

SUMMARY OF OPERATIONS CALIFORNIA OIL FIELDS

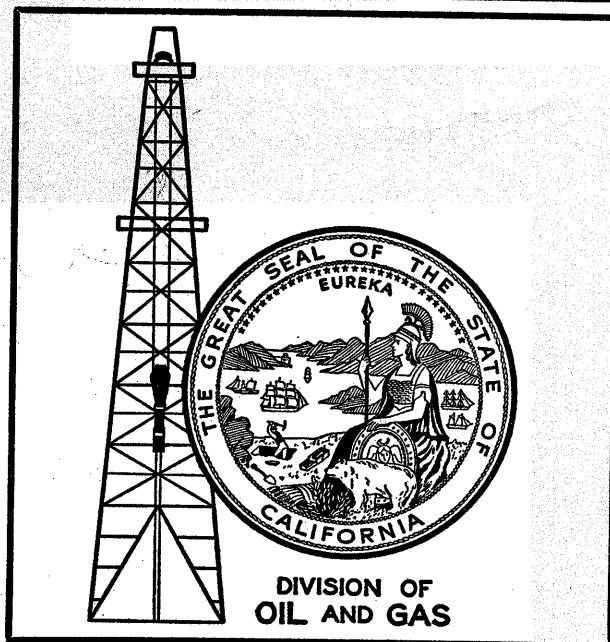
FORTY-EIGHTH ANNUAL REPORT OF THE
STATE OIL AND GAS SUPERVISOR

ISSUED BY
DEPARTMENT OF CONSERVATION
DIVISION OF OIL AND GAS

Vol. 48

SAN FRANCISCO, CAL., JANUARY-JUNE, 1962

No. 1



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RECENT DEVELOPMENTS IN THE KRAFT-YORK AREA OF PLACERITA OIL FIELD ^a

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INTRODUCTION

The Placerita oil field is at the western end of the San Gabriel Mountains, the predominant topographic feature in the area, and two miles east of the town of Newhall. The field is divided into the Kraft-York and Juanita areas, which are accessible from Sierra Highway (U.S. 6) and Placerita Canyon road.

The topography is uneven, and elevations range from 1,350 to 1,800 feet above sea level. Placerita Canyon trends east and west, slopes slightly to the west, and the bottom is covered with alluvium. The climate is semi-arid, and the vegetation consists of brush.

The proved acreage includes portions of Sec. 6, T. 3 N., R. 15 W., Sec. 1, T. 3 N., R. 16 W., Sec. 31, T. 4 N., R. 15 W., and Sec. 36, T. 4 N., R. 16 W., S.B.B.&M. As no two sections bear the same number, hereafter reference to township, range, base and meridian will be omitted. Nearest production is obtained from wells drilled in two nearby areas of the Newhall oil field, Whitney Canyon and Elsmere.

Previous reports ^{*} on the Placerita field described the Upper and Lower Kraft zones; this article will discuss the Shepard zone, which is a recent development in the Kraft-York area.

The following illustrations accompany this report:

- Plate I. Location map
- Plate II. Map showing contours on top of the Shepard sand
- Plate III. Cross section A-B
- Plate IV. Production graphs

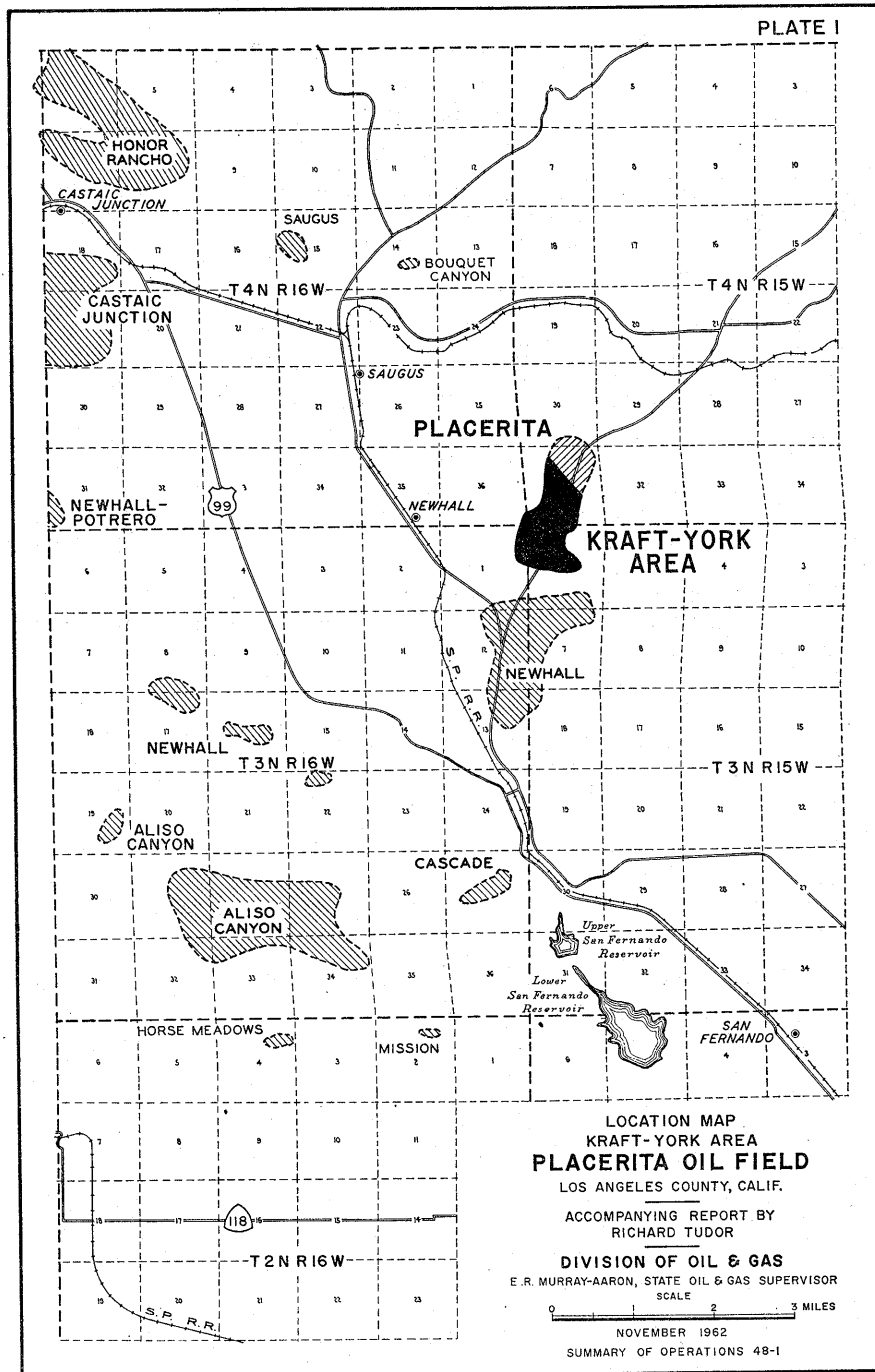
HISTORY

The field was discovered in 1920 by the Equity Oil Company, who completed well No. "Daisy" 1 (now Crestmont Oil Company well No. "York" 1), in the northwest quarter of Section 6. The well produced a few barrels of oil from a depth of 975 feet and was subsequently deepened to 1,394 feet. Although records of its early production history are not complete, there is sufficient information to indicate that the well was a small producer of heavy oil. Because of the low gravity of the oil, only four wells were drilled in this field during the period between 1920 and 1933. Total production from these wells ranged from 6 to 19 barrels of oil per day. During the interval between 1933 and 1948 there was no additional drilling activity. In April 1948, the Nelson-Phillips Oil Company completed well No. "Kraft" 1, Section 31 (now Sunset International Petroleum Corporation well No. "Kraft" 1), flowing 70 to 100 barrels per day of 15.6-degree gravity oil from an interval between 580 and 717 feet, and this initiated the beginning of extensive development of the field.

^a Manuscript submitted December 1962.

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^{*} Listed under "Selected References" at the end of this report.



On April 16, 1951, a new zone was discovered when Standard Oil Company of California completed well No. "Placerita" 13, in the northwest quarter of Section 6, producing at an average daily rate of 55 barrels of 12.6-degree gravity oil and two barrels of water from both the new zone, which was named Shepard, and from the Kraft zone. Production from the two zones was commingled, and it was estimated that the Shepard zone produced 27 percent of the total. Within the next five years, five more such dual-zone wells were completed by the same company.

The first of the 12 wells to be completed in the Shepard zone only, was J. Karl Zimmerman Operator, well No. "KD" 4, Section 31 (now Dr. Marcus S. Gerlach well No. 4). Initial production was approximately 11 barrels per day of 12.9-degree gravity oil, cutting less than one percent water.

GEOLOGY

Stratigraphy

Five formations, ranging in age from Recent to upper Miocene, have been logged in Placerita oil field. These formations are listed in Table 1.

TABLE 1
STRATIGRAPHY AND LITHOLOGY—PLACERITA OIL FIELD

System	Series	Formation or member	Thickness (feet)	Description
Quaternary	Recent	Alluvium	0 to 100	Clay, silt, sand and gravel, gray, light brown to reddish-brown, unconsolidated.
		(Unconformity)		
	Pleistocene	Terrace Deposits	0 to 200	Clay, silt, sand and gravel, gray, light brown or reddish-brown, poorly consolidated.
		(Unconformity)		
Tertiary	Pliocene	Saugus	1800	Poorly sorted conglomerate, conglomeratic sandstone, and sandstone alternating with beds of sandy siltstone, gray, light brown to reddish-brown. Marine at base.
		(Unconformity)		
		Shepard	0 to 130	Oil sand, gray to greenish-gray or brown, fine- to coarse-grained, poorly sorted, good saturation, interbedded with streaks of sandy, clayey, blue shale.
		(Unconformity)		
		Pico	180 to 620	Sandstone and conglomerate, light brown to gray, fine-grained, poorly consolidated, interbedded with siltstone. Abundant foraminiferal and molluscan marine fossils.
		(Unconformity)		
		Upper Kraft	170 to 250	Oil sand, medium brown to black, fine- to coarse-grained, poorly sorted, friable, well-saturated, interfingering with streaks of bluish-green claystone, interbedded with Oil conglomerate with bluish- to blackish-brown pebbles and occasional cobbles in silty to coarse-grained matrix, well saturated.
		Upper Kraft		
		Lower Kraft	120 to 310	Oil sand, dark-brown to black, medium- to coarse-grained, silty, pebbly with occasional cobbles, well-saturated with heavy oil, interbedded with siltstone.
		Repetto	650	Siltstone, brown to gray, fine-grained, interbedded with beds of sandstone and conglomerate. Marine.
(Unconformity)				
Upper Miocene	Modelo	?	Interfingering marine and continental beds.	

Recently deposited alluvium is confined to the floor of Placerita Canyon in the northern part of Section 6. Some of the gravels at the base of the alluvium were found to contain some gold as early as 1842. The terrace deposits are exposed at the surface throughout the northern half of the Kraft-York area. The upper portion consists of alluvium that was elevated but not folded; the lower portion was affected by folding and faulting.

The Saugus formation is exposed at the surface in Section 6 and in the eastern half of Section 31. This formation grades upward, from marine deposits to the lacustrine deposits typical of the formation. The Pico formation is exposed at the surface near the eastern margin of the area. Neither the Repetto nor the Modelo formations are exposed within the area. No oil-bearing sands are present in the Modelo formation here. However, commercial Modelo production has been obtained in the Tunnel area of Newhall field, two miles to the south.

Structure

The Placerita oil field lies on a westward-dipping homocline in the eastern end of the Ventura basin and is bounded on the east by the Whitney Canyon fault (Plate II). The dip of the beds ranges from 15 to 20 degrees. Surface topography does not reflect the subsurface structure. Faulting is minor and does not appear to affect the Shepard zone.

PRODUCING ZONE

Shepard Zone

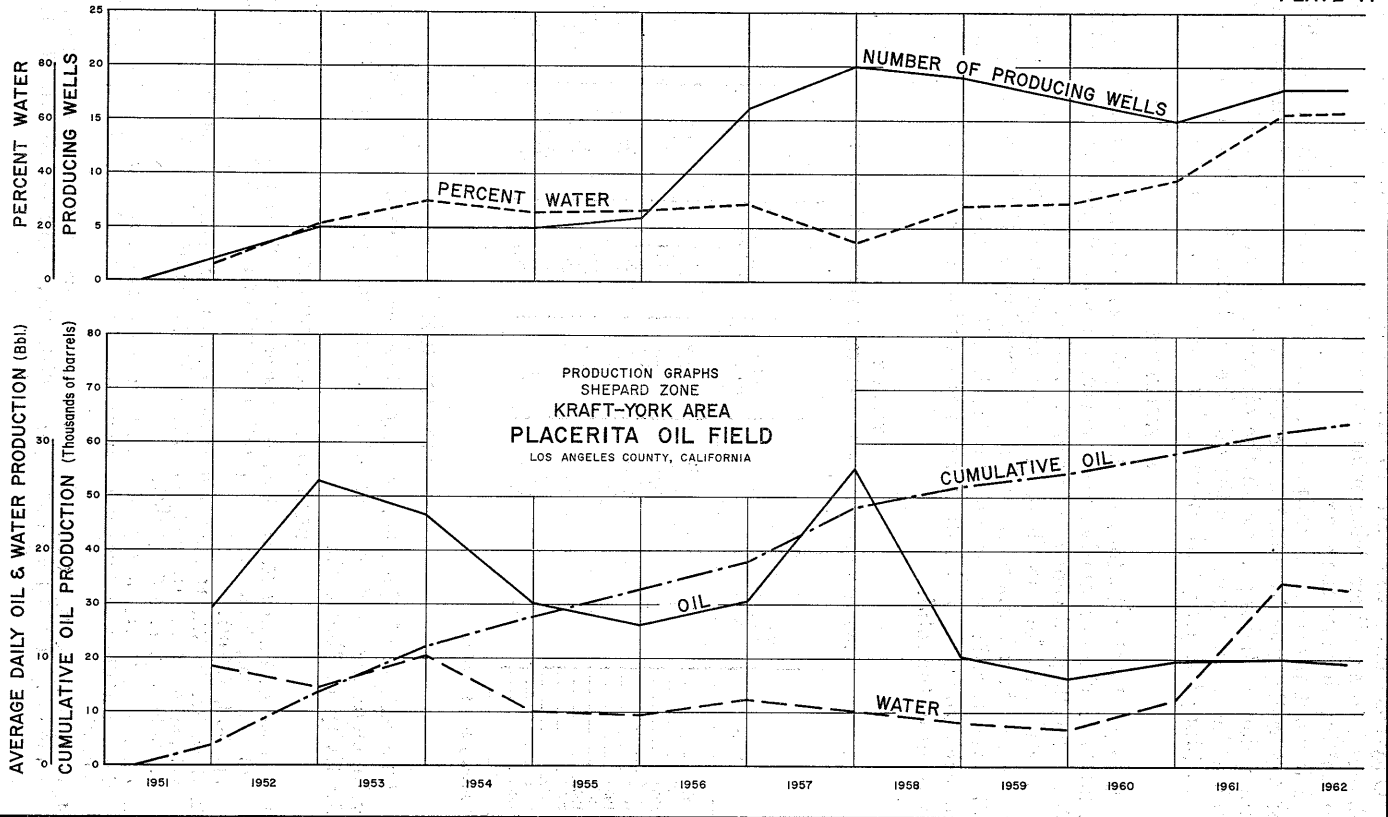
The Shepard zone is the shallowest producing zone within the area and consists of alternating lenses of sand, which range in thickness from 10 to 115 feet, and shale ranging in thickness from 10 to 80 feet. The depth to the top of the zone varies between 410 and 790 feet. Porosity and permeability range from poor to good.

The zone's limits have been fairly well defined in all directions: oil-water interface on the west, and facies changes in all other directions. The present production mechanism is a combination of gravity drainage and gradual edgewater encroachment. Altogether, 20 wells were completed in the Shepard zone and presently 17 wells are still on production.

DRILLING AND COMPLETION PRACTICES

Portable rotary drilling equipment, which was moved over pre-installed 14- to 16-inch conductor casing, was used in the development of the Kraft-York area. In single zone completions, water strings consisting of 8 $\frac{5}{8}$ - or 9-inch casing were cemented over the zone and tested for water shut-off by bailing the hole dry after having drilled out two to four feet below the casing shoe. Then 7 $\frac{5}{8}$ - or 8 $\frac{3}{4}$ -inch holes were drilled through the oil sand and 5 $\frac{1}{2}$ - or 6 $\frac{5}{8}$ -inch liners with 80- to 180-mesh, 2-inch slots were hung through the zone. In dual-zone completions, the same size water strings were cemented over the top zone and water shut-off tests were made through shot holes with formation testers. Five and one-half or 6 $\frac{5}{8}$ -inch liners with 80- to 160-mesh, 2-inch slots were hung through both zones.

In several wells already producing from the Kraft zone, casings were tested for water shut-off through gun perforations above the Shepard zone and then perforated for production.



Clay-base mud was used to drill to the top of the zone and was changed to an oil-emulsion mud after casing was cemented, but prior to drilling through the zone.

Blow-out prevention equipment, which was used on about two-thirds of the wells, was installed after the water string had been cemented but prior to drilling through the oil zone. Two of the wells blew out, one while changing over to the oil-base mud and the other while pulling drill pipe; however, both were easily brought under control.

STATISTICS

The production history of the Shepard zone is shown graphically on Plate IV. The cumulative and yearly totals of oil and water produced from the Shepard zone are shown on Table 2.

The figures for the Shepard zone production of the dual-completion wells are based upon an estimated fraction of the total production. This fraction is proportional to the length of the perforated intervals of each zone. In individual wells the estimate ranges from 25 to 33 percent of the total.

TABLE 2
PRODUCTION STATISTICS—SHEPARD ZONE, PLACERITA OIL FIELD

Year	Number of producing wells	Oil (bbl.)	Water (bbl.)	Percent water	Cumulative production	
					Oil (bbl.)	Water (bbl.)
1951.....	2	3,754	240	6.0	3,754	240
1952.....	5	9,637	2,654	21.6	13,391	2,894
1953.....	5	8,535	3,730	30.4	21,926	6,624
1954.....	5	5,527	1,926	25.8	27,453	8,550
1955.....	6	4,769	1,729	26.6	32,222	10,279
1956.....	16	5,652	2,277	28.7	37,874	12,556
1957.....	20	10,104	1,832	15.3	47,978	14,388
1958.....	19	3,772	1,501	28.5	51,750	15,889
1959.....	17	3,033	1,259	29.4	54,783	17,148
1960.....	15	3,584	2,259	38.7	58,367	19,407
1961.....	18	3,685	6,270	63.1	62,052	25,677
*1962.....	18	2,004	3,520	63.7	64,056	29,197

* January-July inclusive.

CONCLUSION

The extent of the Shepard zone has been determined. Further development does not seem feasible at this time because of the low productivity of the wells.

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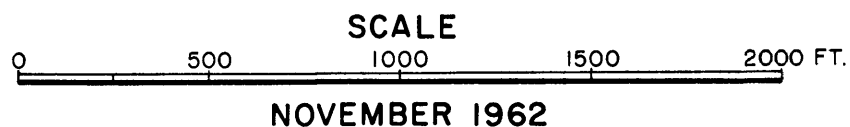
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MAP OF KRAFT-YORK AREA PLACERITA OIL FIELD LOS ANGELES COUNTY, CALIF.

SHOWING
CONTOURS ON TOP OF SHEPARD SAND

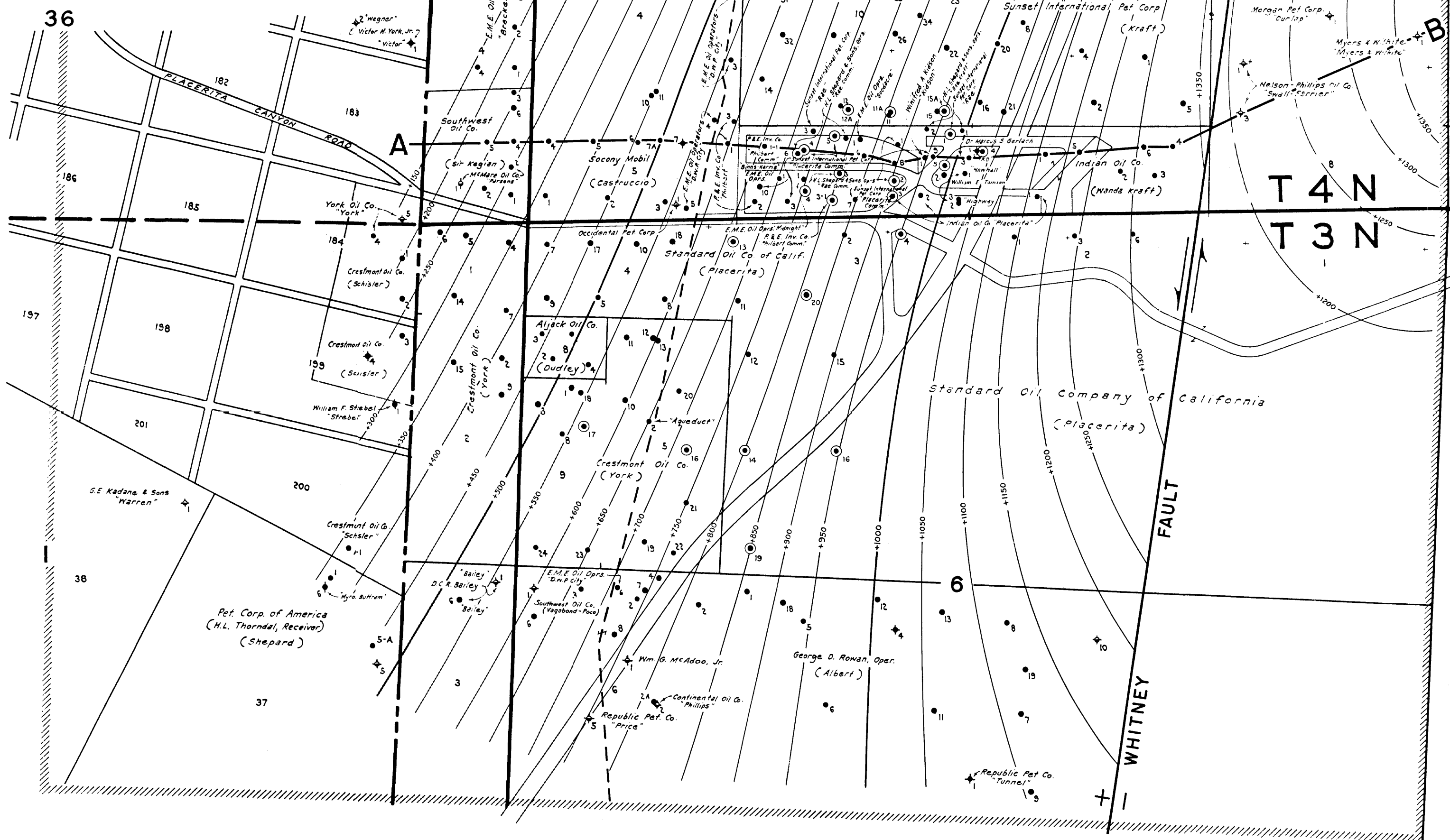
ACCOMPANYING REPORT BY RICHARD B. TUDOR

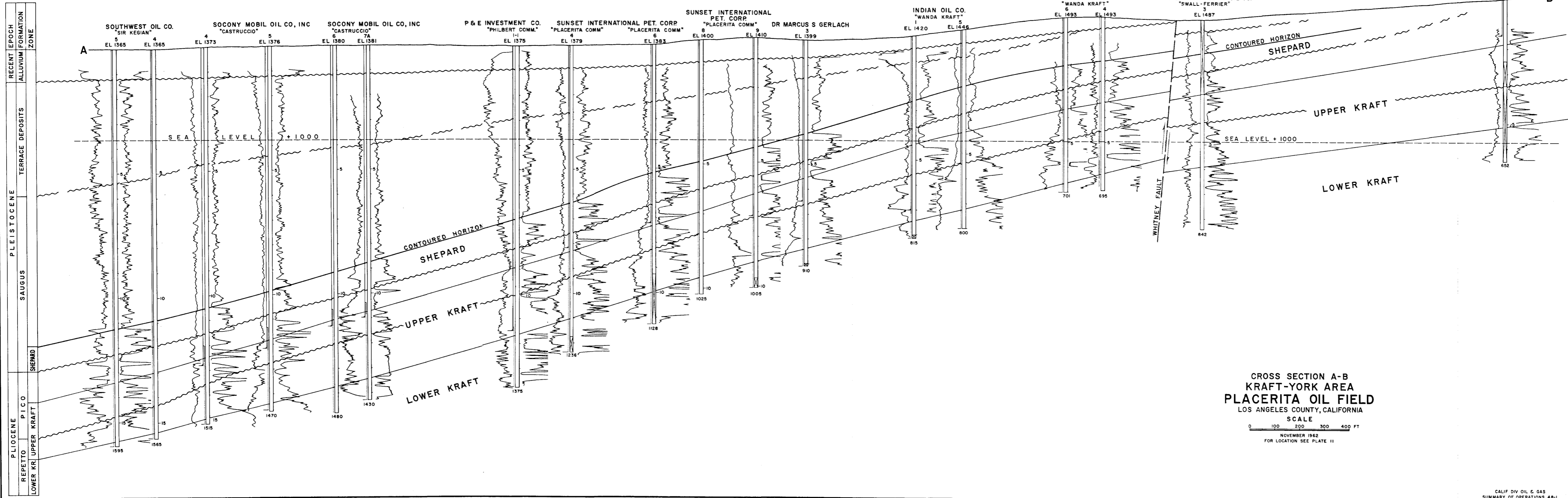
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E. R. MURRAY-AARON, STATE OIL & GAS SUPERVISOR



LEGEND

- ◇ UNCOMPLETED IDLE
 - ◆ UNCOMPLETED ABANDONED
 - COMPLETED PRODUCING
 - ⊙ COMPLETED PRODUCING-SHEPARD ZONE
 - ⬆ COMPLETED IDLE
 - ⬆ COMPLETED ABANDONED
 - ♂ WATER FLOOD
 - ////// FIELD BOUNDARY
 - RANCHO BOUNDARY
- DATUM-SEA LEVEL
CONTOUR INTERVAL 50 FT
- (U.S.L.) UNITED STATES LEASE





CROSS SECTION A-B
KRAFT-YORK AREA
PLACERITA OIL FIELD
LOS ANGELES COUNTY, CALIFORNIA
SCALE
0 100 200 300 400 FT
NOVEMBER 1962
FOR LOCATION SEE PLATE II