

Case 3989

EXHIBIT III

NEW MEXICO OIL AND GAS COMMISSION
WATERFLOOD APPLICATION DATA

FIELD Loco Hills COUNTY Eddy
OPERATOR Anadarko Production Company DATE 11-11-68
LEASE Far West Loco Hills Sand Unit
RESERVOIR Zone (4) Grayburg (Loco Hills Sand) DISCOVERY DATE January, 1939

I. RESERVOIR AND FLUID CHARACTERISTICS

A. Information on entire reservoir

1. Name of Formation Loco Hills Sand (Zone 4 Grayburg)
2. Estimated productive area of entire reservoir 9920 Acres
3. Composition (Sand, Limestone, Dolomite, etc.) Sand
4. Type of structure Monocline
(include cross-section and structure maps)
5. Type drive during primary production Solution Gas
6. Original reservoir pressure 1000 PSIG (Estimated)
7. Was gas cap present originally? NO At present NO

B. Information on proposed project area

(Include plat of lease (s) to be flooded, showing producing wells, proposed injection wells, and offset wells).

1. Number of productive acres in lease (s) to be flooded 840
2. Average depth to top of pay (feet) 2400
3. Average effective pay thickness (feet) 8
4. Average porosity (%) 16.4% (Estimated)
5. Average horizontal permeability (mds.) 5.4 (est.) Range Unknown
6. Connate water content (% of pore space) 25% (Estimated)
7. Gravity of oil (API) 36° API Viscosity 2.0 cp (Estimated)

II. PRIMARY PRODUCTION HISTORY

1. Date first well completed on lease (s) Table I, Engineering Appraisal Attached.
2. Oil, gas, water production by months since discovery. (Graphically as well as in tabular form.) Table 2 & figures 6 thru 17 attached Engineering appraisal.
3. Stage of depletion of project area Stripper-All wells below economic limit.
4. Number of producing wells on each lease in project area See attached list.
5. Average daily oil production per well at present time 1 BOPD / Producing well.
6. Cumulative oil production to date from lease (s) 862,986 barrels as of 9-1-68.

III. RESULTS - EXPECTED

1. Estimated original oil in place (bbls.) 5,049,000
2. Estimated saturation at present time (% of pore space) 51.5%
3. Estimated residual oil saturation at abandonment 20.0%
4. Estimated ultimate additional oil that will be recovered as a direct result of injection (bbls.) 853,000 barrels

IV. INJECTION

1. Source of injected water (formation, depths) Commercial Water Company
2. Fresh or salt water Fresh
3. Flood pattern and spacing Modified 5 spot
4. Initial injection pressure to be used (psi) 1300 PSI
5. Estimated initial per well rate of injection (bbls.) 300
6. List complete injection well data on reverse side of this sheet

INJECTION WELL DATA

			Banner - Miller		Gordon Cone J.L.Langford	
			FWLHSU No. 1	FWLHSU 1-1 (Re-entry P & A Well)	FWLHSU No. 2	FWLHSU 6-2
WELL NO.			8-8 (To be drilled)	2-3 (To be drilled)	10-2 (Conversion)	(To be drilled)
Sur. csg.	Size	8 5/8"	8 5/8"	Unknown	Unknown	8 5/8"
	Length	250'	250'			250'
	Sxs. Cement	150 sx	150			150
Prod. csg.	Size	4 1/2"	4 1/2"	7"	7"	4 1/2"
	Length	2550'	2550'	2397'	2338'	2550'
	Sxs. Cement	200	200	100	100	200
Tubing	Length	2240(Est.)	2240(Est.)	2240(Est.)	2240(Est.)	2240(Est.)
	Packer Depth	2240(Est.)	2240(Est.)	2240(Est.)	2240(Est.)	2240(Est.)
Inj.	Depth	2480-2500 Est.	2450-2470 (Est.)	2525-2555	2457-2473	2465-2480(Est.)
	Thru casing. or tubing?	Tubing	Tubing	Tubing	Tubing	Tubing

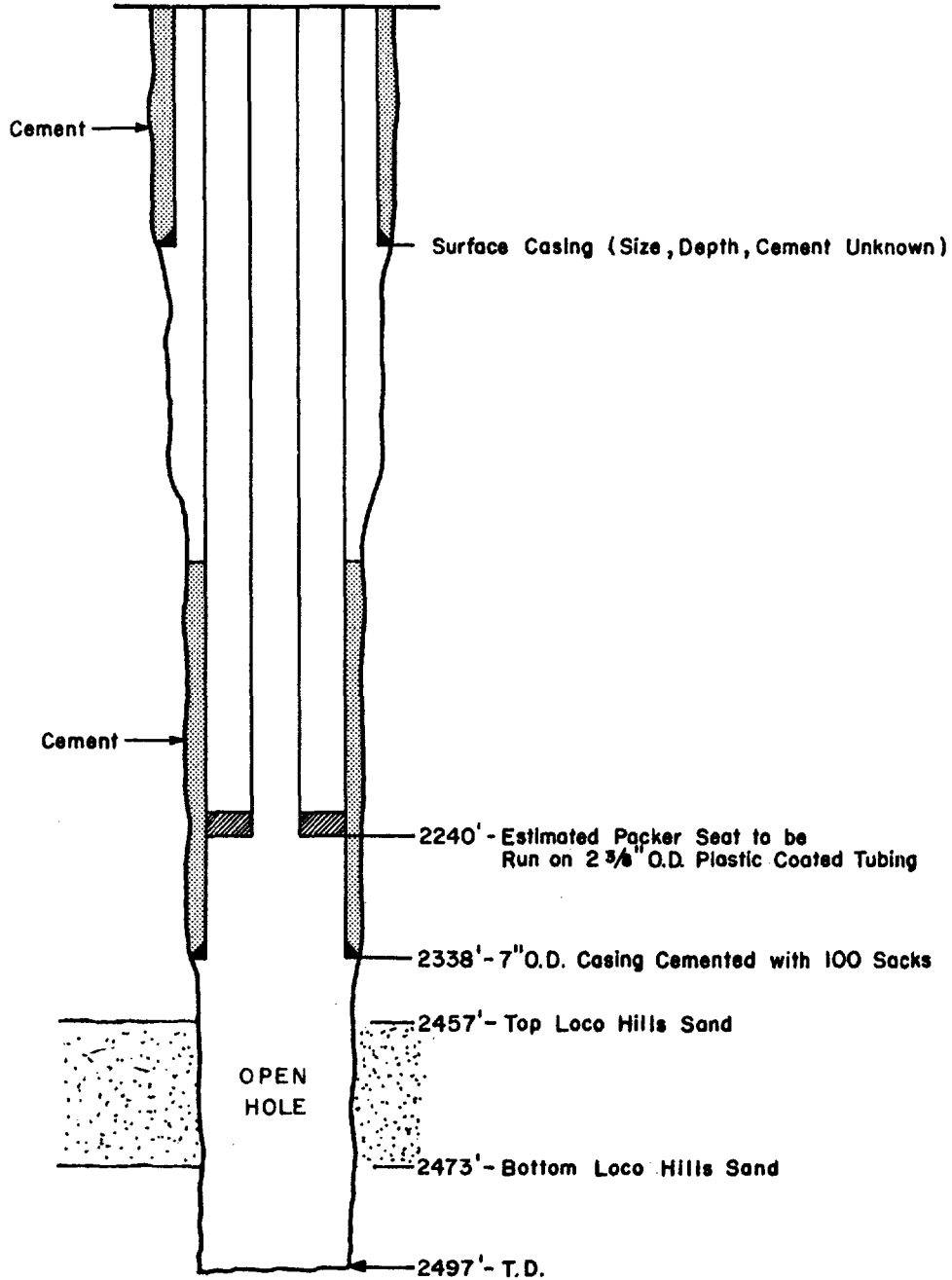
FAR WEST LOCO HILLS SAND UNIT
 LOCO HILLS FIELD
 EDDY COUNTY, NEW MEXICO
 PRODUCING WELL TABULATION

<u>Company</u>	<u>Lease</u>	<u>Well No.</u>	<u>Producing</u>	<u>Inactive</u>
Anadarko Production Co.	H.G. Watson 4-185-29E Tract 8	1	NO	YES
		2	NO	YES
		3	NO	YES
		4	NO	YES
		5	NO	YES
		1-A	YES	NO
		2-A	YES	NO
	J.L.Langford 9-185-29E Tract 9	1	YES	NO
		2	YES	NO
		3	NO	YES
		5	NO	YES
		6	YES	NO
	State L-16 16-185-29E Tract 5	1	YES	NO
	State 0-16 16-185-29E Tract 2	1	NO	YES
	Kemper State 16-185-29E Tract 2	1	NO	YES
Depco, Inc.	Banner-Miller 4-185-29E Tract 1	1	NO	YES
		2	NO	YES
Gordon M. Cone	J.L.Langford 9-185-29E Tract 10	1	NO	YES
		2	YES	NO
J. Cleo Thompson	J.L.Langford 9-185-29E Tract 11	1	YES	NO
		2	NO	YES
Cities Service Oil Co.	Tallmadge "A" 16-185-29E Tract 3	1	YES	NO
	Brookover "A" 16-185-29E Tract 4	1	YES	NO

<u>Company</u>	<u>Lease</u>	<u>Well No.,</u>	<u>Producing</u>	<u>Inactive</u>
Newmont Oil Corp.	Breezy State 16-185-29E Tract 6	1	YES	NO
	State B	1	NO	YES
	16-185-29E	2	YES	NO
	Tract 7			
			<hr/>	<hr/>
TOTAL			12	14

Case 3478

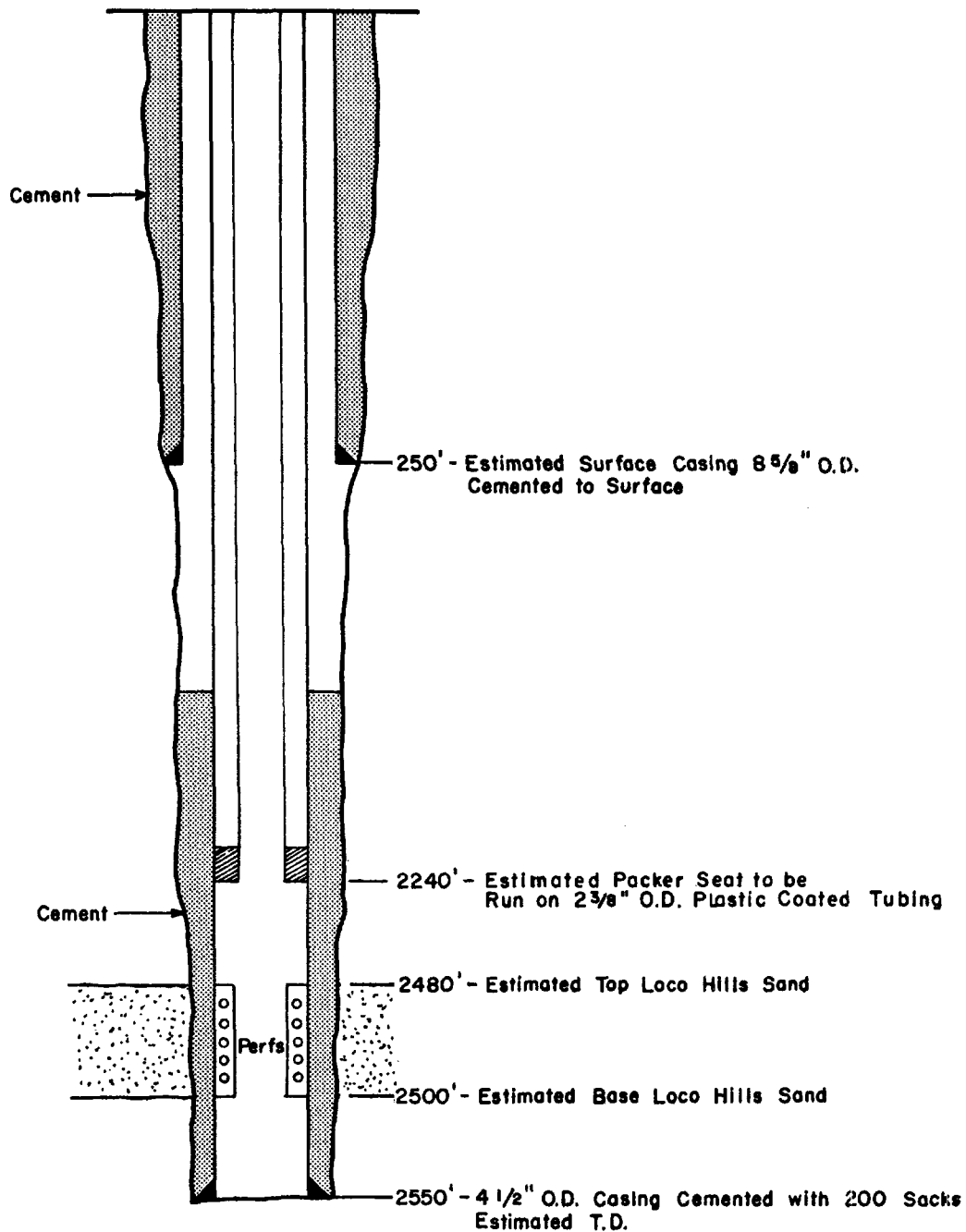
PROPOSED
FAR WEST LOCO HILLS SAND UNIT
WELL NUMBER 10-2
NOW GORDON CONE'S J.L. LANGFORD WELL NO.2



**ANADARKO
PRODUCTION COMPANY**

FAR WEST LOCO HILLS SAND UNIT
LOCO HILLS FIELD
EDDY COUNTY, NEW MEXICO
DIAGRAMMATIC SKETCH
OF
PROPOSED COMPLETION
OF
TYPICAL WATER INJECTION WELL
TO BE CONVERTED FROM PRODUCING
STATUS EXHIBIT **V**

PROPOSED
FAR WEST LOCO HILLS SAND UNIT
WELL NUMBER 8-8



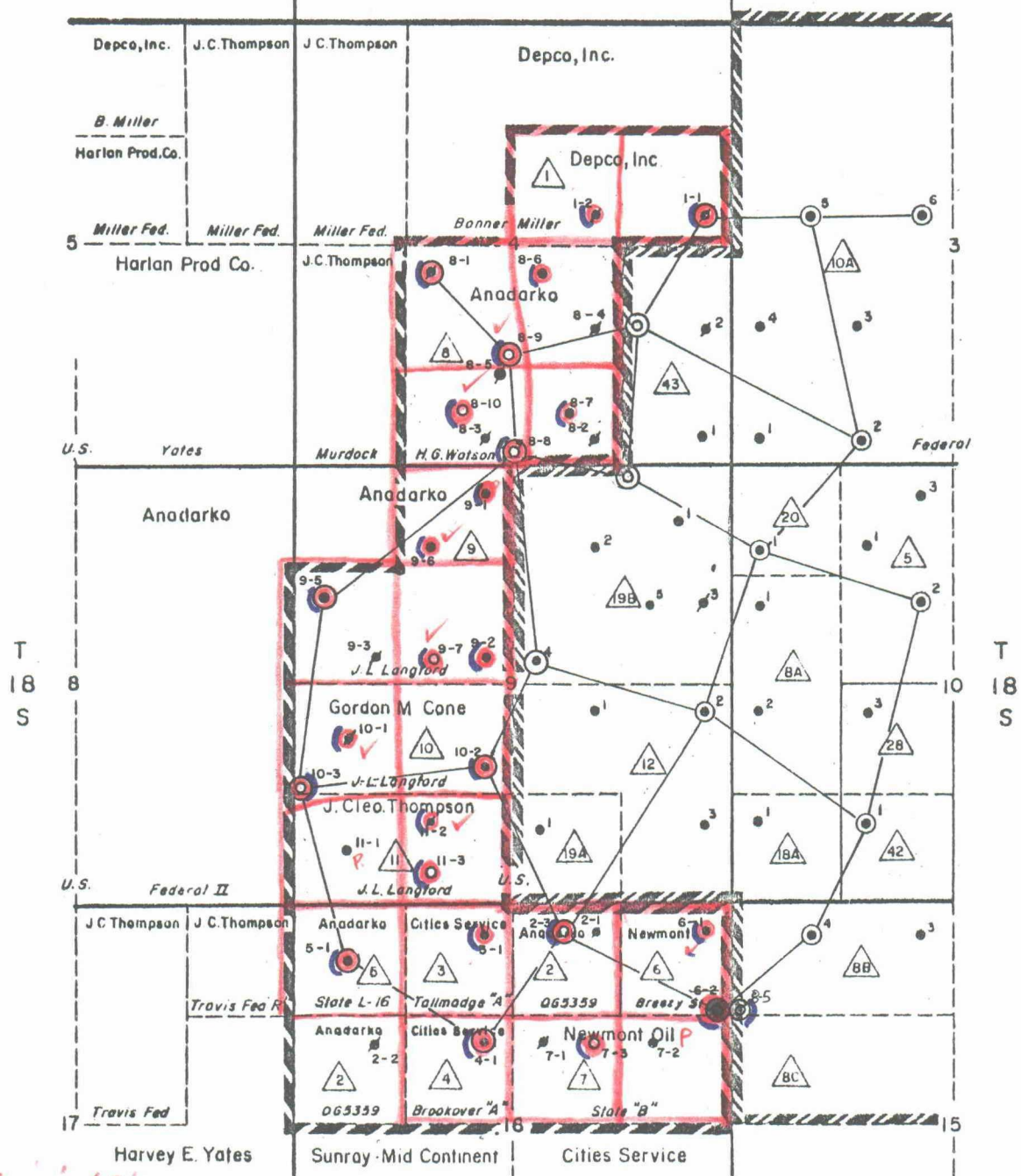
**ANADARKO
PRODUCTION COMPANY**

FAR WEST LOCO HILLS SAND UNIT
LOCO HILLS FIELD
EDDY COUNTY, NEW MEXICO
DIAGRAMMATIC SKETCH
OF
PROPOSED COMPLETION
OF
TYPICAL WATER INJECTION WELL
TO BE DRILLED

EXHIBIT VI

Case 3988

R - 29 - E



9 inj 40's
11 prod 40's
20 40's

42
30
540
98

7 extra wells

Travis U.S.

LEGEND

- OIL WELL
- ⊙ GAS WELL
- ⊙ DRY HOLE
- ⊙ WATER INJECTION WELL
- 3 TRACT NUMBER

- ABANDONED OIL WELL
- TEMPORARILY ABANDONED OIL WELL
- UNIT BOUNDARY - ANADARKO OPERATED
- UNIT BOUNDARY - NEWMONT OPERATED
- NOTE: Plot shows wells that have produced oil from zone 4 of Grayburg

R - 29 - E



ANADARKO
PRODUCTION COMPANY

FAR WEST LOCO HILLS SAND UNIT
LOCO HILLS FIELD
EDDY COUNTY, NEW MEXICO
PROPOSED WATERFLOOD DEVELOPMENT

0 2000 4000
SCALE FEET

DATE 11-8-68

EXHIBIT VII

FAR WEST LOCO HILLS SAND UNIT
DEVELOPMENT PROGRAM
PROPOSED WATERFLOOD OPERATIONS
ZONE 4 GRAYBURG (LOCO HILLS SAND)
LOCO HILLS FIELD
EDDY COUNTY, NEW MEXICO

I. First Quarter 1969

- A. Drill line water input well (8-8) on Anadarko's H. G. Watson lease 10' NSL 2630' WEL of Section 4, T-18S, R-29E.
- B. Drill water input well (2-3) on Anadarko's State 0-16 lease 330' SNL 1980' WEL of Section 16, T-18S, R-29E.
- C. Re-enter and complete as water input well Depco's Banner Miller Well No. 1 (1-1).
- D. Drill line water input well ⁸⁻⁵~~(6-2)~~ on Newmont's *WEST LOCO HILLS GRAYBURG NO. 4 3rd UNIT* ~~Breezy State~~ lease 1310' SNL 10' ~~WEL~~ EWL Section 16¹⁵, T-18S, R-29E (50% Newmont Unit - 50% Anadarko Unit).
- E. Convert Gordon M. Cone's J. L. Langford Well No. 2 (10-2) to water input.
- F. Construct water injection plant to serve five (5) water input wells - one injection pump and engine to give 3,000 BWPD capacity at 1200 psi.
- G. Install water injection system to five (5) water input wells.
- H. Plug back Anadarko's H. G. Watson Well No. 1-A (8-6) and 2-A (8-7), J. L. Langford Well No. 6 (9-6) and State L-16 Well No. 1 (5-1) and Cities Service's Tallmadge Well No. 1 (3-1) and Brookover Well No. 1 (4-1).

II. Second Quarter 1969

- A. Re-enter and complete for production Depco's Banner Miller Well No. 2 (1-2) including production equipment.
- B. Re-enter and complete for production J. Cleo Thompson's J. L. Langford Well No. 2 (11-2) including production equipment.

- C. Recondition Anadarko's J. L. Langford Well No. 1 (9-1) and J. L. Langford Well No. 2 (9-2) for production.
- D. Recondition Cities Service Tallmadge "A" No. 1 (3-1) Well for production.
- E. Recondition Newmont's Breezy State No. 1 (6-1) Well, and State "B" No. 2 (6-2) Well for production.

III. Third Quarter 1969

- A. Re-enter and recondition Gordon M. Cone's J. L. Langford No. 1 (10-1) Well for production.
- B. Drill water input well (8-9) on Anadarko's H. G. Watson lease approximately 1330' NSL and 2630' WEL Section 4, T-18S, R-29E.

IV. Fourth Quarter 1969

- A. Drill water input well (10-3) on Gordon M. Cone's J. L. Langford Lease approximately 10' EWL and 1330' NSL Section 9, T-18S, R-29E.
- B. Convert to input Cities Service's Brookover "A" No. 1 (4-1) Well.
- C. Re-enter and condition for injection Anadarko's H. G. Watson No. 1 (8-1) Well.
- D. Consolidate tank battery and gathering system.
- E. Expand injection system and plant.
- F. Larger pumping equipment for Newmont's Breezy State No. 1 (6-1).
- G. Convert Anadarko's State L-16 No. 1 (5-1) Well to injection.
- H. Convert Anadarko's J. L. Langford No.5 (9-5) Well to injection.

V. First Quarter 1970

- A. Drill producing well (7-3) on Newmont's State "B" Lease approximately 1650' SNL and 1650' WEL of Section 16, T-18S, R-29E.
- B. Larger pumping equipment for Anadarko's J. L. Langford No. 2 (9-2) Well and H. G. Watson's No. 1-A (8-6) Well.

- C. Drill producing Well (9-7) on Anadarko's J. L. Langford Lease approximately 2310 SNL and 1650 EWL of Section 9, T-18S, R-29E.

VI. Second Quarter 1970

- A. Drill producing well (8-10) on Anadarko's H. G. Watson Lease approximately 660' NSL and 1980' EWL of Section 4, T-18S, R-29E.
- B. Drill producing well (11-3) on J. Cleo Thompson's Lease approximately 1650' EWL and 330' NSL of Section 9, T-18S, R-29E.

FAR WEST LOCO HILLS SAND UNIT
TRACT AND WELL DESIGNATION
LOCO HILLS FIELD
EDDY COUNTY, NEW MEXICO

<u>Company</u>	<u>Old Designation</u>		<u>New Designation</u>	
	<u>Lease</u>	<u>Well No.</u>	<u>Tract No.</u>	<u>Well No.</u>
Depco, Inc.	Banner Miller	1	1	1-1
Depco, Inc.	Banner Miller	2	1	1-2
Anadarko Production Co.	State O-16	1	2	2-1
Anadarko Production Co.	Kemper State	1	2	2-2
Cities Service Oil Co.	Tallmadge "A"	1	3	3-1
Cities Service Oil Co.	Brookover "A"	1	4	4-1
Anadarko Production Co.	State L-16	1	5	5-1
Newmont Oil Company	Breezy State	1	6	6-1
Newmont Oil Company	State "B"	1	7	7-1
Newmont Oil Company	State "B"	2	7	7-2
Anadarko Production Co.	H. G. Watson	1	8	8-1
Anadarko Production Co.	H. G. Watson	2	8	8-2
Anadarko Production Co.	H. G. Watson	3	8	8-3
Anadarko Production Co.	H. G. Watson	4	8	8-4
Anadarko Production Co.	H. G. Watson	5	8	8-5
Anadarko Production Co.	H. G. Watson	1-A	8	8-6
Anadarko Production Co.	H. G. Watson	2-A	8	8-7
Anadarko Production Co.	J. L. Langford	1	9	9-1
Anadarko Production Co.	J. L. Langford	2	9	9-2
Anadarko Production Co.	J. L. Langford	3	9	9-3
Anadarko Production Co.	J. L. Langford	5	9	9-5
Anadarko Production Co.	J. L. Langford	6	9	9-6
Gordon M. Cone	J. L. Langford	1	10	10-1
Gordon M. Cone	J. L. Langford	2	10	10-2
J. Cleo Thompson	J. L. Langford	1	11	11-1
J. Cleo Thompson	J. L. Langford	2	11	11-2