

Case 1480: (A) Creation of a new pool

Disc. Well-Gulf Oil Corp.-O. L. Cryer #1 in Unit N, Sec.34-10-36

County LEA Comp. in Devonian 5/5/58. Top Perf. 12,315'

Dickinson-Devonian

TOWNSHIP 10 South, RANGE 36 East, NEW MEXICO PRINCIPAL MERIDIAN

6	5	4	3	2	1
7	8	9	10	11	12
13	17	16	15	14	13
19	20	21	22	23	24
29	28	28	27	26	25
31	32	33	34	35	36

Purpose: One completed well capable of producing.

Proposed Pool Boundary colored in Red: SW/4 of Section 34

Case 1480: (Creation of a new pool

Disc. Well-Miller Brothers Oil Co.-Western Development #1 in Unit J,
of Sec. 14-19-28 Comp. in Queen 4/11/58. ~~XXXXXX~~ Depth to Csg. Shoe 1760'

County

EDDY

Pool

EAST MILLMAN-QUEEN

TOWNSHIP 19 South, RANGE 28 East, NEW MEXICO PRINCIPAL MERIDIAN

6	5	4	3	2	1
7	8	9	10	11	12
18	17	16	15	14	13
19	20	21	22	23	24
30	29	28	27	26	25
31	32	33	34	35	36

Purpose: Two completed wells capable of producing

Miller Brothers Oil Co.-Western Development #2 in Unit O, of Sec. 14-19-28

Comp in Penrose 5/19/58. Top Perf. 1715'.

Proposed Pool boundary colored in Red: SE/4 of Section 14

Case 1480: (C) Creation of a new pool

Disc. Well-Sinclair Oil & Gas Co.-State Lea 403 #1 in Unit D, of Sec. 22-
Twp. 18 South, Range 35 East, Comp in Bone Springs 4/23/58, Top Perf. 8504'.

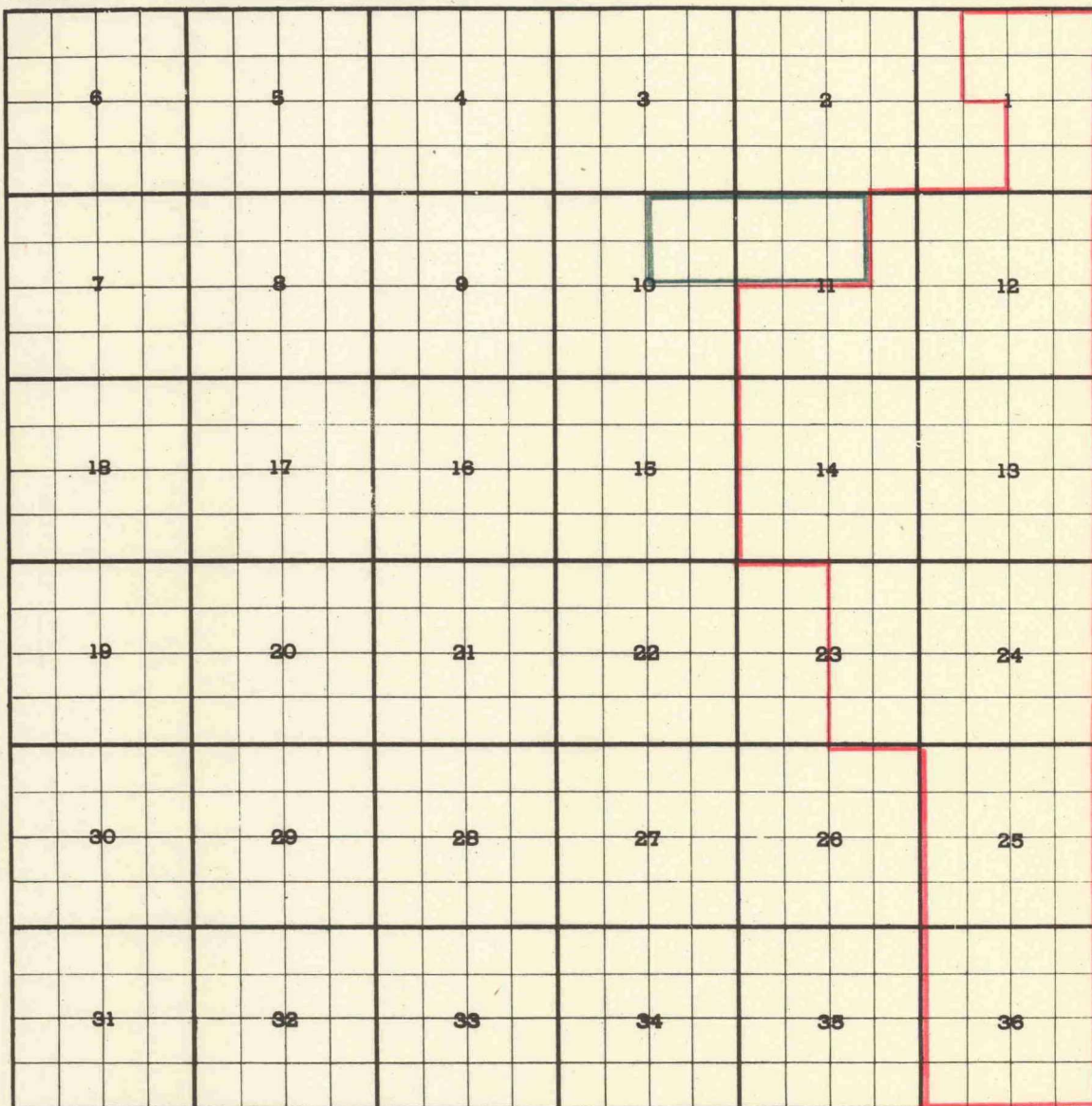
County LEA Pool SOUTH VACUUM-BONE SPRINGS

TOWNSHIP 18 South, RANGE 35 East, NEW MEXICO PRINCIPAL MERIDIAN

6	5	4	3	2	1
7	8	9	10	11	12
18	17	16	15	14	13
19	20	21	22	23	24
30	29	28	27	26	25
31	32	33	34	35	36

Purpose: One completed well capable of producing

Proposed Pool boundary colored in Red: NW/4 of Section 22

County LEA Pool JALMAT*0-5 Yates & Seven Rivers*TOWNSHIP 22 *South*, RANGE 35 *East*, NEW MEXICO PRINCIPAL MERIDIAN

Purpose: Four completed wells capable of producing

Dixilyn Drilling Co.-Phillips State #1 in Unit B, of Sec. 10-22-35,

Comp. in Yates 4/27/58. Top Perf. 3973'.

British American Oil Prod. Co.-Hall State F #10 in Unit F, of Sec. 11-22-35,

Comp. in Yates 5/21/58. Top Perf. 3882'.

British American Oil Prod. Co.-Hall State F #11 in Unit G, of Sec. 11-22-35,

Comp. in Yates 6/12/58. Top Perf. 3876'.

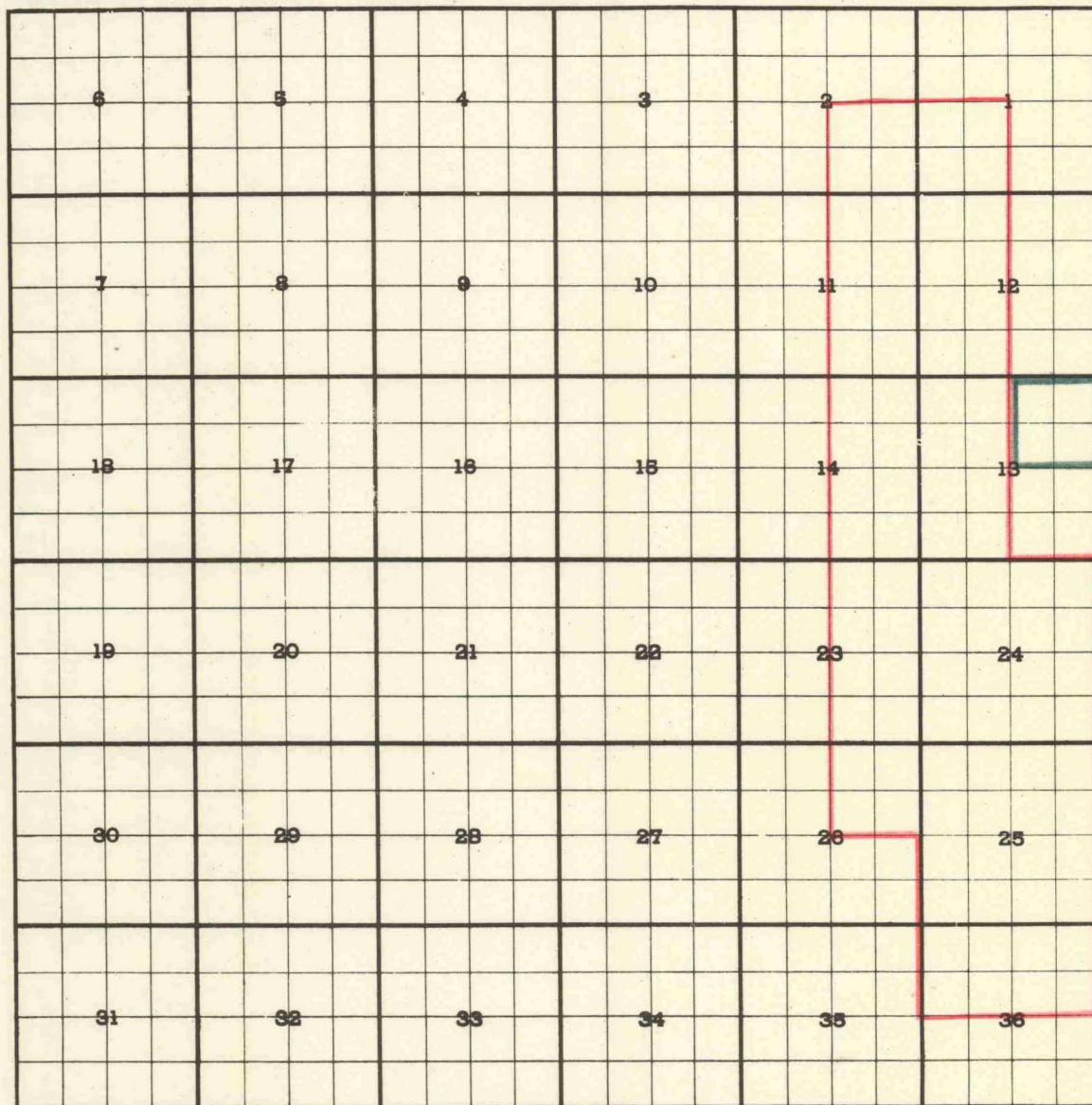
British American Oil Prod. Co.-Hall State F #12 in Unit C, of Sec. 11-22-35,

Comp. in Yates 6/23/58. Top Perf. 3874'.

Pool Boundary Colored in Red:

Proposed Extension Colored in Green: NE/4 of Section 10

NW/4 & W/2 NE/4 of Section 11

County LEA Pool JUSTISDISMISS: Possibly oil well in gas pool with no provision for oil.TOWNSHIP 25 South, RANGE 37 East, NEW MEXICO PRINCIPAL MERIDIAN

Purpose: One completed well capable of producing

Western Pet. Co.-Carlson B-13 #5 in Unit G, of Sec. 13-25-37,Comp. in Glorieta 5/1/58. Top Perf. 4960'.

Pool boundary colored in Red:

Proposed Extension colored in Green: NE/4 of Section 13

County LEA Pool JUSTIS-FUSSELMAN

7-8 Fusselman

TOWNSHIP 25 South, RANGE 37 East, NEW MEXICO PRINCIPAL MERIDIAN

6	5	4	3	2	1
7	8	9	10	11	12
13	17	16	15	14	13
19	20	21	22	23	24
30	29	28	27	26	25
31	32	33	34	35	36

One

Purpose: ~~500~~ completed well~~x~~ capable of producingAmerada Pet. Corp.-Ida Wimberley #3 in Unit L, of Sec. 24-25-37,Comp. in Fusselman 5/7/58, Top Perf. 6960'.

Pool Boundary Colored in Red:

Proposed Extension colored in Green: SW/4 of Section 24

County ROOSEVELTPool MILNESAND-PENNSYLVANIAN

9-10 Pennsylvanian

TOWNSHIP 8 South, RANGE 34 East, NEW MEXICO PRINCIPAL MERIDIAN

6	5	4	3	2	1	
7	8	9	10	11	12	
13	17	18	15	14	16	
19	20	21	22	23	24	
30	29	28	27	26	25	
31	32	33	34	35	36	

Purpose: Two completed wells capable of producing

Lario Oil & Gas Co.-Federal A #1 in Unit J, of Sec. 14-8-34,
Comp. in Pennsylvanian 4/30/58. Top Perf. 9270'

UNADVERTISED: Lario Oil & Gas Co.-Heilman #1 in Unit H, of Sec. 14-8-34,
Comp. in Pennsylvanian 6/25/58. Top Perf. 9250'.

Pool Boundary Colored in Red:

Proposed Extension Colored in Green: SE/4 of Section 14

UNADVERTISED: NE/4 of Section 14

County EDDY Pool VANDAGRIFF-KEYES GASTOWNSHIP 16 South, RANGE 28 East, NEW MEXICO PRINCIPAL MERIDIAN

6	5	4	3	2	1
7	8	9	10	11	12
13	17	16	15	14	13
19	20	21	22	23	24
30	29	28	27	26	25
31	32	33	34	35	36

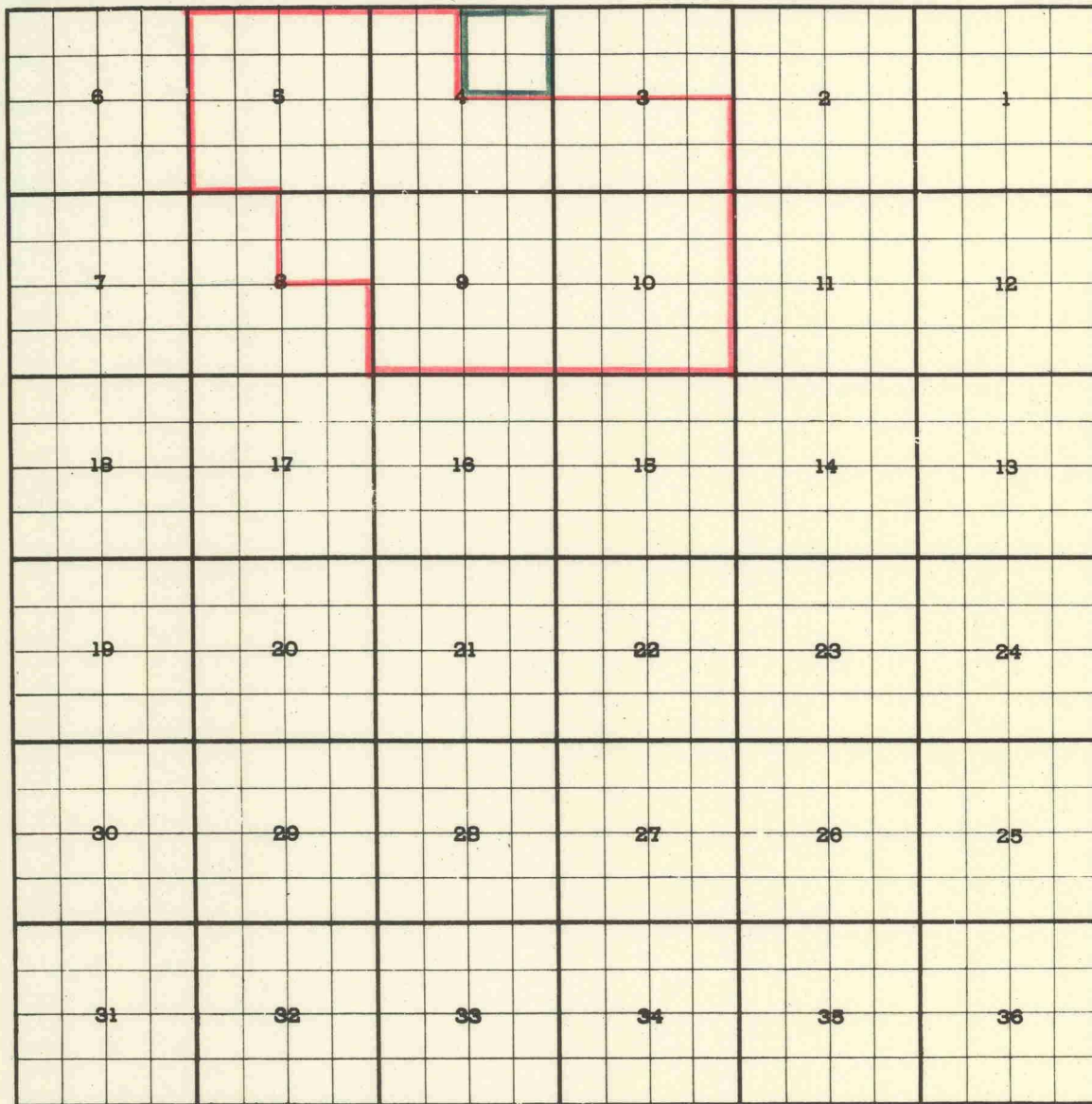
T175- R28E.

Purpose: Two completed wells capable of producing

Kinkaid & Watson Drlg. Co.-So. Union Fed. #2 in Unit M, of Sec. 34-16-28,
Comp. in Queen 3/15/57, Top Perf 1396'.Kinkaid & Watson Drlg. Co.-Aztec State #1 in Unit P, of Sec. 33-16-28,
Comp. in Queen 5/2/58, Depth to Csg. Shoe 1400'.

Pool Boundary Colored in Red:

Proposed Extension Colored in Green: SE/4 of Section 33
SW/4 of Section 34

County Eddy Pool VANDAGRIFF-KEYES GASTOWNSHIP 17 South, RANGE 28 East, NEW MEXICO PRINCIPAL MERIDIANPurpose: Contiguous to Township 16 South, Range 28 East-

Pool Boundary Colored in Red: _____

Proposed Extension Colored in Green: NE/4 of Section 4

County LEA Pool FOUR LAKES-DEVONIANTOWNSHIP 11 South, RANGE 34 East, NEW MEXICO PRINCIPAL MERIDIAN

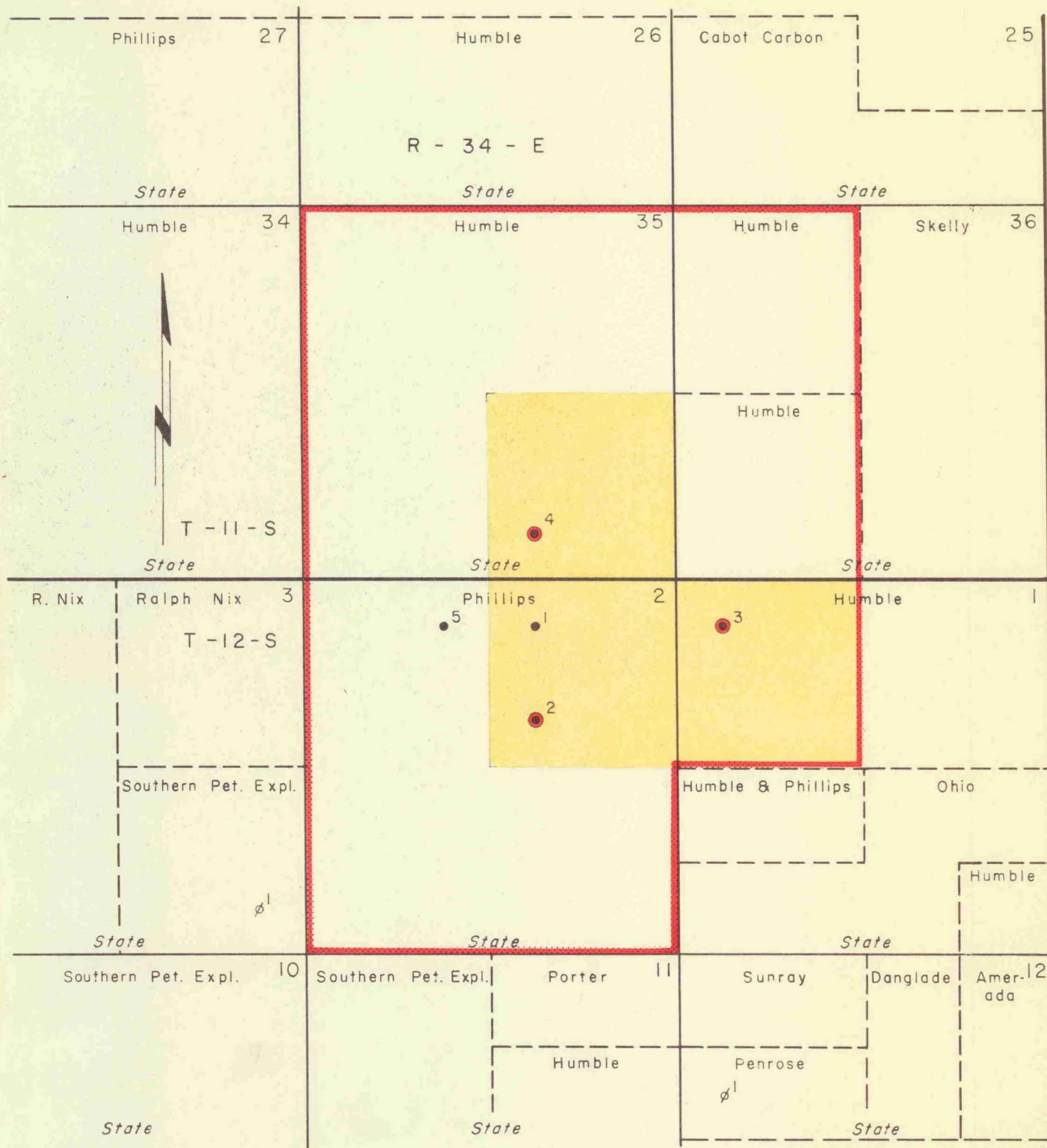
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7	8	9	10	11	12
18	17	16	15	14	13
19	20	21	22	23	24
30	29	28	27	26	25
31	32	33	34	35	36

Purpose: To consider the reclassification of the Four Lakes-Devonian
Pool, Lea County, New Mexico, from an oil pool to a gas pool.

The present horizontal limits of said pool are as follows:

Twp. 11 South, Range 34 East

Section 35: SE/4



- LEGEND -

- South Four Lakes Unit Outline
- Pennsylvanian Completion
- Devonian Completion
- Horizontal Limits - Four Lakes Devonian Pool

BASE MAP
OF THE
SOUTH FOUR LAKES UNIT AREA
LEA COUNTY, NEW MEXICO

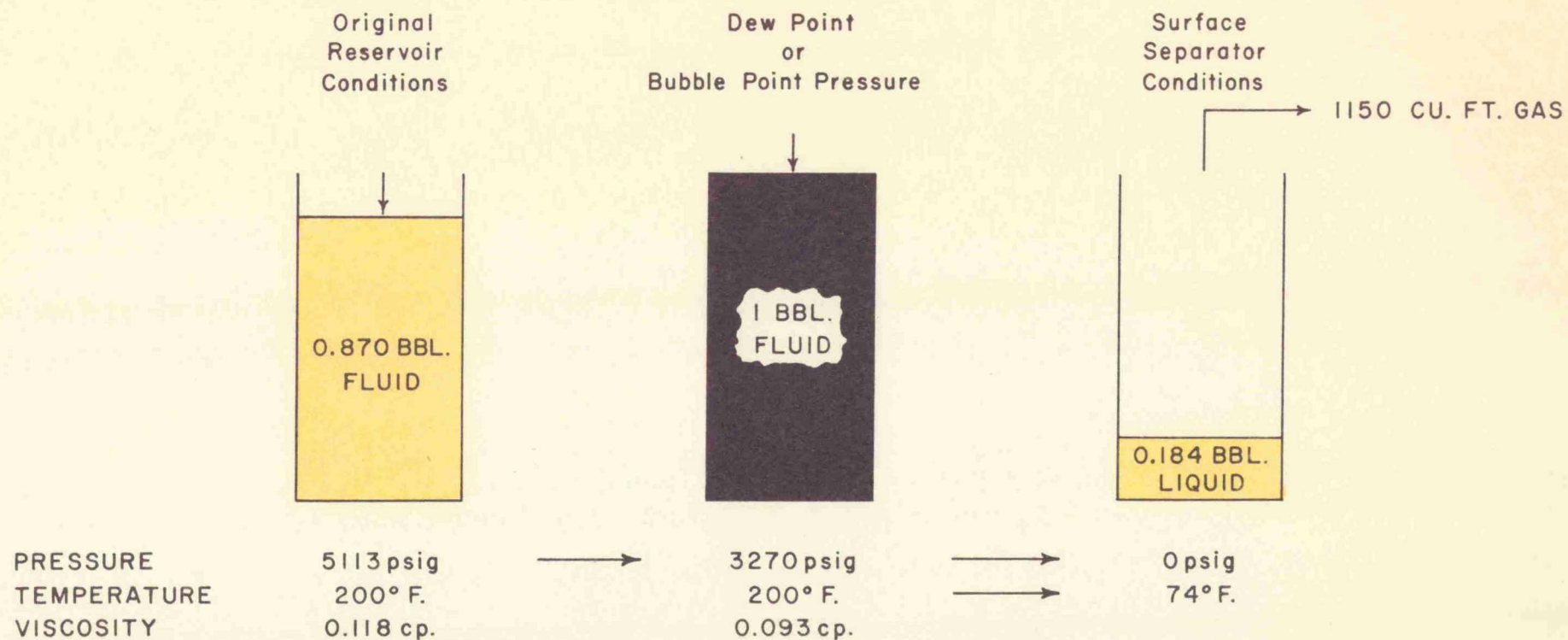
CHARACTERISTICS OF OIL PRODUCED FROM DEVONIAN POOLS
IN VICINITY OF
FOUR LAKES DEVONIAN POOL

<u>Pool Name</u>	<u>Oil Gravity Degrees API</u>	<u>Gas-Oil Ratio Cubic Feet/Bbl</u>
Anderson Ranch	54.0	716
Bagley	44.4	TSTM
Bronco	44.0	108
Caprock, East	43.6	TSTM
Caudill	57.2	399
Crossroads	42.6	TSTM
Crossroads, East	44.6	39
Crossroads, South	42.2	490
Dean	54.0	158
Denton	45.0	848
Denton, South	51.0	1110
Echols	41.0	70
Echols, East	41.5	488
Echols, North	40.0	3
<u>FOUR LAKES</u>	<u>54.0</u>	<u>5026</u>
Gladiola	47.0	129
Hightower	59.5	198
King	46.0	1030
Knowles	47.3	165
Knowles, South	43.8	514
Mescalero	44.0	20
Moore	45.0	34
Sawyer	42.7	70
Shoe Bar	57.9	TSTM
Shoe Bar, North	60.0	961
SRR	40.0	52
White Ranch	47.0	26

HUMBLE EXHIBIT NO. 2

RESERVOIR FLUID BEHAVIOR

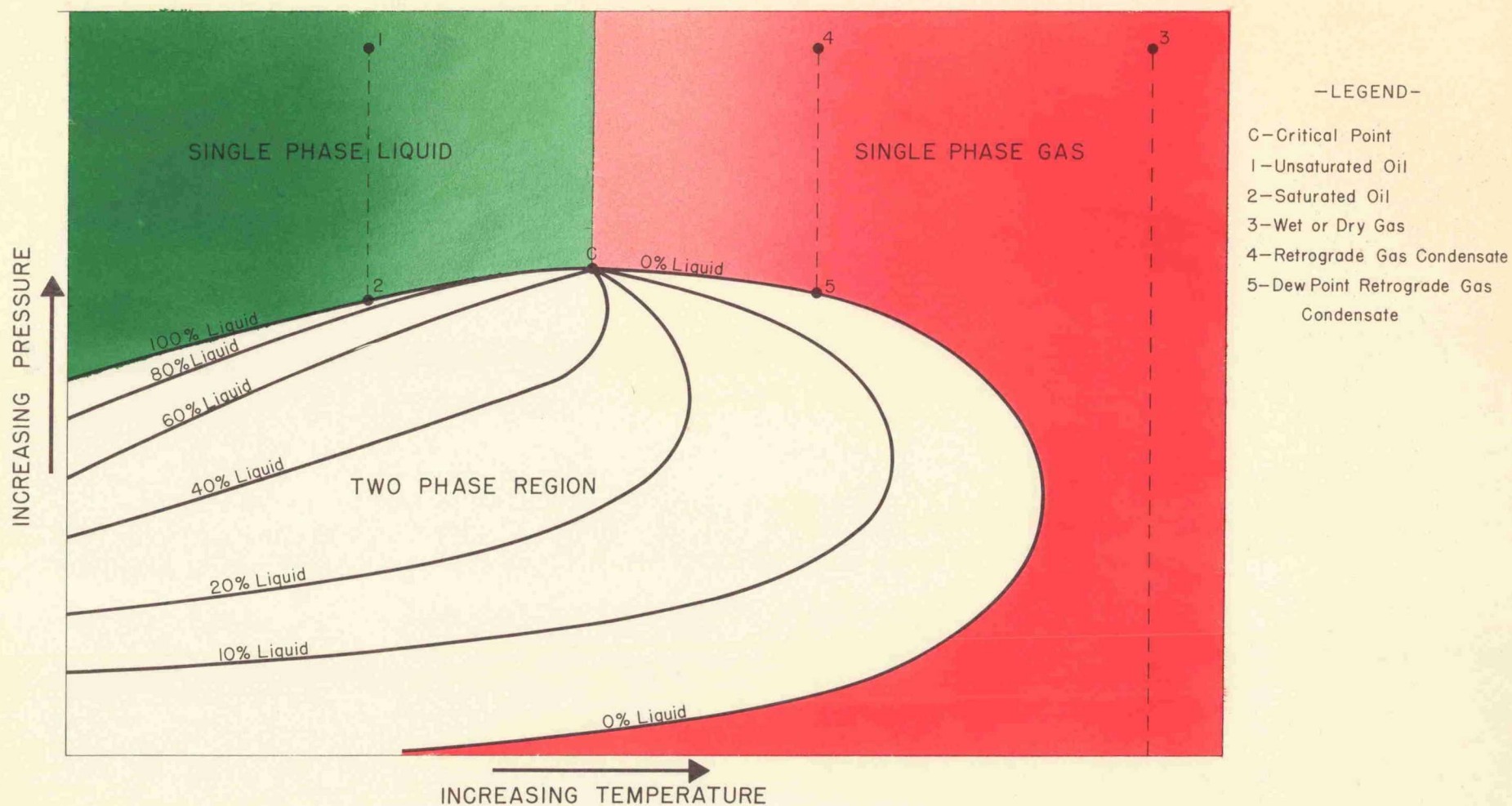
FOUR LAKES DEVONIAN POOL
LEA COUNTY, NEW MEXICO



COMPARISON OF SUBSURFACE FLUID SAMPLE PROPERTIES
FOR DEVONIAN RESERVOIRS
SOUTHEAST NEW MEXICO AND WEST TEXAS

<u>Pool or Field</u>	<u>Fluid Viscosity At Reservoir Conditions Centipoises</u>	<u>Properties from Surface Separation At Atmospheric Conditions</u>		
		<u>Liquid Gravity Degrees API</u>	<u>Gas-Oil Ratio Cubic Feet/Bbl.</u>	<u>Shrinkage Factor</u>
New Mexico				
Caudill	0.273	60.2	267	0.767
Four Lakes	0.118	49.3	6270	0.184
Texas				
Block 9	0.460	45.2	561	0.713
Circle 2	0.730	31.4	1054	0.650
Cordona Lake	0.536	38.5	997	0.653
Hutex	0.970	44.9	58	0.909

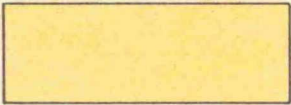

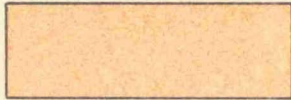
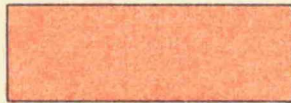


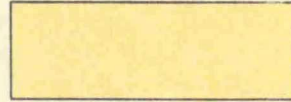
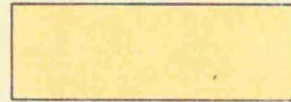
PHASE DIAGRAM FOR A HYDROCARBON MIXTURE ILLUSTRATING TYPES OF RESERVOIR FLUIDS



COLOR CHANGES IN RESERVOIR FLUID WITH CHANGE IN PRESSURE

FOUR LAKES DEVONIAN POOL LEA COUNTY, NEW MEXICO

Observations from Visual Cell at Temperature of 200°F.

<u>Pressure</u>		<u>Color Description</u>	<u>Phase</u>
5113 psig		Pale Yellow	Single
3405		Pale Yellow	Single
3330		Slightly Orange	Single
3280		Orange	Single
3260		Black	Single
		fades to Red	Two (65% Liquid) (35% Gas)
3000		Faint Yellow	Two (50% Liquid) (50% Gas)
2000		Faint Yellow	Two (30% Liquid) (70% Gas)

COMPARISON OF RESERVOIR FLUID PROPERTIES
BETWEEN FOUR LAKES DEVONIAN POOL AND A KNOWN GAS-CONDENSATE SYSTEM

Pool or Field	Four Lakes Devonian	Benedum Ellenburger
Location	Lea County, New Mexico	Upton County, Texas
Present Classification	Oil	Gas
Reservoir Pressure:		
Original	5113 Psig	5005 Psig
Dew Point	3270 Psig	3500 Psig
Reservoir Temperature	204°F	195°F
Reservoir Fluid Critical Temperature	-	193°F
Reservoir Fluid Analysis:		
Component	<u>Mol%</u>	<u>Mol%</u>
Methane	56.03	54.80
Ethane	13.16	14.20
Propane	9.40	9.64
Iso Butane	1.61	1.25
Normal Butane	4.33	4.29
Iso Pentane	1.39	1.12
Normal Pentane	1.59	1.87
Hexanes	1.55	2.72
Heptanes and Heavier	<u>10.94</u>	<u>10.11</u>
Totals	100.00	100.00

EFFECT OF SEPARATION PRACTICE ON LIQUID RECOVERY

FOUR LAKES DEVONIAN POOL
LEA COUNTY, NEW MEXICO

