

above 600 feet in wells No. "Tunnel" 1 and "Banner" 1 are in the Saugus formation. Attempts to produce from these sands showed that they also contain water. The oil sands below 1000 feet, from which these two wells are producing, are probably in the Pico formation. A large amount of hole is open to production below the water shut-off in both wells and, in the absence of tests, it can not be said whether the water being produced with the oil in these wells is from the oil sand or from another source.

A fault probably exists between well No. "Banner" 2 and the other two wells shown on the section. Well No. "Banner" 2 failed to find the upper and lower sands found in the other wells.

Well No. "Price" 4, structurally on the strike with well No. "Tunnel" 1, found the Pliocene (Pico)-Eocene contact at 1174 feet. Based on correlation, the Pliocene-Eocene contact should have been found in well No. "Tunnel" 1 at 1366 feet.

Production

Republic Petroleum Company, Ltd., well No. "Price" 4, the only well in the Newhall field that is known to be producing from the Eocene formation, yields an oil of 27-degree A. P. I. gravity. All the other wells in this area produce oil averaging 18-degree A. P. I. gravity from the Pico formation.

During 31 days in July, 1935, four wells produced a daily average per well of 3.9 barrels of 20-degree oil, cutting 40 per cent water. In addition, well No. "Price" 4 produced a daily average of 3.7 barrels of 27-degree oil and 2.5 barrels of water during the same month.

The following commercial analyses were made by Prutzman:¹

A "Price" Well

Gravity of crude sample, degrees Baume-----	17.2	
Stove oil, 33 degrees Baume, per cent-----	16.0	
Fuel distillate 24.9 degrees Baume, per cent---	24.5	}slop distillate 19.8 degrees—
Reduced stock—solid, per cent-----	43.5	
Asphalt "D," per cent-----	16.0	or 56.2 lb. per bbl.

100.0

Republic Petroleum Company, Ltd., well No. "Fink" 1:

(Light green oil found at about 1100 feet and credited by Prutzman to well No. "Fink" 2.)

Gravity of crude sample degrees Baume-----	30.6	
Engine distillate, 52 degrees Baume, per cent--	18.6	
Kerosene, 42 degrees Baume, per cent-----	10.0	
Stove oil, 33 degrees Baume, per cent-----	22.0	
Fuel distillate, 30.7 degrees Baume, per cent--	16.6	}slop distillate 23.1 degrees—
Reduced stock—solid, per cent-----	24.8	
Asphalt "D," per cent-----	8.0	or 28.1 lb. per bbl.

100.0

PLACERITA CANYON AREA

The Placerita Canyon area lies about two miles east of the town of Newhall in the NW. $\frac{1}{4}$ of the NW. $\frac{1}{4}$ of Sec. 6, T. 3 N., R. 15 W., and

¹ Prutzman, Paul W, Petroleum in Southern California: Calif. St. Min. Bur Bull. 63, p 192, analysis No. 2462, p. 194, analysis No. 4589, 1913

the NE. $\frac{1}{4}$ of the NE. $\frac{1}{4}$ of Sec. 1, T. 3 N., R. 16 W. Four wells have been drilled in this area, all starting in and obtaining their production from the monoclinical beds of the Saugus formation which dip to the northwest.

History of Development

The first well to be drilled in this area was Equity Oil Company well No. "Daisy" 1, on the Nash & McDougal lease. The well was spudded January 1, 1920, and drilled to 975 feet after cementing 8 $\frac{1}{4}$ -inch casing at 853 feet. A string of 6 $\frac{1}{4}$ -inch casing with perforated on bottom was landed at 975 feet and the well pumped for six weeks. During this time the well produced a very heavy oil, almost too heavy to pump, and a large amount of water. Beginning in May, 1921, the 6 $\frac{1}{4}$ -inch casing was pulled and the hole deepened to 1332 feet. Solid 6 $\frac{1}{4}$ -inch casing was then cemented at 1228 feet and the hole drilled ahead to 1394 feet. A string of 4 $\frac{1}{2}$ -inch casing, with perforated on bottom, was landed at 1392 feet and the well placed on production. No information is available on the initial production, but during October, November and December, 1925, the well produced an estimated daily average of 6 barrels of 14-degree gravity oil, which was used for fuel.

Equity Oil Company well No. "Park" 1 was spudded October 10, 1924, and drilled to 1100 feet, after landing 12 $\frac{1}{2}$ -inch casing at an unrecorded depth and cementing 10-inch casing at 998 feet. The well passed through several ownerships during which 8 $\frac{1}{4}$ -inch casing was cemented at 1150 feet, 6 $\frac{1}{4}$ -inch casing cemented at 1179 feet, obtaining a water shut-off, and the well completed with a 4 $\frac{1}{2}$ -inch perforated liner landed at 1402 feet. No information is available as to the completion date or the amount of the initial production, but during 71 days in October, November and December, 1925, the well pumped a daily average of 10 barrels of 14-degree gravity oil, which was used for fuel.

Wilhoite & McCoy well No. "Nash" 2 was spudded during 1925 and drilled to 1050 feet, when work was suspended. The hole stood in this condition until entered in August, 1932, by Naval Reserve Oil Corporation. The new owner deepened the well, cementing 11 $\frac{3}{4}$ -inch casing at 1164 feet and landing 8 $\frac{3}{8}$ -inch perforated liner on bottom at 1598 feet. The well was placed on the pump, but produced mostly water. An electrical water locator was run and showed water entering the hole from formations between 1530 and 1540 feet. The 8 $\frac{3}{8}$ -inch liner was then pulled and the hole plugged with cement from 1598 to 1495 feet, the 8 $\frac{3}{8}$ -inch perforated liner was landed at 1495 feet, and the well placed on production. The first available production records show that this well produced 13 days during May, 1934, at a daily average rate of 14 barrels of 12-degree gravity oil and 2 barrels of water.

W. L. Alexander well No. "Alexander" 1 was spudded November 24, 1932, and drilled to 1563 feet, using rotary equipment. After drilling to 1366 feet, 10 $\frac{5}{8}$ -inch casing was cemented in shale at 1320 feet. Bailing tests of the shut-off indicated that water was entering the hole from below the point of shut-off. The hole was drilled ahead to 1563

TABLE IX
PLACERITA CANYON WELLS—T. 3 N., R. 15 W. and T. 3 N., R. 16 W., S. B. B. and M. ▼

Present well No.	Present operator or owner	Drilled by	Original well No	Sec.	Twp (N.)	R (W)	Elevation (A*) (ft)	Year drilled	Original depth (ft)	Maximum depth (ft)	Depth of water shut-off (ft)	Present status	Initial production (bbl. per day)	Remarks
T-1	Nile Oil Co., Ltd.....	Equity Oil Co.....	"Daisy" 1	6	3	15	A-1,398	1920	975	1,394	853	Producing	?	
T-2	Nile Oil Co., Ltd.....	Equity Oil Co.....	"Park" 1	1	3	16	A-1,422	1921-25	1,402	-----	1,179	Producing	?	
T-3	Nile Oil Co., Ltd.....	G. S. Wilhoite and A. G. McCoy.....	"Nash" 2	6	3	15	A-1,474	1925-32	1,598	Pgd. 1,495	1,164	Producing	?	
T-4	Nile Oil Co., Ltd.....	W. L. Alexander.....	"Alexander" 1	1	3	16	A-1,378	1932-33	1,563	Pgd. 1,509	1,435	Producing	19	11% A. P. I., 5% cut.

*A—Aneroid.

feet and an 8 $\frac{3}{8}$ -inch combination liner landed at 1563 feet and cemented through perforations at 1434 feet. After cleaning out to bottom, bailing tests indicated the presence of bottom water. Cement was pumped in through drill pipe and the hole plugged under pressure from 1563 to 1540 feet and bridged from 1523 to 1509 feet. The well was completed September 1, 1933, and averaged 19 barrels of 11-degree gravity oil and one barrel of water per day during the first 30 days.

Table IX lists the wells and shows the original and present ownership.

Subsurface Conditions

Section I-I, Plate IV, is a dip section and illustrates the general subsurface conditions found in the Placerita Canyon area. The wells are drilled into and secure their production from the cross-bedded poorly assorted sediments of the Saugus formation. Water sands are found in immediate contact with the oil sands and their identification and exclusion has been difficult.

Production

While producing an average of seventeen days during April, 1935, the four wells pumped at a daily average rate per well of 8.9 barrels of 11.8-degree A. P. I. gravity oil, cutting 18.8 per cent water.

SCHIST AREA

The Schist area lies about four and one-half miles east of the town of Newhall in Placerita Canyon. About twelve wells are reported to have been drilled in the NW. $\frac{1}{4}$ of Sec. 3 and the NE. $\frac{1}{4}$ of Sec. 4, T. 3 N., R. 15 W.

This area, while not productive, is of particular interest because of the occurrence in metamorphic rocks overlying the granite of the San Gabriel Mountains of a light gravity oil, variously reported as 43 and 50 degrees Baume. Commenting on this quality of the oil and its occurrence, Kew¹ states: "The low specific gravity of this oil, which is estimated to be close to 0.7777 (50 degrees Baume), its water-like appearance and odor of kerosene, and its unique occurrence in crystalline rocks have been of considerable interest ever since the wells were drilled. None of the wells was capable of producing over three barrels of oil a day. With this oil a great deal of water was pumped, and at present very little oil comes up with the water."

The wells that obtained oil showings in the schist were drilled just south of the Placerita Canyon fault² The oil is thought to have migrated^{2,3} along the fault and into the metamorphic rocks from younger beds to the north of the fault.

Table X lists the wells drilled in this area, with such data as are available.

The Schist area and wells have not been shown on Plate I.

¹Kew, W. S. W., *Geology and Oil Resources of a part of Los Angeles and Ventura Counties*: U. S. Geol. Survey Bull. 753, pp. 155-156, 1924.

²Brown, Arthur B., and W. S. W. Kew, *Occurrence of Oil in Metamorphic Rocks of San Gabriel Mountains, Los Angeles County, California*: Bull. of Am. Assoc. of Pet. Geologists, Vol. 16, No. 8, pp. 777-785, fig. 2, Aug., 1932.

³Eldridge, G. H., and Ralph Arnold, *The Santa Clara Valley, Puente Hills, and Los Angeles Basin Oil Districts, Southern California*: U. S. Geol. Survey Bull. 309, pp. 100-101, 1907.

TABLE X

SCHIST AREA WELLS—Sec. 3 and 4, T. 3 N., R. 15 W., S. B. B. and M.

Company	Well No.	Sec.	Twp (N.)	Range (W.)	Year drilled	Depth (ft.)	Remarks
Freeman & Nelson White Oil Co.....	1	4	3	15	1899	520	Average 2½ bbl. per day; used for fuel.
Freeman & Nelson White Oil Co.....	2	4	3	15	1900	1,030	Drilled by Clark & Sherman; traces of oil only.
Freeman & Nelson White Oil Co.....	3	4	3	15	?	457	Traces of oil only, abandoned.
New Century Oil Co.....	1	4	3	15	1900-01	720	"Several" barrels per day, 43° Baume; lasted only a few days.
New Century Oil Co.....	2	4	3	15	1900-01	700	Traces of oil at 700'.
New Century Oil Co.....	3	4	3	15	1901?	900	Dry hole
New Century Oil Co.....	4	4	3	15	1901?	1,000	Small showing of white oil.
Pioneer White Oil Co.....	1	3	3	15	1901	1,270	NE ¼ of SW. ¼, Sec 3; very little white oil, lots of water, and some gas; also known as Freeman & Elston well
San Miguel Oil & Development Co.....	1	3	3	15	1902	1,000	NE ¼ of NW. ¼ of Sec. 3, traces of white oil.
Harrison Well.....	1	3	3	15	1905	2,100	Dry hole; ½ mile E of San Miguel well.
Los Angeles & Kern Oil Mining Co.....	1	4	3	15	1912	450±	Drilling at 450' in 1912; results unknown