if any strike-slip movement has taken place on this or closely associated faults.

STOUPNITZKY, A., Compagnie Generale de Géophysique, Paris, France

NONEXPLOSIVE ENERGY SOURCES

(No abstract submitted)

THOMAS, GILBERT, Geophoto, Denver, Colo.

STRUCTURAL INTERPRETATION OF COMPUTER PROCESSED GEOFRACTURE DATA

(No abstract submitted)

WAGNER, H. C., AND J. A. BARTOW, U.S. Geological Survey, Menlo Park, Calif.

SUBSURFACE CROSS SECTIONS IN CARRIZO PLAIN SEGMENT OF SAN ANDREAS FAULT, CALIFORNIA

The Carrizo Plain segment of the San Andreas fault system includes an area of about 3,000 sq mi. The segment extends a distance of about 80 mi along the San Andreas fault between Cholame Valley on the north and Cuyama Valley on the south and is about 40 mi wide (20 mi on each side of the fault). Subsurface data from about 500 exploratory wells drilled in this area have been incorporated into a set of cross sections that carry into the subsurface the stratigraphic units and structures mapped and compiled by T. W. Dibblee, Jr., at the surface. Paleontologic data and electric-log correlations have been utilized to determine facies variations in Tertiary units on both sides of the fault. Strikingly different stratigraphy within the Tertiary sequence in closely spaced wells is interpreted as resulting from the effects of (1) gross lateral facies changes in rocks of the same age, (2) moderate erosion beneath local unconformities, and (3) lateral and/or thrust faulting that has brought rocks of the same age but different geologic environment into juxtaposition.

WHITE, DONALD E., U.S. Geological Survey, Menlo Park, Calif.

GEOTHERMAL ENERGY RESERVOIRS

The potential of a geothermal area is dependent primarily on volume and temperature of the reservoir and adequacy of fluid supply. Inadequate fluid supply may be a more common limiting factor than inadequate heat supply. Except in very porous reservoirs, most of the heat is stored in rocks rather than in pore fluids.

Geothermal fields can be classified as hot-spring systems or as deep insulated reservoirs with little surface expression; gradations also exist. Hot-spring systems have high near-surface permeability, at least locally, on faults and fractures, permitting fluids to escape at high rates. Deep reservoirs with little surface expression require the presence of permeable reservoir rocks capped by insulating rocks of low permeability.

Liquid water is generally the dominant fluid, but steam can form by boiling as hot water rises to levels of lower pressure. Dry steam areas probably are rare. About 30 areas in the United States have been explored for geothermal energy, but the existence of dry steam has been proved only at "The Geysers." Extensive utilization of geothermal energy therefore must depend largely on steam "flashed" from hot water with decrease in pressure.

Problems that confront broad utilization of geothermal energy include: (1) discovery of reservoirs with adequate supply of energy and natural fluids; (2) deposition of $CaCO_3$ or SiO_2, (3) chemical corrosion, (4) objectionable chemicals in some effluents, and (5) inapplicability of existing public laws.

The optimum environment for a geothermal reservoir includes (1) potent source of heat, such as a magma chamber; such heat sources are most likely to occur in regions of late Cenozoic volcanism; (2) reservoirs of adequate volume, permeability, and porosity; and (3) capping of rock of low permeability that inhibits convective loss of both fluids and heat. A deep well-insulated reservoir may have at least 10 times the energy content of an otherwise similar, shallow, uninsulated reservoir.

WILCOXON, JAMES A., Chevron Research, La Habra, Calif.

DISTRIBUTION OF CALCAREOUS NANNOPLANKTON FROM MIDDLE TERTIARY CIPERO FORMATION OF TRINIDAD, W.I.

A zonation of the middle Tertiary Cipero section of Trinidad, W.I., based on the distribution of calcareous nannoplankton is presented, and some correlations with strata elsewhere, using these zones, are suggested.

WILLIAMS, JAMES J., Occidental of Libya, Inc., Tripoli, Libya

GEOLOGY OF AUGILA AREA, LIBYA

Reservoirs of the Augila oil field, Libya, are a carbonate and clastic unit as well as the underlying fractured and weathered granitic basement rock.

The Upper Cretaceous sedimentary reservoir rocks were deposited above the crest of a paleohigh composed of early Paleozoic or late Precambrian granitic rocks. The regional high extended across an area greater than 1,000 sq mi, had more than 2,000 ft of topographic relief, and was intensely fractured and weathered prior to burial.

A diachronous basal clastic unit, composed of basement-derived material deposited as the sea advanced across the high, grades upward and laterally into carbonates, forming a single sedimentary reservoir.

Petrographic and ecologic studies indicate that porosity and permeability in the sedimentary reservoir are the result of the environments of deposition and diagenesis. The Augila field is divided into the following environmental sectors: (a) low energy, well protected from the open sea; (b) low to moderate energy, shallow marine, slightly protected; (c) low to moderate energy, shallow open-marine shelf; and, (d) low energy, open marine.

These depositional environments were controlled by granitic ridges along the crest of the regional uplift and formed barrier islands during deposition of the sedimentary reservoir.

YOUNG, REX J., Atlantic Richfield Co., Bakersfield, Calif.

LINDSEY SLOUGH GAS FIELD, CALIFORNIA

Lindsey Slough gas field is 4 mi north of the town of Rio Vista, Solano County, California. It has a major gas accumulation in Upper Cretaceous Starkey sandstones between the depths of 8,500 and 10,300 ft, as well as some lesser reserves in Paleocene Martinez and Upper Cretaceous Mokelumne sandstones at 7,000 and 8,300 ft, respectively.

The field is on the east limb of the Sacramento Valley syncline where the closure is defined by two large normal faults. One strikes northwest along the updip edge of production and the second crosses the field on a more westerly trend. The cross fault separates the lower, southern block from a wedge-shaped horst on the north.

The stratigraphic section at Lindsey Slough indicates a continual decrease in water depth from the deposition of Upper Cretaceous F-zone sediments, through several marine transgressive-regressive depositional cycles of different areal extents, to the final post-Eocene emergence and transition to nonmarine deposition.

Faulting during the close of the Late Cretaceous at Lindsey Slough, and subsequent downwarping of the basin on the south and west, made conditions favorable for gas accumulation in the Starkey, Mokelumne, and Martinez sandstones

AAPG FOUNDATION DIRECTIVE

The contents of the formal document establishing the AAPG Foundation were published in The President's Page of the March 1967 *Bulletin* on pages 646–647. In order to clarify the operation of the Foundation, the President, for the Executive Committee, has transmitted the following statement of specifics as a directive to the Trustees of the Foundation:

December 13, 1967

TRUSTEES, AAPG FOUNDATION

MR. DEAN A. MCGEE, *Chairman*
MR. W. DOW HAMM
MR. MORGAN J. DAVIS, SR.

Gentlemen:

At its recent meeting on December 2, the Executive Committee adopted the following policy statement regarding the AAPG Foundation. The statement is intended to outline the responsibilities of the Trustees of the AAPG Foundation and to define the relationship of the Foundation to the Association, consistent with the Trust Agreement of April 4, 1967.

When the pending tax exemption application is satisfactorily completed with the granting of the 501(c) 3 rating, the following Association assets will be transferred to the custody of the Foundation Trustees:

... The Research Fund, including cash and investportfolio.

... The Levorsen Memorial Award Fund, consisting primarily of cash.

... The Sidney Powers Award Fund, both investments and cash.

... The DeGolyer Memorial Publication Fund, consisting of cash reserve.

It is intended that the current trusteeships of the special funds be retained with custodial responsibility traditionally exercised, the overall responsibility for generating, investing, and distributing monies to implement the specific and broad purposes of the Foundation to be exercised by the Trustees of the Foundation. It is hoped that the assets of the Foundation can be increased to the extent that the Trustees of the special funds need no longer be concerned with generating monies separately, but will submit annual budgets with requests for support of recommended programs.

The Trustees of the Foundation are requested to instigate a campaign to solicit contributions and thereby accumulate a sizeable principal which will permit the operation of the Foundation's program from earnings. A system of budget control should be instigated for the special funds which will introduce the desirable element of planning, consistent with Association policies. The Trustees are requested to keep the Executive Committee informed by quarterly reports.

In addition to the special funds, other assets of the Association may be from time to time transferred to the Foundation for the purpose of relieving the Association's operational budget of activity expenses more closely related to the educational and scientific purposes of the Foundation

The Executive Committee joins me in expressing our most sincere compliments to you gentlemen for your willingness to develop one of the most important projects the Association has ever undertaken. We personally wish you great success and pledge to you the enthusiastic backing of the Association.

Very truly yours,

J. BEN CARSEY
President