LEO H. MOIR, JR., Oceanic Oil Co., Ventura

Oxnard Oil Field, Ventura County, California

The Oxnard oil field is an unique accumulation of exceptionally heavy, asphaltic oil in the highly fractured shales and volcanic rocks which underlie Oxnard Plain, 2 miles east of the town of Oxnard, California. The trap here occurs in a Miocene monoclinal dipping northwesterly away from an irregularly fronted volcanic series of flows and intercalated limestones and shales.

This producing area was discovered in 1936 by the Vaca Exploration Company which located their well on a geomagnetic anomaly. Development has been slow because of mechanical and sales problems. To date, there have been 22 producing wells drilled, which have produced more than 2,500,000 barrels of oil. Some of the early wells are producing considerably more oil now than they did at first. Although four dry holes have been drilled, there are many proved locations yet to be drilled in the present producing pool.

Exploration has disclosed a large lenticular accumulation of tar in the basal Pliocene formations, which has not yet been exploited. This lens is composed of sand having as high as 45% porosity and permeabilities in excess of 17,000 millidarcys.

A recent well drilled by the Texas Consolidated Oils has indicated the presence of a gas zone of considerable proportions.

On the basis of the undeveloped resources of the present producing area, the known regional pinch-outs, and the deeper sands which should underlie this field, there is a sound basis for expecting to find other commercial pools here.

JOHN H. FACKLER, Monterey Oil Co., Los Angeles

Peculiarities of Aurignac Sand Accumulation in San Ardo Field, Monterey County, California

Accumulation of oil in the Aurignac sand of the San Ardo field appears to contradict all of the textbook examples and theories of accumulation. Bottom water is structurally higher than oil. This peculiar type of accumulation is explained as a lack of adjustment of the heavy oil after post-accumulation movement.

A detailed study of this unorthodox accumulation may suggest a new approach to the exploration for oil, particularly in heavy oil areas.

GEORGE H. ROTH, Consulting Geologist, Los Angeles

Castaic Hills Oil Field, Los Angeles County, California

The Castaic Hills field is located in Los Angeles County northwest of, and adjacent to, the Honor Rancho field. It is believed to be completely separate from the latter field both from a structural and stratigraphic standpoint although only one location separates the two areas.

The field was discovered by Ted Sterling, operator for Paul W. Trousdale's "Rynne-Fisher" well No. 1 (now Continental Oil Company's well), which was completed on September 13, 1951, from the interval 4,632–4,697 feet, flowing 233 b/d, 33° gravity, 0.1% cut, 27/64" bean, 90# T.P., 485# C.P., and 185 MCF. As of September 30, 1952, 29 wells have been completed in the area, 5 wells abandoned, and several wells are still drilling.

The stratigraphy in the field is characterized by the great thickness of conglomerate and abrupt facies changes. The general geologic section above the basement granite consists of the following.

1. 1,400–2,700 feet of non-marine Saugus (Pleisto-Pliocene) conglomerate, sands, and clays
2. 1,400–1,000 feet of marine Pico with possibly some Repetto at base (Pliocene) conglomerate, sands, and siltstones
3. 6,500± feet of Modelo upper and middle Miocene sands, conglomerate, and shales, of which there are:
   a. 50–200 feet of Delmontian conglomerate and siltstone
   b. 1,700–2,500 feet of upper Mohnian conglomerate and sand
   c. 4,500± feet of lower Mohnian shales, conglomerates, and thin sands

The producing sand (Sterling zone) is 30–220 feet thick and occurs in the uppermost part of the lower Mohnian or in basal upper Mohnian. Tar sands occur in the Saugus and Pico formations.

The field is on the steeply dipping south flank of the east-west Loma Verde (Devils Canyon) anticline, the surface axis of which is ½ mile north. The discovery well was drilled on the assumption that sands coming up toward the north on this flank would either pinch out or be faulted in such a manner that north and west closure would occur. It was expected that east closure should be provided by the large northwest-trending San Gabriel fault. This is in general what has been proved, although numerous faults made complications. It now appears that the closure on the west is caused by facies change, closure on the east by faults probably related to the San Gabriel fault, and on the north by both faulting and facies change, although this is not definitely determined. The field contains fault blocks which affect accumulation.

The field, which is producing about 4,340 b/d (August average), is composed of about 280 proved acres with possibly 50 additional definitely proved acres to be drilled. However, with very little

imagination, one can visualize the field being twice its present size. Also there are possibilities of deeper producing sand or sands being present and the shallow tar zones being produced.

WILLIAM R. MERRILL, Standard Oil Co., Ojai

Eocene of Eastern Santa Ynez Mountains

This paper presents the more important structural and stratigraphic features of the geology of more than 1,000 square miles of sedimentary outcrops which occur in some of the most inaccessible country in California.

The area presented is structurally an east-plunging anticlinorium. It is divided into three general divisions by the Pine Mountain and Santa Ynez thrust faults. Most interesting is the complex central part which lies between these faults and constitutes the major part of the anticlinorium. Imposed upon this dominant regional feature are numerous faults and tightly folded to overturned structures which display a definite tectonic pattern.

More than 35,000 feet of sedimentary section is present, ranging in age from middle Miocene to Jurassic (Franciscan). Approximately 13,000 feet of this section has been recognized as upper Eocene. It is divided into the Coldwater, Cozy Dell, Matilija, and Juncal formations of current usage. The Sierra Blanca limestone is considered the basal unit of the Juncal. A general lithologic description of the formations and their relationships are presented, including a discussion of the several hiatuses of deposition.

CHARLES F. GREEN, Consulting Geologist, Bakersfield

South Pyramid Hills Oil Field, Kern County, California

A general examination of the stratigraphy of the South Pyramid Hills oil field demonstrates that oil occurs at depths varying from 1,100 to 3,200 feet, in beds of middle Miocene and upper Eocene age.

A detailed analysis of the stratigraphic and structural relationship indicates that the accumulation is effected by anticlinal folding in conjunction with faulting and unconformable overlap. These latter features, although responsible for the presence of the several producing zones, present difficult problems affecting the economic development of the field.

DONALD M. DAVIS, Consulting Geologist, Los Angeles

Markley Gorge, Sacramento County, California

The "Markley Gorge" is the name usually applied to the buried canyon known to exist under the south-central Sacramento Valley. This ancient gorge appears to have developed prior to upper Eocene deposition, and has an approximate maximum relief of 3,000 feet. Present well control indicates that it extends from the region north of the city of Sacramento to the region beyond the southwesterly limits of the Rio Vista gas field and probably drained into what is now Honker Bay.

The author will discuss his interpretation of the origin and extent of this interesting erosional feature and its relation to larger structural deformations.

HAROLD H. SULLWOLD, JR., Consulting Geologist and Petroleum Engineer, North Hollywood

Geology of West Edison Oil Field, Kern County, California

The West Edison oil field is on the east side of the San Joaquin Valley about 9 miles southeast of Bakersfield. Oil occurs principally in the non-marine Chanac formation (Pliocene-Miocene) and and marine Santa Margarita sand (upper Miocene), and minor production is developed from marine Nozu sand (middle Miocene) and Olcese(?) sand (lower Miocene). The total thickness of strata overlying basement varies from 4,000 to 6,500 feet, and average depth of wells is about 4,000 feet. A diagram based on unusually good well control shows the transitional relationships between the Chanac and Santa Margarita formations. Pre-Santa Margarita stratigraphy and structure are not clearly understood because of the paucity of data, but stratigraphic cross sections are presented in an attempt to portray possible conditions during that time.

The field is on a general regional homocline dipping southwest, and oil accumulation is largely due to normal faulting with partial help from lensing sands. Some of the larger pools in the field are trapped on the down-thrown side of normal faults.

The field was discovered in 1935 and has had five periods of activity as a result of discovery of new zones and new fault blocks. There are now 1,300 acres productive from 180 wells. Total production is more than 8 million barrels or 6,200 barrels per acre, and 1951 showed the highest annual production in the field's history, 1,400,000 barrels. Current production is 4,200 barrels per day, or an average of 23 barrels per day per well.