

upper Stevens from depths averaging 8,000 feet was orderly over $2\frac{1}{2}$ years. Structure near the upper Stevens lenticular or channel-type sands is a gentle southwesterly plunging nose with minor unimportant normal faulting. Through 1957, 5,063,000 barrels were produced from 27 upper Stevens wells.

Late in 1957 Universal Consolidated Oil Company and State Exploration Company discovered lower Stevens oil $\frac{1}{2}$ mile east of the original field limits. To date (September 10, 1958) 25 lower Stevens producers have been completed, 4 dry holes were drilled, and 3 wells are drilling. In contrast to the gentle bowing in upper Stevens rocks, there are one and perhaps two areas of structural closure at lower Stevens time. In general, greater pay thicknesses and better production are encountered high on the fold, but basin source sands are well developed downdip and additional stratigraphic traps in downdip wells have afforded commercial reservoirs.

Limits of lower Stevens production have not been reached as yet, but it is likely that principal future drilling will be in the southwest part of the pool, although northerly field limits are not entirely defined. At least 540 acres are proved in the lower Stevens pool (September 10, 1958). The ultimate size of the pool could be substantially larger. Cumulative production from lower Stevens at East Gosford through July, 1958, is 325,000 barrels from 21 wells. Average daily production, August, 1958, was approximately 3,000 barrels from lower Stevens.

(14) FAULT SYMPOSIUM

A. Evidence for Large Cumulative Right Strike-Slip Movement on San Andreas Fault System
Edward L. Winterer, U.C.L.A.

B. Conservative Concept of San Andreas Movement
Thomas H. Baldwin, Monterey Oil Company

C. Effects of Lateral Faulting on Oil Exploration
William Henry Corey, Continental Oil Company

D. Prepared Question on Fault Movement
Robert H. Paschall, Hancock Oil Company
Panel Discussion

Moderator: V. L. Vanderhoof

E. Proposal for Organized Study of Major California Faulting
U. S. Grant, President, Pacific Section A.A.P.G.

(15) STRATIGRAPHY OF LA HONDA AND SAN GREGORIO QUADRANGLES

R. M. Touring, Humble Oil and Refining Company

The oldest rocks exposed are Upper Cretaceous foraminiferal mudstones, graded sandstones, and conglomerates (9,500 feet) occurring in a fault slice along the coast south of Pescadero. Not in contact is the Butano formation (5,000 feet) of Eocene age, consisting of interbedded sandstones, siltstones, and mudstones. The sandstones are thicker and cleaner in the upper part of the Butano formation and produce oil in the La Honda field. Conformably overlying the Butano formation are 2,500 feet of San Lorenzo mudstones and siltstones (upper Eocene A-1 zone to lower Zemorrian) which are cut by diabase sills and dikes. These dikes were feeders to basalt flows which poured from subaerial volcanoes into shallow water. The volcanic rocks are interbedded with upper Zemorrian and Saucian mudstones, quartzose sandstones, and organic calcarenites. This sequence totals 2,000 feet in thickness and is overlain by 500 feet of brown chert and laminated mudstone (Relizian?). Transgressing all older rocks are the upper Miocene cherts and diatomaceous mudstones (0-9,000 feet thick) of the Monterey formation. The Pliocene Purisima formation (5,650 feet) overlies the Monterey conformably and is still transgressive. It is characterized by the first influx of andesitic debris, probably from the Sierra Nevada. The Purisima is divided into five mappable members, which from the base upward are: tuffaceous siltstone and sandstone member containing small amounts of oil in the La Honda field (2,150 feet); siliceous mudstone member (2,300 feet); pebbly sandstone member (150-350 feet); mudstone member (450 feet); fine sandstone member (400 feet). Pleistocene terraces, recent alluvium, and landslides complete the stratigraphic column.

It is believed that the Butano, the lower Miocene volcanics and the Purisima formation can be directly correlated across the present San Andreas fault into the Stanford-Woodside area. The correlation suggests that lateral displacements along the fault in this area may be a mile or two, but not hundreds of miles.

(16) GEOLOGY OF NORTHWEST TEN SECTION

N. H. MacKevett, Shell Oil Company

The Northwest Ten Section accumulation discovered in 1958 is between the Canal and Ten Section oil fields in Secs. 23 and 24, T. 30 S., R. 25 E., approximately 14 miles southwest of Bakersfield in Kern County, California. Shell Oil KCL 15X-24, a 15,739-foot basement test, is credited with finding two new Stevens oil accumulations; however, the first producing well in the pool was a follow-up well, Shell KCL 84-23. An upper Stevens accumulation was indicated in 15X when a formation test