

grained, and consist entirely of quartz. The well sorted and well rounded character of the particles is typical of a high-energy depositional environment. The Vamoosa ranges in thickness from 125 feet to more than 1,000 feet.

Wells in the Vamoosa yield from 25 to 600 gallons per minute, depending on well depth and saturated thickness. Aquifer tests made by the U.S. Geological Survey in the vicinity of Seminole indicate an average transmissivity and hydraulic conductivity of 430 feet squared per day and 7 feet per day, respectively; storage ranged from 0.0001 to 0.0003. Additional tests using wells about 2 miles northwest of Seminole gave a transmissivity of 200 feet squared per day. The decrease in transmissivity is mainly due to the northward decrease in the sand-shale ratio. Wells pumping about 150 gallons per minute should be spaced at least 2,500 feet apart within the City of Seminole, but should be spaced 8,000 feet apart farther north.

Chemical analyses show that the aquifer produces a bicarbonate water (108-480 milligrams per litre) that contains low concentrations of sulfate (40 milligrams per litre) and chloride (50 milligrams per litre). In some areas the aquifer has been infiltrated by saline water, which has resulted in the degradation of the entire fresh-water zone.

SOME OBSERVATIONS ON THE PALEOCHELONIAN FAUNA FROM TEXAS

Dobie, James L., Department of Zoology-Entomology, Auburn University, Auburn, Alabama 36830

Twelve specimens of Hoplochelys turtles from the Paleocene of Brewster County, Texas provide data on the relationships of the dermatemydid turtles of the following genera: Agomphus, Hoplochelys, Kallistira, Batemys, and Xenochelys. Data suggests that several of the aforementioned genera are congeneric and need to be synonymized. Additionally, some of the species of Agomphus and Batemys need to be placed in different genera. Two Eocene specimens of Pseudemys from Brewster County are the oldest known representatives of that genus. Hadrianus and Basilemys are now recorded for the first time from Texas.

POTENTIAL GEOTHERMAL ENERGY: RELATIONSHIPS OF REGIONAL SAND DISTRIBUTION TO PRESSURE AND TEMPERATURE IN THE GEOPRESSURED FRIO FORMATION (OLIGOCENE), SOUTH TEXAS

Dorfman, M. H., Department of Petroleum Engineering, University of Texas at Austin, Austin, Texas 78712;
Sanders, G. B. Jr., Department of Petroleum Engineering, University of Texas at Austin, Austin, Texas 78712

Studies of regional sand distribution of the Frio Formation in South Texas have been augmented by well log evaluations of temperature and pressure in the geopressured intervals, as a first step in evaluation of potential geothermal resources in coastal Texas. The top of the geopressured zone occurs between depths of 7,000' and 12,000' below sea level, and shows well defined pressure patterns that can be correlated with sand body geometry and distribution. Isothermal maps of Frio intervals show steepening thermal gradients below 225° F (107° C), and a relationship of high-sand areas with lower temperatures. Correlation of

physical parameters with sand distribution patterns will lead to selection of prospective areas in the search for geopressured geothermal reservoirs.

ELECTRIC POWER IN THE DECADE AHEAD

Drew, H. R., Texas Electric Service Co., Fort Worth, Texas 76101.

A discussion of the role of the electric power systems in meeting the goal of achieving independence in energy supply in the United States by 1985 and a review of the problems and challenges associated with the use of the various fuels available for power generation, including those which may be coming into wider use within the next decade. There are environmental effects associated with electric power generation. Progress is being made in reducing these effects. There are a number of policy questions which affect the electric power supply, including environmental and land use regulations, control of electric power rates and financing. Public understanding of electric utility problems is essential to maintaining an adequate electric power supply in the future. The electric utilities have undertaken major research and development programs to meet the challenges ahead.

SECULAR VARIATION FROM ARCHEOMAGNETIC DATA

DuBois, Robert L., Department of Geology and Geophysics, University of Oklahoma, Norman, Oklahoma 73069

Archeomagnetism uses magnetic measurements made on specimens collected from kilns, hearths, fired floors and walls from archeological sites as a basis for information. Since the method was developed for the Southwestern United States some ten years ago, the techniques of collecting and processing the samples has undergone a series of modifications. The scope of the present archeomagnetic program, including the present procedures used in obtaining and processing the samples will be discussed. The collection technique involves a careful carving of small columns of baked material, approximately 3 cm. in diameter, and 3 cm. high from the undisturbed archeological feature. A mold, oriented with regards to vertical is placed over each column of baked clay, and the space inside the mold is filled with plaster to completely encase the specimen as a small cube. A reading of magnetic direction is taken along one edge of the cube. Eight to ten individually oriented specimens are collected from each feature to insure precision after checking the area for the existence of magnetic anomalies. This series constitutes a single sample for a magnetic measurement of the ancient field. Magnetic measurements are made in the laboratory using a sensitive spinner magnetometer on the plaster-covered specimens. The direction of the remanent magnetism in each specimen is determined, and a mean direction is calculated for each set of specimens which is then used to establish a preliminary archeomagnetic pole position. Once a series of magnetic stability tests have been performed on the sample, and a final pole position has been obtained, the final results are available for a master polar data representational curve showing characteristics of secular variation. Time control is provided by a tree-ring based chronology using results from