to the present time, approximately 97 wells have been drilled in the United States: 73 in California, 19 in Nevada, 3 in Oregon, and 2 in New Mexico.

The deepest geothermal well in the world was completed February, 1962 in the Salton Sea area of California. The temperature gradient averaged about 13° F. per 100', having a maximum temperature of 720° F. at the total depth of 5230'. This well has tapped a very saline brine which has a high concentration of heavy metals and other rare elements. Gold, copper and silver are precipitated during brine production. It has a mass flow rate of 36,000 barrels per day at a well head temperature of approximately 400° F. This one well is capable of producing 10,000 kw of electrical power for an indefinite period of time.

Exploring and drilling for geothermal energy is extremely expensive and hazardous. The cost of drilling and completing a steam well is approximately \$50.00/foot.

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"Current Applications of Computers by Exploration Geologists"

Many geologists are beginning to use the computer to aid in solving some exploration problems. Examples of five types of computer applications in use by explorationists are presented.

Key micropaleontological data from several thousand wells penetrating portions of the Tertiary in the Louisiana-Texas Gulf Coast area are stored on magnetic tape for

computer usage. Data retrieval programs select wells encountering specified paleo markers and process associated environmental data for preparation of maps showing paleogeography, shorelines, and attitude of ancient sea floors. Too much time is required to justify such map preparation manually.

Correlative tops from electric logs and sample logs are recorded on punched cards or magnetic tape to allow rapid map preparation using the computer in combination with automatic plotting equipment. Current programs include ability to accept normal fault data and restore section on isopachous maps. Fault patterns, combinations of isopach and structure data, and isoliths of sands and combinations of sands can be mapped. Truncation, onlap, shale-out, etc., are indicated on printed results and plotted maps to aid interpretation and contouring.

Computers prepare facies maps from quantified descriptive lithologic information. Many maps can be plotted automatically to show interrelationships of lithologic and faunal variables for quick appraisal and selection of key maps for further refinement.

Trend analysis is used to remove regional gradient to enhance local anomalies. The technique is being applied to various types of contoured data where identification of local anomalies is important.

Computer programs designed to calculate theoretical gravity due to known or postulated structures are useful for interpretation of deep salt mass configurations. Models of assumed structures can be constructed from seismic or subsurface data and modified until computed gravity agrees closely with observed gravity thus indicating the best structural interpretation.

Computers will become more important in exploration as our ability for efficient use improves and as geologists realize their potentialities.