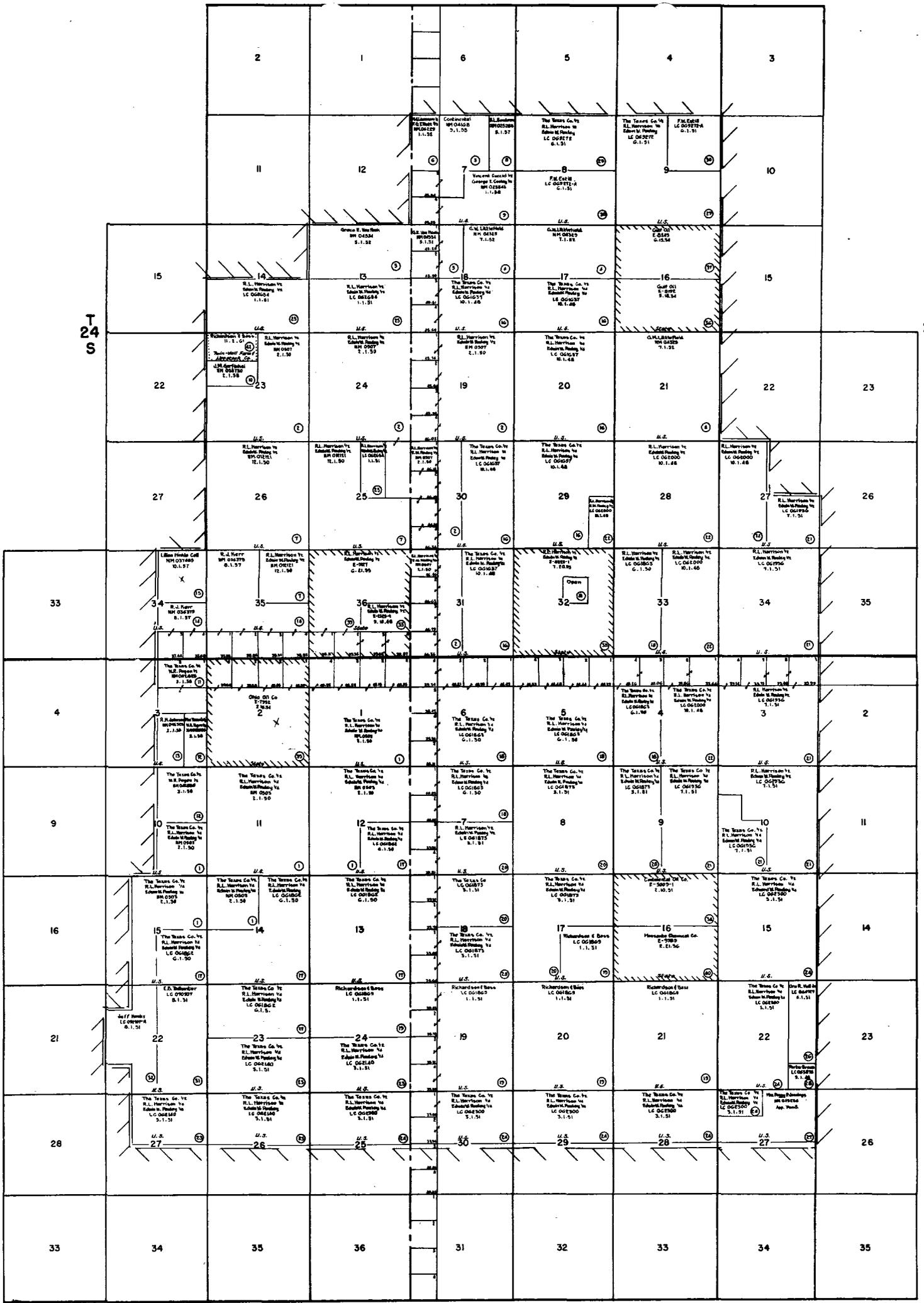


R-31-E

R-32-E



R-31-E

EDDY CO.

LEA CO.

R-32-E

COTTON DRAW UNIT AREA
EDDY & LEA COUNTIES, NEW MEXICO

EXHIBIT "A"

LEGEND

-  UNIT BOUNDARY
-  STATE LAND --- 3,197.88 ACRES
-  FEDERAL LAND --- 31,866.38 ACRES
-  FEE LAND --- 80.00 ACRES

SCALE  = 1 MILE

EXHIBIT "B"
COTTON DRAW UNIT AREA
TOWNSHIPS 24 and 25 SOUTH, RANGES 31 and 32 EAST, LEA AND EDDY COUNTIES, NEW MEXICO

SCHEDULE SHOWING THE PERCENTAGE AND KIND OF OWNERSHIP OF OIL AND GAS INTERESTS IN ALL LANDS IN THE UNIT AREA

Tr. No.	Description of Land	No. of Acres	Serial No. & Date of Lease or Application	Basic Royalty & Percentage	Lessee of Record	Overriding Royalty Owner and Percentage	Working Interest Owner *
<u>FEDERAL LAND</u>							
1	T-25-S, R-31-E Sec. 1: All Sec. 10: SE/4 Sec. 11: All Sec. 12: SW/4, N/2 Sec. 14: NW/4 Sec. 15: NE/4, E/2 NW/4, E/2 SW/4	2400.80	NM 0503 2-1-50	USA 12 2/3%	R. L. Harrison -1/2 Edwin W. Pauley -1/2	Tom W. Hefflin et ux Frieda Ballard E. Spencer Trust, Inc.	The Texas Company - 1/2 R. L. Harrison - 1/4 Edwin W. Pauley - 1/4
2	T-24-S, R-31-E Sec. 23: NE/4, S/2 Sec. 24: All Sec. 25: E/2 NE/4	2555.24	NM 0507 2-1-50	USA 12 1/2%	R. L. Harrison -1/2 Edwin W. Pauley -1/2	Tom W. Hefflin et ux Frieda Ballard E. Spencer Trust, Inc.	R. L. Harrison - 1/2 Edwin W. Pauley - 1/2
3	T-24-S, R-32-E Sec. 7: Lot 3, NE/4 SW/4, W/2 NE/4, E/2 NW/4	245.34	NM 04168 9-1-55	USA 12 1/2%	Mrs. Margaret A. Andrews	Margaret A. Andrews et vir F. K. -\$1000.00 per acre out of 3%	Continental Oil Company

EXHIBIT "B" (Cont'd)

Tr. No.	Description of Land	No. of Acres	Serial No. & Date of Lease or Application	Basic Royalty & Percentage	Lessee of Record	Overriding Royalty Owner and Percentage	Working Interest Owner *
4	T-24-S, R-32-E Sec. 17: N/2 Sec. 18: NE/4 Sec. 21: A11	1120.00	NM 04329 7-1-52	USA 12½%	G. W. Littlefield	Nell S. Sergeant-\$1000.00 per acre out of 3% Erle Payne-\$125.00 per acre out of 1/2 of 1%	G. W. Littlefield
5	T-24-S, R-31-E Sec. 13: N/2 T-24-S, R-32-E Sec. 18: Lots 1, 2, E/2 NW/4	490.65	NM 04534 5-1-52	USA 12½%	Grace E. Van Hook	None	Grace E. Van Hook
6	T-24-S, R-32-E Sec. 7 : Lots 1, 2	90.97	NM 06229 1-1-52	USA 12½%	M. G. Livermore -1/4 Frank O. Elliott-3/4	None	M. G. Livermore - 1/4 Frank O. Elliott - 3/4
7	T-24-S, R-31-E Sec. 25: W/2, SE/4 Sec. 26: A11 Sec. 35: NE/4	1280.00	NM 012121 12-1-50	USA 12½%	R. L. Harrison -1/2 Edwin W. Pauley-1/2	Clara Loving -1/2 of 1% Ballard E. Spencer - 1% Trust, Inc. Robert E. Ferguson -1/4 of 1% J. S. Ward & Son, Inc -1/4 of 1% C. B. Smith - 2% as to NW/4 Sec. 26 only	R. L. Harrison Edwin W. Pauley
8	T-24-S, R-32-E Sec. 7 : E/2 NE/4	80.00	NM 025283 5-1-57	USA 12½%	H. L. Sanderson	None	H. L. Sanderson
9	T-24-S, R-32-E Sec. 7 : SE/4, S/2 SW/4	245.25	NM 025543 1-1-58	USA 12½%	Vincent Cuccia -1/2 George E. Conley-1/2	None	Vincent Cuccia George E. Conley

EXHIBIT "B" (Cont'd)

Tr. No.	Description of Land	No. of Acres	Serial No. & Date of Lease or Application	Basic Royalty & Percentage	Lessee of Record	Overriding Royalty Owner and Percentage	Working Interest Owner *
10	T-24-S, R-31-E Sec. 23: S/2 NW/4	80.00	NM 025750 2-1-58	USA 12 1/2%	J. M. Garfinkel	None	J. M. Garfinkel
11	T-25-S, R-31-E Sec. 3: Lots 1, 2, S/2 NE/4	159.38	NM 042625 3-1-58	USA 12 1/2%	W. R. Pagen	None	W. R. Pagen - 1/2 The Texas Company - 1/2
12	T-25-S, R-31-E Sec. 3: E/2 SE/4 Sec. 10: NE/4	240.00	NM 042626 3-1-58	USA 12 1/2%	W. R. Pagen	None	W. R. Pagen - 1/2 The Texas Company - 1/2
13	T-25-S, R-31-E Sec. 3: W/2 SE/4	80.00	NM 046525 2-1-58	USA 12 1/2%	R. Hal Johnson, Jr.	None	R. Hal Johnson, Jr.
14	T-24-S, R-31-E Sec. 34: Lots 3, 4, N/2 SE/4 Sec. 35: NW/4, Lots 1, 2, 3, 4, N/2 S/2	628.68	NM 036379 8-1-57	USA 12 1/2%	R. J. Kerr	None	R. J. Kerr
15	T-24-S, R-31-E Sec. 34: NE/4	160.00	NM 037489 10-1-57	USA 12 1/2%	Lillian Hinkle Coll	None	Lillian Hinkle Coll
16	T-24-S, R-32-E Sec. 17: S/2 Sec. 18: S/2 Sec. 20: A11 Sec. 29: N/2, W/2 SE/4, SW/4 Sec. 30: E/2 Sec. 31: E/2	2491.15	LC 061637 10-1-48	USA 12 1/2%	R. L. Harrison -1/4 Edwin W. Pauley -1/4 The Texas Co. -1/2	J. A. Fairrey - 3% Erle Payne - 1%	R. L. Harrison - son - 1/4 Edwin W. Pauley - 1/4 The Texas Company - 1/2

EXHIBIT "B" (Cont'd)

Tr. No.	Description of Land	No. of Acres	Serial No. & Date of Lease or Application	Basic Royalty & Percentage	Lessee of Record	Overriding Royalty and Percentage	Owner	Working Interest Owner *
17	T-25-S, R-31-E Sec. 12: SE/4 Sec. 13: A11 Sec. 14: NE/4, S/2 Sec. 15: SE/4 Sec. 23: N/2	1760.00	LC 061862 6-1-50	USA 12½%	R. L. Harrison -1/2 Edwin W. Pauley-1/2	H. L. Arnold J. L. Prude C. L. Cameron Ballard E. Spencer Trust, Inc.	-1/2% -1% -1/2% -1/2%	R. L. Harrison - 1/4 Edwin W. Pauley - 1/4 The Texas Company - 1/2
18	T-24-S, R-32-E Sec. 33: W/2	320.00	LC 061863 6-1-50	USA 12½%	R. L. Harrison -1/2 Edwin W. Pauley-1/2	Ballard E. Spencer Trust, Inc. Marshall Rowley	-1% -1% -1%	R. L. Harrison Edwin W. Pauley
19	T-25-S, R-32-E Sec. 4: W/2 Sec. 5: A11 Sec. 6: A11 Sec. 7: N/2	1922.99	LC 061863 6-1-50	USA 12½%	R. L. Harrison -1/2 Edwin W. Pauley-1/2	Ballard E. Spencer Trust, Inc. Marshall Rowley	-1% -1% -1%	R. L. Harrison - 1/4 Edwin W. Pauley - 1/4 The Texas Company - 1/2
19	T-25-S, R-31-E Sec. 24: N/2	2398.96	LC 061869 1-1-51	USA 12½%	Eugene H. Perry	J. A. Falrey H. L. Arnold	-3% -1/2%	Sid W. Richardson & Perry R. Bass
20	T-25-S, R-32-E Sec. 17: SE/4 Sec. 19: A11 Sec. 20: A11 Sec. 21: A11	319.45	LC 061873-A 3-1-51	USA 12½%	The Texas Company	Jack B. Shaw et ux Virginia Ballard E. Spencer Trust, Inc.	-1% -1%	The Texas Company
20	T-25-S, R-32-E Sec. 18: Lots 1, 2, E/2 NW/4, NE/4	319.45	LC 061873-A 3-1-51	USA 12½%	The Texas Company	Jack B. Shaw et ux Virginia Ballard E. Spencer Trust, Inc.	-1% -1%	The Texas Company

EXHIBIT "B" (Cont'd)

Tr. No.	Description of Land	No. of Acres	Serial No. & Date of Lease or Application	Basic Royalty & Percentage	Lessee of Record	Overriding Royalty and Percentage	Owner	Working Interest Owner *
21	T-25-S, R-32-E	319.73	LC 061873	USA	R. L. Harrison -1/2	Jack B. Shaw et ux	-1%	R. L. Harrison
	Sec. 7: Lots 3, 4, E/2 SW/4, SE/4		3-1-51	12 1/2%	Edwin W. Pauley -1/2	Virginia Ballard E. Spencer Trust, Inc.	-1%	Edwin W. Pauley
	T-25-S, R-32-E	1759.31	LC 061873	USA	R. L. Harrison -1/2	Jack B. Shaw et ux	-1%	R. L. Harrison -1/4
21	Sec. 8: A11		3-1-51	12 1/2%	Edwin W. Pauley -1/2	Virginia Ballard E. Spencer Trust, Inc.	-1%	Edwin W. Pauley
	Sec. 9: W/2							-1/4
	Sec. 17: N/2, SW/4							The Texas Co. -1/2
21	Sec. 18: Lots 3, 4, E/2 SW/4, SE/4							
	T-24-S, R-32-E	1879.14	LC 061936	USA	R. L. Harrison -1/2	Emily Flint Ray	-2%	R. L. Harrison
	Sec. 27: SE/4		7-1-51	12 1/2%	Edwin W. Pauley -1/2	et vir G. B.		Edwin W. Pauley
21	Sec. 34: A11							
	T-25-S, R-32-E	520.00	LC 061936	USA	R. L. Harrison -1/2	Emily Flint Ray	-2%	R. L. Harrison -1/4
	Sec. 3: A11		7-1-51	12 1/2%	Edwin W. Pauley -1/2	et vir G. B.		Edwin W. Pauley
22	Sec. 10: E/2, N/2 NW/4, SE/4 NW/4							The Texas Co. -1/2
	T-25-S, R-32-E	1359.20	LC 062000	USA	R. L. Harrison -1/2	Ballard E. Spencer Trust, Inc.	-2%	R. L. Harrison
	Sec. 27: W/2		10-1-48	12 1/2%	Edwin W. Pauley -1/2			Edwin W. Pauley
22	Sec. 28: A11							
	Sec. 29: E/2 SE/4							
	Sec. 33: E/2							
22	T-25-S, R-32-E	320.32	LC 062000	USA	R. L. Harrison -1/2	Ballard E. Spencer Trust, Inc.	-2%	R. L. Harrison -1/4
	Sec. 4: E/2		10-1-48	12 1/2%	Edwin W. Pauley -1/2			Edwin W. Pauley -1/4

EXHIBIT "B" (Cont'd)

Tr. No.	Description of Land	No. of Acres	Serial No. & Date of Lease or Application	Basic Royalty & Percentage	Lessee of Record	Overriding Royalty Owner and Percentage	Working Interest Owner *
23	T-25-S, R-31-E Sec. 23: S/2 Sec. 24: S/2 Sec. 26: N/2 Sec. 27: E/2 NW/4, NE/4	1200.00	LC 062140 3-1-51	USA 12½%	R. L. Harrison -1/2 Edwin W. Pauley-1/2	Clarence M. Gormley et ux Quilla Ballard E. Spencer Trust, Inc. -2/3%	R. L. Harrison Edwin W. Pauley The Texas Company -1/4 -1/4 -1/2
24	T-25-S, R-31-E Sec. 25: N/2	2479.82	LC 062300 3-1-51	USA 12½%	R. L. Harrison -1/2 Edwin W. Pauley-1/2	G. E. Jordan et ux Edna Ballard E. Spencer Trust, Inc. -1%	R. L. Harrison Edwin W. Pauley The Texas Company -1/4 -1/4 -1/2
25	T-25-S, R-32-E Sec. 15: All Sec. 22: W/2 E/2, W/2 Sec. 27: N/2 NW/4 Sec. 28: N/2 Sec. 29: N/2 Sec. 30: Lots 1, 2, E/2 NW/4, NE/4	720.00	LC 062654 1-1-51	USA 12½%	R. L. Harrison -1/2 Edwin W. Pauley-1/2	R. H. Hayes et ux Cathryn Ballard E. Spencer Trust, Inc. -1/2% Robert E. Ferguson -1/4% J. S. Ward & Son, Inc-1/4%	R. L. Harrison Edwin W. Pauley -1/2 -1/2
26	T-25-S, R-32-E Sec. 22: E/2 NE/4, NE/4 SE/4	120.00	LC 064727 4-1-51	USA 12½%	Ora R. Hall, Jr.	None	Ora R. Hall, Jr.

EXHIBIT "B" (Cont'd)

Tr. No.	Description of Land	No. of Acres	Serial No. & Date of Lease or Application	Basic Royalty & Percentages	Lessee of Record	Overriding Royalty and Percentage	Owner	Working Interest Owner *
27	T-25-S, R-32-E Sec. 27: N/2 NE/4, S/2 N/2	240.00	NM 045256 (Application filed 4-15-58)	USA 12 1/4%	Mrs. Peggy P. Jennings	None	Mrs. Peggy P. Jennings	
28	T-25-S, R-32-E Sec. 22: SE/4 SE/4	40.00	LC 065878 9-1-48	USA 12 1/2%	Porter Brown	None	Porter Brown	
29	T-24-S, R-32-E Sec. 8: N/2 Sec. 9: W/2, SE/4	800.00	LC 069272 6-1-51	USA 12 1/2%	R. L. Harrison -1/4 Edwin W. Pauley -1/4 The Texas Co. -1/2	Lloyd E. Lockhart et ux Erin Helen Magruder Kolliker and Fort Worth National Bank of Fort Worth, Texas, Trustee	-1 1/2%	R. L. Harrison Edwin W. Pauley The Texas Company -1/4 -1/4 -1/2
30	T-24-S, R-32-E Sec. 8: S/2 Sec. 9: NE/4	480.00	LC 069272-A 6-1-51	USA 12 1/2%	F. W. Estill	Lloyd E. Lockhart et ux Erin	-3%	F. W. Estill
31	T-25-S, R-31-E Sec. 22: E/2	320.00	LC 070707 8-1-51	USA 12 1/2%	E. B. Todhunter	None		E. B. Todhunter
32	T-25-S, R-31-E Sec. 22: E/2 W/2, NW/4, NW/4 SW/4	240.00	LC 070707-A 8-1-51	USA 12 1/2%	Jeff Hawks	E. B. Todhunter \$1,000.00 per acre out of -	-3%	Jeff Hawks

* 32 Federal Tracts containing 31,866.38 acres, or 90.673% of Unit Area.
Some Federal Leases are presently held under Option Agreement.

EXHIBIT "B" (Cont'd)

Tr. No.	Description of Land	No. of Acres	Serial No. & Date of Lease or Application	Basic Royalty & Percentage	Lessee of Record	Overriding Royalty Owner and Percentage	Working Interest Owner *
STATE LAND							
33	T-24-S, R-31-E Sec. 36: N/2 SE/4	80.00	E-2129-1 9-10-48	State 12 1/2%	R. L. Harrison -1/2 Edwin W. Pauley-1/2	None	R. L. Harrison Edwin W. Pauley
34	T-25-S, R-32-E Sec. 16: N/2	320.00	E-5009-1 2-10-51	State 12 1/2%	Continental Oil Co.	None	Continental Oil Co.
35	T-25-S, R-31-E Sec. 2: A11	639.92	E-7952 2-16-54	State 12 1/2%	The Ohio Oil Co.	None	The Ohio Oil Co.
36	T-24-S, R-32-E Sec. 16: S/2	320.00	E-8192 5-18-54	State 12 1/2%	Gulf Oil Corp.	None	Gulf Oil Corp.
37	T-24-S, R-32-E Sec. 16: N/2	320.00	E-8245 6-15-54	State 12 1/2%	Gulf Oil Corp.	None	Gulf Oil Corp.
38	T-24-S, R-32-E Sec. 32: W/2, SE/4, N/2 NE/4, SE/4, NE/4	600.00	E-8325-1 7-20-54	State 12 1/2%	R. L. Harrison -1/2 Edwin W. Pauley-1/2	None	R. L. Harrison Edwin W. Pauley
39	T-24-S, R-31-E Sec. 36: N/2, SW/4, S/2 SE/4	557.96	E-9127 6-21-55	State 12 1/2%	R. L. Harrison -1/2 Edwin W. Pauley-1/2	None	R. L. Harrison Edwin W. Pauley
40	T-25-S, R-32-E Sec. 16: S/2	320.00	E-9789 2-21-56	State 12 1/2%	Monsanto Chemical Co.	None	Monsanto Chemical Co.
41	T-24-S, R-32-E Sec. 32: SW/4 NE/4	40.00					Open

9 State Tracts containing 3,197.88 Acres, or 9.099% of Unit Area

EXHIBIT "B" (Cont'd)

Tr. No.	Description of Land	No. of Acres	Date of Lease Expiration	Royalty	Lessor of Record	Overriding Royalty and Percentage	Working Interest Owner
FEE LAND 42	T-24-S, R-31-E Sec. 23: N/2 NW/4	80.00	11-2-61	1/8	Twinwell Farm and Livestock Co.	None	Richardson and Bass
	1 Fee Tract Containing 80.00 Acres, or .228% of Unit Area						
	FEDERAL LAND			32 tracts	31,866.38 acres		90.673 % of unit area
	STATE LAND			9 tracts	3,197.88 acres		9.099 % of unit area
	FEE LAND			<u>1 tract</u>	<u>80.00 acres</u>		<u>.228 % of unit area</u>
	TOTAL			42 tracts	35,144.26 acres		100.00 %

CONSENT AND RATIFICATION
COTTON DRAW UNIT AGREEMENT
EMBRACING LANDS IN LEA AND EDDY COUNTIES, NEW MEXICO

The undersigned (whether one or more) hereby acknowledge receipt of a copy of the Unit Agreement for the Development and Operation of the Cotton Draw Unit Area embracing lands situated in Lea and Eddy Counties, New Mexico, which said agreement is dated the 21 day of April, 1958, and acknowledge that they have read the same and are familiar with the terms and conditions thereof. The undersigned also being the owners of the leasehold, royalty or other interest in the lands or minerals embraced in said unit area, as indicated on the schedule attached to said Unit Agreement as Exhibit "B", do hereby commit all of their said interest to the Cotton Draw Unit Agreement and do hereby consent thereto and ratify all of the terms and provisions thereof, exactly the same as if the undersigned had executed the original of said Unit Agreement or a counterpart thereof.

IN WITNESS WHEREOF, this instrument is executed by the undersigned as of the date set forth in their respective acknowledgments.

_____ Margaret A. Andrews
Andrews

STATE OF New Mexico
COUNTY OF Santa Fe

ss.

The foregoing instrument was acknowledged before me this 22nd day of May, 1958, by _____

My Commission Expires:
March 21 1962

Richard M. Barton
Notary Public

STATE OF _____
COUNTY OF _____

ss.

The foregoing instrument was acknowledged before me this _____ day of _____, 1958, by _____

My Commission Expires:

Notary Public

CONSENT AND RATIFICATION
COTTON DRAW UNIT AGREEMENT
EMBRACING LANDS IN LEA AND EDDY COUNTIES, NEW MEXICO

The undersigned (whether one or more) hereby acknowledge receipt of a copy of the Unit Agreement for the Development and Operation of the Cotton Draw Unit Area embracing lands situated in Lea and Eddy Counties, New Mexico, which said agreement is dated the 21 day of April, 1958, and acknowledge that they have read the same and are familiar with the terms and conditions thereof. The undersigned also being the owners of the leasehold, royalty or other interest in the lands or minerals embraced in said unit area, as indicated on the schedule attached to said Unit Agreement as Exhibit "B", do hereby commit all of their said interest to the Cotton Draw Unit Agreement and do hereby consent thereto and ratify all of the terms and provisions thereof, exactly the same as if the undersigned had executed the original of said Unit Agreement or a counterpart thereof.

IN WITNESS WHEREOF, this instrument is executed by the undersigned as of the date set forth in their respective acknowledgments.

_____ *Harry L. Arnold*

STATE OF CALIFORNIA
COUNTY OF SANTA CLARA

ss.

The foregoing instrument was acknowledged before me this 5th day of May, 1958, by Harry L. Arnold

My Commission Expires:
My Commission Expires July 22, 1960

Gertrude Sharnce
Notary Public

STATE OF _____
COUNTY OF _____

ss.

The foregoing instrument was acknowledged before me this _____ day of _____, 1958, by _____

My Commission Expires:

Notary Public

CONSENT AND RATIFICATION
COTTON DRAW UNIT AGREEMENT
EMBRACING LANDS IN LEA AND EDDY COUNTIES, NEW MEXICO

The undersigned (whether one or more) hereby acknowledge receipt of a copy of the Unit Agreement for the Development and Operation of the Cotton Draw Unit Area embracing lands situated in Lea and Eddy Counties, New Mexico, which said agreement is dated the 21 day of April, 1958, and acknowledge that they have read the same and are familiar with the terms and conditions thereof. The undersigned also being the owners of the leasehold, royalty or other interest in the lands or minerals embraced in said unit area, as indicated on the schedule attached to said Unit Agreement as Exhibit "B", do hereby commit all of their said interest to the Cotton Draw Unit Agreement and do hereby consent thereto and ratify all of the terms and provisions thereof, exactly the same as if the undersigned had executed the original of said Unit Agreement or a counterpart thereof.

IN WITNESS WHEREOF, this instrument is executed by the undersigned as of the date set forth in their respective acknowledgments.

_____ 

STATE OF CALIFORNIA
COUNTY OF LOS ANGELES

ss.

The foregoing instrument was acknowledged before me this 14th day of May, 1958, by _____
C. L. CAMERON

My Commission Expires:

3-14-'59


Notary Public

STATE OF _____
COUNTY OF _____

ss.

The foregoing instrument was acknowledged before me this _____ day of _____, 1958, by _____
My Commission Expires:

Notary Public

CONSENT AND RATIFICATION
COTTON DRAW UNIT AGREEMENT
EMBRACING LANDS IN LEA AND EDDY COUNTIES, NEW MEXICO

The undersigned (whether one or more) hereby acknowledge receipt of a copy of the Unit Agreement for the Development and Operation of the Cotton Draw Unit Area embracing lands situated in Lea and Eddy Counties, New Mexico, which said agreement is dated the 16th day of May, 1958, and acknowledge that they have read the same and are familiar with the terms and conditions thereof. The undersigned also being the owners of the leasehold, royalty or other interest in the lands or minerals embraced in said unit area, as indicated on the schedule attached to said Unit Agreement as Exhibit "B", do hereby commit all of their said interest to the Cotton Draw Unit Agreement and do hereby consent thereto and ratify all of the terms and provisions thereof, exactly the same as if the undersigned had executed the original of said Unit Agreement or a counterpart thereof.

IN WITNESS WHEREOF, this instrument is executed by the undersigned as of the date set forth in their respective acknowledgments.

Robert E. Ferguson

STATE OF New Mexico
COUNTY OF Eddy

ss.

The foregoing instrument was acknowledged before me this 16th day of May, 1958, by Robert E. Ferguson.

My Commission Expires:
May 12, 1961

William M. Sincelt
Notary Public

STATE OF _____
COUNTY OF _____

ss.

The foregoing instrument was acknowledged before me this _____ day of _____, 1958, by _____.
My Commission Expires:

Notary Public

CONSENT AND RATIFICATION
COTTON DRAW UNIT AGREEMENT
EMBRACING LANDS IN LEA AND EDDY COUNTIES, NEW MEXICO

The undersigned (whether one or more) hereby acknowledge receipt of a copy of the Unit Agreement for the Development and Operation of the Cotton Draw Unit Area embracing lands situated in Lea and Eddy Counties, New Mexico, which said agreement is dated the 21 day of April, 1958, and acknowledge that they have read the same and are familiar with the terms and conditions thereof. The undersigned also being the owners of the leasehold, royalty or other interest in the lands or minerals embraced in said unit area, as indicated on the schedule attached to said Unit Agreement as Exhibit "B", do hereby commit all of their said interest to the Cotton Draw Unit Agreement and do hereby consent thereto and ratify all of the terms and provisions thereof, exactly the same as if the undersigned had executed the original of said Unit Agreement or a counterpart thereof.

IN WITNESS WHEREOF, this instrument is executed by the undersigned as of the date set forth in their respective acknowledgments.

J. M. Garzinkel
Eleanor O. Garzinkel

STATE OF CALIFORNIA
COUNTY OF LOS ANGELES

ss.

The foregoing instrument was acknowledged before me this 8th day of May, 1958, by J. M. GARZINKEL

~~and ELEANOR GARZINKEL~~
My Commission Expires:

My Commission Expires March 14, 1959

George S. Lynch
Notary Public

STATE OF _____
COUNTY OF _____

ss.

The foregoing instrument was acknowledged before me this _____ day of _____, 1958, by _____.

My Commission Expires:

Notary Public

CONSENT AND RATIFICATION
COTTON DRAW UNIT AGREEMENT
EMBRACING LANDS IN LEA AND EDDY COUNTIES, NEW MEXICO

The undersigned (whether one or more) hereby acknowledge receipt of a copy of the Unit Agreement for the Development and Operation of the Cotton Draw Unit Area embracing lands situated in Lea and Eddy Counties, New Mexico, which said agreement is dated the 8th day of May, 1958, and acknowledge that they have read the same and are familiar with the terms and conditions thereof. The undersigned also being the owners of the leasehold, royalty or other interest in the lands or minerals embraced in said unit area, as indicated on the schedule attached to said Unit Agreement as Exhibit "B", do hereby commit all of their said interest to the Cotton Draw Unit Agreement and do hereby consent thereto and ratify all of the terms and provisions thereof, exactly the same as if the undersigned had executed the original of said Unit Agreement or a counterpart thereof.

IN WITNESS WHEREOF, this instrument is executed by the undersigned as of the date set forth in their respective acknowledgments.

Clarence M. Gormley 3658 Military Ave.
Quilla Gormley Los Angeles 34, Calif.

STATE OF California
COUNTY OF Los Angeles

ss.

The foregoing instrument was acknowledged before me this 8th day of May, 1958, by Clarence M. Gormley

My Commission Expires:
May 20, 1958

Harold M. Furrow
Notary Public

STATE OF California
COUNTY OF Los Angeles

ss.

The foregoing instrument was acknowledged before me this 8th day of May, 1958, by Quilla Gormley

My Commission Expires:
May 20, 1958

Harold M. Furrow
Notary Public

CONSENT AND RATIFICATION
COTTON DRAW UNIT AGREEMENT
EMBRACING LANDS IN LEA AND EDDY COUNTIES, NEW MEXICO

The undersigned (whether one or more) hereby acknowledge receipt of a copy of the Unit Agreement for the Development and Operation of the Cotton Draw Unit Area embracing lands situated in Lea and Eddy Counties, New Mexico, which said agreement is dated the 21 day of April, 1958, and acknowledge that they have read the same and are familiar with the terms and conditions thereof. The undersigned also being the owners of the leasehold, royalty or other interest in the lands or minerals embraced in said unit area, as indicated on the schedule attached to said Unit Agreement as Exhibit "B", do hereby commit all of their said interest to the Cotton Draw Unit Agreement and do hereby consent thereto and ratify all of the terms and provisions thereof, exactly the same as if the undersigned had executed the original of said Unit Agreement or a counterpart thereof.

IN WITNESS WHEREOF, this instrument is executed by the undersigned as of the date set forth in their respective acknowledgments.

Box 1320 Col. R. L. Harrison
Albuquerque Katharine H. Harrison
New Mexico

STATE OF NEW MEXICO |
COUNTY OF BERNALILLO | ss.

The foregoing instrument was acknowledged before me this 13 day of MAY, 1958, by COL. R. L. HARRISON
AND KATHARINE H. HARRISON.

My Commission Expires:

JANUARY 29, 1962

Paul G. Brown
Notary Public

STATE OF _____ |
COUNTY OF _____ | ss.

The foregoing instrument was acknowledged before me this _____ day of _____, 1958, by _____.

My Commission Expires:

Notary Public

CONSENT AND RATIFICATION
COTTON DRAW UNIT AGREEMENT
EMBRACING LANDS IN LEA AND EDDY COUNTIES, NEW MEXICO

The undersigned (whether one or more) hereby acknowledge receipt of a copy of the Unit Agreement for the Development and Operation of the Cotton Draw Unit Area embracing lands situated in Lea and Eddy Counties, New Mexico, which said agreement is dated the 21 day of April, 1958, and acknowledge that they have read the same and are familiar with the terms and conditions thereof. The undersigned also being the owners of the leasehold, royalty or other interest in the lands or minerals embraced in said unit area, as indicated on the schedule attached to said Unit Agreement as Exhibit "B", do hereby commit all of their said interest to the Cotton Draw Unit Agreement and do hereby consent thereto and ratify all of the terms and provisions thereof, exactly the same as if the undersigned had executed the original of said Unit Agreement or a counterpart thereof.

IN WITNESS WHEREOF, this instrument is executed by the undersigned as of the date set forth in their respective acknowledgments.

R. H. Hayes
Cathryn Hayes

STATE OF NEW MEXICO
COUNTY OF EDDY

ss.

The foregoing instrument was acknowledged before me this 2nd day of May, 1958, by R. H. HAYES and CATHRYN HAYES, his wife.

My Commission Expires:

November 17, 1960

Dorothy Dunn
Notary Public
(Formerly Dorothy Dunn)

STATE OF _____
COUNTY OF _____

ss.

The foregoing instrument was acknowledged before me this _____ day of _____, 1958, by _____.

My Commission Expires:

Notary Public

CONSENT AND RATIFICATION
COTTON DRAW UNIT AGREEMENT
EMBRACING LANDS IN LEA AND EDDY COUNTIES, NEW MEXICO

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IN WITNESS WHEREOF, this instrument is executed by the undersigned as of the date set forth in their respective acknowledgments.

_____ Wlara Lorno

STATE OF New Mexico
COUNTY OF Eddy

ss.

The foregoing instrument was acknowledged before me this 29 day of May, 1958, by Clara Lorno.

My Commission Expires:
10-15-59

Chris Chapin
Notary Public

STATE OF _____
COUNTY OF _____

ss.

The foregoing instrument was acknowledged before me this _____ day of _____, 1958, by _____.

My Commission Expires:

Notary Public

CONSENT AND RATIFICATION
COTTON DRAW UNIT AGREEMENT
EMBRACING LANDS IN LEA AND EDDY COUNTIES, NEW MEXICO

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IN WITNESS WHEREOF, this instrument is executed by the undersigned as of the date set forth in their respective acknowledgments.

William R. Pagen
Aileen D. Pagen

STATE OF CALIFORNIA
COUNTY OF LOS ANGELES

ss.

The foregoing instrument was acknowledged before me this 7th day of May, 1958, by WILLIAM R. PAGEN

~~and AILEEN D. PAGEN~~
My Commission Expires:

My Commission Expires March 14, 1959

Georgia D. Lynch
Notary Public

STATE OF _____
COUNTY OF _____

ss.

The foregoing instrument was acknowledged before me this _____ day of _____, 1958, by _____.

My Commission Expires:

Notary Public

CONSENT AND RATIFICATION
COTTON DRAW UNIT AGREEMENT
EMBRACING LANDS IN LEA AND EDDY COUNTIES, NEW MEXICO

The undersigned (whether one or more) hereby acknowledge receipt of a copy of the Unit Agreement for the Development and Operation of the Cotton Draw Unit Area embracing lands situated in Lea and Eddy Counties, New Mexico, which said agreement is dated the 21 day of April, 1958, and acknowledge that they have read the same and are familiar with the terms and conditions thereof. The undersigned also being the owners of the leasehold, royalty or other interest in the lands or minerals embraced in said unit area, as indicated on the schedule attached to said Unit Agreement as Exhibit "B", do hereby commit all of their said interest to the Cotton Draw Unit Agreement and do hereby consent thereto and ratify all of the terms and provisions thereof, exactly the same as if the undersigned had executed the original of said Unit Agreement or a counterpart thereof.

IN WITNESS WHEREOF, this instrument is executed by the undersigned as of the date set forth in their respective acknowledgments.

Edwin W. Pauley
Barbara Jean Pauley

STATE OF CALIFORNIA
COUNTY OF LOS ANGELES

ss.

The foregoing instrument was acknowledged before me this 1st day of May, 1958, by EDWIN W. PAULEY and

BARBARA JEAN PAULEY

My Commission Expires:
My Commission Expires March 14, 1959

George D. Lynch
Notary Public

STATE OF _____
COUNTY OF _____

ss.

The foregoing instrument was acknowledged before me this _____ day of _____, 1958, by _____.

My Commission Expires:

Notary Public

CONSENT AND RATIFICATION
COTTON DRAW UNIT AGREEMENT
EMBRACING LANDS IN LEA AND EDDY COUNTIES, NEW MEXICO

The undersigned (whether one or more) hereby acknowledge receipt of a copy of the Unit Agreement for the Development and Operation of the Cotton Draw Unit Area embracing lands situated in Lea and Eddy Counties, New Mexico, which said agreement is dated the 21 day of April, 1958, and acknowledge that they have read the same and are familiar with the terms and conditions thereof. The undersigned also being the owners of the leasehold, royalty or other interest in the lands or minerals embraced in said unit area, as indicated on the schedule attached to said Unit Agreement as Exhibit "B", do hereby commit all of their said interest to the Cotton Draw Unit Agreement and do hereby consent thereto and ratify all of the terms and provisions thereof, exactly the same as if the undersigned had executed the original of said Unit Agreement or a counterpart thereof.

IN WITNESS WHEREOF, this instrument is executed by the undersigned as of the date set forth in their respective acknowledgments.

_____ *Erle Payne* _____

STATE OF VIRGINIA
COUNTY OF ARLINGTON

ss.

The foregoing instrument was acknowledged before me this 14th day of MAY, 1958, by ERLE PAYNE

My Commission Expires:

_____ *John M. Kelly* _____
Notary Public

STATE OF _____
COUNTY OF _____

ss.

The foregoing instrument was acknowledged before me this _____ day of _____, 1958, by _____.

My Commission Expires:

_____ Notary Public

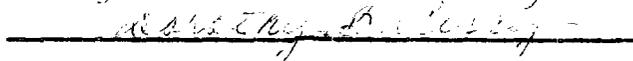
CONSENT RATIFICATION
COTTON DRAW UNIT AGREEMENT
EMBRACING LANDS IN
LEA AND EDDY COUNTIES, NEW MEXICO

THE UNDERSIGNED, (whether one or more), hereby acknowledge receipt of a copy of the Unit Agreement For the Development and Operation of the Cotton Draw Unit Area embracing lands situated in Lea and Eddy Counties, New Mexico, which said Agreement is dated the _____ day of _____, 195____, and acknowledge that they have read the same and are familiar with the terms and conditions thereof.

The undersigned also being the owner of the leasehold, royalty or other interests in the lands or minerals embraced in said Unit Area, as indicated on the schedule attached to said Unit Agreement as Exhibit "B" do hereby commit all of their said interest to the Cotton Draw Unit Agreement and do hereby consent thereto and do ratify all of the terms and provisions thereof exactly the same as if the undersigned had executed the original of said Unit Agreement or a counterpart thereof.

IN WITNESS WHEREOF, this instrument is executed by the undersigned as of the date set forth in their acknowledgment.





STATE OF TEXAS |
 |
COUNTY OF TARRANT |

The foregoing instrument was acknowledged before me this
11th day of June, 1958, by Eugene H. Perry
and Dorothy B. Perry.

My Commission .Expires
June 1, 1959



Notary Public in and for
Tarrant County, Texas.

CONSENT AND RATIFICATION
COTTON DRAW UNIT AGREEMENT
EMBRACING LANDS IN LEA AND EDDY COUNTIES, NEW MEXICO

The undersigned (whether one or more) hereby acknowledge receipt of a copy of the Unit Agreement for the Development and Operation of the Cotton Draw Unit Area embracing lands situated in Lea and Eddy Counties, New Mexico, which said agreement is dated the 21 day of April, 1958, and acknowledge that they have read the same and are familiar with the terms and conditions thereof. The undersigned also being the owners of the leasehold, royalty or other interest in the lands or minerals embraced in said unit area, as indicated on the schedule attached to said Unit Agreement as Exhibit "B", do hereby commit all of their said interest to the Cotton Draw Unit Agreement and do hereby consent thereto and ratify all of the terms and provisions thereof, exactly the same as if the undersigned had executed the original of said Unit Agreement or a counterpart thereof.

IN WITNESS WHEREOF, this instrument is executed by the undersigned as of the date set forth in their respective acknowledgments.

_____ Mrs Emily Flint Ray

STATE OF Texas
COUNTY OF Potter

ss.

The foregoing instrument was acknowledged before me this 14 day of May, 1958, by Mrs Emily Flint Ray.

My Commission Expires:
June 1, 1959

Henry Tomson
Notary Public

STATE OF _____
COUNTY OF _____

ss.

The foregoing instrument was acknowledged before me this _____ day of _____, 1958, by _____.

My Commission Expires:

Notary Public

CONSENT AND RATIFICATION
COTTON DRAW UNIT AGREEMENT
EMBRACING LANDS IN LEA AND EDDY COUNTIES, NEW MEXICO

The undersigned (whether one or more) hereby acknowledge receipt of a copy of the Unit Agreement for the Development and Operation of the Cotton Draw Unit Area embracing lands situated in Lea and Eddy Counties, New Mexico, which said agreement is dated the 21 day of April, 1958, and acknowledge that they have read the same and are familiar with the terms and conditions thereof. The undersigned also being the owners of the leasehold, royalty or other interest in the lands or minerals embraced in said unit area, as indicated on the schedule attached to said Unit Agreement as Exhibit "B", do hereby commit all of their said interest to the Cotton Draw Unit Agreement and do hereby consent thereto and ratify all of the terms and provisions thereof, exactly the same as if the undersigned had executed the original of said Unit Agreement or a counterpart thereof.

IN WITNESS WHEREOF, this instrument is executed by the undersigned as of the date set forth in their respective acknowledgments.

_____ Marshall Rowley

STATE OF New Mexico
COUNTY OF Eddy

ss.

The foregoing instrument was acknowledged before me this 28 day of May, 1958, by Marshall Rowley.

My Commission Expires:
October 15, 1959

Chris Chapin
Notary Public

STATE OF _____
COUNTY OF _____

ss.

The foregoing instrument was acknowledged before me this _____ day of _____, 1958, by _____.

My Commission Expires:

Notary Public

CONSENT AND RATIFICATION
COTTON DRAW UNIT AGREEMENT
EMBRACING LANDS IN LEA AND EDDY COUNTIES, NEW MEXICO

The undersigned (whether one or more) hereby acknowledge receipt of a copy of the Unit Agreement for the Development and Operation of the Cotton Draw Unit Area embracing lands situated in Lea and Eddy Counties, New Mexico, which said agreement is dated the 21 day of April, 1958, and acknowledge that they have read the same and are familiar with the terms and conditions thereof. The undersigned also being the owners of the leasehold, royalty or other interest in the lands or minerals embraced in said unit area, as indicated on the schedule attached to said Unit Agreement as Exhibit "B", do hereby commit all of their said interest to the Cotton Draw Unit Agreement and do hereby consent thereto and ratify all of the terms and provisions thereof, exactly the same as if the undersigned had executed the original of said Unit Agreement or a counterpart thereof.

IN WITNESS WHEREOF, this instrument is executed by the undersigned as of the date set forth in their respective acknowledgments.

_____ Jack B. Shaw

STATE OF New Mexico
COUNTY OF Eddy

ss.

The foregoing instrument was acknowledged before me this 23 day of May, 1958, by Jack B. Shaw and Virginia Shaw.

My Commission Expires:
March 3, 1962

Robert S. Lawrence
Notary Public

STATE OF _____
COUNTY OF _____

ss.

The foregoing instrument was acknowledged before me this _____ day of _____, 1958, by _____.
My Commission Expires:

Notary Public

CONSENT AND RATIFICATION
COTTON DRAW UNIT AGREEMENT
EMBRACING LANDS IN LEA AND EDDY COUNTIES, NEW MEXICO

The undersigned (whether one or more) hereby acknowledge receipt of a copy of the Unit Agreement for the Development and Operation of the Cotton Draw Unit Area embracing lands situated in Lea and Eddy Counties, New Mexico, which said agreement is dated the 21 day of April, 1958, and acknowledge that they have read the same and are familiar with the terms and conditions thereof. The undersigned also being the owners of the leasehold, royalty or other interest in the lands or minerals embraced in said unit area, as indicated on the schedule attached to said Unit Agreement as Exhibit "B", do hereby commit all of their said interest to the Cotton Draw Unit Agreement and do hereby consent thereto and ratify all of the terms and provisions thereof, exactly the same as if the undersigned had executed the original of said Unit Agreement or a counterpart thereof.

IN WITNESS WHEREOF, this instrument is executed by the undersigned as of the date set forth in their respective acknowledgments.

ATTEST: J. A. Fairley Secretary
BALLARD E. SPENCER TRUST, INC.
By: Carl R. Spencer Vice President

STATE OF NEW MEXICO
COUNTY OF E D D Y

ss.

The foregoing instrument was acknowledged before me this 31st day of May, 1958, by CARL R. SPENCER, Vice President of BALLARD E. SPENCER TRUST, INC., a New Mexico corporation, on behalf of said corporation.

My Commission Expires:
October 1, 1960

Louis L. Smith
Notary Public

STATE OF _____
COUNTY OF _____

ss.

The foregoing instrument was acknowledged before me this _____ day of _____, 1958, by _____.

My Commission Expires:

Notary Public

CONSENT AND RATIFICATION
COTTON DRAW UNIT AGREEMENT
EMBRACING LANDS IN LEA AND EDDY COUNTIES, NEW MEXICO

The undersigned (whether one or more) hereby acknowledge receipt of a copy of the Unit Agreement for the Development and Operation of the Cotton Draw Unit Area embracing lands situated in Lea and Eddy Counties, New Mexico, which said agreement is dated the 21 day of April, 1958, and acknowledge that they have read the same and are familiar with the terms and conditions thereof. The undersigned also being the owners of the leasehold, royalty or other interest in the lands or minerals embraced in said unit area, as indicated on the schedule attached to said Unit Agreement as Exhibit "B", do hereby commit all of their said interest to the Cotton Draw Unit Agreement and do hereby consent thereto and ratify all of the terms and provisions thereof, exactly the same as if the undersigned had executed the original of said Unit Agreement or a counterpart thereof.

IN WITNESS WHEREOF, this instrument is executed by the undersigned as of the date set forth in their respective acknowledgments.

E. B. Todhunter
Irene Todhunter

STATE OF NEW MEXICO
COUNTY OF CHAVES

ss.

The foregoing instrument was acknowledged before me this 9th day of June, 1958, by E. B. Todhunter and

Irene Todhunter

My Commission Expires:

4-10-1960

[Signature]
Notary Public

STATE OF _____
COUNTY OF _____

ss.

The foregoing instrument was acknowledged before me this _____ day of _____, 1958, by _____.

My Commission Expires:

Notary Public

CONSENT AND RATIFICATION
COTTON DRAW UNIT AGREEMENT
EMBRACING LANDS IN LEA AND EDDY COUNTIES, NEW MEXICO

The undersigned (whether one or more) hereby acknowledge receipt of a copy of the Unit Agreement for the Development and Operation of the Cotton Draw Unit Area embracing lands situated in Lea and Eddy Counties, New Mexico, which said agreement is dated the 21 day of April, 1958, and acknowledge that they have read the same and are familiar with the terms and conditions thereof. The undersigned also being the owners of the leasehold, royalty or other interest in the lands or minerals embraced in said unit area, as indicated on the schedule attached to said Unit Agreement as Exhibit "B", do hereby commit all of their said interest to the Cotton Draw Unit Agreement and do hereby consent thereto and ratify all of the terms and provisions thereof, exactly the same as if the undersigned had executed the original of said Unit Agreement or a counterpart thereof.

IN WITNESS WHEREOF, this instrument is executed by the undersigned as of the date set forth in their respective acknowledgments.

ATTEST: J.S. WARD & SON, INC.
~~J. Howard~~ SEC. - TREAS. BY: J. Ward PRES.

STATE OF New Mexico
 COUNTY OF Eddy

ss.

The foregoing instrument was acknowledged before me this 12 day of May, 1958, by J.S. Ward Pres.
J.S. Ward & Son, Inc.

My Commission Expires:
11-22-58

Donald A. Pless
 Notary Public

STATE OF _____
 COUNTY OF _____

ss.

The foregoing instrument was acknowledged before me this _____ day of _____, 1958, by _____.
 My Commission Expires:

 Notary Public

CONSENT AND RATIFICATION
COTTON DRAW UNIT AGREEMENT
EMBRACING LANDS IN LEA AND EDDY COUNTIES, NEW MEXICO

RECEIVED
JUN 7 1958
COUNTY CLERK
LEA COUNTY
NEW MEXICO

The undersigned (whether one or more) hereby acknowledge receipt of a copy of the Unit Agreement for the Development and Operation of the Cotton Draw Unit Area embracing lands situated in Lea and Eddy Counties, New Mexico, which said agreement is dated the _____ day of _____, 1958, and acknowledge that they have read the same and are familiar with the terms and conditions thereof. The undersigned also being the owners of the leasehold, royalty or other interest in the lands or minerals embraced in said unit area, as indicated on the schedule attached to said Unit Agreement as Exhibit "B", do hereby commit all of their said interest to the Cotton Draw Unit Agreement and do hereby consent thereto and ratify all of the terms and provisions thereof, exactly the same as if the undersigned had executed the original of said Unit Agreement or a counterpart thereof.

IN WITNESS WHEREOF, this instrument is executed by the undersigned as of the date set forth in their respective acknowledgments.

_____ *Tom W. Hepler*
_____ *Frieda Hepler*

STATE OF New Mexico
COUNTY OF Eddy

ss.

The foregoing instrument was acknowledged before me this 17th day of June, 1958, by _____

My Commission Expires:
Feb. 24, 1960.

Elia Aragon
Notary Public

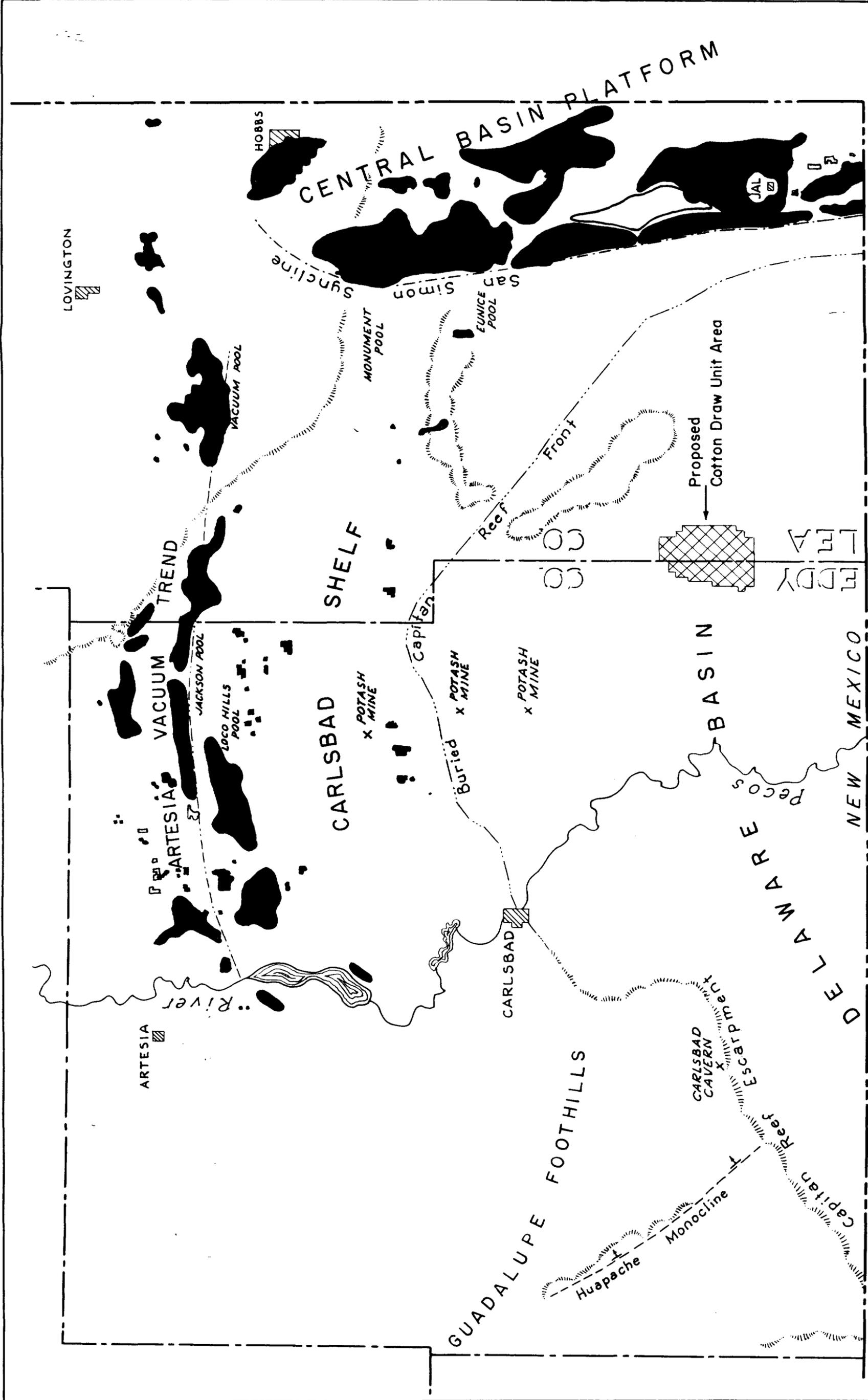
STATE OF _____
COUNTY OF _____

ss.

The foregoing instrument was acknowledged before me this _____ day of _____, 1958, by _____

My Commission Expires:

Notary Public



**PRINCIPAL TECTONIC UNITS
of
SOUTHEASTERN NEW MEXICO**

LEGEND

- Oil Pool
- Gas Pool
- Huapache Monocline
- San Simon Syncline
- Buried Capitan Reef Front
- Artesia Vacuum Trend

Scale in Miles

0 5 10

FIGURE 1

APPLICATION
FOR
DESIGNATION OF UNITIZED AREA
COTTON DRAW SEISMOGRAPH STRUCTURE

Eddy and Lea Counties
New Mexico

BEFORE EXAMINER UTZ	
OIL CONSERVATION COMMISSION	
<i>Lea Co.</i> 1996	EXHIBIT NO. <u>2</u>
CASE NO.	<u>1996</u>

Edwin W. Pauley
and
Raymond L. Harrison

Compiled
by
FRANK C. BARNES
Geologist

DECEMBER 1955

APPLICATION FOR THE DESIGNATION OF AN
UNPROVEN UNIT AREA
COTTON DRAW SEISMOGRAPH STRUCTURE

EDDY AND LEA COUNTIES, NEW MEXICO

INTRODUCTION

The partnership of Edwin W. Pauley and Raymond L. Harrison does hereby make application for approval of a Unit or cooperative development agreement. Such agreement to be subject to all Federal and State requirements as outlined under Unit Plan Regulations. The proposed unit area to be known as the "Cotton Draw" unit, so named after Cotton Draw, a topographic feature in the area.

The possibility of favorable structure in the Cotton Draw area has been the subject of intense geological and geophysical studies for several years. Three deep wells have been drilled in adjoining areas to test similar structural and stratigraphic features. Studies of the results of this drilling combined with later seismograph interpretation have led to the conclusion that structural conditions favorable to the accumulation of oil or gas in commercial quantities exists within the proposed "Cotton Draw" unit area (Fig. 3). Seismic interpretation was made by P. E. Narvarte, Geophysicist, of San Antonio, Texas.

LOCATION

The "Cotton Draw" unit area is located in Township 24 & 25S - Ranges 31 & 32 East, Eddy and Lea Counties, New Mexico (Fig. 1 and 3). This

area is 35 miles southeast of Carlsbad and about 32 miles due west of Jal, New Mexico. The area is also about six miles north of the Texas-New Mexico state line. An ownership map (Fig. 2) is included to outline the lease status within and adjoining the unit area. Physiographically the area is entirely within the Pecos Valley section of the Great Plains province. Tectonically the Cotton Draw area is in the Delaware Basin. Surface topography is flat with elevations ranging from 3,300 feet to 3,600 feet.

GENERAL GEOLOGY

A generalized stratigraphic section of southeastern New Mexico has been included as Table A. A columnar section of the Richardson and Bass, No. 1 Harrison - Federal (Table B) has also been included to illustrate the general stratigraphic section that could be expected in the Cotton Draw area.

The Delaware Basin occupies the southern portion of the larger Permian Basin, and is separated from the Midland Basin by the Central Basin Platform (Fig. 1). The Delaware Basin is sometimes considered to include the area enclosed by the Capitan reef, and while this is not entirely correct, nevertheless, the area is enclosed by prominent Permian reefs. The Basin is approximately 150 miles long in a north-south direction and about 100 miles wide in an east-west direction.

Favorable conditions for commercial accumulation of oil or gas within the Delaware Basin are known to exist in the Delaware Mountain sands, the Bone Spring limestone, the Wolfcamp and the Pennsylvanian. The Siluro-Devonian and the Ordovician are also considered as potential oil and gas

reservoirs. At the present time there are 11 designated oil pools in the Delaware Basin of which some 7 are currently producing. Commercial production has been from the Delaware, Castile, Bone Spring, and the Pennsylvanian.

The surface outcrop in the Cotton Draw area consists of recent and quaternary alluvium and sand. No outcrops of bedrock are known in the area that would provide satisfactory units for surface geological mapping. The flat topography combined with generally unfavorable outcrops makes structural interpretation based on surface data extremely difficult and unreliable. For this reason, geophysical interpretation of deep seated structure is necessary.

SEISMOGRAPH WORK

Extremely adverse near-surface conditions required the use of extraordinary shooting and recording techniques in this area. Shot point location was usually from one deep shot hole and a series of shallow holes spread in a geometric pattern around the shot station. In general, seismic work consisted of a series of continuous traverses, which after the initial stages were supplemented by detailed lines shot over the apparent structural features.

Near surface velocities vary over an extremely wide range. Correction for near surface velocities was of considerable importance. Well velocity surveys were conducted in several shallow test holes in the general area for the determination of near surface velocity corrections. Velocity data used in interpretation of subsurface structure is believed to be more

accurate than that available in older surveys. However, many problems remain and results are subject to variations in interpretation so that a single test in the area might not be conclusive. Estimates of depth of formation tops may be in error locally. An east-west cross section of the Cotton Draw unit area (Fig. 4) based on seismograph interpretation has been included to show approximate depths as well as structure.

STRUCTURAL INTERPRETATION

A reflection seismograph map contoured on the Bone Spring limestone has been included to illustrate the general structural interpretation of the unit area (Fig. 3). Seismograph mapping of the general area indicates the possibility of a major structural feature, possibly an anticlinorium centering about the Cotton Draw unit area. This feature appears to be present in variable form at all levels contoured and becomes more accentuated with depth.

Normal dip in the area appears to be to the east at the Delaware level with considerable flattening at intermediate depths between there and the Pennsylvanian. Positive determination of the regional dip on the Pennsylvanian is not possible, but it is believed to be to the south. Principal seismograph structural feature in the area appears to be located in the north-east portion of T. 25S- R. 31E. At the Bone Springs level, structural evidence at the crest is intermediate in magnitude between the Delaware and Pennsylvanian with some evidence of structural extension to the

southeast. There are other lesser structural possibilities that would deserve serious consideration if the first well were productive in any zone.

Because of the unusual problems involved in any seismograph work in the area, all data required the most careful techniques in order to arrive at an interpretation of maximum accuracy. On the other hand, despite the many refinements employed, the accuracy of seismic interpretations would of necessity be subject to certain limitations. It is therefore, possible that more than one test of the principal structural feature would be required. The location of a second test could be determined by the structural and stratigraphic data obtained in the first well and the presence or lack of production in any zone.

DRILLING OBJECTIVES

It is proposed at this time to drill a well to test all formations to and including the top of the Bone Spring limestone. No wells have been drilled within the proposed unit area to this depth. Such a test would provide valuable subsurface information in addition to testing the various intermediate productive possibilities. In the event that drilling confirmed the seismograph interpretation it might be desirable to drill below the originally stated objective if no production is found at shallower depth. However, a test to the Bone Spring limestone is in itself fully justified as the primary objective of the first well. In the event that drilling data did not substantiate present structural interpretation at the Bone Spring level, then deeper

drilling would not be warranted.

Important shows of oil were encountered in the Richardson and Bass No. 1 Harrison - Federal (Sec. 12-25S-30E) in the Delaware sands and in the Bone Spring. The El Paso Natural Gas Co., Poker Lake Unit No. 2 (Sec. 1-25S-30E) also encountered oil shows in the upper Bone Spring. The tops encountered in the Richardson and Bass No. 1 Harrison-Federal are listed below as it is highly probable that a similar section would be encountered in a test of the Cotton Draw area.

Age	Series	Depth	Thickness
	Ochoa	1160'	2880'
	Guadalupe	4040'	3860'
Permian	Leonard	7900'	2920'
	Wolfcamp	10,820'	2918'
Pennsylvanian	Strawn	13,738'	232'
	Atoka	13,970'	1890'
	Shale	15,860'	230'
Mississippian	Limestone	16,090'	390'
	Woodford sh.	16,480'	140'
Siluro-Devonian		16,620'	

CONCLUSION

In conclusion, a number of facts have been presented to support the application for unitization of the Cotton Draw area. The most important single factor is the highly favorable seismic evidence of deep seated structure of considerable size. The second point is the favorable stratigraphic section underlying the area which contains formations known to be favorable to oil or gas accumulation under proper structural conditions. In the event the Cotton Draw seismograph structure is unitized, we would drill a test well into the top of the Bone Spring limestone to a depth of approximately 8,800 feet, provided commercial production or impenetrable formation was not found at shallower depth. In the event anticipated producing zones were missing from the apex of the structure, then flank tests for stratigraphic accumulation could be considered.

Respectfully submitted,

Edwin W. Pauley and Raymond L. Harrison

Edwin W. Pauley

Raymond L. Harrison

December 1955



Frank C. Barnes
Geologist

TABLE A

GENERALIZED STRATIGRAPHIC SECTION
SOUTHEASTERN NEW MEXICO

SYSTEM	SERIES	FORMATION	Approx. Average Thickness in Feet
PERMIAN	OCHOA	DEWEY LAKE FM.	75- 200
		RUSTLER FM.	150- 250
		SALADO FM.	1000- 2000
		CASTILE FM.	0- 1500
	GUADALUPE	TANSILL FM.	DELAWARE MTN. GROUP
YATES SS.		200- 300	
SEVEN RIVERS		750- 800	
QUEEN FM.	400- 450		
GREYBURG	300±		
LEONARD	SAN ANDRES LS.	BONE SPRINGS LS.	500- 1200
	GLORIETA SS.		50±
	YESO		1000- 2000
	DRINKARD FM.		
WOLFCAMP	ABO - HUECO LS.		1000- 2000
PENNSYLVANIAN	VIRGIL MISSOURI DES MOINES ATOKA		1800 TO 2000
MISSISSIPPIAN	CHESTER	HELMS	800 TO
	MERAMEC	RANCHERIA	1200
DEVONIAN	UPPER	WOODFORD	1100 ±
	LOWER		
SILURIAN	MIDDLE	FUSSELMAN	40- 1000
ORDOVICIAN	UPPER	MONTOYA	200- 400
	MIDDLE	SIMPSON	800±
	LOWER	ELLENBURGER	400±
CAMBRIAN		BLISS SS.	0- 100
PRE - CAMBRIAN		GRANITE, SCHIST	

RICHARDSON & BASS #1 HARRISON-FEDERAL EDDY COUNTY, N.M.

Drilled 660' fr N & W Lines Sec. 12 Twp. 25 S. Rge. 30 E.

Elev. 3378' T.D. 16705' Comm. 7-22-52 Compl. 5-22-54

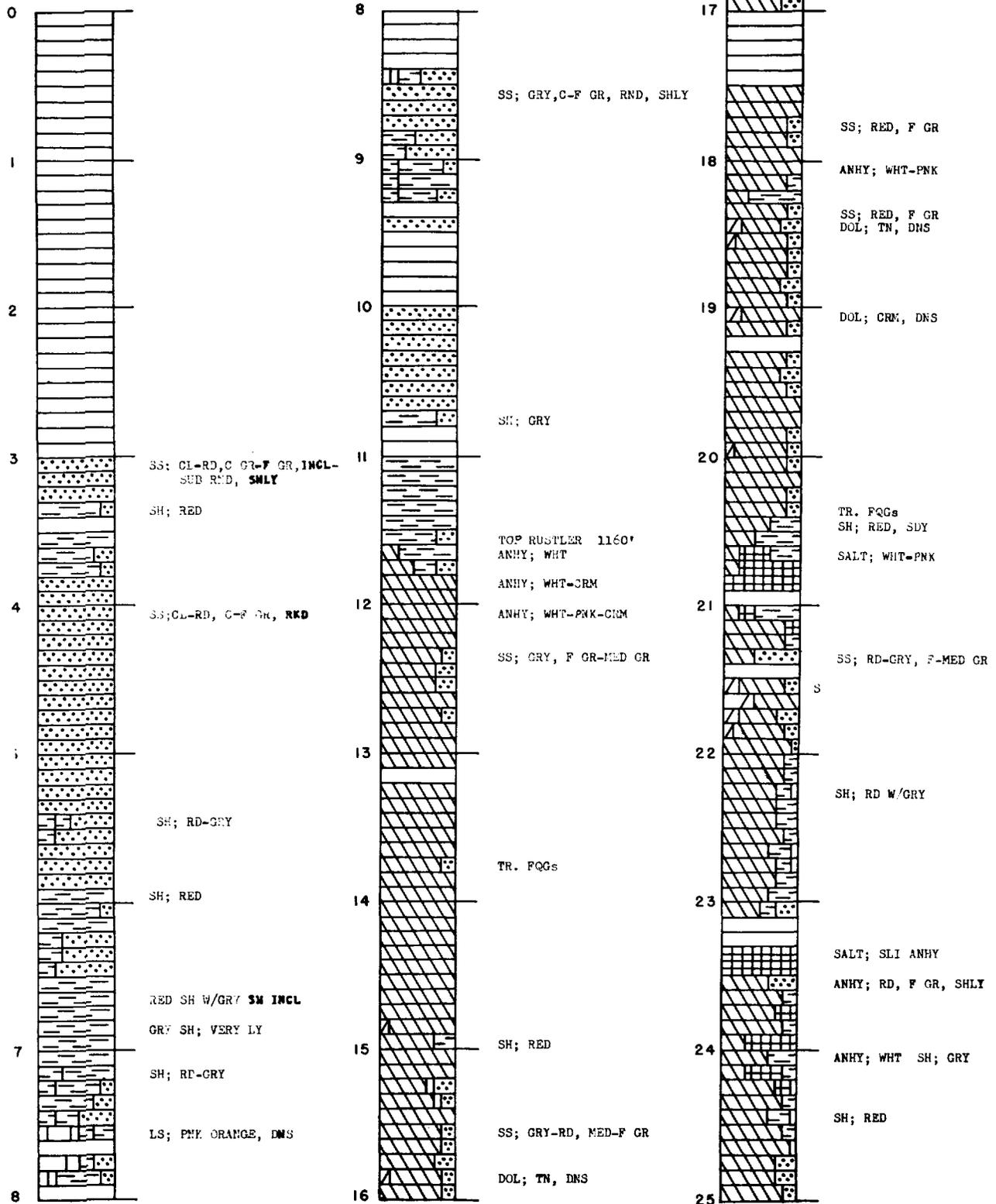
Csg. 20" 557', 13 3/8" 3971', 9 5/8" 10076', 7" 16626'

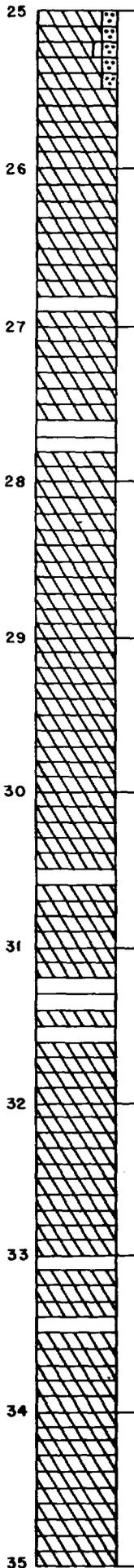
Spl. Desc. P. W. Hughes

Drftg. A. M. Hughes

Paleontology contributed by R. V. Hollingsworth

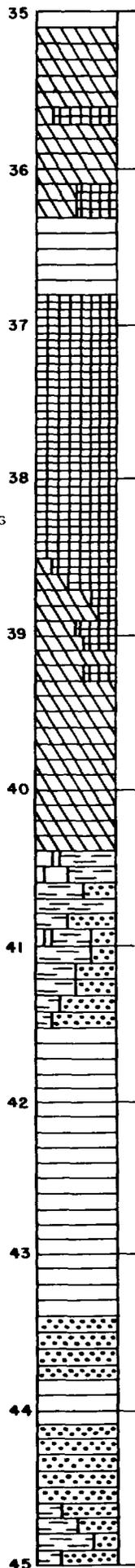
Released by Richardson and Bass





SH; GRY

ANHY; WHT W/BRN LS PARTINGS



SALT; SLI ANHY

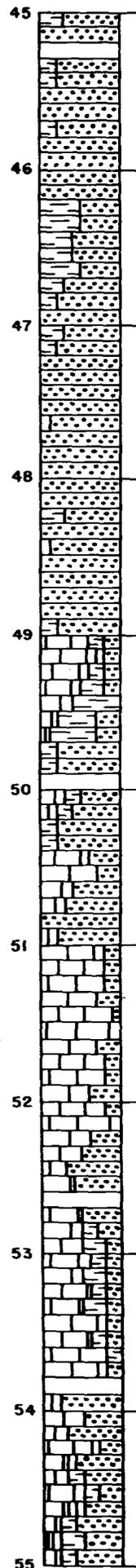
ANHY; WHT W/BRN LS PARTINGS

TOP DELAWARE "LS" 4040'
 LS; BRN, LMS-FY
 SH; BRN-GRY, LY
 SS; GRY, F GR
 TOP DELAWARE SD 4080'
 SS; GRY, F GR

CAVING CASTLE ANHYDRITE
 TO 4350'

SS; GRY, F-MED GR, LY

3 TR. FQGs
 SH; BRN



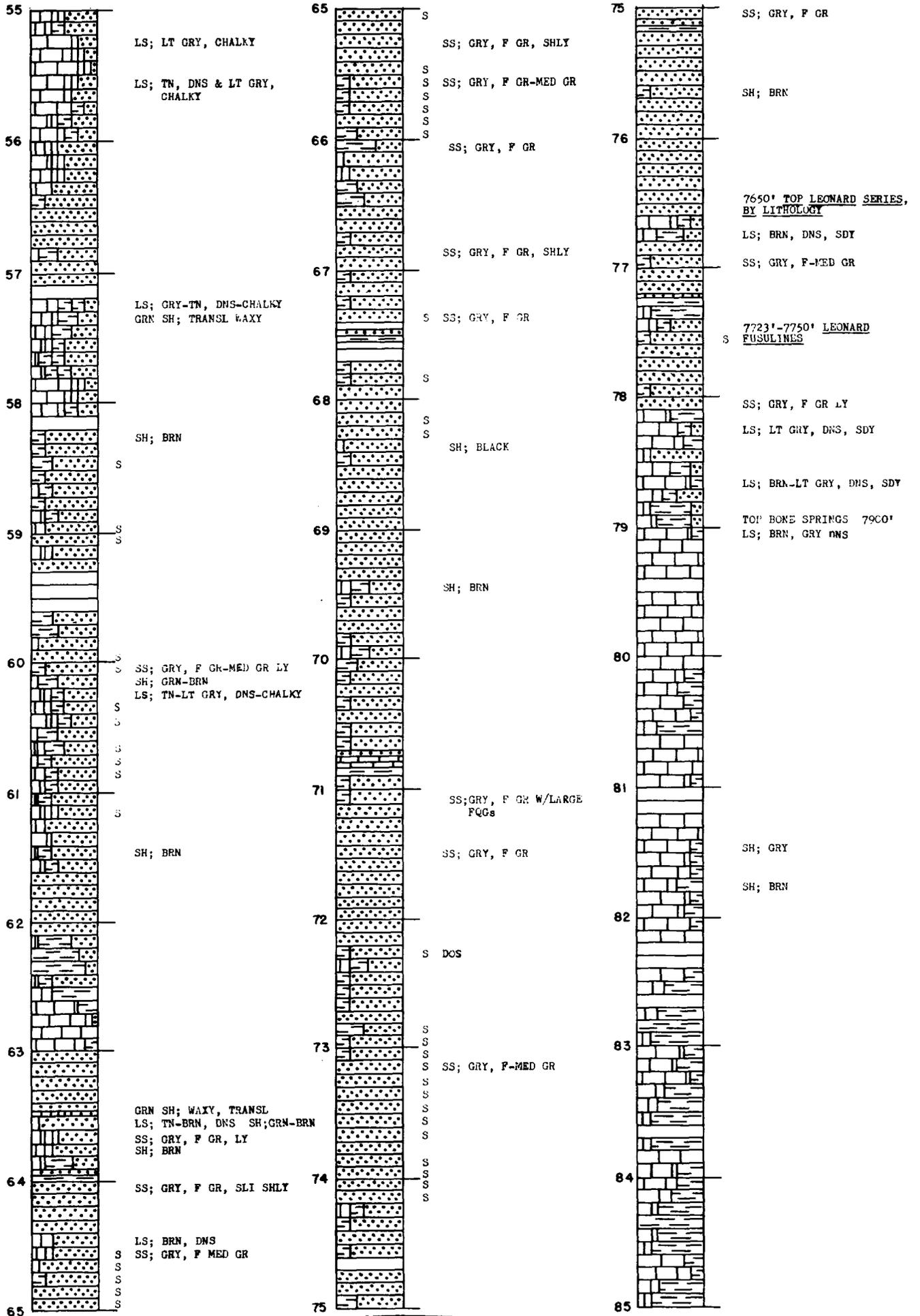
SS; GRY, F GR, LY

SH; BRN

LS; TN-LT GRY, DMS

SH; BRN

SH; GRN-BRN
 GEN SH; WAXY, TRANSL



55 LS; LT GRY, CHALKY
 LS; TN, DNS & LT GRY, CHALKY

56

57 LS; GRY-TN, DNS-CHALKY
 GRN SH; TRANSL WAXY

58 SH; BRN

59

60 SS; GRY, F GR-MED GR LY
 SH; GRN-BRN
 LS; TN-LT GRY, DNS-CHALKY

61 SH; BRN

62

63 GRN SH; WAXY, TRANSL
 LS; TN-BRN, DNS SH; GRN-BRN
 SS; GRY, F GR, LY
 SH; BRN

64 SS; GRY, F GR, SLI SHLY

65 LS; BRN, DNS
 SS; GRY, F MED GR

65 SS; GRY, F GR, SHLY

66 SS; GRY, F GR

67 SS; GRY, F GR, SHLY

68 SH; BLACK

69 SH; BRN

70 SS; GRY, F GR-MED GR LY
 SH; GRN-BRN
 LS; TN-LT GRY, DNS-CHALKY

71 SS; GRY, F GR W/LARGE FQCs
 SS; GRY, F GR

72 S DOS

73 SS; GRY, F-MED GR

74

75

75 SS; GRY, F GR
 SH; BRN

76 7650' TOP LEONARD SERIES,
 BY LITHOLOGY
 LS; BRN, DNS, SDY

77 SS; GRY, F-MED GR
 7723'-7750' LEONARD FUSULINES

78 SS; GRY, F GR LY
 LS; LT GRY, DNS, SDY

79 LS; BRN-LT GRY, DNS, SDY
 TOP BOKE SPRINGS 7900'
 LS; BRN, GRY DNS

80

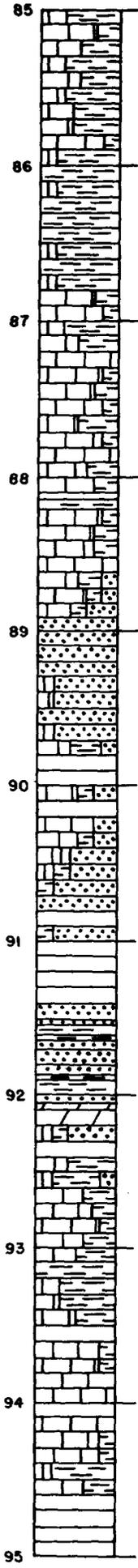
81 SH; GRY
 SH; BRN

82

83

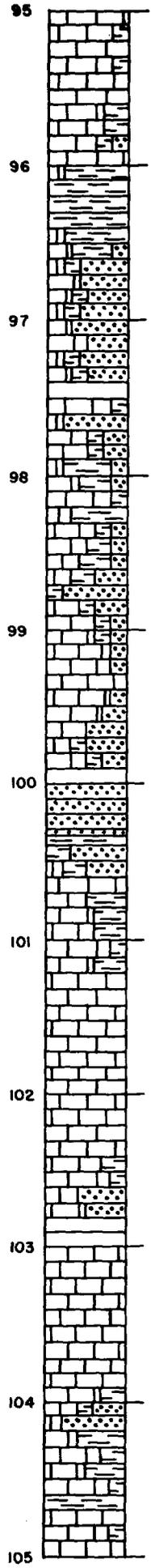
84

85



SS; GRY, F GR, LY

LS; GRY, DNS-CHALKY,
SILTY



SH; BRN

SS; GRY, F GR

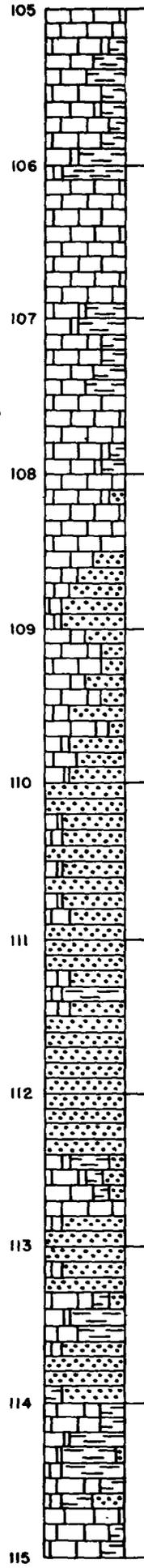
LS; BRN-GRY, DNS-CHALKY,
SILTY

LS; BRN-GRY, DNS-FX

LS; BRN-GRY, DNS

LS; BRN, GRY, DNS-FX

LS; BRN-GRY, DNS-CHALKY,



LS; BRN-GRY, DNS-FX
SH; BRN

LS; BRN-GRY, DNS

LS; BRN-GRY, DNS-FX
SS; GRY, F GR, LY
10,820' TOP WOLFCAMP SERIES,
BY LITHOLOGY

LS; BRN-GRY, DNS
SH; BRN

LS; BRN-GRY, FX-DNS

11,400'-13,540' WOLFCAMP
FUSULINES, HUECO TYPES

LS; BRN-GRY, DNS
SS; GRY, F GR, LY
LS; DK BRN-GRY, DNS-FX

