

OPEN FILE REPORT 83-24 LA

GEOLOGY OF THE SOUTH HALF OF THE MINT CANYON QUADRANGLE  
LOS ANGELES COUNTY, CALIFORNIA

By

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east of the center of Section 35 on the west side of Sand Canyon (Plate 4, no. 6). The material was sold to the Pioneer Division of the Flintkote Company. The tuff was calcined at 1800° to 1900° F., which turned it bright red. The calcined material was then ground, classified, and used as a surfacing on asphalt shingles and roofing (Wallace, 1940, p. 38-39).

Because of the differences in the purity, state of alteration, and thickness, the tuff beds are best used for low-volume specialty purposes. One apparently untested possibility lies in their use in ceramics or glazes. Gay and Hoffman (1954, p. 552) describe the use of vitric tuff exposed in Bouquet Canyon (Oakeshott, 1958, plate 2, no. 81) as an ingredient in chinchilla dust, a finely ground mixture used for "bathing" chinchillas. That operation has moved about 1.6 km northwest to new quarries and plant site under the aegis of Cer Tek Enterprises, Inc.

#### Petroleum-Placerita Oil Field

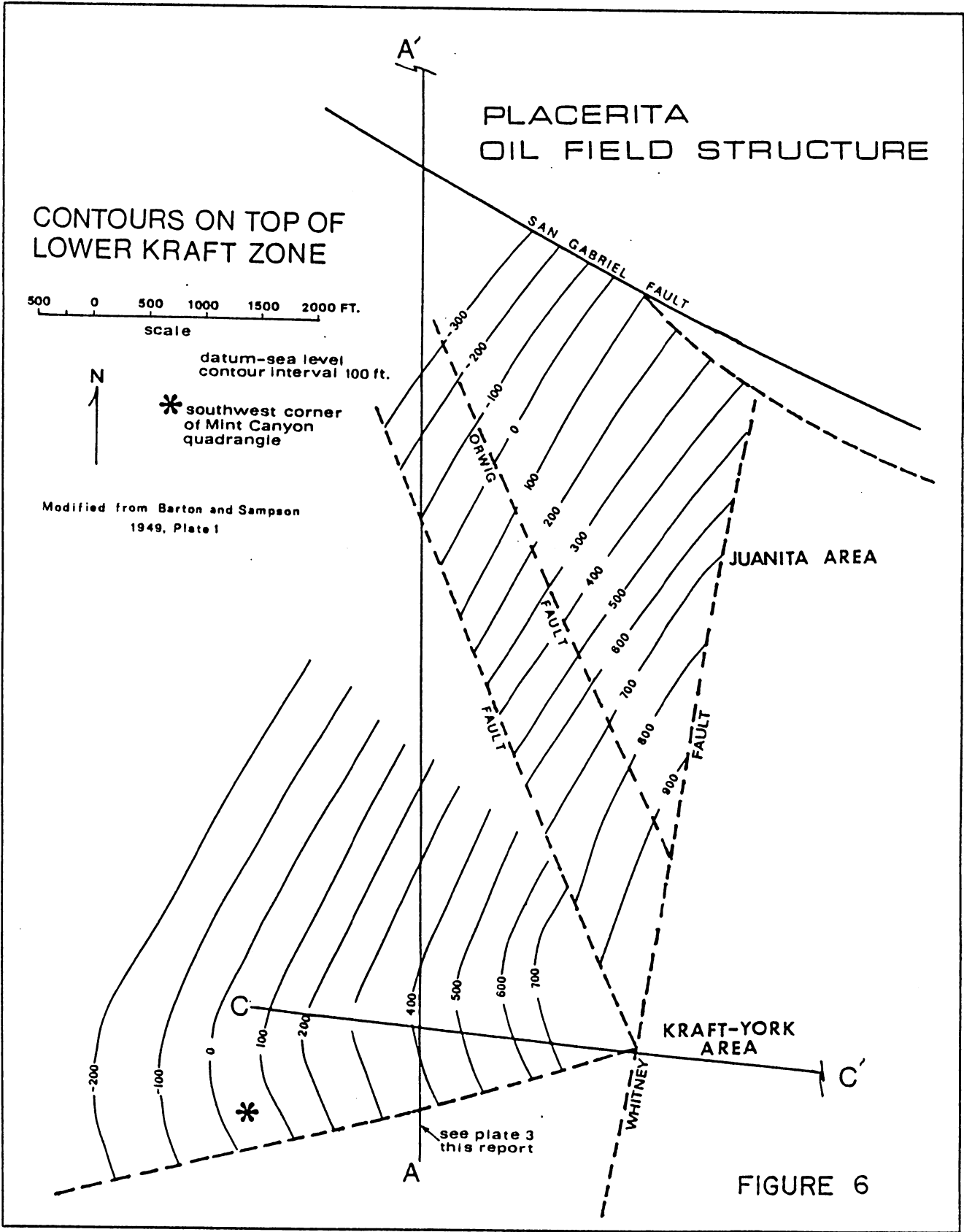
The Placerita Canyon area first attracted attention as a potential source of petroleum near the turn of the century with the discovery of "nearly water-white light-gravity" oil in fractured metamorphic rocks in or near the zone of the San Gabriel fault. Six wells were drilled between 1899 and 1901 in the NE 1/4 of Section 4, just west of the point where the Placerita fault crosses the southern boundary of the area. These wells only produced for a brief time (Brown and Kew, 1932, p. 777).

A later discovery of a more common grade of oil in Placerita Canyon, in 1920, appears to have been in Section 36, T.4 N., R.16 W., in the

Newhall quadrangle, just west of the area of this report. However, subsequent exploration and development was largely in Section 31, T.4 N., R.15 W., to the east in the Mint Canyon quadrangle (Plate 4).

The Placerita oil field (Figure 6) was subject to rapid development and early decline. The Kraft-York area, the more southerly part of the field near Placerita Canyon Road, was the site of discovery. Equity Oil Company completed Daisy 1 for a few barrels of 14 gravity oil at a depth of 297 m. Four wells were drilled between 1920 and 1933, producing from 6 to 19 barrels per day. In April 1948, Nelson-Phillips Oil Company brought in Kraft 1 in Placerita Canyon flowing 70 to 100 barrels per day of 15.6 gravity oil from the interval 177-219 m. In January 1949 the more northerly section of the field, the Juanita area, was discovered when Ramon Somavia brought in Juanita 1, flowing 340 barrels per day of 22.4 gravity oil, about 2 km north of Nelson-Phillips Kraft 1. The bottom of the producing zone was at 158 m. There was a period of unrestricted production when the State Spacing Act was declared unconstitutional by the California Superior Court. A town-lot drilling campaign in the Juanita area sent production skyrocketing to over 860,000 barrels per month in September 1949.

Barton and Sampson (1949, p. 11) state that cumulative oil production as of January 31, 1950 was 5,901,846 barrels. Of that amount, 5,221,394 barrels were produced during the period from July 1, 1949, to January 31, 1950. The importance of the Juanita area was noted by the fact that it had produced 5,048,400 barrels of the total cumulative production. In conclusion Barton and Sampson (1949, p. 14) state:



Drilling activity in the field had practically ceased by the end of February, 1950. Unless a deeper zone is discovered, the only remaining wells to be drilled will be those necessary to fulfill lease requirements. It is unlikely that a deeper zone will be found in the Placerita field inasmuch as several wells have been drilled into the Eocene without finding production.

In spite of apparent depletion, sufficient interest was maintained in the Placerita area to keep leases in interested hands through the 1950's and 1960's and the field was not abandoned. Indeed, in 1951 a third zone, the Shepard zone, was discovered by Standard Oil at an average depth of only 183 m in the Saugus Formation. This zone is thinner than either of the Kraft zones, being an average of 28 m thick (California Division of Oil and Gas Report No. TR 12, v. 11).

The 1975 annual production statistics for the Placerita field show 169 wells producing 296,310 barrels of oil and 5,687,586 barrels of water (including water in emulsion). Cumulative production totaled 40,768,969 barrels of oil (California Division of Oil and Gas, 61st annual report of the state oil and gas supervisor, p. 71). In 1979, 228 wells produced 299,320 barrels of oil and 8,446,529 barrels of water. Cumulative production had increased to 42,058,000 barrels. In new wells Placerita was District 2 leader with 26 new wells drilled (California Division of Oil and Gas, 65th annual report of the oil and gas supervisor, 1979, p 9, 64, 112).

Water flooding was started at Placerita in 1954 and cyclic injection of steam and hot water began in 1964. Water disposal wells were utilized starting in 1953 in the Juanita area and in 1951 and 1965 in the Upper and Lower Kraft zones respectively. In 1980-81 carbon dioxide injection was tried with disappointing results.

The Placerita oil field formed in a structural trap. The oil probably migrated up the slope of the tilted beds of the marine Pico and Towsley formations, along two permeable zones, to pond against the junction of the Whitney and San Gabriel faults (Figure 6, Plate 1A), the planes of which constitute impermeable barriers to the further migration of fluids and gases. The field is divided into two distinct blocks or areas by faulting within the area of accumulation (Figure 6). The more southerly of these blocks underlies the Kraft-York area. The more northerly block underlies the Juanita area. As previously noted, the quantity and quality of oil is better in the block underlying the Juanita area. Of the two productive zones, the Upper and Lower Kraft, the Lower Kraft zone has proved superior in volume and permeability and has yielded the bulk of the oil thus far extracted from the field. The Lower Kraft is in the Miocene-Pliocene Towsley Formation. The Upper Kraft is in the Pliocene Pico Formation (Winterer and Durham, 1962, pp. 344-345) and, as previously noted, the Shepard zone is in the Saugus Formation, probably the Pliocene Sunshine Ranch Member.