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BRENTWOOD FIELD

The Brentwood field, discovered in 1962 along the upturned western portion of the Sacramento basin, is the first northern California gas field to yield commercial quantities of oil. Volumetric reserve estimates range from 30 to 40 billion cubic feet of gas and 3 to 5 million barrels of oil. Separate accumulations ranging through about 2,000 stratigraphic feet occur in abruptly truncated, northwest-dipping Paleocene and Upper Cretaceous sandstones. From the thin-bedded, deep-water upper Martinez sandstones, dry gas with minor condensate is produced; black oil is contained only in the 3 shallower marine "Massive" sandstones straddling the Cretaceous-Paleocene boundary.

The updip closure for Brentwood's cuesta-like trap is provided by the Meganos channel, a shale-filled, late Paleocene submarine gorge or channel which originally was swept clean to eroded depths of 2,000-2,500 feet. The channel can be observed in the outcrop belt immediately south of the field where it is predominantly shale-filled; however, coarse sandstones and conglomerates present to the west are indicative of a local submarine fan.

A number of major faults evident in outcrop also transect the Brentwood field where they influence the position of oil and gas pools on the structure. For example, hydrocarbon/water levels in the Second Massive sandstone change from 10 to 175 feet across fault boundaries. Progressive thinning of oil columns from east to west may be a function of fault baffles retarding fluid migration, or of facies change, as in the First Massive sandstone.

CRAWFORD, F. DOUGLAS, Union Oil Co. of California

BIOSTRATIGRAPHY OF SANTA MARIA AREA

The Santa Maria area is defined as that portion of northwestern Santa Barbara County bounded on the north by the Santa Maria River, on the west by the Pacific Ocean, on the south by the Santa Ynez River, and on the east by Fugler Point, East Cat Canyon, Gato Ridge, and Zaca Creek fields, and the town of Buellton.

In the Los Alamos syncline, 16,000 feet of sediments overlie Franciscan (Jurassic?) basement or the Knoxville (Jurassic?) Formation. Included in this sequence are: Lospe (Oligocene?), fine to coarse, non-marine clastics; Point Sal (middle Miocene), siltstones, mudstones, and sandstones; Monterey (middle and upper Miocene), siliceous, cherty, and calcareous shales; Sisquoc (upper Miocene-lower Pliocene), diatomites, diatomaceous siltstones, and sandstones; Foxen (upper Pliocene), mudstones; and Careaga (upper Pliocene), sandstones. Essentially non-marine beds of Pleistocene to Recent age overlie the Careaga.

Megafossils, foraminifers, radiolarians, and diatoms are present in the marine Tertiary beds. The most effective correlations are foraminiferal. Based on a virtually complete composite of cores, the section has been divided into 18 foraminiferal zones: 5 in the Point Sal, 5 in the Monterey, 4 in the Sisquoc, 2 in the Foxen, and 2 in the Careaga.

In a large part of the area, the rocks are highly siliceous and essentially barren of Foraminifera, but usually reasonably satisfactory correlations based on micro-lithology can be made.

CRAWFORD, JOHN M., Continental Oil Co.

WORLD-WIDE OPERATIONS OF "VIBROSEIS" SYSTEM

This survey gives the general locations of the various field crews now using the *Vibroseis* system and reviews record quality compared with conventional dynamite seismograph records at the same locations.

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REVIEW OF COASTAL STRATIGRAPHY OF OREGON AND WASHINGTON WITH COMMENTS ON 1965 ACTIVITY

Three structural downwarps along the Oregon coast and at least one on the Washington coast provide data on seaward basin development and stratigraphic units. When these units are projected offshore from both States, a tentative framework of a regional north-south basin can be postulated. The offshore basin may be 350 miles long and at least 50 miles wide and should contain marine sedimentary rocks from middle Eocene through Pliocene. The aggregate thickness of these rocks probably is in excess of 20,000 feet.

Attention was first drawn to the oil and gas possibilities off Oregon and Washington in 1960 when Shell Oil Company made application for all of the State of Oregon's tidal and submerged lands. The Shell application, though unsuccessful, provided the interest for initiation of offshore studies by other companies. Since 1960, 13 major oil companies have conducted offshore geological and geophysical studies off both states. Eleven of these companies paid over \$35 million in lease bonuses for federal OCS tracts off both states. Six blocks adjacent to Oregon brought \$27,768,772.24 for 425,433 acres, and 5 blocks next to Washington brought \$7,764,928.40 for 155,420 acres. Union Oil Company of California paid \$376.00 per acre for an Oregon tract for the highest bid of the sale.

It is anticipated that during the summer of 1965, 3-6 deep exploratory tests will be drilled off Oregon and Washington. Standard Oil Company and Union Oil Company, in a joint operation, and Shell Oil Company have announced plans for offshore Oregon tests and Pan American, as operator for Superior and Atlantic, is expected to drill off Washington. The coming summer will be one of the most important yet for oil and gas exploration in Oregon and Washington.

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UPPER CRETACEOUS PLANKTONIC FORAMINIFERA FROM WEST SIDE OF SACRAMENTO VALLEY

Outcrop samples from widely spaced localities in the Venado, Yolo, Sites, Funks, Guinda, and Forbes Formations, Yolo and Colusa Counties, California, contain a sparse but diagnostic fauna of planktonic Foraminifera. About 30 species are presently recognized, the greatest number of species and individuals belonging to the genus *Globotruncana*. These planktonics are described and preliminary correlations made with Cretaceous strata elsewhere.

The siltstone and sandstone of the Venado Formation contain bi-keeled globotruncanids, *Globotruncana helvetica*, and species of *Hedbergella* suggestive of a Turonian age. These strata and the shales of the middle and upper Yolo Formation are tentatively correlated with Members II and III of the Redding area, California.

Planktonic assemblages from the Sites, Funks, and