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THE HOBBS FIELD

and

OTHER OIL AND GAS AREAS

LEA COUNTY, NEW MEXICO

(Preliminary Report)

By

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Socorro, N. M.

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INTRODUCTION

The bringing in of State No. 1 well in Sec. 9, T. 19 S., R. 38 Z. by the Midwest Refining Company in June, 1928, started a drilling campaign which resulted in the development of the Hobbs field. On January 1, 1931, this pool had a rated potential production of 1,081,575 barrels of oil per day with large additional amounts of gas and some oil in upper beds
shut oft.

The Hobbs field is located only a few miles from the eastern line of the state (see Plate I) on the great Llano Estacado of New Mexico and Texas. The surface is relatively *as flat as a floor", there being less than 100 feet difference in the surface elevation of the more than 130 wells so far drilled in an area some 7 miles long and 3 miles wide.

HISTORY

The commercial development and production of oil in southeastern New Mexico dates back to the opening of the Artesia pool in Eddy County, west of Lea County, in 1924. Little attention was paid to Lea County at that time, probably due largely to the fact that the surface gave little evidence as to deep seated geologic structure. With the development of the large fields in Winkler County, Texas,

A general report on the oil and gas resources and. possibilities of New Mexico by Dean E. Winchester, is in preparation and will be published by the New Mexico Bureau of Mines and Mineral Resources late in 1931.)

to the south, however, eyes were turned to the heretofore uninviting area northward in Lea County, and extensive studies were undertaken to determine whether or not the general north-south trend evident in the Texas fields carried through into New Mexico. The drilling which followed these studies resulted in the discovery in 1927 of 90,000,000 cu. ft. of gas by the Texas Production Company in its No. 1 Rhodes well in the Jai area of Lea County. Considerable scattered wildcatting was commenced farther north.

In addition to studying in detail the rock formations at their outcrop and the meager evidences of geological structure in the area, the Midwest Refining Company, among others, made geophysical surveys with both magnetometer and torsion balance. These investigations furnished evidences of a structural high in the vicinity of the present town of Hobbs, then many miles from the nearest railroad and without highway connections. On October 12, 1927, the Midwest spudded in what was to be the discovery well of the great Hobbs pool. Obviously this well, located near the NE corner Sec. 9, T. 19 S., R. 38 E., was thought to be located at the most favorable place, for at that time the Midwest was essentially the only company interested in prospecting this particular area. In June, 1928, at a depth of 4065 feet, the well showed for 200 barrels of 32.50 Baume oil, having had numerous shows of gas and some oil at higher levels. The well was given a production test and then drilled a little deeper and tested again. By the first of December, 1928, the hole had been carried to 4214 feet, where it tested an average of around 700 barrels of oil per day. At 4245 feet, however, sulpher water was encountered which nearly ruined the well. The well was finally plugged back to 4215 feet. At first it yielded 100 barrels per day, but later the production increased somewhat.

Several other wells were started in the immediate vicinity and on June 10, 1929, before any additional wells were brought in, the Humble Oil and refining Company spudded their No. 1 well on the Bowers permit in Sec. 30, T. 18 S., R. 38 E., more than 3 miles to the northwest of the discovery well. This well, which was located and drilled at the time for apparently no other reason than to satisfy an expiring land agreement, was completed eight months later at a total depth of 4106 feet for the first well in the area of large production. (See maps, Plates II and III) Humble Bowers No. 1 well is reported to have had 12,000,000 cu. ft. of gas at 2820 feet, 438 barrels of oil at 3368 feet, 50,000,000 cu. ft. of gas at 3684 feet, and 9720 barrels of oil at 4108 feet.

A well of this character naturally started an active campaign of development, and over twenty oil companies, most of which are major companies, have taken part in the development of the field. Starting without rail or pipeline connections, the field is now served by the Texas & New Mexico Railroad which connects Covington, Hobbs, Eunice, and :al with Monahans on the Texas-Pacific Railroad to the South in Texas, as well as three 8-inch pipe lines. Out of the plains have grown the adjacent towns of Hobbs and New Hobbs, busy, boom towns which had a population in the summer of 1930 of perhaps 12,000 people. The original cable tool outfits for drilling soon gave way to rotary equipment, and today the field presents an orderly alignment of steel derricks and permanent field camps.

With more than 130 wells completed, showing a rated potential of over 1,000,000 barrels per day, the limits of production for the Hobbs field are as yet established at only a few points by edge or outside wells. The development of so large a potential production together with the lack of pipeline facilities and railroads led the producing companies and officials of the State of New Mexico, which is an important landowner in the field, to adopt a proration agreement in June, 1930, and in July the field began production on a restricted basis. Since that time production has been restricted to about 30,000 barrels of oil per day, which has been the market outlet of the field. Up to January 1, 1931, there had been produced and marketed from the Hobbs pool 6,809,746 barrels. The field is by no means completely drilled, as will be noted by examination of the map, Plate II.

GEOLOGY

The only rock occurring at the surface in the vicinity of Hobbs is very recent Tertiary "Caliche" which has a thickness of 30 to 50 feet. This formation rests unconformably on Triassic) "Red Beds", sandstone, shale and some limestone, having a thickness of approximately 1500 feet.

The Permian, which underlies the Triassic, is divisible into two parts. The upper part is composed largely of salt above the anhydrite below, while the lower portion of the formation, as far as revealed by the drill, consists primarily of limestone.

The following generalized section of the Permian is taken from logs of wells drilled within the Hobbs field:

Upper Permian	Feet
Anhydrite	100-200
Salt, with some anhydrite, limestone, shale and sandstone	900-1000
Anhydrite, with thin sandstone, limestone and shales; several important gas and oil zones. (approximately)	1200
Lower Permian	
Principally limestone varying in density and porosity; includes the principal productive zone of the field	300+

Logs of two wells in the Hobbs field are given below to show the general character of the formations penetrated by the drills:

Midwest Refining Company No. 1 State Well

Casing Record:
20" - 255'
15*" - 731*'
12*" - 1517'
10" - 3055' '
8 1/4" - 4040'

New Mexico
Lea County
Midwest Refining Company
No. 1 State
Sec. 9, T. 19 S., R. 38 E.
Elevation: 8800' Commenced: 10/12/27 Completed: 4/25/29

Formation	Bottom
Caliche	50
Hard yellow send - water	57
Water sand	62
Light yellow settling sand	80
Yellow sand	90
quick sand.	100
Sand and gravel	143
Red Shale and gravel	150
Red shale and gravel, shelly	170
Red shale	365
Light red shale	400
Red shale	440
Streaks of sand & shale	460
Red shale	780
Brown shale	790
Light red shale	850
Brown shale	975
Light Brown shale	985
Red shale, lighter in color	990
Red shale	1090
Brown shale	1104
Red shale	1150
Light red shale	1185
Brown shale	1230
Sandy red shale - water 1235'	1240
Red shale	1250
Reddish gray sand	1260
Sand and streaks of red shale	1275
Sandy red shale	1280
Red shale	1290
Grayish sand	1300
Red shale	1310
Sandy red shale	1325
Red shale	1330
Gray sand	1380
Sandy shale	1425
Red shale	1520
Red Bandy shale	1533
White lime and anhydrite	1546
Red shale	1560
Anhydrite and Lime	1570
Gray Lime	1580
Anhydrite	1625
Salt and anhydrite	1635
Anhydrite, red shale and salt	1660
Red salt and anhydrite	1750
Salt, anhydrite and Lime	1780
Anhydrite and salt	1875
Salt, Anhydrite and Lime	2055
Salt and Lime	2210
Salt	2425
Blue shale	2450
Salt	2460
Anhydrite	2590
Red shale	2625
Anhydrite	2675
Anhydrite - hole paving - small show GAS	2700
Red beds - caving	
Gray Limy Shale and anhydrite	2745 2800
Anhydrite - stronger GAS	2835
Anhydrite	2865
Anhydrite. and Lime shells. GAS blew tools 40' up hole	2880
Anhydrite and Lime Shells - more GAS	2887
Anhydrite and Lime Shells - more GAS	2915
Anhydrite	2920
Gray sandy shale and anhydrite	2960
Lime and anhydrite	2985

Midwest Refining Company No. 1 State W311 (continued)

Formation	Bottom
Lime shells and anhydrite	3023
Anhydrite	3050
Anhydrite and lime shells	3070
Hard gray lime shells	3080
Anhydrite and Lime	3140
Anhydrite	3175
Anhydrite and lime	3180
Pocket of GAS and show of OIL	3182
Limy anhydrite	3200
Lime and anhydrite	3210
Sandy lime - show GAS & OIL	3222
Anhydrite and lime	3235
Brown shale	3243
Anhydrite and lime	3270
Anhydrite	3280
Brown sandy shale	3295
Gypsum and anhydrite,	3300
Anhydrite and dime	3380
Anhydrite	3415
Anhydrite and show brown shale	3465
Anhydrite and lime	3490
Anhydrite	3588
Hard gray lime - show OIL	3590
Anhydrite and lime shells	3640
Anhydrite and gray lime	3662
Hard gray lime - show OIL	3670
Anhydrite and Lime shells	3697
Hard gray lime	3708
Hard *gray* lime and little anhydrite	3725
Hard gray lime and dark shale	
Hard gray lime and little anhydrite	
Blue lime	3860
Blue and brown lime	3898
Lime	3929
Blue and gray lime	3957
Lime	4010
Greenish gray sandy lime - show OIL increase 4022 OIL 4035	4035
Hard limo - more GAS	4050
Lime - more GAS	4055
Soft sandy formation - More OIL & GAS PAY	4065
Softer formation	4076
Light brown dolomite	4080
Light brown hard dolomite	4084
Dolomite	4100
Lime	4111
Brown lime	4130
Brown lime and sand	4134
Sandy shale	4140
Gray lime	4158
Light gray lime	4165
Porous gray lime	4176
Brown shale	4195
Brown lime - increase OIL 4203	4207
Lime T.D.	4245

Humble Oil and Refining Company B. A. Bowers No. 1 Well

Casing Record:
121" - 204'
9-5/8" - 2750'
6-5/8" - 3952'

New Mexico
Lea County
Humble Oil and Refining Co.
B. A. Bowers No. 1
Cent. NE1/4 SE1/4 Sec. 30, T. 18 S., R. 38 E.
Elevation: 3652'
Commenced: 6/10/29
Completed: 2/6/30

Formation	Bottom	Formation	Bottom
Cellar	20	Red shale, anhydrite, white lime end gypsum	1485
Sand rock	55	Anhydrite and lime	1503
Sand and caliche	96	Anhydrite, sandy lime and red shale	1513
Sand Rock	97	Anhydrite	1552
Flint and sand	102	Salt	1553
Broken flint	112	Anhydrite and green shale	
Sand rook	113	Salt	1660
Shale and lime shells	165	Red sticky shale and anhydrite	1581
Sand and gravel	200	Anhydrite	1584
Red Rock	204	Salt	1595
Red Beds	230	Red shale	1630
Red shale	440	Red shale and streaks anhydrite	1693
Sand and water	460	Hard Gray Lime	1659
Red Shale	480	Salt	1681
Shale and boulders	540	Potash	1690
Sticky shale	630	Anhydrite	1695
Hard sandy shale	731	Red shale and salt	1721
Red beds	915	Anhydrite and Lime	1729
Hard Sandy shale	994	Salt - streaks Lime	1759
Rook	1009	Anhydrite	1790
Red Beds	1100	Red salt	1800
Red beds and sticky hard sand	1123	Anhydrite	1812
Red beds and sandy Lime	1143	Salt	1825
Hard reds	1163	Streaks salt, anhydrite and lime	1870
Hard sandy Lime	1183	Anhydrite	1910
Red beds and streaks sandy Lime	1275	Lime	1920
Red beds and Lime	1335	Salt	1930
Hard sand shells, red and sandy	1345	Red shale and salt	1955
Sandy lime and red beds	1375	Salt and anhydrite	1975
Sandy grey lima	1416	Anhydrite	2020
Hard red rock, sandy lime and shale	1425	Salt	2030
Hard sandy shale, lime shelly and sand	1440	Anhydrite	2050
Lime shells, anhydrite and red shale	1450	Salt	2064
		Anhydrite salt and lime	2074
			2095

Humble Oil and Refining Co. Bowers No. I Well (Continued)

Formation	Bottom
Anhydrite	2105
Salt	2110
Anhydrite	2116
Red and white salt	2265
Anhydrite	2300
Red sandy anhydrite green sand - GAS 2311'	2315
Lime anhydrite and sand	2330
Lime shaly anhydrite and sand	2345
Broken lime	2415
Sticky shale	2435
Shale	2439
Hard lime and streaks shale	2470
Anhydrite and broken lime	2515
Anhydrite	2540
Red Beds	2555
Anhydrite	2630
Broken anhydrite, red shale	2645
Anhydrite and gypsum	2663
Gray sand - slight OIL show	2670
Anhydrite salt and red shale	2677
Anhydrite and red shale	2701
Anhydrite	2708
Anhydrite and sandy shale	2739
Anhydrite	2755
Anhydrite and lime	2761
Anhydrite and red rock	2764
Anhydrite - GAS	2772
Anhydrite and lime	2780
Hard anhydrite	2786
Anhydrite	2790
Red shale	2792
Anhydrite	2801
Lime, anhydrite, red shale. Inorease GAS 2810-20	2621
Hard anhydrite	2824
Lime and anhydrite	2840
Anhydrite	2870
Anhydrite and Lime	2894
Anhydrite - breaks 2915	2908
Anhydrite and Lime	2915
Anhydrite	2930
Anhydrite and lime, gypsum	2940
Hard brcken anhydrite	2973
Lime, shale and anhydrite	2988
Lime shale and broken anhydrite	3004
Anhydrite	3024
Sandy shale and streaks anhydrite	3045
Shale and anhydrite	3054
Lime, shale and anhydrite	3070
Anhydrite and shale	3121
Gypsum and lime, hard	3127
Gypsum and anhydrite	3138
Anhydrite	3143
Sand and shale - show GAS 3143-49	3147
Lime anhydrite, shale	3165
Broken anhydrite	3186
Anhydrite and lime	'3201
Hard anhydrite	3222
Anhydrite, gypsum, shale	3245
Anhydrite	3255
Anhydrite, streaks shale and lime	'3285
Anhydrite and shale breaks Increase OIL and GAS 3296-3300	3310
Anhydrite, shale, sand and lime	3339
Anhydrite and sandy shale	3359
Anhydrite	3384
Anhydrite and shale	3397
Anhydrite	3402
Hard Anhydrite	3410
Anhydrite, shale and sand	3438
Hard anhydrite	3452
Anhydrite and broken sandy shale	3480
Anhydrite, sand and shale	3526
Anhydrite and broken sandy shale	3547
Anhydrite and sandy shale	3577
Anhydrite and streaks broken sandy shale	3600

Humble Oil and Refining Company B. A. Bowers No. 1 Well
(continued)

Formation	Bottom
Hard anhydrite	3625
Anhydrite and lime	3630
Lime	3669
Lime and anhydrite	3682
Hard Lime	3688
Bend - 50 M. GAS	3684-873689
Sand and sandy shele	3690
Broken lime and sandy shale	3695
Hard lime	3701
Sandy anhydrite	3703
Cave	3716
Hard anhydrite	3725
Anhydrite	3737
Hard sand - increase GAS 3737-40	3740
Anhydrite	3743
Hard anhydrite	3747
Anhydrite	3785
Hard anhydrite	3767
Anhydrite	8780
Dime and anhydrite	3793
Lime	3803
Anhydrite - cored 11'	3818
Cored anhydrite	3843
Lime and anhydrite	3854
Anhydrite	3863
Lime - cored 3888-3907 S.L.M.	3907
Lime cored	3919
Coring	3963
Coring Lime T.D.	4106

GEOLOGIC STRUCTURE

The surface beds in the Hobbs field give no indication of the anticlinal structure which exists in the Permian rocks below. Geophysical instruments were used to locate the structural high before drilling took place, but now, with more than 130 wells completed, it is possible to map the subsurface structure with considerable certainty. Some indication of the folding is furnished by the position of the top of the salt in the various wells, but this surface does not reflect accurately the structure below.

The so-called "Brown Lime" which occurs in the anhydrite beds some 300 feet below the salt forms a marker which can be identified in practically all wells, and this bed appears to indicate fairly well the structure below, although not exactly. Without a very careful and complete study of well cuttings this "Brown Lime" is practically the only bed which can be correlated over the field with definiteness. The structure contours shown on Plate II, are drawn on the top of the "Brown Lime".

To date only four wells have been drilled outside of the productive zone, and only one of the producers - Ohio Oil Company, State No. 1, NE corner SE1/4 SW1/4 Sec. 9, T. 19 S.,R. 38E. may be considered an actual edge well. Because of this, the configuration of the structure beyond the border of production is not known except at a very few points.

The structure as shown by the "Brown Lime" is a more or less regular northwestward-trending anticlinal up lift with its high point in Sec. 32, T. 18 S., R. 38 B. (See Plate II) The productive area is widest in the vicinity of the highest part of the structure. Minor irregularities of structure are indicated by the ccntours on the map. The total amount of closure is still undetermined, although the wells to the north in Sec. 7, T. 18 S., R. 38 E. and to the east in Sec. 35, T. 18 S., R. 38 E., indicates a closure in excess of 300 feet at these points. Wells to the southwest and west have proven less than 200 feet of closure, and drilling in those directions has net even reached the limit of production except in the case of Ohio No. 1 in Sec. 9, T. 19 S., R. 38 E. Present developments to the northeast indicate a nosing in Sec. 28, T. 18 S.,R. 38 E. which may add a oonsiderable area of production to the area already proven, while much is yet to be learned from future drilling along the axial trend to the northwest beyond the producer in Sec. 24, T. 18 S., R. 37 E.

LAND OWNERSHIP

Present development in the Hobbs field indicates a probable total productive area of approximately 8300 acres, of which 400 acres is United States Government land, approximately 3050 acres is owned by the State of New Mexico, and approximately 4850 acres is privately owned. Operating leases on these lands are distributed among more than twenty operating companies.

PRODUCTION

Present production of the Hobbs field is coming from a lime zone consisting of alternating hard and porous beds and having a total thickness of about 200 feet. It is estimated that a total average thickness of only about 50 feet of this zone is actually furnishing the oil produced from the field.

It is conservatively estimated that the present productive zone in the lower Permian will ultimately yield at least 150,000,000 barrels of oil. With proper handling of wells and the exploitation of other known productive horizons this amount of oil may easily be doubled. Enormous quantities of gas are also present in the field and will probably some day be utilized both for supplying commercial markets and for assisting in forcing more oil from the ground. All productive wells flow naturally.

The story of the day-by-day production of Humble Bowers No. 1 well for the period prior to proration is about the only record of practically unrestricted production and this record is, therefore, given below. This record shows practically uniform production during the entire period:

Production of Humble Bowers No. 1 Well

1930		1930	
May 9	7476 barrels	June 1	7442 barrels
10	7277 "	2	7638 "
11	7262 "	3	7335 "
12	7271 "	4	7341 "
13	7271 "	5	7438 "
14	7603 "	6	7200 "
15	7558 "	7	7292 "
16	7647	8	7432 "
17	7235 "	9	7490 "
18	7598 "	10	7360
19	7272	11	7402
20	7364	12	7329 "
21	7067 "	13	7335 "
22	7374 "	14	7387 "
23	7610 "	15	7345 "
24	7286	16	7428 "
25	7346 "	17	7565 "
26	7425 "	18	7371
27	6979 "	19	7351 "
28	6913 "	20	7318 "
29	7043 "	21	7264 "
30	7323 "	22	7278 "
31	7392 "	23	7562 "
		24	7216 "
		25	7292 "
		26	7185 "
		27	6976 "
		28	7219 "
		29	7289 "
		30	7210 "

Within the field the size of wells varies greatly, and it is noteworthy that some of the largest wells are located well dawn off the top of the structure. The production map (Plate III) is designed to show by patterns the areas yielding the most prolific wells and to suggest the approximate size of wells that may be expected in the :various parts of the field. The largest area yielding wells having a capacity of over 15,000 barrels per day is located in Sees. 29 and 30, T. 18 8., R. 38 E. rather than in Section 32 on the structural high. This area includes the largest wells so far completed in the Hobbs pool. Two other areas of large production - one in Secs. 33 and 4 just west of the town of Hobbs and the other in Sec. 5, T. 19 S., R. 38 E. - are shown.

The Hobbs pool, on January 1, 1931, had a rated potential production of 1,081,575 barrels of oil par day. Under proration by mutual agreement between the operators and the State of New Mexico the total marketed production of the field at this time was approximately 3 per cent of the rated potential. Inasmuch as the rated potential of the field is based on a very short test of each well, it is practically certain that if the field were allowed to produce to capacity the rated potential would be equalled for only a few days at most. Production from the present wells after a period of several months would perhaps not exceed one-half of the rated potential. Unrestricted production, even if marketable, would quite probably result in the bringing in of water, the drowning of wells and the pocketing of oil. As a result the total amount of oil which the field should produce would be materially decreased and the gas resources of the area would be largely dissipated.

THE OIL

The oil from the present producing zone in the Hobbs pool has a gravity of about 37° Baume. The following analysis was furnished by the U. S. Geological Survey:

Analysis of oil sample from Rumble Bowers No. 1 Well

Gravity of Crude	.37 0° API
Centrifuge: B. S., water and mud	0 45%
Sulphur content	1 57%
Universal Saybolt viscosity at 100 deg. F	45 secs.

DISTILLATION (AIR): First drop.....100° F.

Up to 392 deg. P.	39.4% -	58.2 deg.API
392 deg. F. to 482° F.	12.3% -	36.5 " "
482 deg. F. to 527° F.	8.2% -	31.0 " "

VACUUM DISTILLATION AT 40 MM:

Up to 392 deg. F.	1.3%
392° F. to 482° F.	7.2%
482° F. to 527° F.	3.3%
527° F. to 572° F.	4.21%

RESDIUM 24.2%
Base of Crude..... Asphaltum

DRILLING AND PRODUCTION METHODS

During the early stages of development in the Hobbs pool standard cable drilling equipment was used, but the high gas pressure in zones above the present producing oil zone caused the change to rotary equipment now universally used.

Drilling practices, equipment, costs, etc. in the Hobbs pool are discussed in considerable detail by L. G. E. Bignell in an article entitled "Operating Conditions in the Hobbs Pool" published in the Oil and Gas Journal, July 31, 1930, page 58.

In order to properly handle the relatively high pressures (1200-1400 lbs.) found in the gas zone above the main oil production, it has been found necessary to use exceptionally heavy mud mixtures in drilling the wells. This material cosh about $55 per ton, approximately 200 tons being required for each well. According to Bignell, the casing practice is to yet about 200 feet of surface pipe (151-inch), cementing its full length as well as the bottom of the cellar; the next string (9 5/8-inch) is set and cemented at about 2750 feet; then at about 4100 feet a string of 7-inch pipe is set and cemented. After the drilling is completed a string of 3-inch tubing is run to within about 15 feet of the bottom of the hole. The following table taken from Bignell's report shows the average cost of drilling a well in the Hobbs pool in its early history. The cost of later wells may have been somewhat less. These figures do not include the cost of permanent equipment such as boilers, rotary equipment, slush pumps, tools
camp, etc.

Average Cost of Equipment and Drilling Wells, Hobbs Pool

Excavation for pit and cellar	$ 600
Concrete for piers and cellar	500
122-foot high steel rotary derrick	2,100
Derrick sills, lumber and galvanized iron	2,000
Derrick erection	800
Hauling, total	3,700
1,500-bbl. tank for fuel oil	1,000
1,500-bbl. tank for water	1,000

7,500-bbls. of fuel oil for drilling	$ 7,500
Welding around rig at $5 per hour	1,000
Drilling at $8 per foot--4,200 feet (oil and water furnished)	33,600
Day work coring	1,000
CASING:	
200 feet, 15 1/2-inch, 52-pound	700
3,012 feet, 9 5/8-inch, 40-pound	6,000
4,200 feet, 6 5/8-inch, 26-pound	6,720
4,200 feet, 3-inch tubing	2,000
FITTINGS:	
1 control head	280
I Manual operated blowout preventer	1,250
2 Drilling valves, 3,000-pound capacity. .	665
1-9 5/8-inch casting head	150
Valves for 3-inch tubing	400
Oil acd gns separator	2,500
Line pipe for lease	1,000
Cementing casing---labor . . . $ 500 material. 1,000	1,500
Mud admixture average 200 tons at $55 per ton	11,000
Water system for drilling well	800
Total	$89,765

FUTURE DEVELOPMENTS

Present drilling, as has been said, has not completely outlined the Hobbs pool, and the operating companies are gradually feeling out the edges of the structure with new wells. It seems quite probable that considerable areas of production will be added to the present proven area both to the east and west as well as to the northwest along the axial trend. Within the pool as at present known there are areas where wells will ultimately be drilled and found productive. Complete cooperatin between the various companies Operating within the field has reduced line drilling to a minimum, and development has been carried on in a most orderly manner.

NOTES ON OTHER OIL AND GAS AREAS IN LEA COUNTY

Developments to date in Lea County have proven production of oil or gas or both in six distinct areas outside

the Hobbs pool. These are known as the Jal, Cooper, Eunice, Empire, Lea and Maljamar areas. (See Plate I.) The Maljamar area, which is largely in Eddy County, is not discussed in this report.

Jal Area

The Jai area is here described as including Tps. 25 and 26 S., Rgs. 36, 37 and 38 E. and is in the extreme southeast corner of the state. Developments to date, which began with the discovery of gas in the Texas Production Company No. 1
Rhodes well in Sec. 22, T. 26 S., R. 37 E., in 1927, have resulted in the completion of 9 gsc wells (up to 90 million cu. ft.), 12 oil wells (maximum 1800 bbls.) and 5 dry holes. Production is found at depths of 3000 to 3400 feet. Although not well outlined, the productive area is large and the gas resources are enormous.

Gas from the Jal area is taken to El Paso, Texas, through the 16-inch gas line of the El Paso Natural Gas Company, and lines under construction will convey it to markets in southwestern New Mexico, southern Arizona and northern Sonora, Mexico

The oil from the Jal area moves southward through the pipe lines of the Humble Pipe Line Company and the Texas
Pipe Line Company. The area had produced to January 1, 1931, approximately 1,000,000 barrels of oil.

Cooper Area

The Cooper area includes Tps. 23 and 24 S., Rgs. 36, 37 and 38 E. and lies immediately north of the Jai area.

To date this area has 4 oil wells (maximum 1500 bbls.), 4 gas wells (12-50 million cu. ft. per day) and two dry holes.

Most of the production is coming from a depth of around 3900 feet.

Eunice Area

The Eunice Area includes Tps. 20 S., Rgs. 37, 38 and 39 E. and Tps. 21 and 22, Rgs. 36; 37 and 38 E. and lies

between the Cooper area on the south and the Hobbs area to the north.

This area now has 3 gas wells (one good for 50 million cu. ft. per day), 5 oil wells (140-500 bbls.) and 3 dry holes.

Production in the Eunice area comes from a depth of 4000-4100 feet. One large gas well was brought in at 3315 feet.

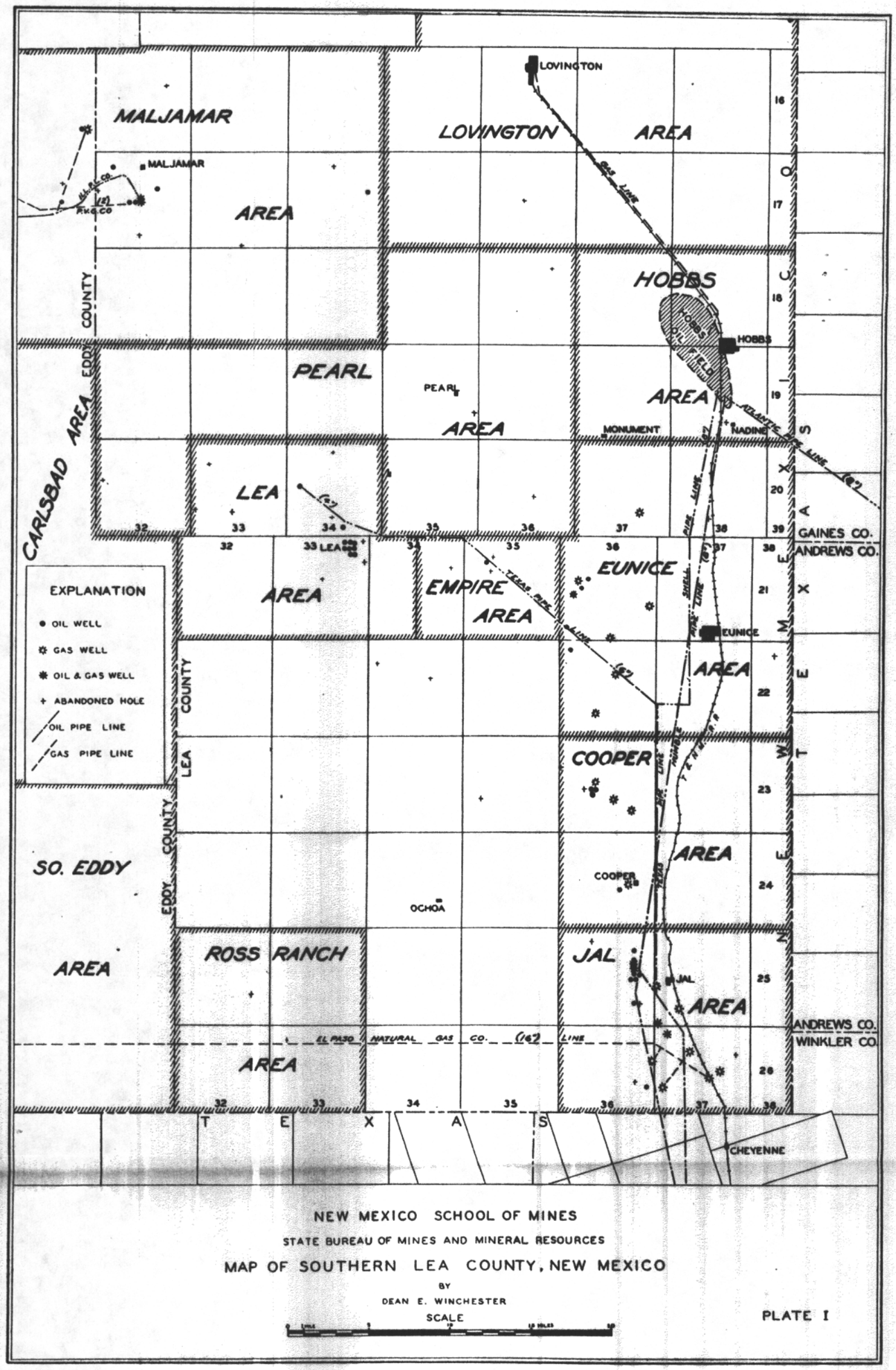
Empire Area

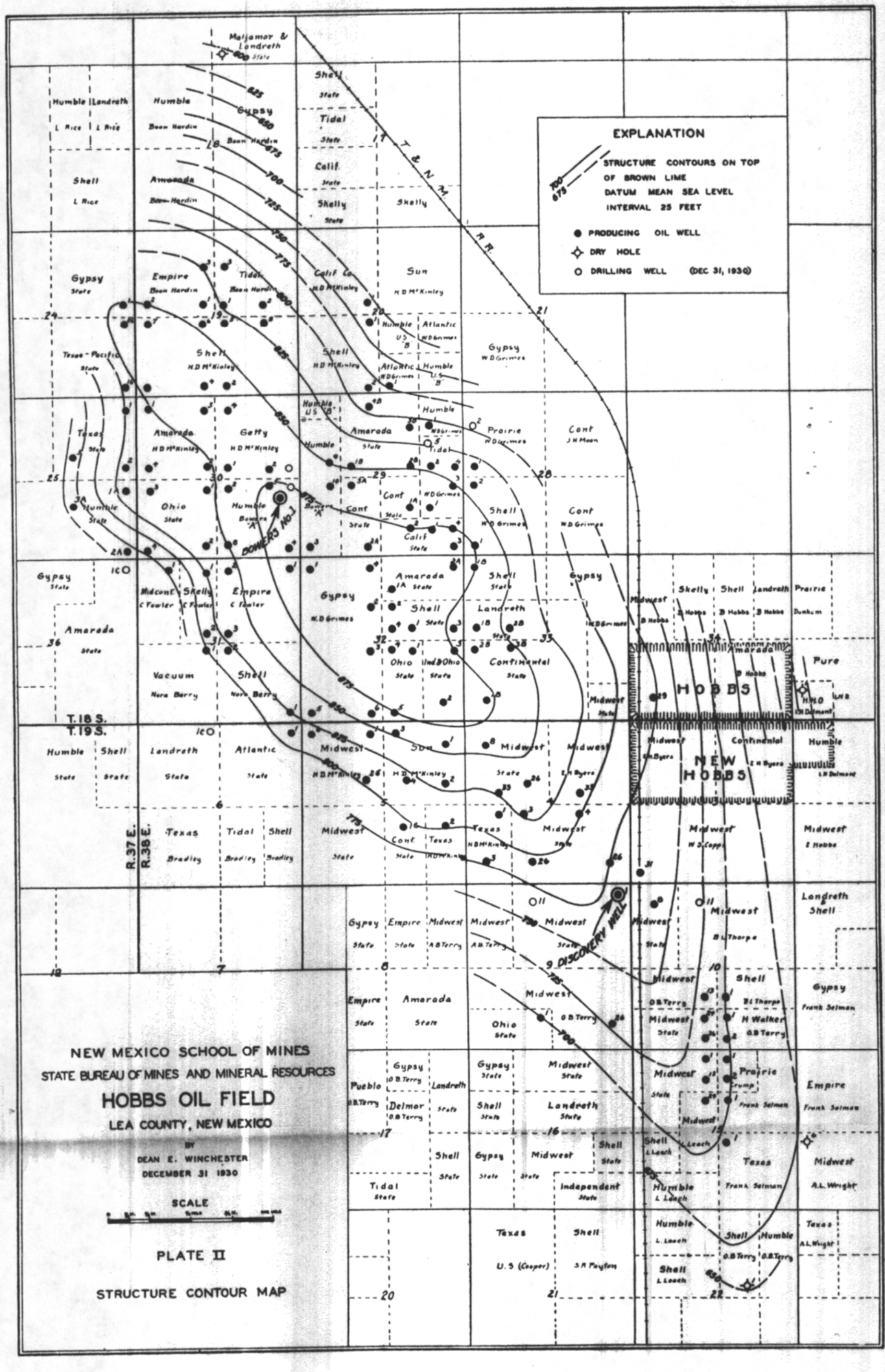
Township 21 S., Rgs. 34 E1/2. and 35 E. is designated the Empire area. Drilling so far has produced but one oil well, Empire No. 1 State in Sec. 8 being a pumper (200 bbls.) at 3835 feet. Wells drilled nearby are nonproducers.

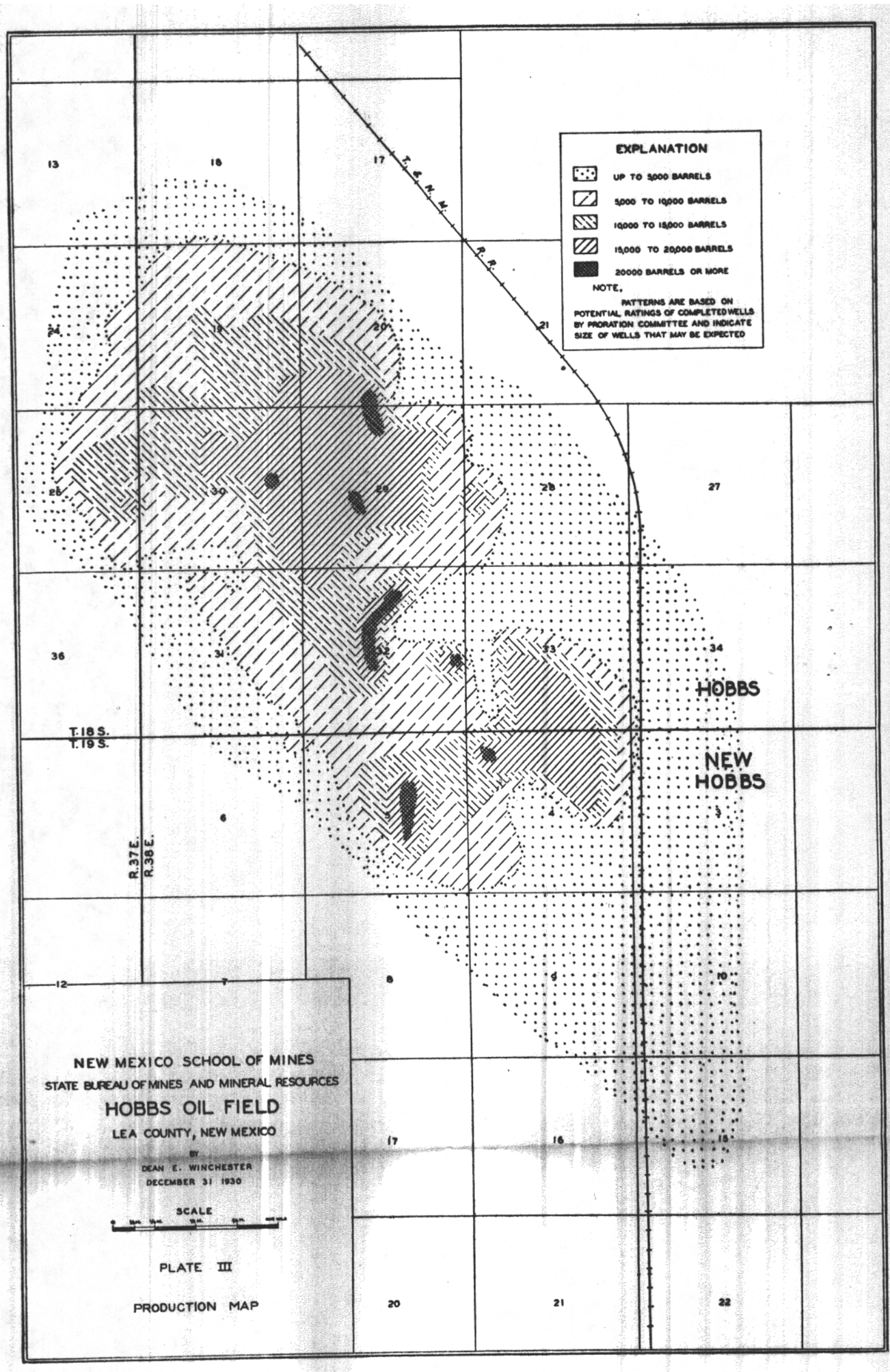
Lea Area

The Lea area, which at first looked like a possible field of considerable proportions, has proven rather limited in productive area. The name Lea area is applied to T.20 S., Rgs. 33 and 34 E. and T. 21 S., Rgs. 32, 33 and 34 E. Eleven oil wells ranging in initial production from to 2028 bbls. and producing from a depth of around 3800 feet have been drilled within *a* comparatively small area. The field up to January 1, 1931, had produced about 4,600,000 barrels of oil which was marketed through the Texas Company pipeline.

Ten dry holes have been drilled in the Lea area.


LOVINGTON
MALJAMAR
LOVINGTON AREA
MALJAMAR
AREA
HOBBS
HOBBS
PEARL
PEARL
AREA
AREA
MONUMENT
NADINE
LEA
LEA
CARLSBAD AREA
EDDY COUNTY
LEA COUNTY
EUNICE
AREA
EMPIRE AREA
EUNICE
COOPER
AREA
COOPER
SO. EDDY
AREA
OCHOA
ROSS RANCH
AREA
JAL
JAL
AREA
GAINES CO.
ANDREWS CO.
ANDREWS CO.
WINKLER CO.
EL PASO NATURAL GAS CO. (16") LINE
CHEYENNE
EXPLANATION
OIL WELL
GAS WELL
OIL & GAS WELL
ABANDONED HOLE
OIL PIPE LINE
GAS PIPE LINE
TEXAS
NEW MEXICO SCHOOL OF MINES
STATE BUREAU OF MINES AND MINERAL RESOURCES
MAP OF SOUTHERN LEA COUNTY, NEW MEXICO
BY
DEAN E. WINCHESTER
SCALE
PLATE I


EXPLANATION
STRUCTURE CONTOURS ON TOP OF BROWN LIME
DATUM MEAN SEA LEVEL
INTERVAL 25 FEET
PRODUCING OIL WELL
DRY HOLE
DRILLING WELL (DEC 31, 1930)
T. & N. M. R. R.
BOWERS NO. 1
DISCOVERY WELL
HOBBS
NEW HOBBS
T. 18 S.
T. 19 S.
R. 37 E.
R. 38 E.
NEW MEXICO SCHOOL OF MINES
STATE BUREAU OF MINES AND MINERAL RESOURCES
HOBBS OIL FIELD
LEA COUNTY, NEW MEXICO
BY
DEAN E. WINCHESTER
DECEMBER 31 1930
SCALE
PLATE II
STRUCTURE CONTOUR MAP


EXPLANATION
UP TO 5,000 BARRELS
5,000 TO 10,000 BARRELS
10,000 TO 15,000 BARRELS
15,000 TO 20,000 BARRELS
20000 BARRELS OR MORE
NOTE,
PATTERNS ARE BASED ON POTENTIAL RATINGS OF COMPLETED WELLS BY PRORATION COMMITTEE AND INDICATE SIZE OF WELLS THAT MAY BE EXPECTED
T. 8 N. M.
R. E.
HOBBS
NEW HOBBS
T.18 S.
T.19 S.
R.37E.
R.38E.
NEW MEXICO SCHOOL OF MINES
STATE BUREAU OF MINES AND MINERAL RESOURCES
HOBBS OIL FIELD
LEA COUNTY, NEW MEXICO
BY
DEAN E. WINCHESTER
DECEMBER 31 1930
SCALE
PLATE III
PRODUCTION MAP