SUNRAY MID-CONTINENT OIL COMPANY
P. O. BOX 2039
TULSA 2, OKLAHOMA

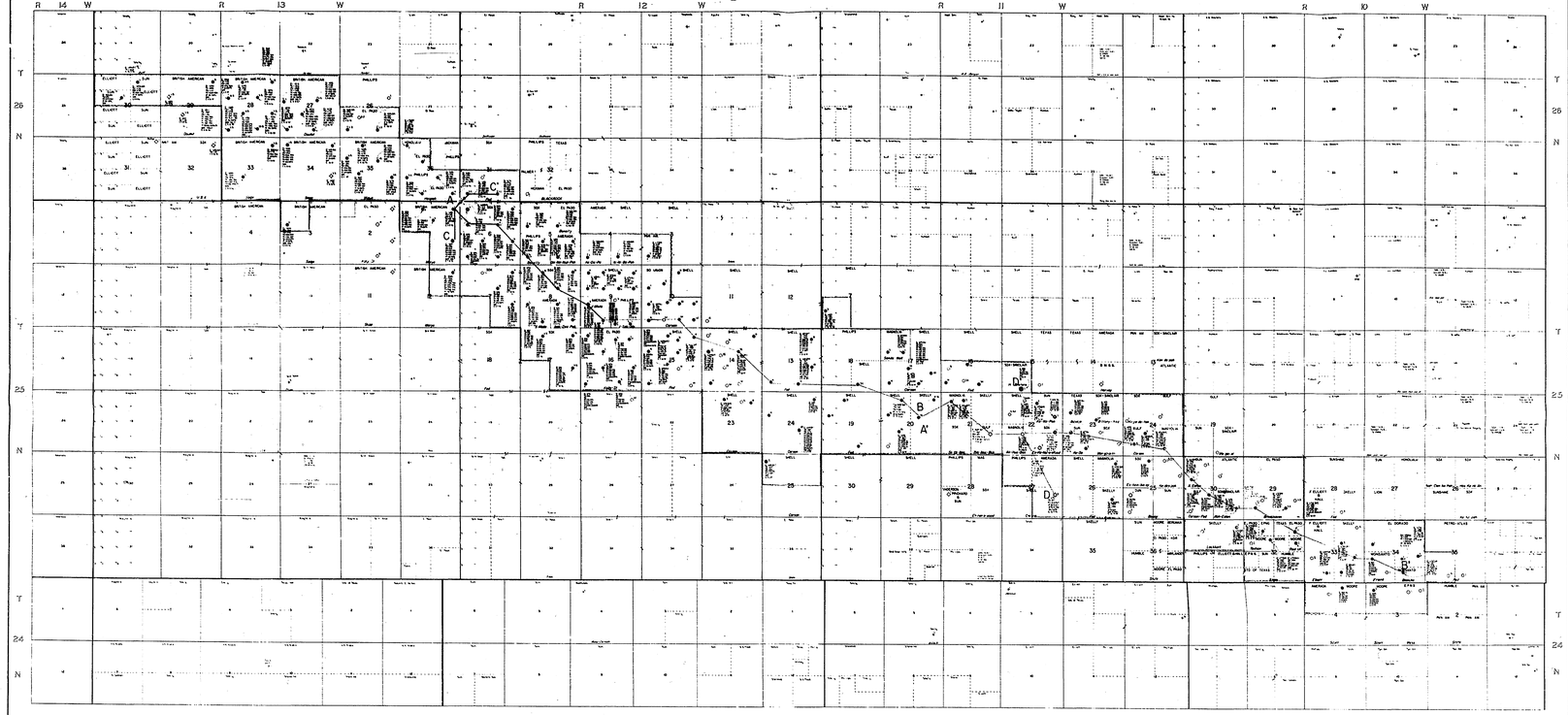
Bisti Field, San Juan Co. N. Mexico

Rehearing – 80 acre spacing - 12/18/57

Exhibits 1-9

Case No. 1308

281

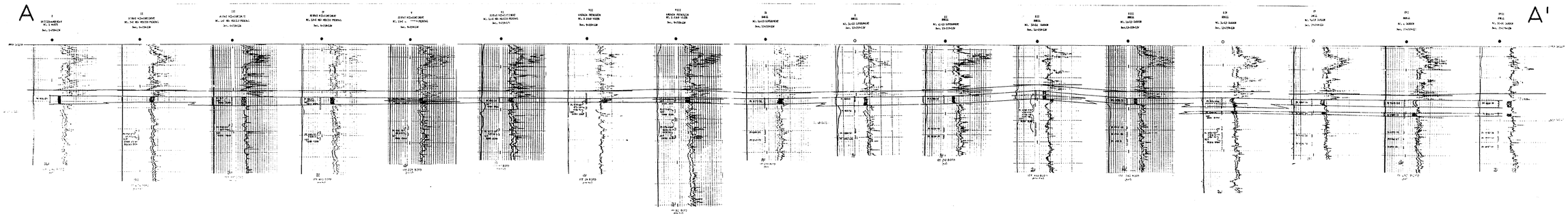


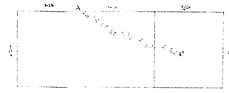
SUNRAY MID-CONTINENT OIL CO
BISTI LOWER GALLUP OIL POOL
Portion of
Township 25 & 26 N., Ranges 10, 11, 12, & 13 W.
County San Juan State New Mexico

PREPARED BY EXPLORATION DRAFTING SECTION

SUNRAY MID-CONTINENT OIL COMPANY
EXHIBIT NO. 12 CASE NO. 1308

B-12



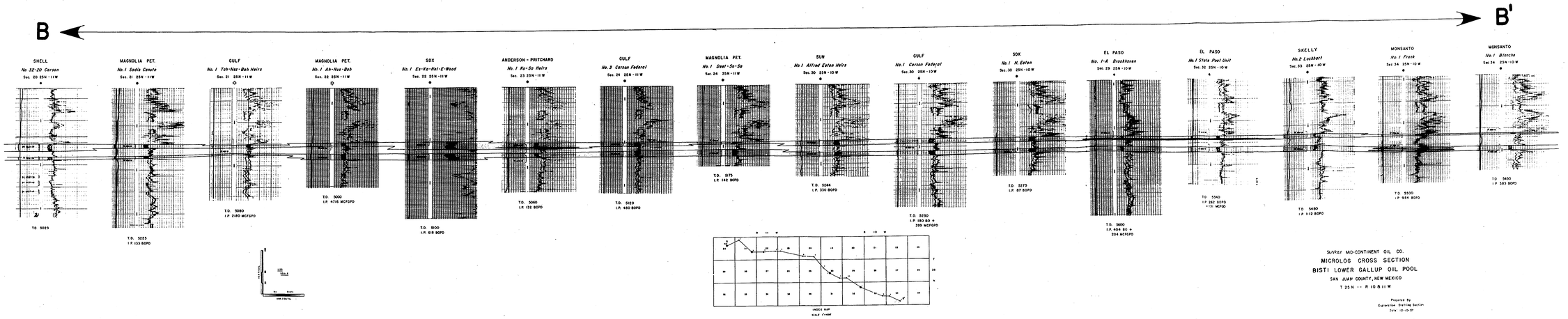


SUNRAY MID-CONTINENT OIL COMPANY
NW-SE MICROLOG CROSS-SECTION
BISTI LOWER GALLUP OIL POOL

SAN JUAN COUNTY, NEW MEXICO
T 25 N - R 11,12,13 W

SUNRAY MID-CONTINENT OIL COMPANY
EXHIBIT NO. ___ CASE NO. 1308

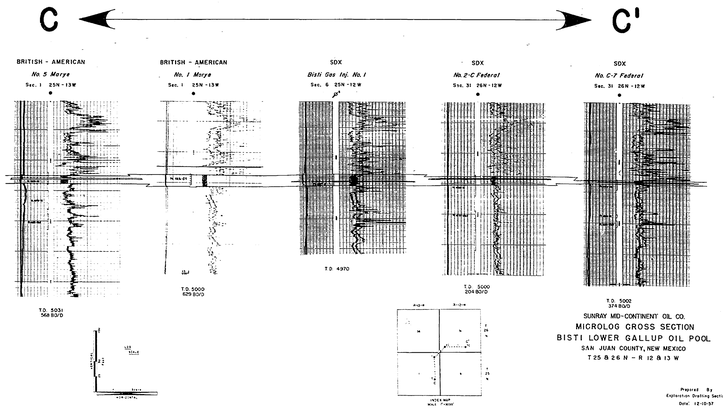
282



SUNRAY MID-CONTINENT OIL CO.
MICROLOG CROSS SECTION
BISTI LOWER GALLUP OIL POOL
SAN JUAN COUNTY, NEW MEXICO
T 25 N -- R 10 & 11 W

Prepared By
Exploration Drafting Section
Date 12-10-57

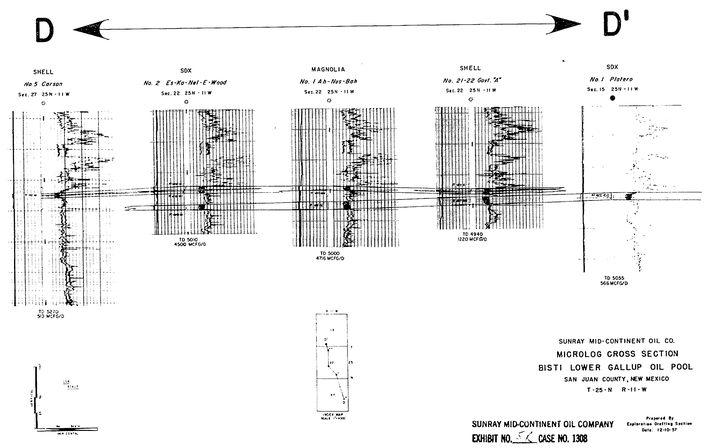
SUNRAY MID-CONTINENT OIL COMPANY
EXHIBIT NO. 4 CASE NO. 1308



SUNRAY MID-CONTINENT OIL CO.
MICROLOG GROSS SECTION
BISTI LOWER GALLUP OIL POOL
SAN JUAN COUNTY, NEW MEXICO
T 25 & 26 N - R 12 & 13 W

Prepared By
Exploration Drafting Section
Date 12-10-57

SUNRAY MID-CONTINENT OIL COMPANY
EXHIBIT NO. 5 CASE NO. 1308

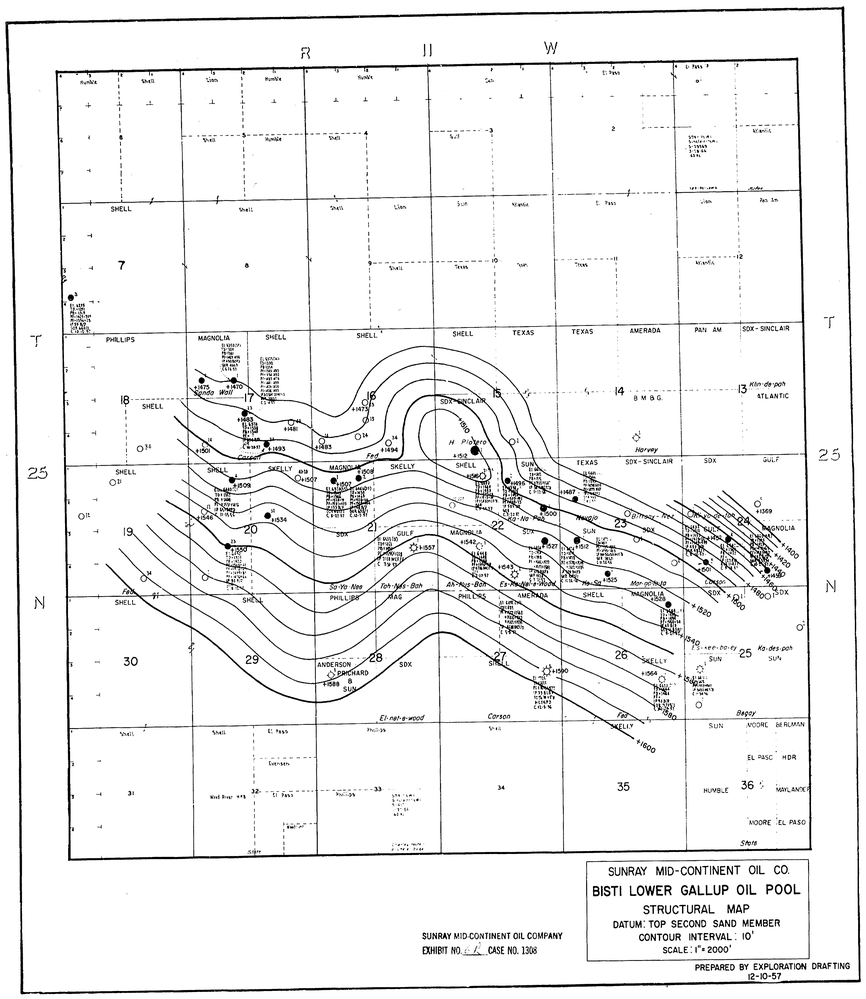


SUNRAY MID-CONTINENT OIL CO.
MICROLOG GROSS SECTION
BISTI LOWER GALLUP OIL POOL
SAN JUAN COUNTY, NEW MEXICO
T-25-N R-11-W

Prepared By
Exploration Drafting Section
Date 12-10-57

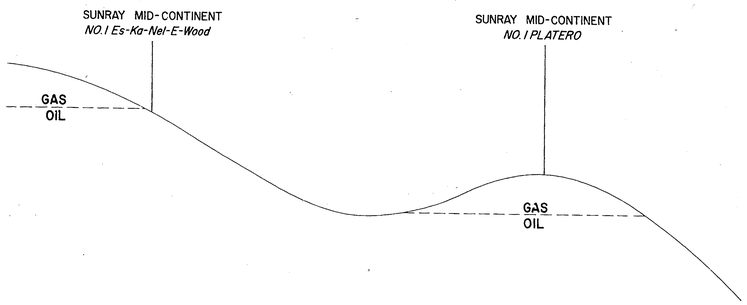
SUNRAY MID-CONTINENT OIL COMPANY
EXHIBIT NO. 5 CASE NO. 1308

283



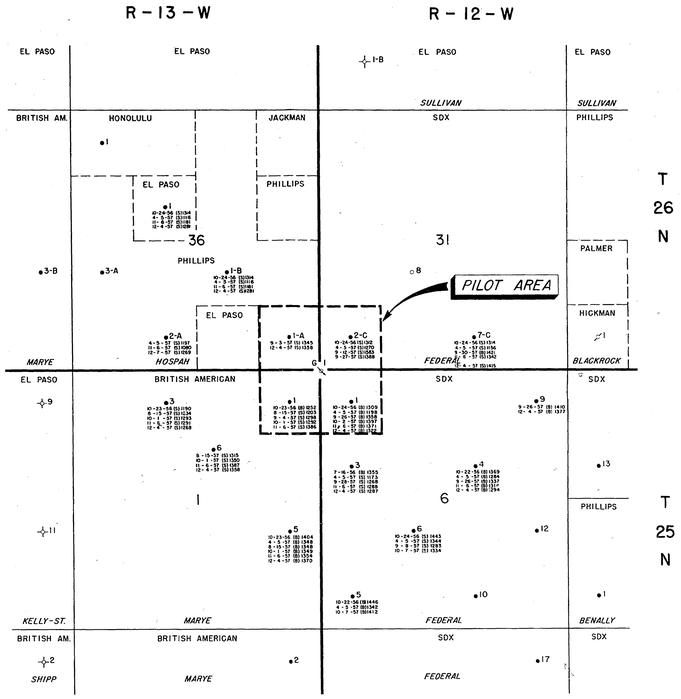
SUNRAY MID-CONTINENT OIL COMPANY
EXHIBIT NO. 6 CASE NO. 1308

SCHEMATIC DIAGRAM
GAS CAP AREA
BISTI LOWER GALLUP OIL POOL
SAN JUAN CO., NEW MEXICO



SUNRAY MID-CONTINENT OIL COMPANY
EXHIBIT NO. 28 CASE NO. 1308

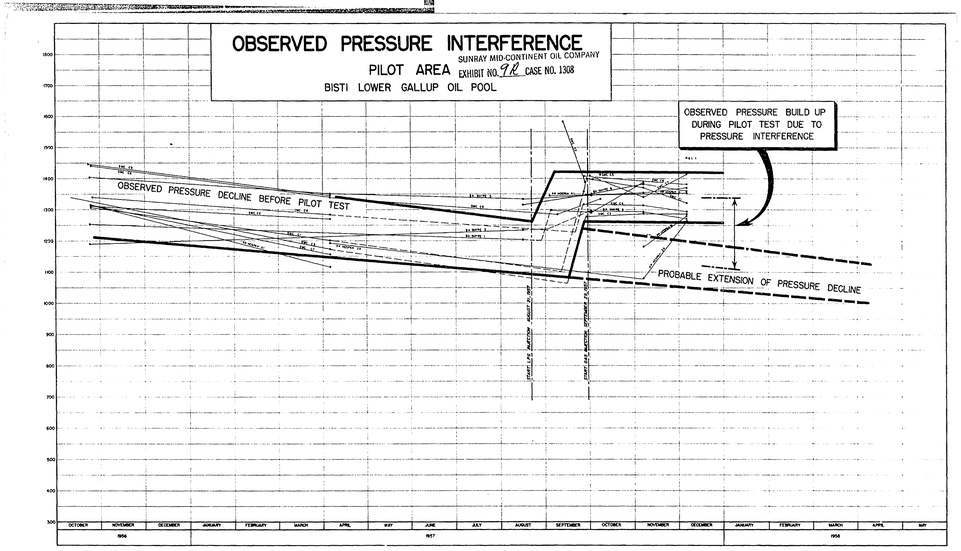
PREPARED BY EXPLORATION DRAFTING
12-10-57



SUNRAY MID-CONTINENT OIL CO.
PILOT AREA MAP
BISTI LOWER GALLUP OIL POOL
SAN JUAN CO., NEW MEXICO

SUNRAY MID-CONTINENT OIL COMPANY
EXHIBIT NO. 24 CASE NO. 1308

PREPARED BY EXPLORATION DRAFTING SECTION
12-10-57



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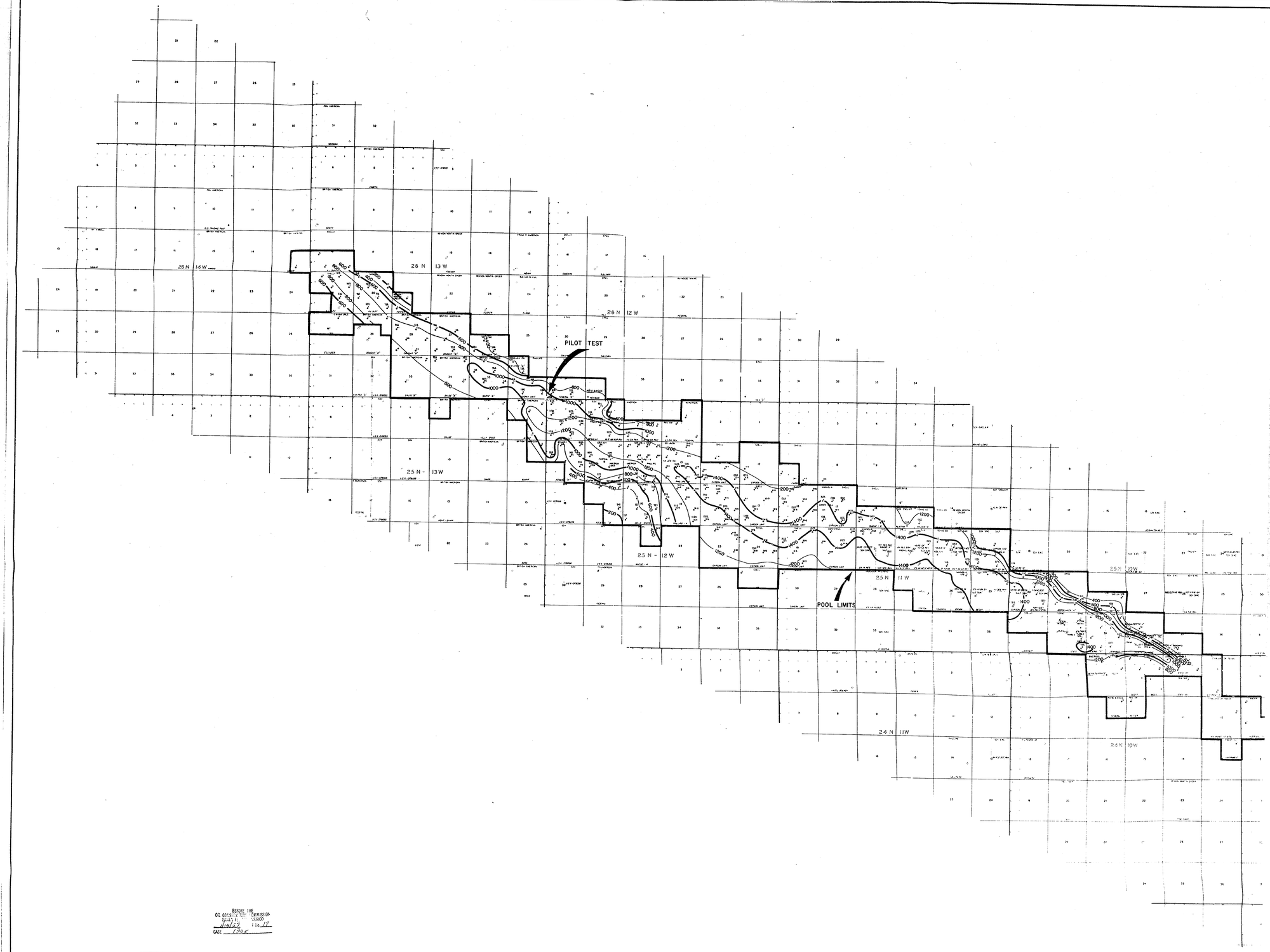


BEFORE THE
OIL CONSERVATION COMMISSION
Santa Fe, New Mexico
Exhibit No. 17
Case 1308

SUNRAY MID-CONTINENT OIL CO.
BISTI LOWER GALLUP OIL POOL Portions of County San Juan State New Mexico
4000 2000 0 2000 4000 8000 SCALE IN FEET
PREPARED BY EXPLORATION DRAFTING SECTION Date: 12-19-58

SUNRAY MID-CONTINENT OIL COMPANY
EXHIBIT NO. 17 CASE NO. 1308

285

ISOBARIC MAP

LOWER GALLUP FORMATION

AUGUST 1958

N

25N 10W

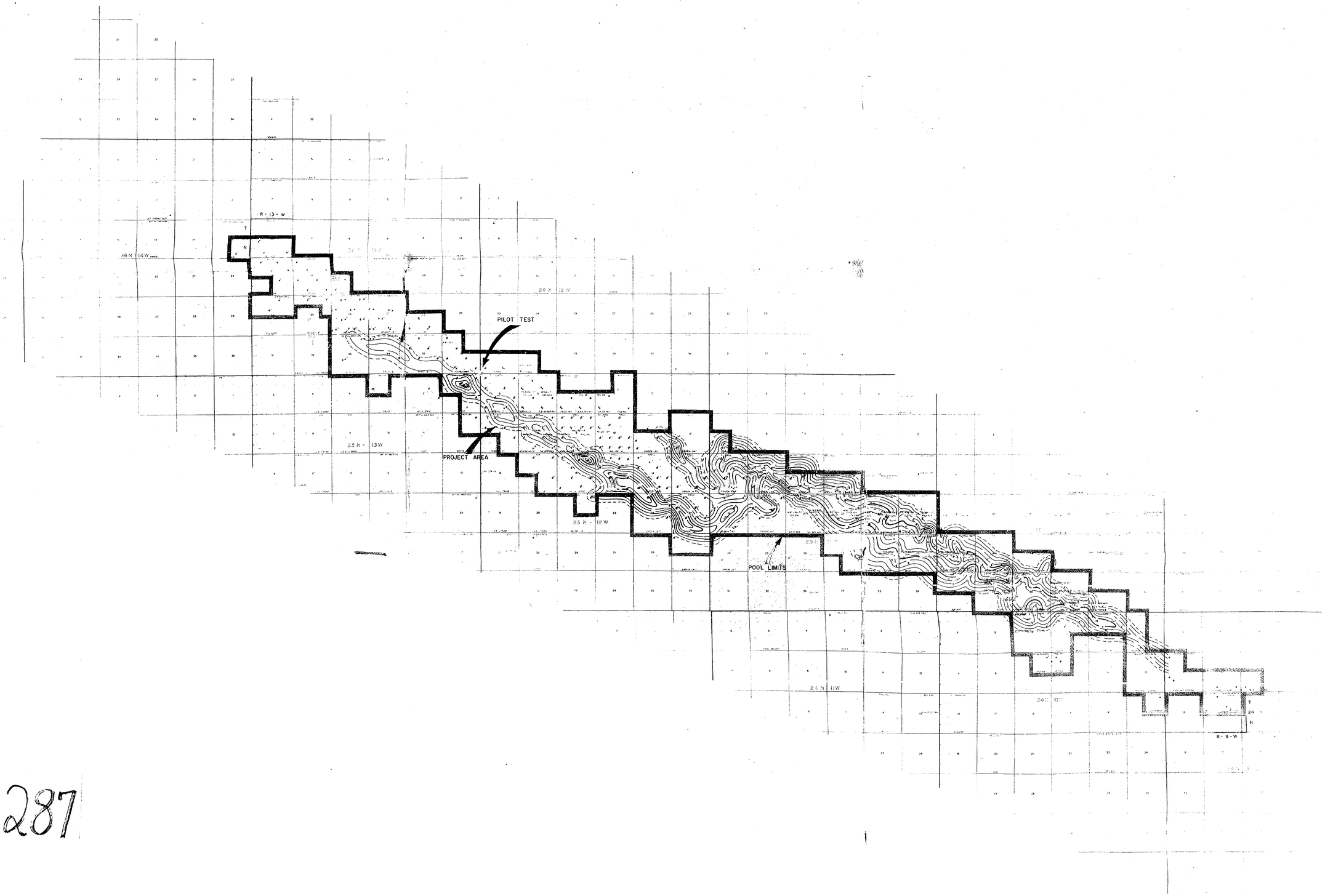
24N 10W

24N 9W

24N 8W

23N 8W

286



287

SUNRAY MID-CONTINENT OIL CO

BISTI LOWER GALLUP OIL POOL

Portions of

County San Juan State New Mexico

4000 2000 0 4000 8000 12000

SCALE IN FEET

PREPARED BY EXPLORATION DRAFTING SECTION

SUNRAY MID-CONTINENT OIL COMPANY

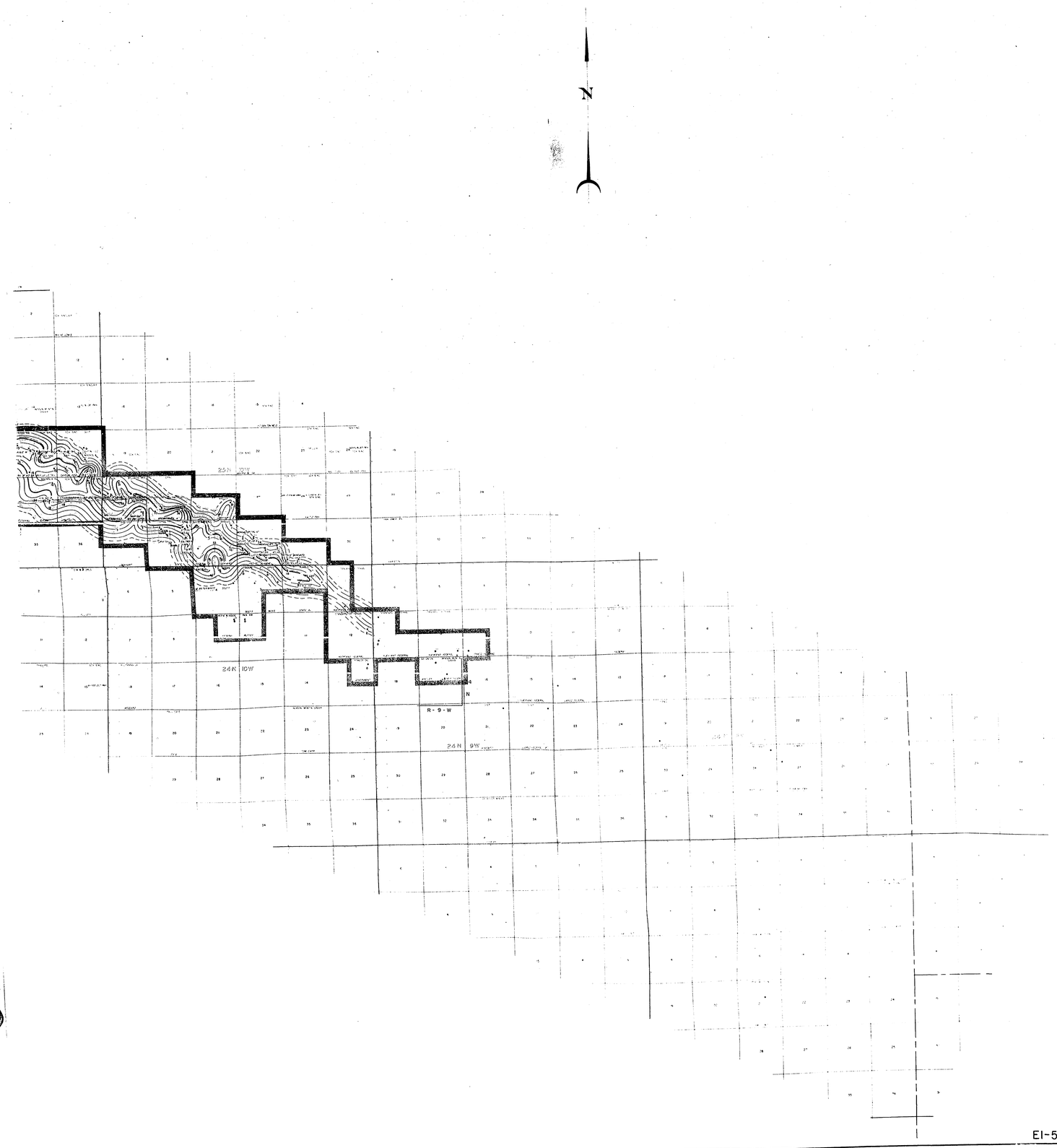
EXHIBIT NO. ... CASE NO. ...

ISOPACH OF SECOND SAND

LOWER GALLUP FORMATION

POSITIVE MICROLOG SEPARATION

CONTOUR INTERVAL 2'



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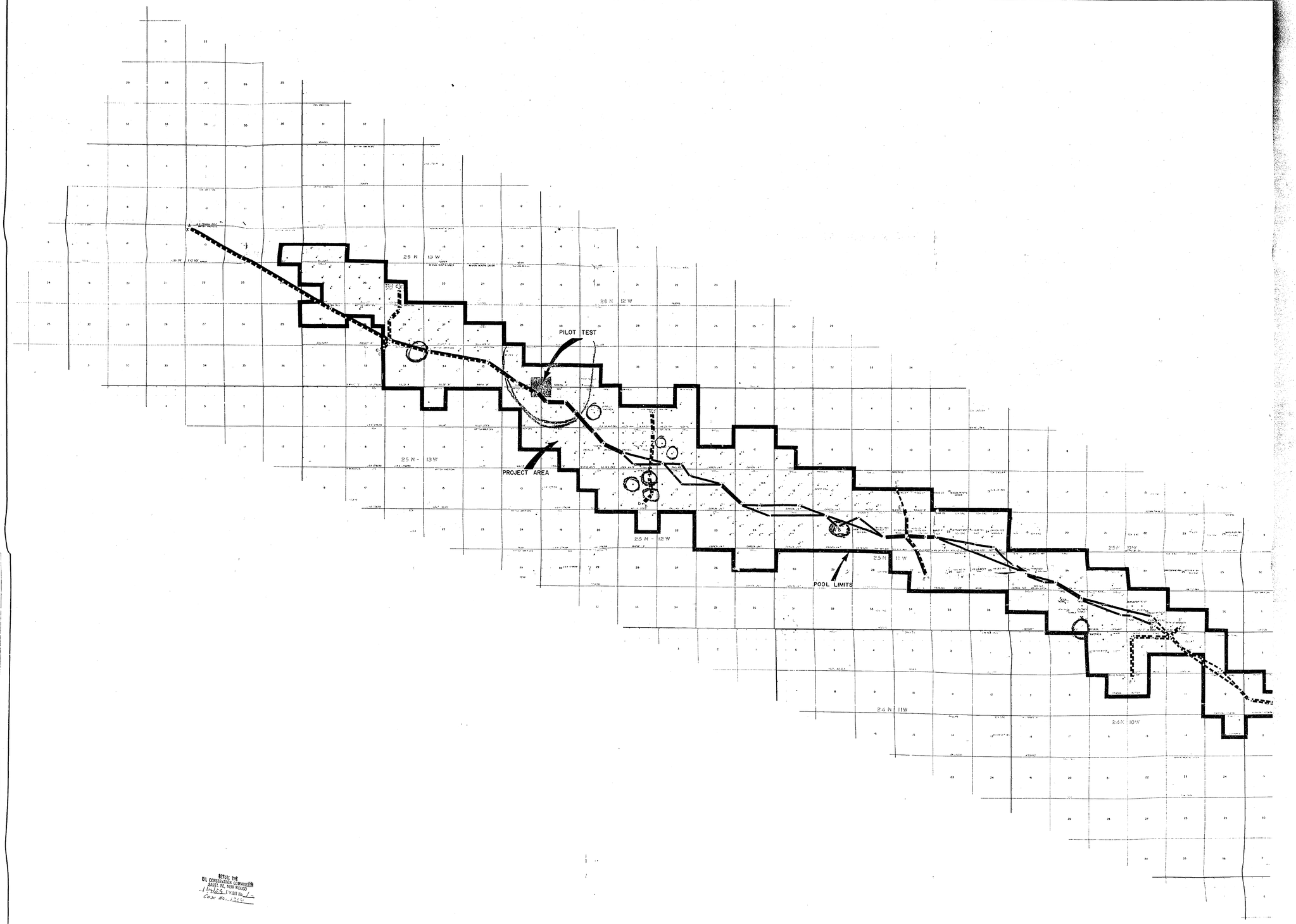


Before the
OIL CONSERVATION COMMISSION
SANTA FE, NEW MEXICO
Exhibit No. 1
Case No. 1308

SUNRAY MID-CONTINENT OIL CO.
BISTI LOWER GALLUP OIL POOL Portions of County San Juan State New Mexico
4000 2000 0 2000 4000 8000 SCALE IN FEET
PREPARED BY EXPLORATION DRAFTING SECTION

SUNRAY MID-CONTINENT OIL COMPANY
EXHIBIT NO. 1 CASE NO. 1308

289

N

25 N 10W

26 N 10W

24 N 9W

24 N 8W

23 N 8W

290

SCHLUMBERGER WELL SURVEYING CORPORATION
HOUSTON, TEXAS

Electrical Log

COMPANY BRITISH AMERICAN OIL PRODUCING CO.
WELL MARYE #1
FIELD WILDCAT
LOCATION SEC. 1-25N-13W
COUNTY SAN JUAN
STATE NEW MEXICO

Location of Well
600' FR N/L
600' FR E/L
SEC. 1-25N-13W

ES
(ML-LL)

Elevation: D.F. 6187'
K.B. 6185'
or G.L. 6173'

FILING No.

RUN No.	ONE	TWO
Date	3/7/58	3/12/58
First Reading	4761	6004
Last Reading	252	4761
Feet Measured	4519	253
Csg. Schlum.	252	---
Csg. Driller	225	229
Depth Reached	4752	6005
Bottom Driller	4745	6000
Depth Datum	KB	KB
Mud Not.	GEL-CHEM	GEL-CHEM
Density	9.9	9.6
Viscosity	73	74
Resist.	2.35 @ 65°F	1.43 @ °F
Res. BHT	1.08 @ 135°F	1.20 @ 172°F
pH	10 @ °F	9.5 @ °F
Wtr. Loss	8 CC 30 min.	8 CC 30 min.
Max. Temp. °F	135	172
Bit Size	8 3/4"	7 7/8"
Spcgs.—AM	16"	16"
AM	84"	84"
AO	18'8"	18'8"
Opr. Rig Time	10 HRS.	10 HRS.
Truck No.	1773FARM	1782FARM
Recorded By	COX	MONTGOMERY
Witnessed By	CALLAHAN	PARKER

DIESEL RESERVOIR SPOUT - 1
1 2 3 4 5 6 7 8 9 10 11 12
A B C D E F G H

LOWER GALLUP

4500 4600 4700 4800 4900 5000

RUN 1 | RUN 2

88-49

BEFORE THE OIL CONSERVATION COMMISSION SANTA FE, NEW MEXICO EXHIBIT NO. 2 CASE NO. 1308

SUNRAY MID-CONTINENT OIL COMPANY
EXHIBIT NO. 2 CASE NO. 1308

SCHLUMBERGER WELL SURVEYING CORPORATION
HOUSTON, TEXAS

Induction-Electrical Log

COMPANY SKELLY OIL COMPANY
WELL LOCKHART #1-A
FIELD BISTI EXT.
LOCATION SEC. 31-25N-10W
COUNTY SAN JUAN
STATE NEW MEXICO

Other Surve
ML

Location of W
660' FR N/
660' FR E/
SEC. 31-25N

Elevation: D.F. 6
K.B.:
or G.L.:

FILING No.

RUN No.	ONE
Date	7-17-57
First Reading	4284
Last Reading	271
Feet Measured	4013
Csg. Schlum.	271
Csg. Driller	272
Depth Reached	5300
Bottom Driller	5300
Depth Datum	DF
Mud Not.	GEL CHEM
Dens., Visc.	9.5 / 60
Mud Resist.	2.5@ 70°F
Res. BHT	.10@123°
Rmf	.18@123°
Rmc	.16@123°
pH	9.1@
Wtr. Loss	8.2 CC30 min.
Bit Size	7 7/8"
Spcgs.—AM	16"
IND.	40"
MM	271'9"
Opr. Rig Time	2 1/2 HRS
Truck No.	1503FARM
Recorded By	MATTHEWS
Witness	BERRY

LOWER GALLUP

4700 4800 4900 5000 5100 5200 5300

88-50

BEFORE THE OIL CONSERVATION COMMISSION SANTA FE, NEW MEXICO EXHIBIT NO. 4 CASE NO. 1308

SUNRAY MID-CONTINENT OIL COMPANY
EXHIBIT NO. 4 CASE NO. 1308

SCHLUMBERGER WELL SURVEYING CORPORATION
HOUSTON, TEXAS

Electrical Log

COMPANY SHELL OIL COMPANY
WELL CARSON #1
FIELD WILDCAT
LOCATION SEC. 24-25N-12W
COUNTY SAN JUAN
STATE NEW MEXICO

Location of Well
660' FR N/L
660' FR E/L
SEC. 24-25N-12W

ES
(ML)

Elevation: D.F. 6436'
K.B. 6436'
or G.L. 6422'

FILING No.

RUN No.	TWO
Date	8-11-58
First Reading	5880
Last Reading	5015
Feet Measured	865
Csg. Schlum.	227
Csg. Driller	226
Depth Reached	5881
Bottom Driller	5880
Depth Datum	KB
Mud Not.	CHEM
Density	8.5
Viscosity	64
Resist.	4.26@ 83°F
Res. BHT	1.30@135°F
pH	10 @ °F
Wtr. Loss	8 CC 30 min.
Max. Temp. °F	135
Bit Size	7 7/8"
Spcgs.—AM	16"
AM	84"
AO	18'8"
Opr. Rig Time	2 HRS.
Truck No.	2787FARM
Recorded By	HAMILTON
Witnessed By	WRIGHT

TOP LOWER GALLUP

BASE LOWER GALLUP

4700 4800 4900 5000 5100 5200 5300 5400 5500

SUNRAY MID-CONTINENT OIL COMPANY
EXHIBIT NO. 3 CASE NO. 1308

BEFORE THE OIL CONSERVATION COMMISSION SANTA FE, NEW MEXICO EXHIBIT NO. 3 CASE NO. 1308

SCHLUMBERGER WELL SURVEYING CORPORATION
HOUSTON, TEXAS

Induction-Electrical Log

COMPANY L. E. ELLIOTT
WELL FEDERAL ELLIOTT C #1
FIELD BISTI
LOCATION SEC. 34-25N-10W
COUNTY SAN JUAN
STATE NEW MEXICO

Other Surveys
NONE

Location of Well
990' FR S/L
1980' FR W/L
SEC. 34-25N-10W

Elevation: D.F. 6804'
K.B.: --
or G.L.: 6792'

FILING No.

RUN No.	ONE
Date	11-27-57
First Reading	5450
Last Reading	269
Feet Measured	5197
Csg. Schlum.	253
Csg. Driller	255
Depth Reached	5456
Bottom Driller	5450
Depth Datum	KB
Mud Not.	OIL EMUL
Dens., Visc.	9.7 / 50
Mud Resist.	5.0@ 70°F
Res. BHT	2.8@125°F
Rmf	--- @ °F
Rmc	--- @ °F
pH	8.6@ °F
Wtr. Loss	6.0CC30 min.
Bit Size	6 3/4"
Spcgs.—AM	16"
IND.	40"
Opr. Rig Time	2 HRS
Truck No.	1786FARM
Recorded By	MONTGOMERY
Witness	ELLIOTT

DIESEL RESERVOIR SPOUT - 1
1 2 3 4 5 6 7 8 9 10 11 12
A B C D E F G H

LOWER GALLUP

0 5100 5200 5300 5400

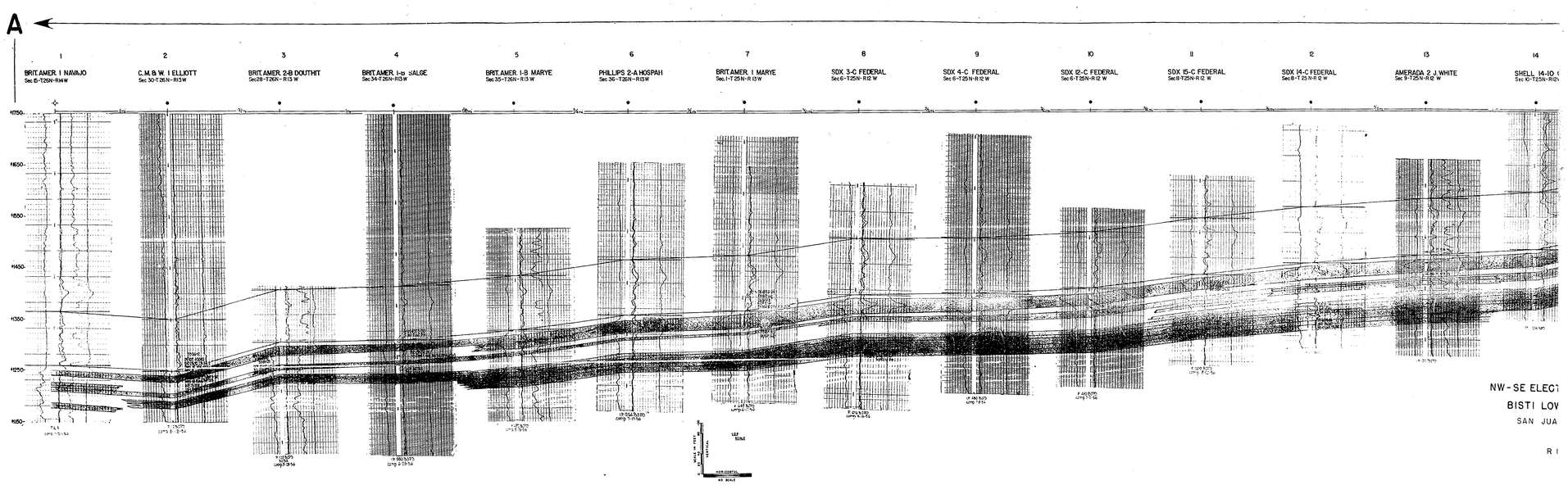
5"=100'

88-51

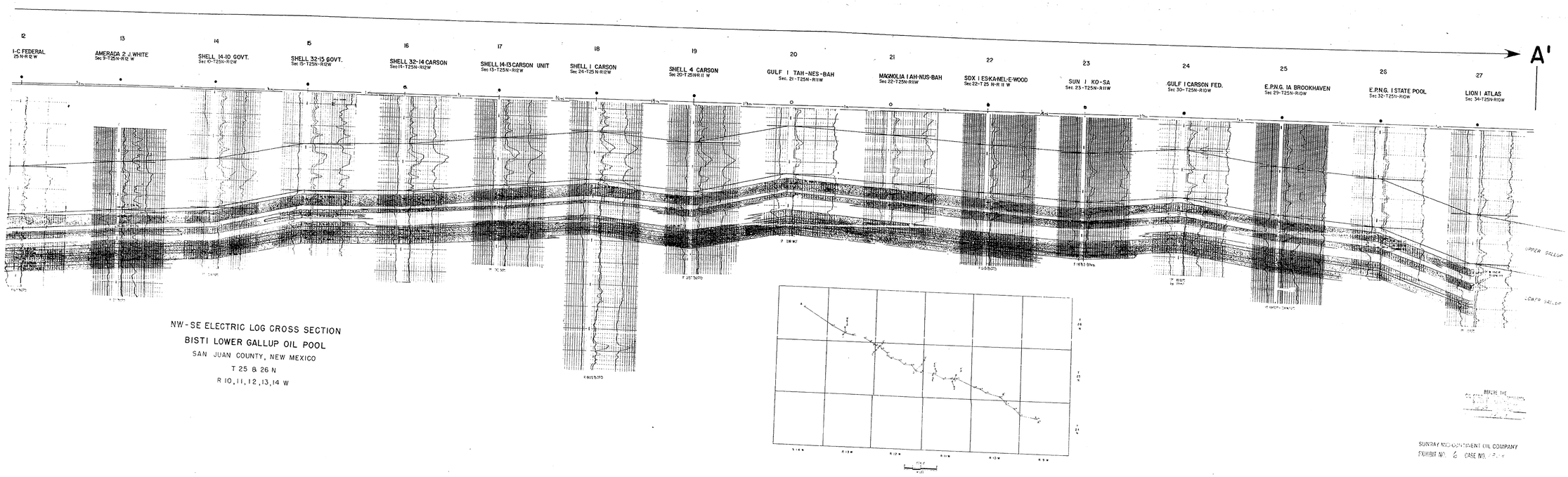
BEFORE THE OIL CONSERVATION COMMISSION SANTA FE, NEW MEXICO EXHIBIT NO. 5 CASE NO. 1308

SUNRAY MID-CONTINENT OIL COMPANY
EXHIBIT NO. 5 CASE NO. 1308

291


A
1
BRIT.AMER. 1 NAVAJO
Sec 8-T26N-R14W
2
C.M.& W. 1 ELLIOTT
Sec 30-T26N-R13W
3
BRIT.AMER. 2-B DOUTHIT
Sec28-T26N-R13 W
4
BRIT.AMER. 1-a SALGE
Sec 34-T 26N-R13W
5
BRIT.AMER. 1-B MARYE
Sec 35-T 26N-R13 W
6
PHILLIPS 2-A HOSPAH
Sec 36-T 26N-R13W
7
BRIT.AMER. 1 MARYE
Sec.1-T 25N-R 13 W
8
SDX 3-C FEDERAL
Sec 6-T 25N-R12 W
9
SDX 4-C FEDERAL
Sec 6-T 25N-R 12 W
10
SDX 12-C FEDERAL
Sec 6-T 25N-R 12 W
11
SDX 15-C FEDERAL
Sec 8-T 25N-R 12 W
12
SDX 14-C FEDERAL
Sec 8-T 25 N-R 12 W
13
AMERADA 2 J WHITE
Sec 9-T 25N-R12 W
14
SHELL 14-10
Sec 10-T 25N-R12
11750
11650
11550
11450
11350
11250
11150
NW-SE ELEC
BISTI LOV
SAN JUA
R

292

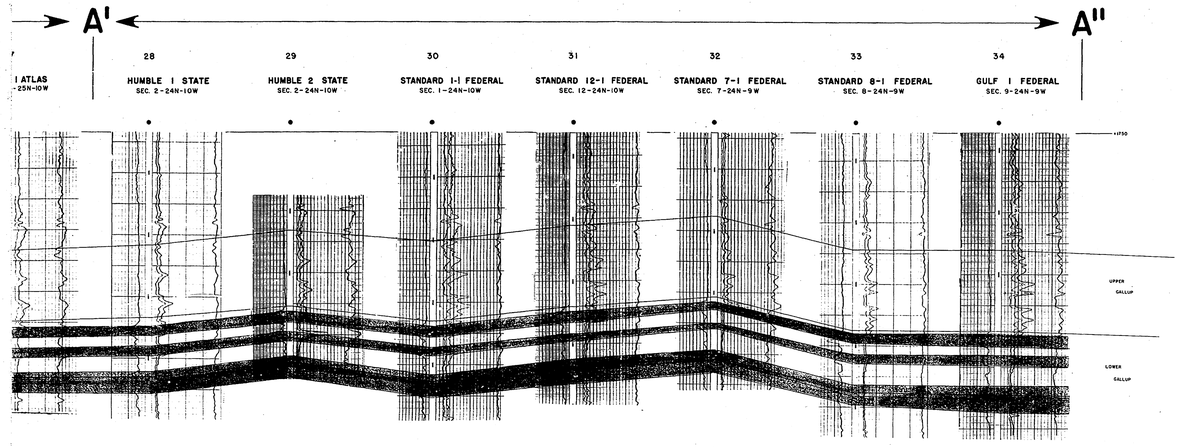


NW-SE ELECTRIC LOG CROSS SECTION
BISTI LOWER GALLUP OIL POOL
SAN JUAN COUNTY, NEW MEXICO
T 25 & 26 N
R 10, 11, 12, 13, 14 W

BEFORE THE

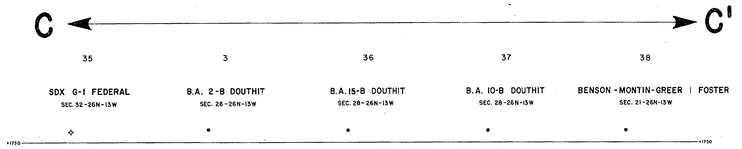
SUNRAY MID-CONTINENT OIL COMPANY
EXHIBIT NO. 6 CASE NO.

293



BEFORE THE
OIL CONSERVATION COMMISSION
SANTA FE, NEW MEXICO
EXHIBIT NO. 7
CASE 1305

SUNRAY MID-CONTINENT OIL COMPANY
EXHIBIT NO. 7 CASE NO. 1305



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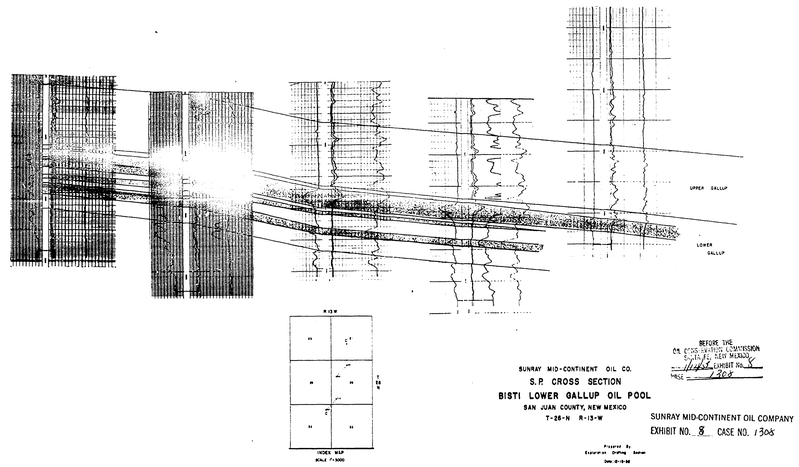
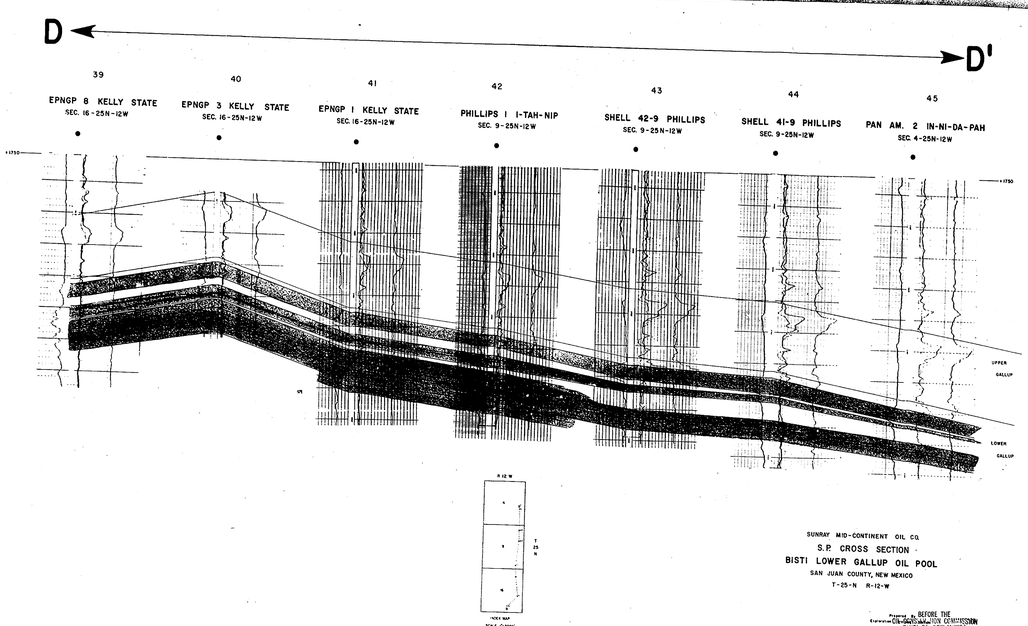


BEFORE THE
OIL CONSERVATION COMMISSION
SANTA FE, NEW MEXICO
EXHIBIT NO. 8
CASE 1305

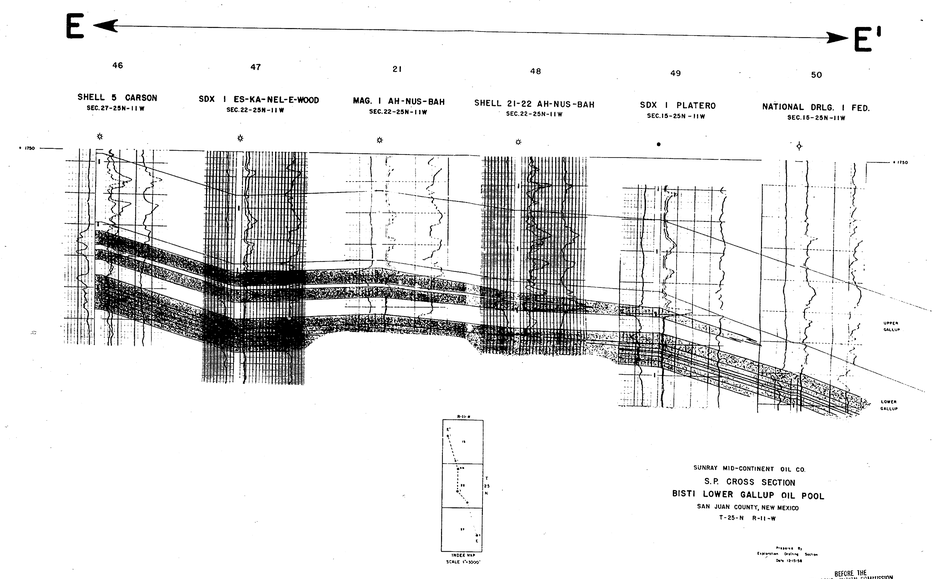
SUNRAY MID-CONTINENT OIL COMPANY
EXHIBIT NO. 8 CASE NO. 1305



SUNRAY MID-CONTINENT OIL CO.
S.P. CROSS SECTION
BISTI LOWER GALLUP OIL POOL
SAN JUAN COUNTY, NEW MEXICO
T-25-N R-12-W

BEFORE THE
OIL CONSERVATION COMMISSION
SANTA FE, NEW MEXICO
EXHIBIT No. 9
CASE 1308

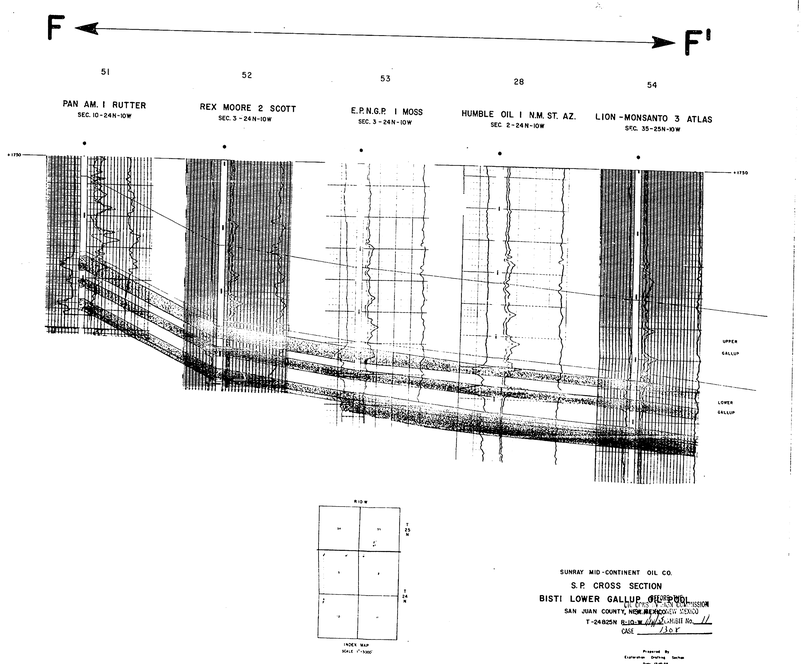
SUNRAY MID-CONTINENT OIL COMPANY
EXHIBIT NO. 9 CASE NO. 1308



SUNRAY MID-CONTINENT OIL CO.
S.P. CROSS SECTION
BISTI LOWER GALLUP OIL POOL
SAN JUAN COUNTY, NEW MEXICO
T-25-N R-11-W

BEFORE THE
OIL CONSERVATION COMMISSION
SANTA FE, NEW MEXICO
EXHIBIT No. 10
CASE 1308

SUNRAY MID-CONTINENT OIL COMPANY
EXHIBIT NO. 10 CASE NO. 1308

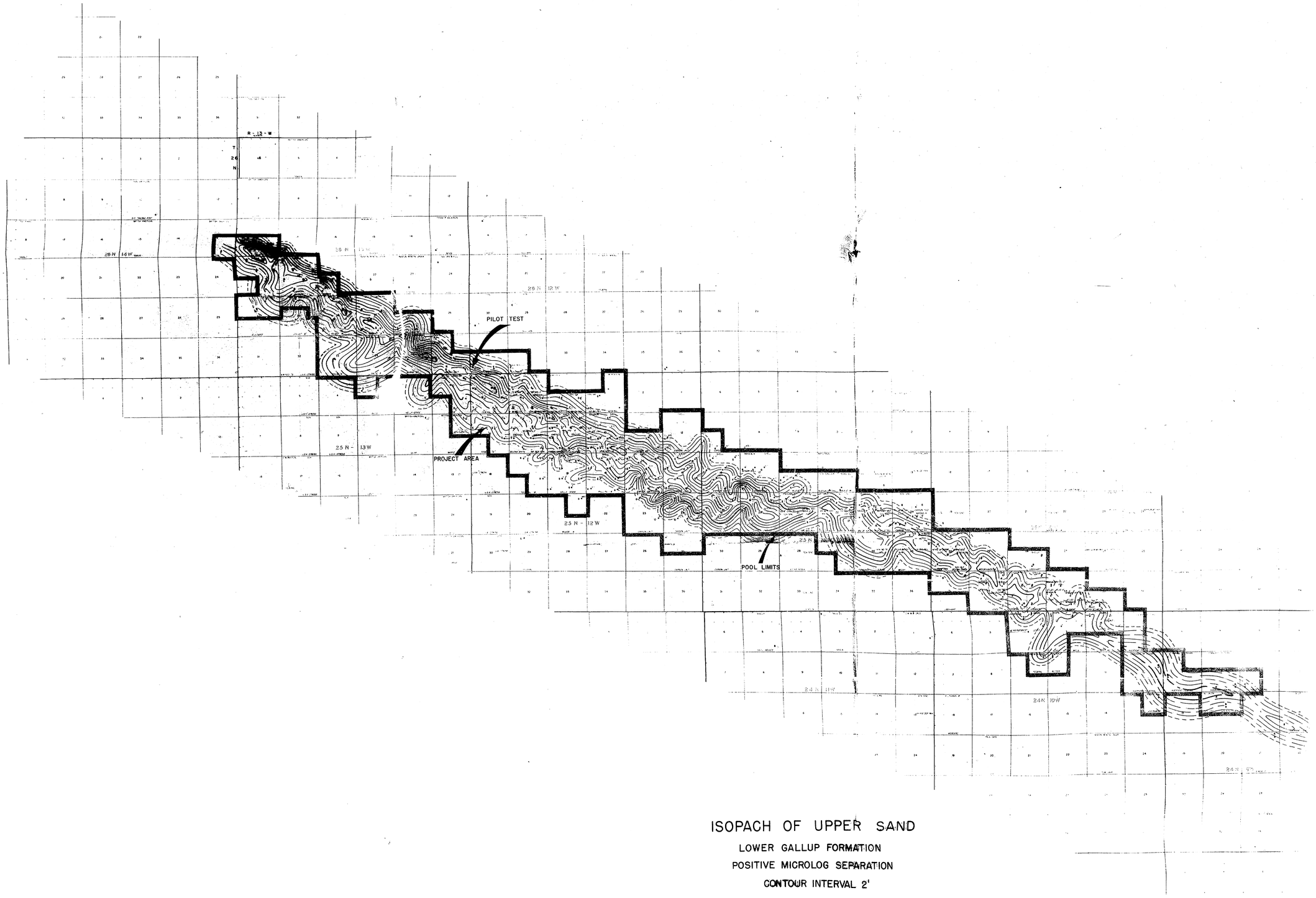


SUNRAY MID-CONTINENT OIL CO.
S.P. CROSS SECTION
BISTI LOWER GALLUP (DEEPROL)
SAN JUAN COUNTY, NEW MEXICO
T-24&25N R-10-W
CASE 1308

BEFORE THE
OIL CONSERVATION COMMISSION
SANTA FE, NEW MEXICO
EXHIBIT No. 11

SUNRAY MID-CONTINENT OIL COMPANY
EXHIBIT NO. 11 CASE NO. 1308

295



ISOPACH OF UPPER SAND

LOWER GALLUP FORMATION

POSITIVE MICROLOG SEPARATION

CONTOUR INTERVAL 2'

SUN OIL MID-CONTINENT OIL CO

[illegible] GALLUP OIL POOL

Portions of

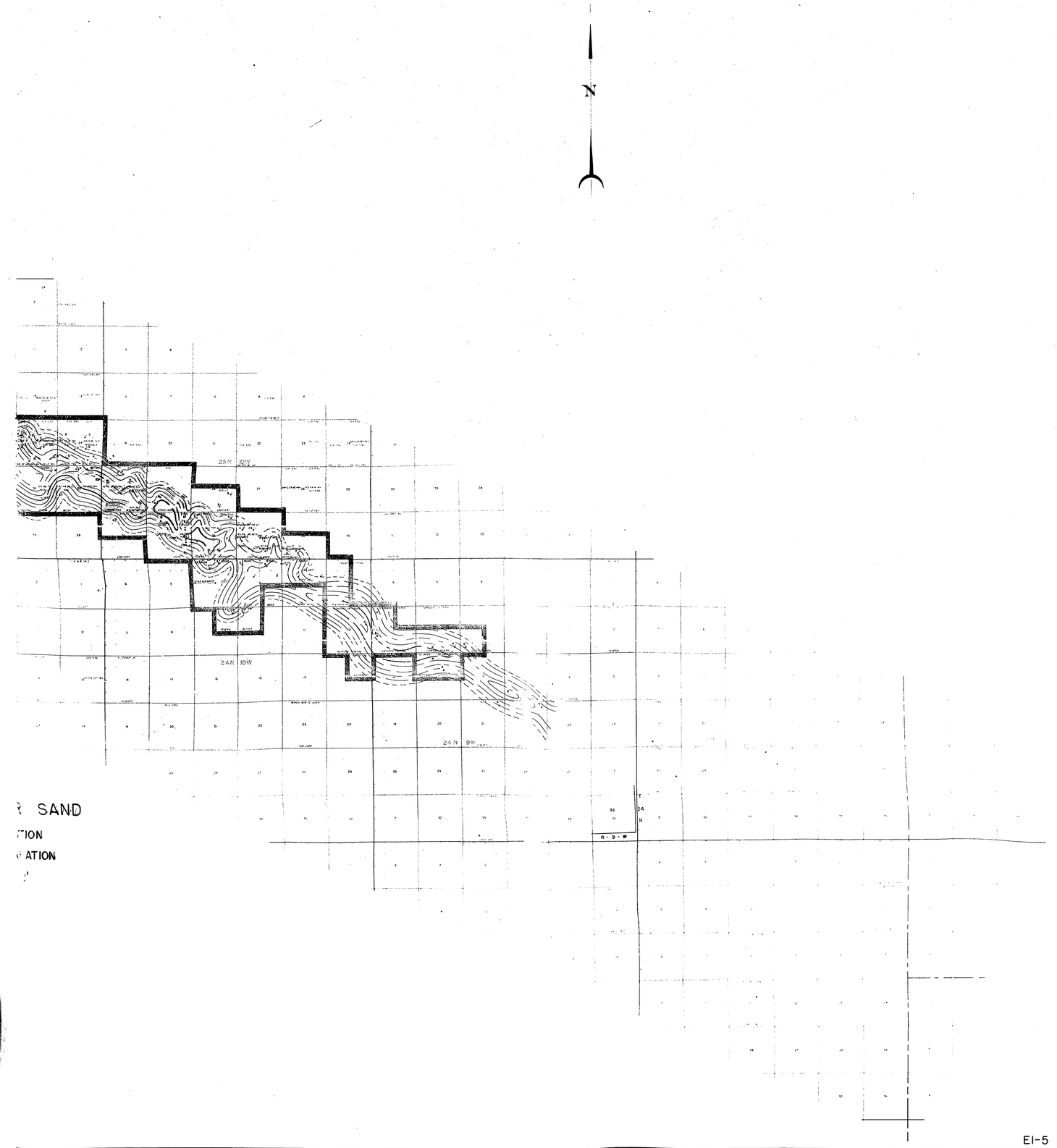
[illegible] San Juan State New Mexico

[illegible] FEET

[illegible] SECTION

[illegible] COMPANY

296



297

R11W

R10W

T 25 N

T 24 N

GULF OIL CORPORATION
ROCKY MOUNTAIN PRODUCTION ZONE
DENVER, COLORADO

CARSON AREA

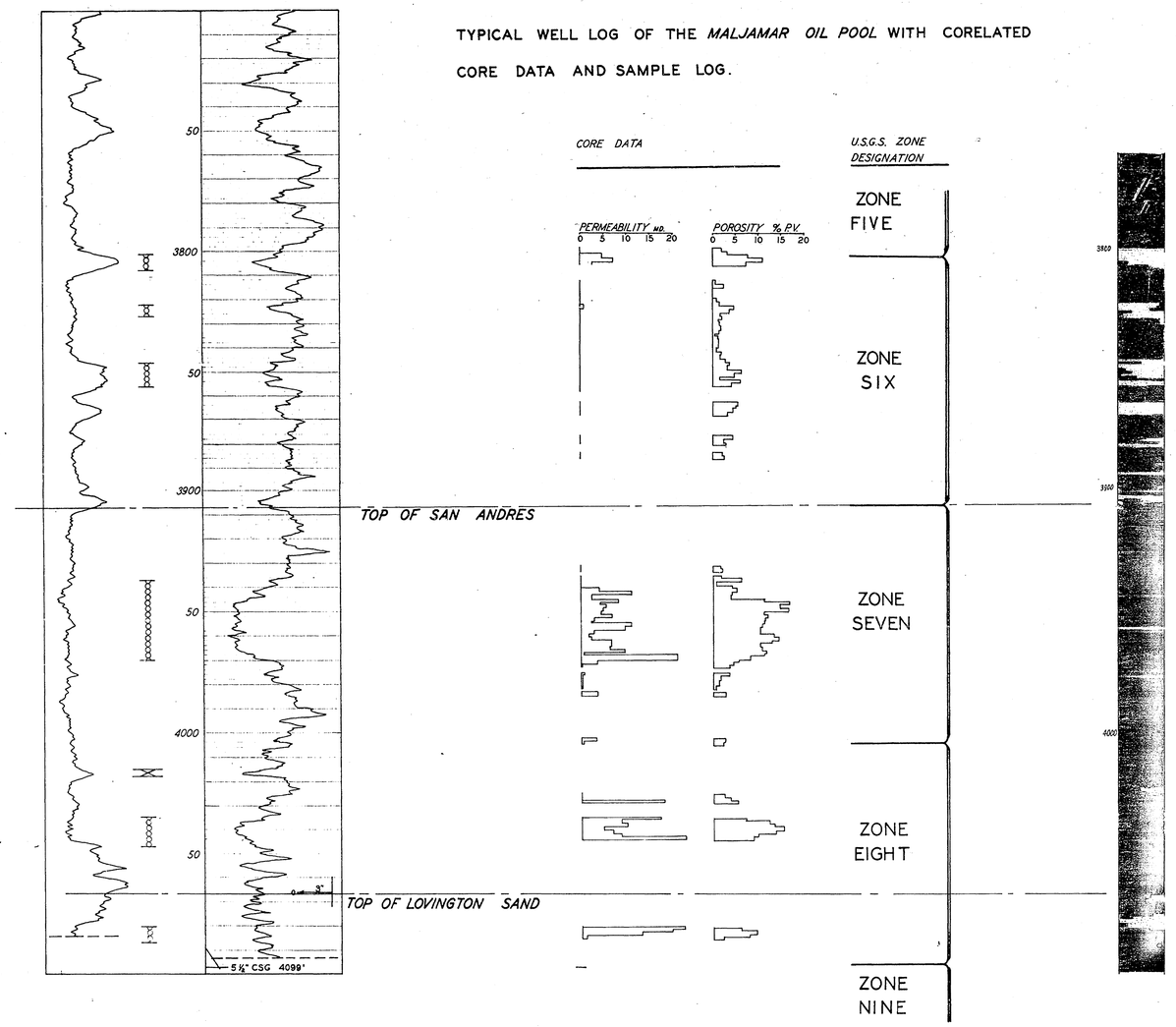
T 24 & 25 N - R10 & 11 W
SAN JUAN CO., NEW MEXICO

- OIL WELL
- GAS WELL
- WELL LOCATION
- PERMITTED LOCATION UNDER APPLICATION

N

298

TYPICAL WELL LOG OF THE *MALJAMAR OIL POOL* WITH CORELATED CORE DATA AND SAMPLE LOG.

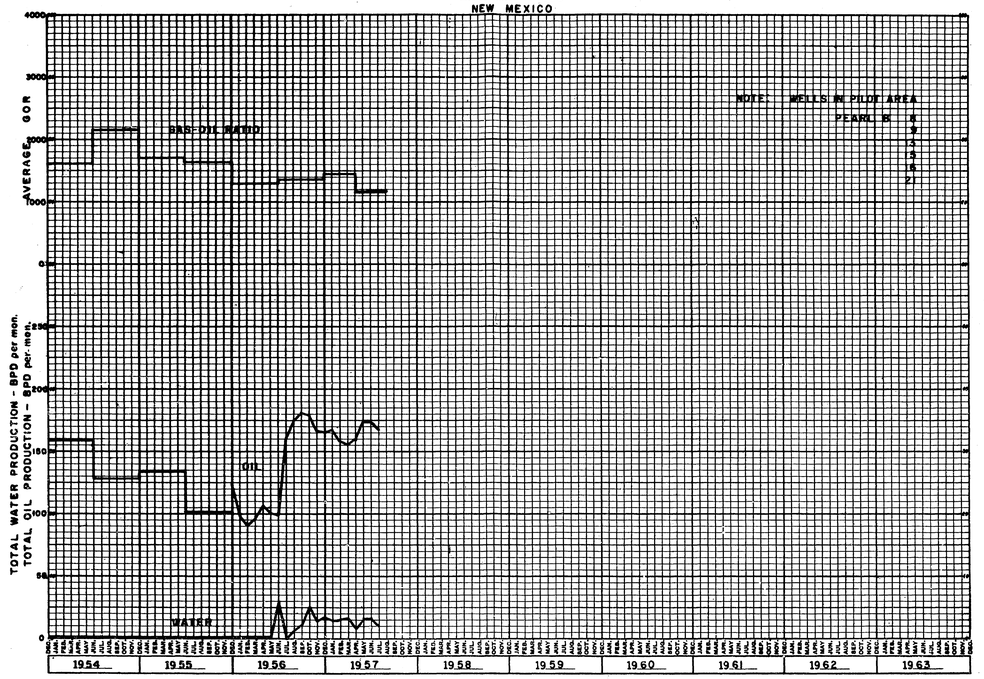


299

PEARL PILOT WATER FLOOD

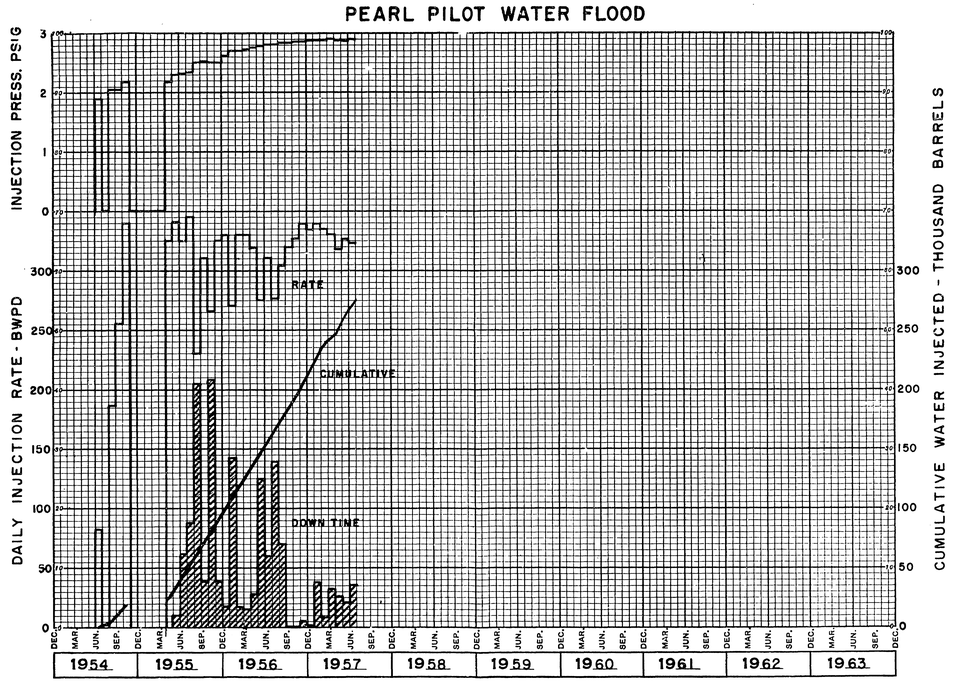
MALJAMAR FIELD

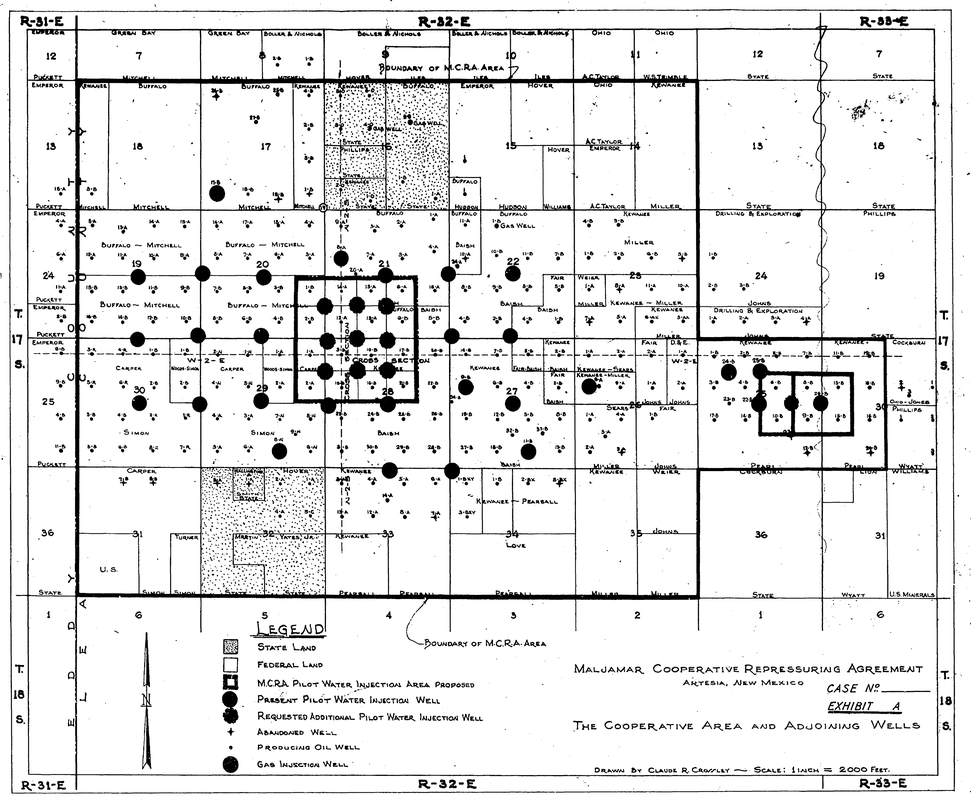
NEW MEXICO



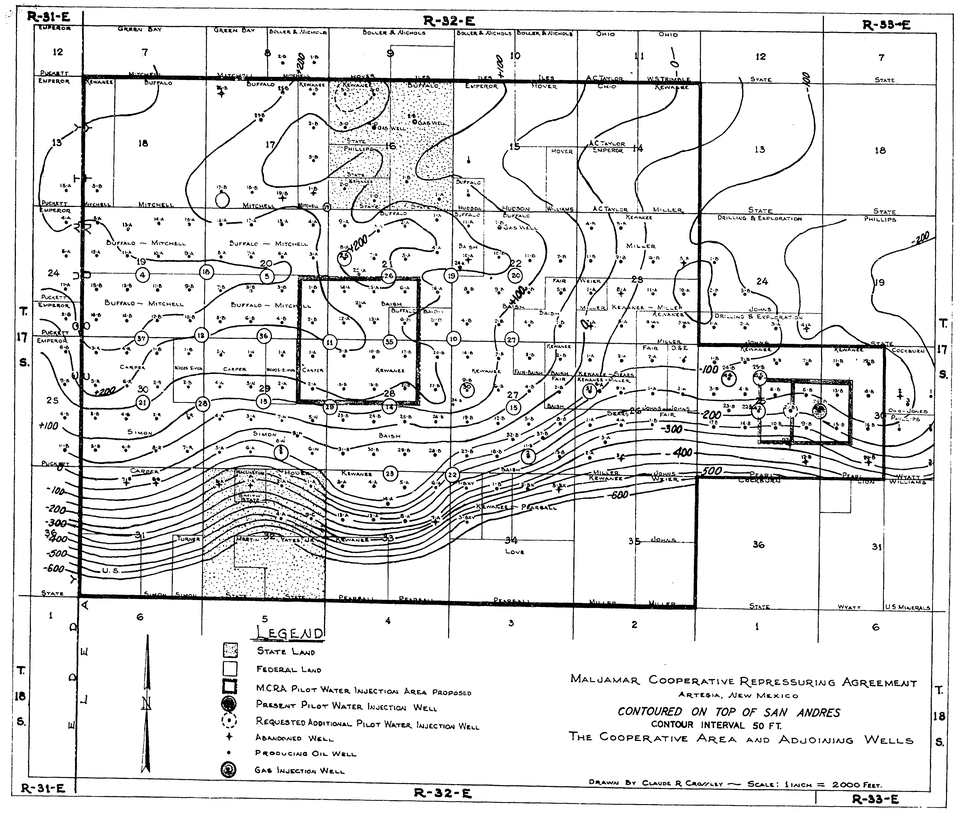
300

PEARL PILOT WATER FLOOD




R-31-E
R-32-E
R-33-E
T. 17 S.
T. 18 S.
BOUNDARY OF M.C.R.A. AREA
CROSS SECTION
W-2-E
W-2-E
LEGEND
STATE LAND
FEDERAL LAND
M.C.R.A. PILOT WATER INJECTION AREA PROPOSED
PRESENT PILOT WATER INJECTION WELL
REQUESTED ADDITIONAL PILOT WATER INJECTION WELL
ABANDONED WELL
PRODUCING OIL WELL
GAS INJECTION WELL
BOUNDARY OF M.C.R.A. AREA
MALJAMAR COOPERATIVE REPRESSURING AGREEMENT
ARTESIA, NEW MEXICO
CASE NO.
EXHIBIT A
THE COOPERATIVE AREA AND ADJOINING WELLS
DRAWN BY CLAUDE R. CROWLEY — SCALE: 1 INCH = 2000 FEET.

301


R-31-E
R-32-E
R-33-E
T. 17 S.
T. 18 S.
LEGEND
STATE LAND
FEDERAL LAND
MCRA PILOT WATER INJECTION AREA PROPOSED
PRESENT PILOT WATER INJECTION WELL
REQUESTED ADDITIONAL PILOT WATER INJECTION WELL
ABANDONED WELL
PRODUCING OIL WELL
GAS INJECTION WELL
MALJAMAR COOPERATIVE REPRESSURING AGREEMENT
ARTESIA, NEW MEXICO
CONTOURED ON TOP OF SAN ANDRES
CONTOUR INTERVAL 50 FT.
THE COOPERATIVE AREA AND ADJOINING WELLS
DRAWN BY CLAUDE R. CROWLEY — SCALE: 1 INCH = 2000 FEET.

LEASE PRODUCTION DATA
Kewanee Oil Company
Pearl B Lease
Sections 25 and 30

Year / Lease & Well		Oil Production Barrels	Gross Ratio C.F.B.	Gross Gas Volume Produced MCF	Gas Volume Injected M. C. F.	Reservoir Pressure Inj. Well	Net Gas Volume Prod. MCF	Net Ratio C.F.B.	Reservoir Pressure Prod. Well	Water Production Barrels
First half 1942										
Pearl B	1	1,289	1,870	2,410					-	-
	2	1,289	1,710	2,204					1,175	-
	3	-	-	-					1,285	-
	4	-	-	-					1,316	-
	5	-	-	-					-	-
	6	-	-	-					-	-
	7	-	-	-					-	-
	8	-	-	-					-	-
	9	-	-	-					-	-
	10	-	-	-					-	-
	11	-	-	-					-	-
	12	-	-	-					-	-
	13	-	-	-					-	-
	14	-	-	-					-	-
	15	-	-	-					-	-
	16	-	-	-					-	-
	17	-	-	-					-	-
	18	-	-	-					-	-
	19	-	-	-					-	-
	20	-	-	-					-	-
	21	-	-	-					-	-
	22	-	-	-					-	-
	23	-	-	-					-	-
	24	-	-	-					-	-
	25	-	-	-					-	-
	26	-	-	-					-	-
	IP #2, All				-	-				
	IP #4, All				-	-				
	IP #5, All				-	-				
	IP #6, All				-	-				
Total	2	2,578	1,789	4,614	-	-	4,614	1,789	(3) 3,776	-
Cumulative	2	2,578	1,789	4,614	-	-	4,614	1,789	1,258	-
Last half 1942										
Pearl B	1	5,660	1,720	9,735					1,058	-
	2	2,658	1,640	9,279					951	-
	3	4,683	1,440	6,743					1,277	-
	4	3,712	1,150	4,268					1,165	-
	5	2,971	2,500	7,427					-	-
	6	1,891	1,640	3,101					-	-
	7	455	1,440	655					-	-
	8	-	-	-					-	-
	9	-	-	-					-	-
	10	-	-	-					-	-
	11	-	-	-					-	-
	12	-	-	-					-	-
	13	-	-	-					-	-
	14	-	-	-					-	-
	15	-	-	-					-	-
	16	-	-	-					-	-
	17	-	-	-					-	-
	18	-	-	-					-	-
	19	-	-	-					-	-
	21	-	-	-					-	-

LEASE PRODUCTION DATA
Kewanee Oil Company
Pearl B Lease
Sections 25 and 30

Year / Lease & Well		Oil Production Barrels	Gross Ratio C.F.B.	Gross Gas Volume Produced MCF	Gas Volume Injected M. C. F.	Reservoir Pressure Inj. Well	Net Gas Volume Prod. MCF	Net Ratio C.F.B.	Reservoir Pressure Prod. Well	Water Production Barrels
Last half 1942 continued										
Pearl B	22	-	-	-					-	-
	23	-	-	-					-	-
	24	-	-	-					-	-
	25	-	-	-					-	-
	26	-	-	-					-	-
	IP #2, All				-	-				
	IP #4, All				-	-				
	IP #5, All				-	-				
	IP #6, All				-	-				
Total	7	25,030	1,646	41,208	-	-	41,208	1,646	(4) 4,451	-
Cumulative	7	27,608	1,659	45,822	-	-	45,822	1,659	1,112	-
First half 1943										
Pearl B	1	6,678	1,640	10,951					1,013	-
	2	6,679	1,520	10,152					1,208	-
	3	6,679	1,380	9,230					-	-
	4	6,680	1,210	8,082					-	-
	5	6,681	2,490	16,635					-	-
	6	6,683	1,520	10,158					-	-
	7	6,684	1,380	9,223					-	-
	8	4,976	1,740	7,962					-	-
	9	4,976	1,590	7,273					-	-
	10	3,401	1,480	5,033					-	-
	11	1,667	3,560	5,934					-	-
	12	1,087	890	967					-	-
	13	1,669	1,980	3,304					-	-
	14	1,087	1,210	1,315					-	-
	15	752	1,180	887					-	-
	16	-	-	-					-	-
	17	-	-	-					-	-
	18	-	-	-					-	-
	19	-	-	-					-	-
	21	-	-	-					-	-
	22	-	-	-					-	-
	23	-	-	-					-	-
	24	-	-	-					-	-
	25	-	-	-					-	-
	26	-	-	-					-	-
	IP #2, All				-	-				
	IP #4, All				-	-				
	IP #5, All				-	-				
	IP #6, All				-	-				
Total	15	65,979	1,633	107,108	-	-	107,108	1,633	(2) 2,221	-
Cumulative	15	93,187	1,641	152,930	-	-	152,930	1,641	1,110	-
Last half 1943										
Pearl B	1	6,813	1,730	11,786					934	-
	2	6,813	1,690	11,513					887	-
	3	6,815	1,410	9,609					1,132	-
	4	6,815	1,280	8,723					999	-
	5	6,815	2,380	16,219					-	-
	6	6,815	1,690	11,517					-	-
	7	6,816	1,410	9,610					-	-

LEASE PRODUCTION DATA
Kewanee Oil Company
Pearl B Lease
Sections 25 and 30

Year / Lease & Well		Oil Production Barrels	Gross Ratio C.F.B.	Gross Gas Volume Produced MCF	Gas Volume Injected M. C. F.	Reservoir Pressure Inj. Well	Net Gas Volume Prod. MCF	Net Ratio C.F.B.	Reservoir Pressure Prod. Well	Water Production Barrels
Last half 1943										
Pearl B	8	6,816	1,690	11,519					-	-
	9	6,816	1,660	11,178					-	-
	10	6,816	1,560	10,632					-	-
	11	8,191	3,990	32,640					-	-
	12	6,816	840	5,725					-	-
	13	8,192	2,190	18,378					-	-
	14	6,818	1,150	7,840					-	-
	15	8,193	1,150	9,691					-	-
	16	8,195	1,320	11,081					-	-
	17	6,819	1,190	8,114					-	-
	18	4,078	4,250	20,731					-	-
	19	-	-	-					-	-
	21	-	-	-					-	-
	22	-	-	-					-	-
	23	-	-	-					-	-
	24	-	-	-					-	-
	25	-	-	-					-	-
	26	-	-	-					-	-
	IP #2, All				-	-				
	IP #4, All				-	-				
	IP #5, All				-	-				
	IP #6, All				-	-				
Total	18	127,052	1,782	226,466	-	-	226,466	1,782	(4) 3,952	-
Cumulative	18	220,239	1,722	379,396	-	-	379,396	1,722	988	-
First half 1944										
Pearl B	1	6,548	1,910	12,506					-	-
	2	6,548	1,700	11,131					732	-
	3	6,550	1,290	8,449					-	-
	4	6,550	1,190	7,796					894	-
	5	6,550	2,460	16,113					-	-
	6	6,550	1,700	11,135					-	-
	7	6,551	1,290	8,450					-	-
	8	6,551	1,780	11,660					-	-
	9	6,552	1,580	10,352					-	-
	10	6,554	1,420	9,306					-	-
	11	6,704	4,120	27,620					-	-
	12	6,554	960	6,460					-	-
	14	6,705	2,010	13,477					-	-
	15	6,574	1,290	8,454					-	-
	16	6,706	1,310	8,114					-	-
	17	6,708	1,290	8,653					-	-
	18	6,554	1,210	7,930					-	-
	19	6,709	5,100	34,215					805	-
	21	6,709	6,240	41,864					-	-
	22	-	-	-					-	-
	23	-	-	-					-	-
	24	-	-	-					-	-
	25	-	-	-					-	-
	26	-	-	-					-	-
	IP #2, All									

LEASE PRODUCTION DATA
Kewanee Oil Company
Pearl B Lease
Sections 25 and 30

Year / Lease & Well		Oil Production Barrels	Gross Ratio C.F.B.	Gross Gas Volume Produced MCF	Gas Volume Injected M. C. F.	Reservoir Pressure Inj. Well	Net Gas Volume Prod. MCF	Net Ratio C.F.B.	Reservoir Pressure Prod. Well	Water Production Barrels
First half 1944 continued										
Pearl B	IP #4, All				-	-				
	IP #5, All				-	-				
	IP #6, All				-	-				
Total	19	125,407	2,099	263,283	-	-	263,283	2,099	(3) 2,431	-
Cumulative	19	345,646	1,859	642,679	-	-	642,679	1,859	810	-
Last half 1944										
Pearl B	1	6,209	1,840	11,424					510	-
	2	6,209	1,710	10,617					-	-
	3	6,210	1,380	8,569					963	-
	4	6,211	1,310	8,136					-	-
	5	6,211	2,510	15,589					-	-
	6	6,213	1,710	10,626					-	-
	7	6,213	1,370	8,513					-	-
	8	6,214	1,650	10,177					-	-
	9	6,215	1,410	8,763					-	-
	10	6,215	1,190	8,438					-	-
	11	6,302	3,990	25,144					-	-
	12	6,215	740	4,599					-	-
	13	6,303	2,160	13,614					-	-
	14	6,213	1,340	8,328					-	-
	15	6,303	1,420	8,950					-	-
	16	6,301	1,140	7,185					-	-
	17	6,215	1,320	8,203					1,075	-
	18	6,304	4,680	29,502					-	-
	19	6,306	7,110	44,835					-	-
	21	-	-	-					-	-
	22	-	-	-					-	-
	23	-	-	-					-	-
	24	-	-	-					-	-
	25	-	-	-					-	-
	26	-	-	-					-	-
	IP #2, All				-	-				
	IP #4, All				-	-				
	IP #5, All				-	-				
	IP #6, All				-	-				
Total	19	118,586	2,122	251,660	-	-	251,660	2,122	(3) 2,948	-
Cumulative	19	464,232	1,926	894,339	-	-	894,339	1,926	849	-
First half 1945										
Pearl B	1	5,961	1,720	10,252					837	-
	2	5,960	1,560	9,297					-	-
	3	5,960	1,110	6,615					1,197	-
	4	5,960	1,250	7,450					-	-
	5	5,961	2,480	14,783					-	-
	6	5,961	1,560	9,298					-	-
	7	5,961	1,110	6,616					-	-
	8	5,961	1,910	11,385					-	-
	9	5,961	1,390	8,285					-	-
	10	5,961	1,580	9,418					-	-
	11	5,771	4,560	26,315					-	-
	12	5,961	880	5,245					-	-
	13	5,771	2,420	13,965					-	-

LEASE PRODUCTION DATA
Kewanee Oil Company
Pearl B Lease
Sections 25 and 30

Year / Lease & Well		Oil Production Barrels	Gross Ratio C.F.B.	Gross Gas Volume Produced MCF	Gas Volume Injected M. C. F.	Reservoir Pressure Inj. Well	Net Gas Volume Prod. MCF	Net Ratio C.F.B.	Reservoir Pressure Prod. Well	Water Production Barrels
Last half 1945 continued										
Pearl B	14	5,962	1,120	6,677					-	-
	15	5,772	1,010	5,829					-	-
	16	5,772	1,090	6,291					1,167	-
	17	5,962	1,420	8,466					-	-
	18	5,775	4,290	24,775					-	-
	19	5,775	8,250	47,643					-	-
	21	-	-	-					-	-
	22	-	-	-					-	-
	23	-	-	-					-	-
	24	-	-	-					-	-
	27	-	-	-					-	-
	26	-	-	-					-	-
	IP #2, All				-	-				
	IP #4, All				-	-				
	IP #5, All				-	-				
	IP #6, All				-	-				
Total	19	112,128	2,127	238,605	-	-	238,605	2,127	(3) 1,201	-
Cumulative	19	576,360	1,965	1,132,944	-	-	1,132,944	1,965	1,067	-
Last half 1945										
Pearl B	1	5,919	1,810	10,713					626	-
	2	5,919	1,620	9,588					-	-
	3	5,918	1,260	7,456					753	-
	4	5,918	1,190	7,042					-	-
	5	5,918	2,390	14,144					-	-
	6	5,920	1,620	9,590					-	-
	7	5,920	1,260	7,459					-	-
	8	5,920	1,870	11,070					-	-
	9	5,920	1,280	7,577					-	-
	10	5,920	1,420	8,406					-	-
	11	5,352	4,240	22,692					-	-
	12	5,895	860	5,069					-	-
	13	5,921	2,210	13,825					-	-
	14	5,897	1,210	7,132					-	-
	15	5,352	1,100	5,887					-	-
	16	5,352	1,210	6,475					1,021	-
	17	5,895	1,150	6,779					-	-
	18	5,352	4,690	25,100					-	-
	19	5,352	7,590	40,607					-	-
	21	-	-	-					-	-
	22	-	-	-					-	-
	23	-	-	-					-	-
	24	-	-	-					-	-
	25	-	-	-					-	-
	26	-	-	-					-	-
	IP #2, All				-	-				
	IP #4, All				-	-				
	IP #5, All				-	-				
	IP #6, All				-	-				
Total	19	108,988	2,059	224,411	-	-	224,411	2,059	(3) 2,400	-
Cumulative	19	685,348	1,980	1,357,355	-	-	1,357,355	1,980	800	-

LEASE PRODUCTION DATA
Kewanee Oil Company
Pearl B Lease
Sections 25 and 30

Year / Lease & Well		Oil Production Barrels	Gross Ratio C.F.B.	Gross Gas Volume Produced MCF	Gas Volume Injected M. C. F.	Reservoir Pressure Inj. Well	Net Gas Volume Prod. MCF	Net Ratio C.F.B.	Reservoir Pressure Prod. Well	Water Production Barrels
First half 1946										
Pearl B	1	5,942	1,960	11,254					895	-
	2	5,942	1,640	9,991					-	-
	3	5,942	1,240	7,684					937	-
	4	5,942	1,090	6,258					-	-
	5	5,942	2,280	13,091					-	-
	6	5,942	1,740	9,991					-	-
	7	5,942	1,340	7,694					-	-
	8	5,941	1,960	11,252					-	-
	9	5,941	1,560	8,955					-	-
	10	5,941	1,330	7,635					-	-
	11	4,995	4,980	24,877					-	-
	12	2,781	920	2,558					-	-
	13	4,995	2,340	11,474					-	-
	14	5,761	1,430	8,209					-	-
	15	4,995	1,380	6,899					-	-
	16	4,995	1,320	6,461					-	-
	17	5,760	1,180	6,773					1,094	-
	18	5,894	4,430	21,680					-	-
	19	4,894	8,100	39,641					-	-
	21	-	-	-					-	-
	22	-	-	-					-	-
	23	-	-	-					-	-
	24	-	-	-					-	-
	25	-	-	-					-	-
	26	-	-	-					-	-
	IP #2, All				-	-				
	IP #4, All				-	-				
	IP #5, All				-	-				
	IP #6, All				-	-				
Total	19	101,047	2,173	219,667	-	-	219,667	2,173	(2) 2,926	-
Cumulative	19	786,395	2,005	1,577,022	-	-	1,577,022	2,005	975	-
Last half 1946										
Pearl B	1	5,454	1,210	10,434					-	-
	2	5,454	1,810	9,871					-	-
	3	5,454	1,250	6,817					927	-
	4	5,454	1,140	6,217					-	-
	5	5,454	2,410	13,144					-	-
	6	5,454	1,810	9,871					-	-
	7	5,453	1,250	6,816					-	-
	8	5,453	2,010	10,960					-	-
	9	5,453	1,420	7,743					-	-
	10	5,453	1,290	7,031					-	-
	11	4,283	5,670	24,284					-	-
	12	-	-	-					-	-
	13	4,283	2,510	10,750					-	-
	14	5,492	1,120	6,106					-	-
	15	4,283	890	3,811					-	-
	16	4,282	1,440	6,166					-	-
	17	5,451	1,290	7,031					1,025	-
	18	4,282	4,610	19,740					-	-
	19	4,282	7,910	33,870					-	-
	21	-	-	-					-	-

LEASE PRODUCTION DATA
Kewanee Oil Company
Pearl B Lease
Sections 25 and 30

Year / Lease & Well		Oil Production Barrels	Gross Ratio C.F.B.	Gross Gas Volume Produced MCF	Gas Volume Injected M. C. F.	Reservoir Pressure Inj. Well	Net Gas Volume Prod. MCF	Net Ratio C.F.B.	Reservoir Pressure Prod. Well	Water Production Barrels
First half 1946 continued										
Pearl B	22	-	-	-					-	-
	23	-	-	-					-	-
	24	-	-	-					-	-
	25	-	-	-					-	-
	26	-	-	-					-	-
	IP #2, All				-	-				
	IP #4, All				-	-				
	IP #5, All				-	-				
	IP #6, All				-	-				
Total	18	91,134	2,201	200,648	-	-	200,648	2,201	(2) 1,952	-
Cumulative	19	877,529	2,025	1,777,670	-	-	1,777,670	2,025	976	-
First half 1947										
Pearl B	1	5,740	1,620	9,298					-	-
	2	5,740	1,930	11,422					840	-
	3	5,741	1,190	6,832					-	-
	4	5,040	1,210	6,098					-	-
	5	6,287	2,280	14,963					-	-
	6	6,287	1,990	12,511					-	-
	7	5,949	1,150	6,841					-	-
	8	5,949	2,150	12,799					-	-
	9	6,287	1,560	9,807					-	-
	12	6,289	1,410	8,867					-	-
	11	4,607	4,950	22,804					-	-
	12	-	-	-					-	-
	13	4,340	2,760	11,978					-	-
	14	6,289	980	6,163					-	-
	15	2,611	910	2,376					-	-
	16	5,090	1,610	8,194					999	-
	17	6,288	1,410	8,867					-	-
	18	2,924	4,420	12,924					-	-
	19	2,924	8,190	23,947					-	-
	21	-	-	-					-	-
	22	-	-	-					-	-
	23	-	-	-					-	-
	24	-	-	-					-	-
	25	-	-	-					-	-
	26	-	-	-					-	-
	IP #2, All				-	-				
	IP #4, All				-	-				
	IP #5, All				-	-				
	IP #6, All				-	-				
Total	18	94,182	2,074	195,822	-	-	195,822	2,074	(2) 1,839	-
Cumulative	19	971,711	2,030	1,973,492	-	-	1,973,492	2,030	919	-
Last half 1947										
Pearl B	1	6,107	1,990	12,152					789	-
	2	6,107	1,870	11,420					-	-
	3	5,607	1,210	6,784					937	-
	4	6,107	1,180	7,206					-	-
	5	6,107	2,210	13,496					-	-
	6	6,107	2,640	16,122					-	-

LEASE PRODUCTION DATA
Kewanee Oil Company
Pearl B Lease
Sections 25 and 30

Year / Lease & Well		Oil Production Barrels	Gross Ratio C.F.B.	Gross Gas Volume Produced MCF	Gas Volume Injected M. C. F.	Reservoir Pressure Inj. Well	Net Gas Volume Prod. MCF	Net Ratio C.F.B.	Reservoir Pressure Prod. Well	Water Production Barrels
Last half 1947 continued										
Pearl B	7	6,107	1,280	7,816					-	-
	8	5,090	2,910	14,782					-	-
	9	6,107	1,630	10,320					-	-
	11	6,107	1,390	8,485					-	-
	11	5,107	4,290	32,305					-	-
	12	5,607	880	4,920					-	-
	13	4,358	2,810	12,288					-	-
	14	1,916	810	1,095					-	-
	15	920	860	760					-	-
	16	3,407	1,210	7,231					-	-
	17	6,107	1,100	6,869					951	-
	18	1,924	4,210	8,102					-	-
	19	4,917	5,510	27,102					-	-
	21	-	-	-					-	-
	22	-	-	-					-	-
	23	-	-	-					-	-
	24	-	-	-					-	-
	25	-	-	-					-	-
	26	-	-	-					-	-
	IP #2, All				-	-				
	IP #4, All				-	-				
	IP #5, All				-	-				
	IP #6, All				-	-				
Total	19	89,673	2,210	203,652	-	-	203,652	2,210	(3) 2,035	-
Cumulative	19	1,061,384	2,049	2,173,324	-	-	2,173,324	2,049	975	-
First half 1948										
Pearl B	1	5,381	1,302	18,921					988	-
	2	5,381	1,009	16,140					780	-
	3	5,381	925	2,808					672	-
	4	5,381	1,021	5,495					865	-
	5	6,311	1,057	6,938					816	-
	6	5,375	3,805	21,004					88	-
	7	5,375	1,805	9,729					231	-
	8	5,375	3,300	17,809					-	-
	9	5,350	1,798	9,586					977	-
	10	5,350	1,332	7,108					976	-
	11	5,350	6,794	36,406					984	-
	12	-	-	-					865	-
	13	3,668	2,618	9,602					822	-
	14	5,351	955	5,132					805	-
	15	5,350	338	1,818					807	-
	16	5,350	1,081	5,789					821	-
	17	5,351	911	4,875					733	-
	18	5,350	1,725	9,069					669	-
	19	4,258	10,255	25,310					997	-
	21	-	-	-					-	-
	22	-	-	-					-	-
	23	-	-	-					-	-
	24	-	-	-					-	-
	25	-	-	-					-	-
	26	-	-	-					-	-

LEASE PRODUCTION DATA
Kewanee Oil Company
Pearl B Lease
Sections 25 and 30

Year / Lease & Well		Oil Production Barrels	Gross Ratio C.F.B.	Gross Gas Volume Produced MCF	Gas Volume Injected M. C. F.	Reservoir Pressure Inj. Well	Net Gas Volume Prod. MCF	Net Ratio C.F.B.	Reservoir Pressure Prod. Well	Water Production Barrels
First half 1948 continued										
Pearl B	IP #2, All				-	-				
	IP #4, All				-	-				
	IP #5, All				-	-				
	IP #6, All				-	-				
Total	18	86,856	2,478	215,275	-	-	215,275	2,478	(3) 1,[illegible]	-
Cumulative	19	1,148,240	2,081	2,391,219	-	-	[illegible]	[illegible]	[illegible]	-
Last half 1948										
Pearl B	1	4,382	1,173	13,835					-	-
	2	4,382	2,241	2,261					-	-
	3	4,382	523	13,280					-	-
	4	4,382	1,358	5,307					-	-
	5	4,383	2,017	12,[illegible]					-	-
	6	4,383	2,286	8,[illegible]					-	-
	7	4,383	1,835	8,[illegible]					-	-
	8	4,383	2,757	12,[illegible]					-	-
	9	4,383	938	4,[illegible]					-	-
	10	4,383	1,075	4,[illegible]					-	-
	11	4,381	3,469	15,[illegible]					-	-
	12	-	-	-					-	-
	13	4,[illegible]	3,361	15,[illegible]					-	-
	14	4,[illegible]	1,208	5,[illegible]					-	-
	15	4,[illegible]	1,[illegible]	4,[illegible]					-	-
	16	4,[illegible]	641	2,[illegible]					-	-
	17	4,[illegible]	1,381	5,[illegible]					-	-
	18	4,[illegible]	2,782	8,[illegible]					-	-
	19	2,[illegible]	3,[illegible]	13,[illegible]					-	-
	21	2,[illegible]	825	1,[illegible]					-	-
	22	2,[illegible]	825	1,[illegible]					-	-
	23	1,[illegible]	867	1,[illegible]					-	-
	24	-	-	-					-	-
	25	1,347	1,729	2,[illegible]					-	-
	26	991	1,[illegible]	2,[illegible]					-	-
	IP #2, All				-	-				
	IP #4, All				-	-				
	IP #5, All				-	-				
	IP #6, All				-	-				
Total	23	77,[illegible]	2,[illegible]	159,[illegible]	-	-	[illegible]	[illegible]	[illegible]	-
Cumulative	26	1,[illegible]	2,[illegible]	2,[illegible]	-	-	[illegible]	[illegible]	[illegible]	-
First half 1949										
Pearl B	1	3,196	1,005	6,407					-	-
	2	2,668	1,082	3,211					-	-
	3	3,202	493	1,581					-	-
	4	2,668	1,107	3,[illegible]					-	-
	5	2,997	1,[illegible]	3,[illegible]					-	-
	6	3,[illegible]	1,321	3,[illegible]					-	-
	7	3,201	1,[illegible]	3,[illegible]					-	-
	8	3,[illegible]	1,[illegible]	2,[illegible]					-	-
	9	3,815	658	2,[illegible]					-	-
	10	3,[illegible]	539	2,[illegible]					-	-
	11	3,[illegible]	2,078	6,[illegible]					-	-
	12	-	-	-					-	-

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LEASE PRODUCTION DATA
Kewanee Oil Company
Pearl B Lease
Sections 25 and 30

Year / Lease & Well		Oil Production Barrels	Gross Ratio C.F.B.	Gross Gas Volume Produced MCF	Gas Volume Injected M. C. F.	Reservoir Pressure Ini. Well	Net Gas Volume Prod. MCF	Net Ratio C.F.B.	Reservoir Pressure Prod. Well	Water Production Barrels
First half 1949 continued										
Pearl B 1		3,008	4,271	12,847					526	-
16		2,913	1,517	4,419					700	-
17		1,698	1,383	2,349					672	-
18		4,293	745	3,198					672	-
19		3,007	4,401	6,232					770	-
23		4,363	4,665	6,378					683	-
24		1,653	10,280	16,936					909	-
25		4,233	1,179	4,990					841	-
22		4,583	772	4,453					871	-
23		4,708	668	3,146					870	-
24		4,004	765	3,063					870	-
25		4,248	1,663	7,914					841	-
26		4,247	758	3,219					698	-
IP W2, All					-	-				
IP W4, All					-	-				
IP W5, All										
IP W6, All										
Total	24	79,841	1,591	127,083	-	-	127,083	1,591 (24)	17,503	-
Cumulative	25	1,305,995	2,050	2,677,337	-	-	2,677,337	2,050	729	-
Last half 1949										
Pearl B 1		3,113	2,260	7,035					776	-
2		3,113	1,000	3,113					804	-
3		3,113	915	1,903					822	-
4		3,113	1,231	3,837					807	-
5		3,113	2,380	7,411					790	-
6		3,113	980	3,050					736	-
7		3,113	750	2,334					695	-
8		3,113	1,470	4,576					729	-
9		3,113	1,080	3,362					763	-
10		3,113	652	2,029					863	-
11		3,113	2,490	7,751					536	-
12									-	-
13		3,113	1,625	5,058					631	-
14		3,113	770	2,397					733	-
15		3,113	601	1,870					722	-
16		3,171	870	4,498					594	-
17		3,113	1,267	3,944					698	-
18		3,113	2,105	1,835					731	-
19		1,728	1,675	2,894					762	-
21		3,975	1,289	5,123					858	-
22		3,975	1,050	4,173					770	-
23		3,975	1,330	5,288					748	-
24		3,975	970	3,855					898	-
25		3,975	3,100	12,322					652	-
26		3,975	1,145	4,551						-
IP W2, All					-	-				
IP W4, All					-	-				
IP W5, All					-	-				
IP W6, All										
Total	24	79,203	1,338	106,047	-	-	106,047	1,338 (24)	17,172	-
Cumulative	25	1,385,198	2,009	2,783,384	-	-	2,783,384	2,009	715	-

LEASE PRODUCTION DATA
Kewanee Oil Company
Pearl B Lease
Sections 25 and 30

Year / Lease & Well		Oil Production Barrels	Gross Ratio C.F.B.	Gross Gas Volume Produced MCF	Gas Volume Injected M. C. F.	Reservoir Pressure Ini. Well	Net Gas Volume Prod. MCF	Net Ratio C.F.B.	Reservoir Pressure Prod. Well	Water Production Barrels
First half 1950										
Pearl B 1		2,960	1,420	4,203					599	-
2		2,960	1,821	5,390					671	-
3		2,960	984	2,912					805	-
4		2,960	984	2,912					811	-
5		2,960	2,474	7,323					700	-
6		2,960	1,085	3,211					582	-
7		2,960	2,631	7,787					697	-
8		2,960	1,562	4,623					704	-
9		2,960	842	2,492					746	-
10		2,960	790	2,338					853	-
11		2,960	2,299	6,805					516	-
12									-	-
13		2,960	1,057	3,128					560	-
14		2,960	510	1,509					751	-
15		2,960	896	2,652					747	-
16		4,931	967	4,768					699	-
17		2,961	759	2,235					794	-
18		1,844	1,714	2,617					782	-
19		1,844	3,178	5,218					513	-
21		4,091	1,438	5,760					726	-
22		4,091	862	3,526					826	-
23		4,091	1,274	5,211					729	-
24		4,091	1,405	5,747					695	-
25		4,091	2,013	8,235					860	-
26		4,091	1,173	4,800					614	-
IP W2, All					-	-				
IP W4, All					-	-				
IP W5, All					-	-				
IP W6, All										
Total	24	77,166	1,368	105,608	-	-	105,608	1,368 (24)	16,580	-
Cumulative	25	1,462,364	1,975	2,888,992	-	-	2,888,992	1,975	690	-
Last half 1950										
Pearl B 1		2,575	1,985	5,111					589	-
2		2,575	2,295	5,909					779	-
3		2,822	1,251	3,532					776	-
4		2,822	1,314	3,708					798	-
5		1,930	1,504	2,902					472	-
6		2,822	1,406	3,967					625	-
7		1,930	2,476	4,780					465	-
8		2,354	1,402	3,300					682	-
9		2,822	928	2,618					697	-
10		2,822	1,047	2,954					881	-
11		2,853	3,183	9,081					497	-
12									-	-
13		3,311	993	3,287					494	-
14		2,822	718	2,026					762	-
15		2,822	2,097	5,904					708	-
16		5,212	1,599	8,125					698	-
17		3,401	1,629	5,543					828	-
18		1,092	2,018	2,203					719	-
19		1,187	3,691	4,373					494	-

LEASE PRODUCTION DATA
Kewanee Oil Company
Pearl B Lease
Sections 25 and 30

Year / Lease & Well		Oil Production Barrels	Gross Ratio C.F.B.	Gross Gas Volume Produced MCF	Gas Volume Injected M. C. F.	Reservoir Pressure Ini. Well	Net Gas Volume Prod. MCF	Net Ratio C.F.B.	Reservoir Pressure Prod. Well	Water Production Barrels
First half 1951 continued										
Pearl B 1		4,375	1,566	6,851					719	-
22		4,375	1,946	5,888					799	-
23		4,375	1,388	6,072					700	-
24		4,375	1,157	5,061					628	-
25		4,375	3,132	13,702					828	-
26		4,375	1,632	7,140					576	-
IP W2, All					-	-				
IP W4, All					-	-				
IP W5, All					-	-				
IP W6, All					-	-				
Total	24	74,961	1,730	129,754	-	-	129,754	1,730 (24)	16,006	-
Cumulative	25	1,537,325	1,963	3,018,746	-	-	3,018,746	1,963	666	-
First half 1951										
Pearl B 1		2,059	2,035	4,190					587	-
2		1,180	2,686	3,098					628	-
3		3,135	1,490	4,671					779	-
4		4,494	1,572	7,716					767	-
5		1,338	2,110	2,823					794	-
6		2,822	1,437	3,825					586	-
7		868	1,863	1,598					512	-
8		1,405	2,082	2,978					537	-
9		4,899	747	3,644					699	-
10		4,700	1,060	4,982					573	-
11		2,634	2,198	5,789					517	-
12									-	-
13		2,828	1,283	3,628					705	-
14		2,945	863	2,196					639	714
15		2,721	1,605	4,367					661	1,196
16		5,463	1,373	7,061					687	-
17		3,940	1,740	6,855					736	258
18		599	1,736	1,039					729	-
19		982	1,038	1,020					921	-
21		3,681	1,213	4,466					693	-
22		3,736	1,651	6,168					766	-
23		3,911	1,466	5,733					702	-
24		4,089	1,717	7,020					956	-
25		2,850	3,619	9,013					819	-
26		2,821	1,953	5,227					564	-
IP W2, All					-	-				
IP W4, All					-	-				
IP W5, All					-	-				
IP W6, All										
Total	24	69,590	1,600	111,356	-	-	111,356	1,600 (24)	15,665	2,168
Cumulative	25	1,606,915	1,947	3,130,102	-	-	3,130,102	1,947	652	2,168
Last half 1951										
Pearl B 1		2,192	1,411	3,092					559	-
2		928	4,634	4,300					601	-
3		3,243	1,197	3,881					743	-
4		5,306	1,132	6,006					730	-
5		2,850	1,873	5,338					490	-
6		2,873	1,183	3,398					587	-

LEASE PRODUCTION DATA
Kewanee Oil Company
Pearl B Lease
Sections 25 and 30

Year / Lease & Well		Oil Production Barrels	Gross Ratio C.F.B.	Gross Gas Volume Produced MCF	Gas Volume Injected M. C. F.	Reservoir Pressure Ini. Well	Net Gas Volume Prod. MCF	Net Ratio C.F.B.	Reservoir Pressure Prod. Well	Water Production Barrels
Last half 1951 continued										
Pearl B 7		429	4,390	1,883					498	-
8		1,339	1,898	2,541					608	-
9		5,027	1,219	7,625					659	-
10		2,525	1,091	6,007					855	-
11		2,664	4,005	10,669					599	-
12		-	-	-					-	-
13		2,826	1,811	5,117					-	-
14		2,942	964	2,834					496	-
15		2,849	1,232	3,518					624	714
16		5,028	1,482	8,809					677	1,196
17		2,980	1,480	4,549					691	-
18		380	582	221					701	258
19		311	2,974	924					488	-
21		3,940	1,520	5,380					671	-
22		3,887	2,117	8,228					671	-
23		4,194	1,281	6,630					658	-
24		4,158	2,005	8,338					606	-
25		1,262	2,788	3,518					511	-
26		2,680	1,814	4,861					806	-
IP W2, All					-	-			536	
IP W4, All					-	-				
IP W5, All					-	-				
IP W6, All										
Total	24	68,238	1,651	112,705	-	-	112,705	1,651 (24)	15,022	2,168
Cumulative	25	1,675,153	1,935	3,242,807	-	-	3,242,807	1,935	625	4,336
First half 1952										
Pearl B 1		1,875	2,119	3,973						-
2		806	2,971	2,073					519	-
3		2,316	1,974	4,168					578	-
4		3,378	1,835	6,198					774	-
5		471	3,488	1,171					623	-
6		2,935	1,259	3,695					773	-
7		394	2,931	1,039					677	-
8		1,087	1,516	1,607					519	-
9		2,901	940	2,548					643	-
10		1,803	1,462	5,976					665	-
11		2,014	2,105	4,239					844	-
12		-	-	-					564	-
13		2,118	1,825	3,886					-	-
14		2,245	860	1,930					477	-
15		2,936	1,123	3,296					708	714
16		4,892	1,833	7,869					583	1,196
17		2,907	868	2,100					659	-
18		710	1,331	945					651	258
19		389	4,527	1,999					516	-
21		3,786	1,596	4,446					592	-
22		3,839	1,826	7,010					676	-
23		3,668	1,694	6,213					727	-
24		3,780	2,018	7,626					648	-
25		975	2,272	2,216					578	-
26		1,534	1,992	3,056					789	-
IP W2, All					-	-				

LEASE PRODUCTION DATA
Kewanee Oil Company
Pearl B Lease
Sections 25 and 30

Year / Lease & Well		Oil Production Barrels	Gross Ratio C.F.B.	Gross Gas Volume Produced MCF	Gas Volume Injected M. C. F.	Reservoir Pressure Ini. Well	Net Gas Volume Prod. MCF	Net Ratio C.F.B.	Reservoir Pressure Prod. Well	Water Production Barrels
First half 1952 continued										
Pearl B IP W4, All					-	-				
IP W5, All					-	-				
IP W6, All					-	-				
Total	24	57,457	1,527	89,485	-	-	89,485	1,527 (23)	14,743	2,168
Cumulative		1,732,610	1,923	3,332,292	-	-	3,332,292	1,923	641	6,504
Last half 1952										
Pearl B 1		2,031	2,229	4,527					525	-
2		778	1,592	2,972					745	-
3		2,940	1,990	5,851					701	-
4		2,089	1,066	2,226					461	-
5		738	1,478	784					537	-
6		3,616	1,436	5,192					642	-
7		955	1,931	1,840					613	-
8		1,291	1,767	2,281					608	-
9		1,104	1,707	1,917					767	-
10		3,392	2,038	6,912					-	-
11		2,024	2,022	4,092					559	-
12		-	-	-					-	-
13		2,151	3,413	7,341					450	-
14		2,151	645	1,377					676	714
15		3,530	416	1,468					667	1,196
16		4,720	1,561	7,367					639	-
17		2,710	1,084	2,937					701	258
18		811	1,331	1,079					945	-
19		72	4,361	314					508	-
21		3,142	1,952	6,133					630	-
22		1,234	1,826	2,253					930	-
23		3,126	1,687	5,273					640	-
24		972	2,018	1,961					1,026	-
25		1,014	4,483	4,545					747	-
26		291	1,910	555					1,004	-
IP W2, All					13,307	912				
IP W4, All					9,157	1,079				
IP W5, All										
IP W6, All					9,025	1,020				
Total	24	49,783	1,675	83,367	31,489 (3)	3,011	33,908	1,042 (23)	15,117	2,168
Cumulative	25	1,782,393	1,916	3,415,659	31,489	1,003	3,366,200	1,898	697	8,672
First half 1951										
Pearl B 1		1,729	2,518	4,354					561	-
2		706	3,702	2,836					573	-
3		2,798	1,714	4,797					746	-
4		348	940	1,277					453	-
5		4,94	3,215	1,588					571	-
6		2,638	1,814	4,785					574	-
7		289	2,831	818					-	-
8		1,089	1,859	2,024					676	-
9		5,744	1,291	7,415					782	-
10		3,011	1,302	6,926					753	-
11		1,612	1,950	3,143					572	-
12		-	-	-					-	-
13		1,505	3,865	5,816					485	-

LEASE PRODUCTION DATA
Kewanee Oil Company
Pearl B Lease
Sections 25 and 30

Year / Lease & Well		Oil Production Barrels	Gross Ratio C.F.B.	Gross Gas Volume Produced MCF	Gas Volume Injected M. C. F.	Reservoir Pressure Ini. Well	Net Gas Volume Prod. MCF	Net Ratio C.F.B.	Reservoir Pressure Prod. Well	Water Production Barrels
First half 1953 continued										
Pearl B 14		2,693	494	1,332					721	714
15		4,976	1,020	4,867					691	1,196
16		4,453	1,451	6,461					646	-
17		2,603	1,025	2,660					702	260
18		607	1,411	856					696	-
19		530	1,250	2,252					649	-
21		5,608	3,016	5,297					615	-
22		-	-	-					-	-
23		3,016	1,497	4,515					720	-
24		-	-	-					-	-
25		595	4,617	4,599					759	-
26		-	-	-					-	-
IP W2, All					31,328	992				
IP W4, All					10,325	1,179				
IP W5, All					-	-				
IP W6, All					41,653	1,322				
Total	21	49,615	1,574	78,116	83,306 (3)	3,493	69,739 (3)	3,239	12,377	949 (20) 12,351	2,170
Cumulative	25	1,832,008	1,907	3,493,805	97,283	1,079	3,395,377	1,854	617	10,842
Last half 1953										
Pearl B 1		1,375	2,391	3,219					580	3
2		942	3,279	3,090					552	-
3		2,550	1,672	4,332					703	-
4		6,270	653	4,284					916	-
5		375	2,910	1,091					520	24
6		2,190	1,476	3,101					615	-
7		190	2,410	457					516	-
8		1,012	1,215	1,533					583	-
9		7,926	1,051	8,329					778	-
10		7,266	1,006	7,308					874	-
11		1,478	4,559	6,724					570	4
12		-	-	-					-	-
13		1,237	4,191	5,184					476	-
14		2,735	2,042	5,587					817	714
15		5,649	1,488	8,403					781	1,199
16		9,567	1,840	13,697					965	-
17		3,540	1,190	4,211					701	260
18		797	1,010	764					337	46
19		588	1,160	846					594	-
21		2,085	1,960	4,088					606	-
22		-	-	-					-	-
23		3,004	1,520	4,565					725	-
24		-	-	-					-	-
25		970	4,145	4,021					693	-
26		-	-	-					-	-
IP W2, All					39,213	992				
IP W4, All					7,884	1,093				
IP W5, All					-	-				
IP W6, All					47,097	982				
Total	21	64,349	1,677	91,446	88,289 (3)	3,022	22,897	420 (21)	13,300	2,252
Cumulative	25	1,886,357	1,900	3,586,951	165,517	1,007	3,419,434	1,812	633	13,094

LEASE PRODUCTION DATA
Kewanee Oil Company
Pearl B Lease
Sections 25 and 30

Year / Lease & Well		Oil Production Barrels	Gross Ratio C.F.B.	Gross Gas Volume Produced MCF	Gas Volume Injected M. C. F.	Reservoir Pressure Ini. Well	Net Gas Volume Prod. MCF	Net Ratio C.F.B.	Reservoir Pressure Prod. Well	Water Production Barrels
Last half 1953										
Pearl B 1		1,586	2,811	4,458					737	-
2		1,841	8,845	9,907					693	-
3		2,850	869	2,738					800	-
4		6,012	599	3,360					701	-
5		1,847	3,818	5,821					641	-
6		1,840	1,570	2,892					591	-
7		739	732	533					-	-
8		1,845	3,194	5,899					758	87
9		3,488	6,264	21,627					821	-
10		3,299	1,823	12,023					-	-
11		1,476	1,963	2,120					-	-
12		-	-	-					-	-
13		2,313	2,973	6,810					737	-
14		3,120	2,619	8,018					671	136
15		4,320	1,208	5,181					782	-
16		3,601	1,117	4,047					-	-
17		2,251	1,372	4,089					-	7
18		390	4,602	1,751					-	-
19		304	4,618	1,372					-	-
21		2,703	3,052	14,003					696	-
22		-	-	-					-	-
23		3,433	2,680	7,183					717	-
24		-	-	-					-	-
25		-	-	-					-	-
26		-	-	-					-	-
IP W2, All					41,653	1,018				
IP W4, All					13,545	1,094				
IP W5, All					53,198	1,045				
IP W6, All					108,396	1,052				
Total	20	51,758	2,534	131,154	88,206 (3)	3,685	31,916	616 (14)	9,332	223
Cumulative	25	2,100,418	1,889	3,968,142	697,698	1,201	3,490,318	1,419	736	15,719
Last half 1954-Water Injected Bbls.										
IP W6					51,503	2,295				
Total					51,503 (1)	2,295				
Cumulative					99,316	2,254				
First half 1954										
Pearl B 1		3,721	1,316	4,895					885	-
2		725	811	588					843	-
3		2,387	3,719	8,879					843	-
4		4,051	100	406					948	-
5		2,064	9,789	20,206					925	-
6		1,921	931	1,816					635	-
7		680	2,029	1,096					-	-
8		2,182	920	2,031					313	-
9		5,337	2,615	13,956					732	70
10		3,969	1,429	5,641					776	-
11		1,092	2,391	2,610					-	-
12		-	-	-					-	-
13		2,239	918	2,055					370	1,132
14		1,515	1,518	2,299					853	453
15		4,367	2,827	12,345					534	701

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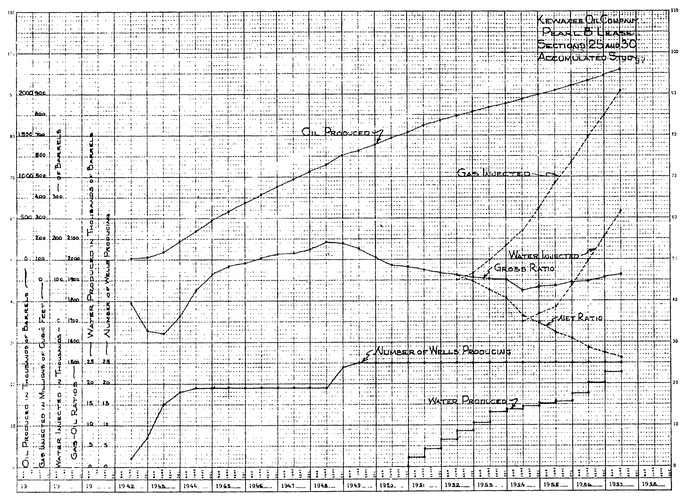
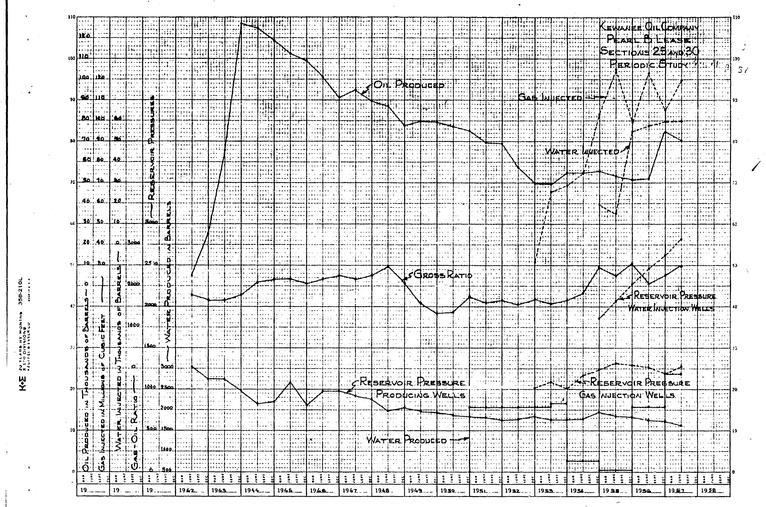
LEASE PRODUCTION DATA
Kewanee Oil Company
Pearl B Lease
Sections 25 and 30

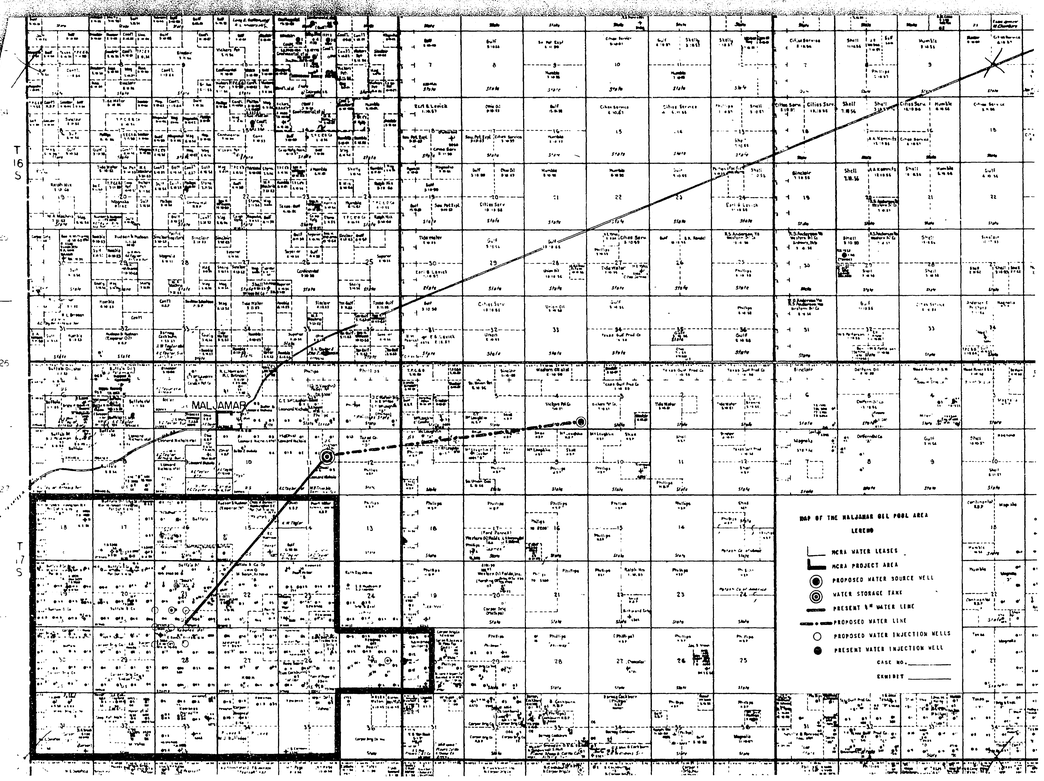
Year / Lease & Well		Oil Production Barrels	Gross Ratio C.F.B.	Gross Gas Volume Produced MCF	Gas Volume Injected M. C. F.	Reservoir Pressure Inj. Well	Net Gas Volume Prod. MCF	Net Ratio C.F.B.	Reservoir Pressure Prod. Well	Water Production Barrels
First half 1956 continued										
Pearl B 16		3,642	1,170	4,261					-	-
17		2,597	937	2,395					-	102
18		571	6,746	2,302					-	21
19		362	3,809	2,464					-	23
21		2,185	1,701	3,716					572	-
22		-	-	-					-	-
23		3,269	2,751	8,339					805	-
24		-	-	-					-	-
25		-	-	-					-	-
26		-	-	-					-	-
IP W2, All					42,806	962				
IP W4, All					40,993	1,411				
IP W5, All					39,413	1,399				
IP W6, All										
Total	20	51,928	2,649	106,330	123,172	(3) 3,924	45,842	322	(14) 8,859	2,172
Cumulative	25	2,152,340	1,895	4,074,972	699,700	1,257	3,383,872	1,572	632	17,891
First half 1956-Water Injected Bbls.										
IP W6					57,361	2,448				
Total					57,361	(1) 2,448				
Cumulative					146,707	2,458				
Last half 1956										
Pearl B 1		3,735	2,369	8,848					607	-
2		2,152	1,913	4,796					561	-
4		5,822	1,738	10,787					893	-
5		3,658	922	1,920					942	-
6		3,198	2,602	8,315					489	-
7		5,010	1,622	7,966					586	-
8		6,033	1,836	11,076					-	-
9		2,570	4,480	11,976					313	-
10		6,711	2,692	17,844					732	50
11		3,857	3,762	13,438					774	-
12		3,186	3,173	10,109					-	-
13		4,688	2,335	10,946					370	1,132
14		3,681	2,551	9,409					853	146
15		6,320	1,331	8,411					534	700
16		6,765	1,902	12,868					-	-
17		2,577	822	2,118					-	103
18		919	1,147	1,054					-	20
19		918	1,147	1,052					-	22
21		1,985	2,941	5,840					572	-
22									-	-
23		3,318	2,155	7,150					780	-
24		-	-	-					-	-
25		-	-	-					-	-
26		-	-	-					-	-
IP W2, All					40,944	985				
IP W4, All					31,815	1,297				
IP W5, All					29,562	1,314				
IP W6, All										
Total	28	74,119	2,238	165,835	105,321	(3) 3,596	60,414	815	(14) 8,504	2,171
Cumulative	25	2,226,463	1,908	4,240,807	795,121	1,198	3,444,286	1,546	611	20,062



LEASE PRODUCTION DATA
Kewanee Oil Company
Pearl B Lease
Sections 25 and 30

Year / Lease & Well		Oil Production Barrels	Gross Ratio C.F.B.	Gross Gas Volume Produced MCF	Gas Volume Injected M. C. F.	Reservoir Pressure Inj. Well	Net Gas Volume Prod. MCF	Net Ratio C.F.B.	Reservoir Pressure Prod. Well	Water Production Barrels
Last half 1956-Water Injected Bbls.										
IP W6					59,946	(1) 2,610				
Total					59,946	(1) 2,610				
Cumulative					206,653	2,610				
First half 1957										
Pearl B 1		3,432	4,042	13,872					551	-
2		4,086	2,373	9,696					491	-
4		3,105	4,920	15,276					810	-
5		3,922	1,617	5,688					947	-
6		3,412	4,641	15,835					431	-
7		1,868	1,816	3,392					690	-
8		3,461	1,476	5,108					-	-
9		2,459	1,326	3,262					317	-
10		6,066	1,720	10,433					705	73
11		3,465	4,288	14,722					880	-
12		3,605	4,284	15,371					423	-
13		-	-	-					-	-
14		4,580	3,200	14,656					210	1,832
15		3,619	3,489	12,626					831	145
16		7,884	954	7,521					407	698
17		9,664	1,568	8,881					383	-
18		2,534	1,445	3,661					-	101
19		881	925	814					-	28
21		885	925	818					-	26
22		2,048	2,297	4,704					370	-
23		-	-	-					-	-
24		3,495	2,300	8,038					792	-
25		-	-	-					-	-
26		-	-	-					-	-
IP W2, All					49,149	985				
IP W4, All					40,784	1,388				
IP W5, All					29,547	1,411				
IP W6, All										
Total	20	70,051	2,496	174,914	119,480	(3) 3,784	55,434	791	(16) 8,838	2,883
Cumulative	25	2,296,514	1,922	4,415,321	915,601	1,261	3,499,720	1,523	552	22,945
First half 1957-Water Injected Bbls.										
IP W6					59,678	2,820				
Total					59,678	(1) 2,820				
Cumulative					265,931	2,820				





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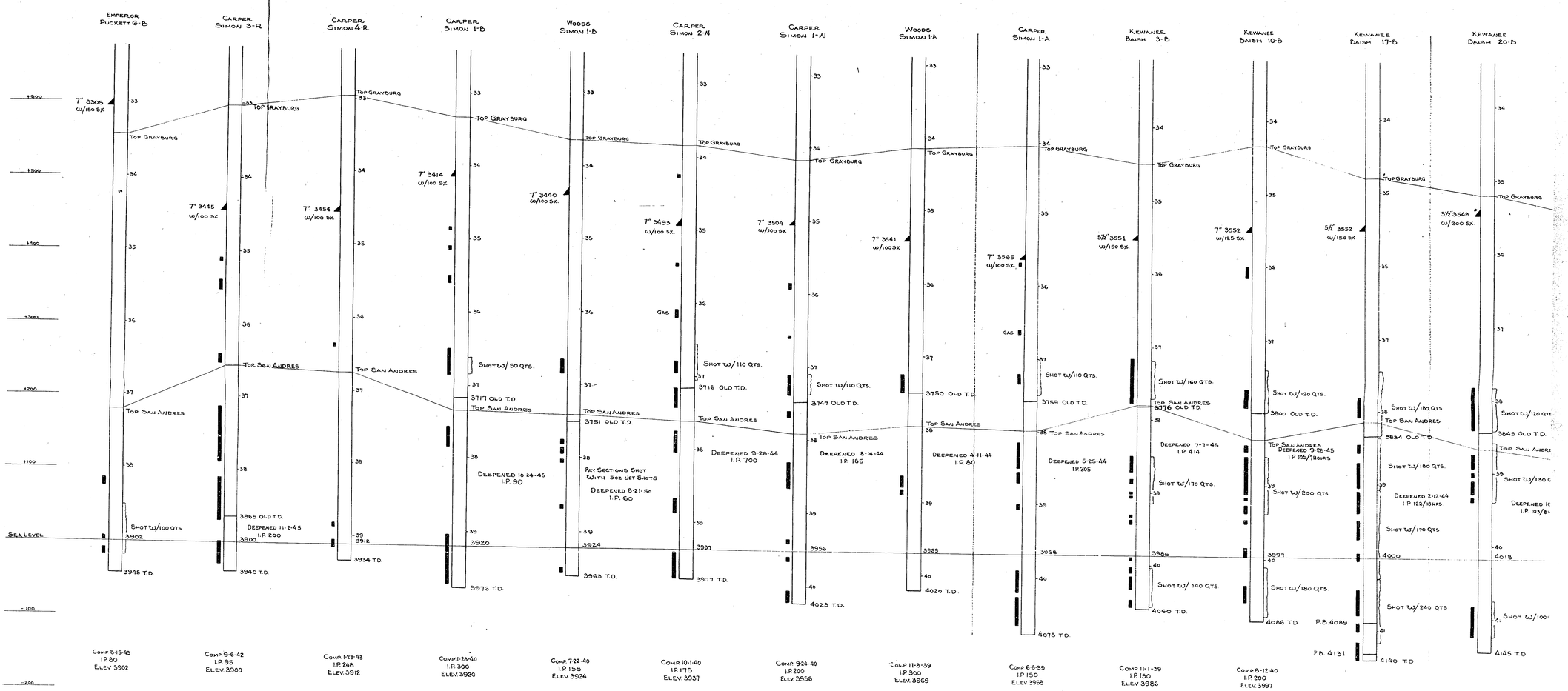
SECTION W-2-E



Comp 8-15-43 I.P. 80 Elev 3902

Comp 9-6-42 I.P. 95 Elev 3900

Comp 1-23-43 I.P. 248 Elev. 3912

Comp 11-28-40 I.P. 300 Elev. 3920

Comp 7-22-40 I.P. 158 Elev 3924

Comp 10-1-40 I.P. 175 Elev. 3937

Comp 9-24-40 I.P. 200 Elev 3956

Comp 11-8-39 I.P. 300 Elev. 3969

Comp 6-8-39 I.P. 150 Elev 3968

Comp 11-1-39 I.P. 150 Elev 3986

Comp. 8-12-40 I.P. 200 Elev. 3997

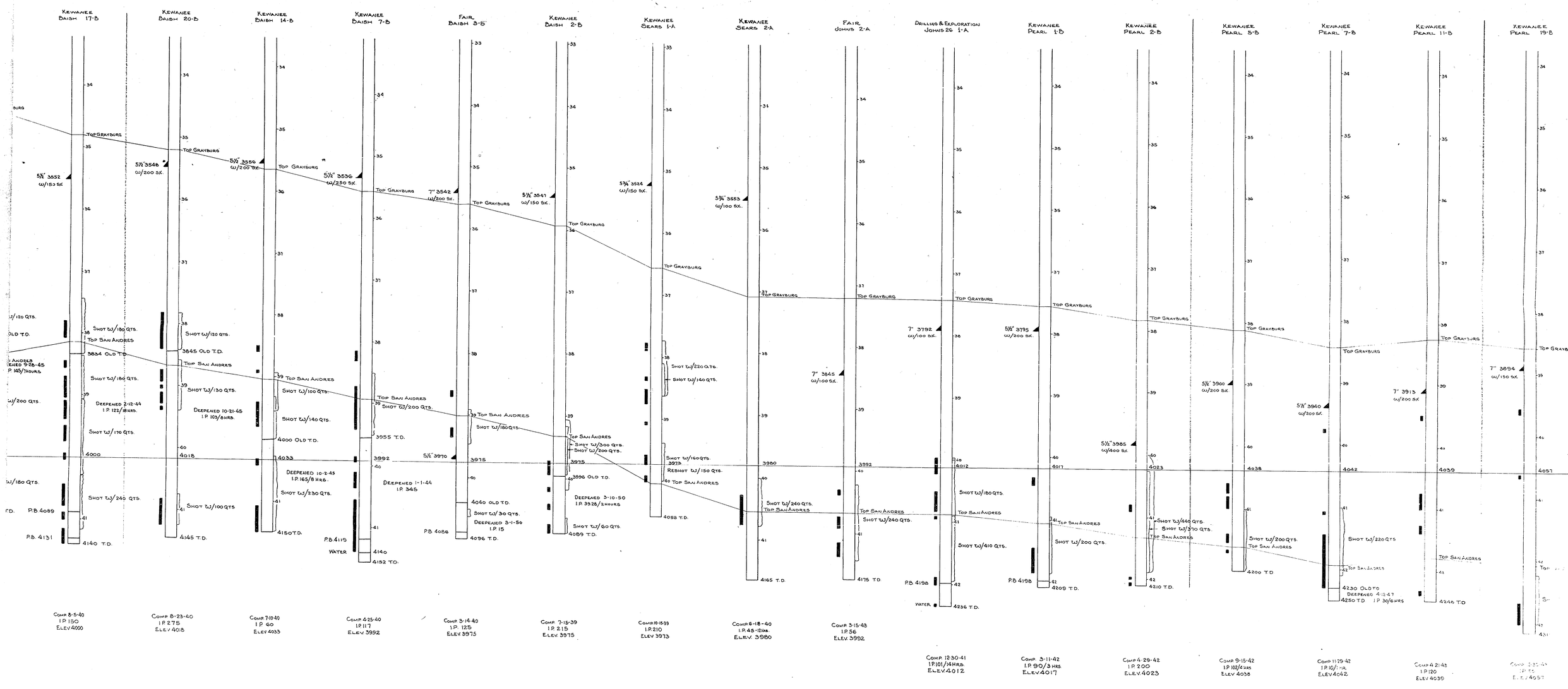
Comp 8-5-40 I.P. 150 Elev 4000

Comp 8-23-40 I.P. 275 Ele / 4018

SCALE
VERTICALLY 1" = 50'
HORIZONTALLY 1" = 400'

SECTION W-2-E

305


KEWANEE DAISH 17-B
KEWANEE DAISH 20-B
KEWANEE DAISH 14-B
KEWANEE DAISH 7-B
FAIR DAISH 3-B
KEWANEE DAISH 2-B
KEWANEE SEARS 1-A
KEWANEE SEARS 2-A
FAIR JOHNS 2-A
DRILLING & EXPLORATION JOHNS 2G 1-A
KEWANEE PEARL 1-B
KEWANEE PEARL 2-B
KEWANEE PEARL 5-B
KEWANEE PEARL 7-B
KEWANEE PEARL 11-B
KEWANEE PEARL 15-B
TOP GRAYBURG
5¼" 3552 w/150 SX
5½" 3548 w/200 SX.
5½" 3559 w/200 SX.
5½" 3539 w/250 SX.
7" 3542 w/200 SX.
5½" 3547 w/150 SX.
5¾" 3524 w/150 SX.
5¾" 3553 w/100 SX.
7" 3792 w/100 SX.
5½" 3795 w/200 SX.
7" 3845 w/100 SX.
5½" 3900 w/200 SX.
5½" 3940 w/200 SX.
5½" 3985 w/400 SX.
7" 3894 w/150 SX.
7" 3913 w/200 SX
TOP SAN ANDRES
Shot w/180 QTS.
Shot w/120 QTS.
Shot w/130 QTS.
Shot w/140 QTS.
Shot w/170 QTS.
Shot w/240 QTS.
Shot w/100 QTS.
Shot w/200 QTS.
Shot w/180 QTS.
Shot w/300 QTS.
Shot w/220 QTS.
Shot w/160 QTS.
Reshot w/150 QTS.
Shot w/60 QTS.
Shot w/30 QTS.
Shot w/410 QTS.
Shot w/440 QTS.
Shot w/370 QTS.
Shot w/200 QTS.
Shot w/220 QTS
3834 OLD T.D.
3845 OLD T.D.
4000 OLD T.D.
3955 T.D.
4040 OLD T.D.
3896 OLD T.D.
4230 OLD TO
DEEPENED 9-28-45 P. 145/1HOURS
DEEPENED 2-12-44 I.P. 122/18HRS.
DEEPENED 10-21-45 I.P. 103/8HRS.
DEEPENED 10-2-45 I.P. 165/8 HRS.
DEEPENED 1-1-44 I.P. 345
DEEPENED 3-10-50 I.P. 3928/2HOURS
DEEPENED 3-1-50 I.P. 15
DEEPENED 4-12-47 I.P. 30/6HRS
P.B. 4131
P.B. 4089
P.B. 4119
P.B. 4086
P.B. 4198
WATER
4140 T.D.
4145 T.D.
4150T.D.
4152 T.D.
4096 T.D.
4089 T.D.
4058 T.D.
4165 T.D.
4175 T.D.
4236 T.D.
4209 T.D.
4210 T.D.
4200 T.D
4250 T.D
4248 T.D
Comp 8-5-40 I.P. 150 Elev 4000
Comp 8-23-40 I.P. 275 Elev 4018
Comp 7-10-40 I.P. 60 Elev 4033
Comp 4-25-40 I.P. 117 Elev. 3992
Comp 3-14-40 I.P. 125 Elev. 3975
Comp 7-15-39 I.P. 215 Elev. 3975
Comp 10-1939 I.P. 210 Elev 3973
Comp 6-18-40 I.P. 45-12Hrs. Elev. 3980
Comp 3-15-43 I.P. 56 Elev 3992
Comp. 12-30-41 I.P. 101/16HRS. Elev. 4012
Comp. 3-11-42 I.P. 90/3 HRS Elev. 4017
Comp 4-29-42 I.P. 200 Elev. 4023
Comp 9-15-42 I.P. 102/4 HRS Elev 4038
Comp 11-29-42 I.P. 10/1 HR Elev. 4042
Comp 4-21-43 I.P. 120 Elev 4039

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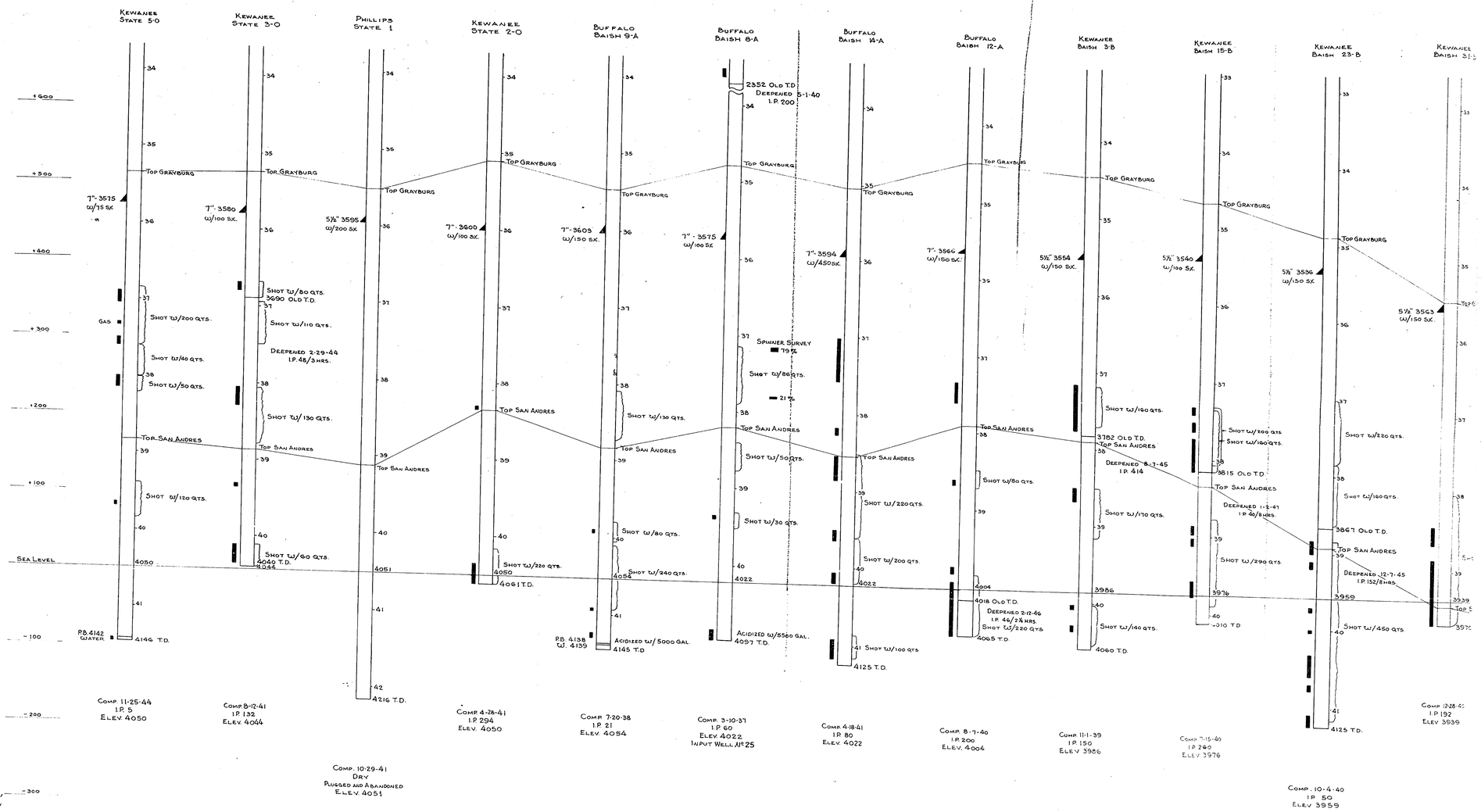
SECTION W-2-E

SECTION W-2-E

BEFORE THE OIL CONSERVATION COMMISSION SANTA FE, NEW MEXICO CASE NO. 716 EXHIBIT No. 5 DATE 7-8-49

307

SECTION N-2-S



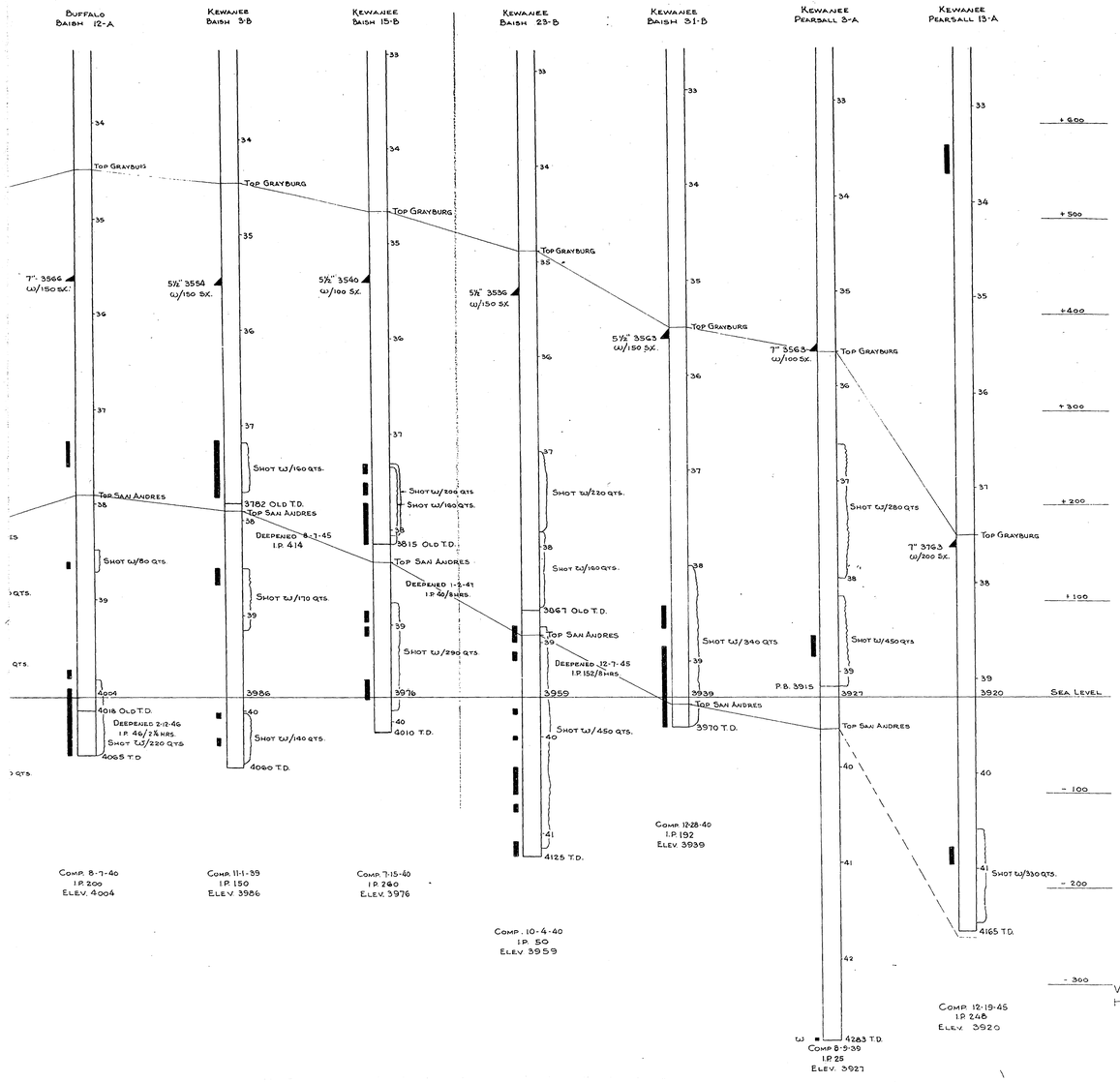
BEFORE THE OIL CONS. COM. NEW MEXICO
SANTA FE, NEW MEXICO
EXHIBIT No. 2
CASE No. 1209

SCALE
VIRTICALLY 1" = 50' = 300
HORIZONTALLY 1" = 400'

SECTION N-2-S

308

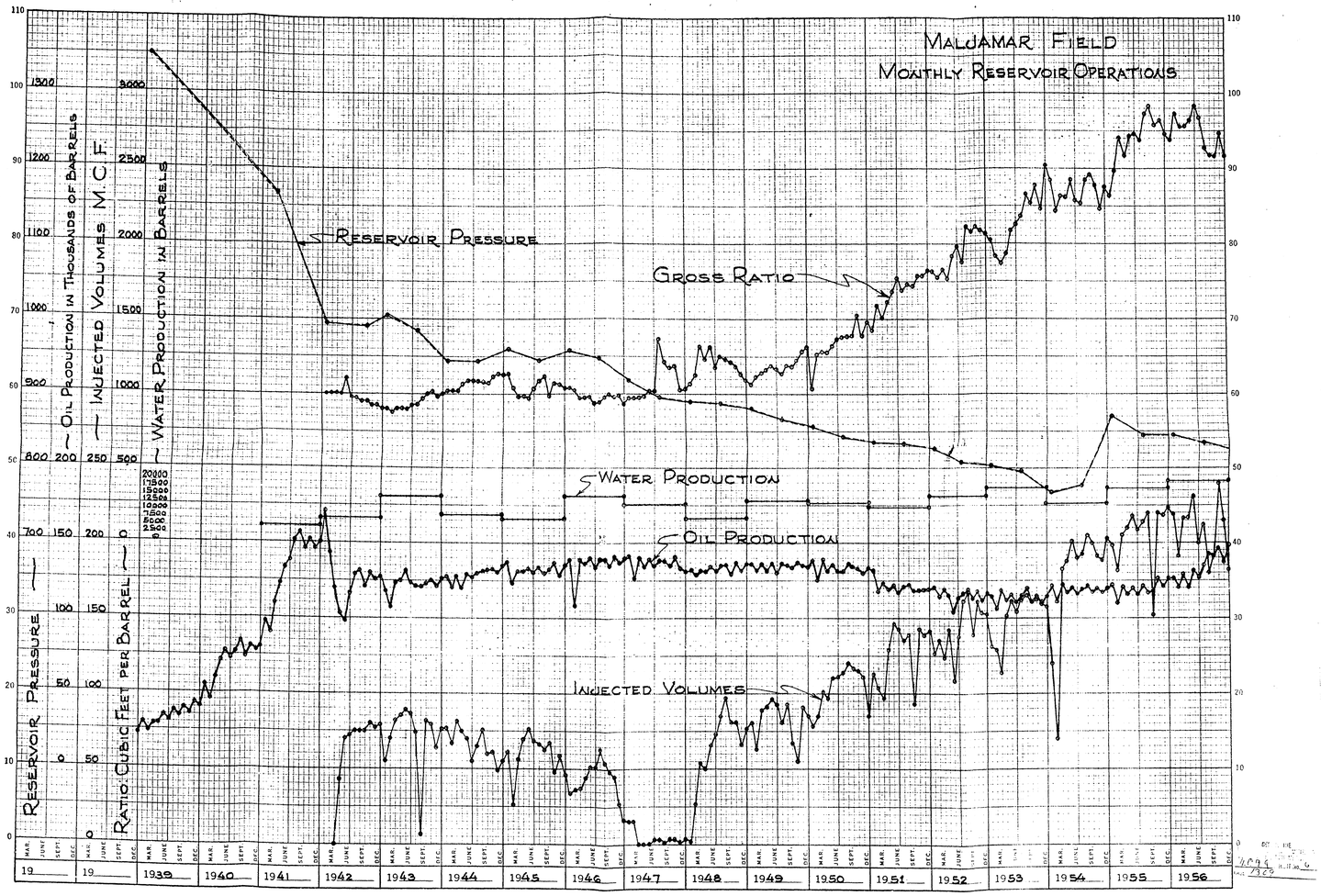
SECTION N-2-S



309

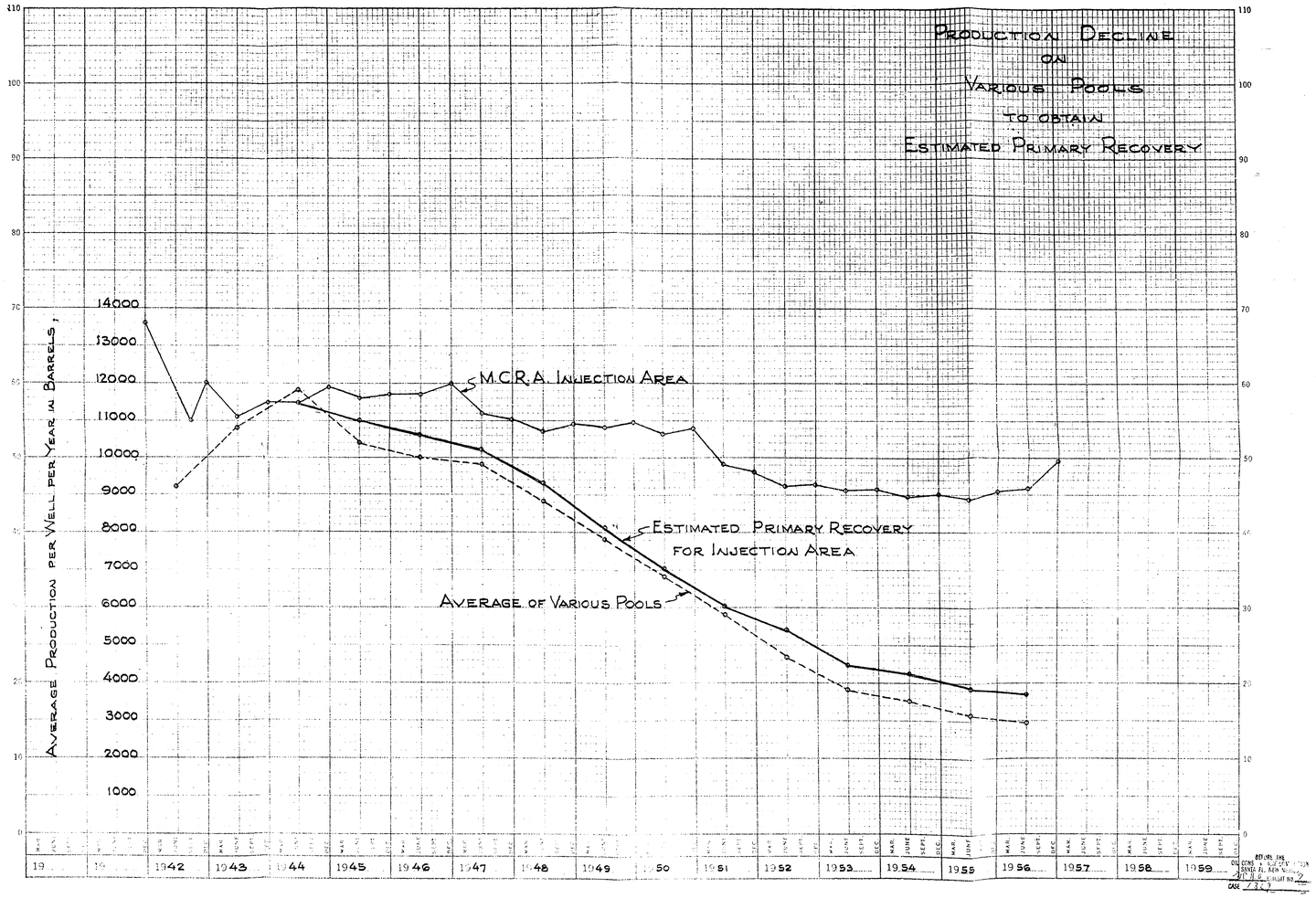
SCALE
VIRTICALLY 1" = 50'
HORIZONTALLY 1" = 400'

SECTION N-2-S

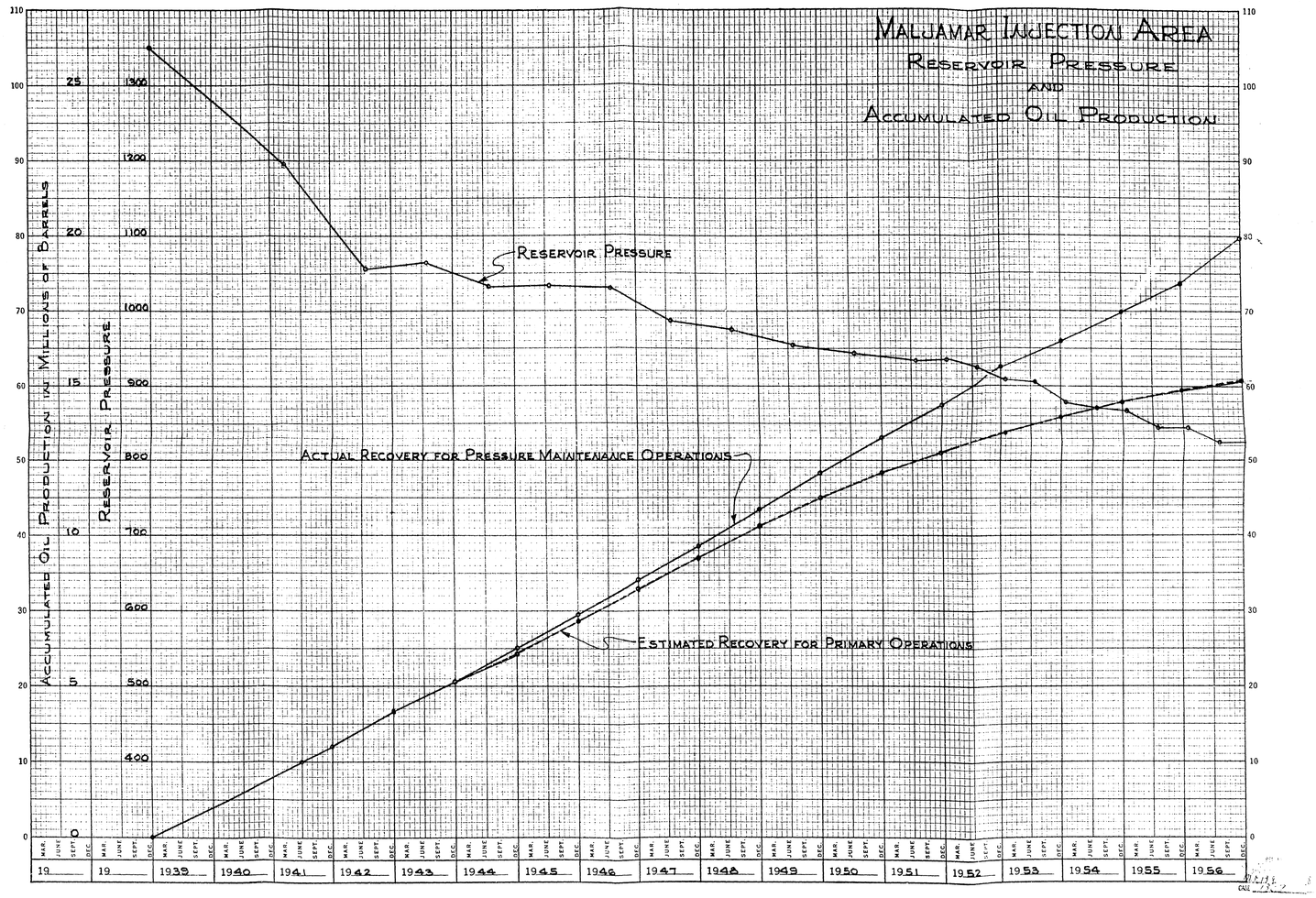


KEUFFEL & ESSER CO., N. Y. NO. 359-21½L
Thirty Years by Mauth

310


PRODUCTION DECLINE
ON
VARIOUS POOLS
TO OBTAIN
ESTIMATED PRIMARY RECOVERY
AVERAGE PRODUCTION PER WELL PER YEAR IN BARRELS
14000
13000
12000
11000
10000
9000
8000
7000
6000
5000
4000
3000
2000
1000
M.C.R.A. INJECTION AREA
ESTIMATED PRIMARY RECOVERY
FOR INJECTION AREA
AVERAGE OF VARIOUS POOLS
110
100
90
80
70
60
50
40
30
20
10
0
1941
1942
1943
1944
1945
1946
1947
1948
1949
1950
1951
1952
1953
1954
1955
1956
1957
1958
1959
CASE 7329

311



KEUFFEL & ESSER CO., N. Y. NO. 339-1701
Twenty Years by Months
MADE IN U.S.A.

312

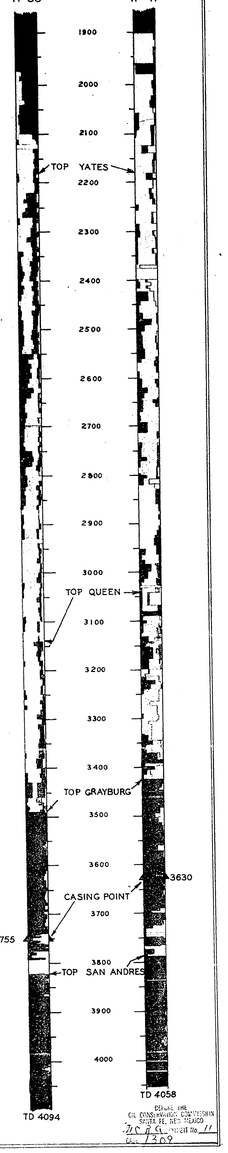
CASE NO._____ EXHIBIT c

KEWANEE OIL CO.

GENERALIZED SAMPLE LOG

BAISH "B" IP-35

BAISH "B" IP-11



FILED APR 6 1950
OIL CONSERVATION COMMISSION
SANTA FE, NEW MEXICO
NMOCC EXHIBIT No. 11
CASE 1309

313

LANE WELLS RADIOACTIVITY LOG COMPANY

FILE NO.

Location of Well

COMPANY: BUFFALO OIL COMPANY
WELL: BAISH A-21
FIELD: MALJAMAR
COUNTY: LEA STATE: N.M.
LOCATION: 1395 FSL & 1347 FWL SEC. 21
T-17-S, R-32-E

COUNTY LOCATION: LEA STATE N.M.
FIELD: MALJAMAR
WELL: BAISH A-21
COMPANY: BUFFALO OIL COMPANY

LOG MEAS. FROM GROUND LEVEL ELEV. 4015
DRLG. MEAS. FROM GROUND LEVEL ELEV. 4015
PERM. DATUM GROUND LEVEL ELEV. 4015

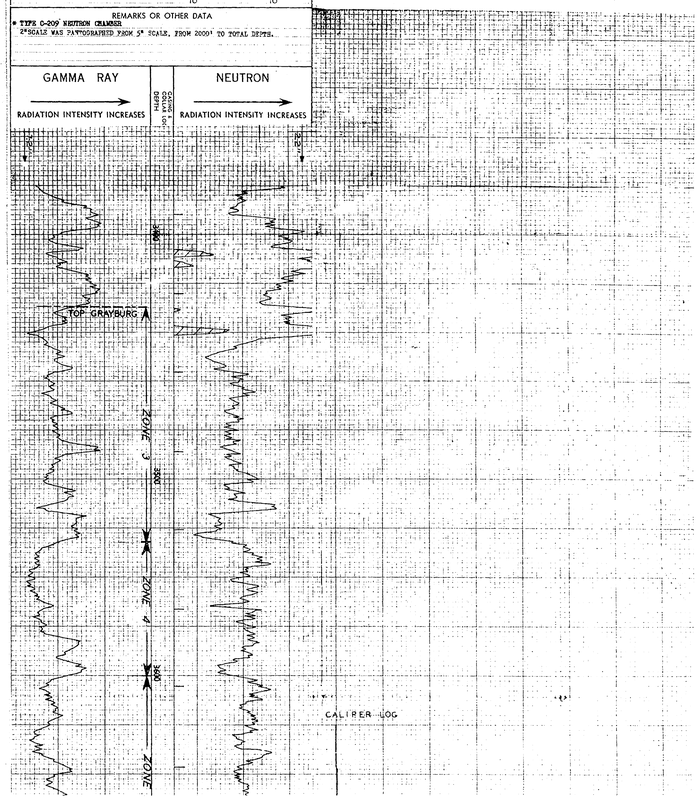
	GAMMA RAY	NEUTRON		CALIPER	
TYPE OF LOG	GAMMA RAY	NEUTRON		CALIPER	
RUN NO.	1-G.R.	1-G.R.		1-G.R.	
DATE	8-25-56	8-25-56		8-25-56	
TOTAL DEPTH (DRILLER) SAND LINE	4100	4100		4100	
EFFECTIVE DEPTH (DRALLER)	4100	4100		4100	
TOP OF LOGGED INTERVAL	SURF.	SURF.	CASING	3600	
BOTTOM OF LOGGED INTERVAL	4093	4099		4097	
TYPE OF FLUID IN HOLE	OIL	OIL		OIL	
FLUID LEVEL		722			
MAXIMUM RECORDED TEMP.					
NEUTRON SOURCE STRENGTH & TYPE		60M	SIMULTANEOUS		
SOURCE SPACING — IN.		8.25			
LENGTH OF MEASURING DEVICE — IN.	36	9.14			
O.D. OF INSTRUMENT — IN.	3 5/8	3 5/8			
TIME CONSTANT — SECONDS	5.0	1.0			
LOGGING SPEED FT. MIN.	20-40	20-40		20	
STATISTICAL VARIATION — IN.					
SENSITIVITY REFERENCE	27R	27F			
RECORDED BY	DUCKWORTH & FOSTER	KIMBELL		DUCKWORTH & FOSTER	KIMBELL
WITNESSED BY					

CASING RECORD

RUN NO.	BIT SIZE	CASING	WT.-LB.	FROM	WELL RECORD		FROM	R/A LOG	
1	7	20		SURF.	TO	3741	SURF.	TO	3747
1	O.H.			3741	TO	4100	3747	TO	4098
					TO			TO	
					TO			TO	
					TO			TO	

REMARKS OR OTHER DATA

• TYPE C-209 NEUTRON CHAMBER
2"SCALE WAS PANTOGRAPHED FROM 5" SCALE, FROM 2000' TO TOTAL DEPTH.



COMPLETION DATA

CASE NO._____
EXHIBIT "D"

LEASE Baish "A" WELL NO. 21 FIELD Maljamar

LOCATION 1395' FSL & 1347' FWL SECTION 21 TOWNSHIP 17S RANGE 32E

SURVEY N.M.P.M. COUNTY Lea STATE New Mexico

TOTAL DEPTH 4085' TYPE WELL Oil COMPLETION DATE 10-1-49

PRODUCING FORMATION Zones 6,7,8,&9 PRODUCING METHOD Flow

PBTD 4085' ELEVATION 4015' GL DRILLING COMPLETED 9-11-49

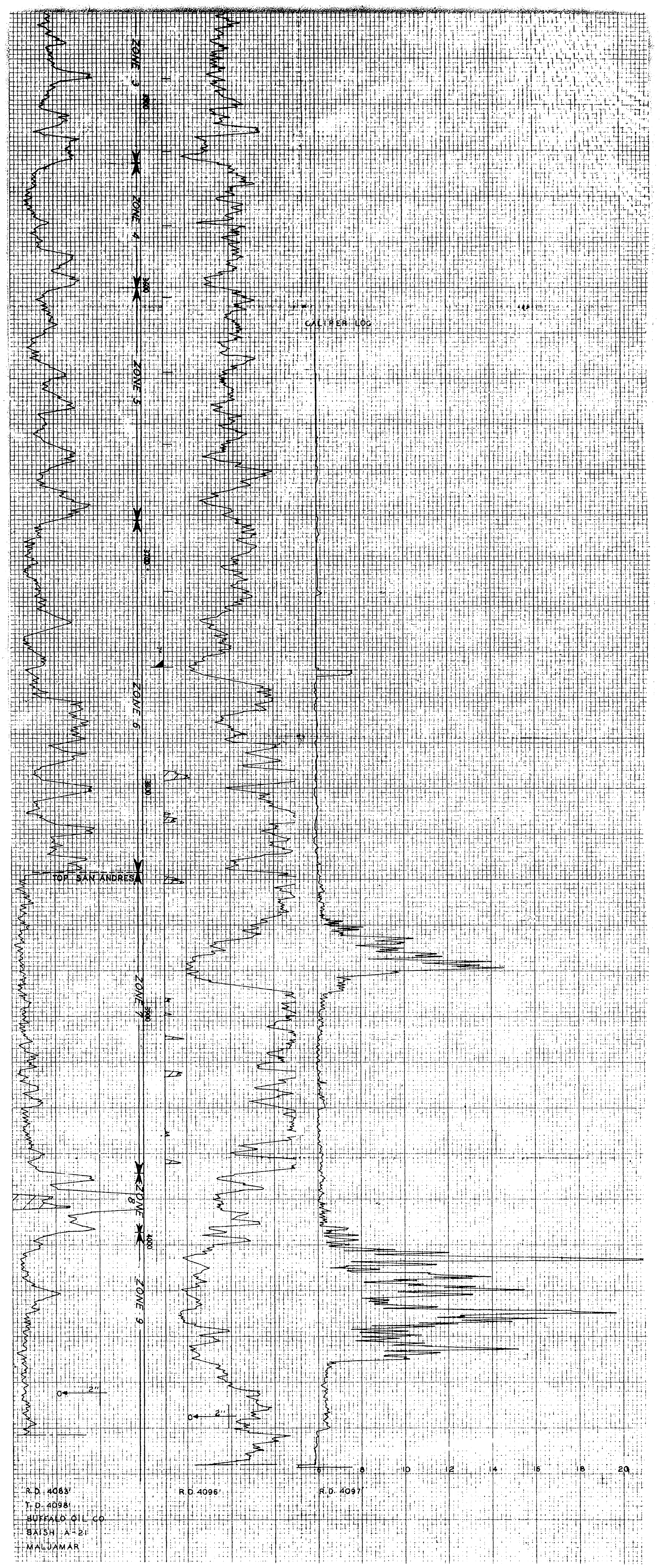
HOLE SIZE	SIZE CASING	WEIGHT	GRADE	THREAD	DEPTH SET	SACKS CEMENT
10-1/2"	10-3/4"	40.5	H-40	8	85'	50
10"	8-5/8"	24	J-55	8	880'	15 Sr.Aquagel
8"	7"	20 & 23	J-55	8	3741'	310
6"	Open Hole					

SURVEYS RUN Temperature survey 8-25-49
Lane Wells R/A and Caliper log

TREATMENTS

Acidized with 1000 gallons	4000' - 4085'
Shot with 150 quarts nitroglycerin	4000' - 4047'
Shot with 70 quarts nitroglycerin	3860' - 3880'
Drilled out to 4100'. Acidized 4094' - 4100' with 2500 gallons acid.	
Fraced 6th. zone with 5000 gallons Petrofel	

FILED
OIL CONSERVATION COMMISSION
Santa Fe, NEW MEXICO
NMOCC EXHIBIT No. 12
CASE 1309


ZONE 3
ZONE 4
3600
CALIPER LOG
ZONE 5
3700
ZONE 6
3800
TOP SAN ANDRES
ZONE 7
3900
ZONE 8
4000
ZONE 9
0 ← 2"
0 ← 2"
6
8
10
12
14
16
18
20
R.D. 4083'
T.D. 4098'
BUFFALO OIL CO
BAISH A-21
MALJAMAR
R.D. 4096'
R.D. 4097'

ALBERT GACKLE, OPERATOR
Case #1310 Exhibit C
Application for Dual Completion

RADIOACTIVITY LOG

NATURAL GAMMA RADIATION | INDUCED GAMMA RADIATION

COMPANY ALBERT GACKLE
OPERATOR
WELL NO. 3
FIELD South Eunice
County Lea State N. M.

COMPANY ALBERT GACKLE OPERATOR
FILE
WELL ESMOND # 3
FIELD South Eunice
COUNTY Lea STATE N.Mex.
SEC. 33 TWP 22-S RGE 36-E
SURVEY

Location
1980' Fr. N/L
660' Fr. E/L
Sec. 33
Twp. 22-S
Rge. 36-E
GR-NG (Guard-Fo Rxo-Cal.)

Elev. D.F. 3474'
K.B. 3475'
Grd. 3466'

Log Measured From	Drive Bushing	Elevation	3475'	
Drilling Measured From	Drive Bushing	Elevation	3475'	
Permanent Datum	Ground Level	Elevation	3466'	

Type Log	GAMMA	N.GAMMA		
Run No.	ONE	ONE		
Date	8-20-57	8-20-57		
Footage Logged	3844'	3854'		
Total Depth, Driller	3853'	3853'		
Total Depth, Logged	3844'	3854'		
Type of Fluid in Hole	Mud	Mud		
Fluid Level	15'	15'		
Max. Temp.	92 °F	92 °F	°F	°F
Neutron Source Strength		400mg		
Source to Center of Counter	in.	19 in.	in.	in.
Length Meas. Device-in	29 in.	14in		
O.D. of Instrument-in	3 5/8"	3 5/8"		
Time Constant-sec.	2	2		
Logging Speed Ft. min.	SEE REMARKS			
Neutron Source Code		Yellow		
Truck No.	4567			
Recorded by	J.G. Greer			
Witnessed by	Paul Johnston			

OPEN HOLE RECORD

BIT-SIZE-IN	INTERVAL
12 1/4"	Surface TO 315'
8 3/4"	315' TO 3853'
	TO
	TO

CASING RECORD

RUN NO.	SIZE - IN	WT. - LB.	INTERVAL
ONE	9 5/8"		Surface TO 315'
ONE			TO
			TO
			TO

REMARKS: THIS LOG MADE WITH F.M. EQUIPMENT.
GR-NG TOOL RAN 2 3013
RECORDED ON RECORDER ON LEFT INDICATE GR. LOGGING SPEED.
CASING COLLARS CORRECTED TO TRUE DEPTH.

NEUTRON - GAMMA
COUNTS PER SECOND

Sensitivity 0'-1530' 200 450 700 950
Sensitivity 1530'-3854 400 650
Time Constant 2 Sec.

Depth Casing Collars

GAMMA
COUNTS PER SECOND

0 90 90 180
Time Constant 2 Sec.

700 900

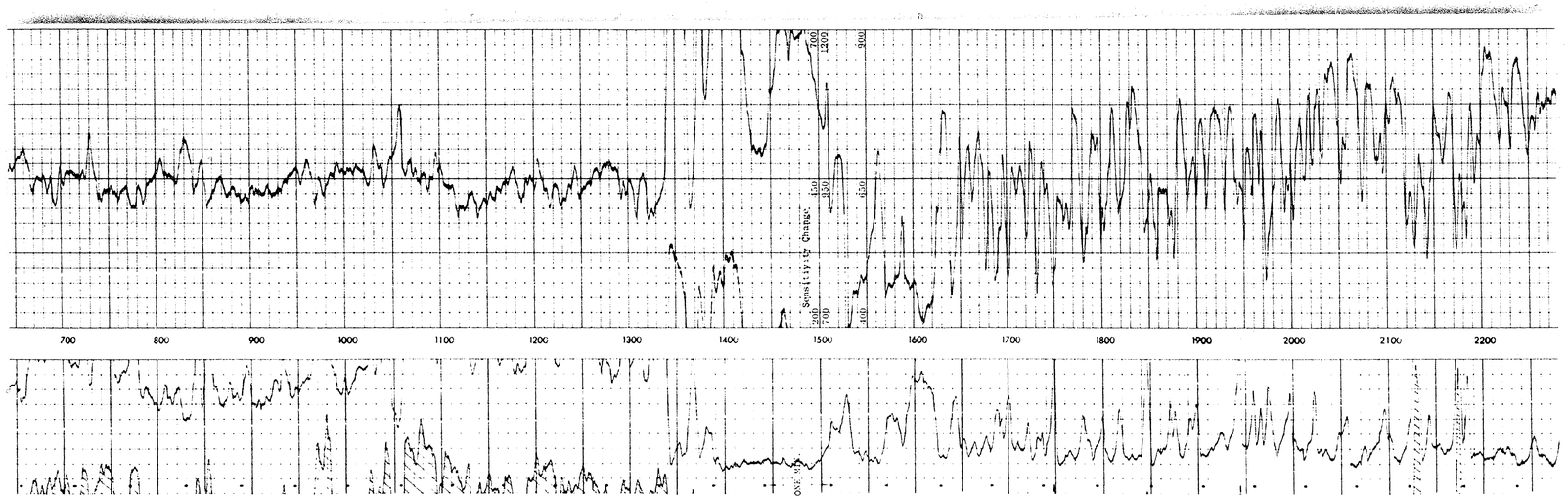
PLAIN LOG

CASING COLLARS CORRECTED TO TRUE DEPTH

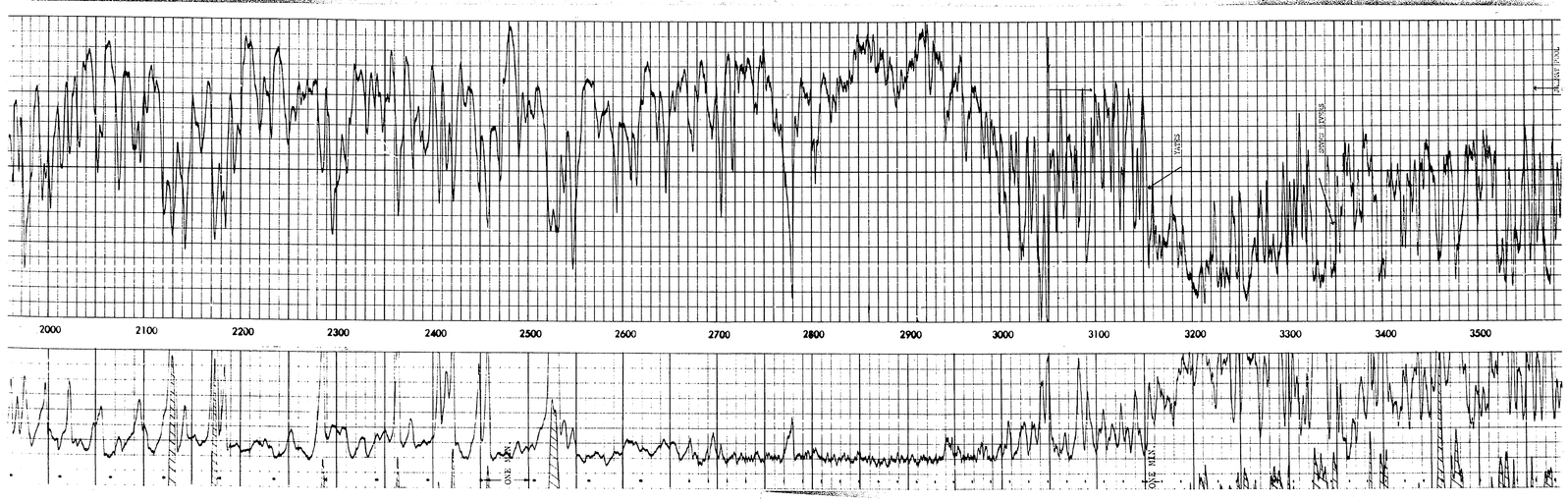
OVER MIN.

100 200 300 400 500 600 700 800 900

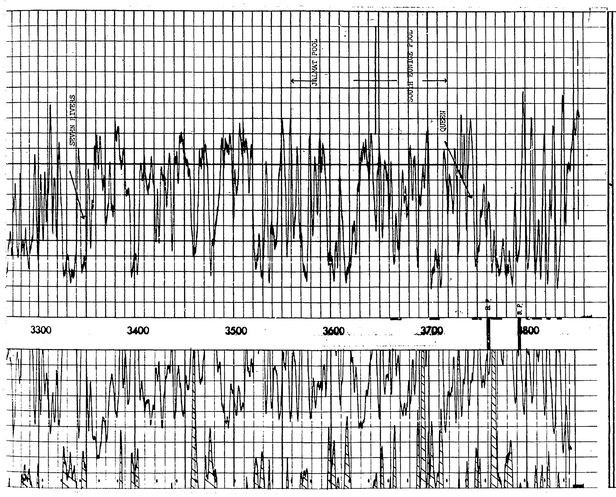
315


700
800
900
1000
1100
1200
1300
1400
1500
1600
1700
1800
1900
2000
2100
2200

316


2000
2100
2200
2300
2400
2500
2600
2700
2800
2900
3000
3100
3200
3300
3400
3500

317



T.D. LOGGED 3854'
T.D. DRILLER 3853'
T.D. REACHED 3854'

ALBERT GACKLE OPERATOR
ESMOND # 3
South Eunice Field
Lea County, New Mexico

DETAIL LOG
(2580'-3854')

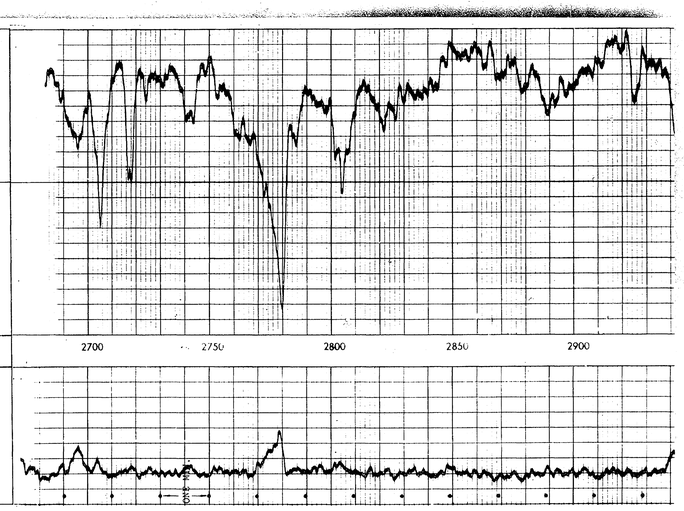
NEUTRON - GAMMA
COUNTS PER SECOND

900 650 400 Time Constant 2 Sec.

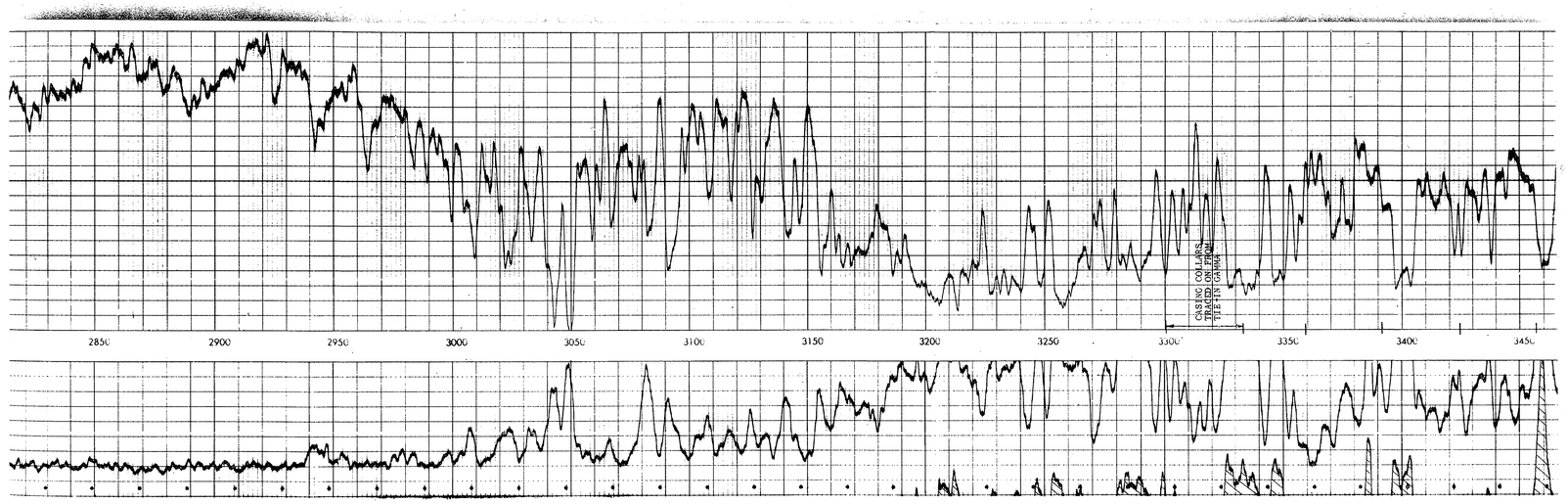
Depth & Casing Collars

GAMMA
COUNTS PER SECOND

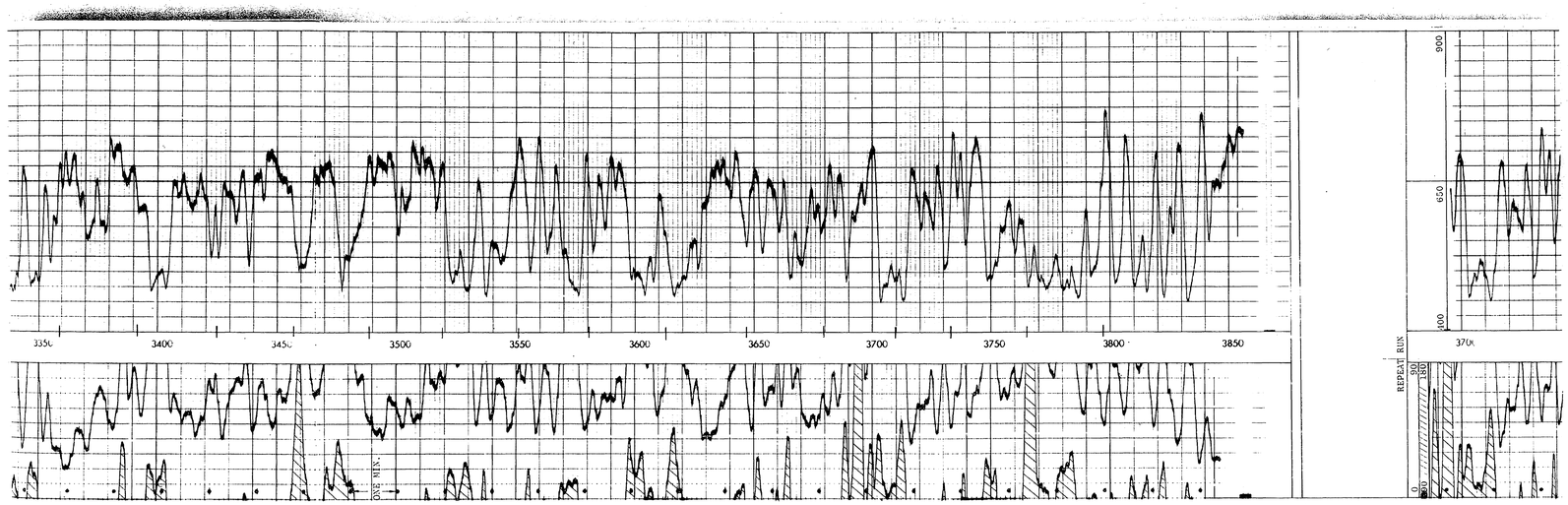
90 180 0 90 Time Constant 2 Sec.



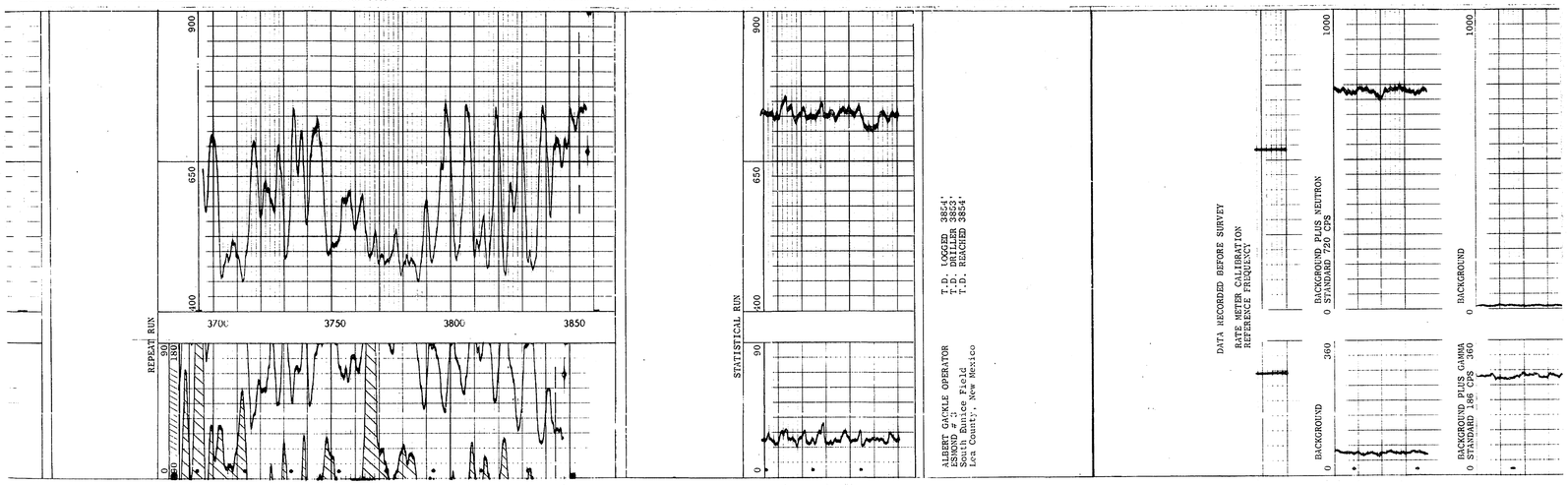
318


CASING COLLARS
TRANSMITTED FROM
TELEVIEWER
2850
2900
2950
3000
3050
3100
3150
3200
3250
3300
3350
3400
3450

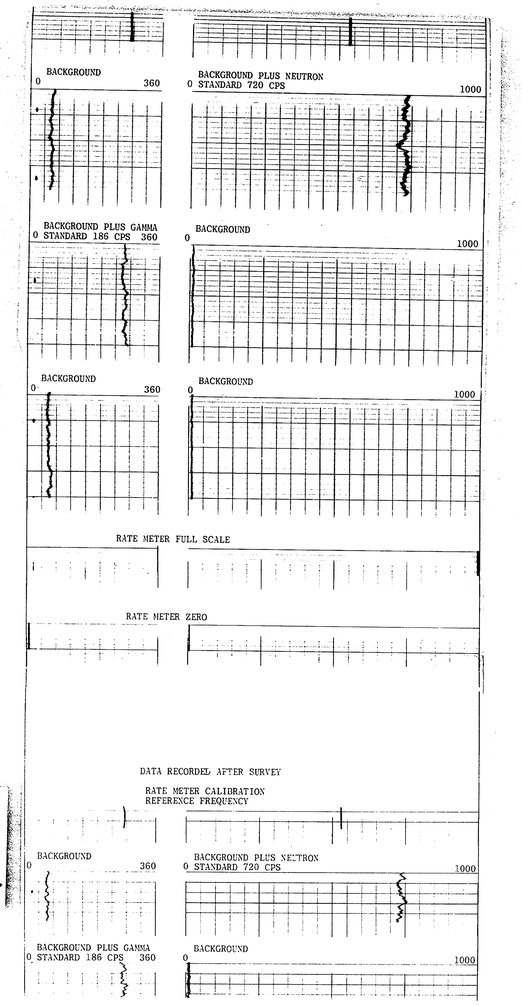
319


900
650
400
3350
3400
3450
3500
3550
3600
3650
3700
3750
3800
3850
3700
REPEAT RUN
900
1000
0
50
DIST. MEAS.

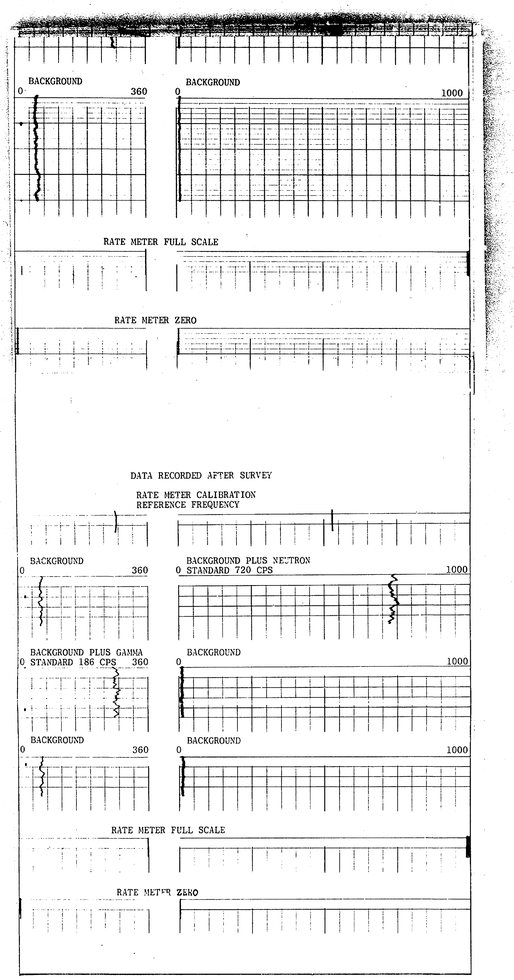
320


900
650
400
3700
3750
3800
3850
REPEAT RUN
90
180
0
STATISTICAL RUN
T.D. LOGGED 3854'
T.D. DRILLER 3853'
T.D. REACHED 3854'
ALBERT GACKLE OPERATOR
ASHLAND #1
South Eunice Field
Lea County, New Mexico
DATA RECORDED BEFORE SURVEY
RATE METER CALIBRATION
REFERENCE FREQUENCY
1000
BACKGROUND PLUS NEUTRON
STANDARD 725 CPS
BACKGROUND
360
BACKGROUND PLUS GAMMA
STANDARD 186 CPS

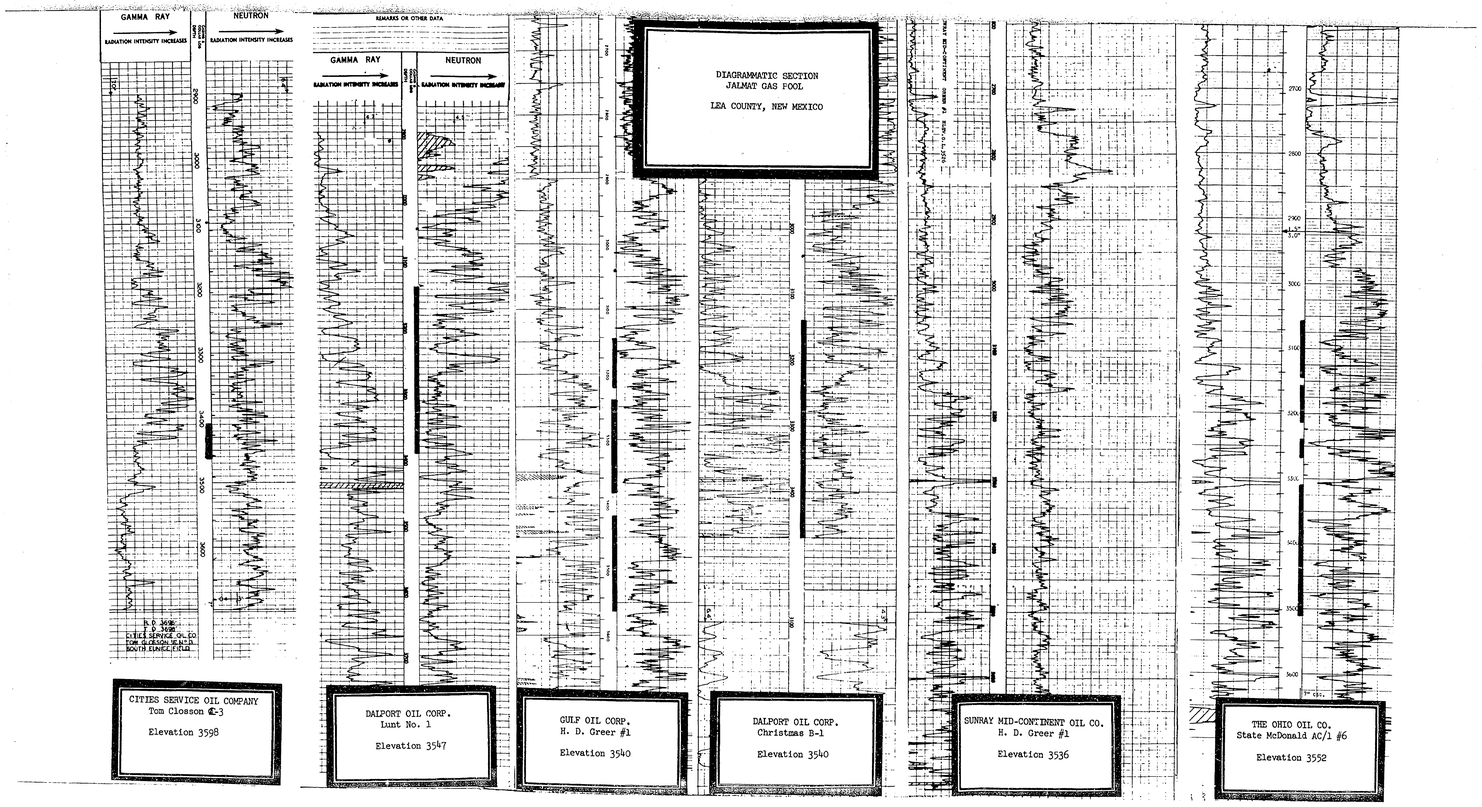
321


BACKGROUND
0
360
BACKGROUND PLUS NEUTRON
0 STANDARD 720 CPS
1000
BACKGROUND PLUS GAMMA
0 STANDARD 186 CPS 360
BACKGROUND
0
1000
BACKGROUND
0
360
BACKGROUND
0
1000
RATE METER FULL SCALE
RATE METER ZERO
DATA RECORDED AFTER SURVEY
RATE METER CALIBRATION
REFERENCE FREQUENCY
BACKGROUND
0
360
BACKGROUND PLUS NEUTRON
0 STANDARD 720 CPS
1000
BACKGROUND PLUS GAMMA
0 STANDARD 186 CPS 360
BACKGROUND
0
1000

322


BACKGROUND
0
360
BACKGROUND
0
1000
RATE METER FULL SCALE
RATE METER ZERO
DATA RECORDED AFTER SURVEY
RATE METER CALIBRATION
REFERENCE FREQUENCY
BACKGROUND
0
360
BACKGROUND PLUS NEUTRON
0 STANDARD 720 CPS
1000
BACKGROUND PLUS GAMMA
0 STANDARD 186 CPS
360
BACKGROUND
0
1000
BACKGROUND
0
360
BACKGROUND
0
1000
RATE METER FULL SCALE
RATE METER ZERO

323


GAMMA RAY
RADIATION INTENSITY INCREASES
NEUTRON
RADIATION INTENSITY INCREASES
REMARKS OR OTHER DATA
GAMMA RAY
RADIATION INTENSITY INCREASES
NEUTRON
RADIATION INTENSITY INCREASES
DIAGRAMMATIC SECTION
JALMAT GAS POOL
LEA COUNTY, NEW MEXICO
R.C. 3598
T.D. 3598
CITIES SERVICE OIL CO.
TOM GLOSSON NCT-3
SOUTH ELMEC FIELD
CITIES SERVICE OIL COMPANY
Tom Closson #2-3
Elevation 3598
DALPORT OIL CORP.
Lunt No. 1
Elevation 3547
GULF OIL CORP.
H. D. Greer #1
Elevation 3540
DALPORT OIL CORP.
Christmas B-1
Elevation 3540
SUNRAY MID-CONTINENT OIL CO.
H. D. Greer #1
Elevation 3536
THE OHIO OIL CO.
State McDonald AC/1 #6
Elevation 3552

324

LANE RADIOACTIVITY LOG WELLS

COMPANY

X-5

Before Examiner Nutter
Oil Conservation Commission
Exhibit Case No. 1318
Ex 5

CASING RECORD

OPEN HOLE RECORD

REMARKS OR OTHER DATA

GAMMA RAY — RADIATION INTENSITY INCREASES →

NEUTRON — RADIATION INTENSITY INCREASES →

2800
2900
3000
3100
3200
3300
3400

R.D. 3466
T.D. 3602
CONTINENTAL OIL CO.
MEYER B-23 NO 1
AIRTOMLOG

NORTH WELL SURVEYS

Simultaneous Radioactivity Log

COMPANY: CONTINENTAL OIL COMPANY

WELL: MEYER B-23 #3

FIELD: SOUTH EUNICE

X-6

COUNTY: LEA STATE: NEW MEXICO

LOCATION: 1980' FNL, 660 FEL, SEC. 23, T-22-S, R, 36 E

FILE NO. LOG NO.

LOG MEAS. FROM: 10.5' ABOVE B.S/8" B.H.F. ELEV. 3517'

DRLG. MEAS. FROM: KELLY DRIVE BUSHINGS ELEV. 3517'

PERM. DATUM: B 5/8" BRADENHEAD FLANGE ELEV. 3506.5'

COMPANY: CONTINENTAL OIL COMPANY
WELL: MEYER B-23 #3
FIELD: SOUTH EUNICE
COUNTY: LEA STATE: N.M.
LOCATION: 1980' FNL & 660' FEL SEC. 23 T-22-S R-36-E

	GAMMA-RAY	NEUTRON
TYPE OF LOG	ONE	ONE
RUN NO.	ONE	ONE
DATE	4-6-57	4-6-57
JOB NO.	13-197	12-197
TOTAL DEPTH (DRILLER)	3869'	3865'
TOTAL DEPTH (WIRE LINE)	3869'	3865'
TOP OF LOGGED INTERVAL	60'	60'
BOTTOM OF LOGGED INTERVAL	3870'	3864'
TYPE OF FLUID IN HOLE	WATER	WATER
FLUID LEVEL		
MAXIMUM RECORDED TEMP.		
NEUTRON SOURCE STRENGTH		500 MG.
SOURCE SPACING IN.		18"
LOCATION OF MEAS. DEVICE-IN.	34"	7"
O.D. OF INSTRUMENT-IN.	3-5/8	3-5/8
TIME CONSTANT-SECONDS	1.0	1.0
LOGGING SPEED-FT/MIN.	20	20
STATISTICAL VARIATION-IN.	10-2	6.12
SENSITIVITY REFERENCE	1.1-1	7.6-2
RECORDED BY	FRENCH	
WITNESSED BY	MR. SMITH	

Before Examiner Nutter
Oil Conservation Commission
Exhibit Case No. 1318
Ex 6

WELL RECORD

RUN NO.	BIT SIZE	CASING	WT.-LB.	FROM WELL RECORD	FROM R/A LOG
ONE	15 1/8"	8 5/8"		0' TO 389'	
ONE	7 7/8"	5 1/2"		0' TO 3864'	
	7 5/8"				

REMARKS

NOB TO B 5/8" BRADEN HEAD FLANGE 10.5'
DETECTOR CLASS: G.M. COUNTER
DETECTOR TYPE: G/M 1-25
N/L 2-A

NORTH WELL T.D. 3869' RESET LOG T.D. TO 3865' PER ORDERS FROM CONTINENTAL ENGINEER.

DH

GAMMA RAY — RADIATION INTENSITY INCREASES →

SENS. 10 CPS/INCH

0 — 3"

10 40

NEUTRON — RADIATION INTENSITY INCREASES →

SENS. 60 CPS/INCH

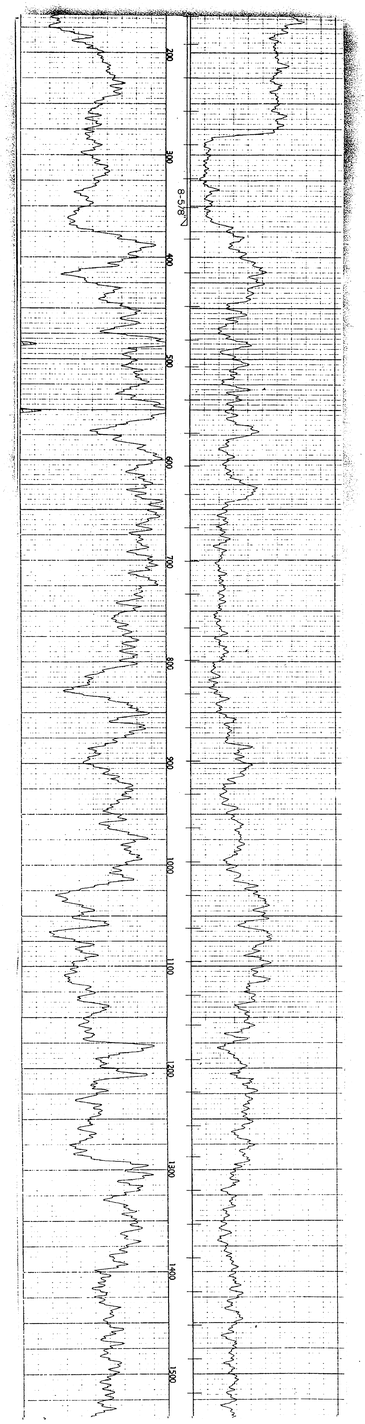
0 — 4"

156 336

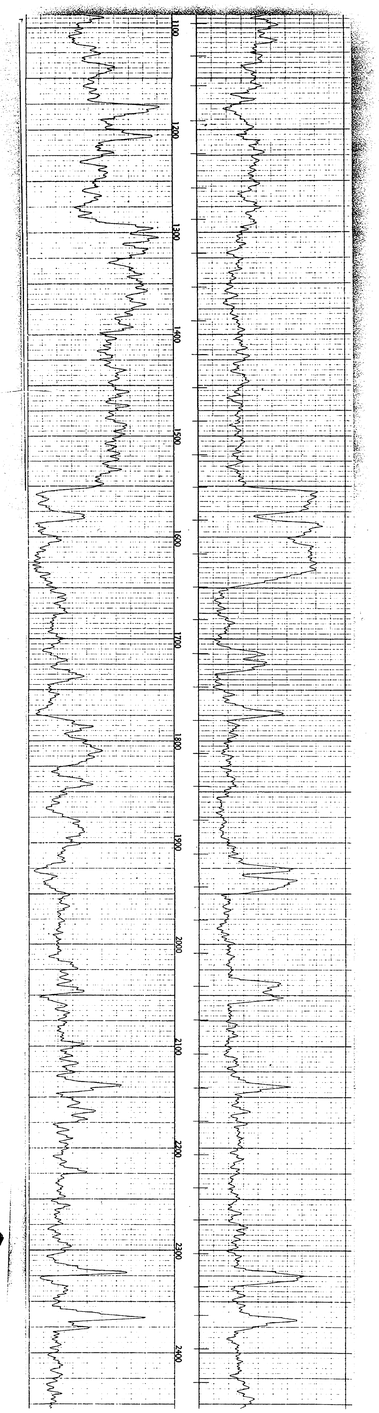
100
200
300
400
500
600

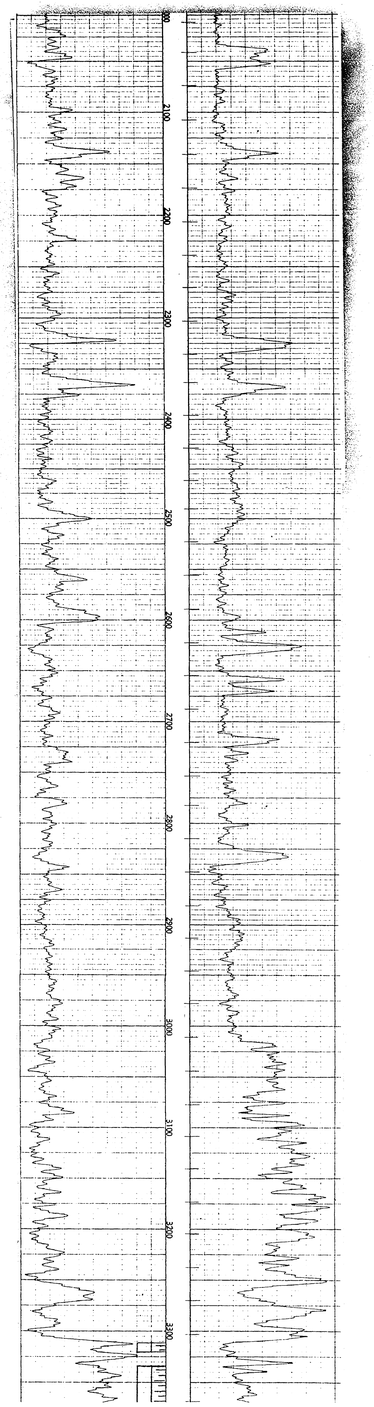
B-5-R

325

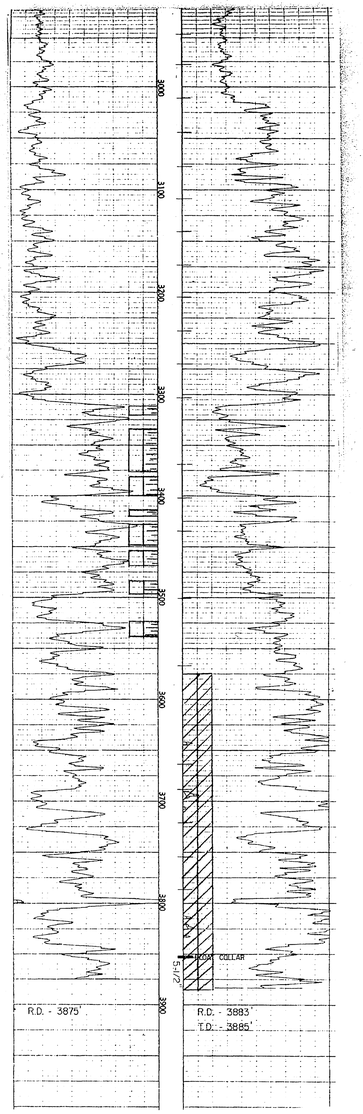

8-5/8"
200
300
400
500
600
700
800
900
1000
1100
1200
1300
1400
1500

326


1100
1200
1300
1400
1500
1600
1700
1800
1900
2000
2100
2200
2300
2400


2000
2100
2200
2300
2400
2500
2600
2700
2800
2900
3000
3100
3200
3300

328


3000
3100
3200
3300
3400
3500
3600
FLOAT COLLAR
2½"
R.D. - 3875'
R.D. - 3883'
T.D. - 3885'

329

330

R-26-E

T 18 S

T 18 S

33 | 34 | 35 | 36 | 31

Malco 12-2-56 | F. Brainard, etal | F. Brainard, etal | F. Brainard (s) M.G. Moore (m) | C. Clayton | Magnolia 11-4-57 | W.C. Bradshaw | J. Heslie | State | Brainard HBP | C. Guy HBP | J.S. Mills (s) USA (m) | USA

4 | 3 | 2 | 1 | 6

B.B. White (s) D.J. Conne, etal (m) | B.G. Smith | Malco 11-7-56 | Gulf below 1800' L.N. Mabry above 1900' | J. Mills (s) N. Camp (m) | Brainard 7-1-54 | Brainard

M.R. Brainhard | M.R. Brainhard | M. Moore, (m) | L. Clayton, etal | J.W. Bradshaw | Trigg 12-5-57

Sinclair 12-14-56 | Malco 1-21-57 | Std. of Tex. D-1-7 64 D-4-19-59 D-5-1-59 | L.M. Walker | N. Rel, etal

Malco 12-12-56 | Std. of Tex. D-1-28-64 | (400 Ac. Tol.) (Katharine Phillips Day - 1311/4000) (P.M. Myers - 1689/20000) (Wayland L. Morrison - 1689/20000) (Richard H. Morrison - 1689/20000) (Lee A. Morrison - 1689/20000) (Keith N. Morrison - 1689/20000) (Russel Rogers 1/6) (160 Ac.) | (85 Ac. Tol.) (S.O. Higgins) | (Fred L. Faulkner) | (440.29 Ac. Tol.) (M.L. Higgins et al #1, 1/2) | A. Blake, etal | H.E. Hode | Wm. Sterling (s) Malco (m) | USA

P. Zeleny (s) C. Rogers (m) | G. Martin, etal

9 | 10 | 12 | 7

Waters (Hudson) | F.B. Waters | Std. of Tex. D-17-64 D-4-29-59 D-5-1-59 | Std. of Tex. D-6-27-60 | Std. of Tex. D-6-27-60 | Std. of Tex. D-1-11-64 | Std. of Tex. D-2-11-59 | 30 Ac. (85 Ac. Tol.) (W.N. Swearingen)

S.S. Suppes 1184 | (H.R. Stroup) | (320.76 Ac. Tol.) (H.R. Stroup) | Magnolia 10-25-56 | Magnolia 12-16-56 | R. Wade Brainard Bros. | (440.29 Ac. Tol.) (M.L. Higgins et al #1) | (Mary Lorene Higgins et al #1 et al of Unit #2) | (William C. Ashley et al) | (440.29 Ac. Tol.) (M.L. Higgins et al #1) | (440.23 Ac. Tol.) (M.L. Higgins et al #1) | F.E.J.C. Irwin Inc. | Wm Sterling (s) Malco Ref'g. Inc (m)

J.W. Lanning | Kessinger Farms (s) H.E. Kessinger (m) | 8' Strip Conflict? | Deeded from Kessinger to Suppes | 8' Strip Conflict? | Deeded from Suppes to Kessinger

F.B. Waters 10-5-63 | Std. of Tex. D-1-8-64 | Std. of Tex. D-1-9-64 | Std. of Tex. D-1-7-64 D-4-29-59 D-5-1-59 | Std. of Tex D-1-31-59 D-1-26-59 | D. Fanning (s) G.R. Brainard (m) | Magnolia 12-25-56 | Std. of Tex. D-1-8-64 | L. Jackson | L. Jackson | P. Peterson | S.W.D. | B. Kaiser, etal

40 Ac. | (J.B. Lanning) | 80 Ac. | (J.T. Giles, Jr. Gdn. - 1/2) (M.G. Johnson 1/2) | 80 Ac. | 40 Ac. | 80 Ac. | (Story Lorene Higgins et al #1 et al Unit #1) | (Mrs. Sterlingyce)

Waters (Hudson) | 120 Ac. | (E. Holland, etal 1/3) (J.S. Worley 1/3) (Mrs. M. Beasley 1/3) | (400 Ac. Tol.) (Katharine Phillips Day - 1311/4000) (P.M. Myers - 1689/20000) (Wayland L. Morrison - 1689/20000) (Richard H. Morrison - 1689/20000) (Lee A. Morrison - 1689/20000) (Keith N. Morrison - 1689/20000) (Ralph W. Rogers etal - 1/6) (160 Ac. Tol.) | Std. of Tex D-1-9-59 | Magnolia | Brainard Bros. | G.R. Brainard | (Mrs. S.H. Vinther, etal) | S.F. Kaiser | S.W.D. | B.F. Kaiser

Joe Torres | (B.C. Aaron) | 80 Ac.

Ohio 4-10-54 | Yates Bros. | Bell 1020 | Std. of Tex. D-1-8-59 | Tri-St. Oil Brown | Std. of Tex. D-3-2-59 D-2-3-56 D-1-27-59 | Std. of Tex. D-2-3-59, D-3-2-59, D-1-27-59 | 14 | Standard Oil Company of Tex - Below 2074' Assigned to S.L. Jones - Above 2074' | Std. of Tex. D-1-12-59 D-1-26-59 | 13 | 18

D.H.E.A. S.O.T. Gudger T.C. Rimmer Surf. Loc. | Harris (S) Winget | M. Hammond | 160 Ac. | (R.C. Simpson) | Midwest Pet. Terry | Std. of Tex. D-2-3-56 | 80 Ac. (398 Ac. Tol.) (Paul Terry) | (P. Terry 7/16) (C.S. Brown 1/16) (L.B. Peak 1/16) (C.P. Turner 1/16) | (C.S. Brown 7/16) (315 Ac. Tol.) (C.P. Turner 1/16) (319 Ac. Tol.) (Paul Terry 1/16) (395 Ac. Tol.) (L.B. Peak 1/16) (319 Ac. Tol.) | Jones Terry | (J.A. Leavitt 1/3) (320 Ac. Tol.) (W.S. Jones 1/3) (320 Ac. Tol.) (V.L. Leavitt 1/3) (325 Ac. Tol.) | P. Terry 7/16 | M. Yates Jr. etal 6-14-57

Ohio 4-10-54 | Yates Bros. | Std. of Texas - Below 4000' Yates Bros. - Above 4000' | Jones-Yates | S.O.T. D-6-11-55 H.B.P. Below 3200' | Yates 6-11-55 | 80 Ac. ? (J.H. Everest) | S. Jones | Jones | Malco 1-8-57 | Malco 1-8-57 | Std. of Tex. - Below 3000' Assigned to S.L. Jones to 3000' | (Donald E. Fanning) | C.G. Spears, etal | W.D. Angell (s) B.F. Kaiser, etal (m)

Yates Bros. | 80 Ac. | (Robert K. Everest et al) | BOLLING NO. OIL CO. | Bolling No. 1 | 1319 | D. Fanning | Std. of Tex. D-2-11-59 | 20 Ac. (Elsa McNaff) 40 Ac. | Std. of Tex. D-1-9-59 | Std. of Tex. D-1-14-59 D-1-11-64 | 120 Ac. | (W.A. Waldrop 1/2) (A.E. Waldrop 1/2) | Mrs. S.H. Dumas

State | 240 Ac. | (Charles R. Martin) | J.H. Everest Est. | "McNaff-Vandagriff Unit" (Lee Vandagriff) | 60 Ac.

21 | 22 | 23 | 24

Hunefeld | Jones & Arthur | Magnolia | Dayton Pet.

STANDARD OIL CO. OF TEXAS

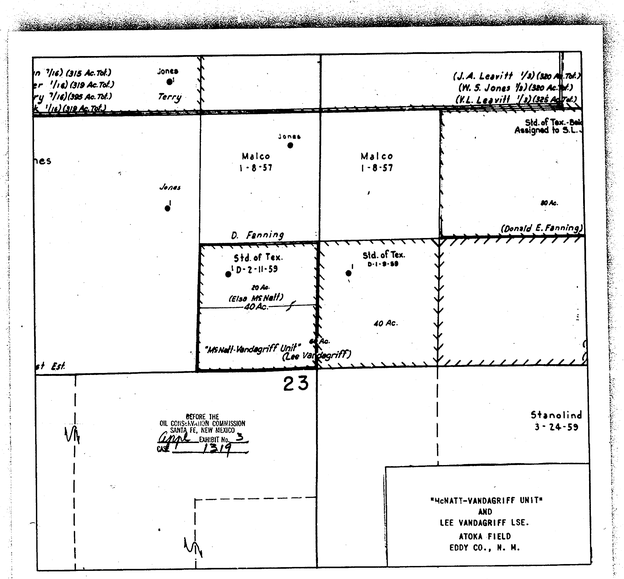
ATOKA FIELD

EDDY CO., NEW MEX.

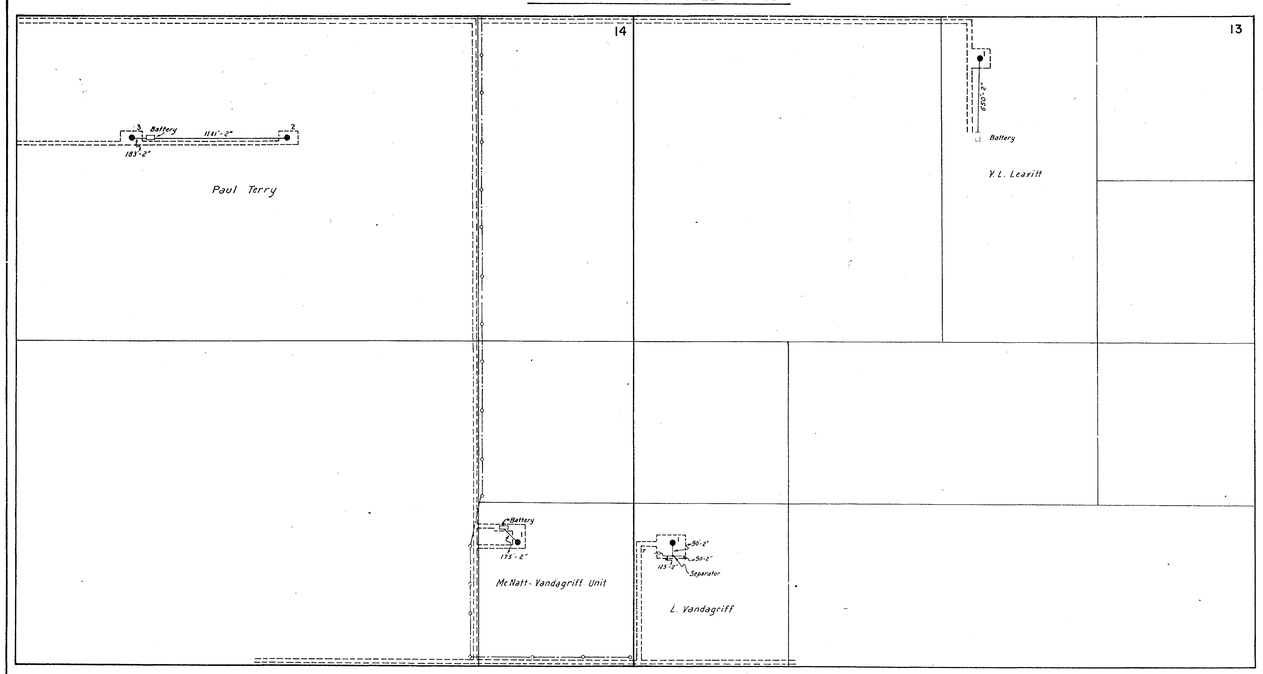
SCALE 1" = 500' | DATE | APPROVED | DR BY | TR BY | CH BY | A-1044

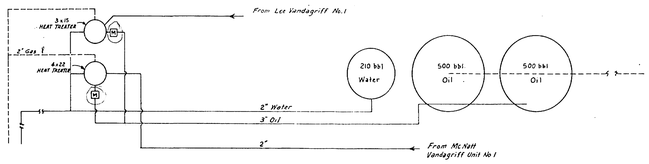
(TA-15)

331



LEASE DETAIL - SCALE: 1" = 400'





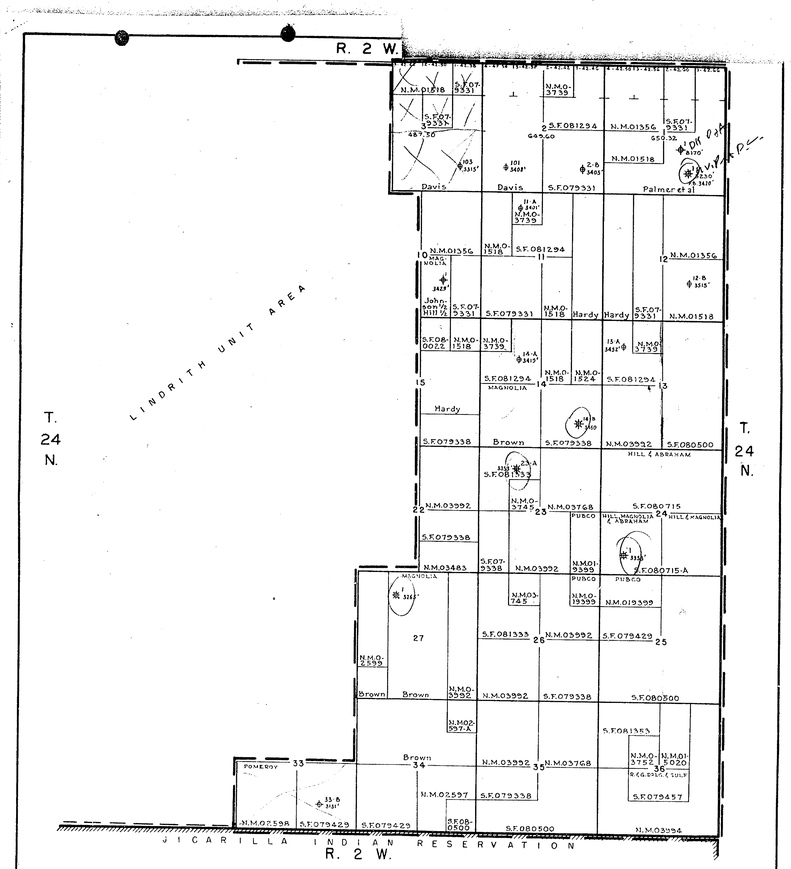
PROPOSED BATTERY DETAIL

BEFORE THE
OIL CONSERVATION COMMISSION
SANTA FE, NEW MEXICO
EXHIBIT No. 4
CASE 1314

STANDARD OIL CO OF TEXAS
FACILITY MAP
ATOKA FIELD
EDDY CO. NEW MEXICO
T-18-S R-26-E

C-410

332



LEGEND

	ACREAGE	PERCENT
FEDERAL LANDS	8,420.04	78.34 %
PATENTED LANDS	2,327.38	21.66 %
TOTAL	10,747.42	100.00 %

BOUNDARY UNIT AREA

TRACT NUMBER FROM EXHIBIT "B"

NOTE: SAN JUAN GAS CORPORATION holds Operating Rights, wholly or in part, to base of Mesaverde formation in all land within unit area unless such ownership is otherwise shown. (For details see Exhibit "B".)

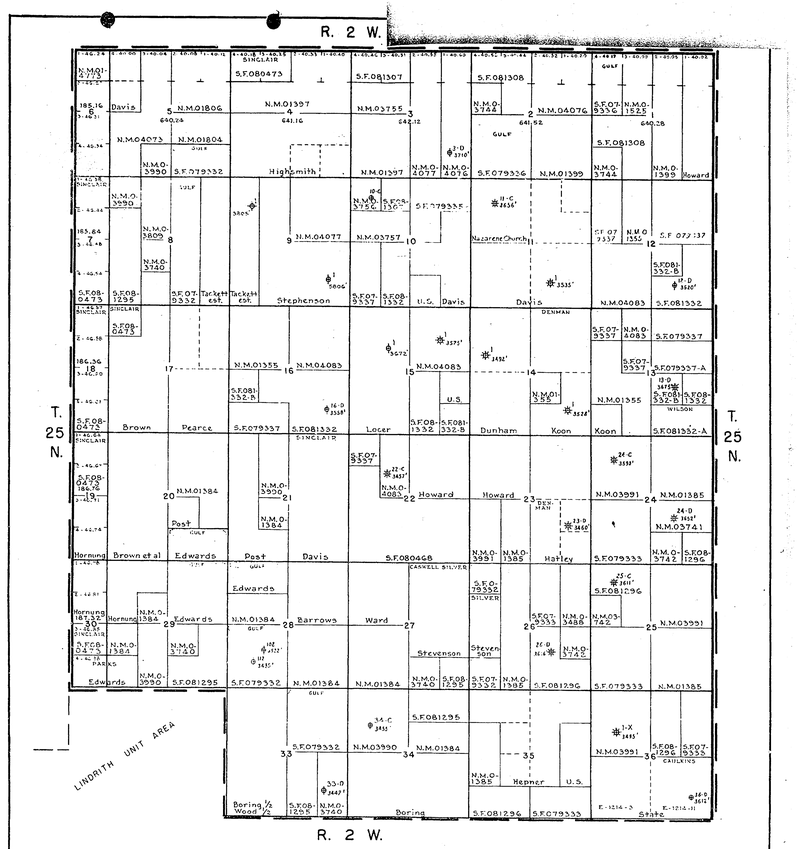
EXHIBIT "A"

SAN JUAN 24-2 UNIT AREA

RIO ARRIBA COUNTY, NEW MEXICO

SCALE 2" = 1 MILE

333



R. 2 W.

LEGEND

	ACREAGE	PERCENT
FEDERAL LANDS	11,603.90	59.52 %
STATE LANDS	320.00	1.64 %
PATENTED LANDS	7,572.86	38.84 %
TOTAL	19,496.76	100.00 %

BOUNDARY UNIT AREA

TRACT NUMBER FROM EXHIBIT "B"

EXHIBIT "A"

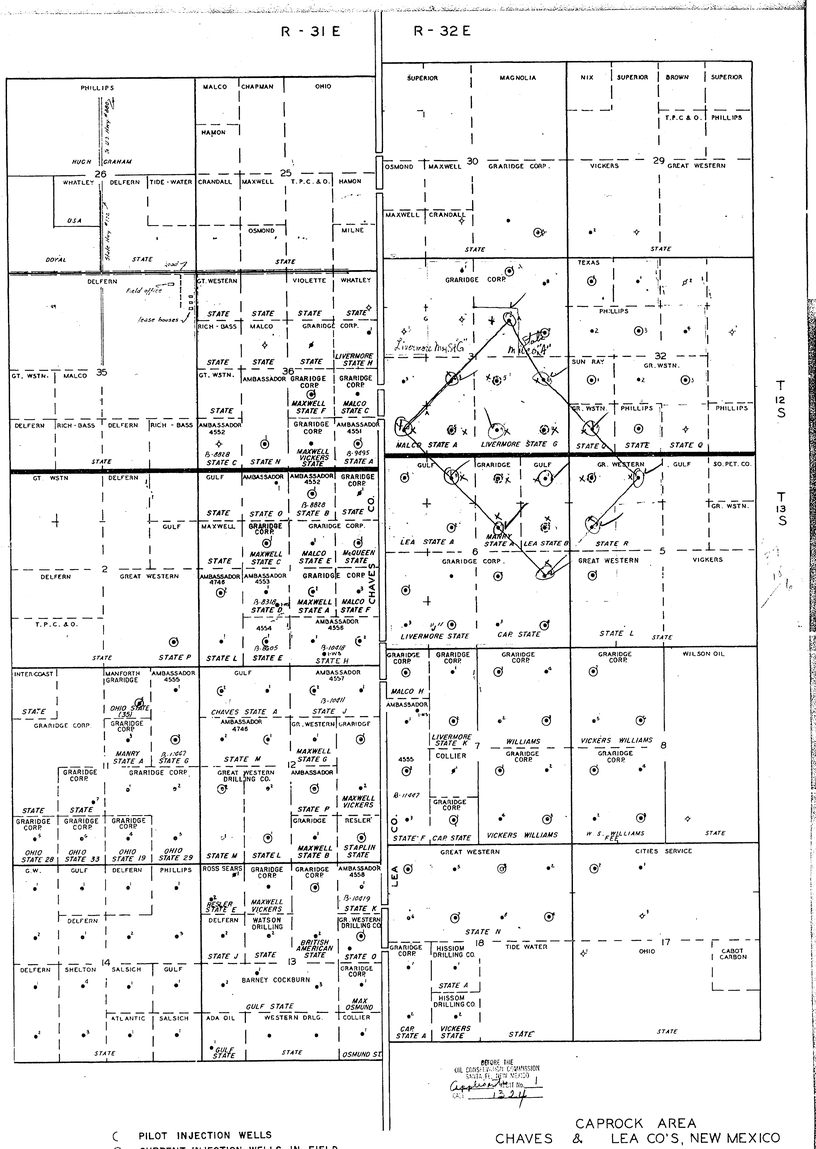
SAN JUAN 25-2 UNIT AREA

RIO ARRIBA COUNTY, NEW MEXICO

SCALE 2" = 1 MILE

NOTE: SAN JUAN GAS CORPORATION holds Operating Rights, wholly or in part, to base of Mesaverde formation in all land within unit area unless such ownership is otherwise shown. (For details see Exhibit "B".)

334



(PILOT INJECTION WELLS
○ CURRENT INJECTION WELLS IN FIELD
○ FUTURE INJECTION PATTERN FOR FULL SCALE FLOOD

CAPROCK AREA
CHAVES & LEA CO'S, NEW MEXICO

GRARIDGE, GULF, & GREAT WESTERN
PILOT WATERFLOOD

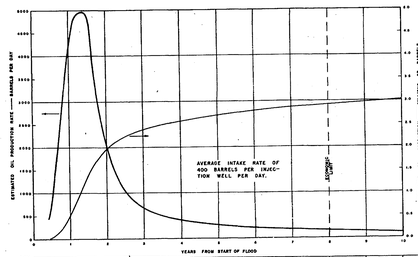
ONE MILE

BEFORE THE OIL CONSERVATION COMMISSION SANTA FE, NEW MEXICO
Gulf EXHIBIT No. 1
CASE 1324

Page II

335

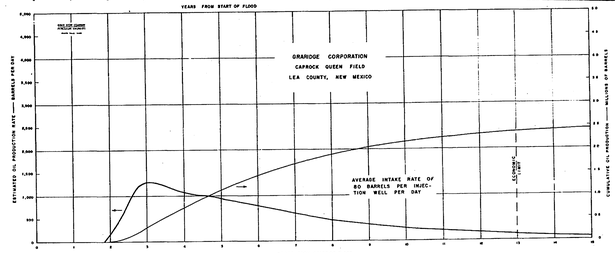
Gravidge Ex 3



ESTIMATED WATERFLOOD OIL PRODUCTION

SAME SAND — 10 FEET
SAME AREA — 1760 ACRES
SAME RATE OF DEVELOPMENT
SAME DISPLACEMENT EFFICIENCY
DIFFERENT RATES OF WATER INJECTION

BEFORE THE OIL CONSERVATION COMMISSION SANTA FE, NEW MEXICO
Gulf EXHIBIT No. 3
CASE 1324



GRARIDGE CORPORATION Gr. 4

Projected Valuations of 1760 Acres of Caprock Queen Field, Lea County, New Mexico
Valuations do not include Acquisition Costs, Depletion, Income Taxes or Salvage Values

BEFORE THE OIL CONSERVATION COMMISSION SANTA FE, NEW MEXICO
Gulf EXHIBIT No. 4
CASE 1324

Based on Average Intake Rate of 400 Barrels per Injection Well per Day

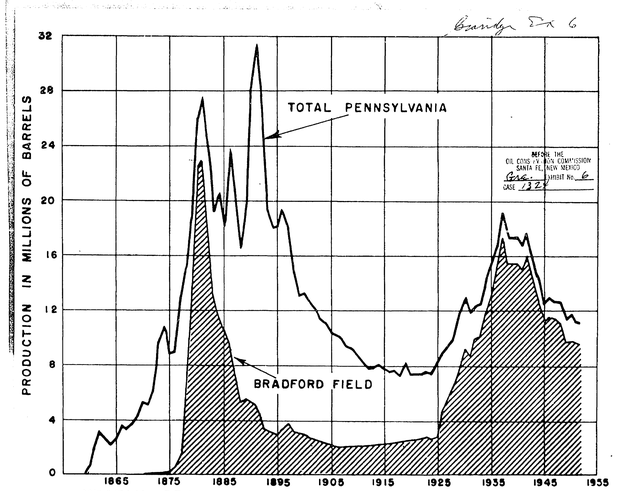
Years from Start of Flood	Estimated Future Oil Production: Gross Barrels	Gross Barrels Per Day	Net Barrels (.82)	Income* From Oil Sales	Deduct Estimated Expenses: Production Tax	Direct Lease Expense and Overhead	Development Costs	Total	Net Value: Not Discounted	@ Discount Factor	Present Worth
1	504,600	1,382	413,800	$1,200,000	$ 55,700	$ 85,500	$704,000	$ 845,200	$ 354,800	.9717	$ 344,800
2	1,464,700	4,013	1,201,100	3,483,200	161,600	132,000		293,600	3,189,600	.9167	2,923,900
3	408,100	1,118	334,600	970,300	45,000	132,000		177,000	793,300	.8648	686,000
4	187,700	514	153,900	446,300	20,700	132,000		152,700	293,600	.8159	239,500
5	128,300	352	105,200	305,100	14,200	132,000		146,200	158,900	.7697	122,300
6	96,900	265	79,500	230,600	10,700	132,000		142,700	87,900	.7261	63,800
7	76,200	209	62,500	181,300	8,400	132,000		140,400	40,900	.6850	28,000
8	62,800	172	51,500	149,400	6,900	132,000		138,900	10,500	.6462	6,800
Totals	2,929,300		2,402,100	$6,966,200	$323,200	$1,009,500	$704,000	$2,036,700	$4,929,500		$4,415,100

Based on Average Intake Rate of 80 Barrels per Injection Well per Day

1	0	0	0	$ 0	$ 0	$ 24,000	$498,000	$ 522,000	($ 522,000)	.9717	($ 507,200)
2	5,100	14	4,200	12,200	600	30,000		30,600	(18,400)	.9167	(16,900)
3	295,700	810	242,500	703,300	32,600	80,000		112,600	590,700	.8648	510,800
4	442,400	1,212	362,800	1,052,100	48,800	105,600		154,400	897,700	.8159	732,400
5	372,500	1,021	305,500	886,000	41,100	105,600		146,700	739,300	.7697	569,000
6	317,300	869	260,200	754,600	35,000	105,600		140,600	614,000	.7261	445,800
7	256,000	701	209,900	608,700	28,200	105,600		133,800	474,900	.6850	325,300
8	195,400	535	160,200	464,600	21,600	105,600		127,200	337,400	.6462	218,000
9	152,500	418	125,100	362,800	16,800	105,600		122,400	240,400	.6097	146,600
10	120,000	329	98,400	285,400	13,200	105,600		118,800	166,600	.5751	95,800
11	93,200	255	76,400	221,600	10,300	105,600		115,900	105,700	.5426	57,400
12	71,500	196	58,600	169,900	7,900	105,600		113,500	56,400	.5119	28,900
13	53,900	148	44,200	128,200	5,900	105,600		111,500	16,700	.4829	8,100
Totals	2,375,500		1,948,000	$5,649,400	$262,000	$1,190,000	$498,000	$1,950,000	$3,699,400		$2,614,000

* $2.90 per barrel

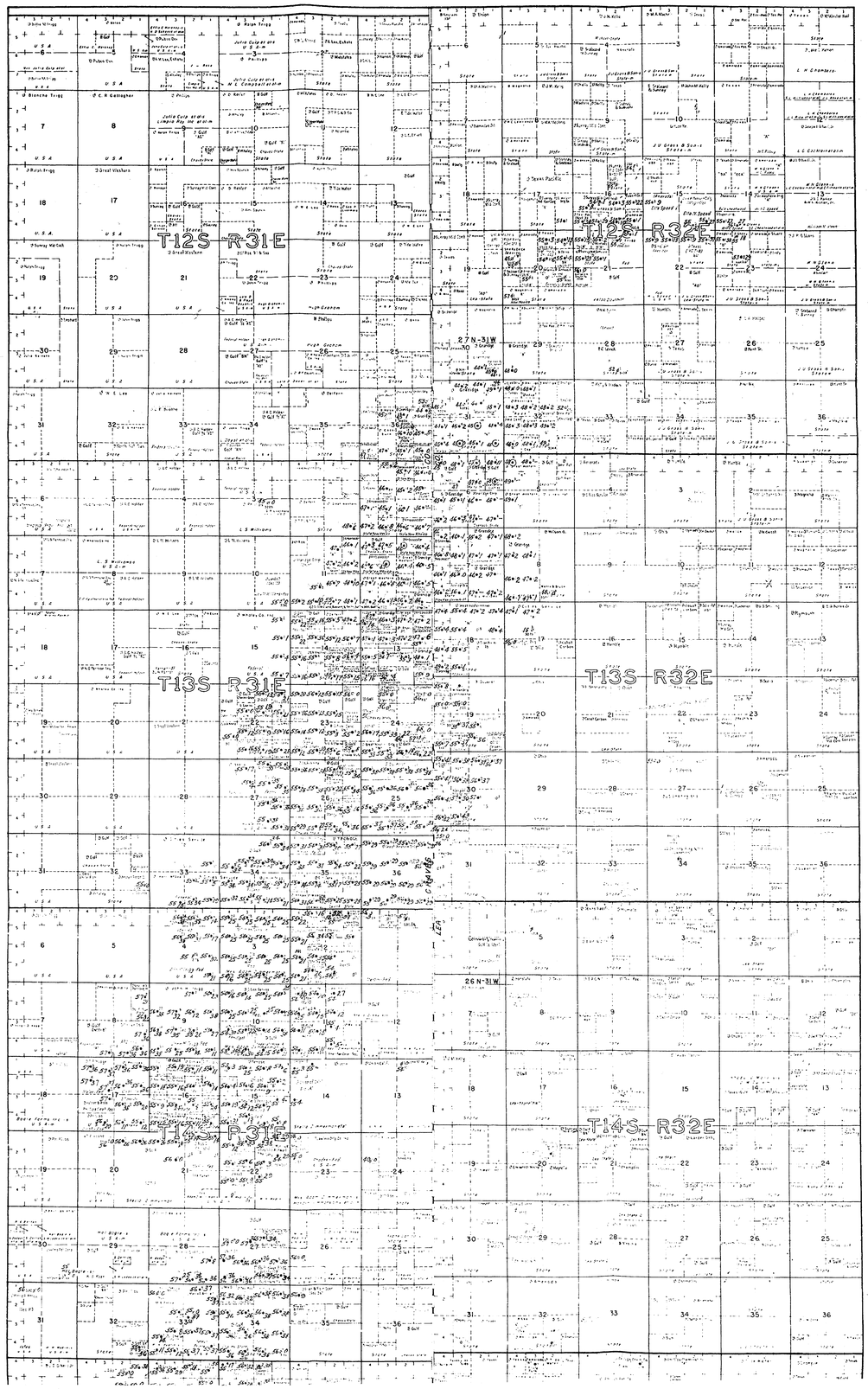
Gravidge Ex 6



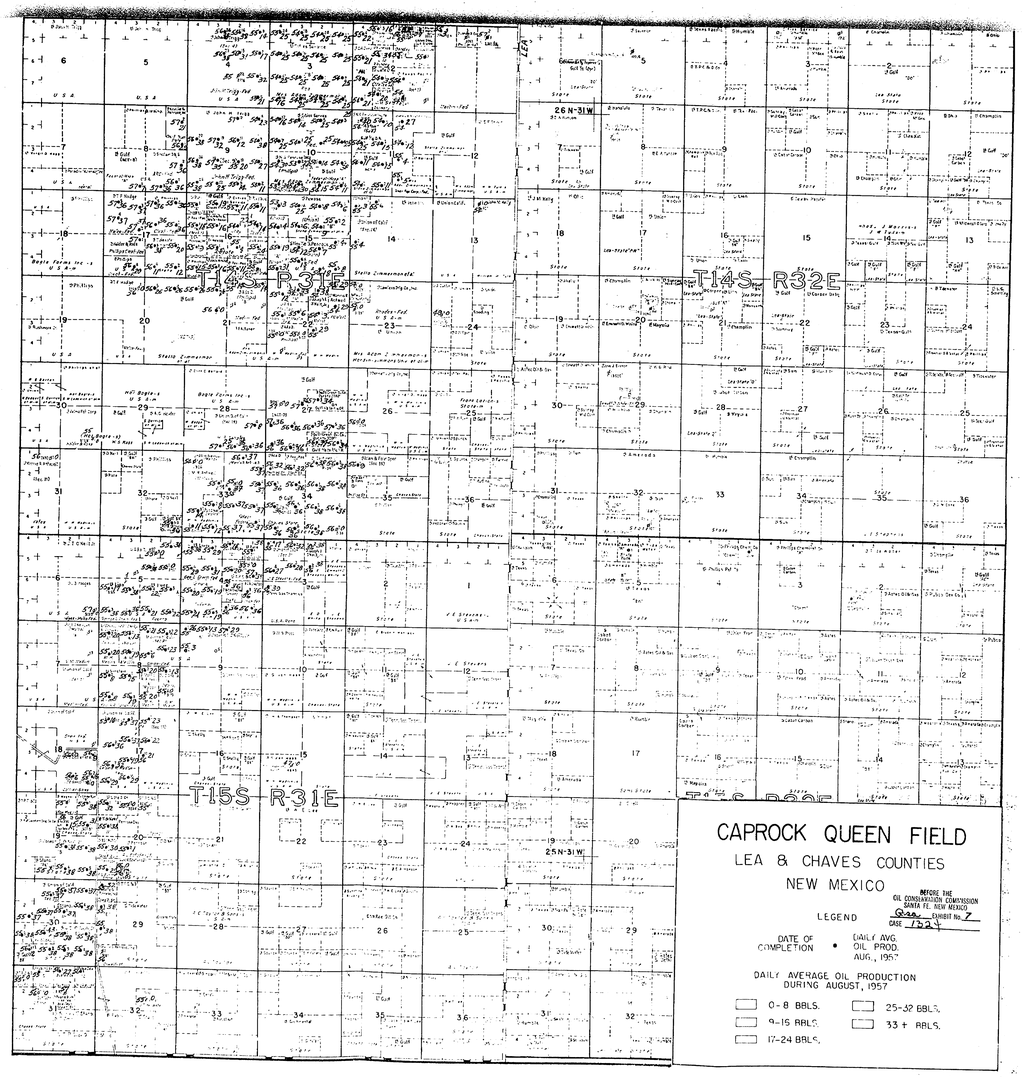
BEFORE THE OIL CONSERVATION COMMISSION SANTA FE, NEW MEXICO
Gulf EXHIBIT No. 6
CASE 1324

YEARLY PRODUCTION OF CRUDE OIL IN PENNSYLVANIA AND IN THE BRADFORD OIL FIELD

Gr, no 7


T12S R31E
T12S R32E
T13S R31E
T13S R32E
T14S R31E
T14S R32E
27 N-31W
26 N-31W

336


T14S R31E
T14S R32E
T15S R31E
26 N-31 W
25 N-31 W
CAPROCK QUEEN FIELD
LEA & CHAVES COUNTIES
NEW MEXICO
BEFORE THE OIL CONSERVATION COMMISSION SANTA FE, NEW MEXICO
EXHIBIT No. 7
CASE 1324
LEGEND
DATE OF COMPLETION
DAILY AVG. OIL PROD. AUG., 1957
DAILY AVERAGE OIL PRODUCTION DURING AUGUST, 1957
0-8 BBLS.
9-16 BBLS.
17-24 BBLS.
25-32 BBLS.
33 + BBLS.

337

Graridge Ex 8

CALCULATED PRODUCTION PERFORMANCE
6720 ACRE WATERFLOOD PROJECT

OIL PRODUCTION—1000 Barrels per Day

WATERFLOOD OPERATION & EXPANSION—Years

Red — Injection Rate 400 Bbl./Well/Day
Blue — Injection Rate 80 Bbl./Well/Day
Both curves based on a constant development rate of 2,240 Acres per year and the assumption of identical displacement efficiency.

BEFORE THE OIL CONSERVATION COMMISSION SANTA FE, NEW MEXICO
Graridge EXHIBIT No. 8
CASE 1324

Graridge Ex 9

CALCULATED PRODUCTION PERFORMANCE
WATERFLOOD PROJECT IN EXCESS OF 15,680 ACRES

Maximum Oil Producing Rate

Maximum Oil Producing Rate

OIL PRODUCTION—1000 Barrels per Day

WATERFLOOD OPERATION & EXPANSION—Years

Red — Injection Rate 400 Bbl./Well/Day
Blue — Injection Rate 80 Bbl./Well/Day
Both curves based on a constant development rate of 2,240 Acres per year and the assumption of identical displacement efficiency.

BEFORE THE OIL CONSERVATION COMMISSION SANTA FE, NEW MEXICO
Graridge EXHIBIT No. 9
CASE 1324

Ex 10

GRARIDGE CORPORATION
OIL PRODUCTION RATE FOR ENTIRE CAPROCK FIELD
LEA AND CHAVES COUNTIES, NEW MEXICO

OIL PRODUCTION RATE — BARRELS PER DAY

PRIMARY OIL PRODUCTION

1948 1949

ESTIMATED WATERFLOOD OIL PRODUCTION
400 B/D WATER INJECTION PER INTAKE WELL.
CONSTANT RATE OF DEVELOPMENT AT 4480 ACRES PER YEAR.
5 YEARS TO DEVELOP 22,400 ACRES STARTING JANUARY 1, 1958.

ESTIMATED WATERFLOOD OIL PRODUCTION
80 B/D WATER INJECTION PER INTAKE WELL.
CONSTANT RATE OF DEVELOPMENT AT 4480 ACRES PER YEAR.
5 YEARS TO DEVELOP 22,400 ACRES STARTING JANUARY 1, 1958.

BEFORE THE OIL CONSERVATION COMMISSION SANTA FE, NEW MEXICO
Graridge EXHIBIT No. 10
CASE 1324

Graridge Ex 11

RATE OF OIL PRODUCTION VS. CUMULATIVE OIL RECOVERY FOR ELEVEN DIFFERENT FLOODS IN SOUTH WARD FIELD

WATER FLOOD OIL PRODUCTION RATE
BARRELS PER YEAR PER BARREL OF TOTAL PRIMARY PRODUCTION

CUMULATIVE WATER FLOOD OIL PRODUCTION
BARRELS PER BARREL OF TOTAL PRIMARY PRODUCTION

KEY

A Standard Oil Company of Texas - Durgin, Section 15
B Forest Oil Corporation - Pilot Flood
C The Atlantic Refining Company - W. D. Johnson
D Forest Oil Corporation - Flood No. 2
E D. D. Feldman Oil & Gas - Olcott
F Standard Oil Company of Texas - J. F. York & Prince York
G Forest Oil Corporation - Johnson
H Richardson Oils, Inc. - Johnson
I Tennessee Gas Transmission Company - Bennett
J Texas Pacific Coal & Oil Company - James & Barker
K Cities Service Oil Company - McDonald

DASH LINES ARE EXTRAPOLATIONS OF DATA.

BEFORE THE OIL CONSERVATION COMMISSION SANTA FE, NEW MEXICO
Graridge EXHIBIT No. 11
CASE 1324

Graridge Ex 12

WATER INJECTION RATES
1.0 BPD/AF
0.75 BPD/AF
0.50 BPD/AF
0.35 BPD/AF

Gross Barrels Per Day

LOST OIL
3000' Depth
Thousand Bbl
% Possible Ult.
1500' Depth
Thousand Bbl
% Possible Ult.

Economic Limit @ 3000'
Economic Limit @ 1500'

YEARS

Calculated Water Flood Oil Production Rate vs Time Curves
Conditions:

Lease	80 Acres
Flood Pattern	5 Spot - 10 Acre Spacing
Porosity	18 %
Operating Cost - 16 wells (From Figure 1)	
1500 Feet	$27,000/Year
3000 Feet	$57,500/Year
Crude Value	$2.50/Bbl (After 3% GPT and 1/8 Royalty)
Ultimate Water Input	170% Pore Space
Ultimate Oil Recovery (Figure 2 using 5,000 BA @ 100% ultimate)	
Possible @ 170% pore space input	400,000 barrels

Injection Rate BPD/AF	Depth Feet	Ultimate Oil Rec at Economic Limit Gross Barrels	% Total Possible	Oil Uncovered at Economic Limit Gross Barrels	% Total Possible Rec
0.35	1500	359,000	90	41,000	10
0.50	1500	378,000	93	27,000	7
0.75	1500	385,000	97	12,000	3
1.00	1500	397,000	99	3,000	1
0.35	3000	292,000	73	108,000	27
0.50	3000	328,000	82	72,000	18
0.75	3000	350,000	88	50,000	12
1.00	3000	368,000	92	32,000	8

BEFORE THE OIL CONSERVATION COMMISSION SANTA FE, NEW MEXICO
Graridge EXHIBIT No. 13
CASE 1324

FIGURE 3
Earlougher Engineering Oct., 1957

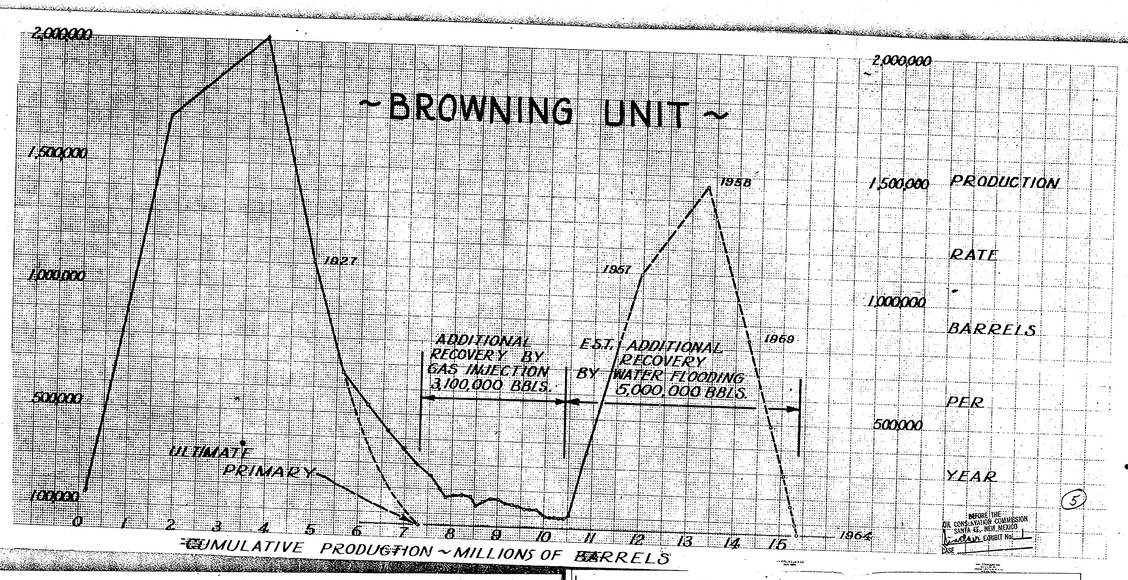
Graridge Ex 14

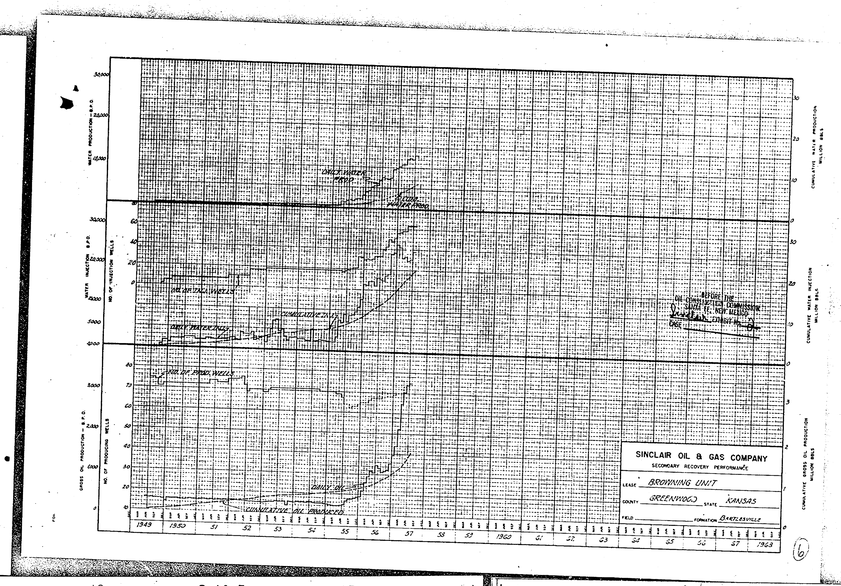
Producing Oil Well (Lower Sand)
Water Injection Well
Producing Water Well (Upper Sand)

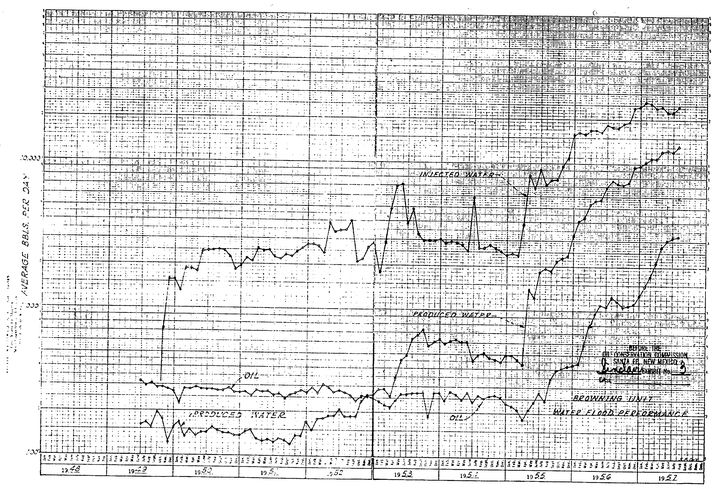
Portion of Caprock Field
Lea & Chaves Co., New Mex.
9-10-56 RFF
1" = 2000'

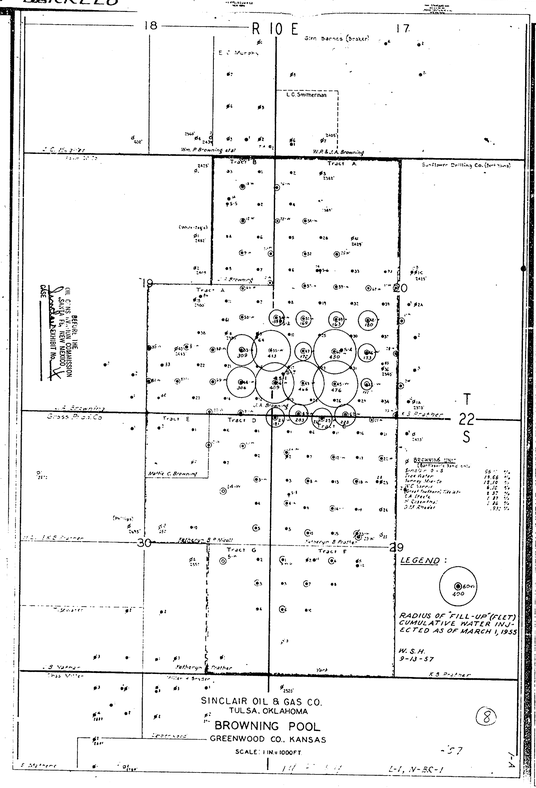
BEFORE THE OIL CONSERVATION COMMISSION SANTA FE, NEW MEXICO
Graridge EXHIBIT No. 14
CASE 1324

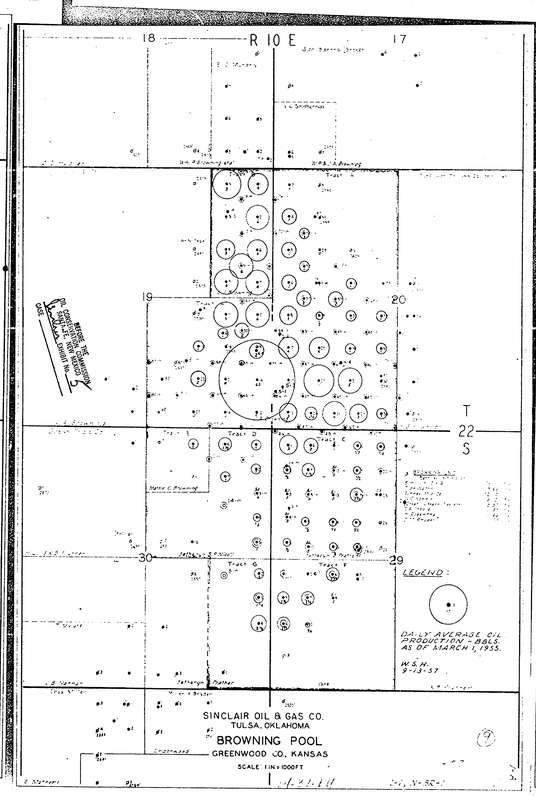
338

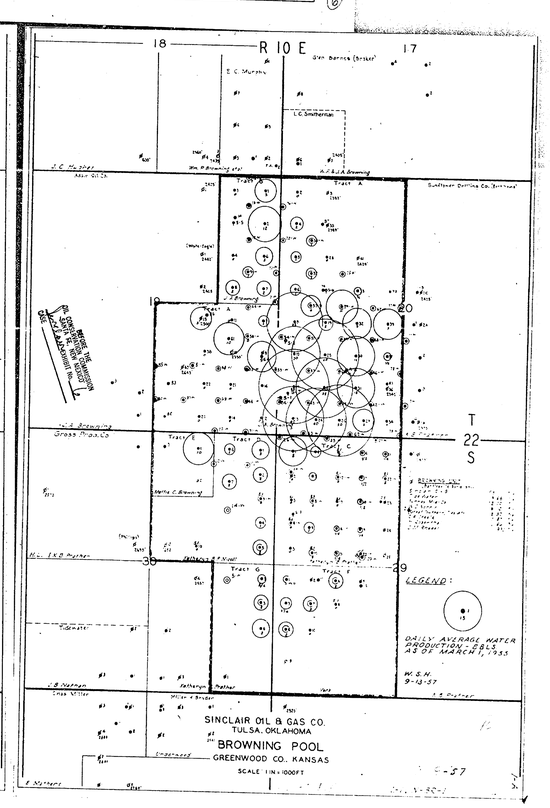

~BROWNING UNIT~
2,000,000
1,500,000
1,000,000
500,000
100,000
1927
1957
1958
1964
1969
ADDITIONAL RECOVERY BY GAS INJECTION 3,100,000 BBLS.
EST. ADDITIONAL RECOVERY BY WATER FLOODING 5,000,000 BBLS.
ULTIMATE PRIMARY
0 1 2 3 4 5 6 7 8 9 10 11 12 13 14 15
CUMULATIVE PRODUCTION ~ MILLIONS OF BARRELS
2,000,000
1,500,000 PRODUCTION RATE
1,000,000 BARRELS
500,000 PER
YEAR
BEFORE THE OIL CONSERVATION COMMISSION SANTA FE, NEW MEXICO
CASE
5


SINCLAIR OIL & GAS COMPANY
SECONDARY RECOVERY PERFORMANCE
LEASE BROWNING UNIT
COUNTY GREENWOOD STATE KANSAS
FIELD
FORMATION BARTLESVILLE
BEFORE THE OIL CONSERVATION COMMISSION SANTA FE, NEW MEXICO
CASE
6


AVERAGE BBLS PER DAY
INJECTED WATER
PRODUCED WATER
OIL
OIL
INJECTED WATER
BROWNING UNIT
WATER FLOOD PERFORMANCE
1948 1949 1950 1951 1952 1953 1954 1955 1956 1957
BEFORE THE OIL CONSERVATION COMMISSION SANTA FE, NEW MEXICO
CASE
7

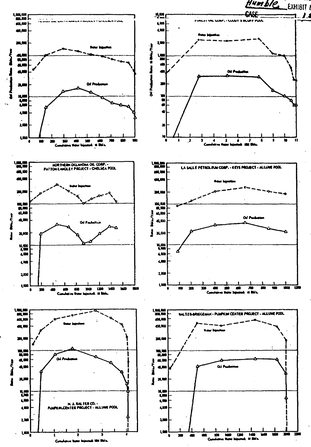

R 10 E
T 22 S
SINCLAIR OIL & GAS CO.
TULSA, OKLAHOMA
BROWNING POOL
GREENWOOD CO., KANSAS
SCALE: 1 IN. = 1000 FT.
LEGEND:
RADIUS OF "FILL-UP" (FLET) CUMULATIVE WATER INJECTED AS OF MARCH 1, 1935
W.S.H. 9-13-57
8


R 10 E
T 22 S
SINCLAIR OIL & GAS CO.
TULSA, OKLAHOMA
BROWNING POOL
GREENWOOD CO., KANSAS
SCALE: 1 IN. = 1000 FT.
LEGEND:
DAILY AVERAGE OIL PRODUCTION - BBLS. AS OF MARCH 1, 1935.
W.S.H. 9-13-57
9


R 10 E
T 22 S
SINCLAIR OIL & GAS CO.
TULSA, OKLAHOMA
BROWNING POOL
GREENWOOD CO., KANSAS
SCALE: 1 IN. = 1000 FT.
LEGEND:
DAILY AVERAGE WATER PRODUCTION - BBLS. AS OF MARCH 1, 1935.
W.S.H. 9-13-57
10

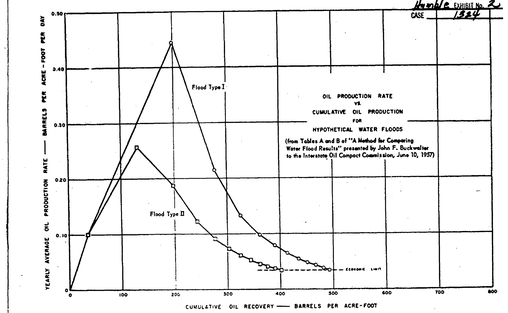
339

BEFORE THE OIL CONSERVATION COMMISSION SANTA FE, NEW MEXICO Humble EXHIBIT No. 1 CASE 1324



RELATION BETWEEN OIL PRODUCTION AND WATER INJECTION FOR SEVERAL WATER FLOOD PROJECTS IN OKLAHOMA
(Data from Bureau of Mines Rl 4521)

BEFORE THE OIL CONSERVATION COMMISSION SANTA FE, NEW MEXICO Humble EXHIBIT No. 2 CASE 1324



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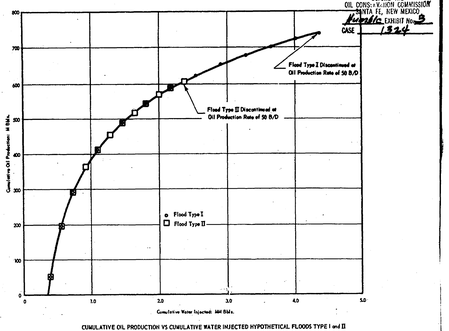
BEFORE THE OIL CONSERVATION COMMISSION SANTA FE, NEW MEXICO Humble EXHIBIT No. 3 CASE 1324

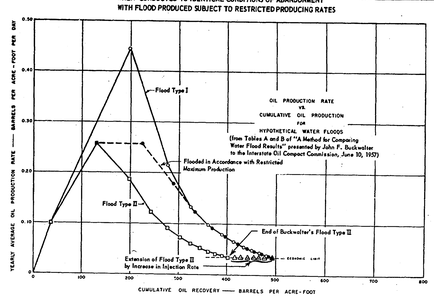


CUMULATIVE OIL PRODUCTION VS CUMULATIVE WATER INJECTED HYPOTHETICAL FLOODS TYPE I and II
(from Tables A and B of "A Method for Comparing Water Flood Results" presented by John F. Buckwalter to the Interstate Oil Compact Commission, June 10, 1957)

3

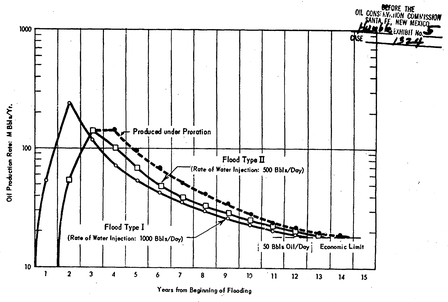
BEFORE THE OIL CONSERVATION COMMISSION SANTA FE, NEW MEXICO Humble EXHIBIT No. 4 CASE 1324

COMPARISON OF BUCKWALTERS FLOOD TYPES I and II
WHEN CONDUCTED TO IDENTICAL CONDITIONS OF ABANDONMENT
WITH FLOOD PRODUCED SUBJECT TO RESTRICTED PRODUCING RATES



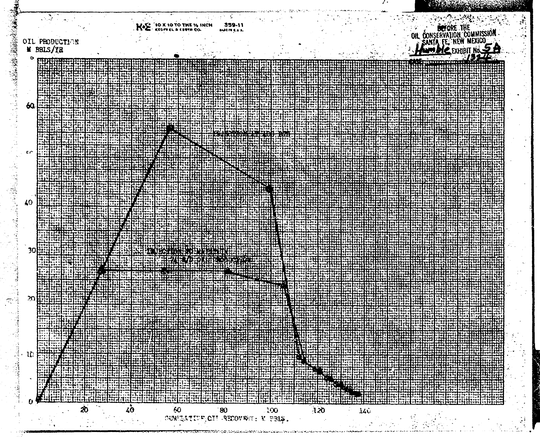
4

BEFORE THE OIL CONSERVATION COMMISSION SANTA FE, NEW MEXICO Humble EXHIBIT No. 5 CASE 1324

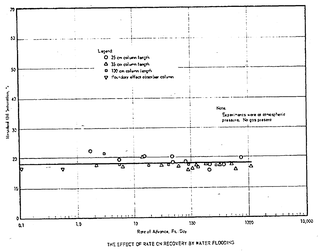


OIL PRODUCTION RATE VS TIME HYPOTHETICAL FLOODS TYPE I AND II
(from Tables A and B of "A Method for Comparing Water Flood Results" presented by John F. Buckwalter to the Interstate Oil Compact Commission, June 10, 1957)

5



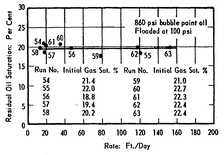
BEFORE THE OIL CONSERVATION COMMISSION SANTA FE, NEW MEXICO Humble EXHIBIT No. 6 CASE 1324



THE EFFECT OF RATE ON RECOVERY BY WATER FLOODING

6

BEFORE THE OIL CONSERVATION COMMISSION SANTA FE, NEW MEXICO Humble EXHIBIT No. 6A CASE 1324

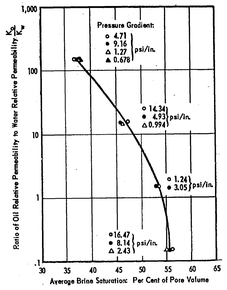


Run No.	Initial Gas Sat. %	Run No.	Initial Gas Sat. %
54	21.4	59	21.0
55	22.0	60	22.7
56	18.8	61	22.3
57	19.4	62	22.4
58	20.2	63	22.4

THE EFFECT OF RATE ON OIL RECOVERY BY WATER FLOODING IN PRESENCE OF A 22% FREE GAS SATURATION
(Homogeneous Sand)

7

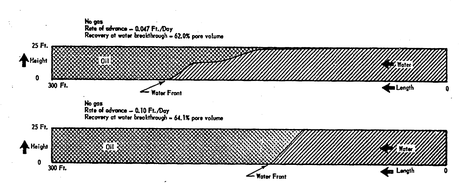
BEFORE THE OIL CONSERVATION COMMISSION SANTA FE, NEW MEXICO Humble EXHIBIT No. 7 CASE 1324



RELATIVE PERMEABILITY AS A FUNCTION OF BRINE SATURATION MEASUREMENTS AT DIFFERENT PRESSURE GRADIENTS
(From Data of Geffen, Owens, Pentah & Morse)

8

BEFORE THE OIL CONSERVATION COMMISSION SANTA FE, NEW MEXICO Humble EXHIBIT No. 8 CASE 1324



THE EFFECT OF RATE ON THE FLOODING CONFORMANCE OF A UNIFORM SAND WHERE GRAVITATIONAL SEGREGATION IS IMPORTANT

9

BEFORE THE OIL CONSERVATION COMMISSION SANTA FE, NEW MEXICO Humble EXHIBIT No. 9 CASE 1324

CAN PRODUCTION AND INJECTION BE TEMPORARILY HALTED WITHOUT DAMAGING FLOOD?

Data From: "A Laboratory Study of Gravity Segregation in Frontal Drives" F. I. Craig, Jr., J. L. Sanderlin, D. Y. Moore, T. W. Geffen, Pan American Prod. Corp. Presented at 31st Annual Meeting of the Petroleum Branch of the AIME, Oct., 1956

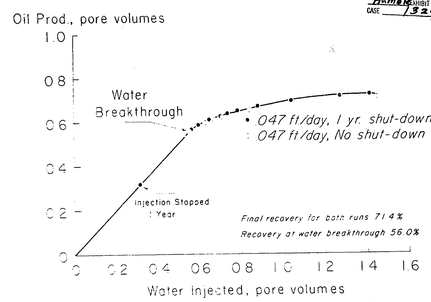
Reservoir Simulated:
- 10-Acre — 5-Spot Pattern
- 50 mds — Permeability
- 55 Feet — Formation Thickness
- 1.55 cp — Oil Viscosity
- 40° API — Oil Density

Operation Schedules Studied:
1 – Continuous Injection and Production – at 143 Bbl/Day Per Well
2 – Intermittent Operation – Alternate Days of Operation and Shutdown 286 Bbl/Day Per Well Each Day of Operation
3 – Intermittent Operation – 15 Days Operating Followed by 15 Days Shutdown 296 Bbl/Day Per Well Each Day of Operation

Observation: "The Oil Recovery Performances of All Three Water Floods Were Identical" – page 6.

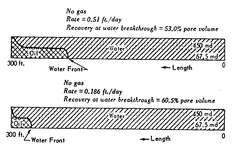
10

BEFORE THE OIL CONSERVATION COMMISSION SANTA FE, NEW MEXICO Humble EXHIBIT No. 10 CASE 1324



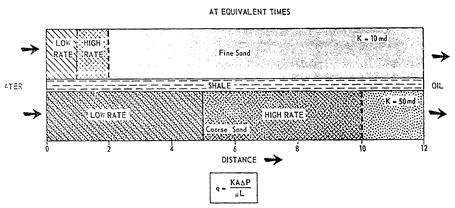
11

BEFORE THE OIL CONSERVATION COMMISSION SANTA FE, NEW MEXICO Humble EXHIBIT No. 11 CASE 1324



The effect of rate on the flooding conformance of a stratified reservoir.

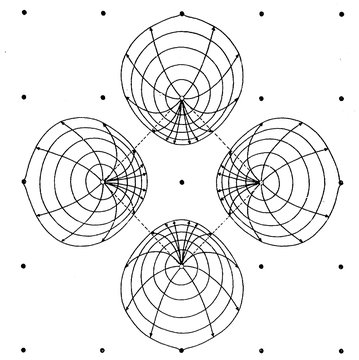
BEFORE THE OIL CONSERVATION COMMISSION SANTA FE, NEW MEXICO Humble EXHIBIT No. 12 CASE 1324



RELATIVE MOVEMENT OF WATER THROUGH STRATIFIED, NON-COMMUNICATING SANDS OF DIFFERENT PERMEABILITIES

12

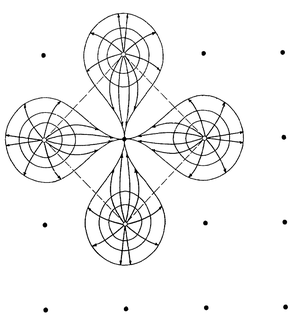
BEFORE THE OIL CONSERVATION COMMISSION SANTA FE, NEW MEXICO Humble EXHIBIT No. 13 CASE 1324



AT BREAKTHROUGH:
% Of Injected Water Entering 5-Spot = 13.6%

Oil Lost 190,639 bbls.
+172% Of Oil Produced

BEFORE THE OIL CONSERVATION COMMISSION SANTA FE, NEW MEXICO Humble EXHIBIT No. 14 CASE 1324



AT BREAKTHROUGH
% of Injected Water Entering 5-Spot = 35.0%

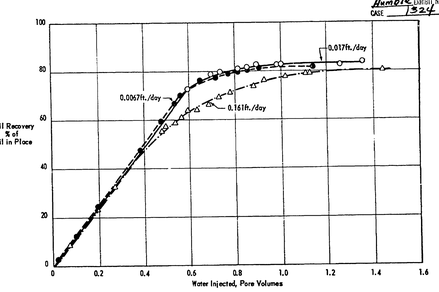
Oil Gained 164,833 bbls.
+ 30.0% of Oil Produced

BEFORE THE OIL CONSERVATION COMMISSION SANTA FE, NEW MEXICO Humble EXHIBIT No. 15 CASE 1324

RECOVERY OF OIL AT DIFFERENT RATES OF FLOODING

1.87 ft.		272 md	
3 ft.		22.7 md	
1.87 ft.	11.6 ft.	41 md	128 md
3 ft.		272 md	
1.87 ft.		10 md	

Length = 432 feet



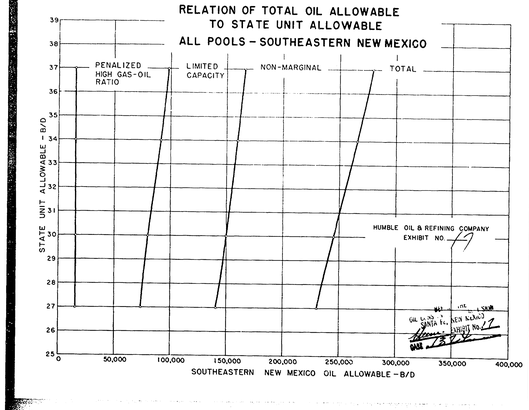
340

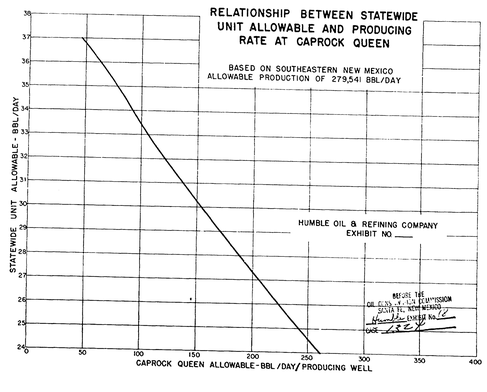
BEFORE THE OIL CONSERVATION COMMISSION SANTA FE, NEW MEXICO Humble EXHIBIT No. 16 CASE 1324

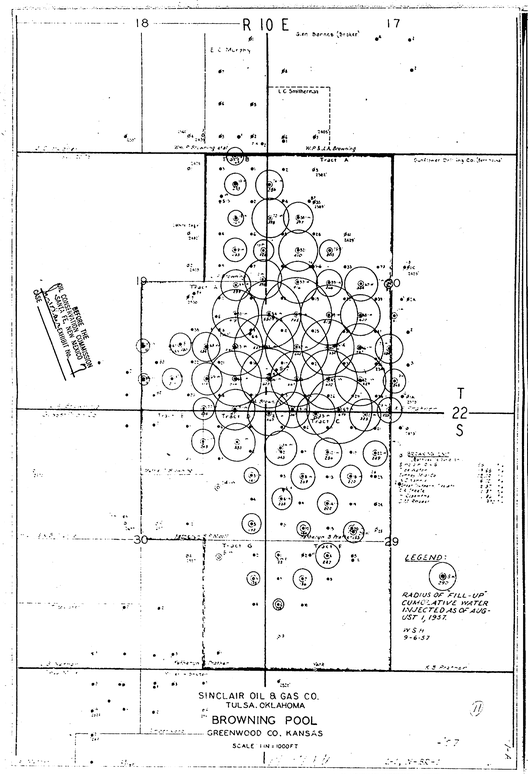
Characteristics of Stratified Model as Reservoir

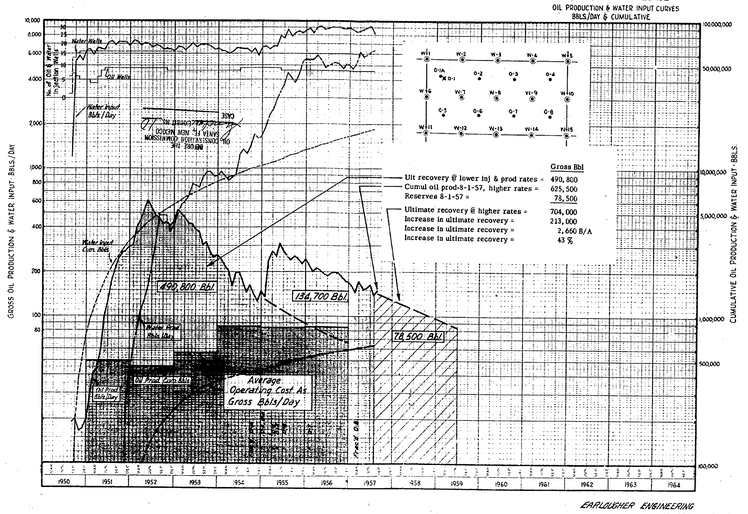
Property		Model	Reservoir
Oil Density, ρ_o		0.827 g/cc	0.821 g/cc
Water Density, ρ_w		1.098 g/cc	0.993 g/cc
Density Difference, $\rho_w - \rho_o$		0.271 g/cc	0.172 g/cc
Permeability, K1		109,000 md	222 md
	K2	9,500	23.7
	K3	16,400	41
	K4	109,000	272
	K5	4,000	10
	Overall	51,400	128.4
Porosity, ϕ		44%	22%
Height, H_1		.312 inches	1.87 feet
	H_2	.500 inches	3.00 feet
	H_3	.312 inches	1.87 feet
	H_4	.500 inches	3.00 feet
	H_5	.312 inches	1.87 feet
	Overall	1.936 inches	11.61 feet
Length, L		72 inches	432 feet
Length ' H'		37.2	37.2
Oil Viscosity, μ_o		6.3 cp	3.6 cp
Water Viscosity, μ_w		1.19 cp	0.68 cp
Viscosity Oil / Viscosity Water, $\frac{\mu_o}{\mu_w}$		5.3	5.3
Interfacial Tension, γ		33.8 dynes/cm	33.8 dynes/cm
Flood Rate 1, q_1		7.87 ft/day	0.00668 ft/day
Flood Rate 2, q_2		20	0.017
Flood Rate 3, q_3		189	0.161
Gravitational Pressure / Capillary Pressure	$\frac{(\rho_w - \rho_o)gH}{\gamma\sqrt{\frac{\phi}{K}}}$	0.0415	0.134
Viscous Pressure / Capillary Pressure	$\frac{q}{K}\frac{\mu_w L}{\sqrt{\frac{\phi}{K}}}$ Rate 1	0.375	0.375
	Rate 2	0.955	0.955
	Rate 3	9.05	9.05
Viscous / Gravitational	$\frac{q}{(\rho_w - \rho_o)gH}\frac{\mu_w L}{}$ Rate 1	9.04	2.8
	Rate 2	23	7.12
	Rate 3	218	67.5

BEFORE THE OIL CONSERVATION COMMISSION SANTA FE, NEW MEXICO Humble EXHIBIT No. 17 CASE 1324

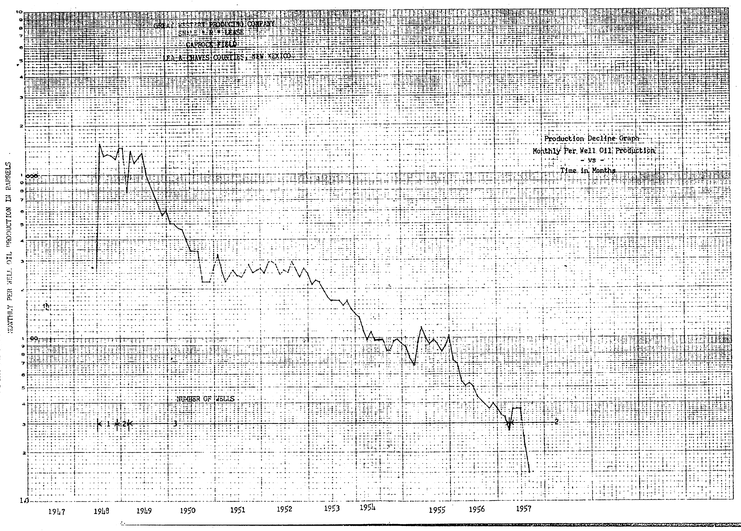


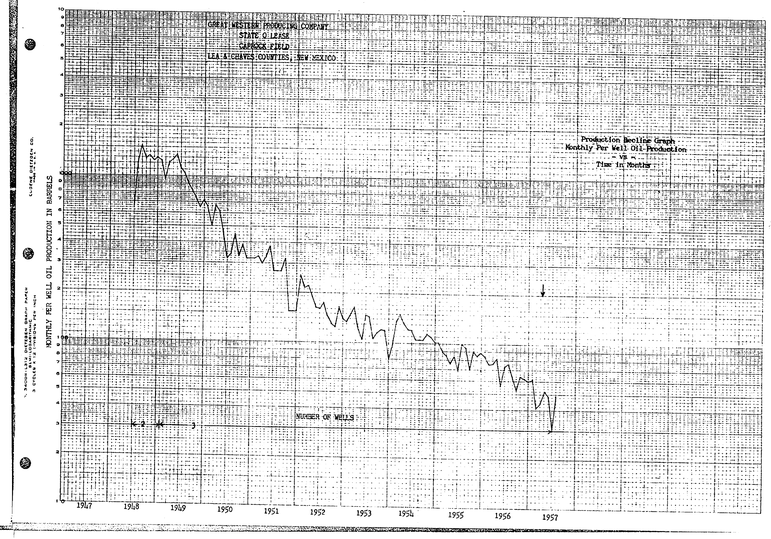


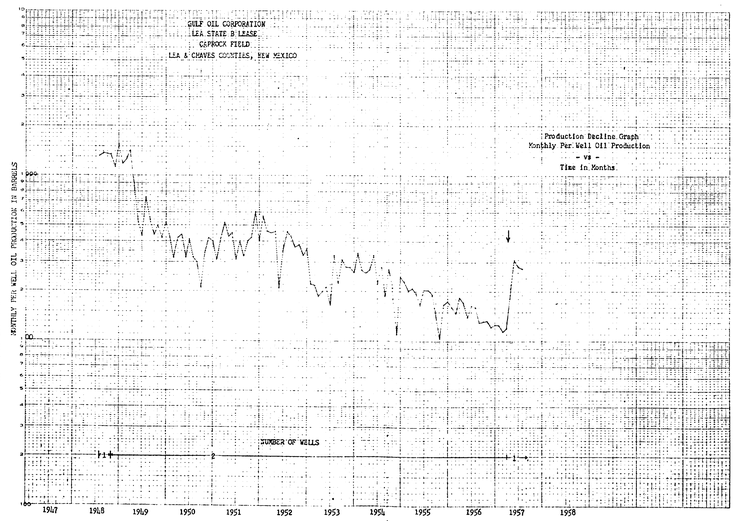


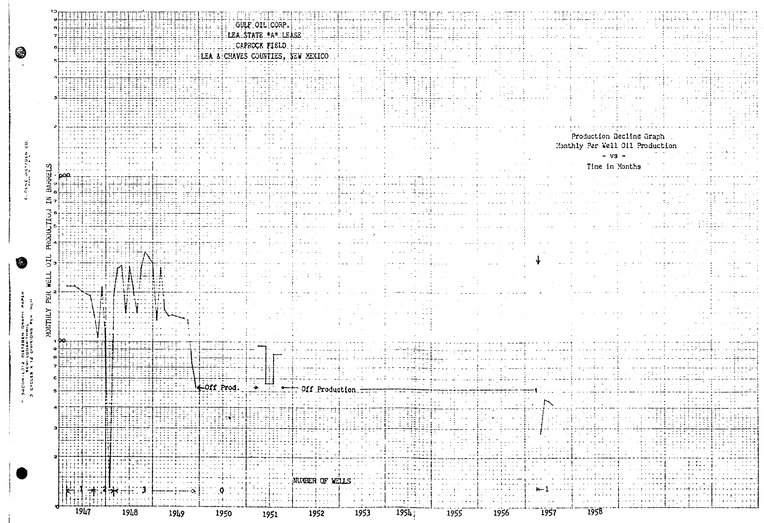


EARLOUGHER ENGINEERING









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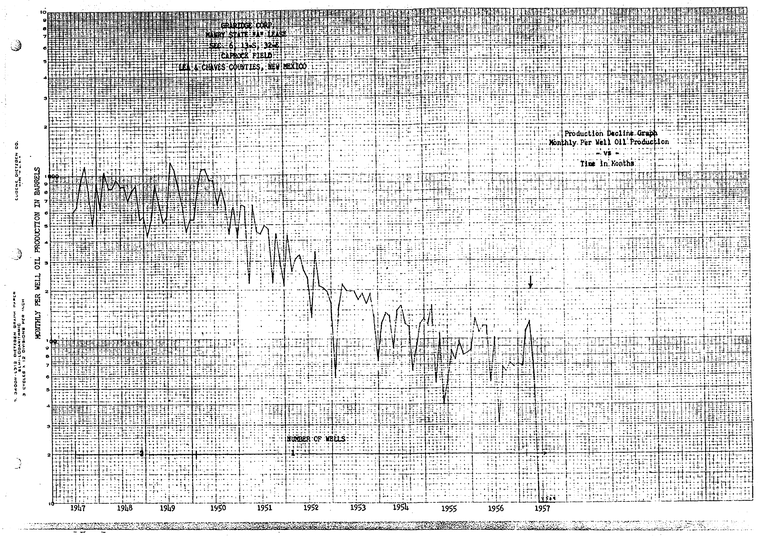
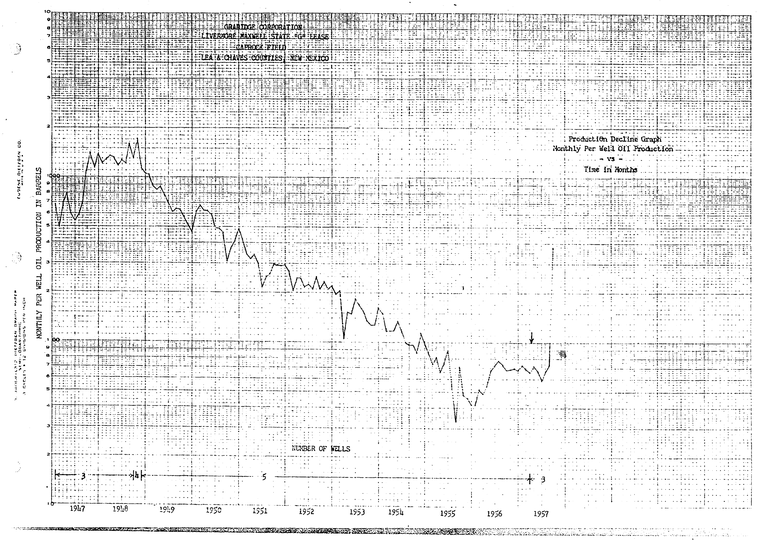
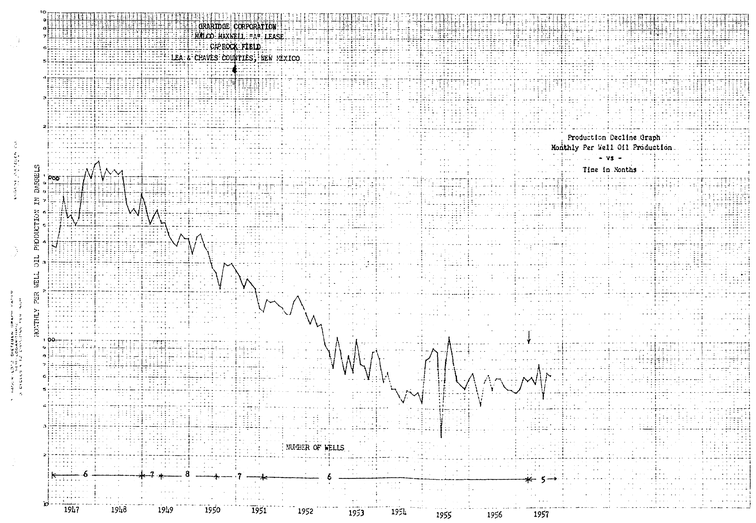
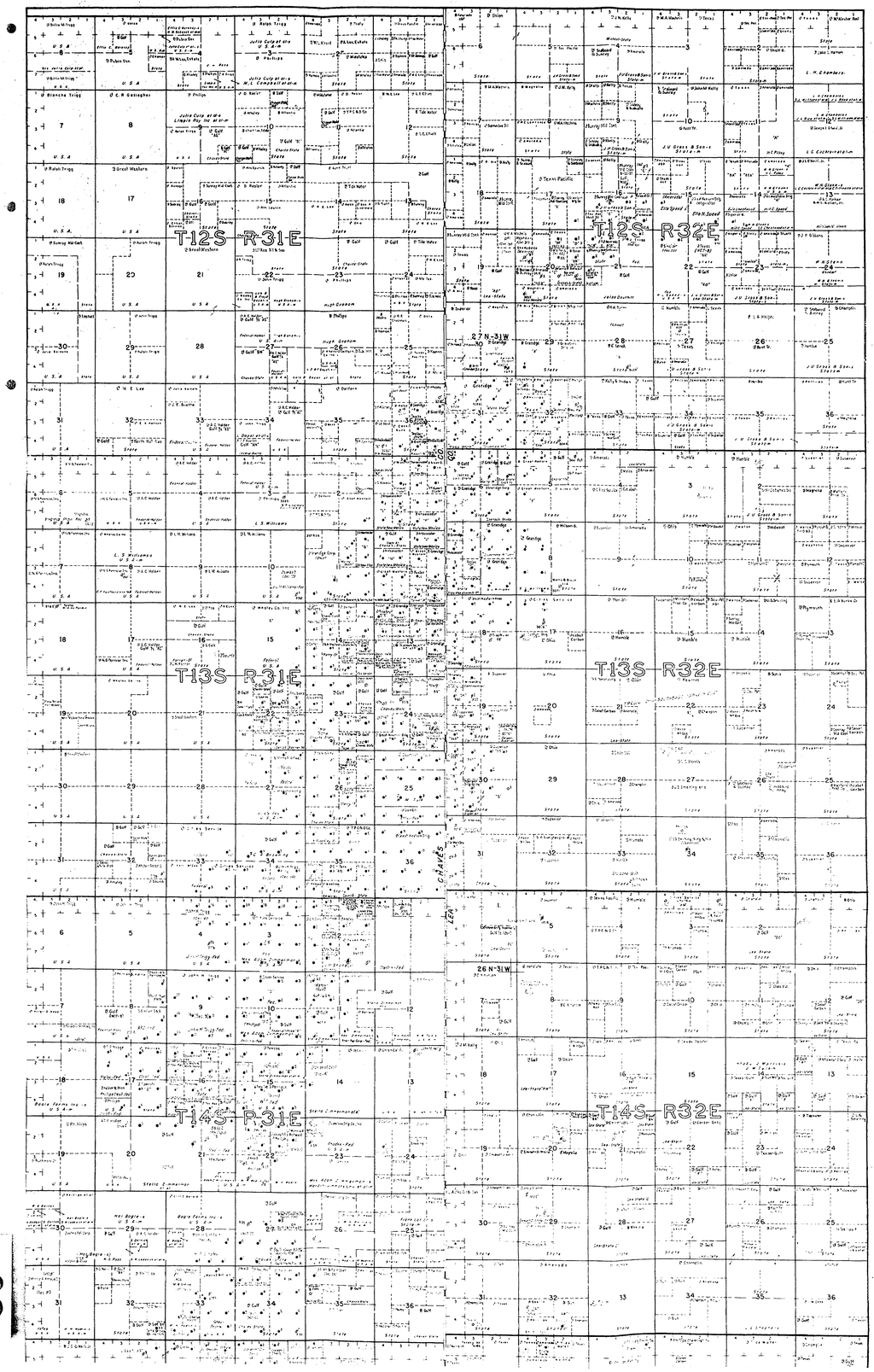

GRANTHOR CORP.
MAXEY STATE NCT LEASE
SEC. 6, T-14S, R-34E
CAPROCK FIELD
LEA & CHAVES COUNTIES, NEW MEXICO
Production Decline Graph
Monthly Per Well Oil Production
- vs -
Time in Months
MONTHLY PER WELL OIL PRODUCTION IN BARRELS
NUMBER OF WELLS
1947
1948
1949
1950
1951
1952
1953
1954
1955
1956
1957

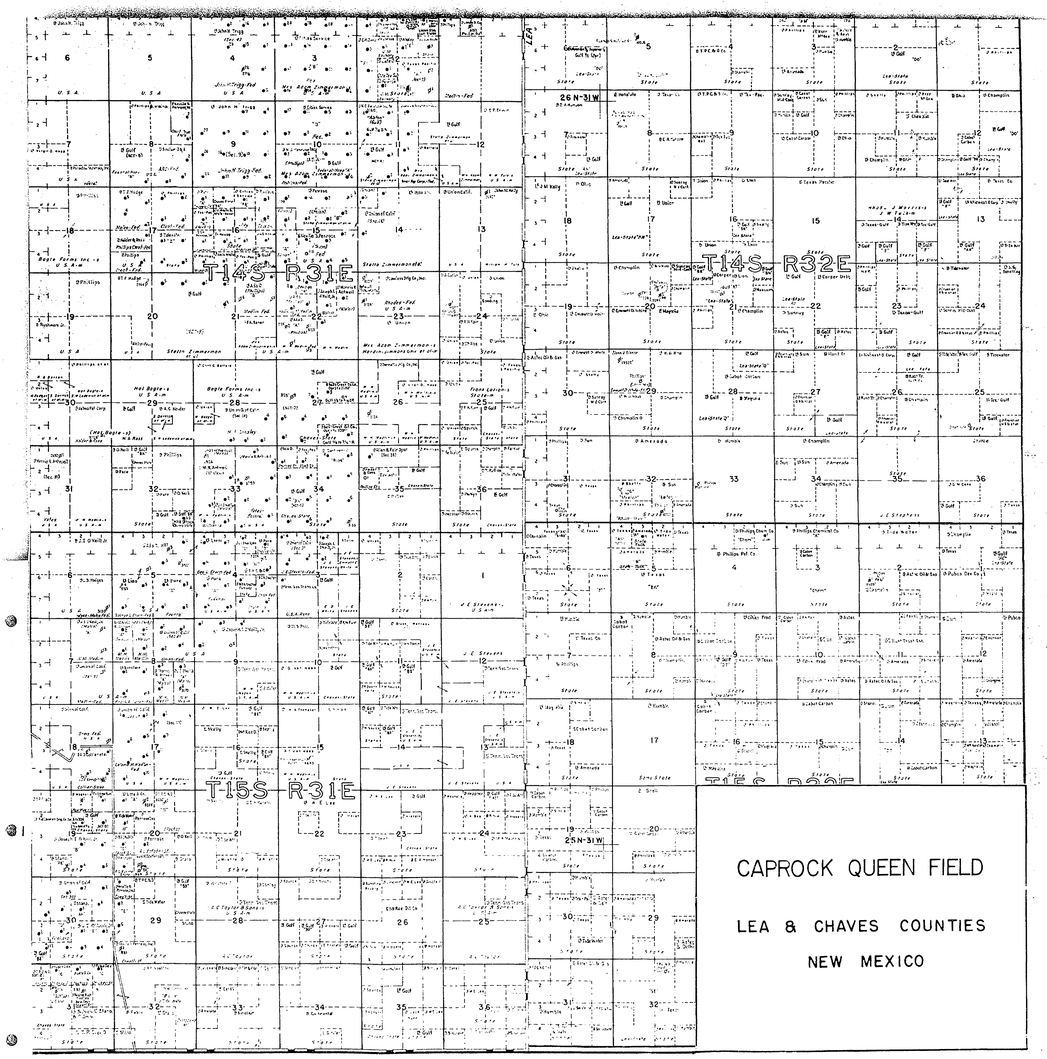

GRANTHOR CORPORATION
LIVESTOCK MAXWELL STATE NCT LEASE
CAPROCK FIELD
LEA & CHAVES COUNTIES, NEW MEXICO
Production Decline Graph
Monthly Per Well Oil Production
- vs -
Time in Months
MONTHLY PER WELL OIL PRODUCTION IN BARRELS
NUMBER OF WELLS
3
4
5
3
1947
1948
1949
1950
1951
1952
1953
1954
1955
1956
1957


GRANTHOR CORPORATION
MILCO MAXWELL NCT LEASE
CAPROCK FIELD
LEA & CHAVES COUNTIES, NEW MEXICO
Production Decline Graph
Monthly Per Well Oil Production
- vs -
Time in Months
MONTHLY PER WELL OIL PRODUCTION IN BARRELS
NUMBER OF WELLS
6
7
8
7
6
5
1947
1948
1949
1950
1951
1952
1953
1954
1955
1956
1957

342


T12S R31E
T12S R32E
T13S R31E
T13S R32E
T14S R31E
T14S R32E
27N-31W
26N-31W
CHAVES

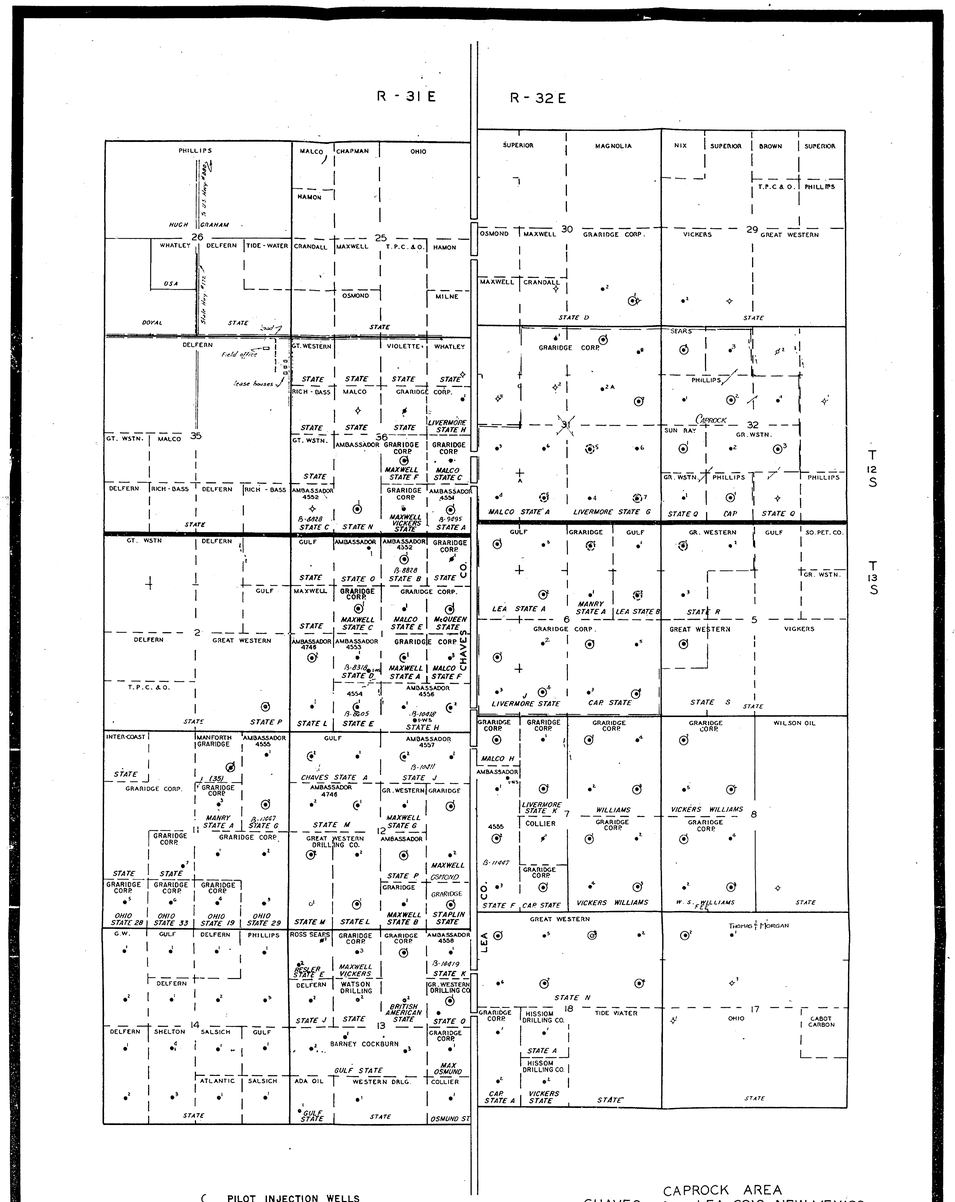
343



CAPROCK QUEEN FIELD

LEA & CHAVES COUNTIES

NEW MEXICO



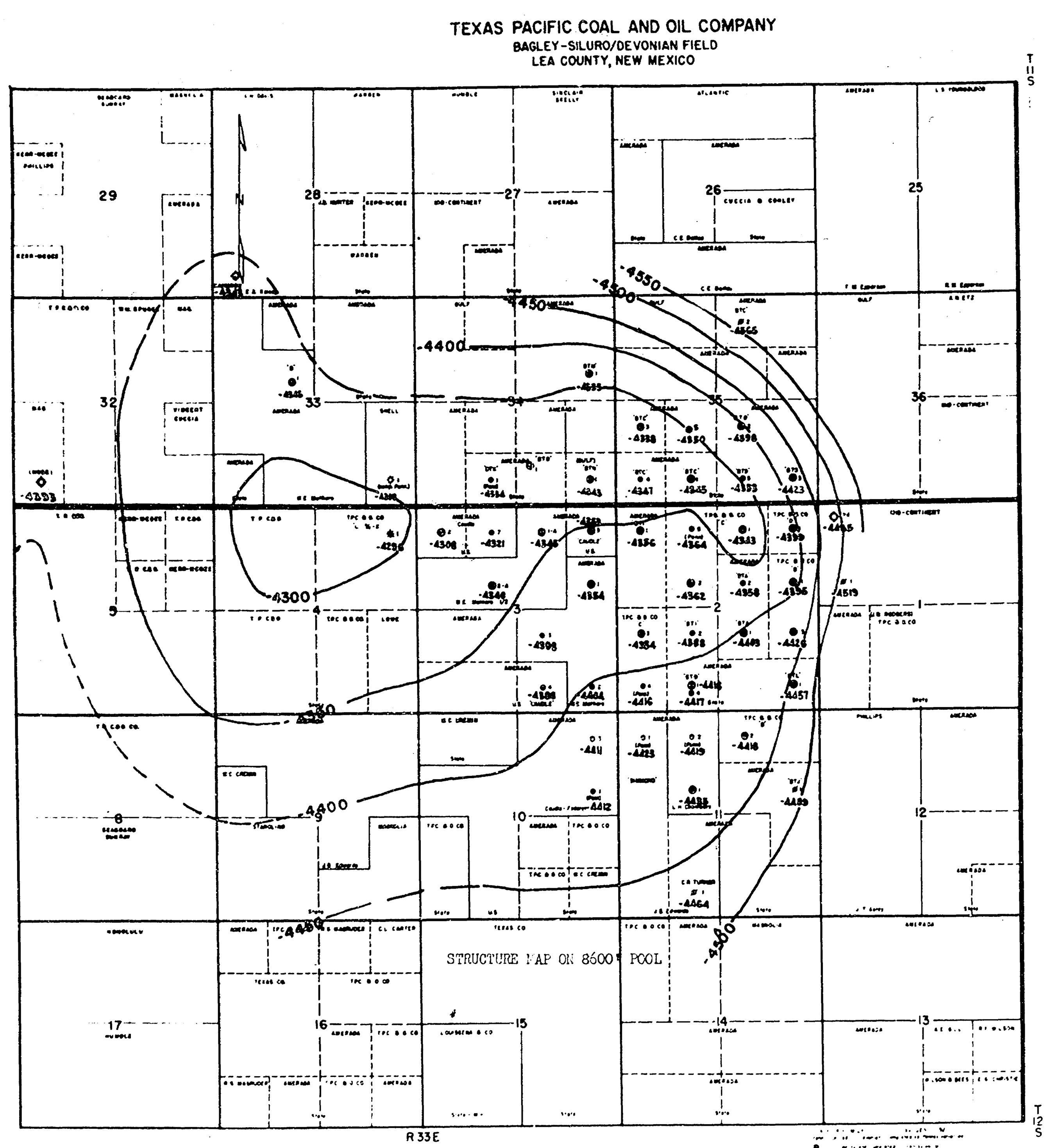
(PILOT INJECTION WELLS
(CURRENT INJECTION WELLS IN FIELD
○ FUTURE INJECTION PATTERN FOR FULL SCALE FLOOD
— — — AREA UNDER STUDY

CAPROCK AREA
CHAVES & LEA CO'S, NEW MEXICO

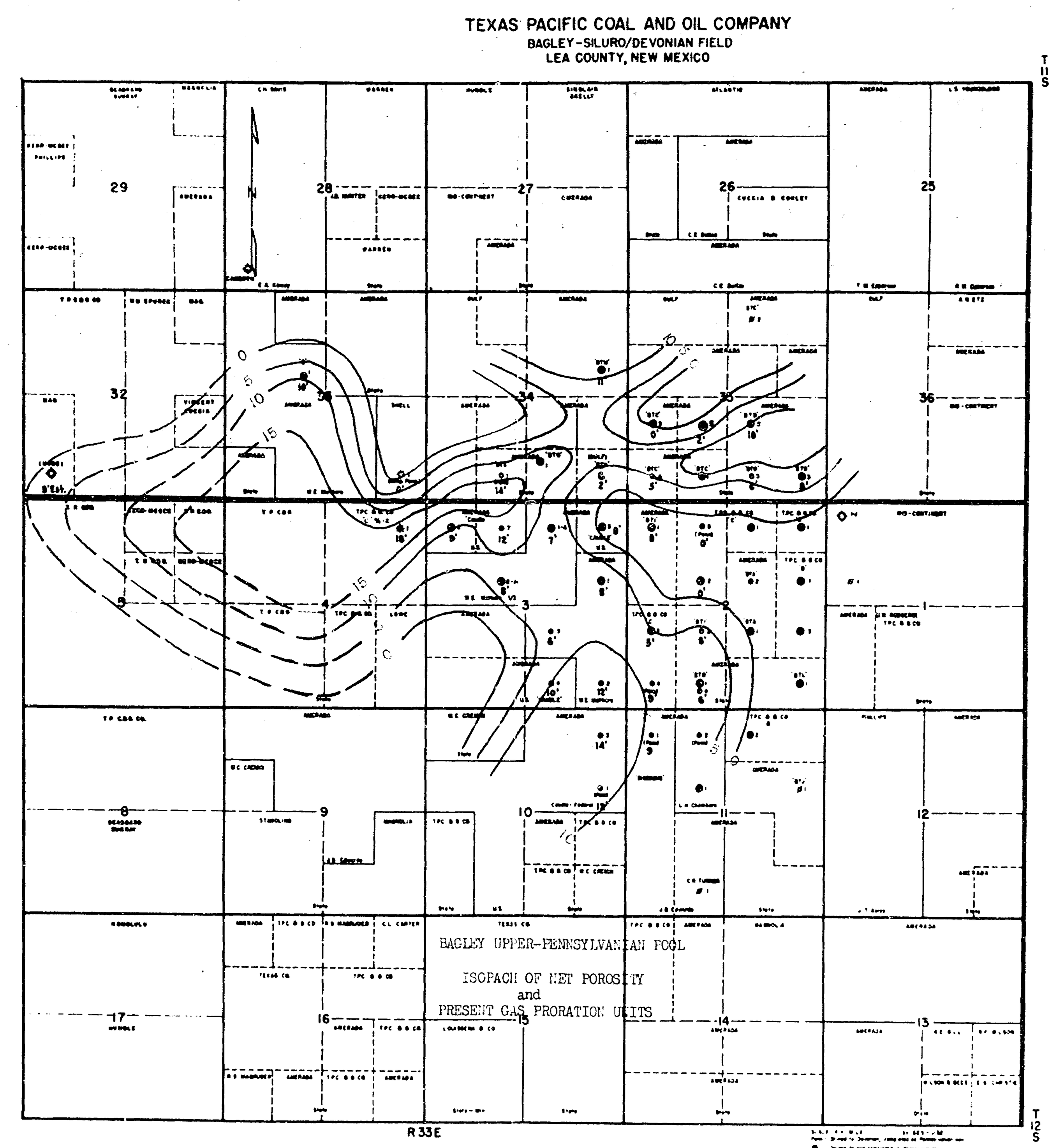
GRARIDGE, GULF, & GREAT WESTERN
PILOT WATERFLOOD

ONE MILE

345



BEFORE THE
OIL CONSERVATION COMMISSION
SANTA FE, NEW MEXICO
TP EXHIBIT No. 1
CASE 1325



BEFORE THE
OIL CONSERVATION COMMISSION
SANTA FE, NEW MEXICO
T&P EXHIBIT No. 2
CASE 1325

346

R 33 E

T 11 S

T 12 S

CONTOURS ON BASE OF
UPPER PENNSYLVANIAN GAS ZONE
CONTOUR INTERVAL 25'

BAGLEY FIELD

LEA COUNTY, NEW MEXICO

SCALE 1"=1000'

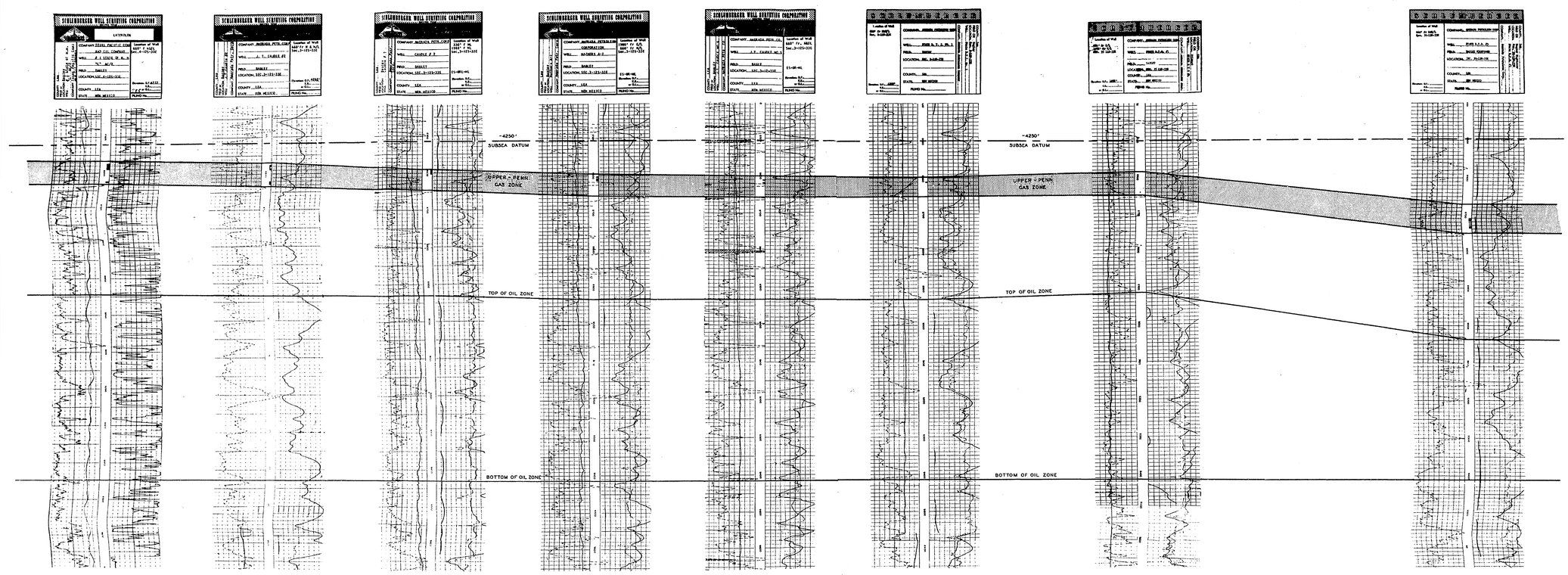
◉ SILURO-DEVONIAN WELL
• PENNSYLVANIAN WELL

BEFORE THE
OIL CONSERVATION COMMISSION
SANTA FE, NEW MEXICO
EXHIBIT NO. 1
CASE 1325

EXHIBIT NO. 1

347

EAST-WEST ELECTRIC LOG CROSS-SECTION BAGLEY FIELD



348

DRILL-STEM TEST DATA
BAGLEY UPPER PENNSYLVANIAN GAS ZONE

Caudle #2	(#2) DST 8565-8717'. 4-hr test. Gas to surface in 4 min, mud and distillate, 8 min. Flowed 41.40 bbls distillate in 4 hours. Gas volume 6,850 Mcf/day. FFP 1575#. BUP 3050#.
Caudle #3	(#1) DST 8665-8722' - Gas to surface in 3 min, oil in 16 min. Flowed 79.96 BO/4 hrs. Gas volume 1,672 Mcf/day. FFP 840#. BUP 2770#.
Caudle #4	(#1) DST 8644-8765'. Gas to surface in 6 min, distillate in 2 hrs 5 min. Flowed 10.61 bbls dist/4 hours. Gas volume 2,543 Mcf/day. FFP 1350#. BUP 2785#.
Caudle #7	(#1) DST 8585-8665' - Gas to surface in 3 min, distillate in 10 min. Flowed 37.62 bbls dist/4 hours. Gas volume 6965 Mcf/day. FFP 1970#. BUP 3060#.
Chambers #2	(#1) DST 8665-8723' - 4-hr test - no show.
Mathers #1	(#2) DST 8610-8675' - gas to surface in 3 min, volume diminished from 71 Mcf/day to 36 Mcf/day at end of 4-hr test. Rec. no oil or water. FFP 100#. BUP 855#.
Mathers #2	(#1) DST 8645-8715'. Gas to surface in 4 min, oil in 35 min. Flowed 89.16 bbls distillate in 4 hrs, gas volume 802 Mcf/day. FFP 1150#.
Mathers #3	(#1) DST 8644-8725', no show - 4-hr test.
Mathers "A" #2	(#1) DST 8615-8670' - gas to surface in 3 min. Distillate in 31 min. Flowed 26.58 bbls dist/4 hrs. Gas volume 3436 Mcf/day. FFP 1100#. BUP 2950#.
Mathers "B" #1	(#1) DST 8580-8690' - gas to surface in 7 min, mud in 40 min, oil in 50 min. Flowed 100.77 bbls oil & trace BS&W in 4 hrs, gravity 46.7 corrected, IFP 555#, FFP 850#, BUP 2145#.
Simmons #1	(#1) DST 8675-8726' - gas to surface in 6 min, volume diminished from 138 Mcf/day to 67 Mcf/day at end of 4-hr test. FFP 0#, BUP 1230#.
State BT "A" #2	(#1) DST 8580-8771', no show in 4-hr test.
State BT "I" #1	(#1) DST 8585-8771', no show in 4-hr test.
State BT "K" #1	(#1) DST 8586-8672' - gas to surface in 3 min, distillate in 6 min. Flowed 35.92 bbls dist/4 hrs, gas volume 5420 Mcf/day. FFP 1630#, BUP 2970#.

BEFORE THE
OIL CONSERVATION COMMISSION
SANTA FE, NEW MEXICO
Amerada EXHIBIT No. 3
CASE 1325

EXHIBIT NO. 3

PRODUCTION HISTORY
W. E. MATHERS NO. 2
BAGLEY PENNSYLVANIAN FIELD

MONTH	1951 GAS MCF	1951 OIL BBLS	MONTH	1952 GAS MCF	1952 OIL BBLS
			Jan.	47,731	1,147
			Feb.	39,040	1,131
			March	41,349	992
April	5,423	4,353	April	37,965	958
May	31,134	3,344	May	24,110	307
June	15,987	1,909	June	31,406	852
July	13,688	1,414	July	36,267	732
Aug.	13,822	938	Aug.	38,146	961
Sept.	12,154	937	Sept.	20,041	545
Oct.	8,103	992	Oct.	41,817	561
Nov.	6,160	487	Nov.	15,550	286
Dec.	11,915	1,663	Dec.	30,273	558
	118,386	16,037		403,695	9,030

MONTH	1953 GAS MCF	1953 OIL BBLS	MONTH	1954 GAS MCF	1954 OIL BBLS
Jan.	26,722	558	Jan.	18,264	527
Feb.	26,858	504	Feb.	9,838	476
March	37,910	558	March	13,422	527
April	24,908	540	April	16,823	510
May	26,388	558	May	10,428	527
June	30,164	540	June	8,709	510
July	29,788	558	July	16,204	527
Aug.	19,183	558	Aug.	17,289	527
Sept.	20,609	540	Sept.	11,350	480
Oct.	29,175	558	Oct.	21,924	496
Nov.	9,198	510	Nov.	28,948	482
Dec.	15,022	527	Dec.	28,502	535
	295,925	6,509		201,701	6,124

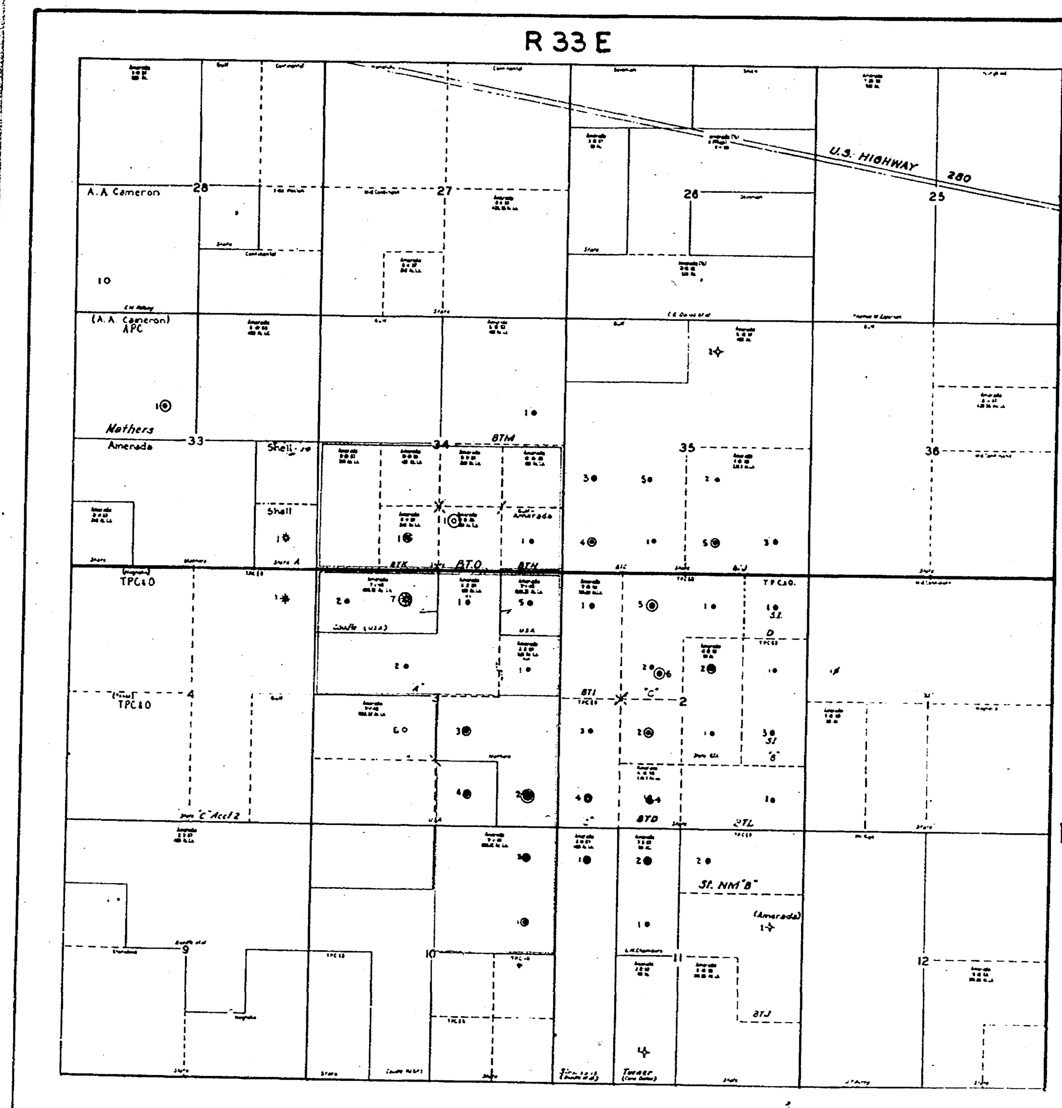
MONTH	1955 GAS MCF	1955 OIL BBLS	MONTH	1956 GAS MCF	1956 OIL BBLS
Jan.	28,072	539	Jan.	14,134	437
Feb.	15,480	490	Feb.	11,799	408
March	8,291	537	March	9,839	438
April	11,077	515	April	8,554	418
May	8,633	531	May	8,259	405
June	10,839	512	June	6,890	392
July	9,377	436	July	7,903	400
Aug.	9,291	432	Aug.	10,392	407
Sept.	8,624	423	Sept.	12,541	385
Oct.	11,101	400	Oct.	11,372	377
Nov.	12,582	461	Nov.	13,333	355
Dec.	13,743	494	Dec.	10,971	360
	147,110	5,770		125,987	4,782

MONTH	1957 GAS MCF	1957 OIL BBLS
Jan.	10,922	400
Feb.	9,461	365
March	13,181	402
April	11,177	396
May	18,330	408
June	15,440	348
July	17,823	372
Aug.	17,770	376
	114,104	3,067

Cumulative Gas - 1,406,908 Mcf
Cumulative Oil - 51,319 Bbls

BEFORE THE
OIL CONSERVATION COMMISSION
SANTA FE, NEW MEXICO
Amerada EXHIBIT No. 4
CASE 1325

EXHIBIT NO. 4



EXHIBIT

BEFORE THE
OIL CONSERVATION COMMISSION
SANTA FE, NEW MEXICO
Amerada EXHIBIT No. 5
CASE 1325

⦿ PENNSYLVANIAN WELLS
• DEVONIAN WELLS

BAGLEY FIELD
LEA COUNTY, NEW MEXICO
SCALE 1" = 2000 FEET

Amerada exhibit # 5

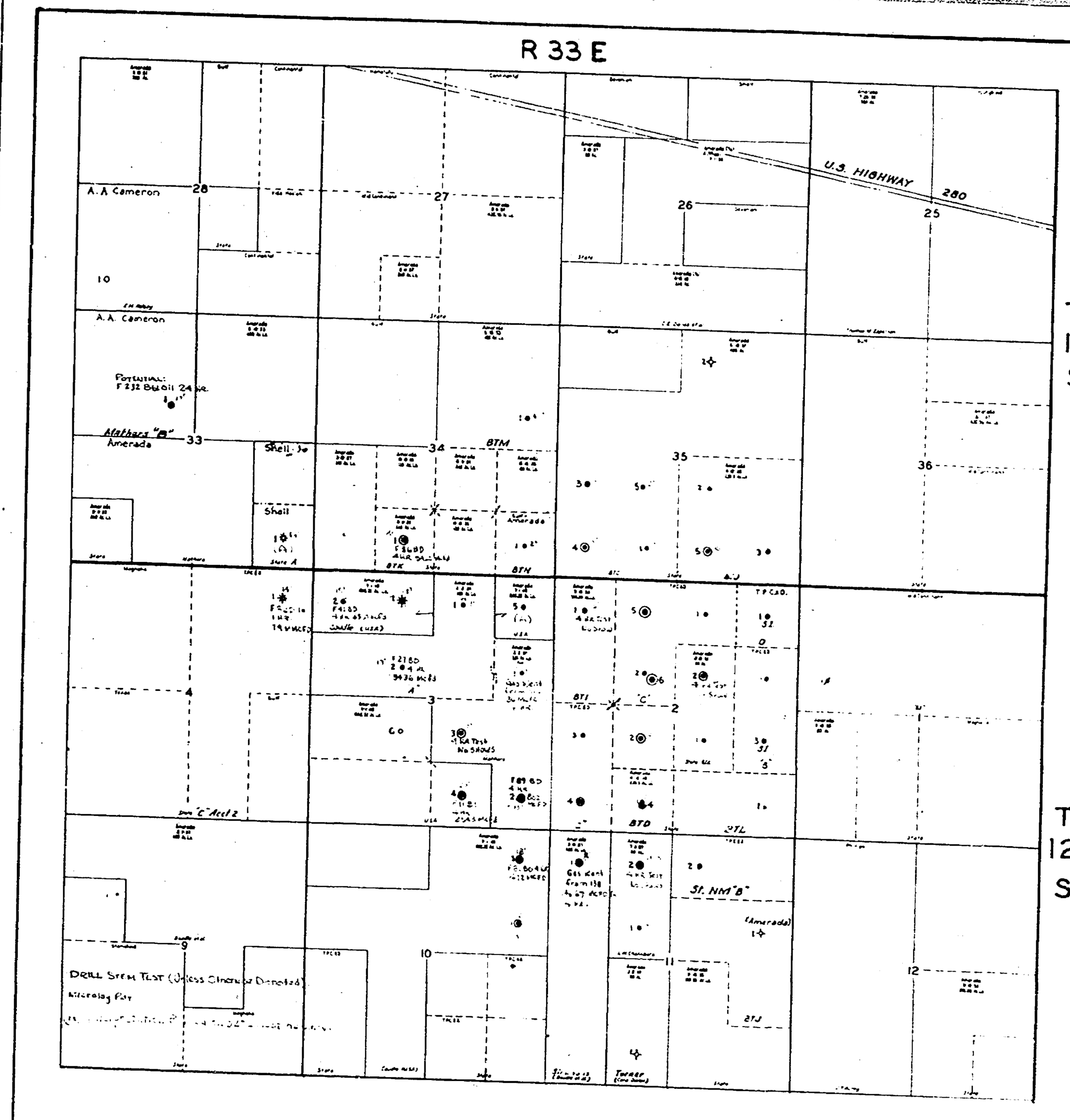


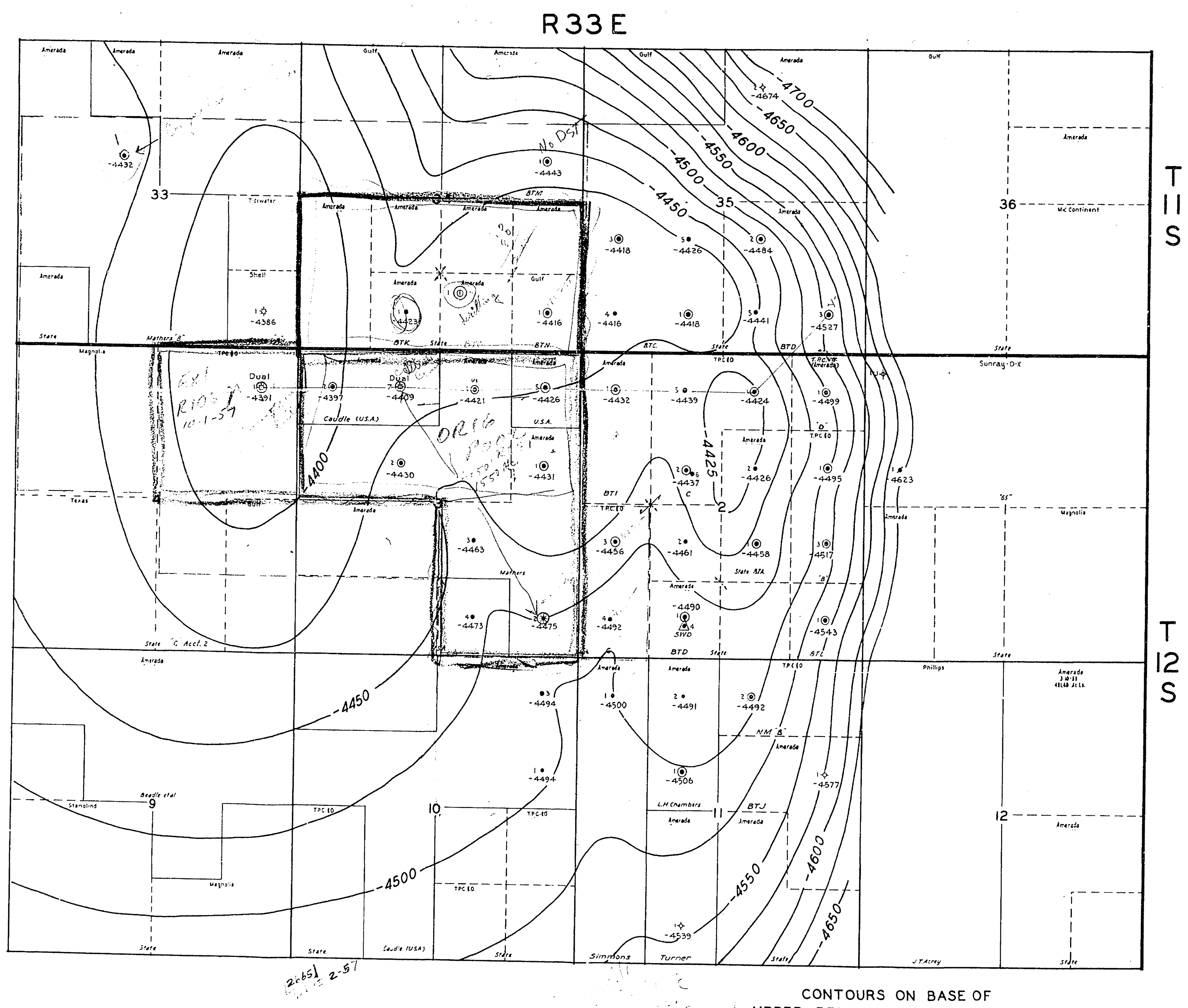
EXHIBIT A

BEFORE THE
OIL CONSERVATION COMMISSION
SANTA FE, NEW MEXICO
Amerada EXHIBIT No. 6
CASE 1325

⦿ PENNSYLVANIAN WELLS
• DEVONIAN WELLS

BAGLEY FIELD
LEA COUNTY, NEW MEXICO
SCALE 1" = 2000 FEET

349

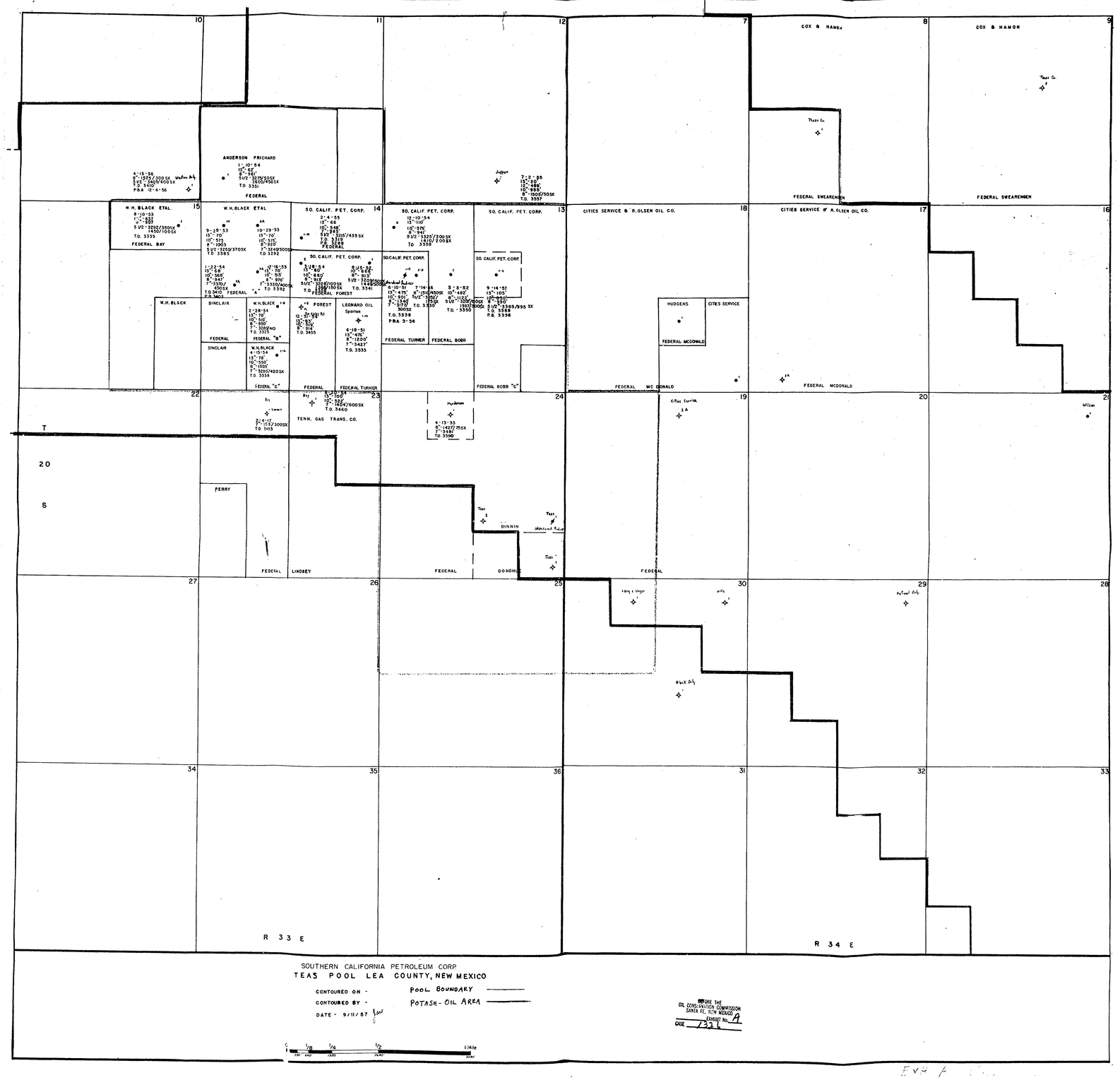


CONTOURS ON BASE OF
UPPER PENNSYLVANIAN GAS ZONE
CONTOUR INTERVAL 25'

BAGLEY FIELD
LEA COUNTY, NEW MEXICO
SCALE 1" : 1000'

⦿ SILURO-DEVONIAN WELL
• PENNSYLVANIAN WELL

EXHIBIT NO. 1



SOUTHERN CALIFORNIA PETROLEUM CORP
TEAS POOL LEA COUNTY, NEW MEXICO

CONTOURED ON -
CONTOURED BY -
DATE - 9/11/57 Jam

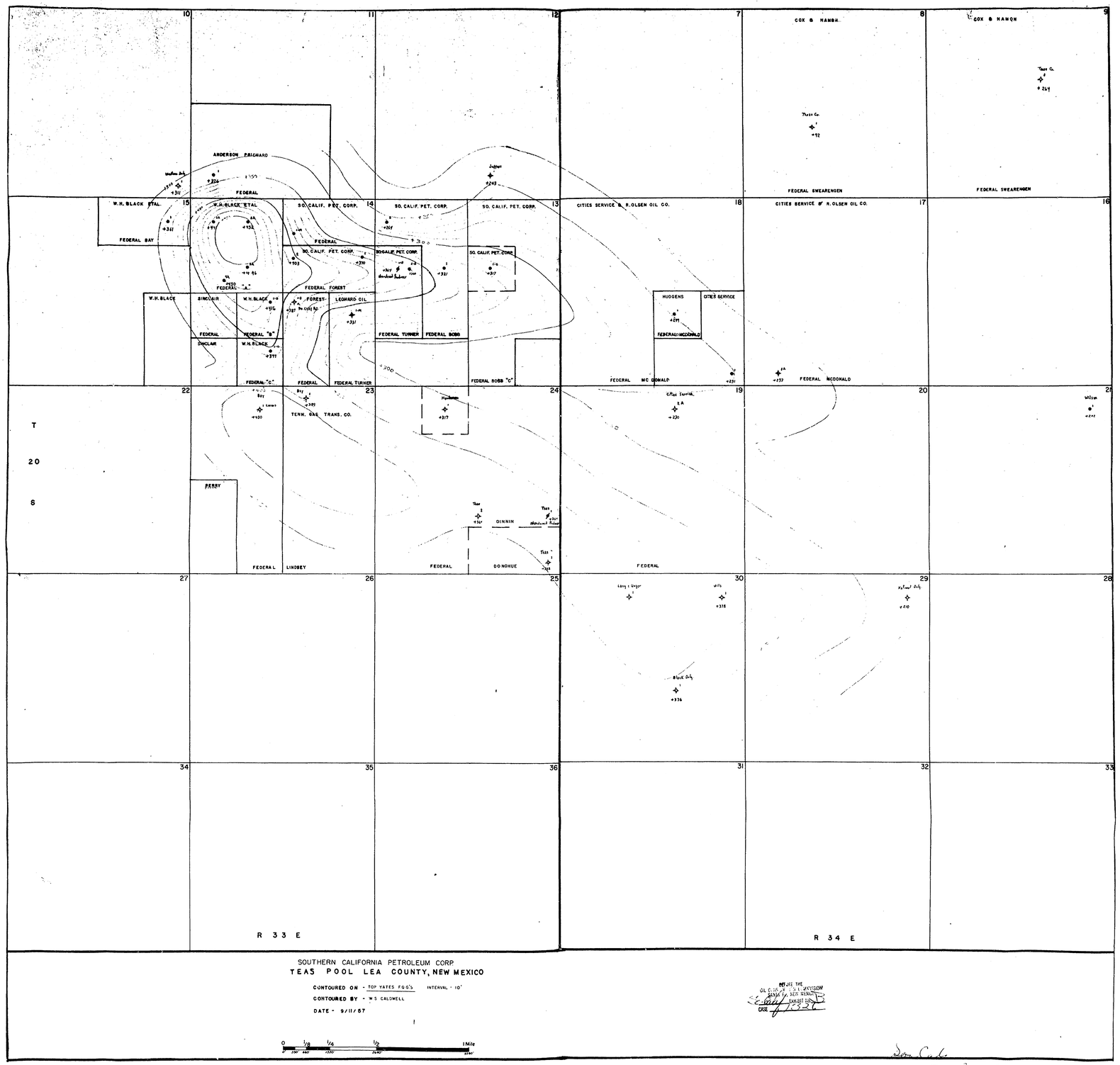
Pool Boundary ——
Potash-Oil Area ——

0 1/8 1/4 1/2 1 Mile
330' 660' 1320' 2640' 5280'

BEFORE THE
OIL CONSERVATION COMMISSION
SANTA FE, NEW MEXICO
EXHIBIT No. 4
CASE 1334

350

EX 4



SOUTHERN CALIFORNIA PETROLEUM CORP

TEAS POOL LEA COUNTY, NEW MEXICO

CONTOURED ON - TOP YATES FOG'S INTERVAL - 10'

CONTOURED BY - W.S. CALDWELL

DATE - 9/11/57

0 1/8 1/4 1/2 1 Mile

0' 330' 660' 1320' 2640' 5280'

BEFORE THE OIL CONS. COM. OF THE STATE OF NEW MEXICO SANTA FE, NEW MEXICO EXHIBIT NO. 5 CASE 1326

351

STATE NEW MEXICO ELEV. 3600

COUNTY LEA

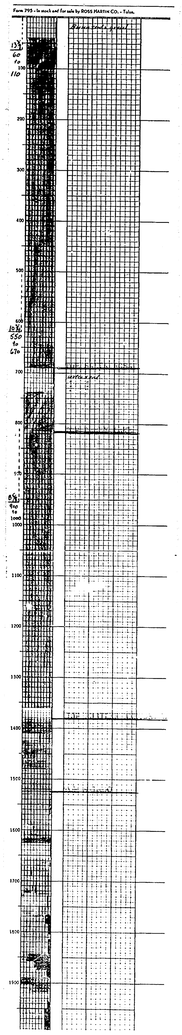
COMPANY

FARM WELL NO.

LOCATION TYPICAL COMPOSITE LOG

TD 3410 ft. TOOLS CABLE

Form 795 - In stock and for sale by Ross Mattox Co. - Tulsa.



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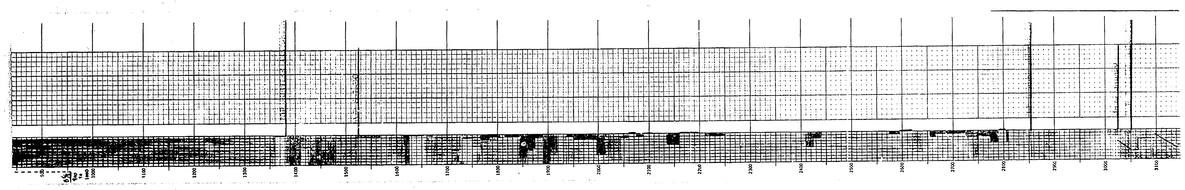

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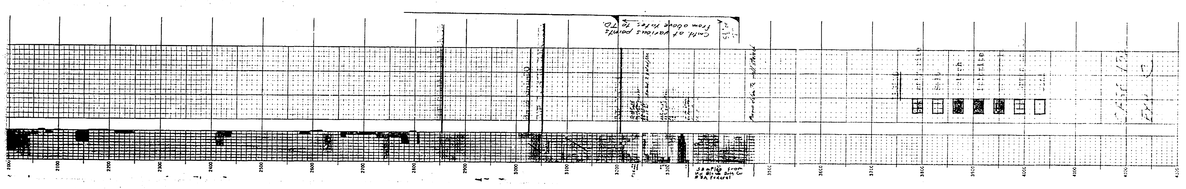
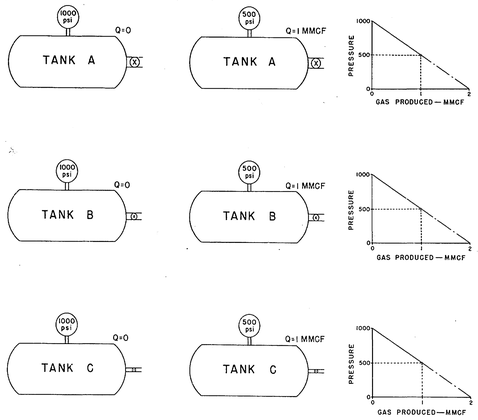
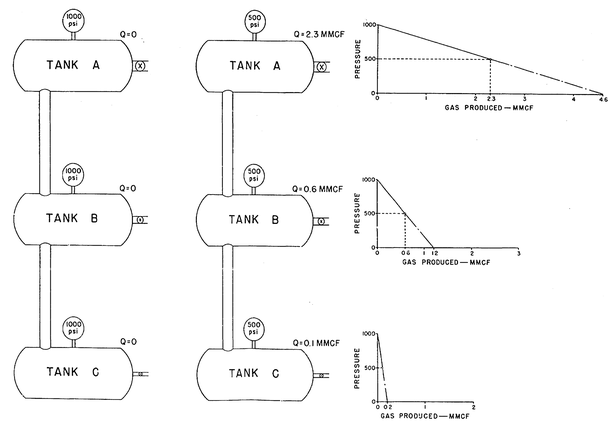


EXHIBIT SHOWING LIMITATIONS OF THE MATERIAL BALANCE EQUATION

CASE 1



CASE 2



OPERATORS EXHIBT NO. 1

355

BEFORE THE
OIL CONSERVATION COMMISSION
SANTA FE, NEW MEXICO
EXHIBIT No. 1
CASE 1330

R 5 W R 4 W

			SUG 2-H PC	SUG 5-E PC	SUG
14	13	18	17	16 1-E PC	15 2-E PC
EPN			SUG 1-N		SUG 4-E PC
23 1-G PC	24	19	20	21	22
		NWP 8-30 PC	NWP 7-29		SUG 1-F WV
26	25	30 9-30 PC 14-30 PC	29 4-29 PC 2-29 MV RD	28	27
SUG		NWP 10-31 PC	NWP 11-32 PC		
35 2-J PC	36	31 15-31 PC	32 13-32 PC	33	34
SUG 4-K PC	SUG	NWP	NWP		
2	1 3-K PC	6 6-6 PC	5	4	3
SUG 2-K PC	SUG	NWP 1-7 PC	NWP		
11 6-K PC	12	7 3-7 PC 12-7 PC	8 5-8 PC	9	10
PAN AM. 4 PC	PAN AM. 6 PC	EPN			EPN
14 2 PC	13 5 PC	18 3-E PC 4-E PC	17	16	15 2-G PC

T 26 N

T 25 N

NORTHWEST PRODUCTION CORPORATION
ALBUQUERQUE, NEW MEXICO

PROPOSED EXTENSION TO SOUTH BLANCO
PICTURED CLIFFS GAS POOL
RIO ARRIBA COUNTY, NEW MEXICO

South Blanco Pictured Cliffs Gas Pool

Proposed Extension of South Blanco Pool

Tapacito Pictured Cliffs Gas Pool

356

Case 1331

R 3 W

R 2 W

T 27 N

T 26 N

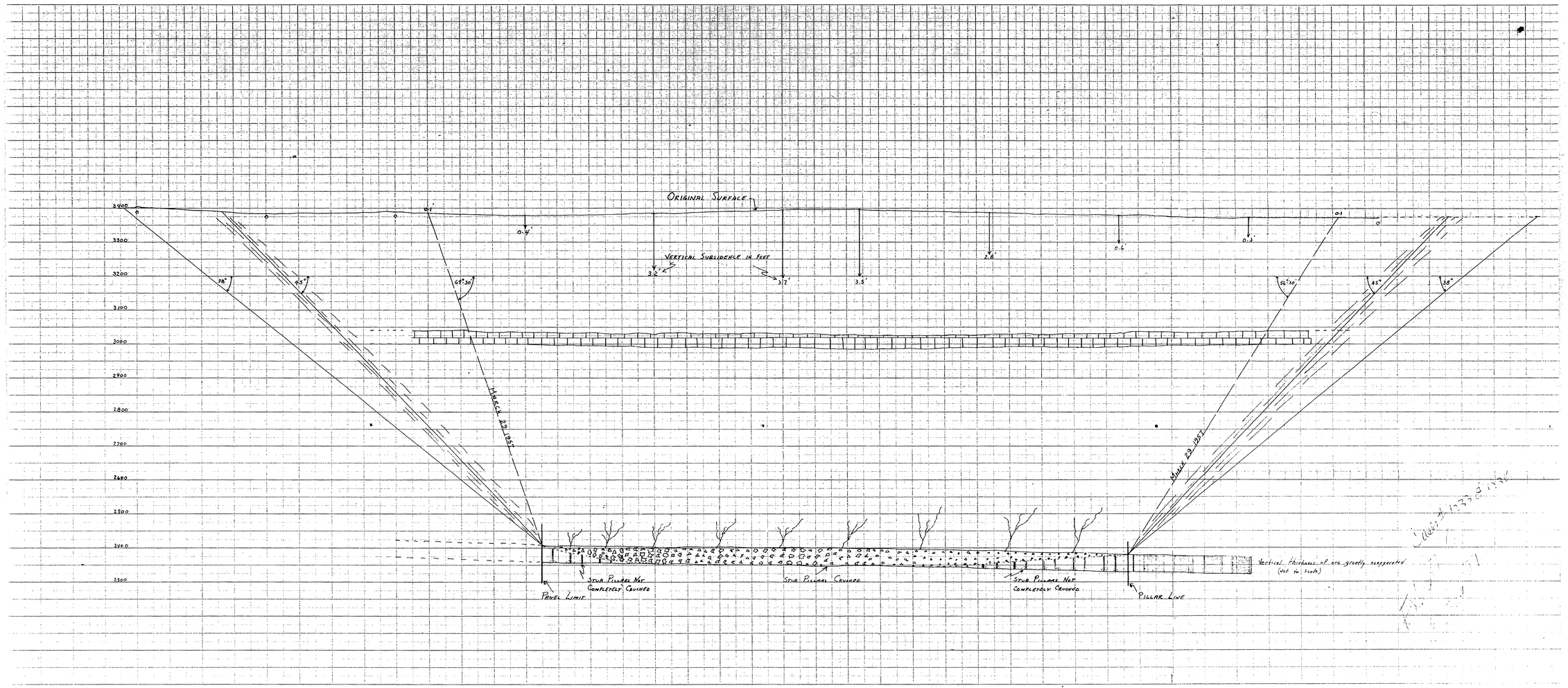
BLANCO MESAVERDE GAS POOL BOUNDARY

SCALE 3" = 1 MI.
3-12-57

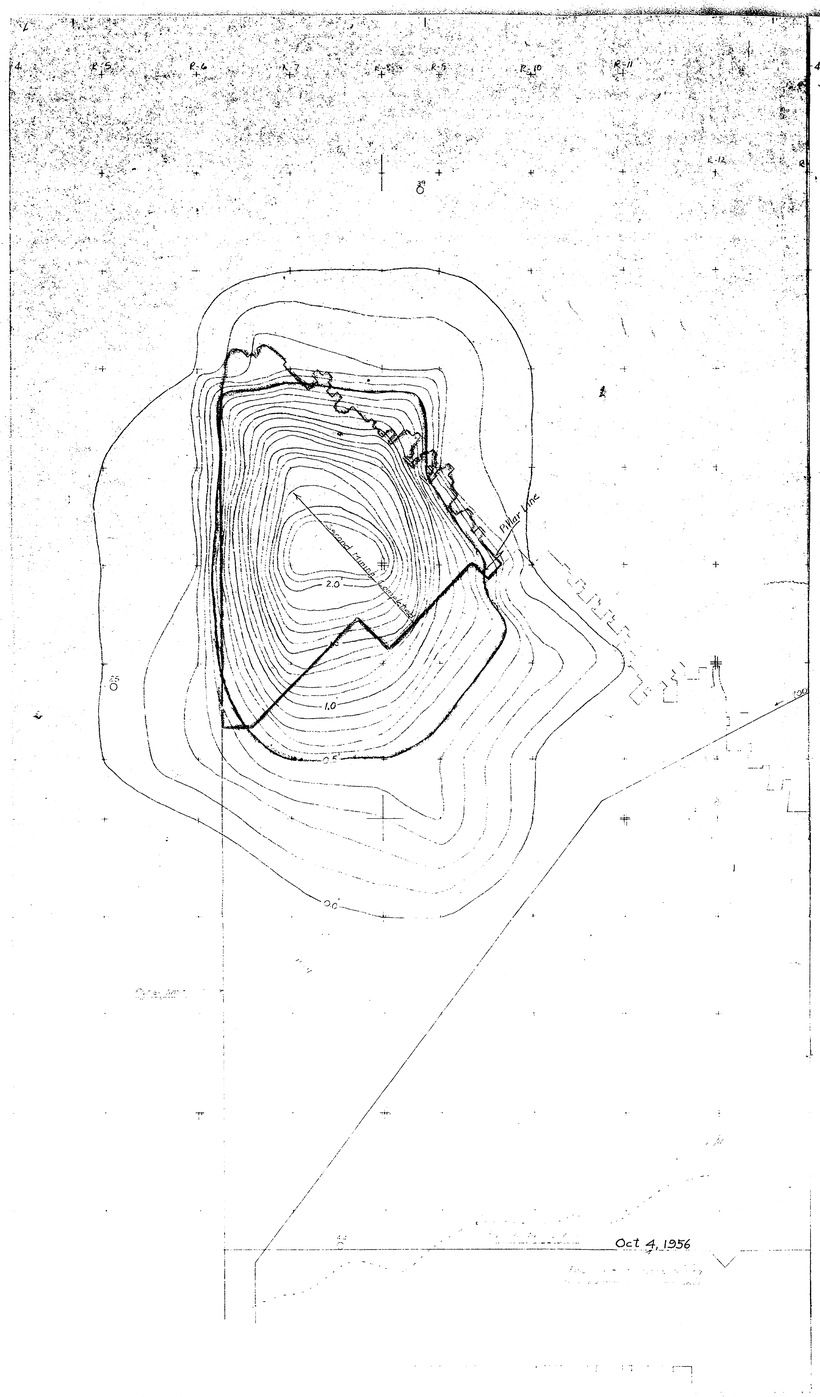
BEFORE THE OIL CONSERVATION COMMISSION SANTA FE, NEW MEXICO Exhibit No. 3 Case

OIL CONSERVATION COMMISSION SANTA FE, NEW MEXICO EXHIBIT No. 3

357


ORIGINAL SURFACE
VERTICAL SUBSIDENCE IN FEET
3.2'
3.7'
3.5'
2.8'
0.4'
0.3'
0.4
0.1
0
3400
3300
3200
3100
3000
2900
2800
2700
2600
2500
2400
2300
78°
85°
69°30'
76°30'
85°
78°
MARCH 29 1952
MARCH 29 1952
STUB PILLARS NOT COMPLETELY CRUSHED
STUB PILLARS CRUSHED
STUB PILLARS NOT COMPLETELY CRUSHED
PANEL LIMIT
PILLAR LINE
Vertical Thickness of ore greatly exaggerated (not to scale)

358


R-5
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R-8
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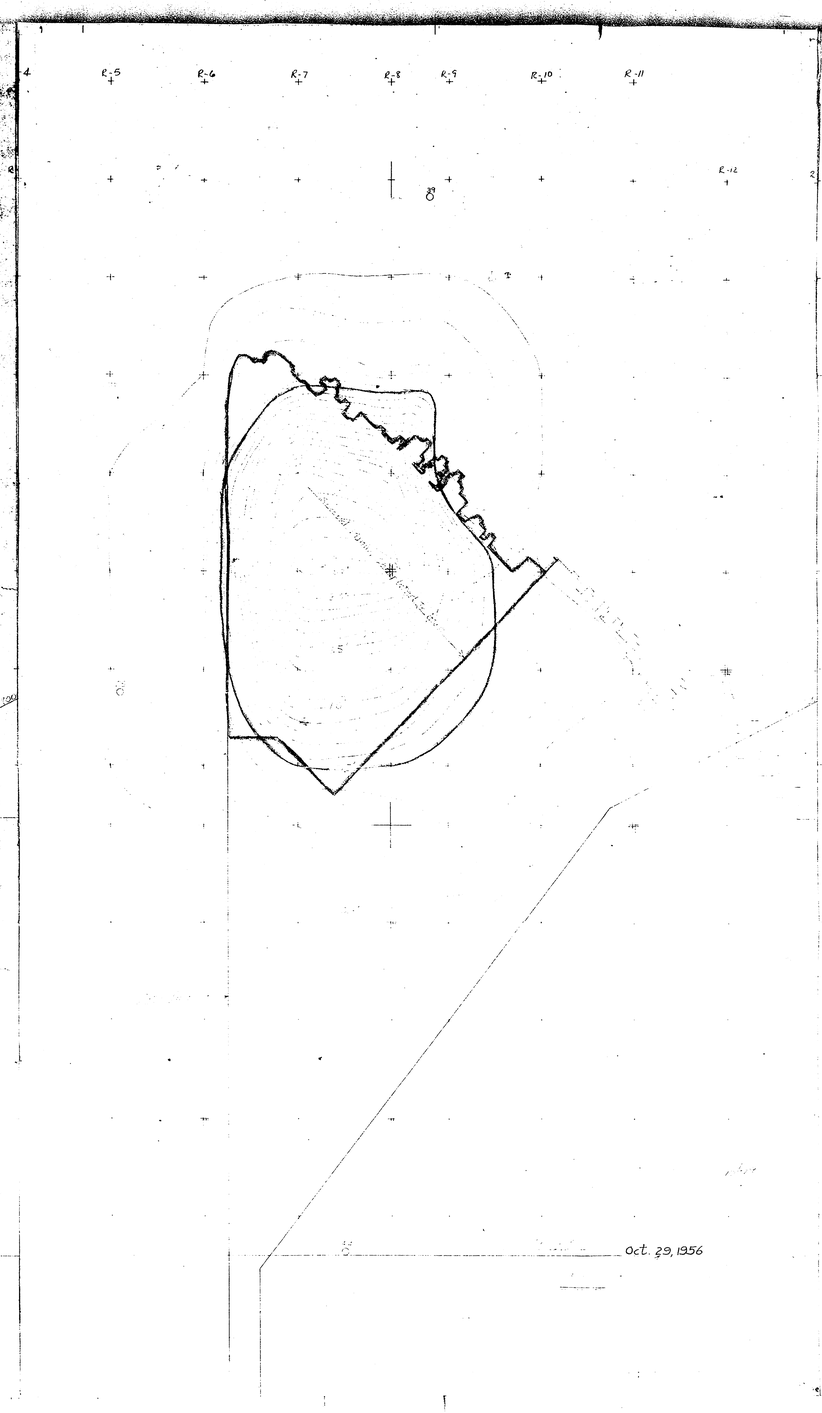
R-10
R-11
R-12
8
Property Line
2.0
1.0
0.5
Oct 4, 1956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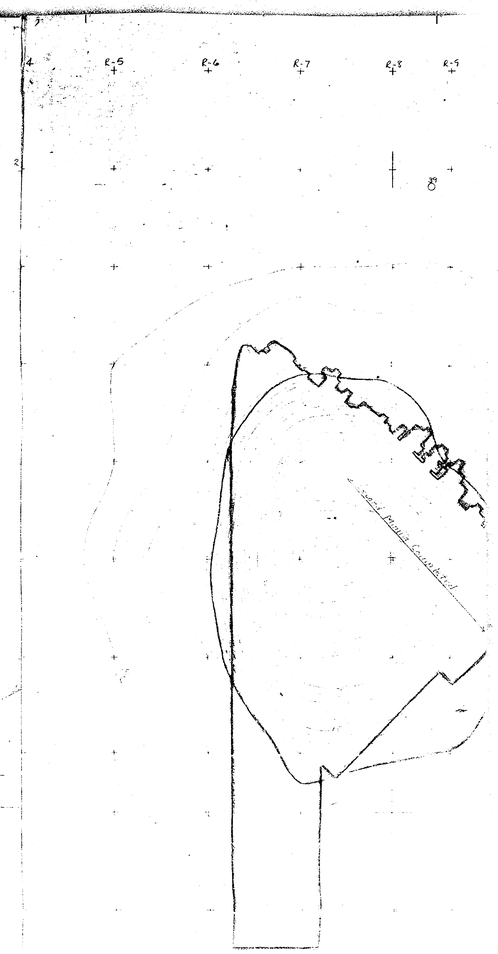
Oct. 29, 1956


R-5
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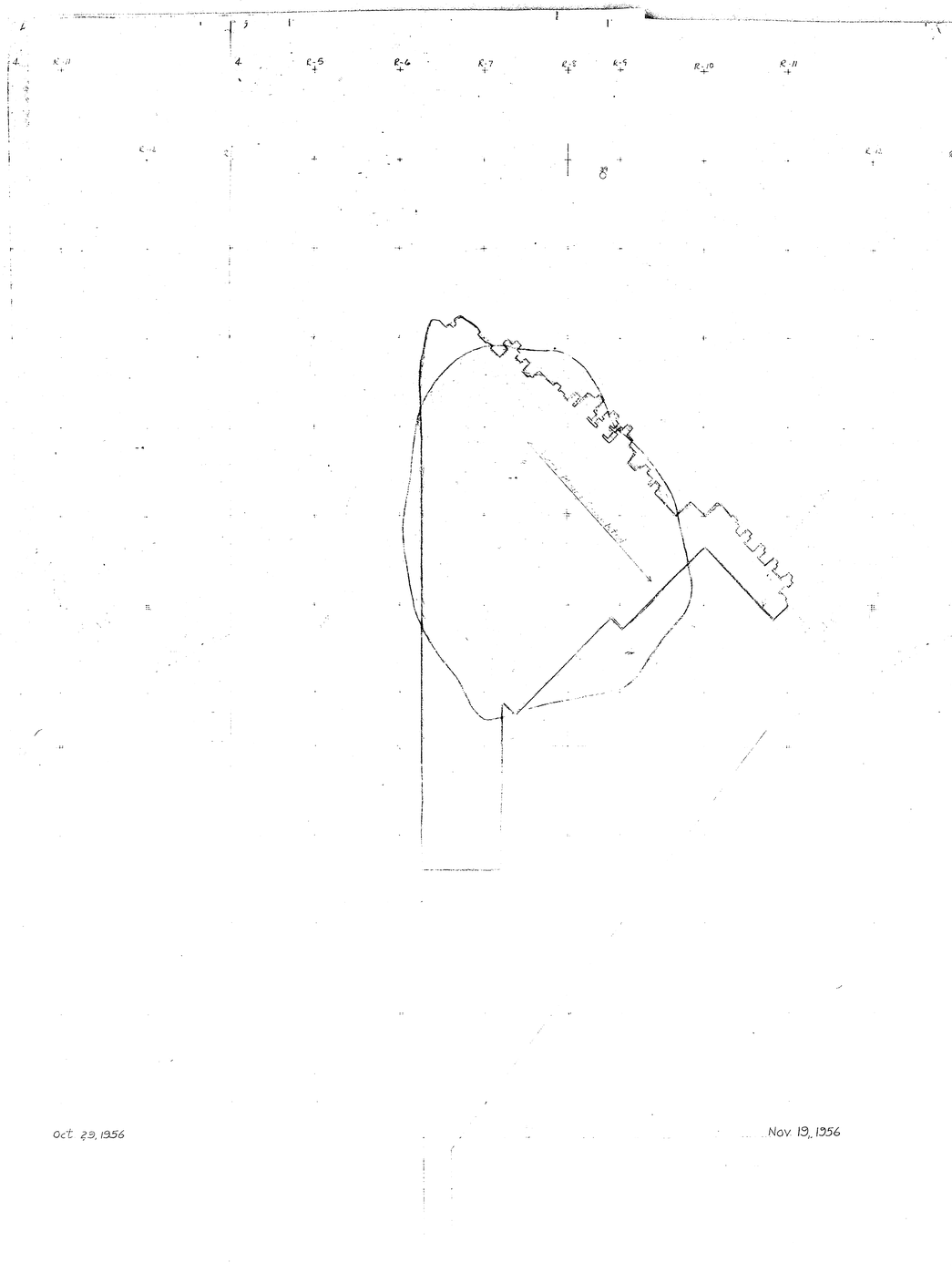
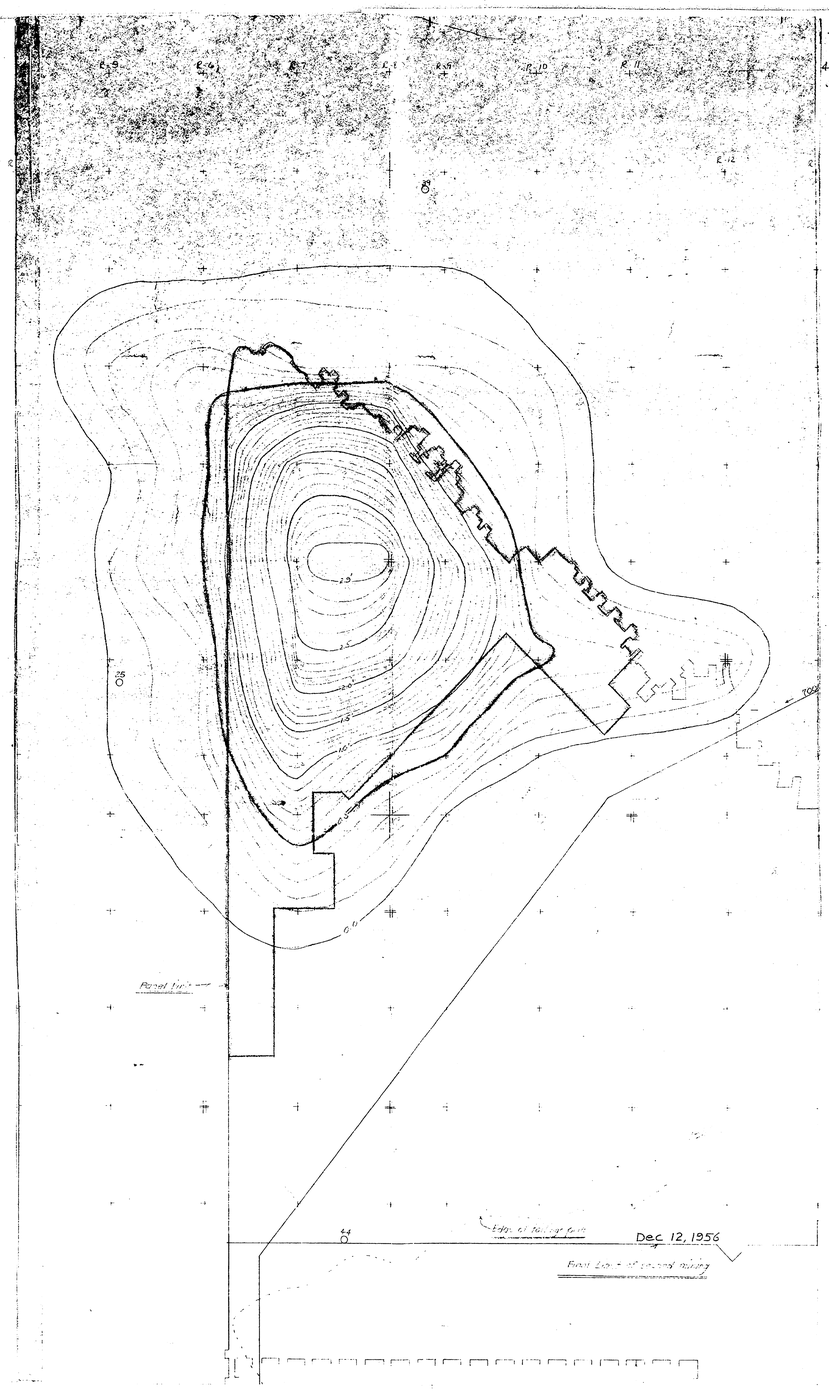
8

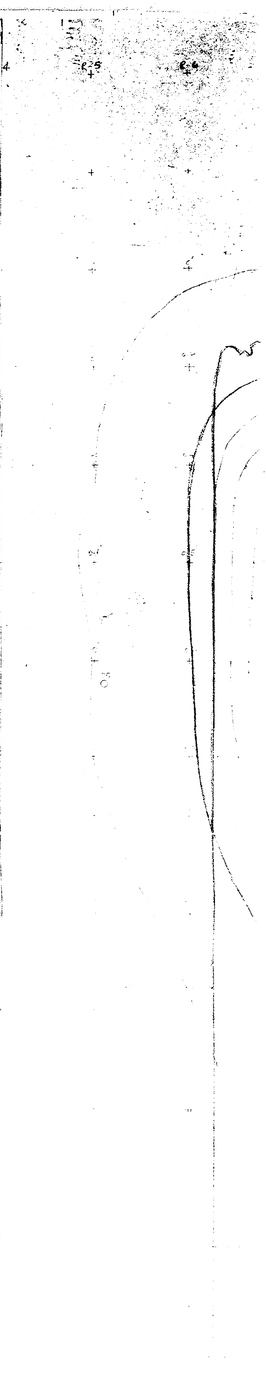
359



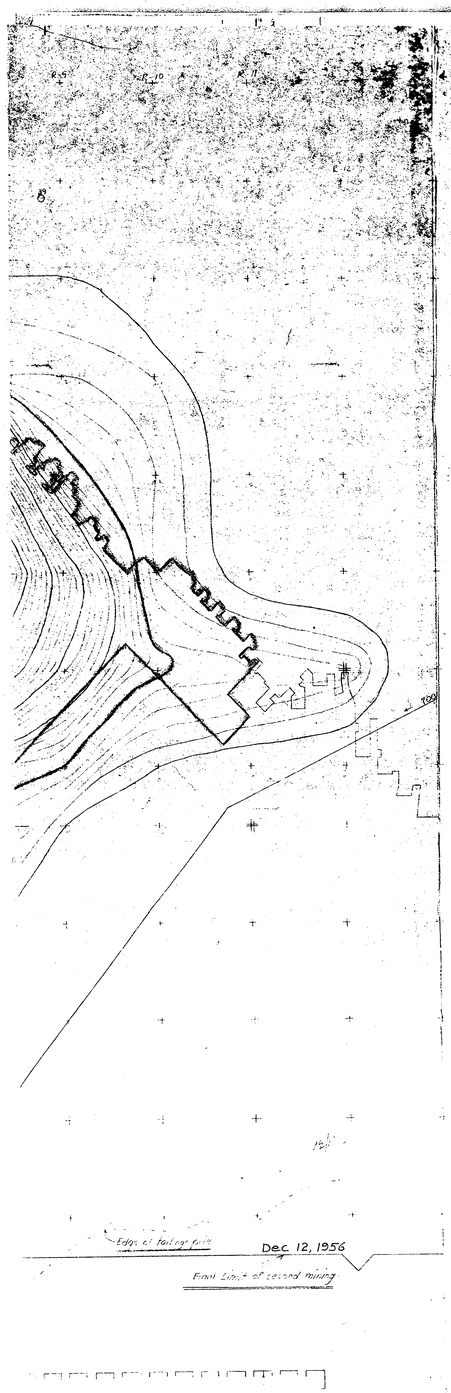
Oct 29, 1956

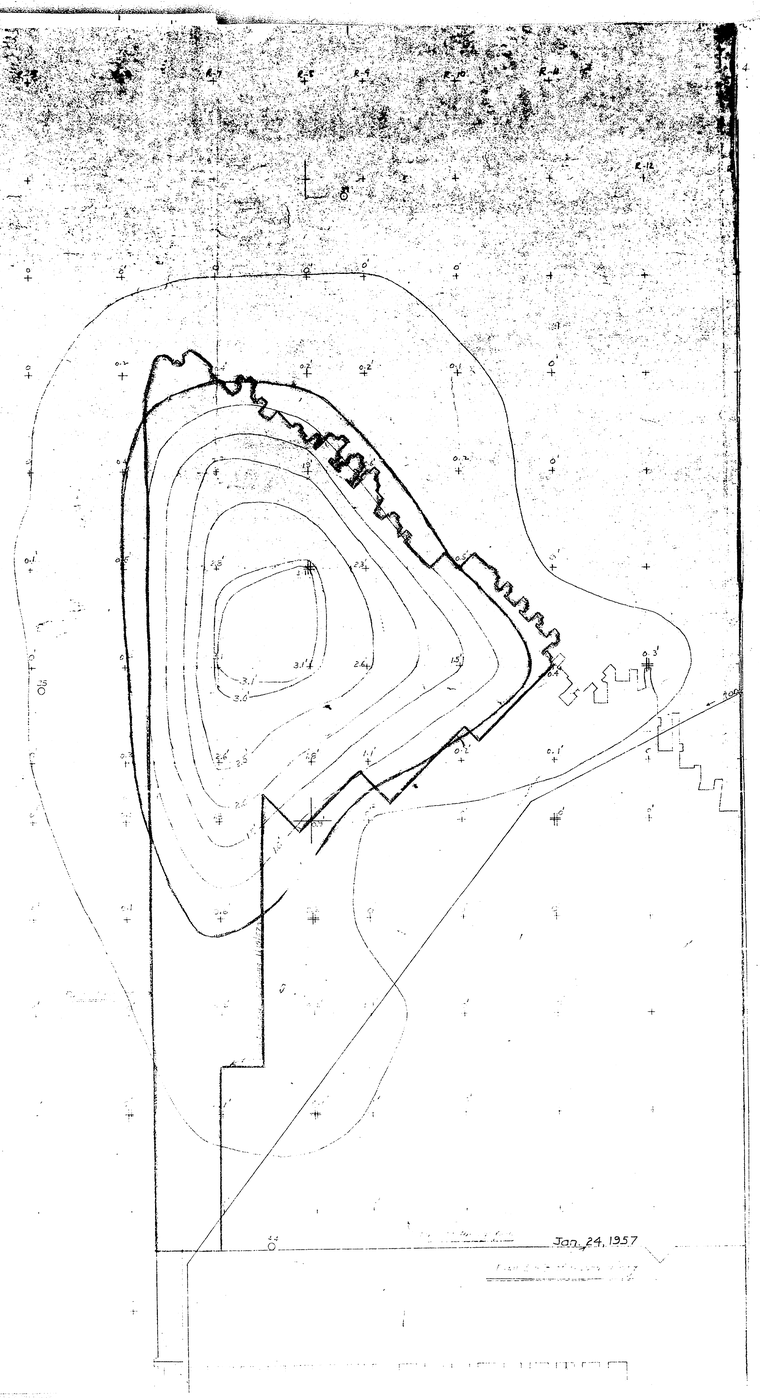


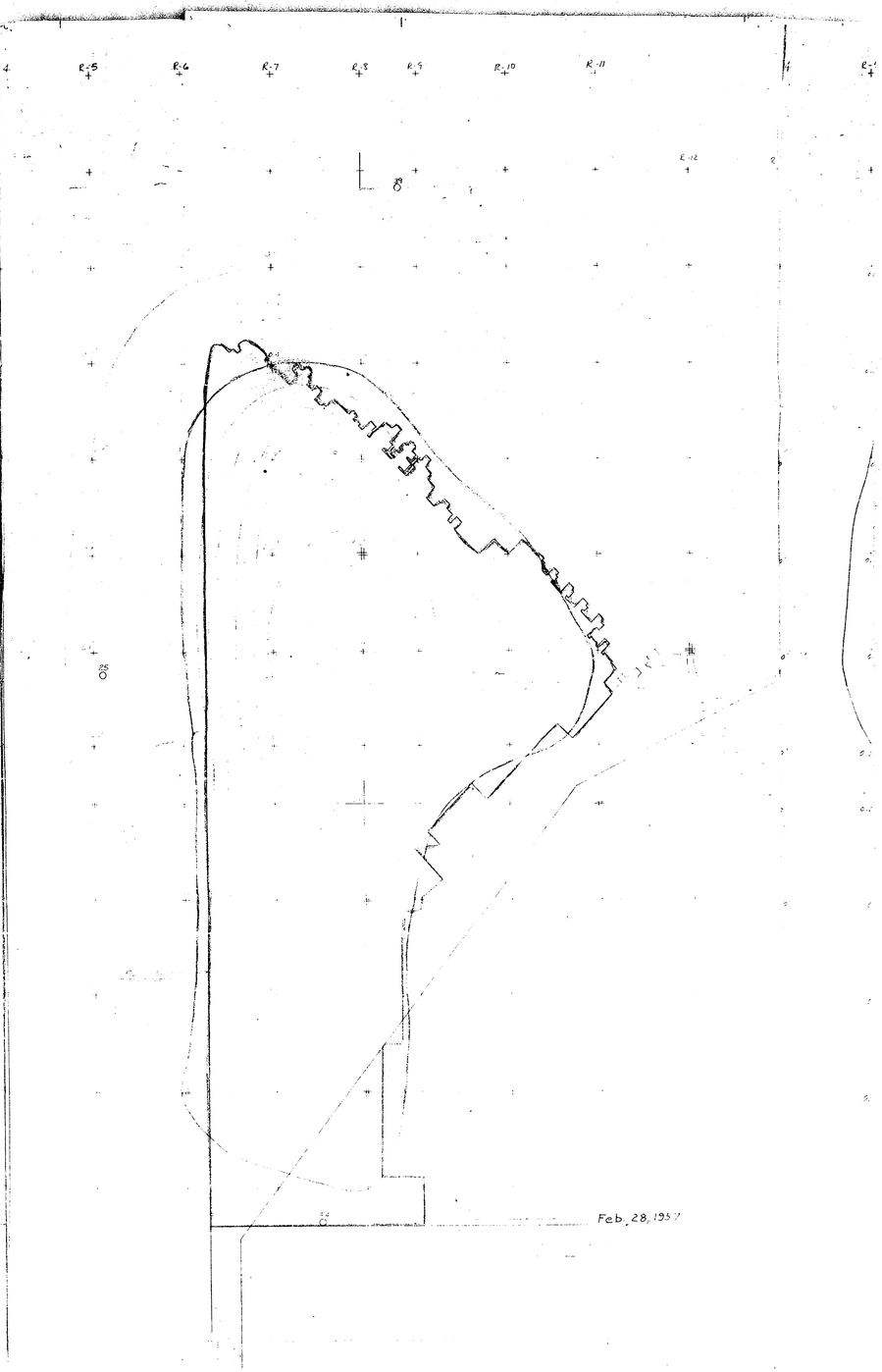
Nov. 19, 1956

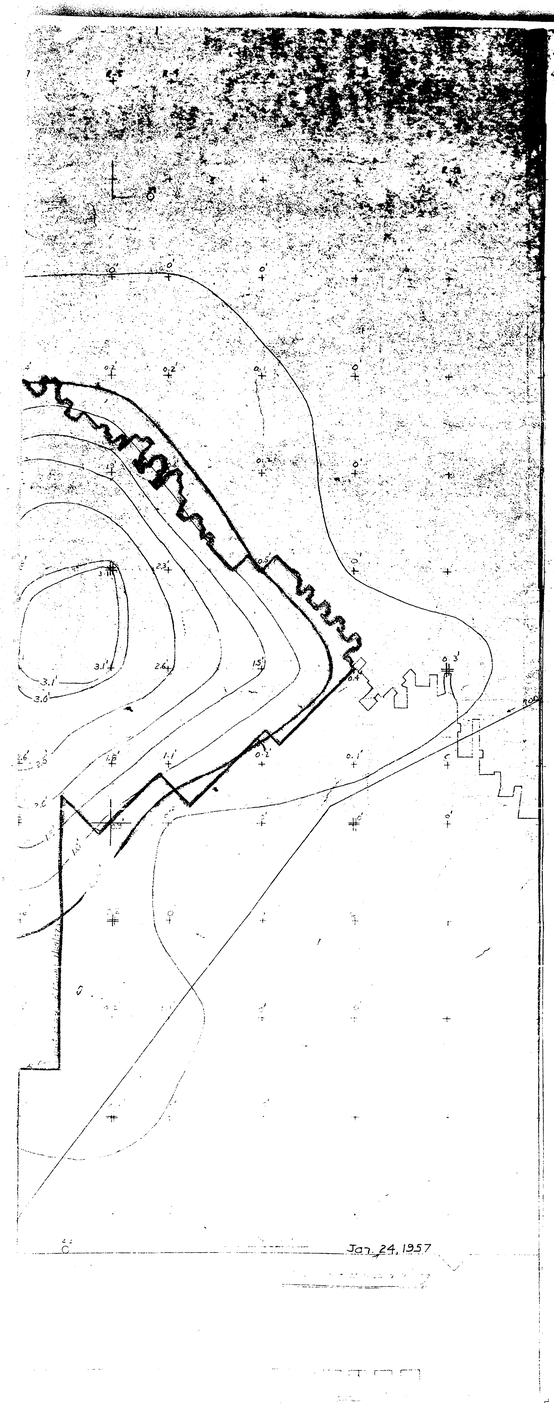


360


Edge of tailings pile
Dec. 12, 1956
Final Limit of second mining


Jan. 24, 1957


Feb. 28, 1957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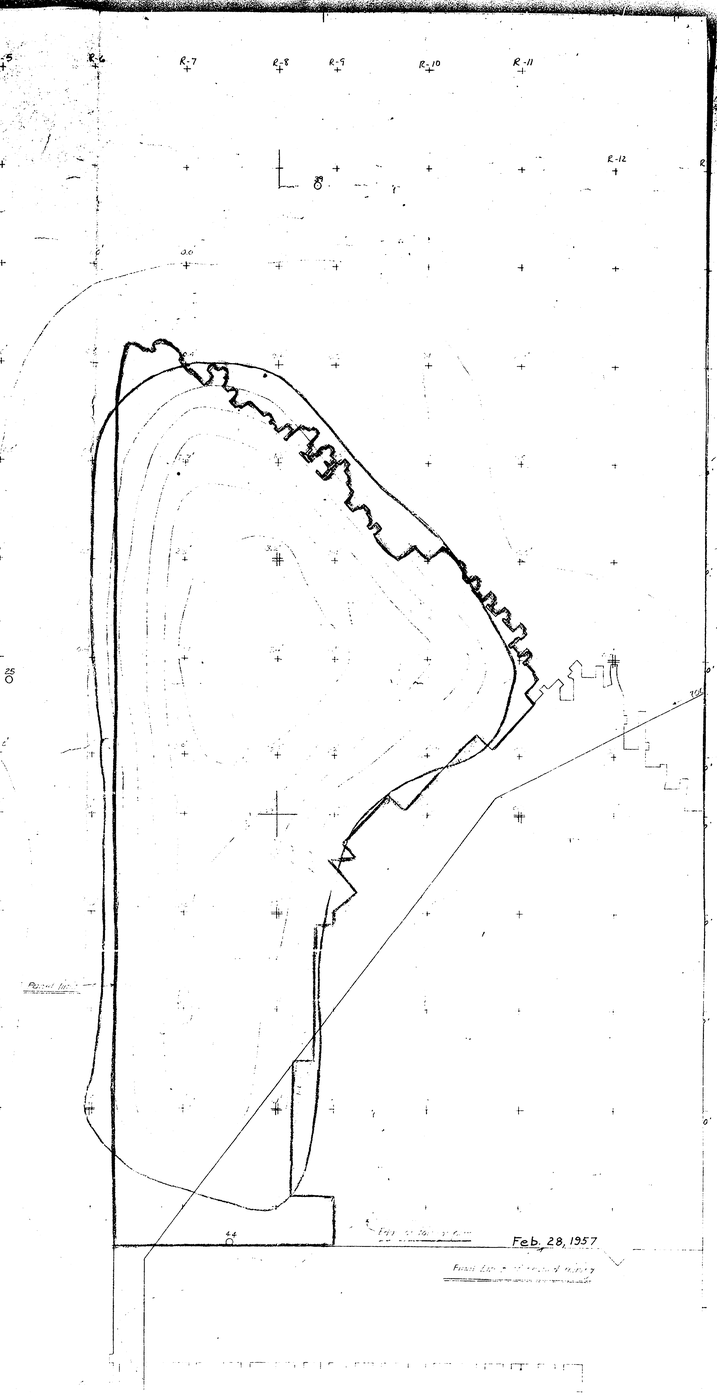
R-11
Jan. 24, 1957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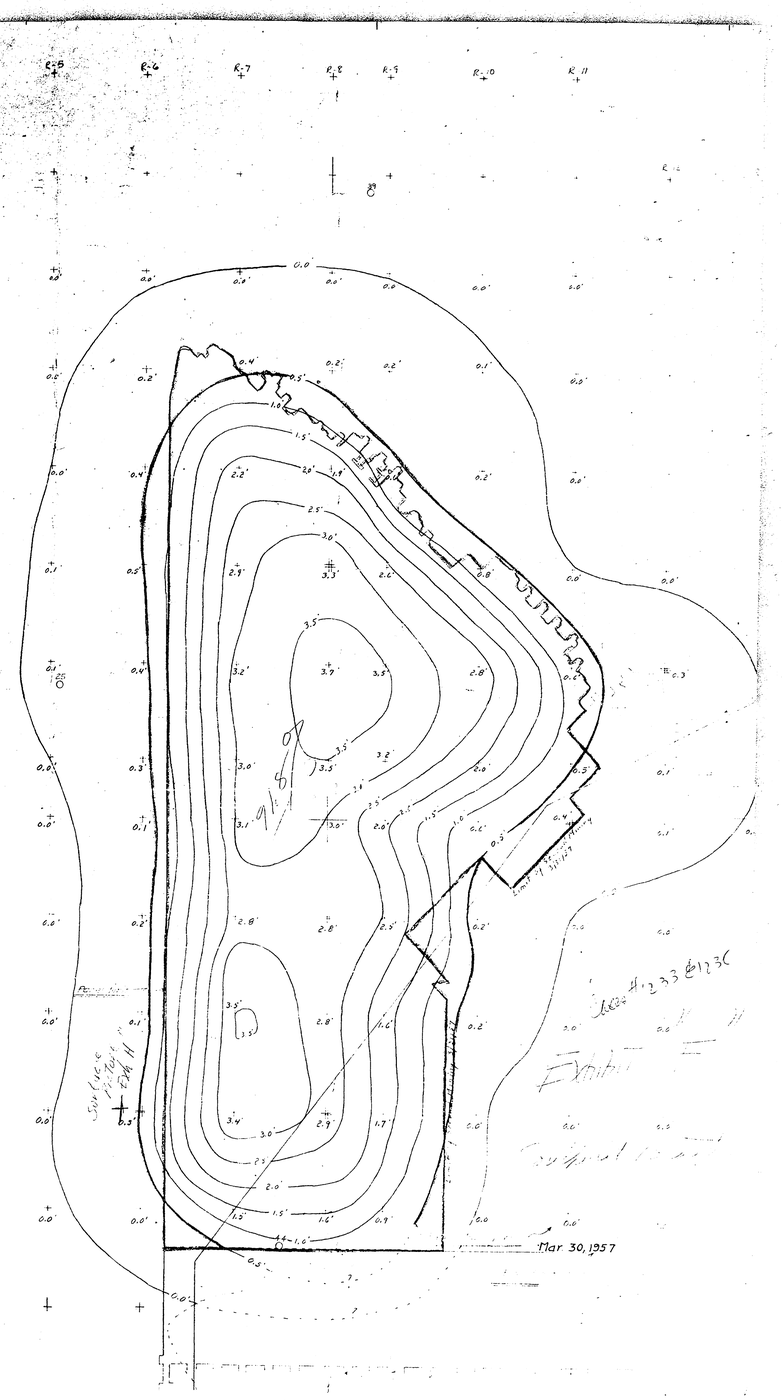
R-12
Feb. 28, 1957


R-5
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R-9
R-10
R-11
Mar. 30, 1957

362

THE WESTERN COMPANY

GAMMATRON

COMPANY GULF OIL CORPORATION

WELL N. L. MOTTEN (DEEP) # 1B

FIELD WILDCAT

COUNTY LEA STATE N.MEX.

LOCATION 660 FSL & 660 FEL

SEC. 19 TWP. 23S RGE. 37E

PERMANENT DATUM GROUND LEVEL ELEV. 3297

LOG MEAS. FROM K.B. ABOVE G.L. ELEV. 3306

DRL. MEAS. FROM DERRICK FLOOR ELEV. 3306

ELEV.: K.B. 3306 D.F. 3305 G.L. 3297

RUN NO.	ONE	TWO	
DATE	10-24-57	10-24-57	
TYPE LOG	GAMMA RAY	NEUTRON	
DEPTH-DRILLER	12,000	12,000	
DEPTH-LOGGER	12,000	12,000	
BTM. LOG INTERVAL	12,000	12,000	
TOP LOG INTERVAL	11,700	11,700	
TYPE FLUID IN HOLE	SALT WATER	SALT WATER	
SALINITY, PPM CL	150,000	150,000	
DENSITY	10.0	10.0	
LEVEL	FULL	FULL	
MAX. REC. TEMP. DEG. F.	200°	200°	
OPR. RIG TIME	5 HRS.	5 HRS.	
RECORDED BY	R. LEE	R. LEE	
WITNESSED BY	MR. MAYFIELD	MR. MAYFIELD	

CASING RECORD

SIZE	WGT.	GRADE	SET AT	FROM WELL HEAD	FROM KB	FROM GL
10 3/4"	40.5#	H-40	1,700'	1,700'	1,694'	1,684'
7"	23#	J-55	11,700'	11,700'	11,694'	11,684'

REMARKS

Reproduced By
West Texas Electrical Log Service
Dallas 9, Texas

REFERENCE AG460D

COMPLETION RECORD

SPUD DATE

COMP DATE

DAY RECORD

CASING RECORD

PERFORATING RECORD

ACID, FRAC DAST

I.P.

GOR

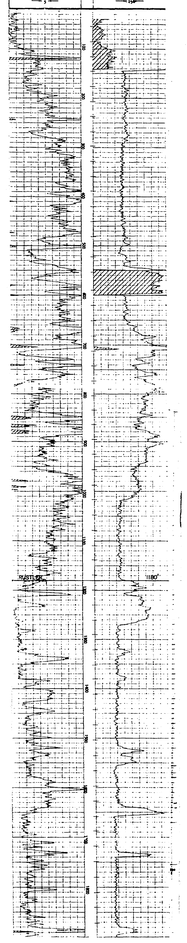
F.P.

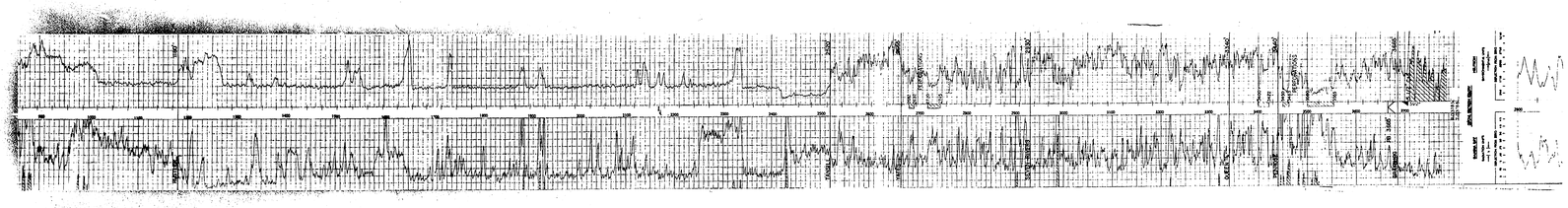
REMARKS

Gulf Oil Corporation
Case No. 1335
Exhibit No. 4
October 24, 1957
BEFORE THE
OIL CONSERVATION COMMISSION
SANTA FE, NEW MEXICO
EXHIBIT No. 4

GAMMA RAY — MILLIVOLTS — 0 — 100

NEUTRON — APPROXIMATE UNITS — 1100 — 0





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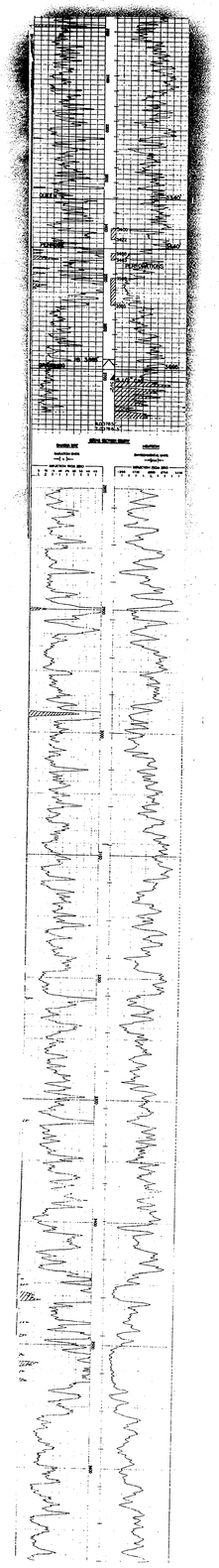
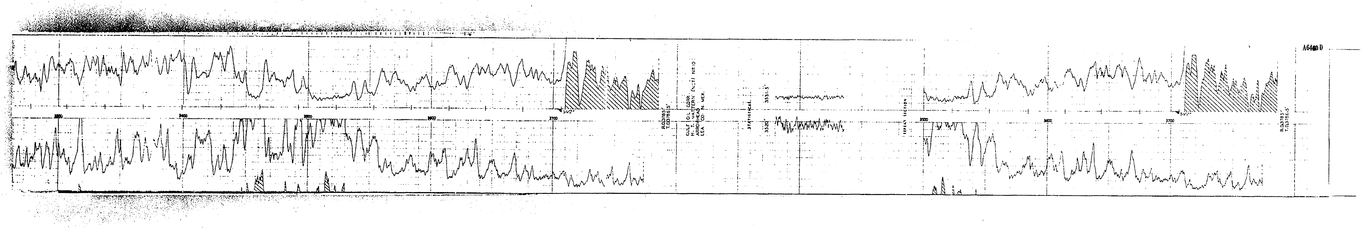




CITIES SERVICE OIL COMPANY

PARALLEL TUBING STRING
INSTALLATION - DUAL COMPLETED WELL

STATE P-2

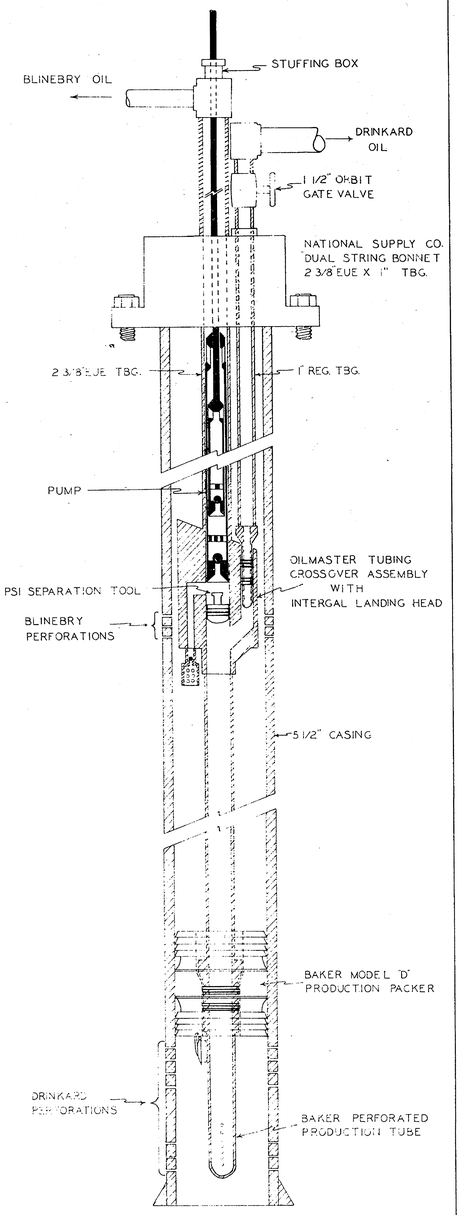


EXHIBIT 3

CITIES SERVICE OIL COMPANY

PARALLEL TUBING STRING
INSTALLATION - DUAL COMPLETED WELL

STATE P-2

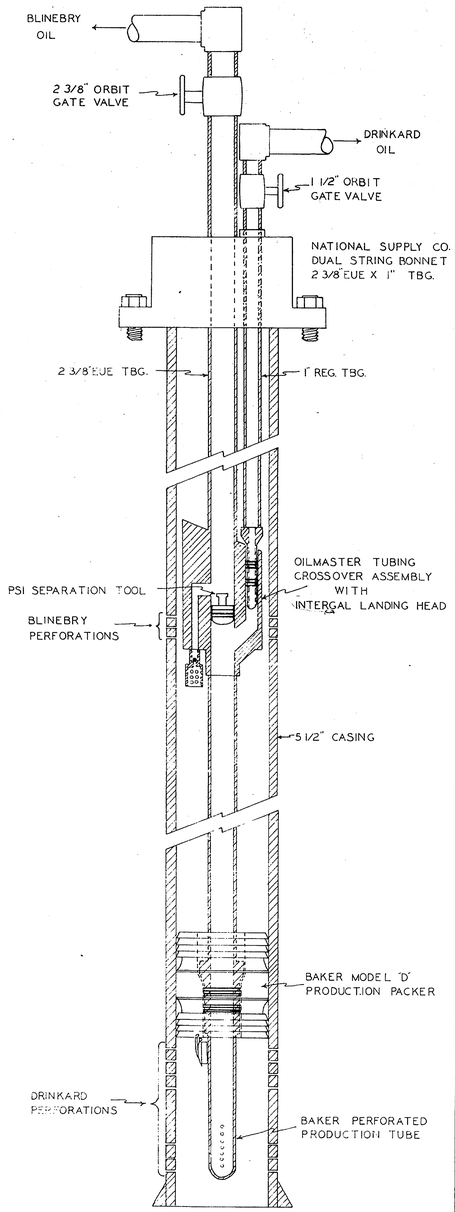


EXHIBIT 3

PRODUCTION CURVE STATE P-1

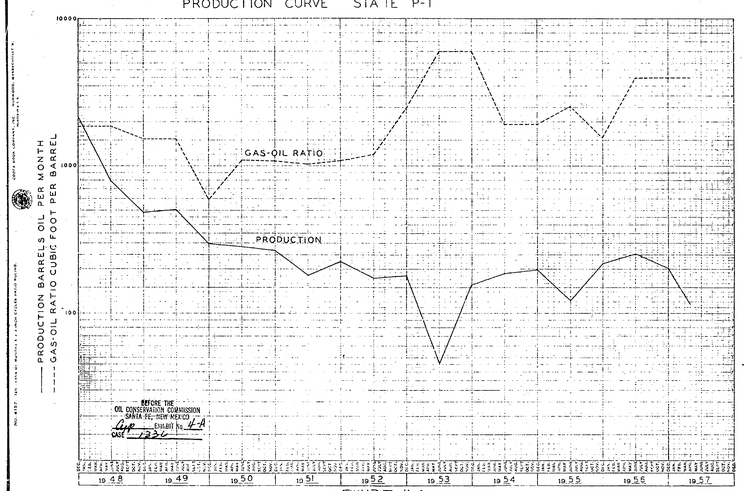


EXHIBIT 4-A

PRODUCTION CURVES PAN-AMERICAN STATE B #3

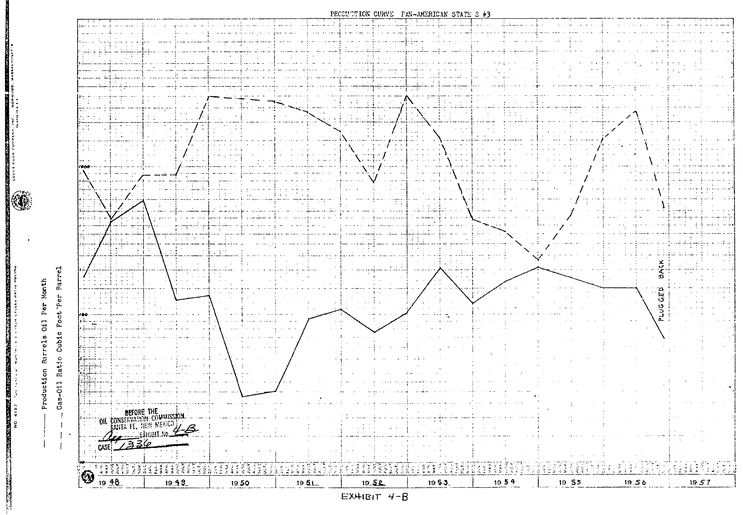
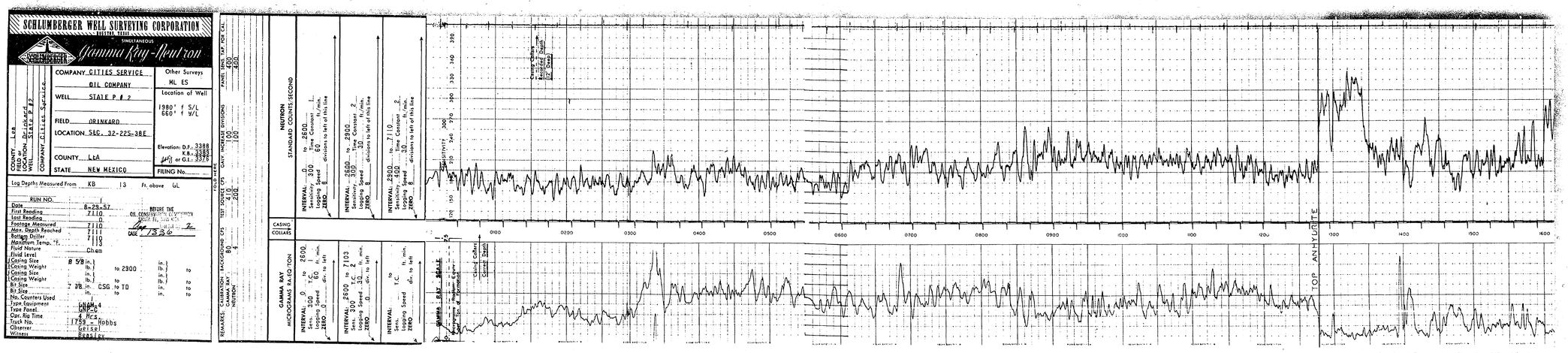
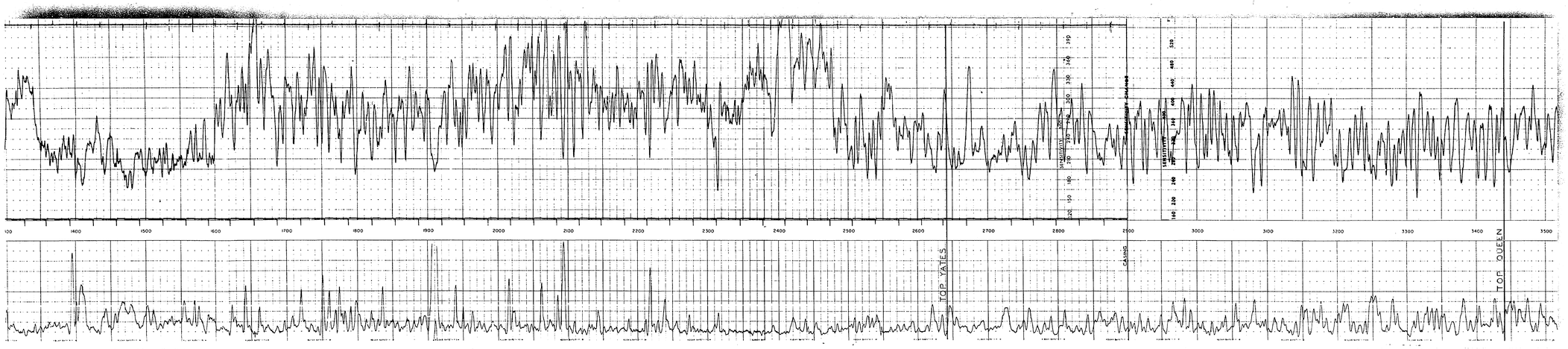


EXHIBIT 4-B

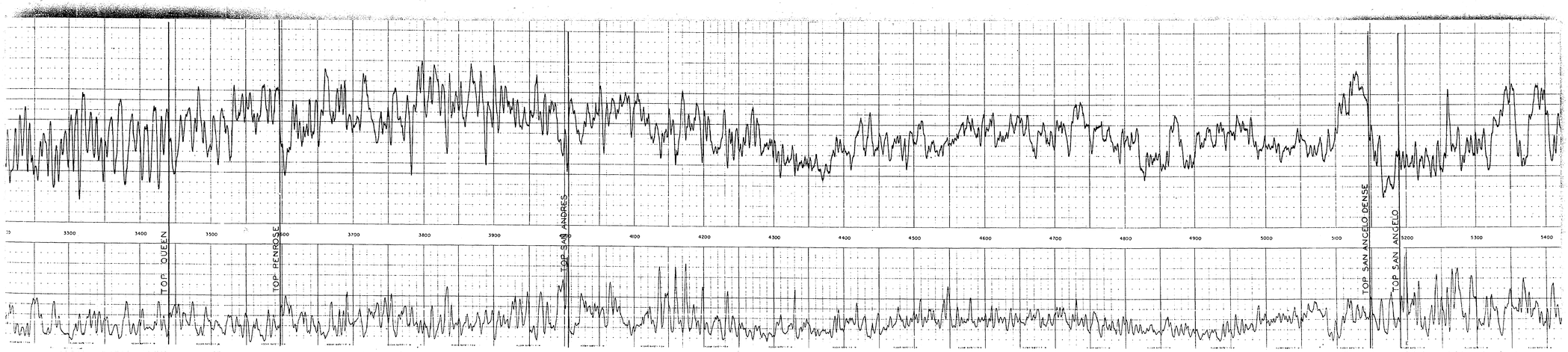
367


SCHLUMBERGER WELL SURVEYING CORPORATION
TESTED, TRUE
SIMULTANEOUS
Gamma Ray-Neutron
COMPANY CITIES SERVICE OIL COMPANY
WELL STATE P # 2
FIELD DRINKARD
LOCATION SEC. 32-22S-38E
COUNTY LEA
STATE NEW MEXICO
Other Surveys
ML ES
Location of Well
1980' f S/L
660' f W/L
Elevation: D.F. 3388
K.B. 3388
or G.L. 3375
FILING No.
COUNTY Lea
FIELD or LOCATION Drinkard
WELL State P #2
COMPANY Cities Service
Log Depths Measured From KB 13 Ft. above GL
RUN NO. 1
Date 8-29-57
First Reading 7110
Last Reading 0
Footage Measured 7110
Max. Depth Reached 7111
Bottom Driller 7110
Maximum Temp. °F. 138
Fluid Nature Chem
Fluid Level
Casing Size 8 5/8 in.
Casing Weight lb.
Casing Size in.
Casing Weight lb.
Bit Size 7 7/8 in. CSG
Bit Size in.
No. Counters Used
Type Equipment GNAM-4
Type Panel GNC-E
Cor. Rig Time 4 Hrs.
Truck No. 1759 - Hobbs
Observer Geisel
Witness Beasley
BEFORE THE OIL CONSERVATION COMMISSION SANTA FE, NEW MEXICO
CASE 1836
REMARKS: CALIBRATION, BACKGROUND CPS, TEST SOURCE CPS, GAMMA INCREASE DIVISIONS, PANEL SENS. TAP OSK CAL.
GAMMA RAY 80, 410, 410, 100, 400
NEUTRON 4, 4, 4, 100, 400
NEUTRON STANDARD COUNTS/SECOND
INTERVAL 0 to 2600
Sensitivity 340
Logging Speed 60
ZERO 8
INTERVAL 2600 to 2900
Sensitivity 300
Logging Speed 60
ZERO 8
INTERVAL 2900 to 7110
Sensitivity 500
Logging Speed 30
ZERO 8
Time Constant 2
ft./min.
divisions to left of this line
CASING COLLARS
GAMMA RAY MICROGRAMS PER EQUIVALENT FOOT
INTERVAL 0 to 2600
Sens. 300
Logging Speed 60
ZERO 0
INTERVAL 2600 to 7103
Sens. 50
Logging Speed 30
ZERO 0
INTERVAL to
Sens.
Logging Speed
ZERO
ft. min.
div. to left
GAMMA RAY SCALE
Casing Collars
Gamma Ray
Neutron
Caliper
Depth
Sensitivity
0100 0200 0300 0400 0500 0600 0700 0800 0900 1000 1100 1200 1300 1400 1500 1600
TOP ANHYDRITE

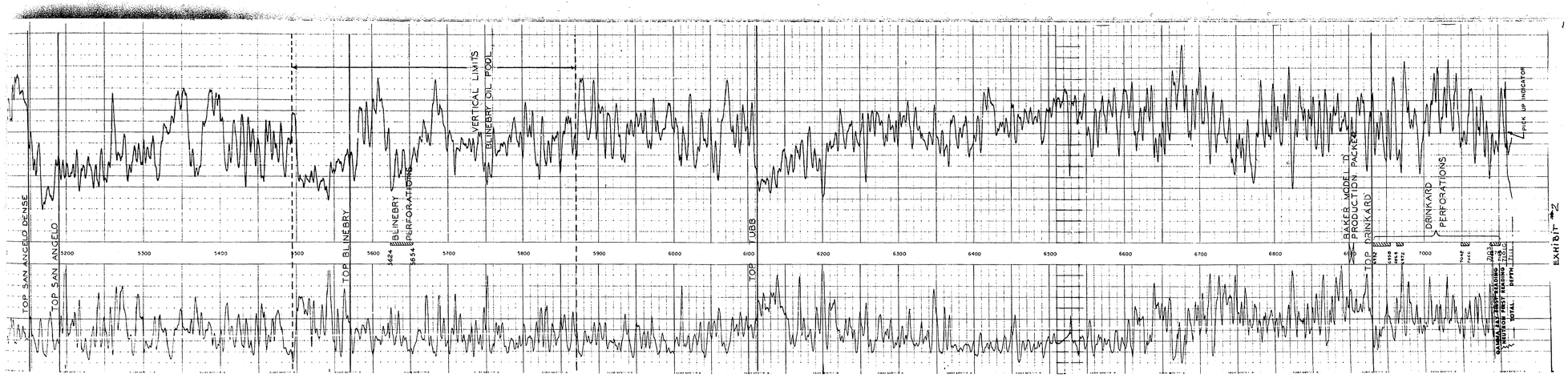
368


1400
1500
1600
1700
1800
1900
2000
2100
2200
2300
2400
2500
2600
2700
2800
2900
3000
3100
3200
3300
3400
3500
TOP YATES
TOP QUEEN

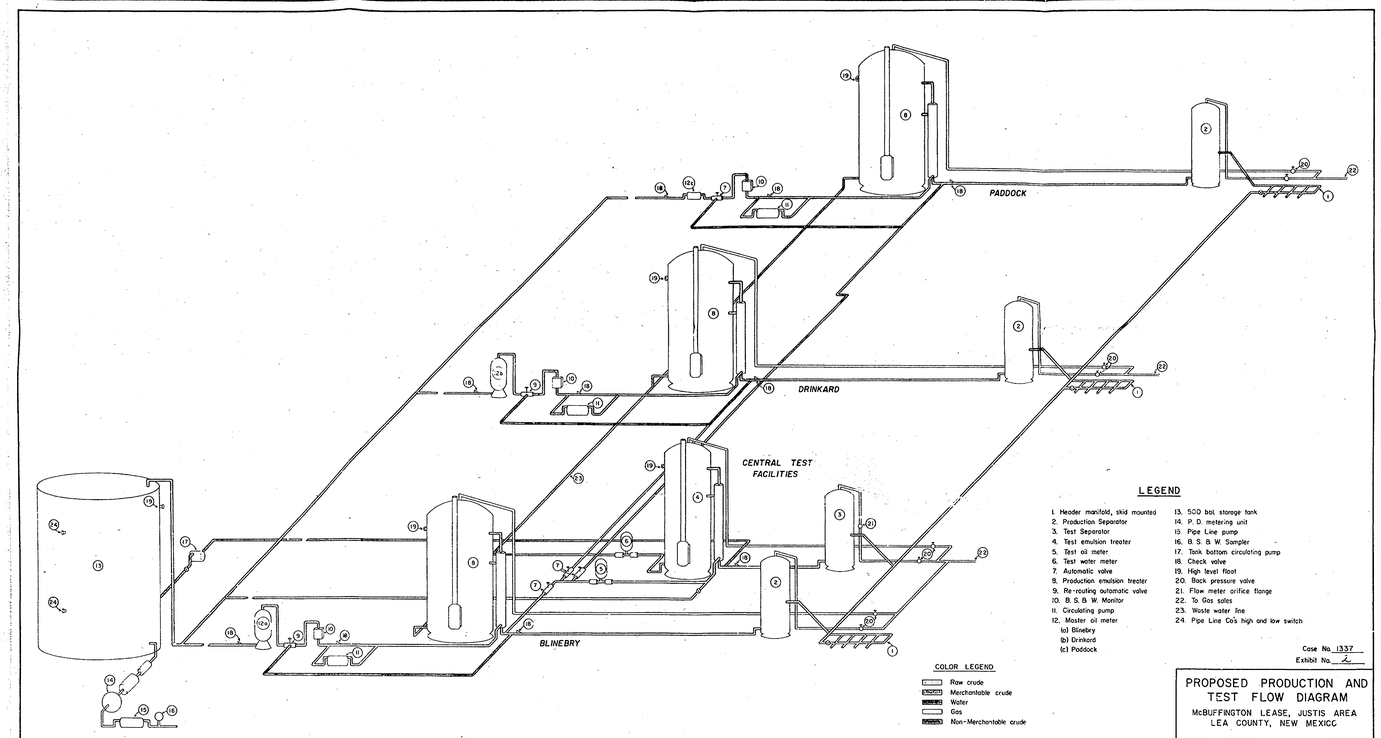
369


3300
3400
TOP QUEEN
3500
TOP PENROSE
3600
3700
3800
3900
TOP SAN ANDRES
4100
4200
4300
4400
4500
4600
4700
4800
4900
5000
5100
TOP SAN ANGELO DENSE
TOP SAN ANGELO
5200
5300
5400

370


TOP SAN ANGELO DENSE
TOP SAN ANGELO
TOP BLINEBRY
BLINEBRY PERFORATIONS
VERTICAL LIMITS BLINEBRY OIL POOL
TOP TUBB
BAKER MODEL D PRODUCTION PACKER
TOP DRINKARD
DRINKARD PERFORATIONS
PICK UP INDICATOR
EXHIBIT #2

371



COLOR LEGEND

- Raw crude
- Merchantable crude
- Water
- Gas
- Non-Merchantable crude

LEGEND

1. Header manifold, skid mounted
2. Production Separator
3. Test Separator
4. Test emulsion treater
5. Test oil meter
6. Test water meter
7. Automatic valve
8. Production emulsion treater
9. Re-routing automatic valve
10. B. S. & W. Monitor
11. Circulating pump
12. Master oil meter
    - (a) Blinebry
    - (b) Drinkard
    - (c) Paddock
13. 500 bbl. storage tank
14. P. D. metering unit
15. Pipe Line pump
16. B. S. & W. Sampler
17. Tank bottom circulating pump
18. Check valve
19. High level float
20. Back pressure valve
21. Flow meter orifice flange
22. To Gas sales
23. Waste water line
24. Pipe Line Co's high and low switch

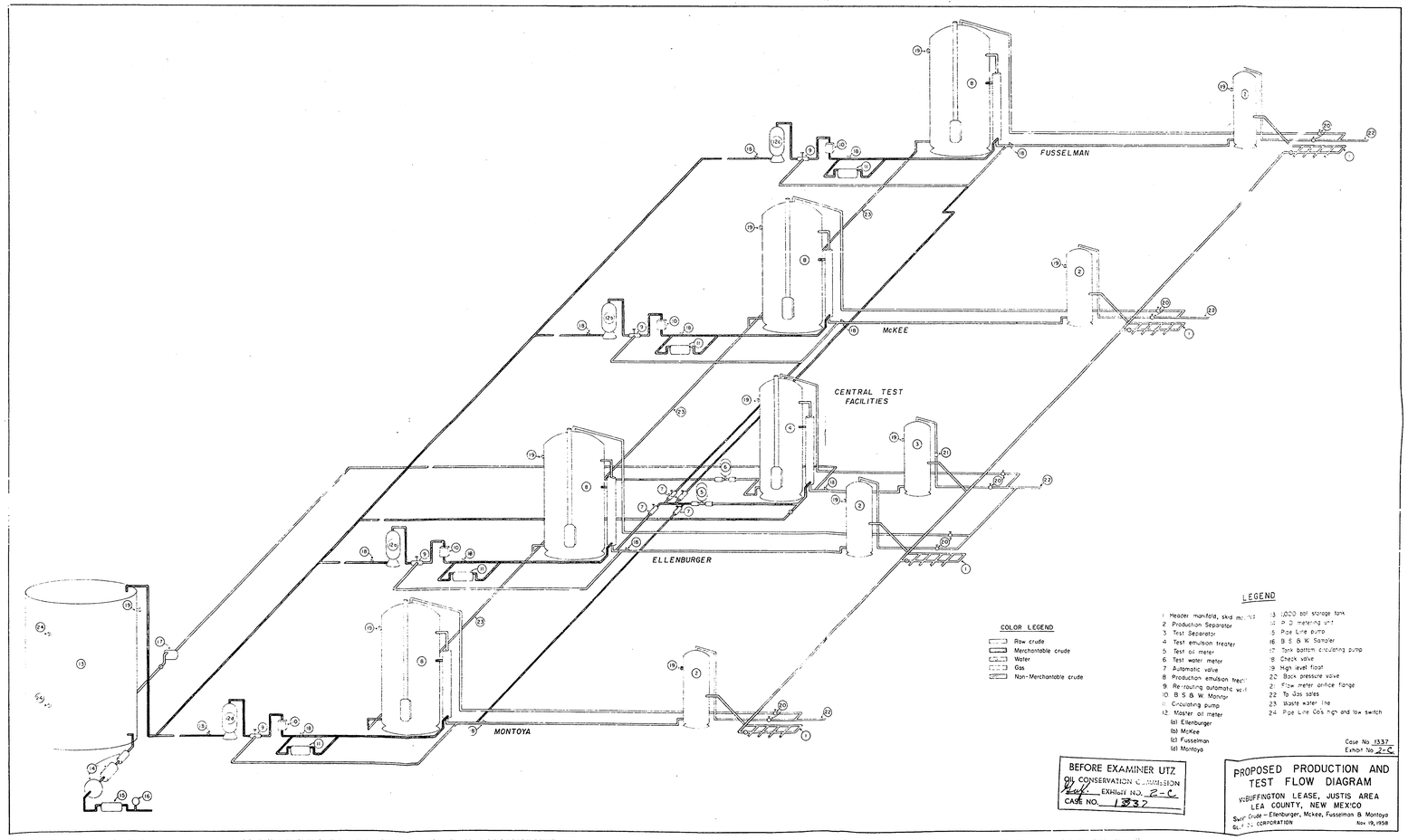
Case No. 1337
Exhibit No. 2-C

PROPOSED PRODUCTION AND TEST FLOW DIAGRAM

McBUFFINGTON LEASE, JUSTIS AREA
LEA COUNTY, NEW MEXICO

GULF OIL CORPORATION — JUNE 24, 1959

372



COLOR LEGEND

- Raw crude
- Merchantable crude
- Water
- Gas
- Non-Merchantable crude

LEGEND

1. Header manifold, skid mounted
2. Production Separator
3. Test Separator
4. Test emulsion treater
5. Test oil meter
6. Test water meter
7. Automatic valve
8. Production emulsion treater
9. Re-routing automatic valve
10. B. S. & W. Monitor
11. Circulating pump
12. Master oil meter
    - (a) Ellenburger
    - (b) McKee
    - (c) Fusselman
    - (d) Montoya
13. 1,000 bbl storage tank
14. P. D. metering unit
15. Pipe Line pump
16. B. S. & W. Sampler
17. Tank bottom circulating pump
18. Check valve
19. High level float
20. Back pressure valve
21. Flow meter orifice flange
22. To Gas sales
23. Waste water line
24. Pipe Line Co's high and low switch

BEFORE EXAMINER UTZ
OIL CONSERVATION COMMISSION
EXHIBIT NO. 2-C
CASE NO. 1332

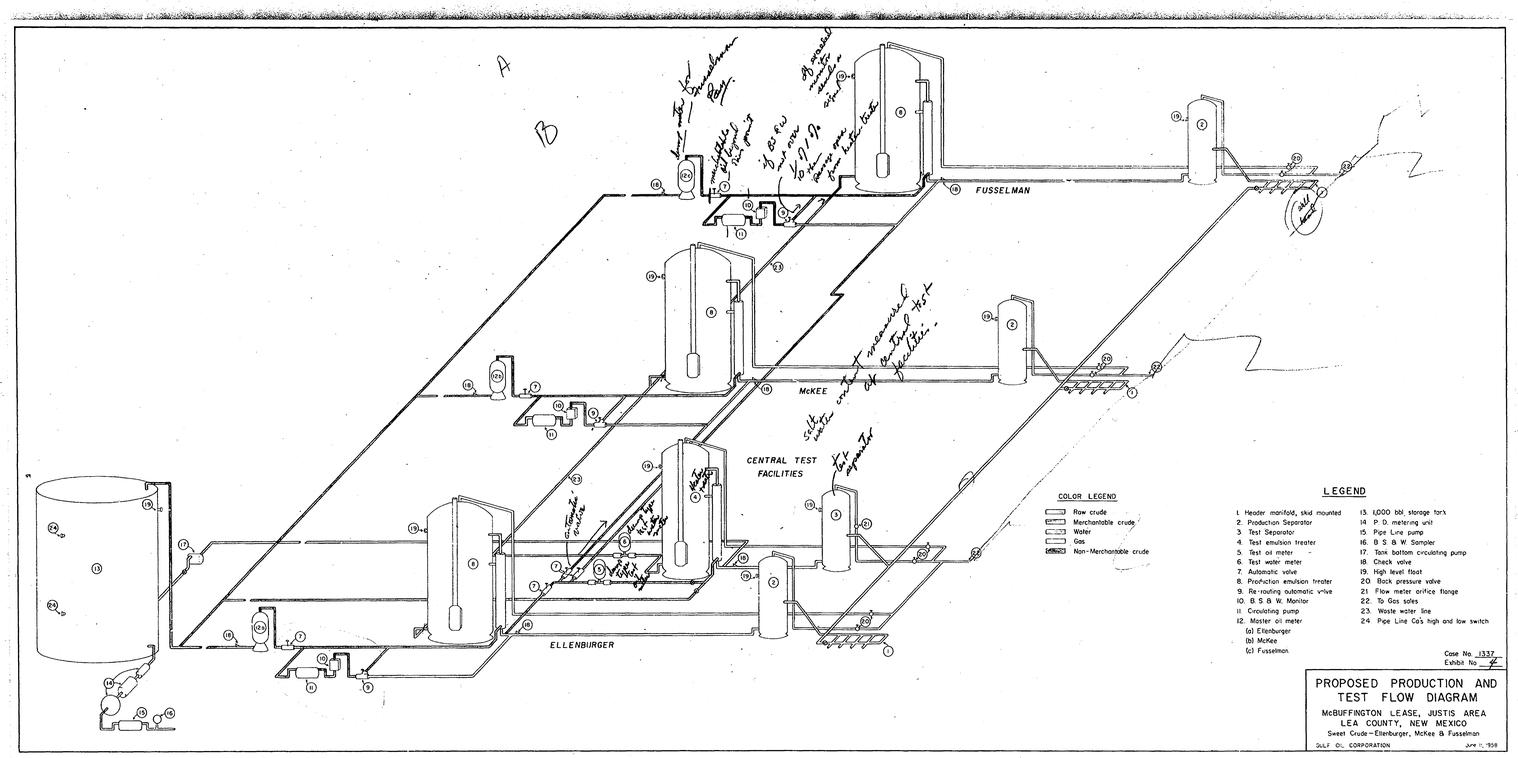
Case No. 1337
Exhibit No. 2-C

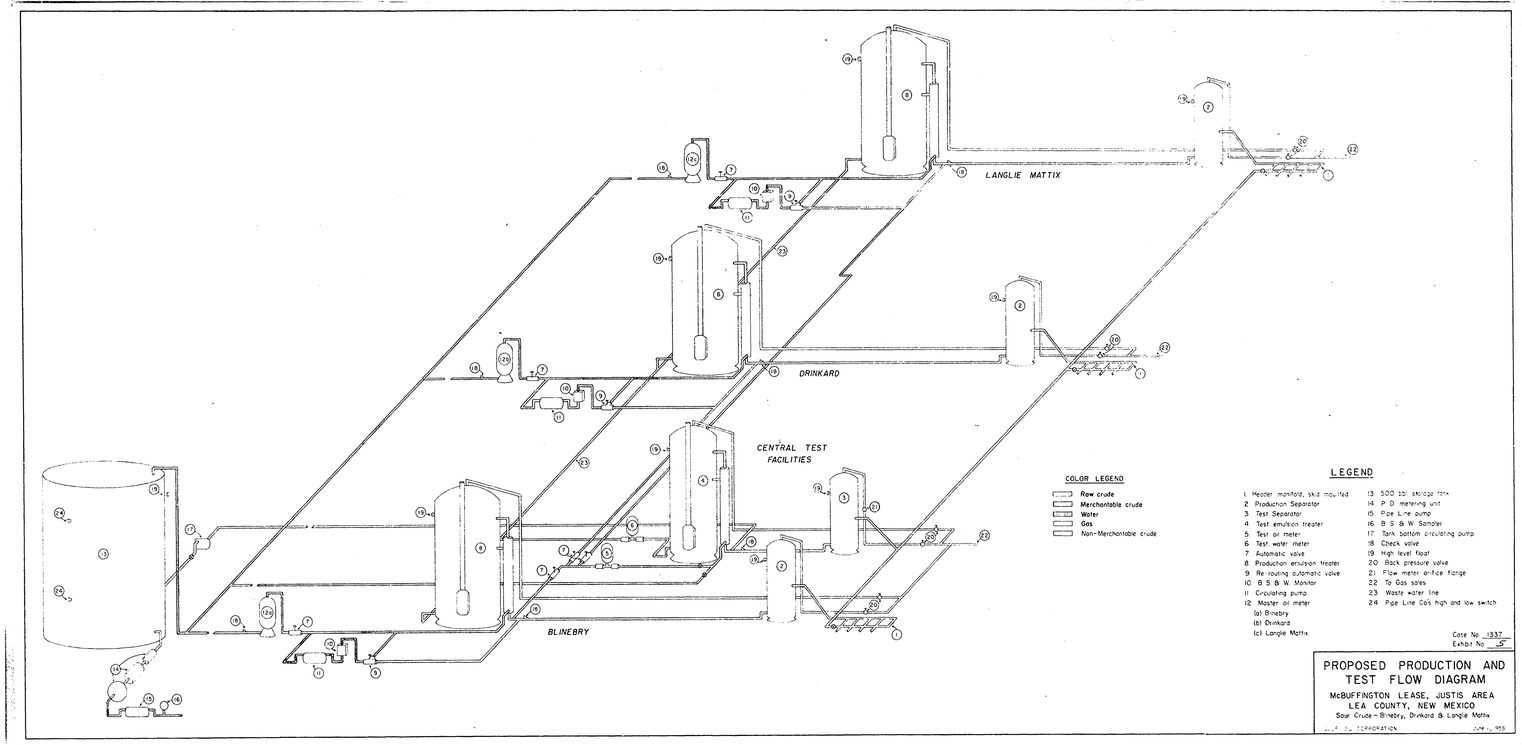
PROPOSED PRODUCTION AND TEST FLOW DIAGRAM

McBUFFINGTON LEASE, JUSTIS AREA
LEA COUNTY, NEW MEXICO

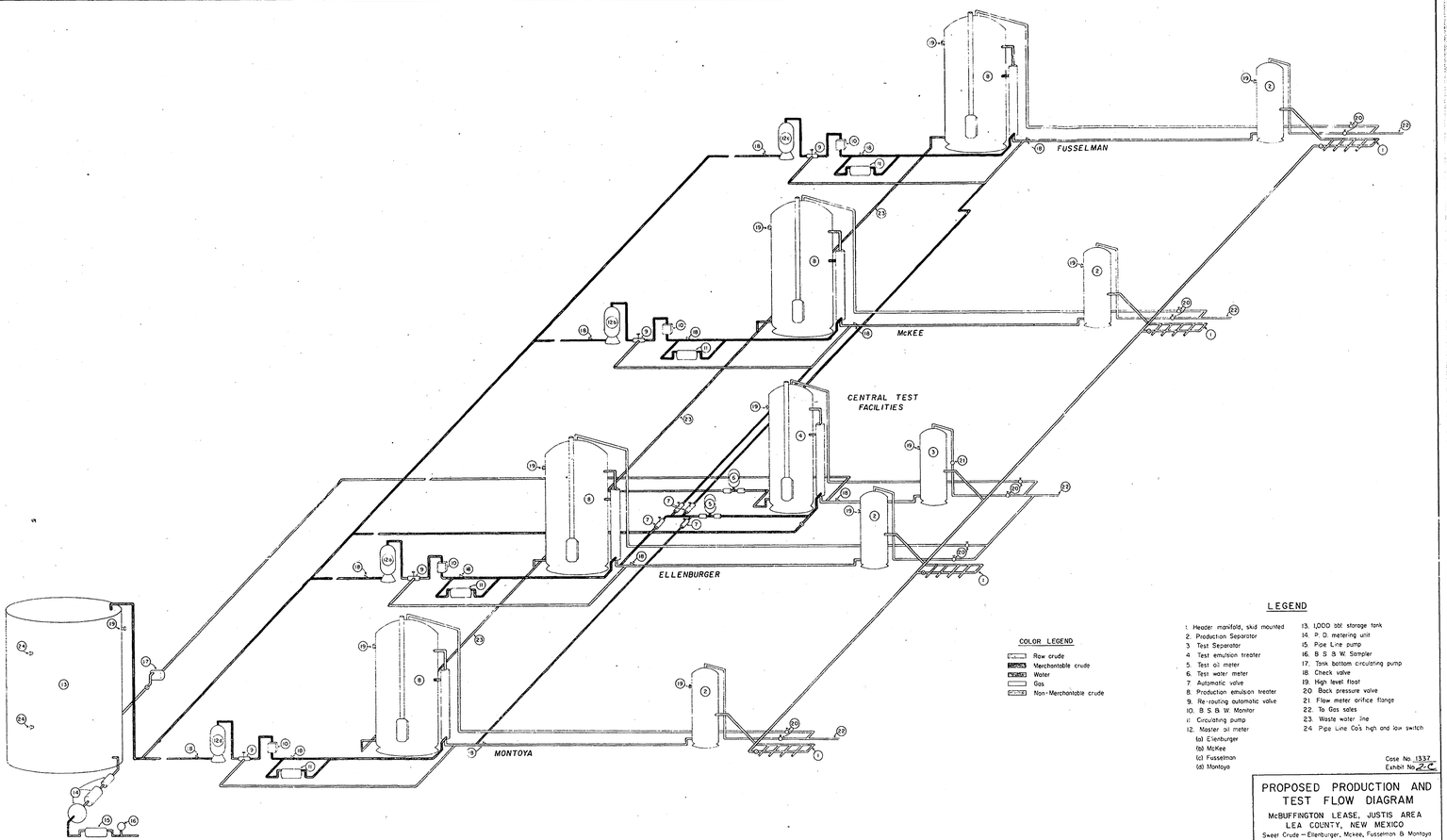
Sweet Crude – Ellenburger, McKee, Fusselman & Montoya

GULF OIL CORPORATION — Nov. 19, 1958


FUSSELMAN
McKEE
CENTRAL TEST FACILITIES
ELLENBURGER
COLOR LEGEND
Raw crude
Merchantable crude
Water
Gas
Non-Merchantable crude
LEGEND
1. Header manifold, skid mounted
2. Production Separator
3. Test Separator
4. Test emulsion treater
5. Test oil meter
6. Test water meter
7. Automatic valve
8. Production emulsion treater
9. Re-routing automatic valve
10. B. S & W. Monitor
11. Circulating pump
12. Master oil meter
(a) Ellenburger
(b) McKee
(c) Fusselman
13. 1,000 bbl storage tank
14. P. D. metering unit
15. Pipe Line pump
16. B. S. & W. Sampler
17. Tank bottom circulating pump
18. Check valve
19. High level float
20. Back pressure valve
21. Flow meter orifice flange
22. To Gas sales
23. Waste water line
24. Pipe Line Co's high and low switch
Case No. 1337
Exhibit No. 4
PROPOSED PRODUCTION AND TEST FLOW DIAGRAM
McBUFFINGTON LEASE, JUSTIS AREA
LEA COUNTY, NEW MEXICO
Sweet Crude – Ellenburger, McKee & Fusselman
GULF OIL CORPORATION
June 11, 1958


LANGLIE MATTIX
DRINKARD
CENTRAL TEST FACILITIES
BLINEBRY
COLOR LEGEND
Raw crude
Merchantable crude
Water
Gas
Non-Merchantable crude
LEGEND
1. Header manifold, skid mounted
2. Production Separator
3. Test Separator
4. Test emulsion treater
5. Test oil meter
6. Test water meter
7. Automatic valve
8. Production emulsion treater
9. Re-routing automatic valve
10. B. S & W. Monitor
11. Circulating pump
12. Master oil meter
(a) Blinebry
(b) Drinkard
(c) Langlie Mattix
13. 500 bbl storage tank
14. P. D. metering unit
15. Pipe Line pump
16. B. S. & W. Sampler
17. Tank bottom circulating pump
18. Check valve
19. High level float
20. Back pressure valve
21. Flow meter orifice flange
22. To Gas sales
23. Waste water line
24. Pipe Line Co's high and low switch
Case No. 1337
Exhibit No. 5
PROPOSED PRODUCTION AND TEST FLOW DIAGRAM
McBUFFINGTON LEASE, JUSTIS AREA
LEA COUNTY, NEW MEXICO
Sour Crude – Blinebry, Drinkard & Langlie Mattix
GULF OIL CORPORATION
June 11, 1958

373



COLOR LEGEND

- Raw crude
- Merchantable crude
- Water
- Gas
- Non-Merchantable crude

LEGEND

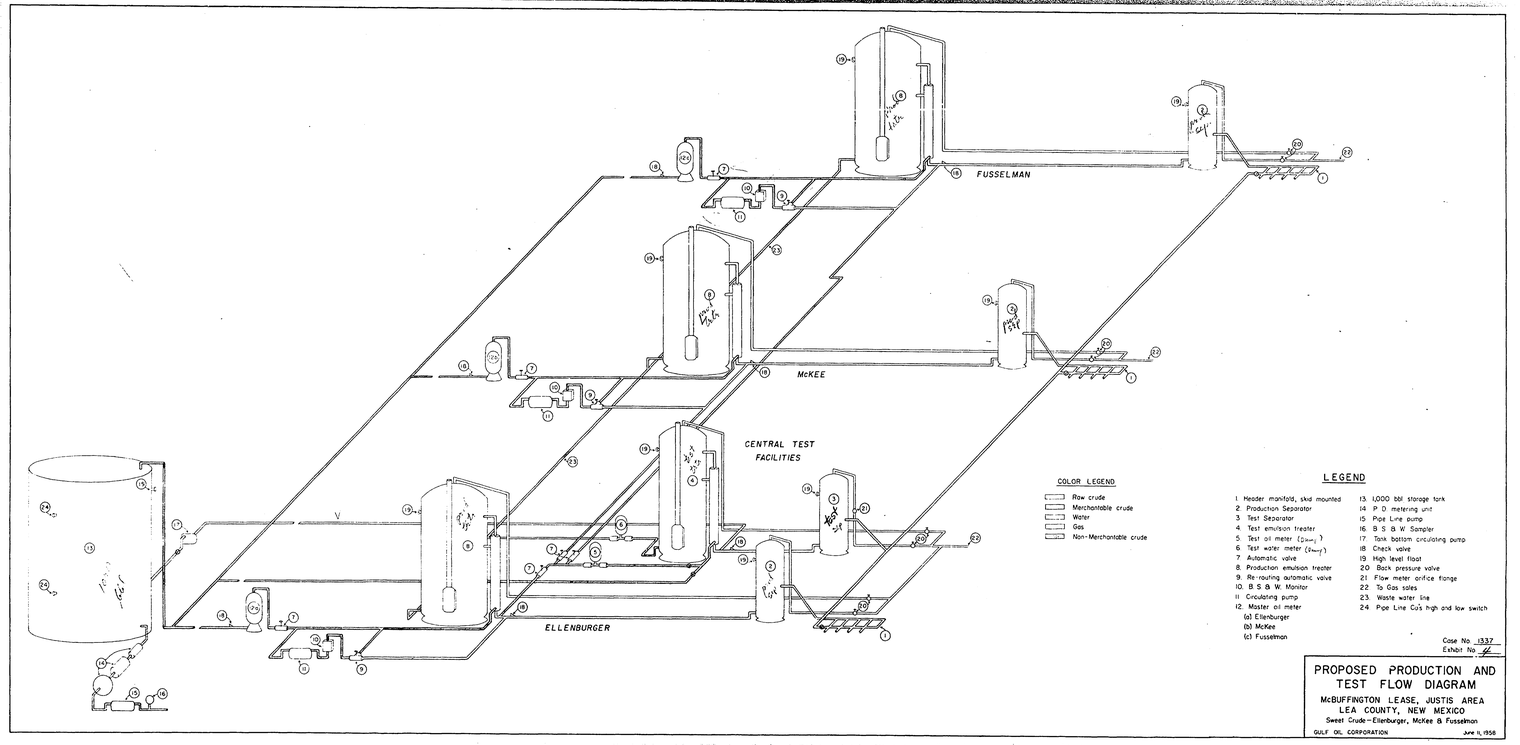
1. Header manifold, skid mounted
2. Production Separator
3. Test Separator
4. Test emulsion treater
5. Test oil meter
6. Test water meter
7. Automatic valve
8. Production emulsion treater
9. Re-routing automatic valve
10. B S & W. Monitor
11. Circulating pump
12. Master oil meter
    (a) Ellenburger
    (b) McKee
    (c) Fusselman
    (d) Montoya
13. 1,000 bbl storage tank
14. P. D. metering unit
15. Pipe Line pump
16. B S & W. Sampler
17. Tank bottom circulating pump
18. Check valve
19. High level float
20. Back pressure valve
21. Flow meter orifice flange
22. To Gas sales
23. Waste water line
24. Pipe Line Co's high and low switch

Case No. 1337
Exhibit No. 2-M

PROPOSED PRODUCTION AND TEST FLOW DIAGRAM

McBUFFINGTON LEASE, JUSTIS AREA
LEA COUNTY, NEW MEXICO
Sweet Crude – Ellenburger, McKee, Fusselman & Montoya
GULF OIL CORPORATION
Nov 19, 1958

374



COLOR LEGEND

- Raw crude
- Merchantable crude
- Water
- Gas
- Non-Merchantable crude

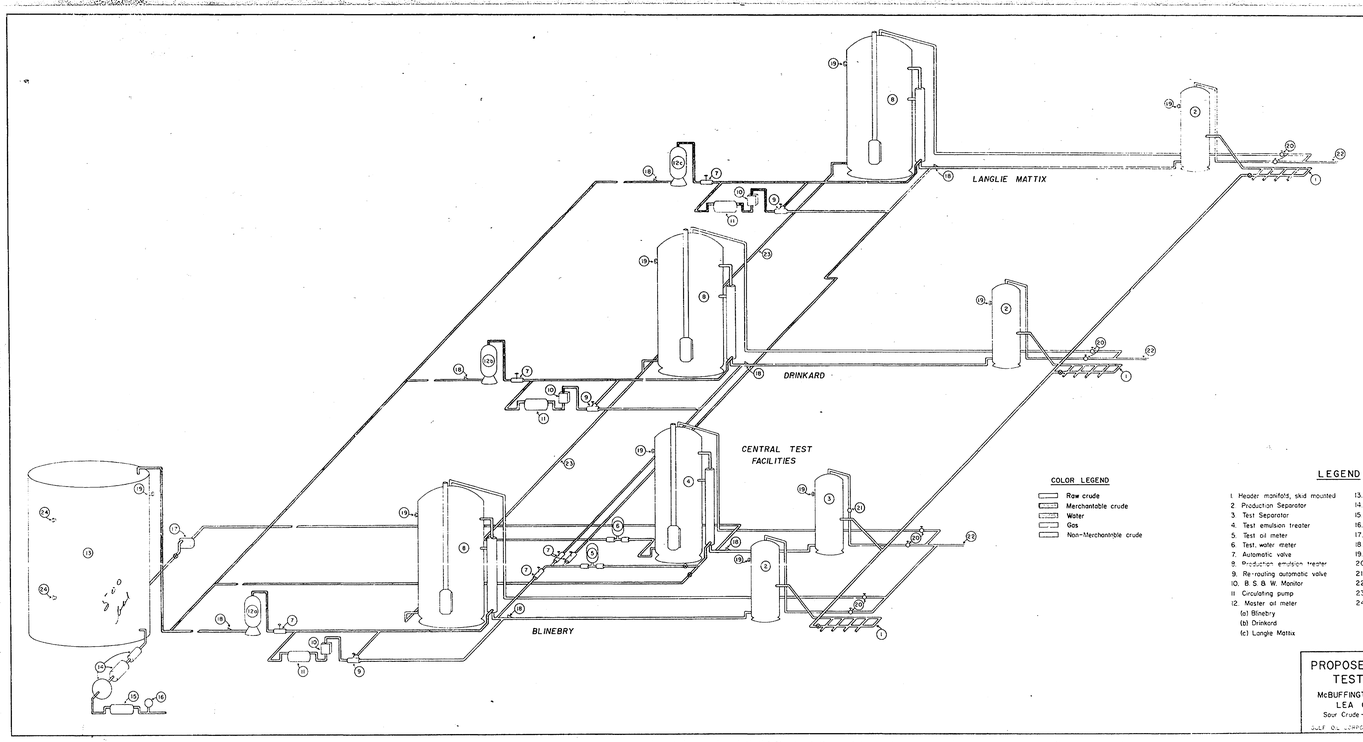
LEGEND

1. Header manifold, skid mounted
2. Production Separator
3. Test Separator
4. Test emulsion treater
5. Test oil meter
6. Test water meter
7. Automatic valve
8. Production emulsion treater
9. Re-routing automatic valve
10. B S & W. Monitor
11. Circulating pump
12. Master oil meter
    (a) Ellenburger
    (b) McKee
    (c) Fusselman
13. 1,000 bbl storage tank
14. P. D. metering unit
15. Pipe Line pump
16. B S & W. Sampler
17. Tank bottom circulating pump
18. Check valve
19. High level float
20. Back pressure valve
21. Flow meter orifice flange
22. To Gas sales
23. Waste water line
24. Pipe Line Co's high and low switch

Case No. 1337
Exhibit No. 4

PROPOSED PRODUCTION AND TEST FLOW DIAGRAM

McBUFFINGTON LEASE, JUSTIS AREA
LEA COUNTY, NEW MEXICO
Sweet Crude – Ellenburger, McKee & Fusselman
GULF OIL CORPORATION
June 11, 1958



COLOR LEGEND

- Raw crude
- Merchantable crude
- Water
- Gas
- Non-Merchantable crude

LEGEND

1. Header manifolds, skid mounted
2. Production Separator
3. Test Separator
4. Test emulsion treater
5. Test oil meter
6. Test water meter
7. Automatic valve
8. Production emulsion treater
9. Re-routing automatic valve
10. B S & W. Monitor
11. Circulating pump
12. Master oil meter
    (a) Blinebry
    (b) Drinkard
    (c) Langlie Mattix
13. 500 bbl. storage tank
14. P. D. metering unit
15. Pipe Line pump
16. B S & W. Sampler
17. Tank bottom circulating pump
18. Check valve
19. High level float
20. Back pressure valve
21. Flow meter orifice flange
22. To Gas sales
23. Waste water line
24. Pipe Line Co's high and low switch

Case No. 1337
Exhibit No. 5

PROPOSED PRODUCTION AND TEST FLOW DIAGRAM

McBUFFINGTON LEASE, JUSTIS AREA
LEA COUNTY, NEW MEXICO
Sour Crude - Blinebry, Drinkard & Langlie Mattix

GULF OIL CORPORATION — JULY 1, 1958

375

SCHLUMBERGER WELL SURVEYING CORPORATION
HOUSTON, TEXAS

SCHLUMBERGER

Electrical Log

COMPANY OHIO OIL CO.

WELL BERTHA BARBER #9

FIELD MONUMENT

LOCATION SEC.5-20S-37E

COUNTY LEA

STATE NEW MEXICO

Location of Well
1980' F NL
560' F WL
Sec.5-20S-37E

Elevation: D.F.; K.B.; or G.L.:

FILING No.

COUNTY LEA
LOCATION SEC.5-20S-37E
COMPANY OHIO OIL CO.

RUN No.	1								
Date	7-6-52								
First Reading	5795								
Last Reading	2698								
Feet Measured	3097								
Csg. Schlum.	2698								
Csg. Driller	2800								
Depth Reached	5768								
Bottom Driller	5755								
Depth Datum	3000 15.0'ABV.GL								
Mud Nat.	L-CHEMICALS								
— Density	9.2								
— Viscosity	54								
— Resist.	1.26 90 F	@	F	@	F	@	F	@	F
— Res. BHT	73 122 F	@	F	@	F	@	F	@	F
— pH		@	F	@	F	@	F	@	F
— Wtr. Loss	CC 30 min.		CC 30 min.		CC 30 min.		CC 30 min.		CC 30 min.
Max. Temp. F	122								
Bit Size	7 7/8"								
Spcgs.—AM	10' LS								
A									
AO	12'								
Opr. Rig Time	3 hrs.								
Truck No.	1-58-ROLLS								
Recorded By	SCHROEDER								
Witness By	KUPFER								

BEFORE THE OIL CONSERVATION COMMISSION SANTA FE, NEW MEXICO
EXHIBIT No. B
CASE 1340

REMARKS

RESISTIVITY -ohms. m²/m — 19" Lateral — 0 — 20 — 200 — 2000

RESISTIVITY -ohms. m²/m — 16" Normal — 18" Inverted — 0 — 20 — 200 — 2000

CASING 2698

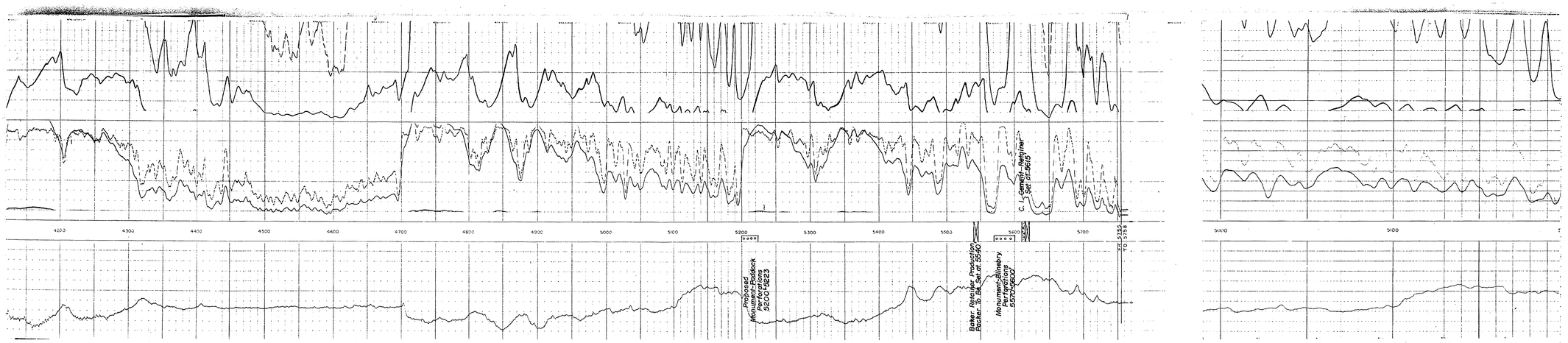
PROBABLE METAL

DEPTHS

SPONTANEOUS POTENTIAL millivolts — 0 — +40

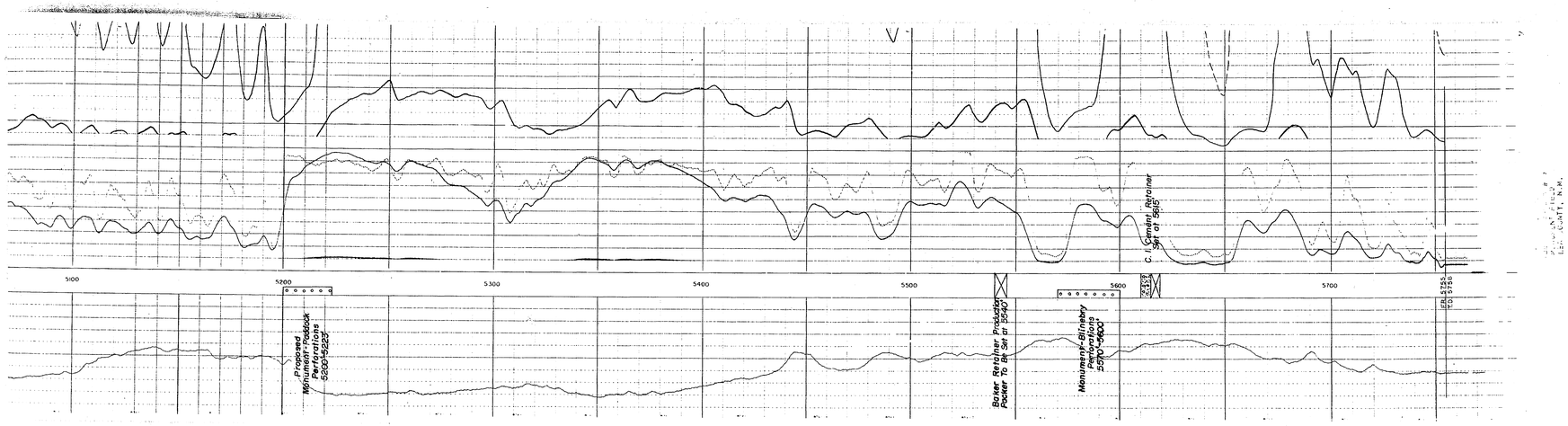
2700 2800 2900 3000 3100 3200 3300 3400 3500 3600 3700 3800 3900 4000 4100 4200 4300 4400

376


4200
4300
4400
4500
4600
4700
4800
4900
5000
5100
5200
5300
5400
5500
5600
5700
TD 5755
TD 5738
C. I. Gerrish Reporter
Sec 07-40S-1E
Proposed
Monument Paddock
Perforations
5200'-5223'
Baker Petrolite - Produced
Baker Paddock Set at 5540'
Monument Blinebry
Perforations
5570'-5600'

5KX10
5100

377


5100
5200
5300
5400
5500
5600
5700
Proposed Monument-Paddock Perforations 5200'-5220'
Baker Retainer Production Packer To be set @ 5540'
Monument-Blinebry Perforations 5570'-5600'
C.I.B.P. @ 5650'
C.I. Cement Retainer Set at 5810'
FR. 5755
TO 5756

378

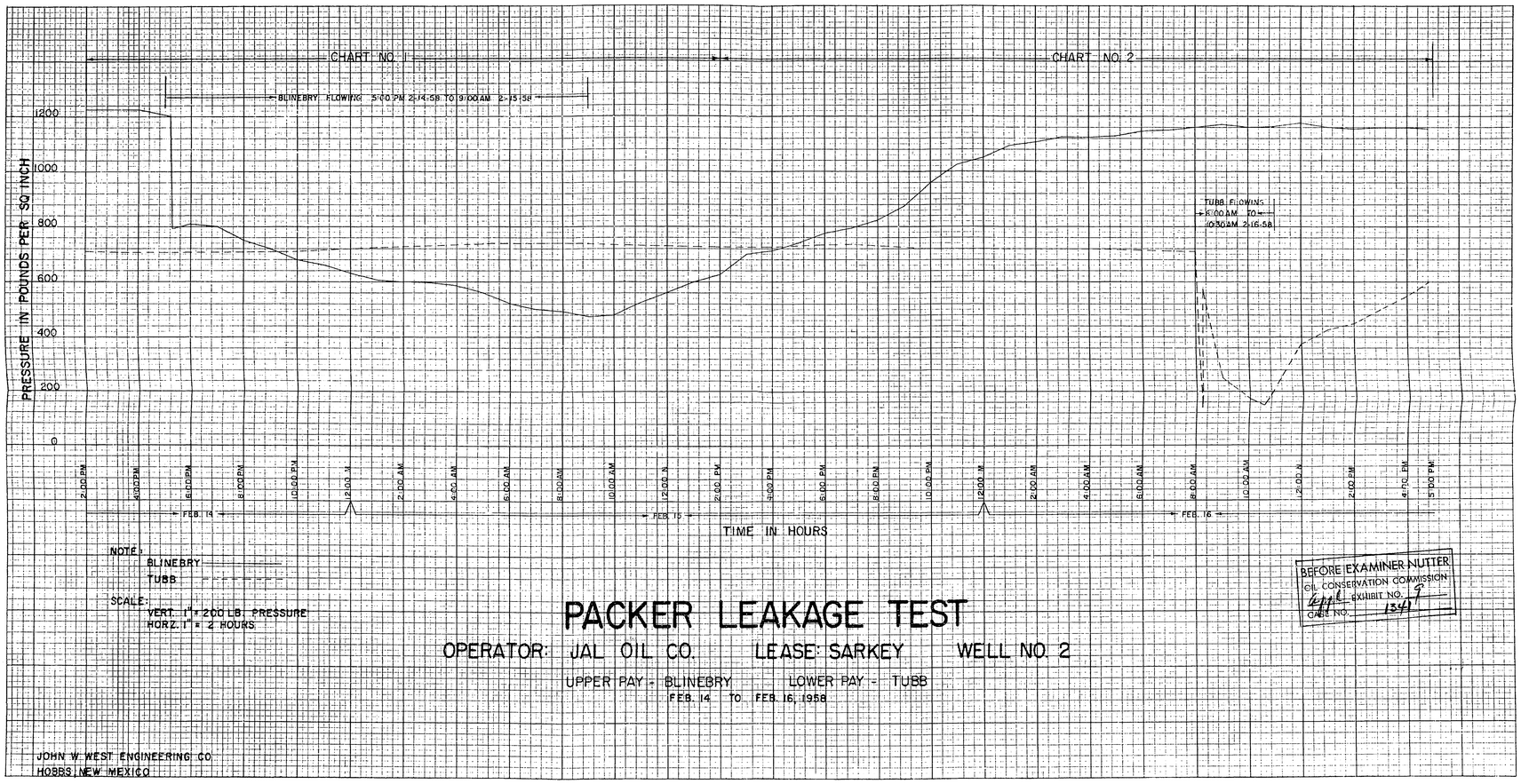
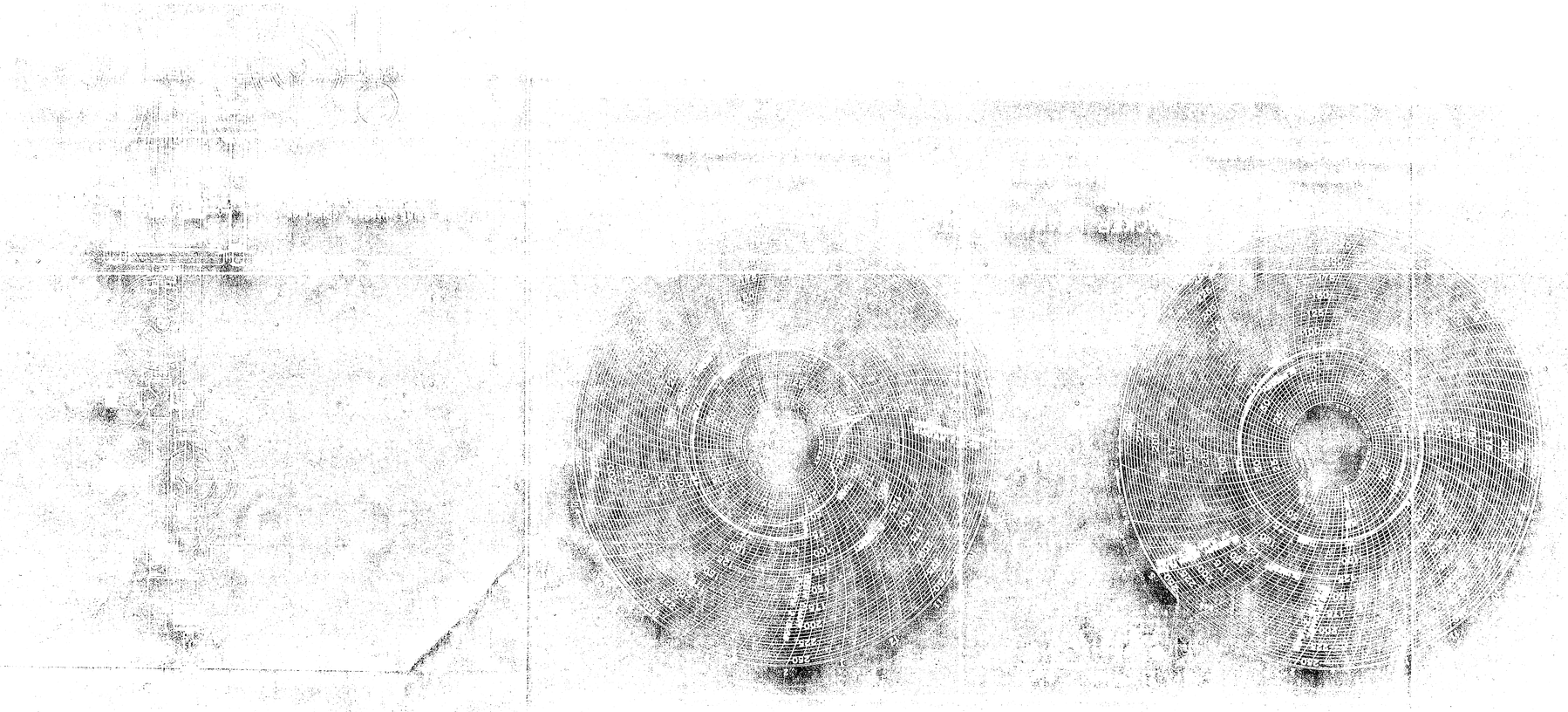


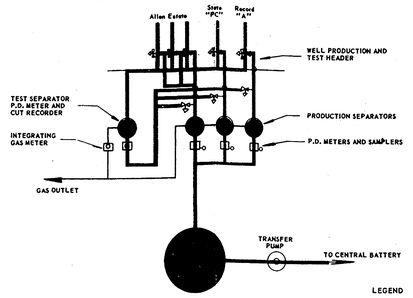
CHART NO. 1
CHART NO. 2
BLINEBRY FLOWING 5:00 PM 2-14-58 TO 9:00 AM 2-15-58
TUBB FLOWING 8:00 AM TO 10:30 AM 2-16-58
PRESSURE IN POUNDS PER SQ INCH
1200
1000
800
600
400
200
0
2:00 PM
4:00 PM
6:00 PM
8:00 PM
10:00 PM
12:00 N
2:00 AM
4:00 AM
6:00 AM
8:00 AM
10:00 AM
12:00 N
2:00 PM
4:00 PM
6:00 PM
8:00 PM
10:00 PM
12:00 N
2:00 AM
4:00 AM
6:00 AM
8:00 AM
10:00 AM
12:00 N
2:00 PM
4:00 PM
5:00 PM
FEB. 14
FEB. 15
FEB. 16
TIME IN HOURS
NOTE:
BLINEBRY
TUBB
SCALE:
VERT. 1" = 200 LB. PRESSURE
HORZ. 1" = 2 HOURS
PACKER LEAKAGE TEST
OPERATOR: JAL OIL CO. LEASE: SARKEY WELL NO. 2
UPPER PAY - BLINEBRY LOWER PAY - TUBB
FEB. 14 TO FEB. 16, 1958
JOHN W. WEST ENGINEERING CO.
HOBBS, NEW MEXICO
BEFORE EXAMINER NUTTER
OIL CONSERVATION COMMISSION
EXHIBIT NO. 9
CASE NO. 1347

379



381

WELLS PRODUCING INTO REMOTE CONTROL STATION NO. I - 1



LEGEND

- GAS LINES
- WELL ROUTED THROUGH TEST SEPARATOR
- WELLS ROUTED THROUGH LEASE PRODUCTION SEPARATORS

Shell Exhibit 4
Case 1342

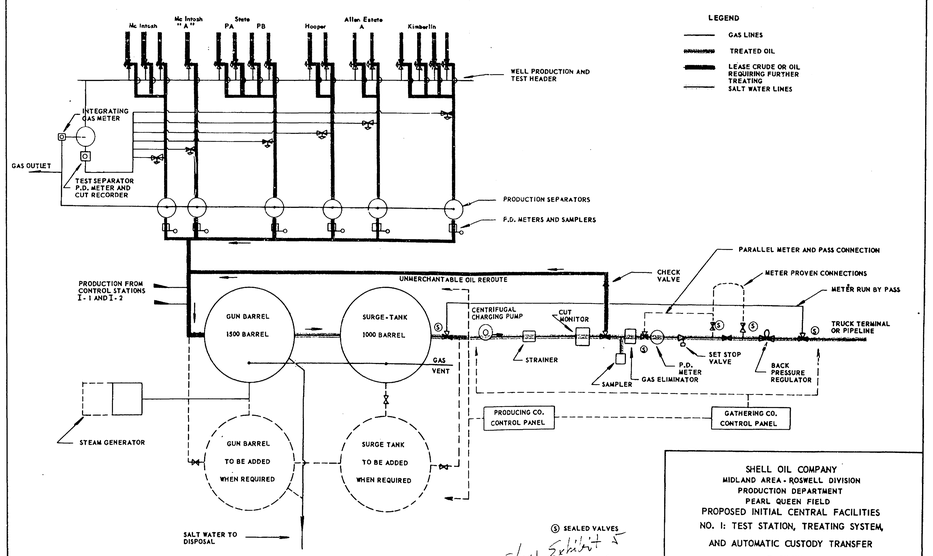
SHELL OIL COMPANY
MIDLAND AREA - ROSWELL DIVISION
PRODUCTION DEPARTMENT
PEARL QUEEN FIELD
PROPOSED REMOTE
CONTROL STATION NO. I - 1
LEA COUNTY, NEW MEXICO

Date 10/22/57
Date By G F Y - J W M
Approved R L E
Drawn By D V H

EXHIBIT IV

Order R-1101

WELLS PRODUCING DIRECTLY INTO CENTRAL FACILITIES



LEGEND

- GAS LINES
- TREATED OIL
- LEASE CRUDE OR OIL REQUIRING FURTHER TREATING
- SALT WATER LINES

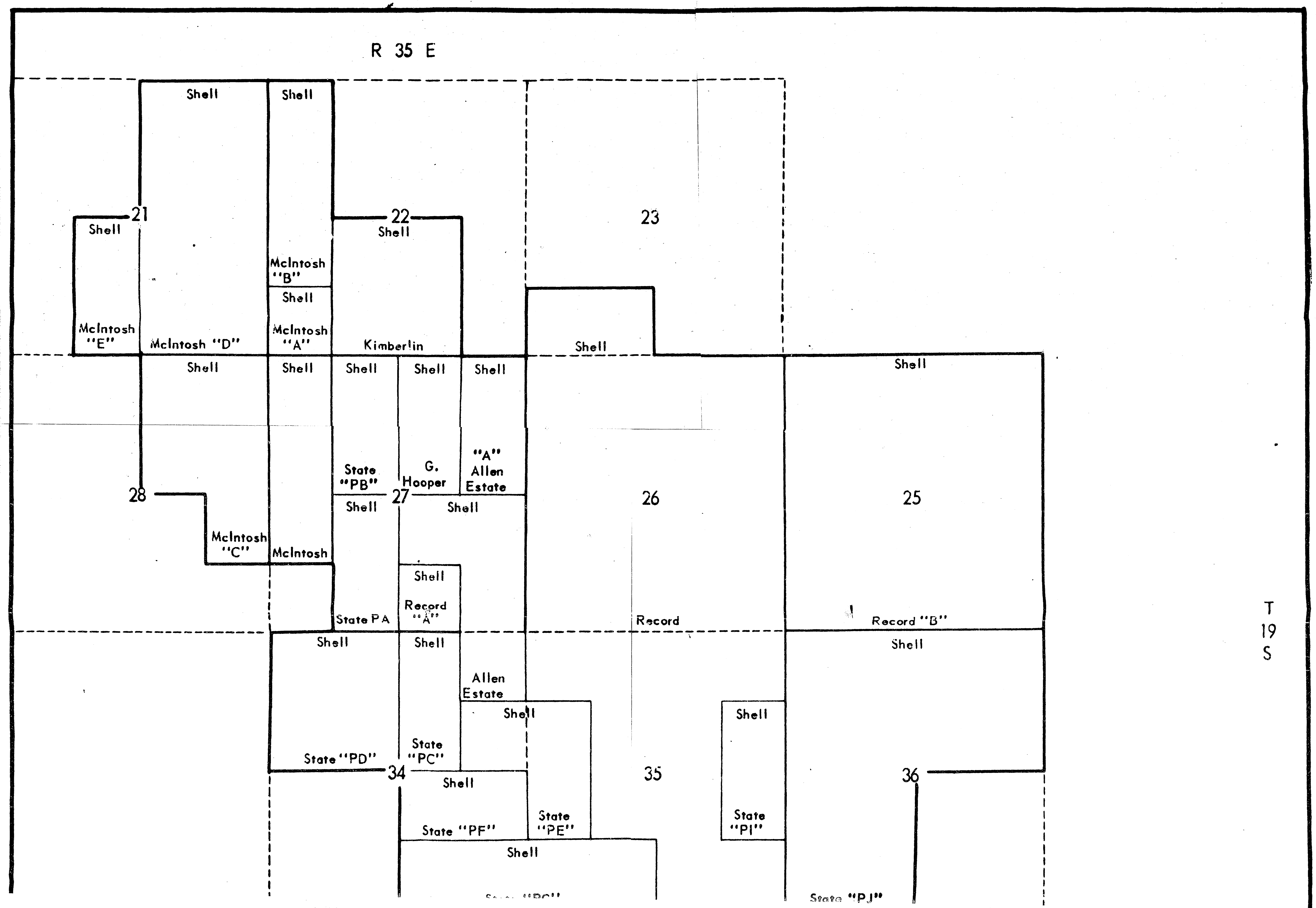
(S) SEALED VALVES

Shell Exhibit 5
Case 1342

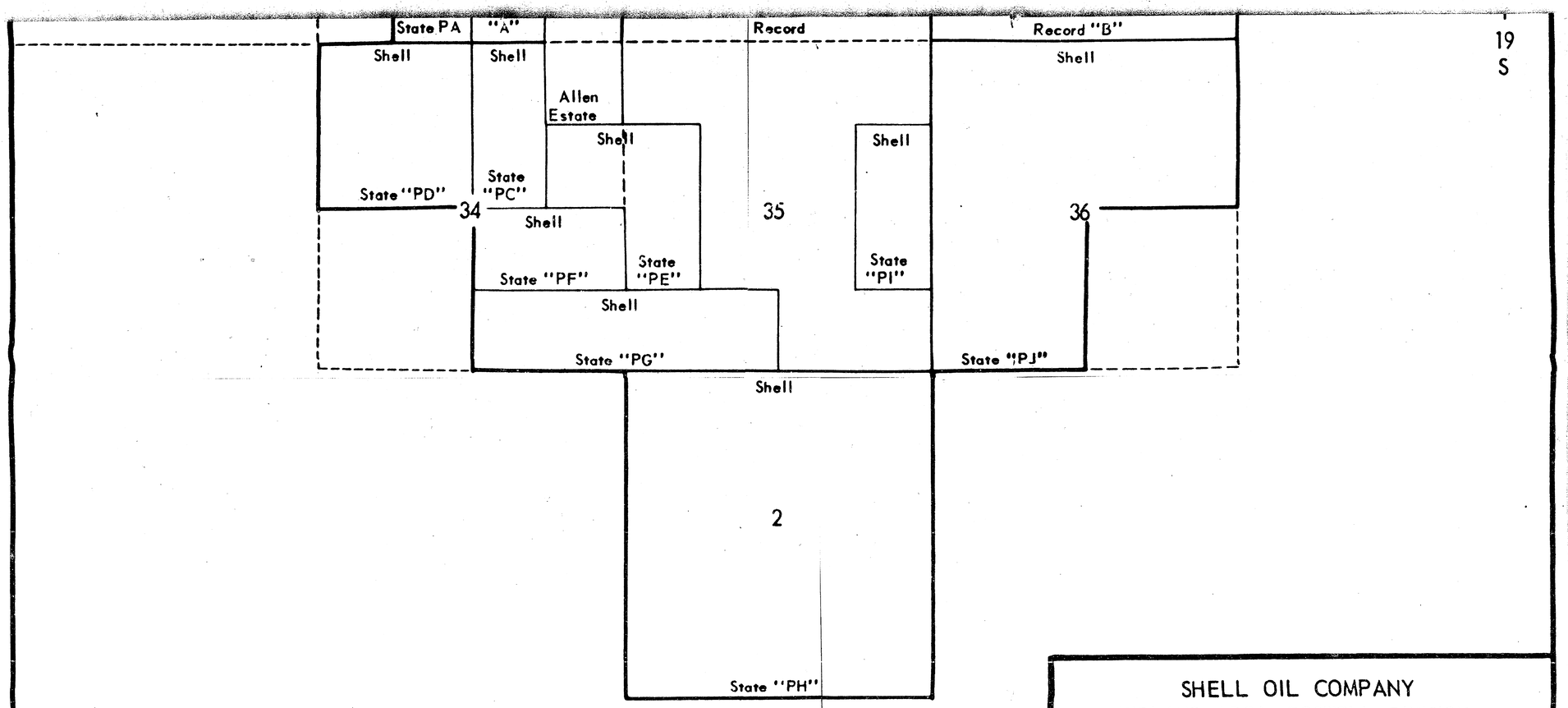
SHELL OIL COMPANY
MIDLAND AREA - ROSWELL DIVISION
PRODUCTION DEPARTMENT
PEARL QUEEN FIELD
PROPOSED INITIAL CENTRAL FACILITIES
NO. I: TEST STATION, TREATING SYSTEM,
AND AUTOMATIC CUSTODY TRANSFER
FACILITIES
LEA COUNTY, NEW MEXICO

Date 10/22/57
Date By G F Y - J W M
Approved R L E
Drawn By D V H

EXHIBIT V


R 35 E
Shell
Shell
21
Shell
22
Shell
23
McIntosh "B"
Shell
McIntosh "E"
McIntosh "D"
McIntosh "A"
Kimberlin
Shell
Shell
Shell
Shell
Shell
Shell
Shell
Shell
State "PB"
G. Hooper
"A" Allen Estate
28
27
Shell
Shell
26
25
McIntosh "C"
McIntosh
Shell
Record "A"
State PA
Record
Record "B"
Shell
Shell
Shell
Allen Estate
Shell
Shell
State "PD"
State "PC"
34
35
36
Shell
State "PF"
State "PE"
State "PI"
Shell
State "PJ"
T 19 S

382



SHELL OIL COMPANY
MIDLAND AREA - ROSWELL DIVISION
PRODUCTION DEPARTMENT
PEARL QUEEN FIELD

PROPOSED LEASES INCLUDED
WITHIN EXCEPTION
LEA COUNTY, NEW MEXICO

Scale: 1"= ½ mile
Date 10/9/57
Data By G F Y - J W M
Approved R L E
Drawn By J W D

BEFORE THE OIL CONSERVATION COMMISSION Case 1512 Exhibit I

EXHIBIT I

383

R35E

T
19
S

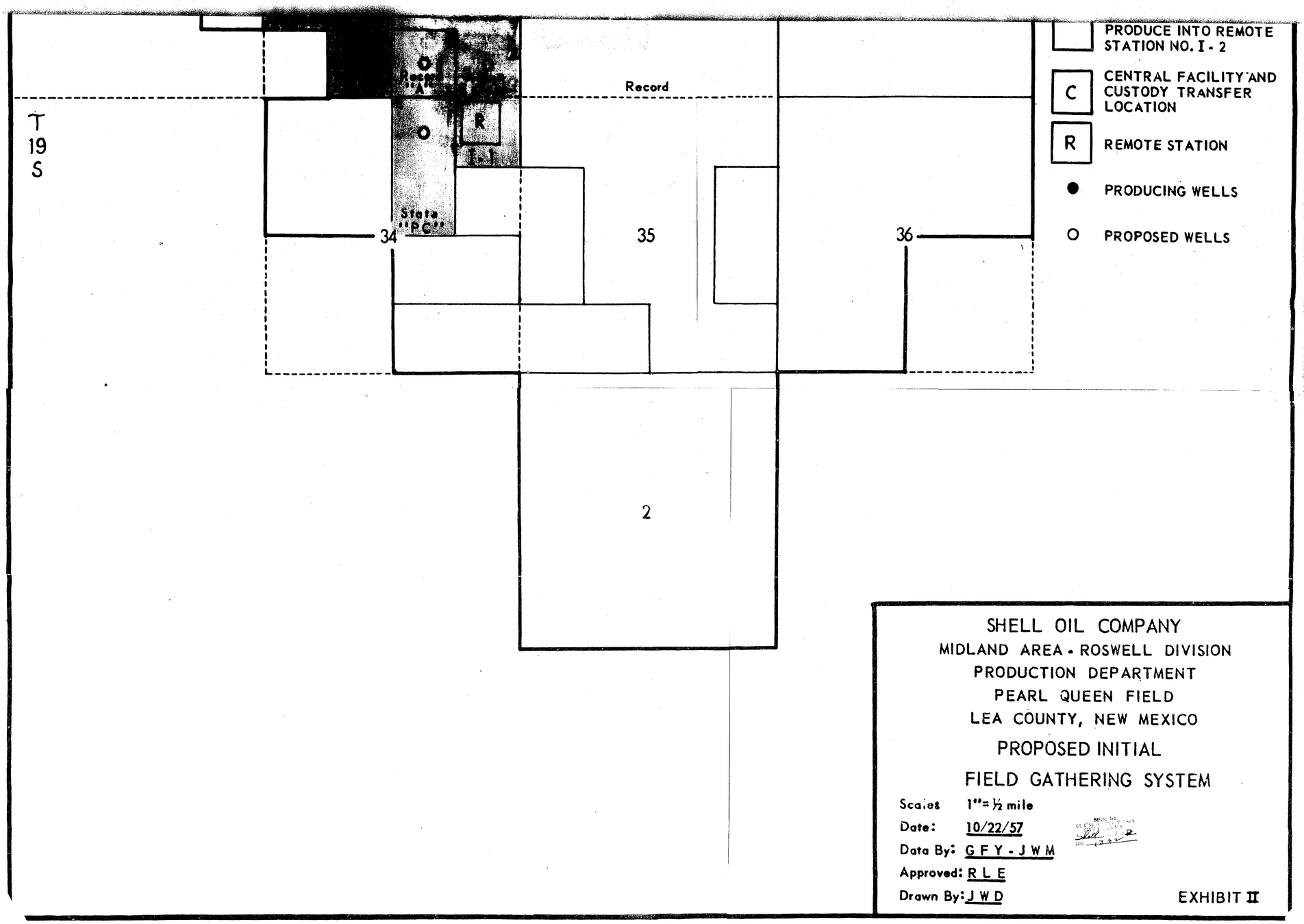
21
22
23
26
27
28
34
35
36
2

McIntosh "A"
Kiehne
I
C
I-2
R
Allen Estate "A"
State "PB"
Hooper
McIntosh
State "PA"
Record "A"
Allen Estate
Record
R
I-1
State "PC"

LEGEND

- WELLS IN THIS AREA PRODUCE DIRECTLY INTO CENTRAL FACILITY AND CUSTODY TRANSFER LOCATION NO. I
- WELLS IN THIS AREA PRODUCE INTO REMOTE STATION NO. I - 1
- WELLS IN THIS AREA PRODUCE INTO REMOTE STATION NO. I - 2
- C — CENTRAL FACILITY AND CUSTODY TRANSFER LOCATION
- R — REMOTE STATION
- ● PRODUCING WELLS
- O PROPOSED WELLS

384



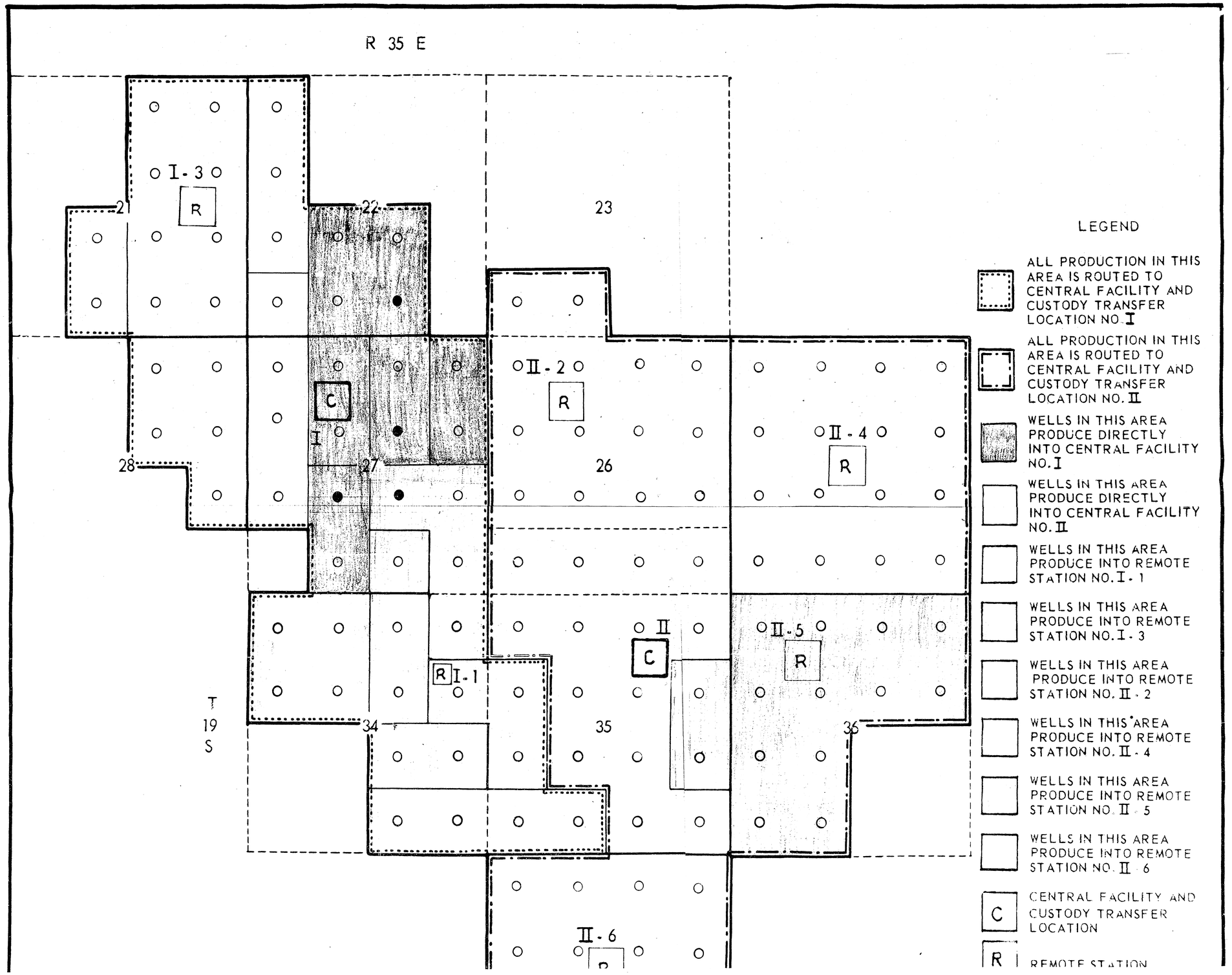
SHELL OIL COMPANY
MIDLAND AREA - ROSWELL DIVISION
PRODUCTION DEPARTMENT
PEARL QUEEN FIELD
LEA COUNTY, NEW MEXICO

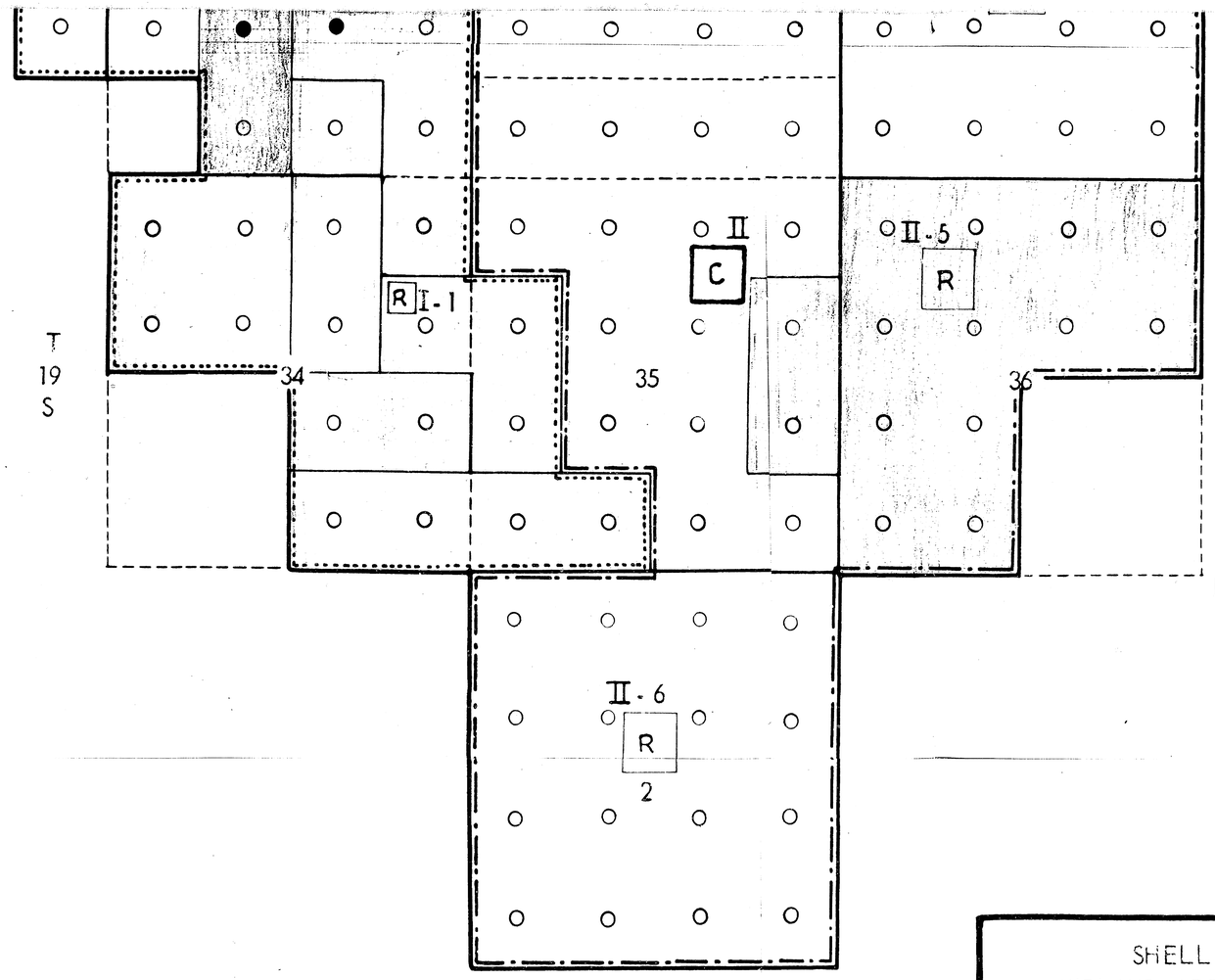
PROPOSED INITIAL

FIELD GATHERING SYSTEM

Scale: 1" = ½ mile
Date: 10/22/57
Data By: G F Y - J W M
Approved: R L E
Drawn By: J W D

EXHIBIT II


R 35 E
I-3
R
21
22
23
II-2
R
C
I
28
27
26
II-4
R
II
C
II-5
R
R I-1
T
19
S
34
35
36
II-6
LEGEND
ALL PRODUCTION IN THIS AREA IS ROUTED TO CENTRAL FACILITY AND CUSTODY TRANSFER LOCATION NO. I
ALL PRODUCTION IN THIS AREA IS ROUTED TO CENTRAL FACILITY AND CUSTODY TRANSFER LOCATION NO. II
WELLS IN THIS AREA PRODUCE DIRECTLY INTO CENTRAL FACILITY NO. I
WELLS IN THIS AREA PRODUCE DIRECTLY INTO CENTRAL FACILITY NO. II
WELLS IN THIS AREA PRODUCE INTO REMOTE STATION NO. I - 1
WELLS IN THIS AREA PRODUCE INTO REMOTE STATION NO. I - 3
WELLS IN THIS AREA PRODUCE INTO REMOTE STATION NO. II - 2
WELLS IN THIS AREA PRODUCE INTO REMOTE STATION NO. II - 4
WELLS IN THIS AREA PRODUCE INTO REMOTE STATION NO. II - 5
WELLS IN THIS AREA PRODUCE INTO REMOTE STATION NO. II - 6
C CENTRAL FACILITY AND CUSTODY TRANSFER LOCATION
R REMOTE STATION



WELLS IN THIS AREA PRODUCE DIRECTLY INTO CENTRAL FACILITY NO. II

WELLS IN THIS AREA PRODUCE INTO REMOTE STATION NO. I - 1

WELLS IN THIS AREA PRODUCE INTO REMOTE STATION NO. I - 3

WELLS IN THIS AREA PRODUCE INTO REMOTE STATION NO. II - 2

WELLS IN THIS AREA PRODUCE INTO REMOTE STATION NO. II - 4

WELLS IN THIS AREA PRODUCE INTO REMOTE STATION NO. II - 5

WELLS IN THIS AREA PRODUCE INTO REMOTE STATION NO. II - 6

C — CENTRAL FACILITY AND CUSTODY TRANSFER LOCATION

R — REMOTE STATION

● PRODUCING WELLS

○ PROPOSED WELLS

SHELL OIL COMPANY
MIDLAND AREA - ROSWELL DIVISION
PRODUCTION DEPARTMENT
PEARL QUEEN FIELD

PROPOSED FUTURE

FIELD GATHERING SYSTEM

LEA COUNTY, NEW MEXICO

Scale: 1" = ½ mile

Date 10/22/57

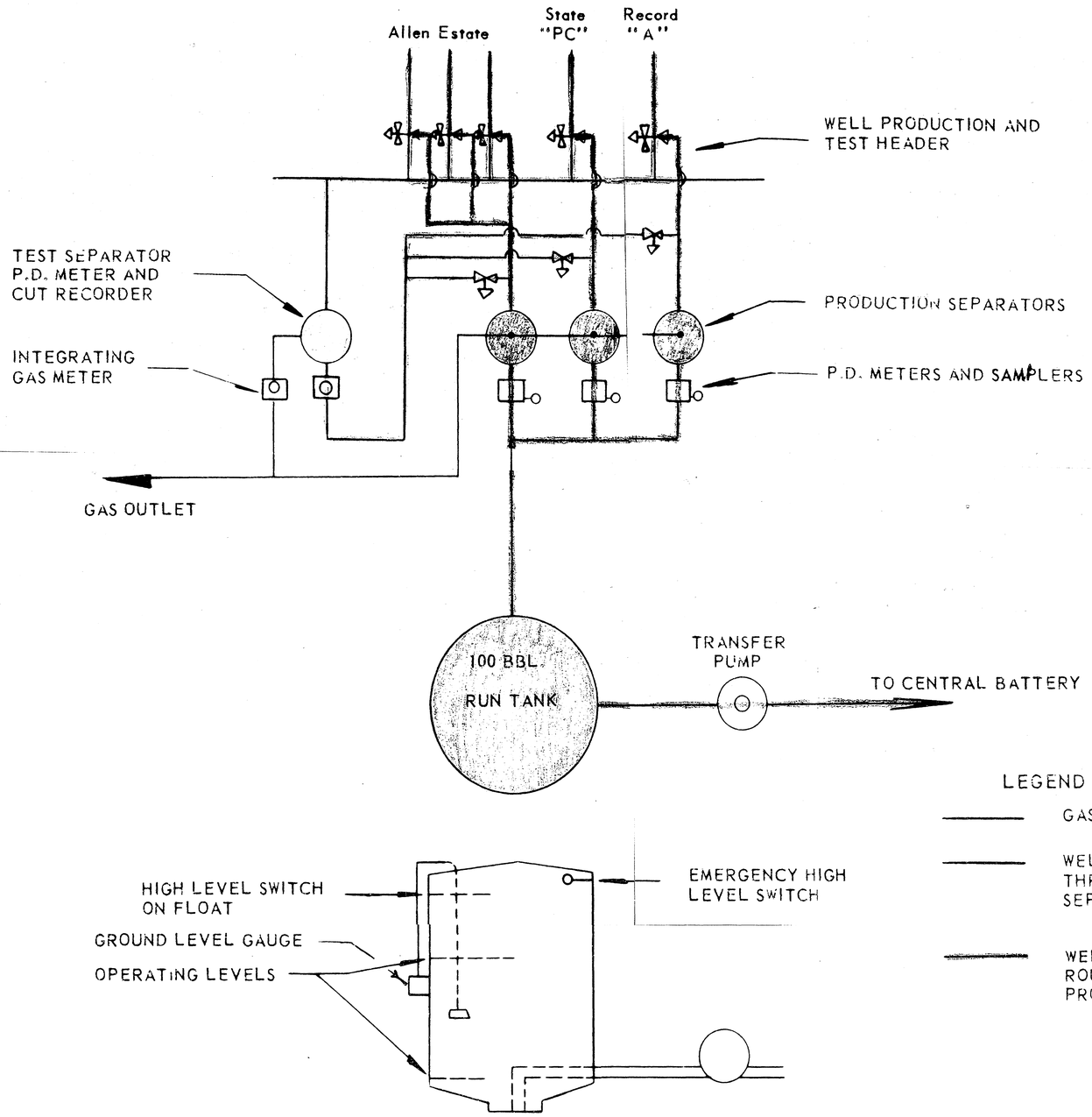
Data By G F Y - J W M

Approved R L E

Drawn By J W D

EXHIBIT III

WELLS PRODUCING INTO REMOTE CONTROL STATION NO. I - 1



LEGEND

- GAS LINES
- WELL ROUTED THROUGH TEST SEPARATOR
- WELLS ROUTED THROUGH LEASE PRODUCTION SEPARATOR

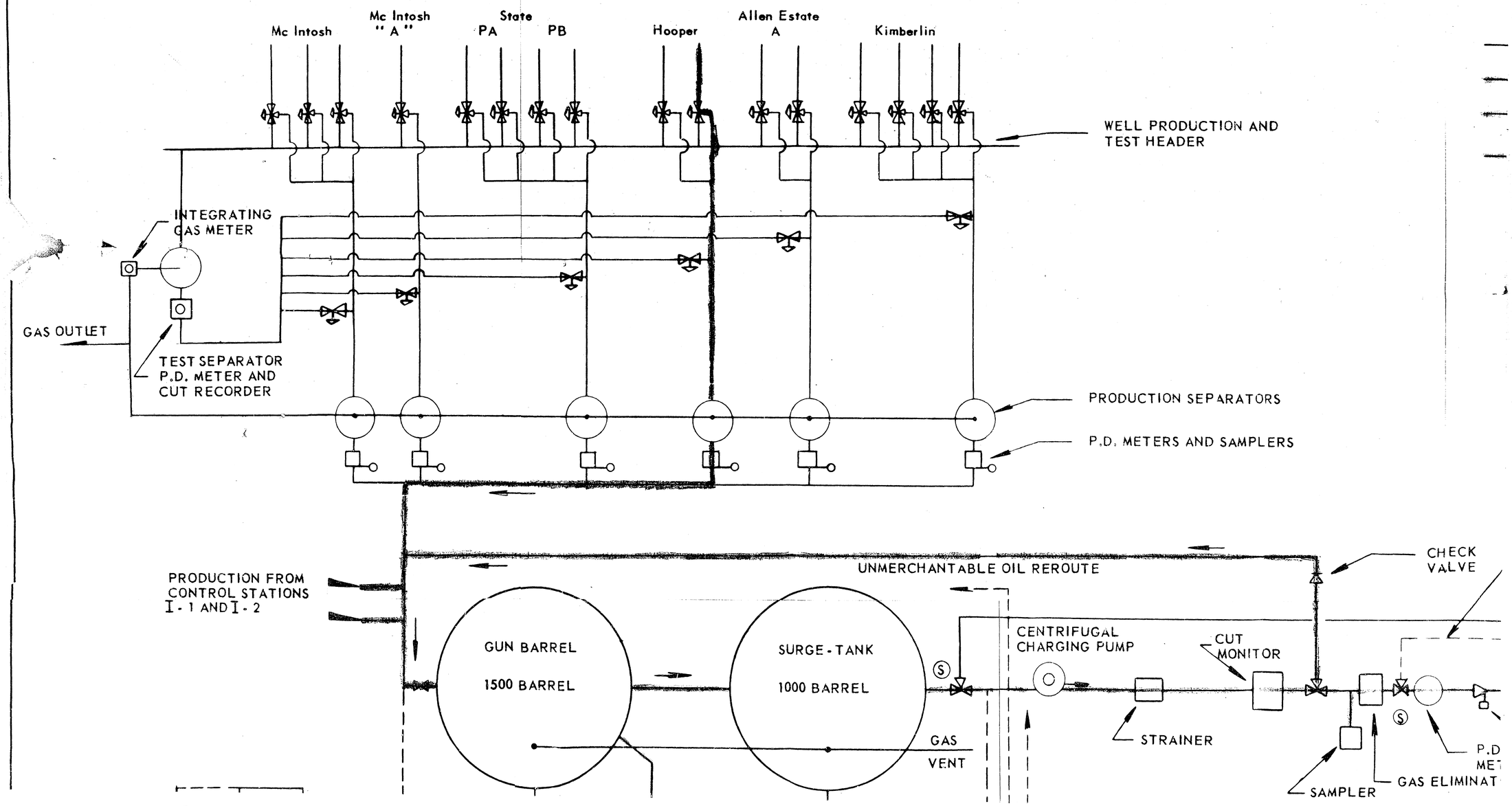
SHELL OIL COMPANY
MIDLAND AREA - ROSWELL DIVISION
PRODUCTION DEPARTMENT
PEARL QUEEN FIELD
PROPOSED REMOTE
CONTROL STATION NO. I - 1
LEA COUNTY, NEW MEXICO

Date 10 22 57
Data By G F Y - J W M
Approved R L E
Drawn By D V H

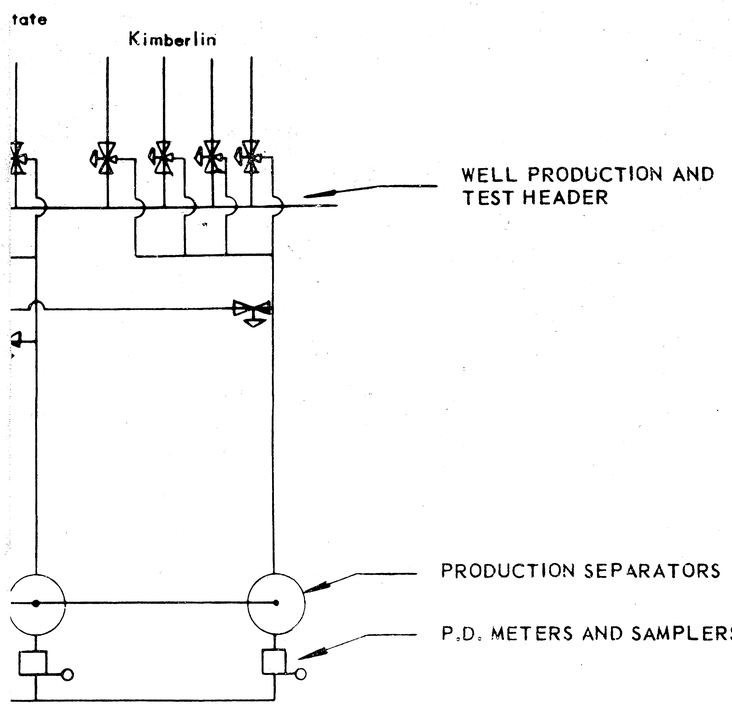
EXHIBIT IV

328

WELLS PRODUCING DIRECTLY INTO CENTRAL FACILITIES

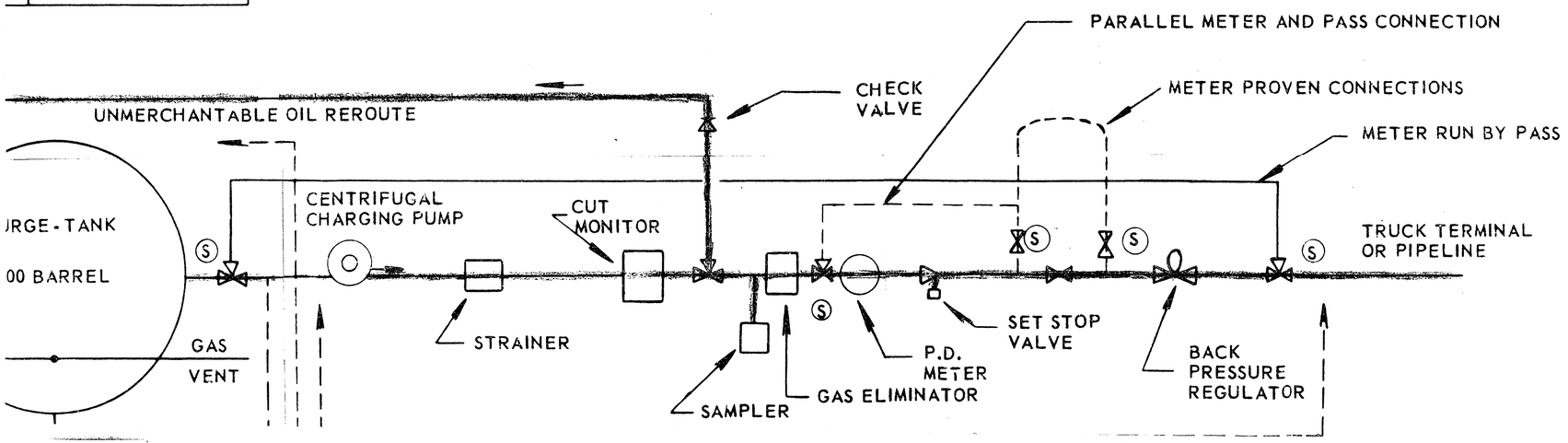


LITIES

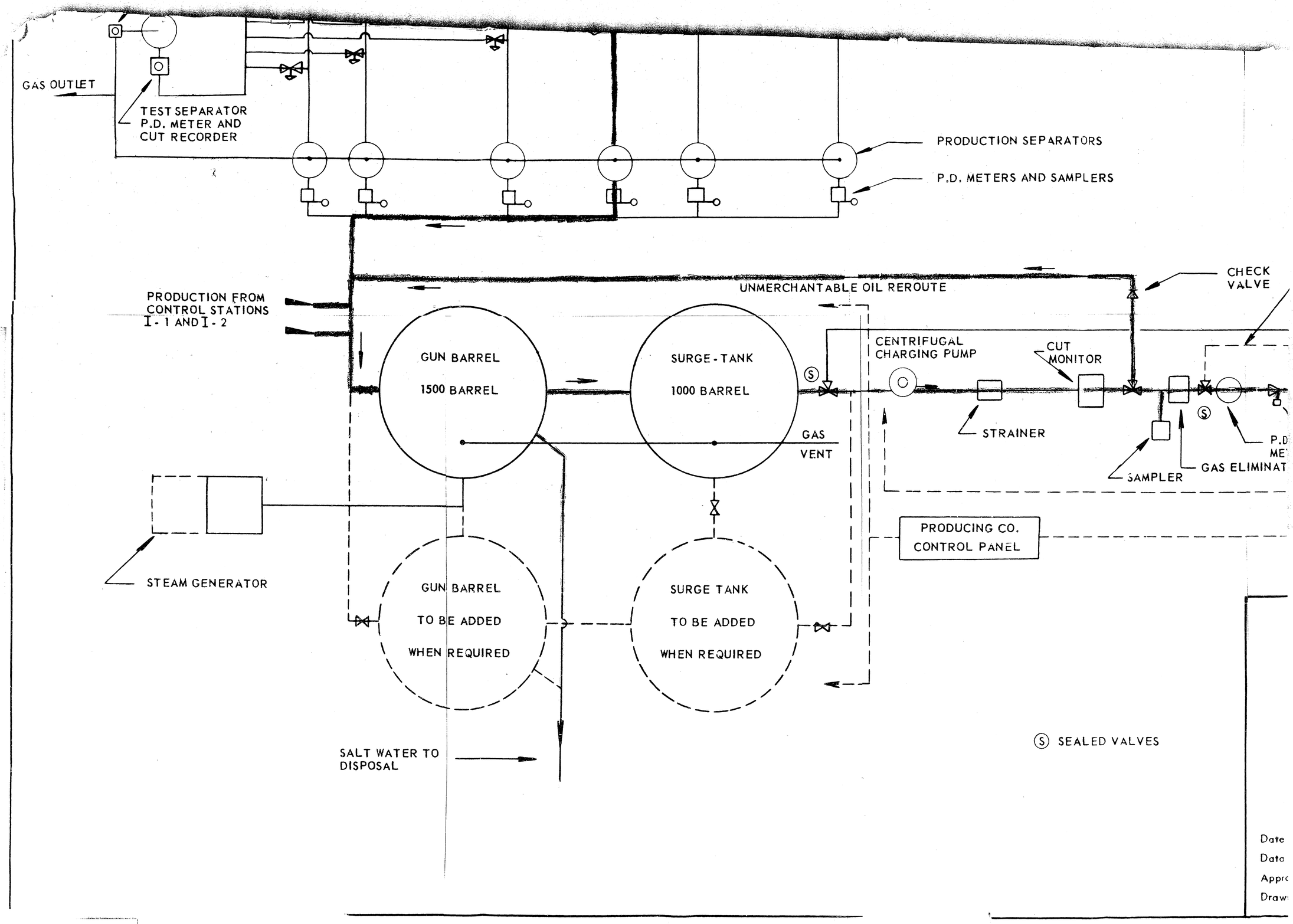


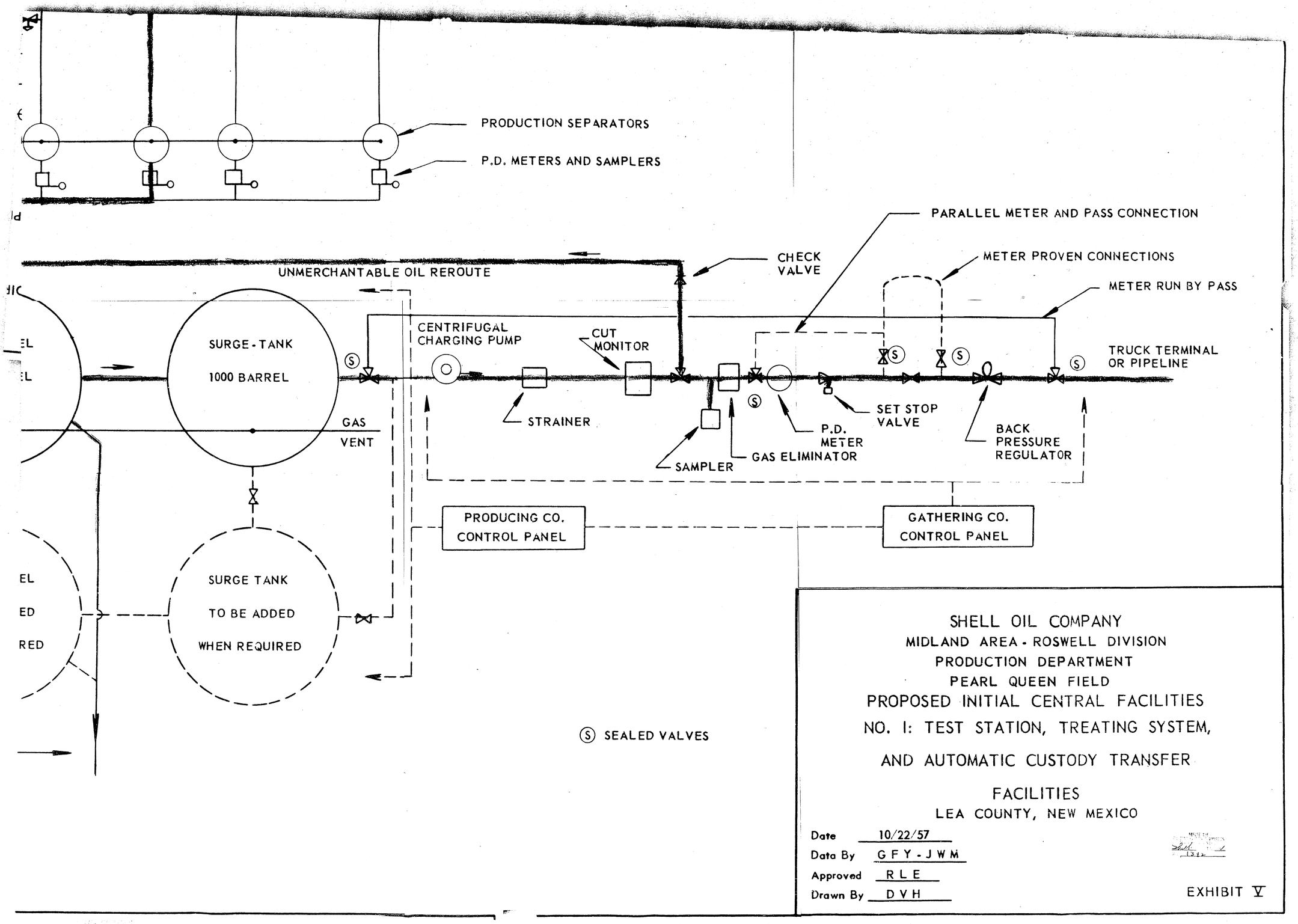
LEGEND

- GAS LINES
- TREATED OIL
- LEASE CRUDE OR OIL REQUIRING FURTHER TREATING
- SALT WATER LINES



390


GAS OUTLET
TEST SEPARATOR
P.D. METER AND
CUT RECORDER
PRODUCTION SEPARATORS
P.D. METERS AND SAMPLERS
PRODUCTION FROM
CONTROL STATIONS
I - 1 AND I - 2
UNMERCHANTABLE OIL REROUTE
CHECK
VALVE
GUN BARREL
1500 BARREL
SURGE - TANK
1000 BARREL
CENTRIFUGAL
CHARGING PUMP
CUT
MONITOR
STRAINER
SAMPLER
GAS ELIMINAT
GAS
VENT
PRODUCING CO.
CONTROL PANEL
STEAM GENERATOR
GUN BARREL
TO BE ADDED
WHEN REQUIRED
SURGE TANK
TO BE ADDED
WHEN REQUIRED
SALT WATER TO
DISPOSAL
(S) SEALED VALVES
Date
Data
Appr
Draw

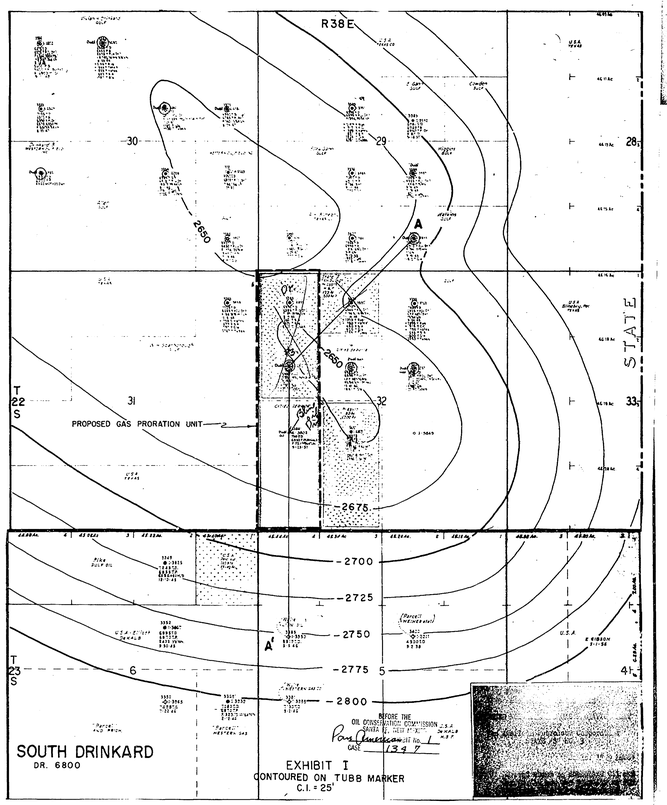


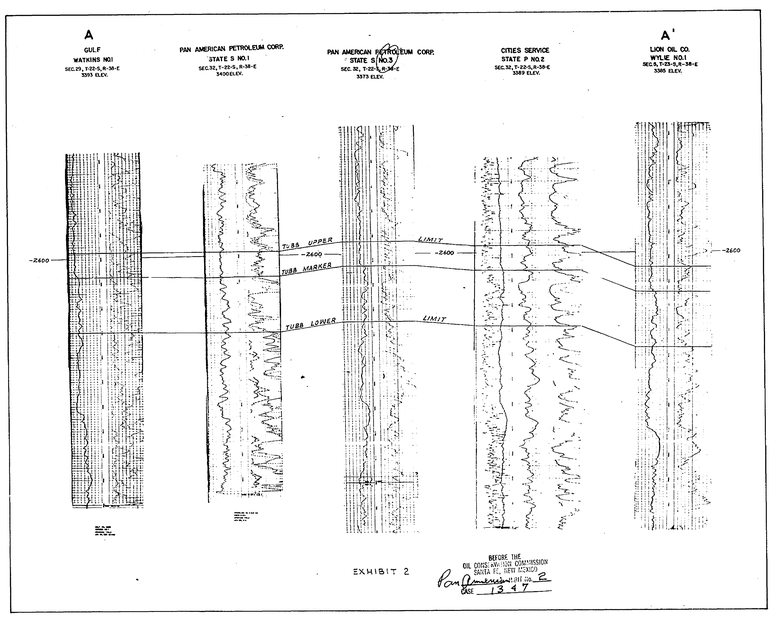
SHELL OIL COMPANY
MIDLAND AREA - ROSWELL DIVISION
PRODUCTION DEPARTMENT
PEARL QUEEN FIELD
PROPOSED INITIAL CENTRAL FACILITIES
NO. 1: TEST STATION, TREATING SYSTEM,
AND AUTOMATIC CUSTODY TRANSFER
FACILITIES
LEA COUNTY, NEW MEXICO

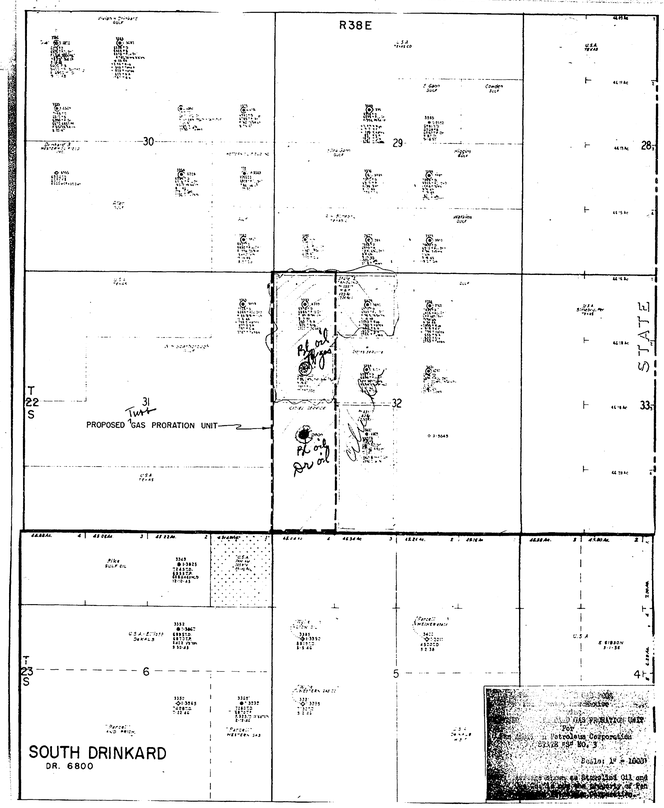
Date 10/22/57
Data By G F Y - J W M
Approved R L E
Drawn By D V H

EXHIBIT V

392

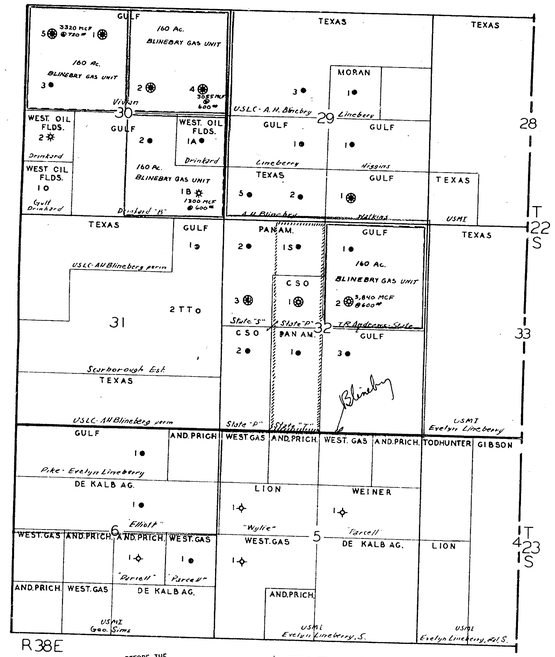

R38E
30
29
28
31
32
33
T 22 S
T 23 S
6
5
4
A
A'
-2650
-2675
-2700
-2725
-2750
-2775
-2800
PROPOSED GAS PRORATION UNIT
STATE
SOUTH DRINKARD
DR. 6800
EXHIBIT I
CONTOURED ON TUBB MARKER
C.I. = 25'
BEFORE THE
OIL CONSERVATION COMMISSION
SANTA FE, NEW MEXICO
CASE 1347


A
GULF
WATKINS NO.1
SEC.29, T-22-S, R-38-E
3293 ELEV.
PAN AMERICAN PETROLEUM CORP.
STATE S NO.1
SEC.32, T-22-S, R-38-E
3400 ELEV.
PAN AMERICAN PETROLEUM CORP.
STATE S NO.3
SEC.32, T-22-S, R-38-E
3373 ELEV.
CITIES SERVICE
STATE P NO.2
SEC.32, T-22-S, R-38-E
3389 ELEV.
A'
LION OIL CO.
WYLIE NO.1
SEC.5, T-23-S, R-38-E
3380 ELEV.
TUBB UPPER LIMIT
-2600
TUBB MARKER
-2650
TUBB LOWER LIMIT
BEFORE THE
OIL CONSERVATION COMMISSION
SANTA FE, NEW MEXICO
CASE 1347
EXHIBIT 2


R38E
30
29
28
31
32
33
T 22 S
T 23 S
6
5
4
PROPOSED GAS PRORATION UNIT
STATE
SOUTH DRINKARD
DR. 6800

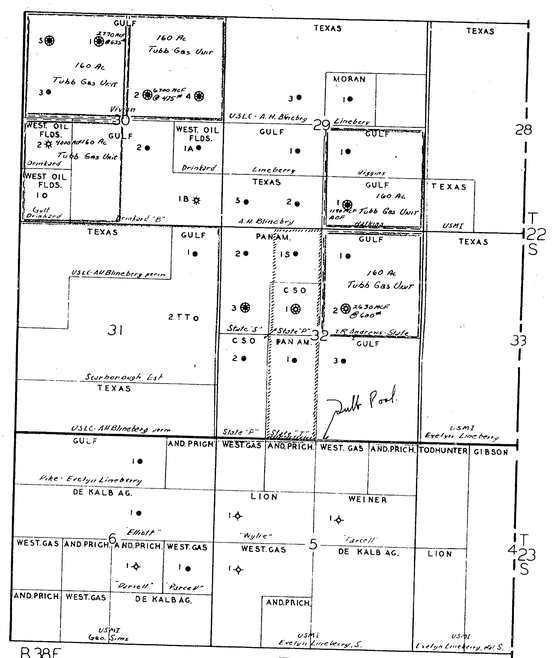
393

394



BEFORE THE
OIL CONSERVATION COMMISSION
SANTA FE, NEW MEXICO
Cities Service Hearing No. 1
CASE 1348

EXHIBIT 1



BEFORE THE
OIL CONSERVATION COMMISSION
SANTA FE, NEW MEXICO
Cities Service Hearing No. 2
CASE 1348

EXHIBIT 2

Radioactivity Log

Well Location: AG340C 35

COMPANY: CITIES SERVICE OIL COMPANY

WELL: STATE P NO. 1

FIELD: SOUTH EUNICE

LOCATION: SEC. 32 T. 22 R 38E — ELEV. DF 3400

COUNTY: LEA — STATE: N. M. — ELEV. KB —, ELEV. GND 3390

LOG ZERO TOP OF ROTARY CABLE ELEV. 3400
PERM. DATUM GROUND LEVEL ELEV. 3390
DRLG. ZERO TOP OF ROTARY CABLE ELEV. 3400

COMPANY: CITIES SERVICE OIL COMPANY
WELL: STATE P NO. 1
FIELD: SOUTH EUNICE
COUNTY: LEA STATE: NEW MEXICO

TYPE OF LOG	GAMMA RAY NEUTRON	
RUN NO.	1 GR	1 NR
DATE	3-30-57	3-30-57
TOTAL DEPTH (DRILLER) RACK	6983	6983
EFFECTIVE DEPTH (DRILLER)	6983	6983
TOP OF LOGGED INTERVAL	15	15
BOTTOM OF LOGGED INTERVAL	6974	6966
TYPE OF FLUID IN HOLE	MUD	MUD
FLUID LEVEL	3832	3832
MAXIMUM RECORDED TEMP.	-----	-----
O.D. OF INSTRUMENT—IN.	3 5/8	3 5/8
DETECTOR CLASS	D401	D6NL
DETECTOR TYPE	SCINT	SCINT
LENGTH OF MEAS. DEVICE—IN.	4	4
SOURCE, STRENGTH AND TYPE	-----	S10A3
SOURCE SPACING—IN.	-----	13.50
TIME CONSTANT—SECONDS	2 - .9	2 - .9
LOGGING SPEED FT./MIN.	24 - 65	24 - 65
STATISTICAL VARIATION—IN.	RECORDED	RECORDED
SENSITIVITY REFERENCE	C933	D968
RECORDED BY	HENDERSON	
WITNESSED BY	WOODRUFF	

BEFORE THE OIL CONSERVATION COMMISSION SANTA FE, NEW MEXICO
Case No. 3
Case 1341

REMARKS OR OTHER DATA

CASING & HOLE RECORD

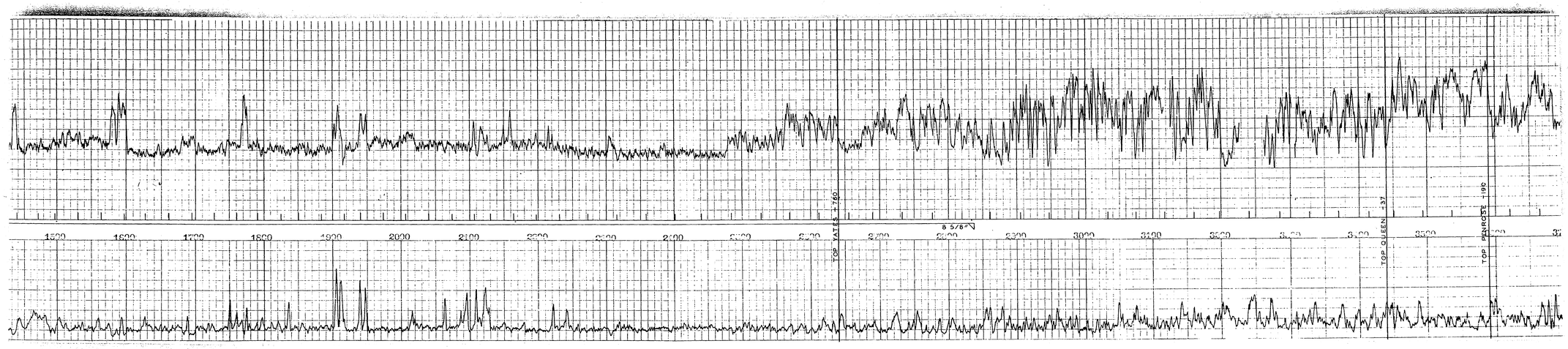
RUN	BIT SIZE	CASING	WT.—LB.	FROM	WELL RECORD	FROM	LOG
1	15	13 3/8	27.5	SURF	TO 286	SURF	TO -----
1	11	8 5/8	28	SURF	TO 2837	SURF	TO -----
1	7 7/8	5 1/2	15.5&17	SURF	TO 6887	SURF	TO 6906
1	7 7/8	0 H	-----	6887	TO 6983	6906	TO 6987
					TO		TO

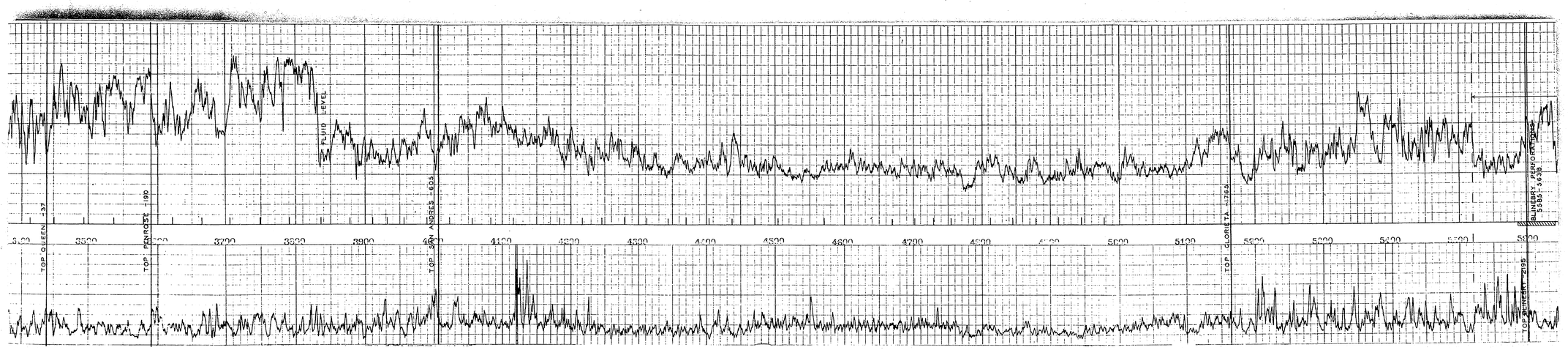
NEUTRON — RADIATION INTENSITY INCREASES — CHART DIVISIONS — 50 EU/CD — 600 EU — 3600 EU

CASING & COLLAR LOG DEPTH — 13 3/8" — 100 200 300 400 500 600 700 800 900 1000 1100 1200 1300 1400 1500 1600 1700 — TOP ANHYDRITE

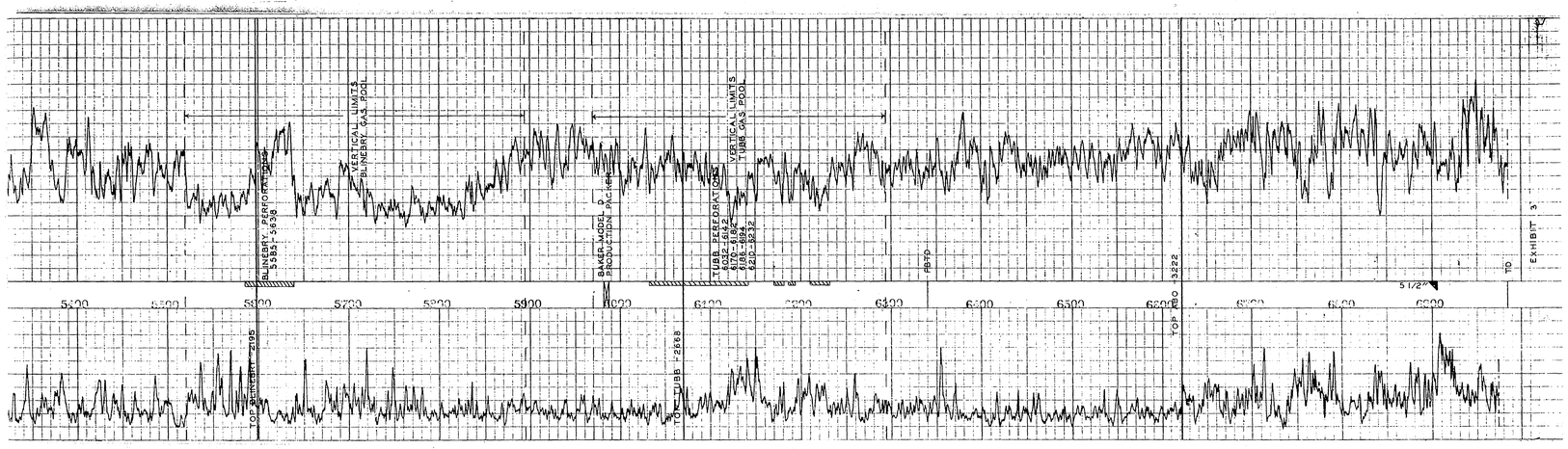
GAMMA RAY — RADIATION INTENSITY INCREASES — CHART DIVISIONS — 6 RU/CD — 60 RU — 0 RU

395

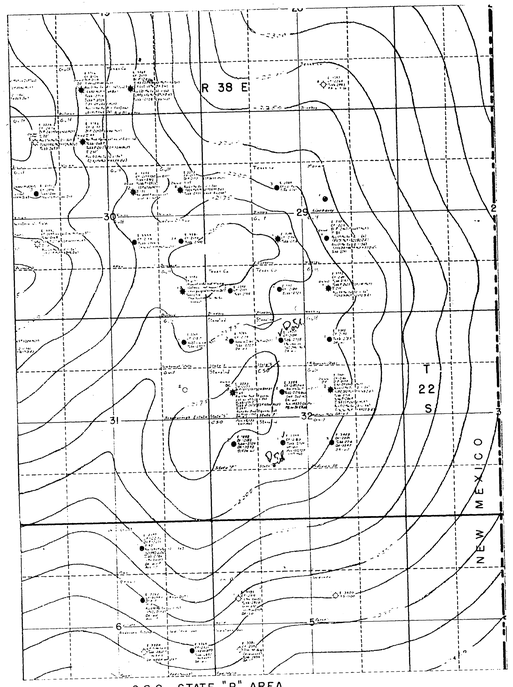

1500
1600
1700
1800
1900
2000
2100
TOP YATES +760
8 5/8"
TOP QUEEN +37
TOP PENROSE +190


TOP QUEEN -37
TOP PENROSE -190
TOP SAN ANDRES -605
TOP GLORIETA -1758
TOP PADDOCK -2195
FLUID LEVEL
RUNNERS PERFORATIONS
5585'-5838'
3500
3700
3800
3900
4100
4300
4500
4600
4700
5000
5100
5400
5500
5700

397

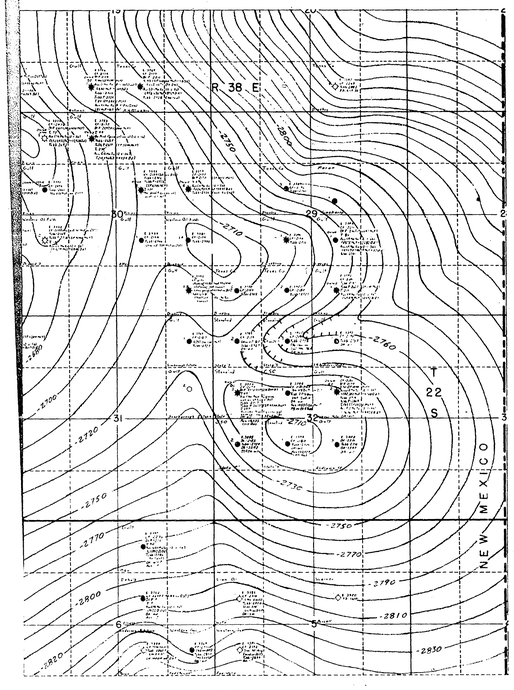

BLINEBRY PERFORATIONS
5981'-6538'
VERTICAL LIMITS
BLINEBRY GAS POOL
BAKER MODEL D
PRODUCTION PACKER
TUBB PERFORATIONS
6072-6242
6702-6762
6186-6194
6210-6232
VERTICAL LIMITS
TUBB GAS POOL
PBTD
TOP BLINEBRY 2795
TOP TUBB 2668
TOP TRD 3222
TD
5 1/2"
EXHIBIT 3
5600
5700
5800
5900
6000
6100
6200
6300
6400
6500
6600
6700
6800
6900

398



C.S.O. STATE "P" AREA
CONTOURED ON TOP OF CLEARFORK (Blinebry)
C.I. = 25'

EXHIBIT 4



C.S.O. STATE "P" AREA
CONTOURED ON TOP OF TUBBS
C.I. = 10'

NOTE: TUBB DATUM 50' BELOW COMMISSION TUBB PICK.

EXHIBIT 5

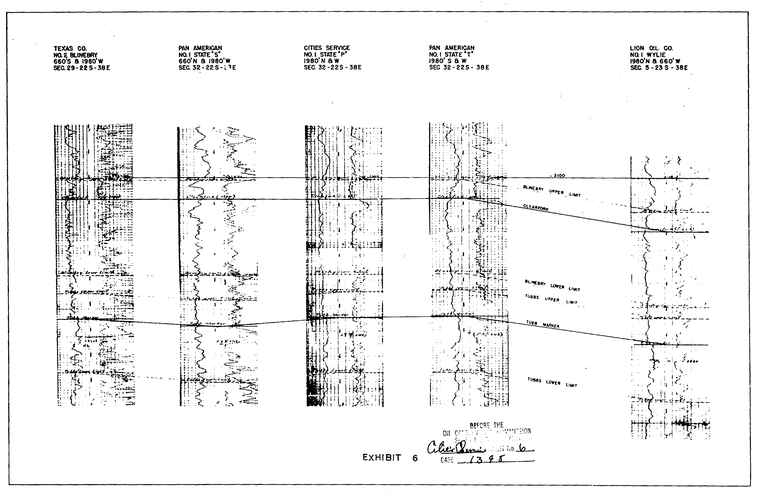


EXHIBIT 6

399

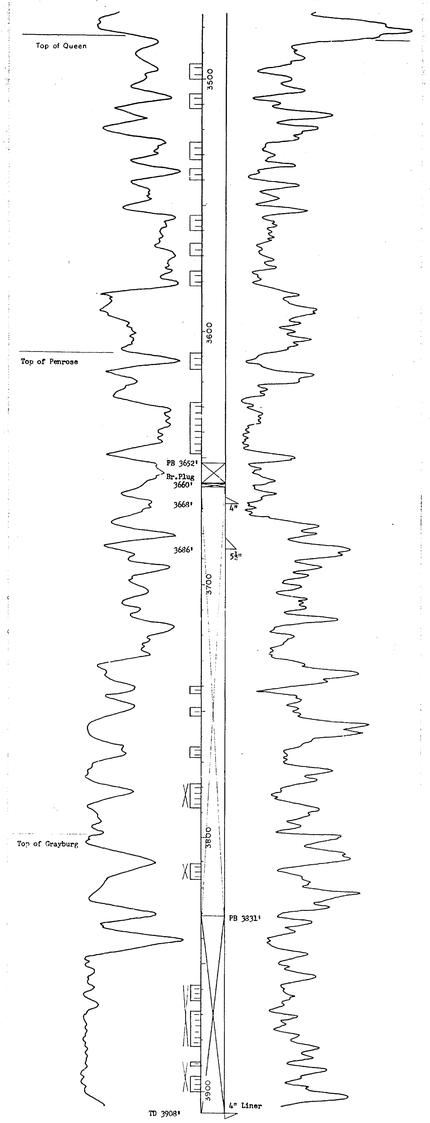
Exhibit No. 2
Case 1349

CONTINENTAL OIL COMPANY

State D-15 No.8

Elev: 3574'

BEFORE THE
OIL CONSERVATION COMMISSION
SANTA FE, NEW MEXICO
Continental EXHIBIT No. 2
CASE 1349

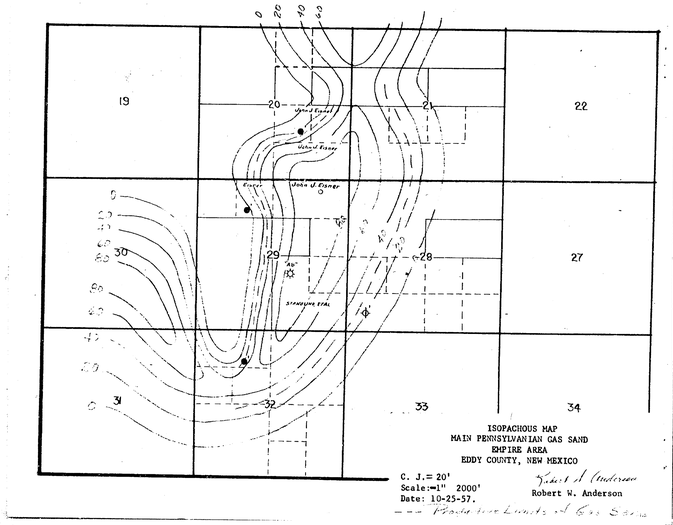


Completed 4-12-37 @ TD 3854' for IP of 99 BOPH, with 1360 MCF gas.

December, '48, deepened & set Liner @ new TD 3908'. After perforating & testing, squeezed off water-productive intervals from 3888' to 3900'. Produced thru intervals from 3857' to 3882'. Tested 66 BOPD + 74 BWPD.

August, '57, squeezed off open intervals. Perforated, tested and squeezed off intervals from 3778' to 3816'. Perforated and acidized intervals from 3740' to 3764'. Pumped 2 BOPD + 1.4 BWPD. CP: OF TP: OF.

400

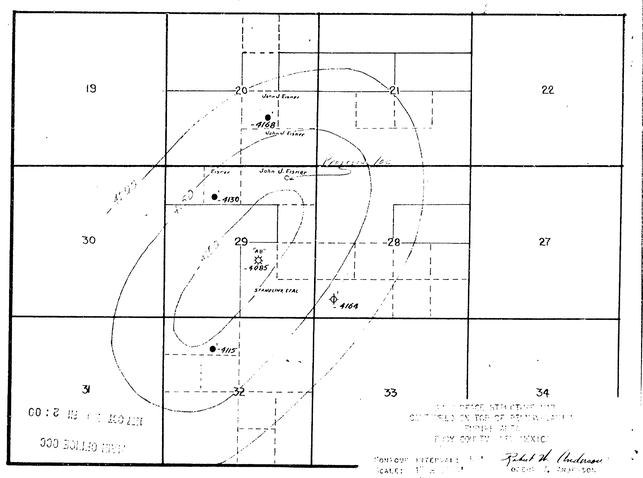


ISOPACHOUS MAP
MAIN PENNSYLVANIAN GAS SAND
EMPIRE AREA
EDDY COUNTY, NEW MEXICO

C. I. = 20'
Scale:-1" 2000'
Date: 10-25-57.

Robert A. Anderson
Robert W. Anderson

--- Probable Limits of Gas Sand



401

COUNTY
RANGE 27

STATE
RANGE 28

TOWNSHIP

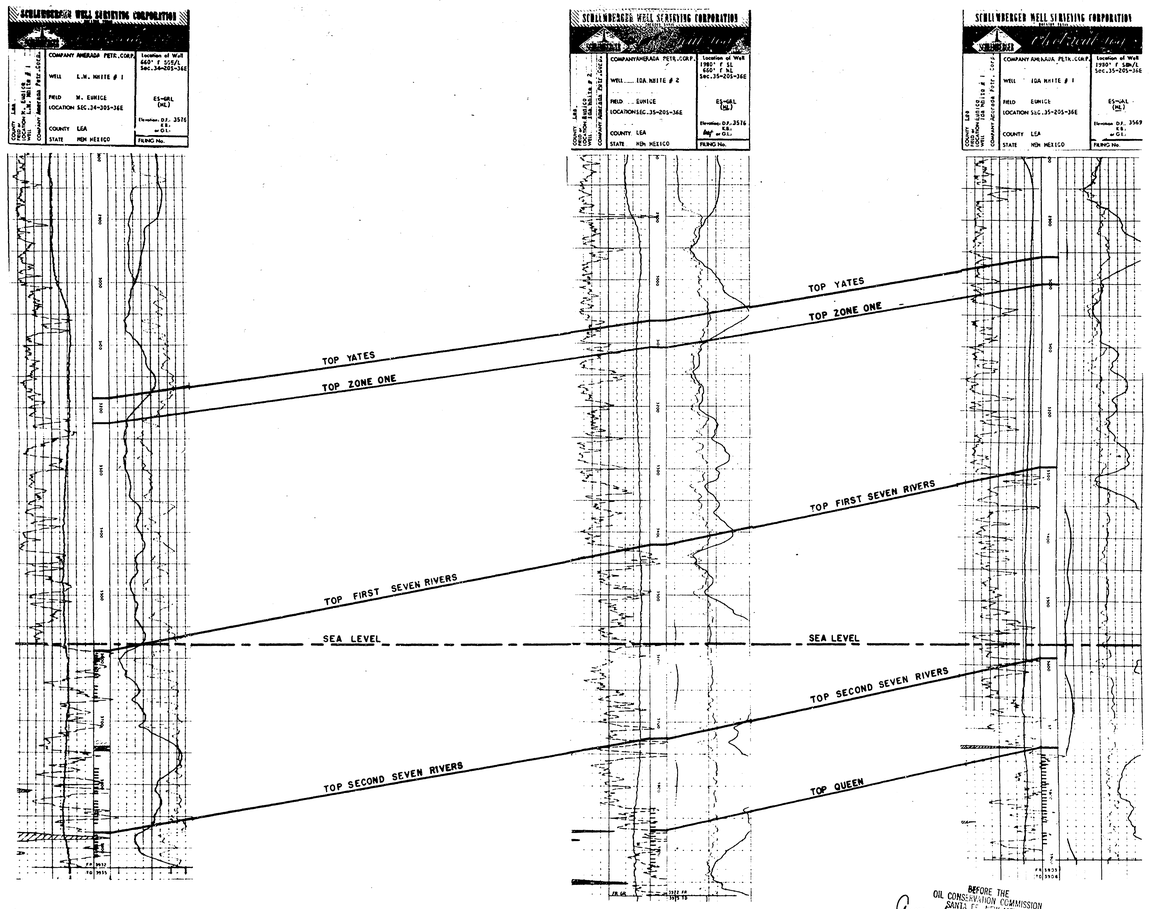
TOWNSHIP

Form 200—Printed and For Sale by Hall-Poorbaugh Press, Roswell, New Mexico

WEST-EAST CROSS SECTION
PORTION EUMONT POOL

A

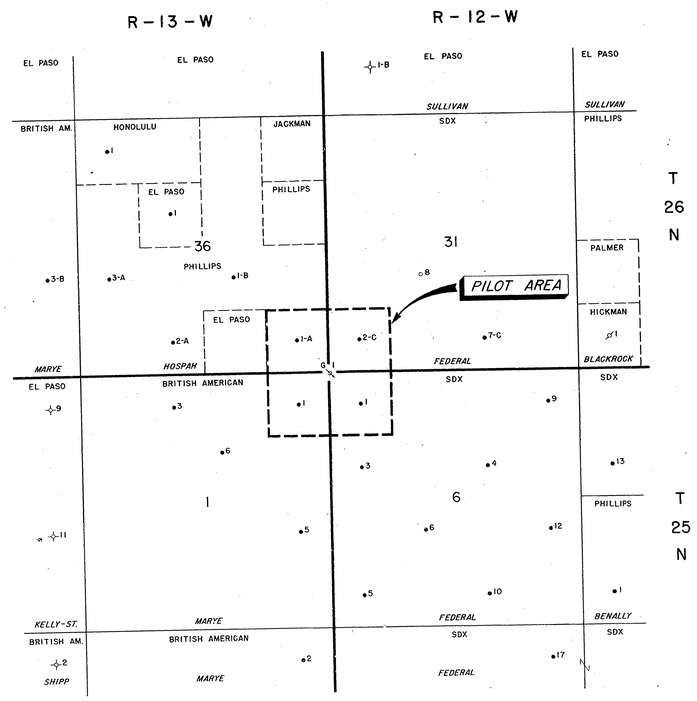
A'



402

BEFORE THE
OIL CONSERVATION COMMISSION
SANTA FE, NEW MEXICO
Amerada EXHIBIT No. 2
CASE 1357

EXHIBIT NO. 2



SUNRAY MID-CONTINENT OIL CO.

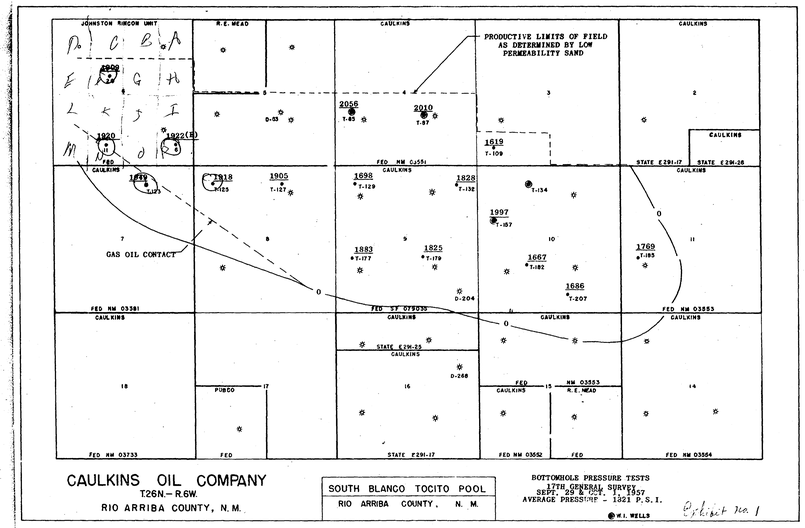
PILOT AREA MAP

BISTI LOWER GALLUP OIL POOL

SAN JUAN CO., NEW MEXICO

SUNRAY MID-CONTINENT OIL COMPANY
EXHIBIT NO. 1 DOCKET NO. 1353

PREPARED BY EXPLORATION DRAFTING SECTION
12-10-57



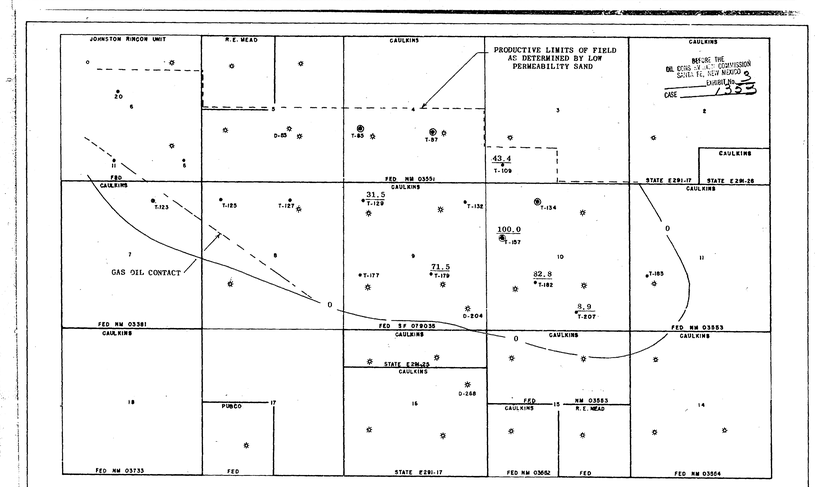
CAULKINS OIL COMPANY
T.26N.- R.6W.
RIO ARRIBA COUNTY, N. M.

SOUTH BLANCO TOCITO POOL
RIO ARRIBA COUNTY, N. M.

BOTTOMHOLE PRESSURE TESTS
17TH GENERAL SURVEY
SEPT. 29 & OCT. 1, 1957
AVERAGE PRESSURE - 1021 P.S.I.

W.I. WELLS

District No. 1



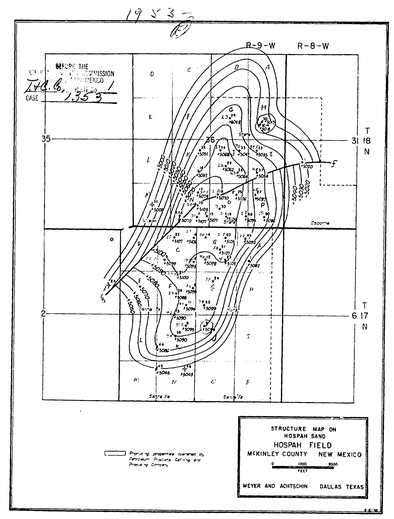
CAULKINS OIL COMPANY
T26N.- R.6W.
RIO ARRIBA COUNTY, N. M.

SOUTH BLANCO TOCITO POOL
RIO ARRIBA COUNTY, N. M.

WATER PERCENTAGE MAP
OCTOBER, 1957
AVERAGE WATER PERCENTAGE - 49.7

W.I. WELLS

403



RADIOACTIVITY LOG

WELEX JET SERVICES, Inc.

FILE NO.

COMPANY GULF OIL CORPORATION

WELL WEST SUMNER (NEW MEX.) SEC. 3

FIELD SAN ANDRES PERMO PENN

COUNTY LEA STATE NEW MEXICO

LOCATION 1650' FNL & 1650' FEL, SEC. 30, T-16-S, R-31-E.

Elev.: K.B. 4206'	D.F.	G.L. 4194'	
Date	12-19-57		
Run No.	ONE		
Depth—Driller	4600		
Depth—Logger	4600		
Bottom Logged Interval	4600		
Top Logged Interval	3500		
Type Fluid in Hole	SALT WATER		
Salinity, P.P.M. Cl	150,000		
Density	10.0		
Level	FULL		
Max. Rec. Temp. Deg. F.	120°		
Operating Time	4 HRS.		
Recorded By	R. HOOD		
Witnessed By			

CASING RECORD					TUBING			
	Size	Wgt.	Grade	Depth	Size	Wgt.	Grade	Depth
1st String	7"	20		3500'				
2nd String								
Liner								

REMARKS OR SPECIAL DATA

Interpreted By

West Texas Electrical Log Service

Colin E. Reese

REFERENCE AG4008

COMPLETION RECORD

SPUD DATE

COMP. DATE

DST RECORD

Gulf Oil Corp.

Case No. 1354

Exhibit No. 4

CASING RECORD Dec. 19, 1957

PERMANENT RECORD

ACID, SAND DATA

T.P.

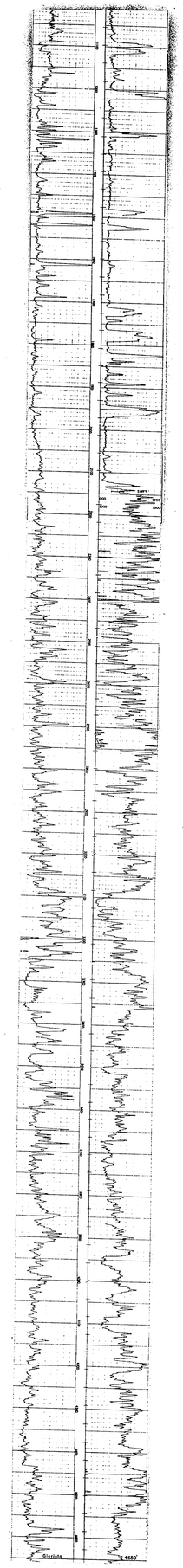
C.P. T.P.

REMARKS

GAMMA RAY — RADIATION INTENSITY INCREASES

NEUTRON — RADIATION INTENSITY INCREASES

404



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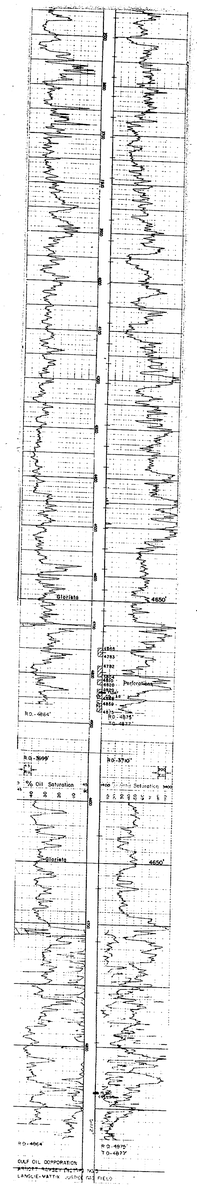

Glorieta
4650'
Perforations
RD-4664'
RD-3699'
RD-3740'
% Oil Saturation
Glorieta
4650'
RD-4664'
RD-4615'
TD-4637'
DAF OIL CORPORATION
LANGLIE-MATTIX UNIT

406

R31E

CITIES SERVICE | GULF | WOOLLEY

WOOLLEY QUEEN

TPC&O

GOV'T D | BROWNING | STATE I — T 12 S

KERR-McGEE | CITIES SERVICE | CITIES SERVICE | TRIGG | PENROSE | CITIES SERVICE | ADA

LEVICK | STATE AN

HODGES | WOOLLEY

GOV'T A | GOV'T C | GOV'T C | FEDERAL-34 | STATE | WOOLEY QUEEN | LEVICK STATE

TRIGG | CITIES SERVICE | CITIES SERVICE | PENROSE | ADA | SHELTON

RICH STATE | GULF STATE | GULF STATE

PENROSE | WHALEY CO | GEROR OIL

ZACHERY STATE | N.M. STATE | STATE A — T 13 S

LATE OIL | TPC&O

STATE

PENROSE

FEDERAL-4 | GOV'T B | STATE AN | ZACHERY STATE | STATE H

TRIGG | CITIES SERVICE | PENROSE | PENROSE

GULF

ZIMMERMAN

GOV'T B | ALSTON

PENROSE | GULF | GULF

FEDERAL-9 | PHILMEX | FEDERAL HOPP A | ZIMMERMAN | REP FEDERAL

CAPROCK - QUEEN POOL
CHAVES CO., NEW MEXICO
CITIES SERVICE OIL CO.

THE MYERSON TOOL CO.

CASE 1356 EXHIBIT 14

407

GOVERNMENT "B" LEASE

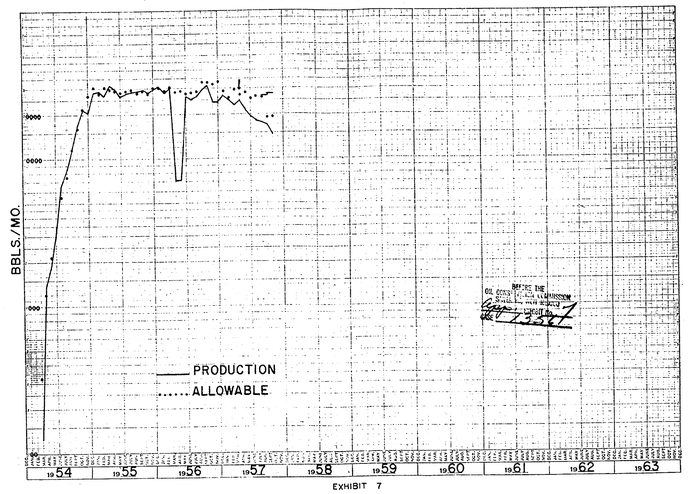
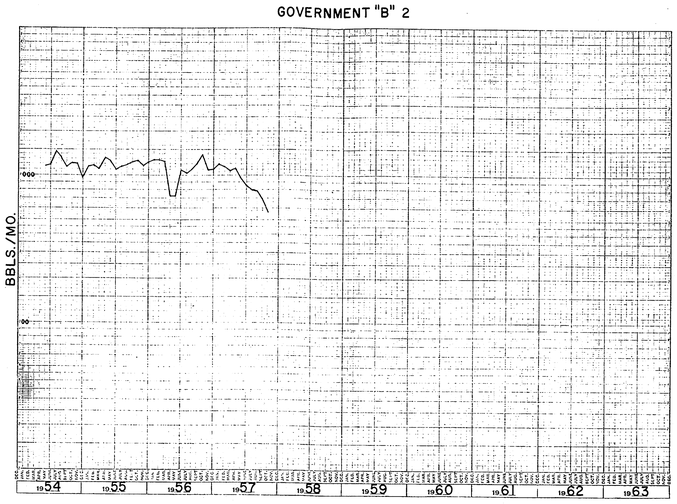
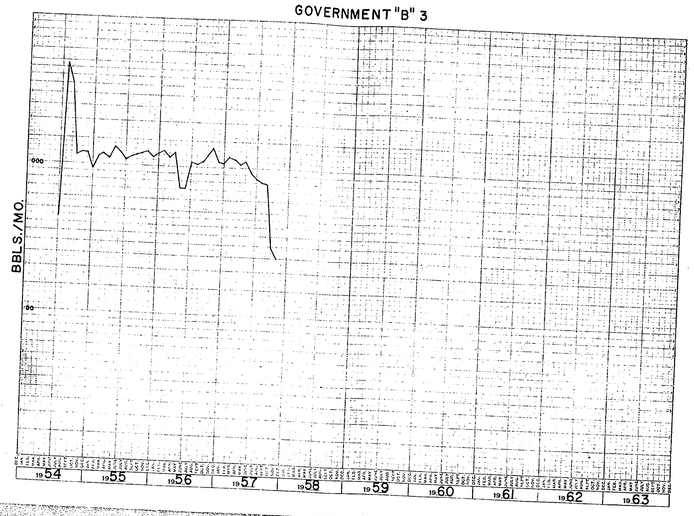


EXHIBIT 7

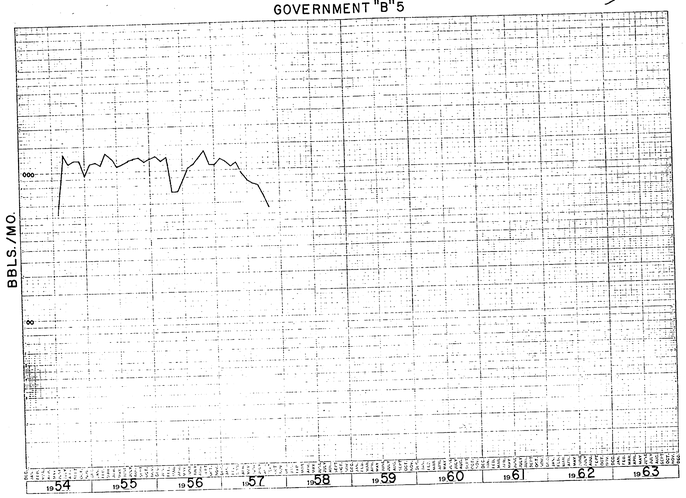
GOVERNMENT "B" 2



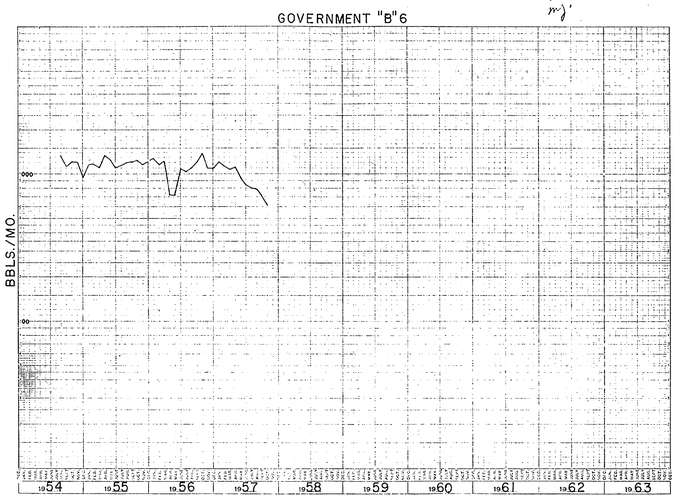
GOVERNMENT "B" 3



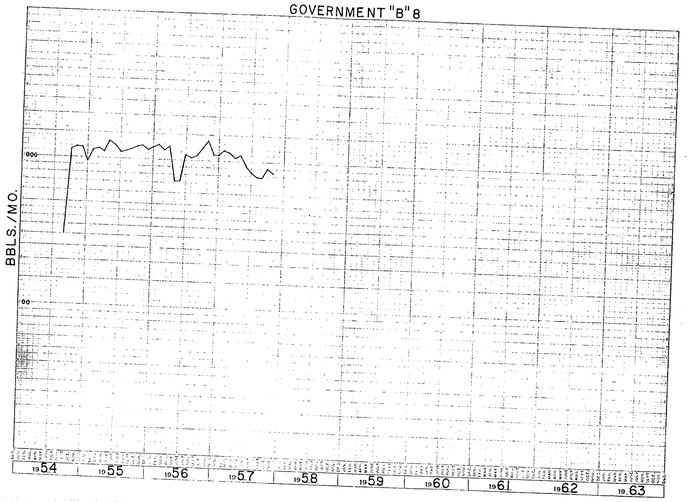
GOVERNMENT "B"5



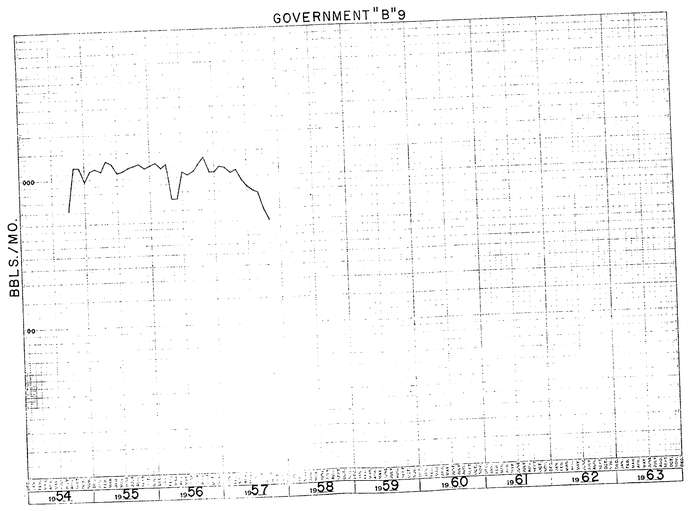
GOVERNMENT "B"6



GOVERNMENT "B" 8



GOVERNMENT "B"9



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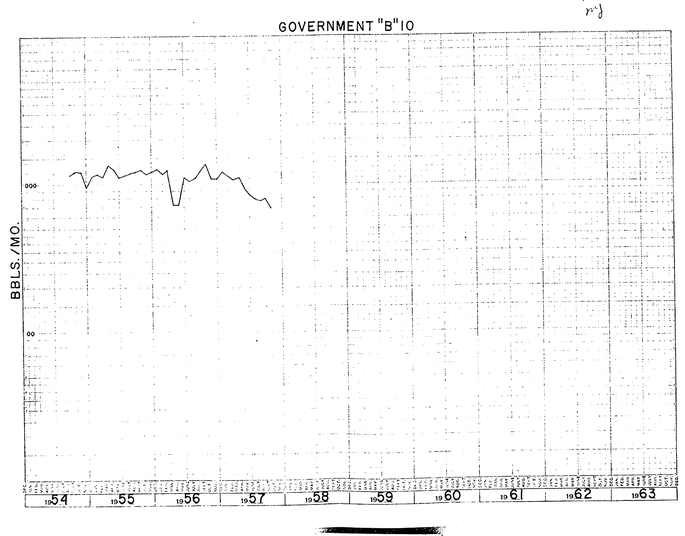

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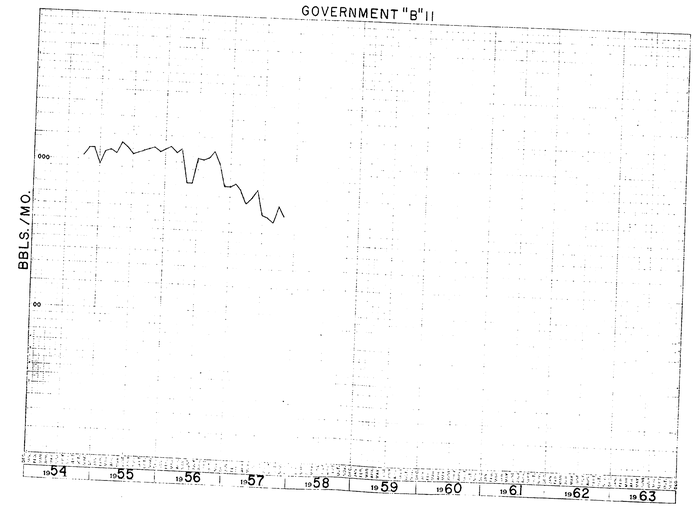

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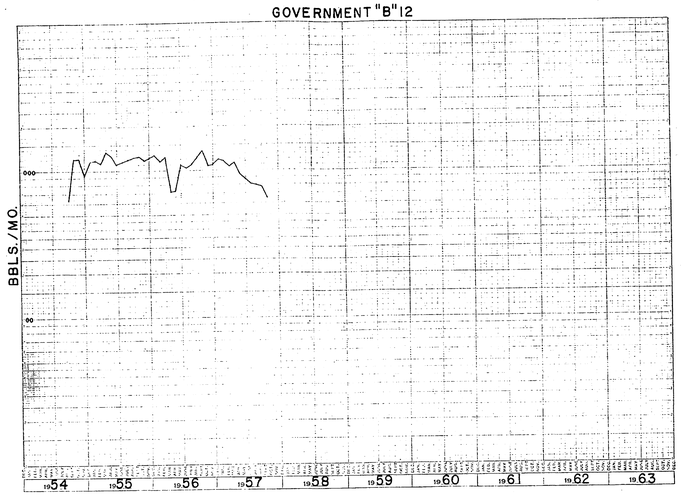
GOVERNMENT "B" 12
BBLS./MO.
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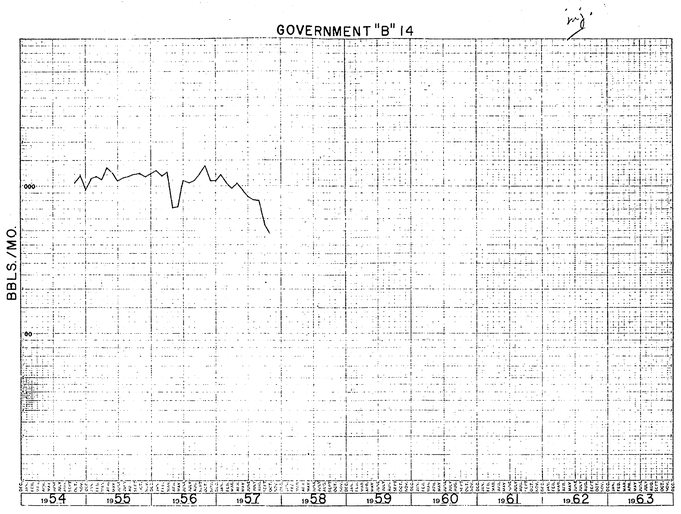
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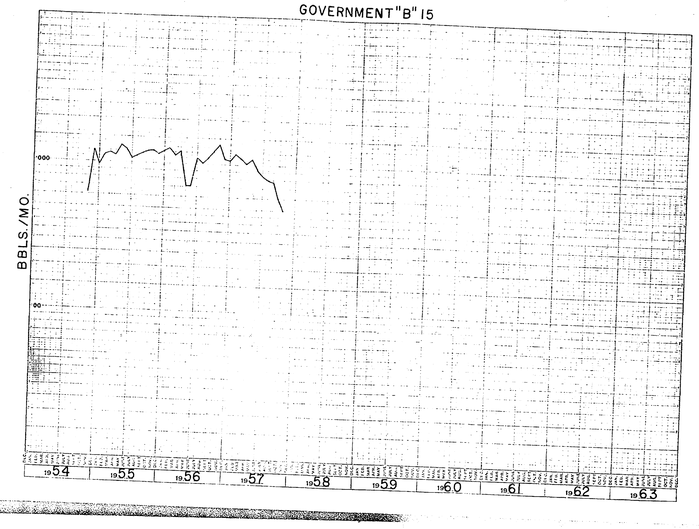
GOVERNMENT "B" 15
BBLS./MO.
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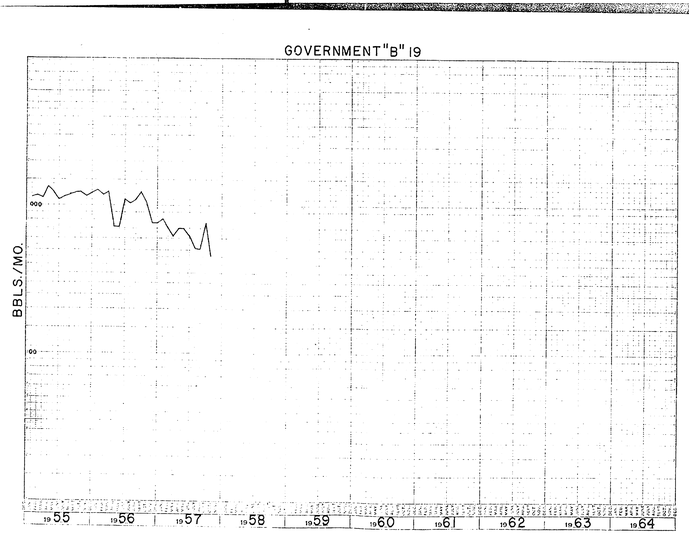
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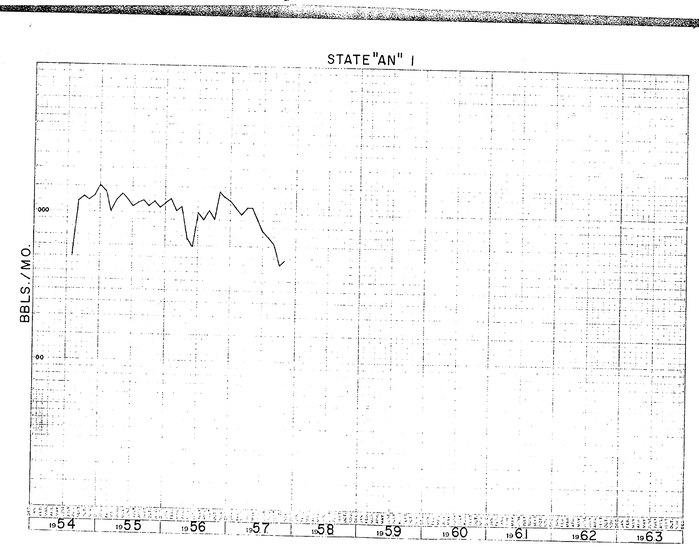
STATE "AN" 1
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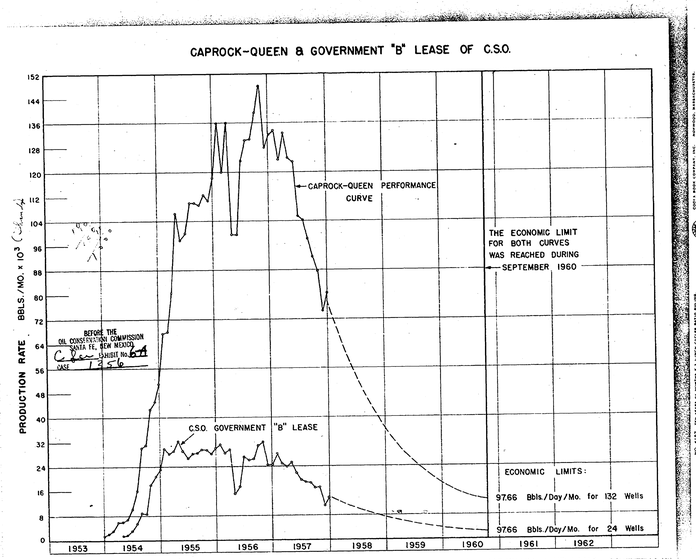
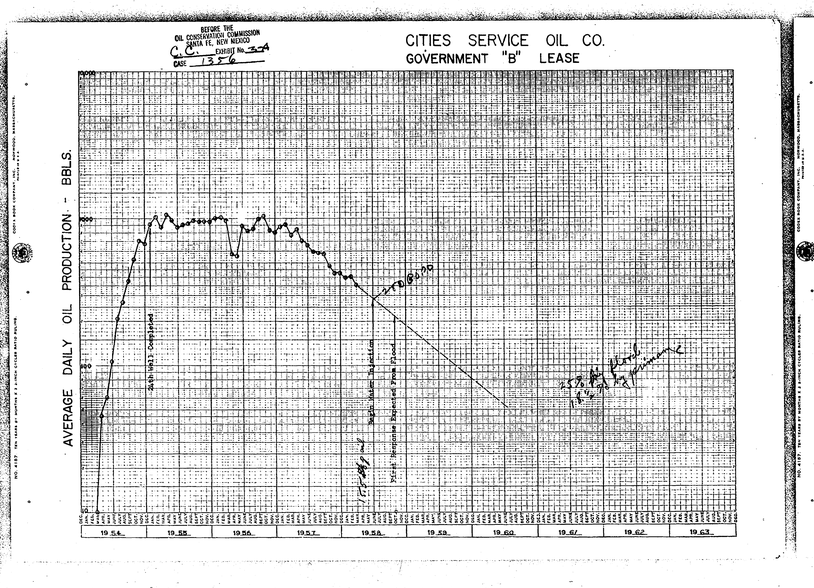
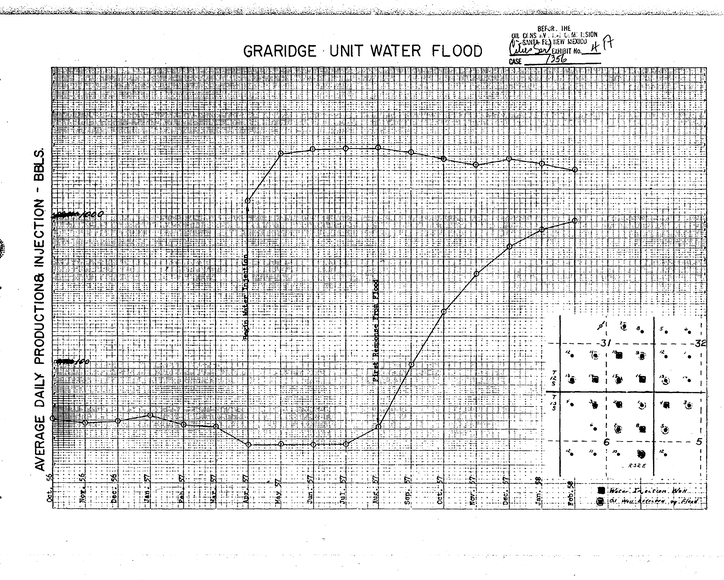
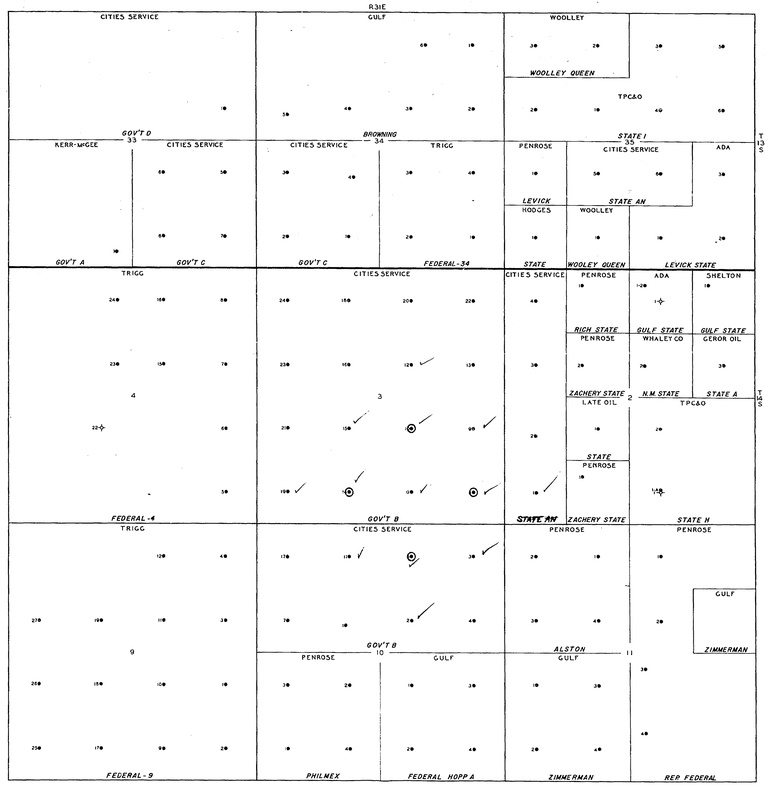








CAPROCK - QUEEN POOL
CHAVES CO., NEW MEXICO
CITIES SERVICE OIL CO.
SCALE 1"=1000'

EXHIBIT 1

410

Exhibit
CASE 1356

LANE RADIOACTIVITY LOG WELLS

COMPANY

FILE NO.

Location of Well

COMPANY: CITIES SERVICE OIL CO.
WELL: GOVERNMENT "B" NO. 5
FIELD: DRINKY QUEENS
COUNTY: LEA STATE: N MEX.
LOCATION: 1980' FEL & 660' FEL OF
SECTION 30, T-11-S, R-31-E

COMPANY: CITIES SERVICE OIL CO.
WELL: GOVERNMENT "B" NO. 5
FIELD: DRINKY QUEENS
COUNTY: LEA
LOCATION: STATE: N MEX.

LOG MEAS. FROM	KELLY DRIVE BUSHING	ELEV. 4428
DRLG. MEAS. FROM	KELLY DRIVE BUSHING	ELEV. 4428
PERM. DATUM	GROUND LEVEL	ELEV. 4421

	GAMMA RAY	NEUTRON
TYPE OF LOG		
RUN NO.	ONE-RW	ONE-RW
DATE	7-28-51	7-28-51
TOTAL DEPTH (DRILLER) RADE	3072	3072
EFFECTIVE DEPTH (DRILLER)	3072	3072
TOP OF LOGGED INTERVAL	SURFACE	SURFACE
BOTTOM OF LOGGED INTERVAL	3059.5	3068.5
TYPE OF FLUID IN HOLE	OIL	OIL
FLUID LEVEL	FULL	FULL
MAXIMUM RECORDED TEMP.		
NEUTRON SOURCE STRENGTH & TYPE		60MM
SOURCE SPACING — IN.		8.25
LENGTH OF MEASURING DEVICE — IN.	36"	9.25
O.D. OF INSTRUMENT — IN.	3 5/8"	3 5/8"
TIME CONSTANT — SECONDS	5.0	4.0
LOGGING SPEED FT. MIN.	20	20
STATISTICAL VARIATION — IN.		
SENSITIVITY REFERENCE	27½	27½
RECORDED BY	WHITTINGTON	& HURST
WITNESSED BY	WOODRUFF	WOODRUFF

CASING RECORD

RUN NO.	BIT SIZE	CASING	WT.—LB.	FROM	WELL RECORD TO	FROM	R A LOG TO
ONE	11"	8 5/8"		SURFACE	307	SURFACE	305
ONE	7 7/8"	5 1/2"	14	SURFACE	3065	SURFACE	3044
ONE	4 3/4"			3045	3072	3044	3062.5

REMARKS OR OTHER DATA

GAMMA RAY

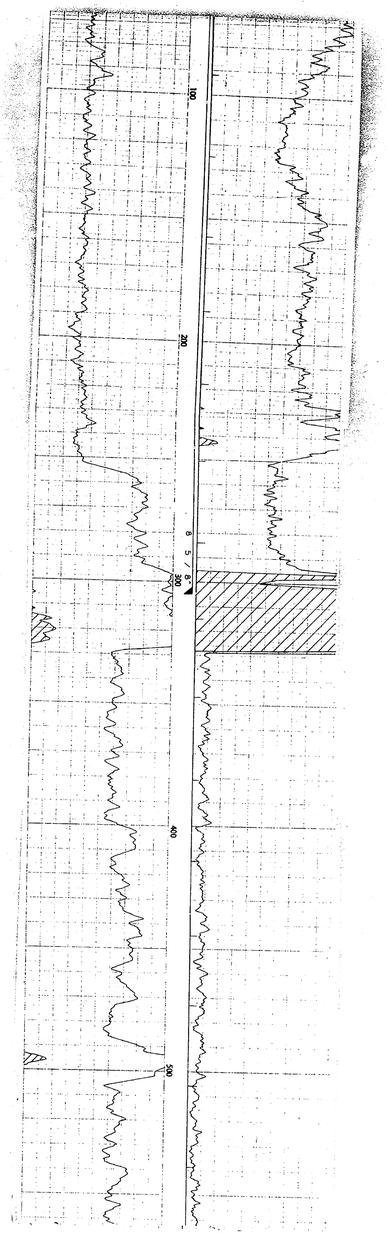
RADIATION INTENSITY INCREASES

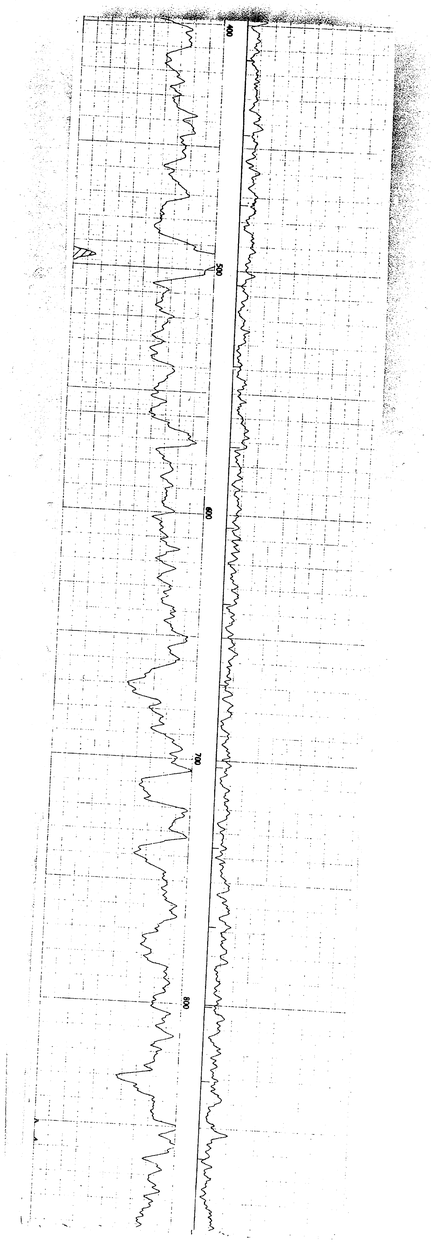
NEUTRON

RADIATION INTENSITY INCREASES

411

412





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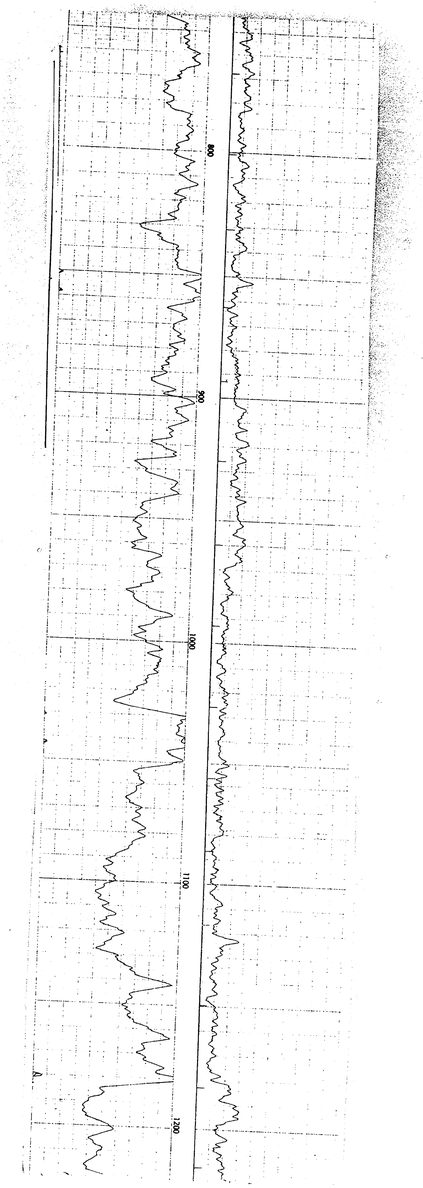

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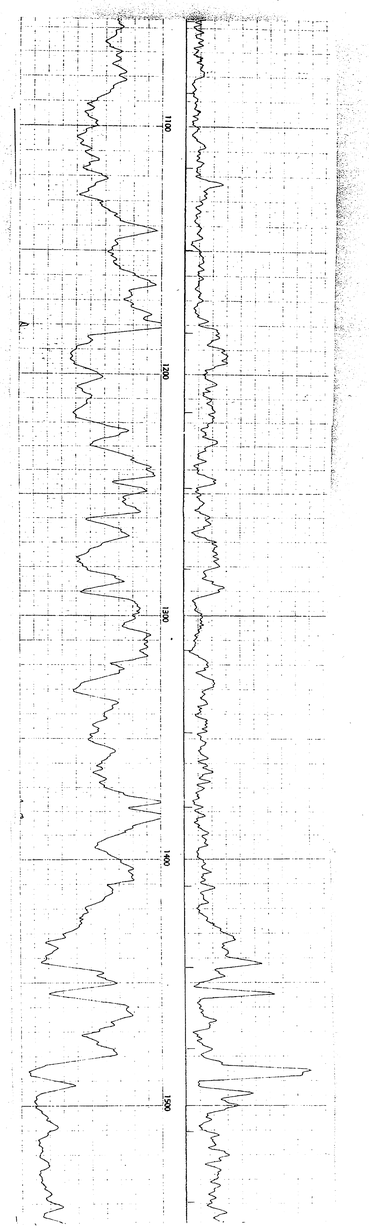

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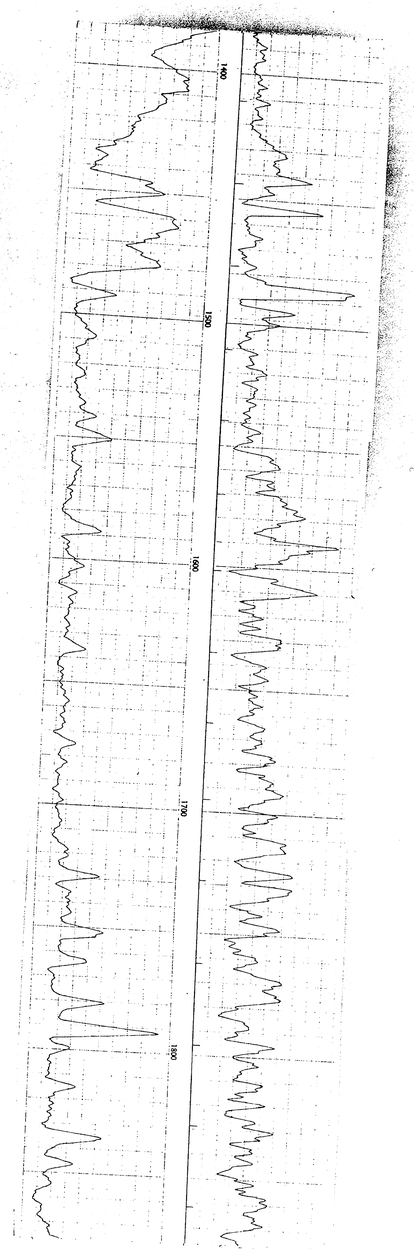

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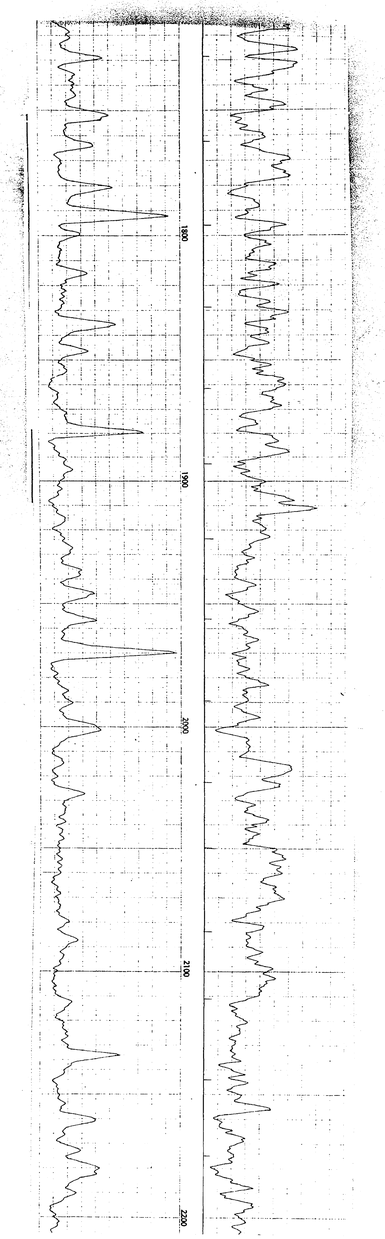

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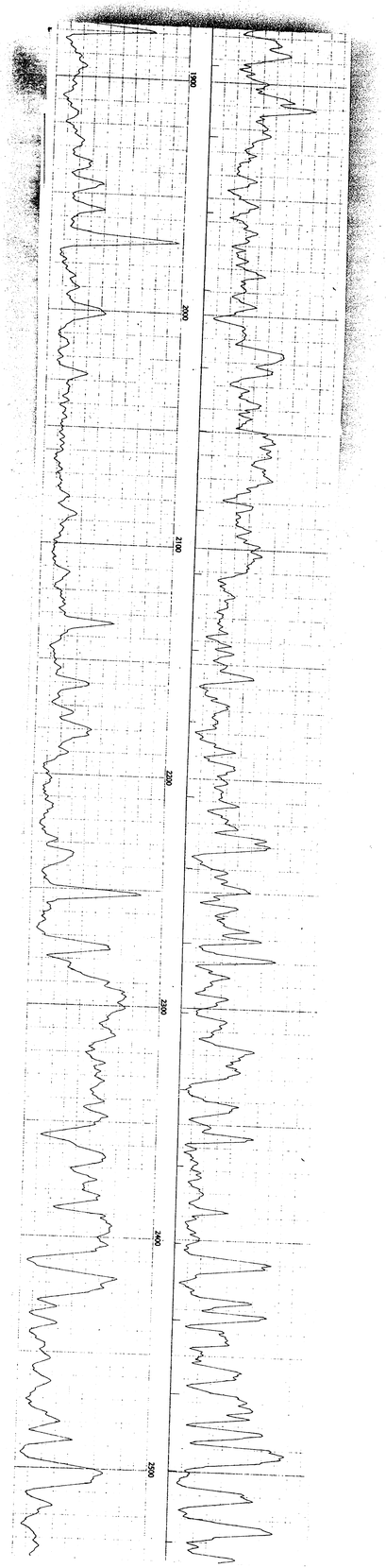

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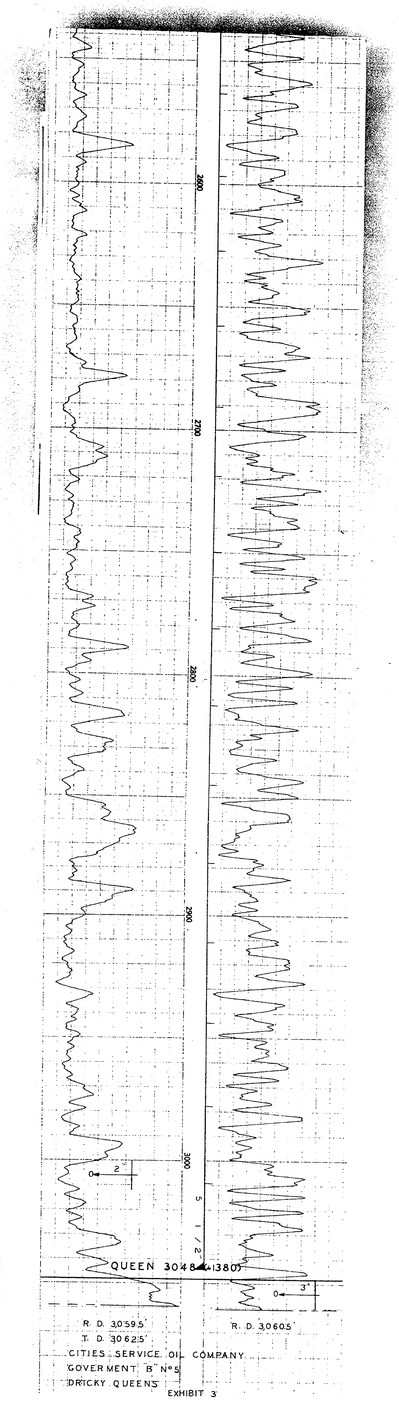

2600
2700
2800
2900
3000
3100
QUEEN 3048 - 1380'
R. D. 3059.5'
T. D. 3062.5'
R. D. 3060.5'
CITIES SERVICE OIL COMPANY
GOVERMENT "B" N°5
DRICKY QUEENS
EXHIBIT 3

419

R-26-E

T 18 S

33 | 34 | 35 | 36 | 31

4 | 3 | 2 | 1 | 6

9 | 10 | 11 | 12 | 7

16 | 15 | 14 | 13 | 18

420

STANDARD OIL CO. OF TEXAS

ATOKA FIELD

EDDY CO., NEW MEX.

T 18 S

R-26-E

N

Malco 12-12-56 — P. Zeleny (s) C. Rogers (m)

G. Martin, etal

(400 Ac. Tol.) (Katharine Phillips Day - 1311/4000) (P.M. Myers - 1689/20000) (Wayland L. Morrison - 1689/20000) (Richard H. Morrison - 1689/20000) (Lee A. Morrison - 1689/20000) (Keith N. Morrison - 1689/20000) (Russell Rogers - 1/4) (160 Ac.)

Std. of Tex. D-1-28-64 — (125 Ac. Tol.) (S.O. Higgins)

S.O.T. ½ D-1-28-64 — S.O.T. D-1-28-64 — Std. Oil Co. of Texas ½ — S.O.T. D-4-23-64 — 5 Ac. Reg. R. Tidewater

Std. of Tex. D-1-28-59 — (65 Ac. Tol.) (S.O. Higgins) — 10 Ac. — (Prof. L. Explorer)

Std. of Tex. D-1-11-64 — (160 Ac. Tol.) J. Hornbacker — Std. of Tex. ½ D-1-11-64 — (460.29 Ac. Tol.) (M.L. Higgins et al #1-192)

S.O.T. D-1-11-64 — S.O.T. D-1-11-64 — S.O.T. D-1-11-64 — S.O.T. D-1-11-64 — S.O.T. D-1-11-64 — S.O.T. D-1-11-64

E.H. — WHS — A.H. — E.C.H. — WNR — USA — Wm. Sterling (s) Malco (m) — USA

9 — 10 — 11 — 12 — 7

Waters (Hudson) — F.B. Waters

Std. of Tex. D-1-7-64 D-4-29-59 D-5-1-59 — Std. of Tex. D-6-27-60 — Std. of Tex. D-6-27-60

S.O.T. D-9-64 (J.J. Dorsey) — S.O.T. D-1-11-64 — S.O.T. D-11-64 — (65 Ac. Tol.) (W. H. Swearingen) — 30 Ac.

Std. of Tex. D-1-11-64 — (460.29 Ac. Tol.) (M.L. Higgins et al #1-192) — Std. of Tex. D-2-11-59 — (460.29 Ac. Tol.) (M.L. Higgins et al #1)

(Mary Lorena Higgins et al #1 et al Unit #2) — 40 Ac. — 10 Ac. (William C. Ashby) — 5 Ac. Leased (M.B. Phillips et al) — 5 Ac. Leased (M.L. Higgins et al #1) — (Mary Lorena Higgins et al #1 et al Unit #2)

Kessinger Farms (s) H.E. Kessinger (m) — J. W. Lanning — Existing Location — S.S. Suppes 1134 — 8' Strip Conflict — Dropped from Ralph H. Rogers et al Tr. — (H.R. Stroup)

Magnolia 10-25-56 — (320.75 Ac. Tol.) (H.R. Stroup) — Magnolia 12-16-56 — R. Wade Brainard Bros. — 3296 — HIGH WATER MARK — 3296

S.O.T. D-11-64 — S.O.T. ½ D-11-64 — (460.29 Ac. Tol.) (M.L. Higgins et al #1-192) — F & JC Irwin Inc. — ECH Est. — Wm. Sterling (s) Malco Refg. Inc (m)

F.B. Waters 10-5-65 — Std. of Tex. D-1-8-64 — 40 Ac. — (J.B. Lanning) — Std. of Tex. D-1-9-64

Std. of Tex. D-1-7-64 D-4-29-59 D-5-1-59 — Std. of Tex. D-1-31-59 D-1-26-59 — 80 Ac. (J.T. Giles, Jr. Edp. - 1/8) (M.G. Johnson 3/8) — D. Fanning (s) G.R. Brainard (m)

Magnolia 12-25-56 — Proposed Battery Site — Std. of Tex. D-1-8-64 — S.O.T. D-11-64 D-3-30-64 — (460.29 Ac. Tol.) (M.L. Higgins et al #1-192) — L. Jackson — L. Jackson — B. Peterson — S.W.G. — B.P.I. (et al)

Waters (Hudson) — Joe Torres — 120 Ac. — (E. Holland, etal ½) (J.S. Worley ½) (Mrs. M. Beasley ½)

(400 Ac. Tol.) (Katharine Phillips Day - 1311/4000) (P.M. Myers - 1689/20000) (Wayland L. Morrison - 1689/20000) (Richard H. Morrison - 1689/20000) (Lee A. Morrison - 1689/20000) (Keith N. Morrison - 1689/20000) (Ralph W. Rogers et al - 1/4) (160 Ac. Tol.)

Std. of Tex. D-1-9-59 — 80 Ac. — (B.C. Aaron) — Magnolia — Brainard Bros. — G.R. Brainard — (Mrs. S.H. Vinther, etal) — 80 Ac. — S.O.T. D-2-11-59 — (460.29 Ac. Tol.) (M.L. Higgins et al #1) — L. Jackson — B.F. Kaiser — 6 Kaiser — B.F. Kaiser

S.O.T. D-3-30-64 (Mary Lorena Higgins et al et al Unit # 1) — 40 Ac. — 10 Ac. (Swearingen)

16 — 15 — 14 — 13 — 18

Ohio 4-10-54 — Yates Bros. — Bell 1020 — Std. of Tex. D-1-8-59 — 0.455 Ac. S.O.T. Surface P.C. Simpson Surf. Loc. — Tri-St. Oil Brown — Std. of Tex. D-3-2-59 D-2-3-56 D-1-27-59 — Std. of Tex. D-2-3-56; D-3-2-59; D-1-31-59

Standard Oil Company of Tex. Below 2074' Assigned to S.L. Jones - Above 2074'

Std. of Tex. D-1-12-59 D-1-26-59 — 160 Ac. — Harris & Ray Hinkle — H. Hammond — (R.C. Simpson)

(J.A. Leavitt ⅓) (320 Ac. Tol.) (W.S. Jones ⅓) (320 Ac. Tol.) (W.L. Leavitt ⅓) (320 Ac. Tol.) — P. Terry T/16 — M. Yates Jr., etal 6-14-57

Midwest Pet. — Terry — Std. of Tex. D-2-3-56 — 80 Ac. (395 Ac. Tol.) (Paul Terry)

(P. Terry T/16) (C.S. Brown T/16) (L.B. Peak T/16) (C.P. Turner T/16) — (C.S. Brown T/16) (315 Ac. Tol.) (C.P. Turner T/16) (319 Ac. Tol.) (Paul Terry T/16) (395 Ac. Tol.) (L.B. Peak T/16) (319 Ac. Tol.) — Jones — Terry

Ohio 4-10-54 — Yates Bros. — Std. of Texas - Below 4000' Yates Bros. - Above 4000' D-5-13-58 — Jones-Yates — S.O.T. D-6-11-55 H-B-P. Below 3200' — Marks Yates III — Std. of Tex. — Yates 6-11-55 — 80 Ac.? (J.H. Everest) — S. Jones — Jones — Malco 1-8-57 — Malco 1-8-57 — Std. of Tex. - Below 3000' Assigned to S.L. Jones to 3000' — 80 Ac. (Donald E. Fanning) — C.G. Spears, etal — W.D. Angell (s) B.F. Kaiser, etal (m)

Yates Bros. — 240 Ac. (Charles R. Martin) — S.O.T. Below 4,700' D-11-26-61 — 80 Ac. (Robert K. Everest etal) — J.H. Everest Est. — D. Fanning — Std. of Tex. D-2-11-59 — 10 Ac. (Elsie McNall) — 40 Ac. — Std. of Tex. D-1-9-59 — 40 Ac. — Std. of Tex. D-1-14-59 D-1-11-64 — 120 Ac. (W.A. Waldrop ½) (A.E. Waldrop ½) — "McNall-Vandagriff Unit" 80 Ac. (Lee Vandagriff) — Mrs. S.H. Dumas

State

21 — 22 — 23 — 24

Hunnell — Magnolia 2-3-57 — M.R. Lee — Jones & Arthur — J.R. Lee (s) C.A. Myers (m) — Magnolia 2-3-57 — J.R. Lee — G.E. Nix — W.C. Morable, est. — Dayton Pet. — Stanolind 12-15-58 — Stanolind 3-24-59

Western Ventures — Western Ventures — J.N. Egger (s) T. Egger, etal (m)

Cannon — Lee — C.R. Martin (s) T.H. Flint (m) — R.G. Goodin (s) A.W. Boyce, etal (m) — A.W. Boyce — R.G. Gooden — R.G. Gooden (s) P.R. Romey (m)

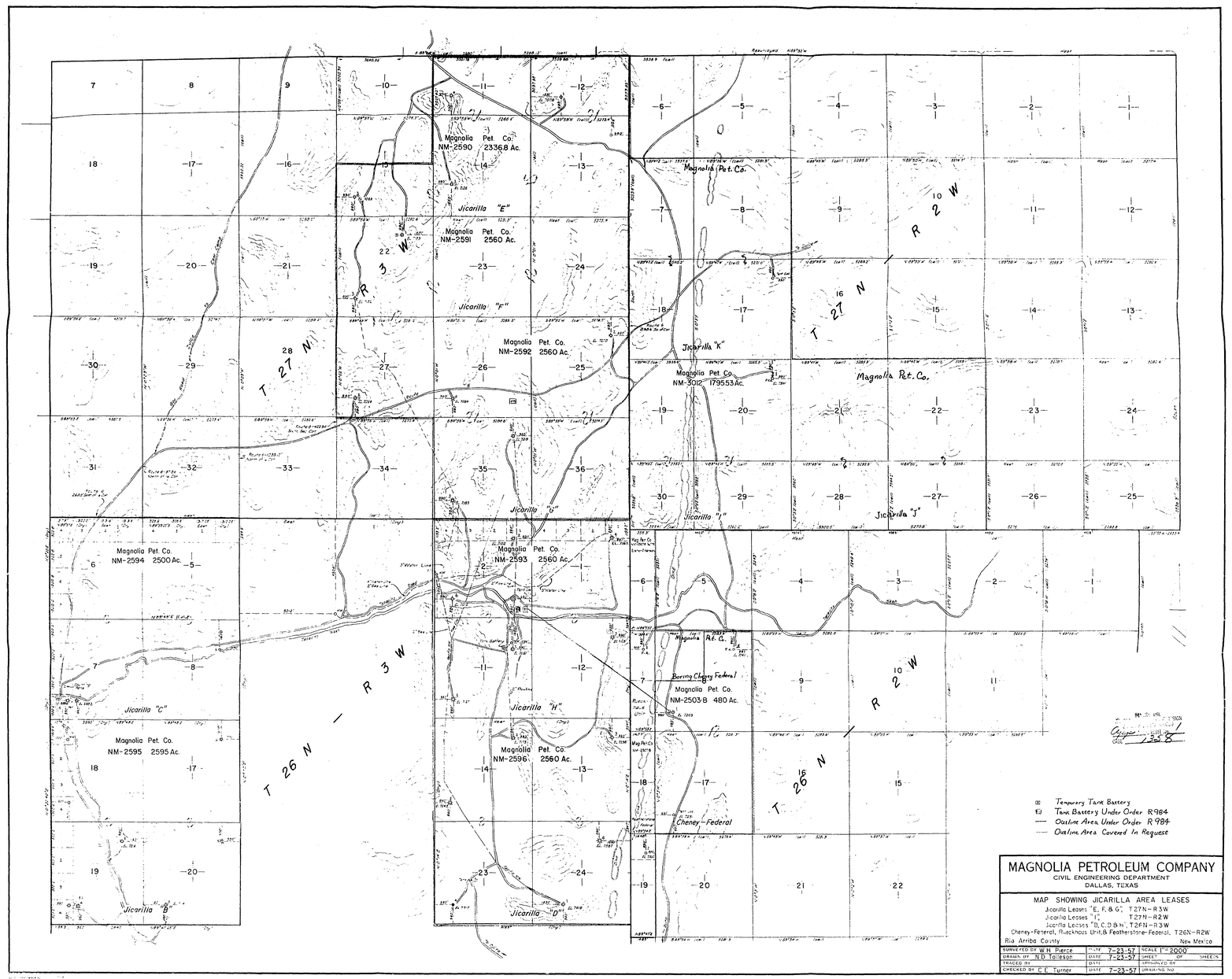
REVISIONS

SCALE	DATE	APPROVED	DR BY	TR BY	CH BY
1" = 500'					

A-1044

(7a-18)

421



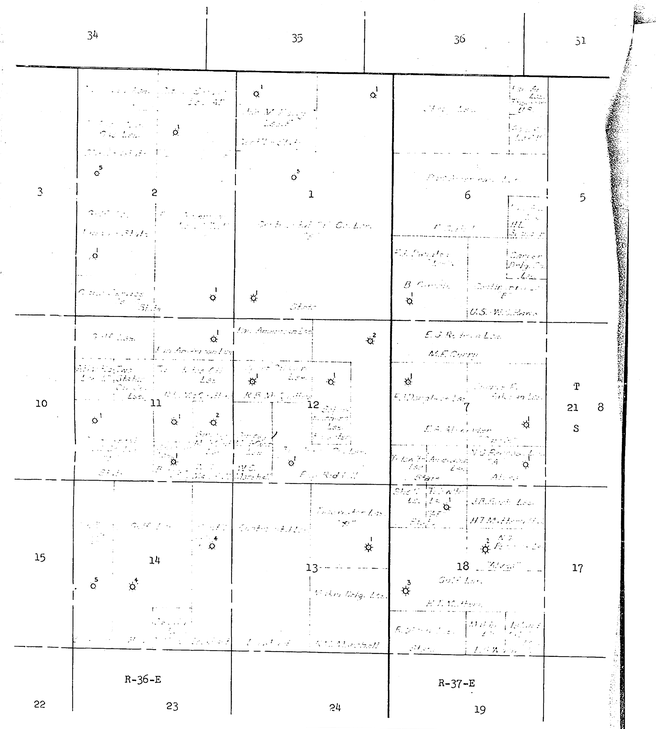
MAGNOLIA PETROLEUM COMPANY

CIVIL ENGINEERING DEPARTMENT
DALLAS, TEXAS

MAP SHOWING JICARILLA AREA LEASES
Jicarilla Leases "E, F, & G", T 27 N – R 3 W
Jicarilla Leases "I", T 27 N – R 2 W
Jicarilla Leases "B, C, D & H", T 26 N – R 3 W
Cheney-Federal, Rueckhaus Unit, & Featherstone-Federal, T 26 N – R 2 W
Rio Arriba County New Mexico

SURVEYED BY W.H. Pierce	DATE 7-23-57	SCALE 1" = 2000'	
DRAWN BY N.D. Tollefson	DATE 7-23-57	SHEET OF SHEETS	
TRACED BY	DATE	APPROVED BY	
CHECKED BY C.E. Turner	DATE 7-23-57	DRAWING NO.	

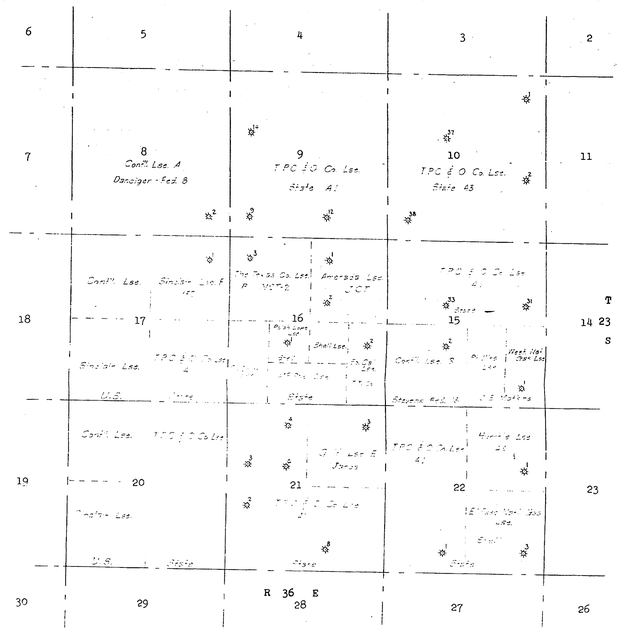
422



CASE 1361
THE TEXAS COMPANY
EXHIBIT NO. 2
ROY RIDDELL #2

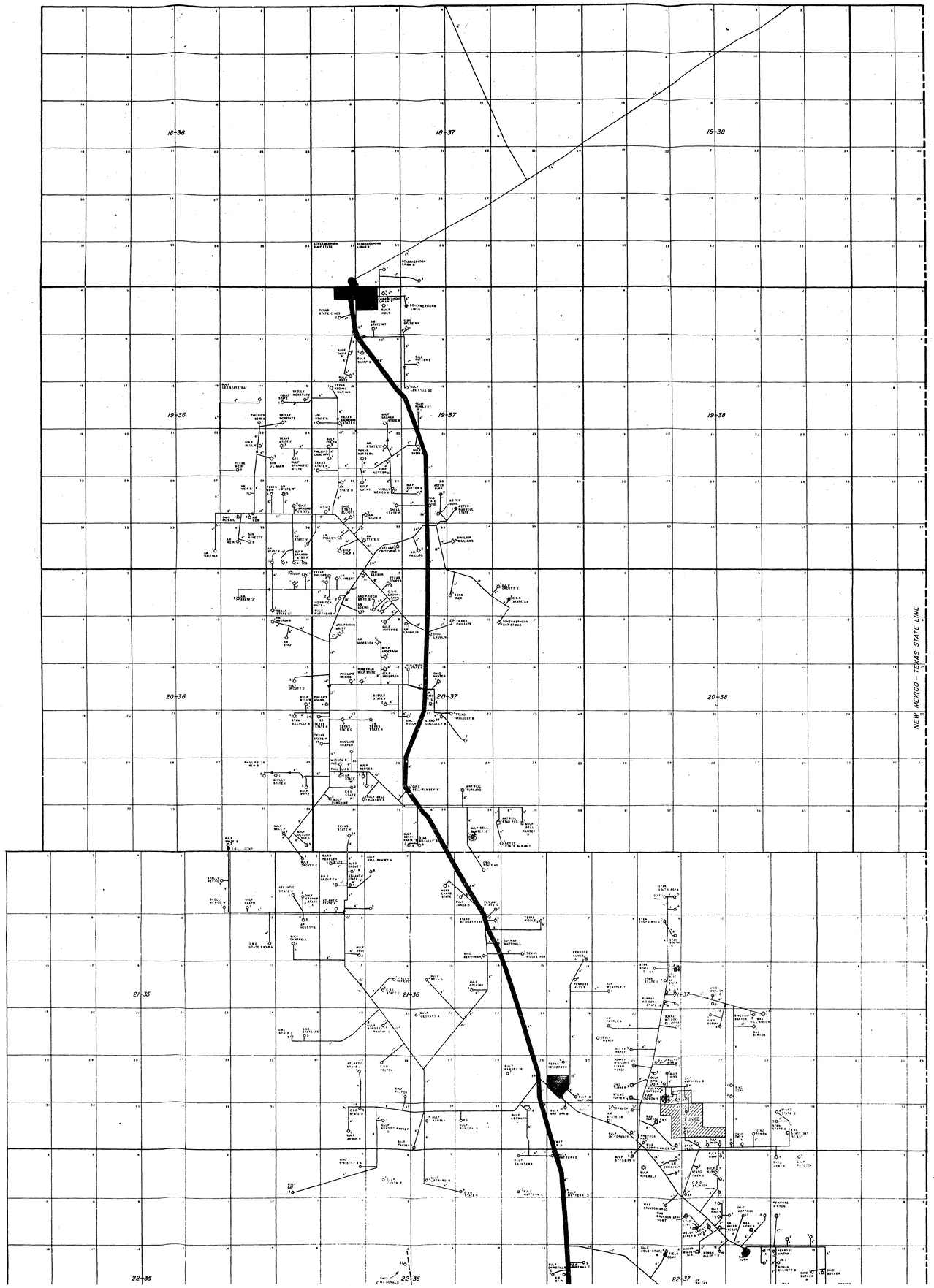
(Oil Wells Not Shown) 1" = 2000'

423

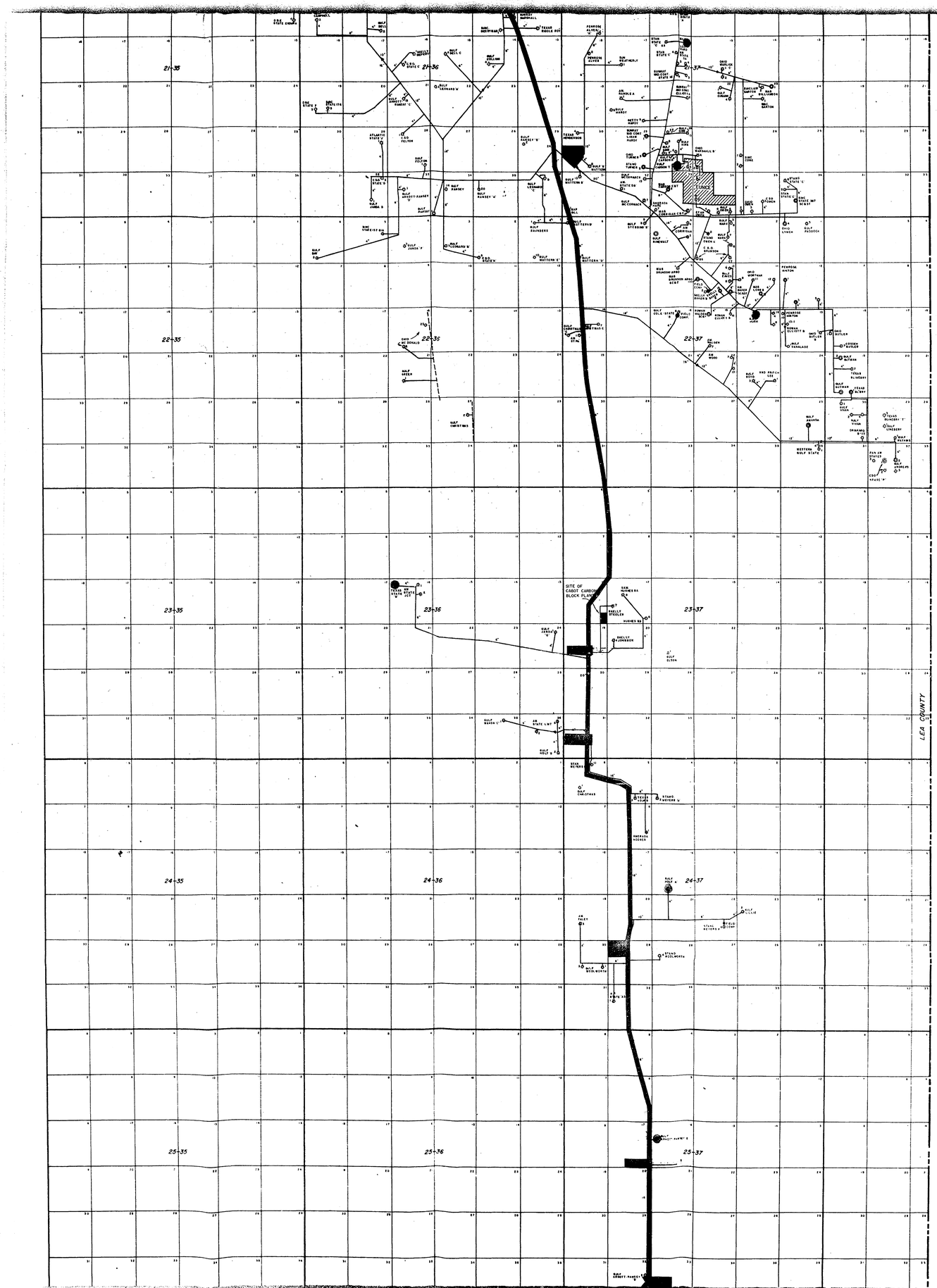


CASE 1361
THE TEXAS COMPANY
EXHIBIT NO. 1
STATE OF NEW MEXICO "B" NCT-2 #3

(Oil Wells Not Shown) 1" = 2000'


18-36
18-37
18-38
19-36
19-37
19-38
20-36
20-37
20-38
21-35
21-36
21-37
22-35
22-36
22-37
NEW MEXICO - TEXAS STATE LINE
EUNICE

1127


21-35
21-36
21-37
22-35
22-36
22-37
23-35
23-36
23-37
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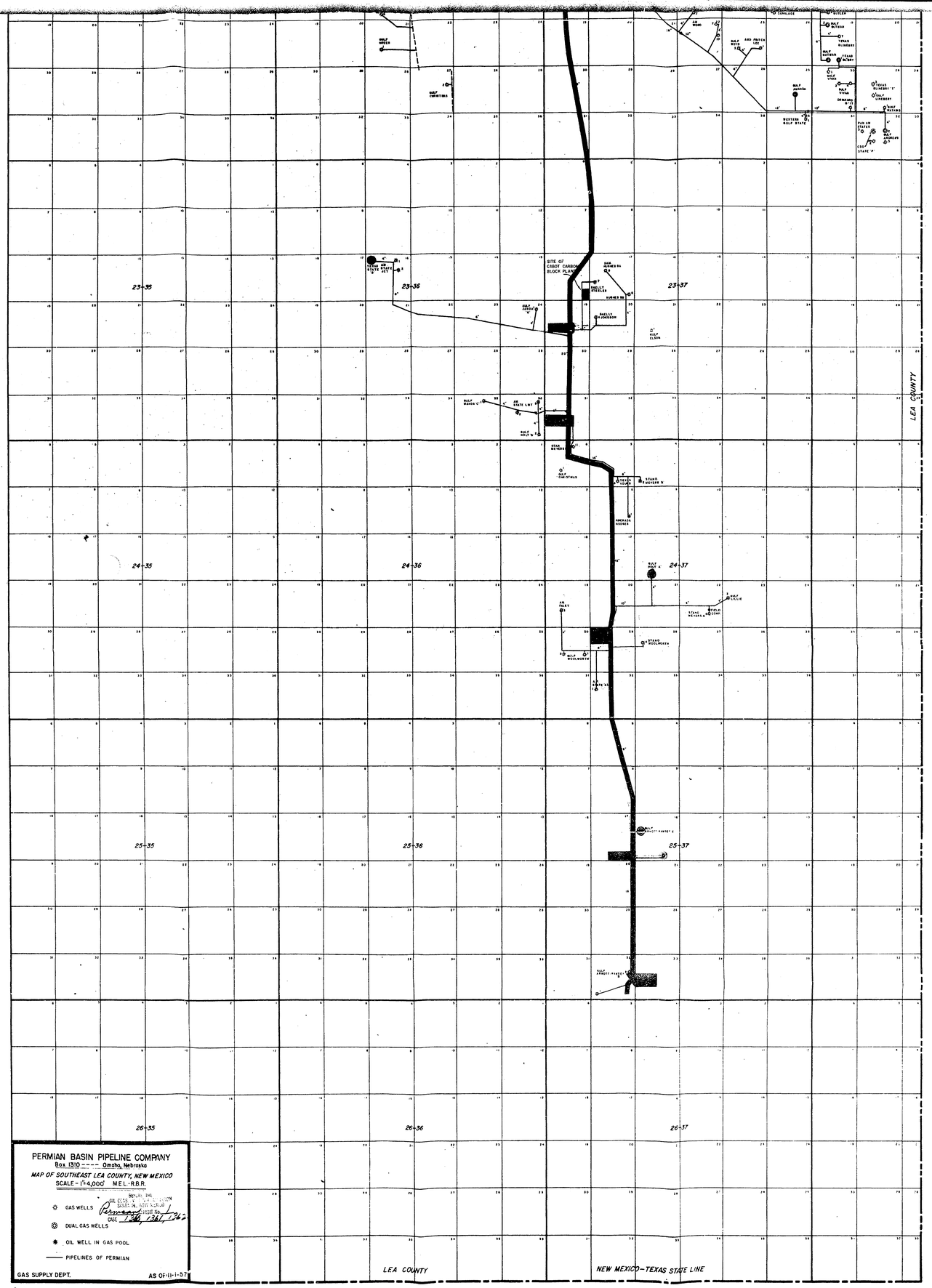
24-36
24-37
25-35
25-36
25-37
SITE OF CABOT CARBON BLOCK PLANT
LEA COUNTY

4125



PERMIAN BASIN PIPELINE COMPANY
Box 1310 ---- Omaha, Nebraska
MAP OF SOUTHEAST LEA COUNTY, NEW MEXICO
SCALE - 1"=4,000' M.E.L.-R.B.R.

- GAS WELLS
- DUAL GAS WELLS
- OIL WELL IN GAS POOL
- PIPELINES OF PERMIAN

GAS SUPPLY DEPT. AS OF 11-1-57

426

S.C. NMPT - PNC

PERFORATING GUNS ATLAS CORPORATION

Simultaneous Radiation Log

LOG NO.	17740
STATION	ROSWELL
TRUCK NO.	GR - 29

COMPANY	CITIES SERVICE OIL COMPANY
WELL	STATE "K" # 2
FIELD	VACUUM
COUNTY / STATE	LEA, NEW MEXICO
LOCATION	1980' FNL, 660' FEL, SEC. 27 TWP. 17-S RGE. 34-E
LOG MEAS. FROM	G.L. ELEV. 3935
DRLG. MEAS. FROM	- ELEV. -
PERMANENT DATUM	G.L. ELEV. 3935

COMPANY: CITIES SERVICE OIL CO. | WELL: STATE "K" # 2 | FIELD: VACUUM | COUNTY / STATE: LEA, NEW MEXICO

CASING RECORD				BORE HOLE RECORD		
SIZE - WT. #	FROM	TO	BIT SIZE - "	FROM	TO
5 1/2" - 17	SURF.	4192	-	-	-
			O.H.	4192	4625

TYPE OF LOG	GAMMA RAY - NEUTRON
RUN NO.	ONE
DATE	12-6-57
TOTAL DEPTH - DRILLER	4615
TOTAL DEPTH - P.G.A.C.	4615
FLUID IN HOLE	OIL
FLUID LEVEL	647 -
MAXIMUM TEMPERATURE °F.	-
INSTRUMENT O.D. AND NO.	2 5/8 - 705
INSTRUMENT TYPE	TA - TN - 126
NEUTRON SOURCE TYPE	RN - 600
CPS FOR CALIB. STD. - GR	90
- N	218
NEUTRON GUN 4 1/2" SAW	198
RECORDED BY	W. MCATEER
WITNESSED BY	Mr. HICKEY

LOGGED INTERVAL RECORD				GAMMA-RAY			NEUTRON		
SCALE * 100'	FROM FT.	TO FT.	SPEED * MIN.	SENSITIVITY RECD'R	SENSITIVITY SCALE *(1μR/hr)	T.C. SEC.	SENSITIVITY RECD'R	SENSITIVITY SCALE *(100 SNU	T.C. SEC.
"	4700	2640	60	55	0.5	2	195	4.0	2
"	2192	2700	18	"	"	8	"	"	4
"	2612	2192	"	"	"	"	15	1.5	"
6	2192	2700	"	"	"	"	195	2.0	"
"	2612	2192	"	"	"	"	15	1.5	"

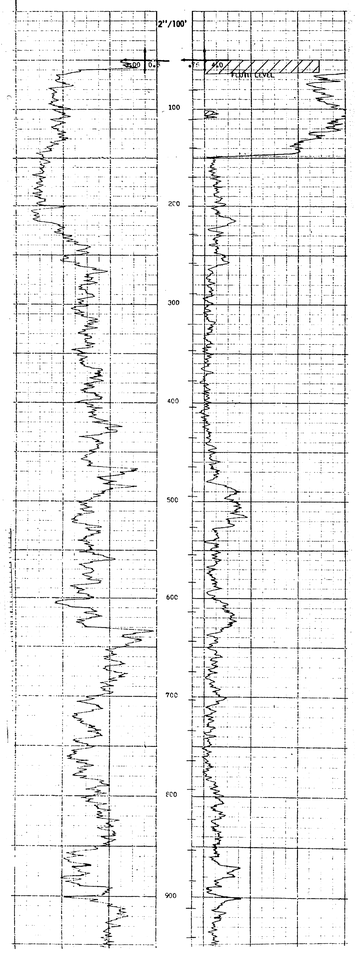
LOG ZERO AND SCALE DESIG.

IN. TO "ZERO"	SCALE*

* GAMMA-RAY - IN. 1μR/HR.)
* NEUTRON - IN. 100 S.N.U.

REMARKS: INSTRUMENT RUN FREE

GAMMA-RAY | DEPTH & COLLARS | NEUTRON



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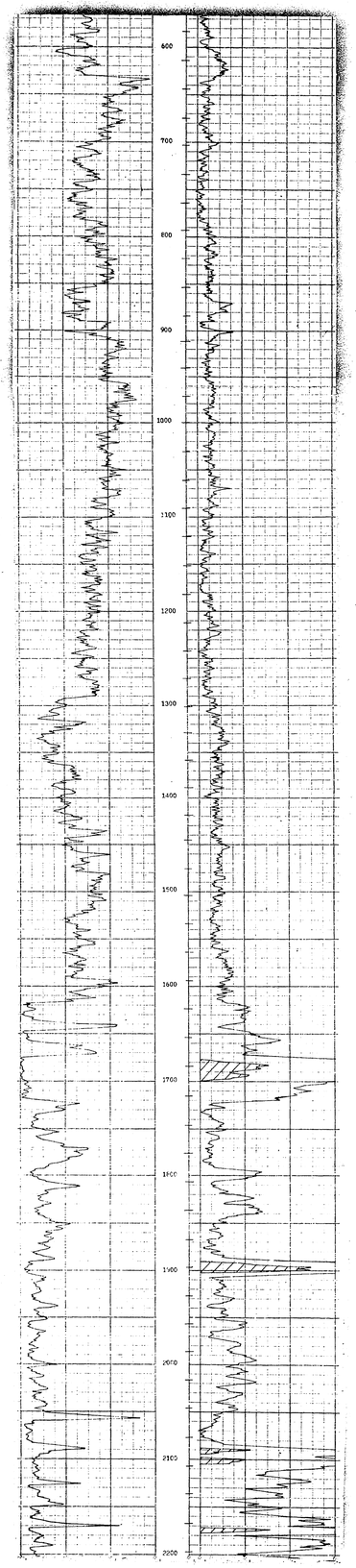
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700
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1000
1100
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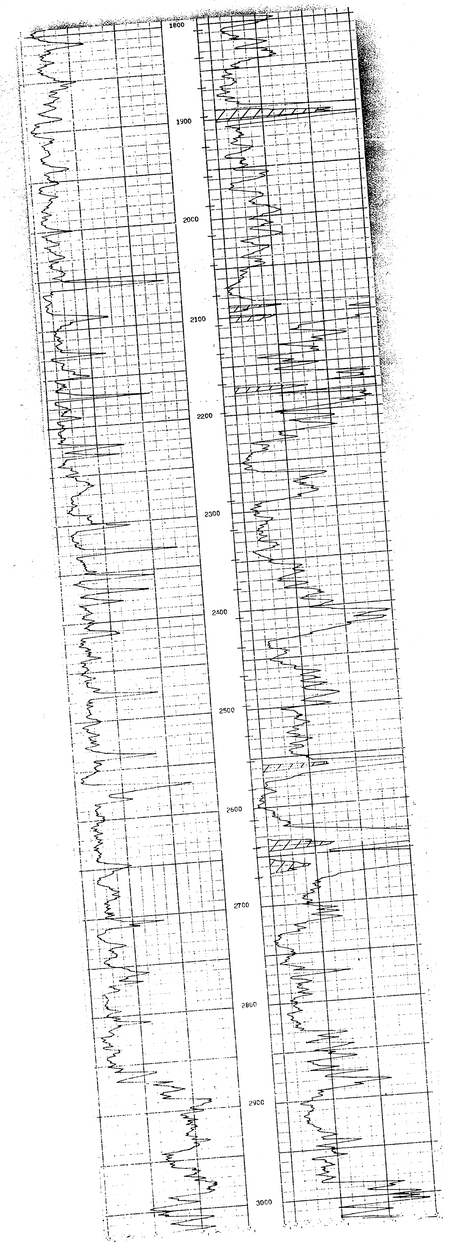
1300
1400
1500
1600
1700
1800
1900
2000
2100
2200

428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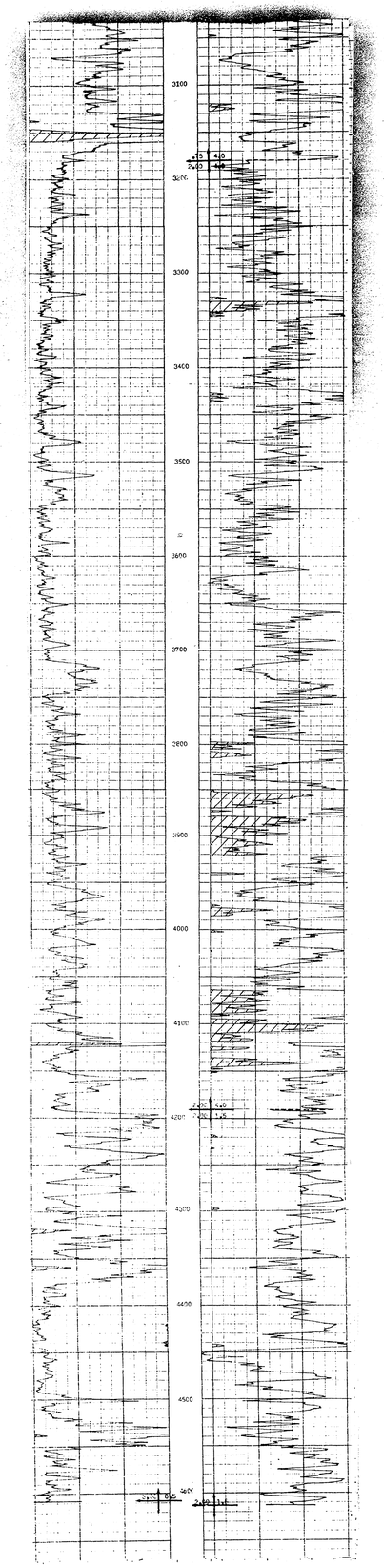
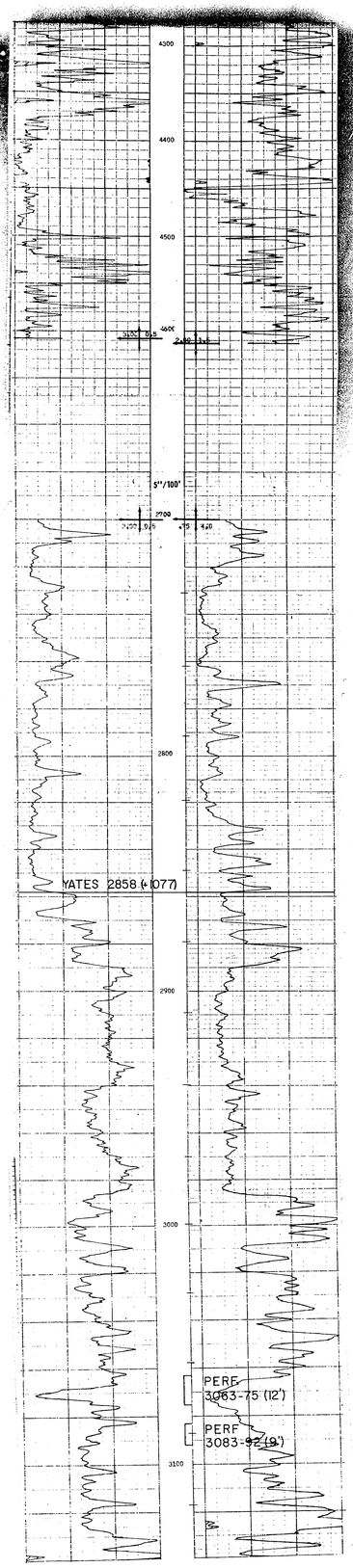
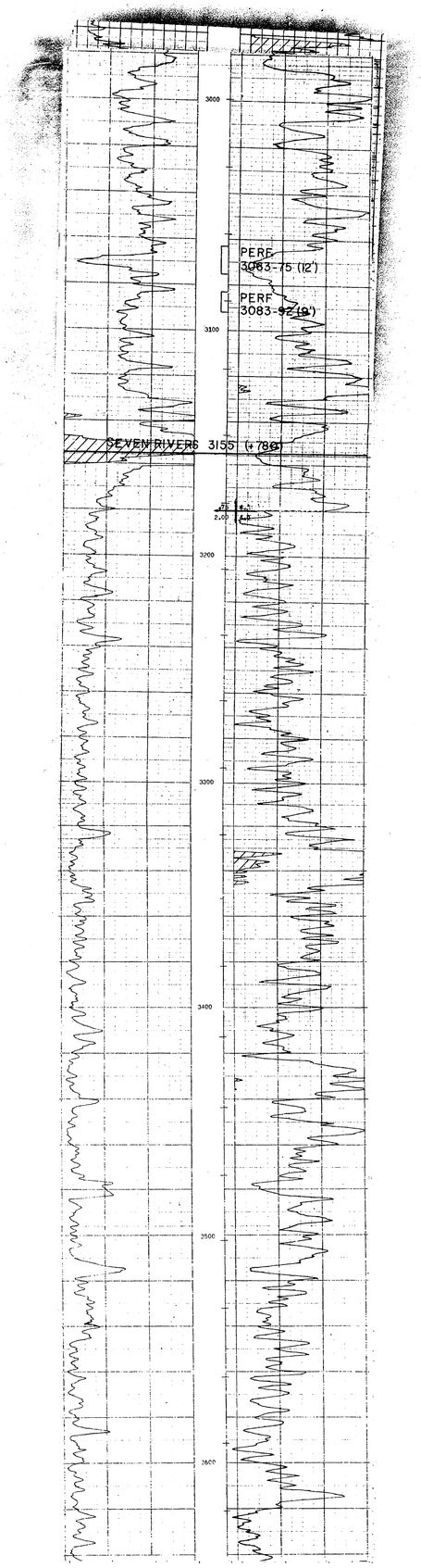
1900
2000
2100
2200
2300
2400
2500
2600
2700
2800
2900
3000

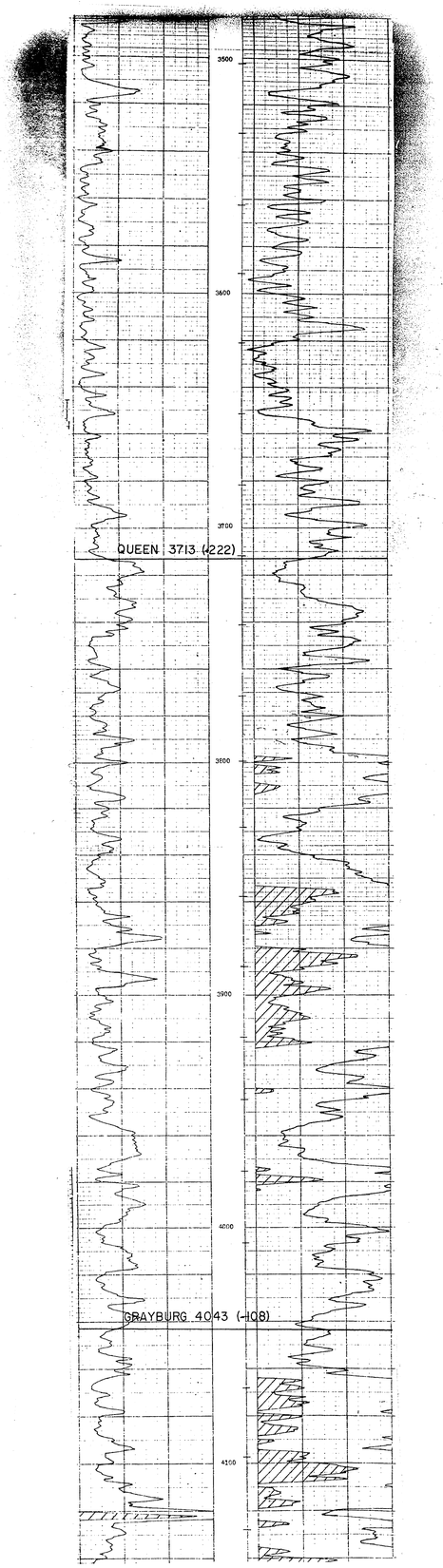

3100
3200
3300
3400
3500
3600
3700
3800
3900
4000
4100
4200
4300
4400
4500

430

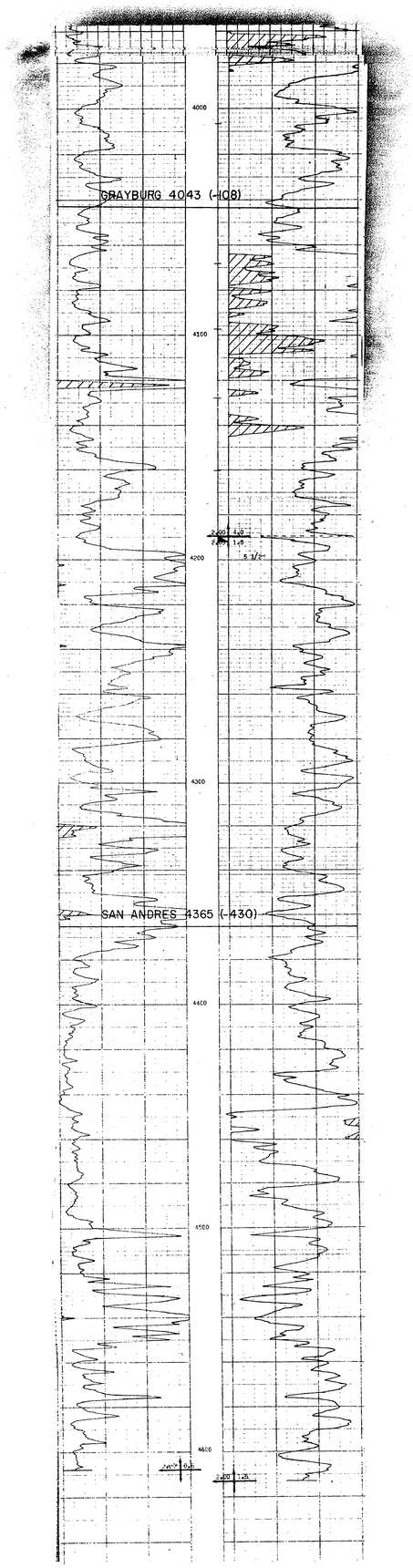

4300
4400
4500
2700
2800
YATES 2858 (+1077)
2900
3000
PERF
3063-75 (12')
PERF
3083-92 (9')
3100

431

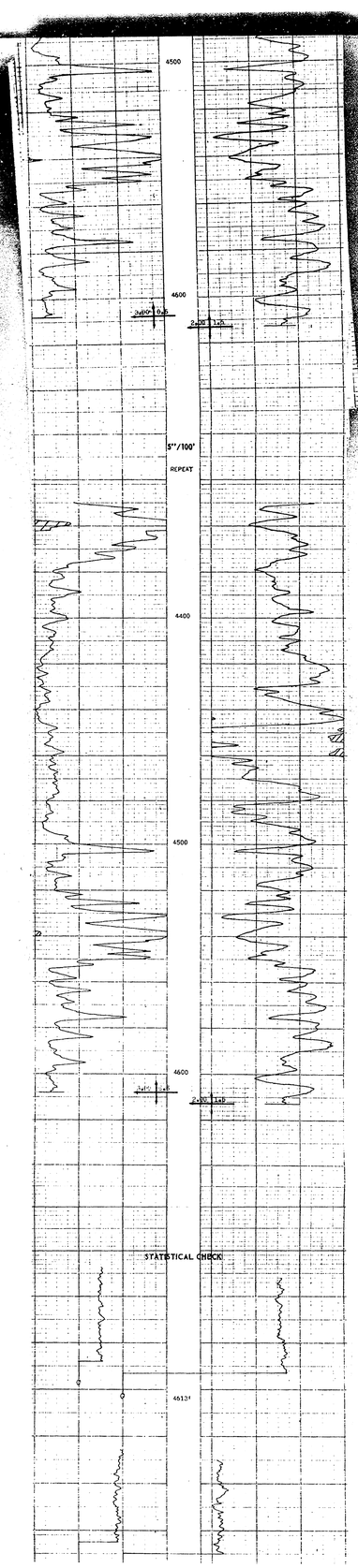

3000
PERF
3083-75 (12')
PERF
3083-97 (19')
3100
SEVEN RIVERS 3155 (+78)
3200
3300
3400
3500
3600


3500
3600
3700
QUEEN 3713 (-222)
3800
3900
4000
GRAYBURG 4043 (-108)
4100

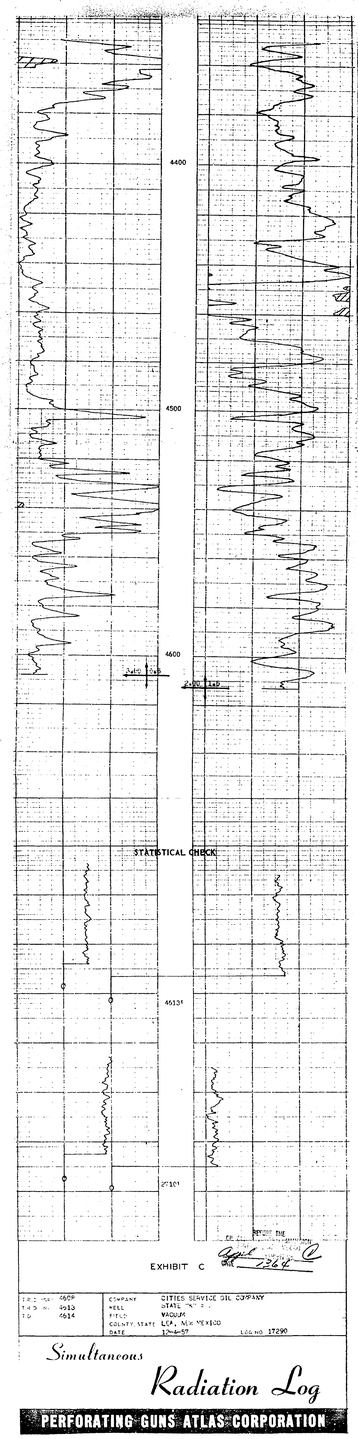
433


4000
GRAYBURG 4043 (-108)
4100
4200
4300
SAN ANDRES 4365 (-430)
4400
4500
4600

434

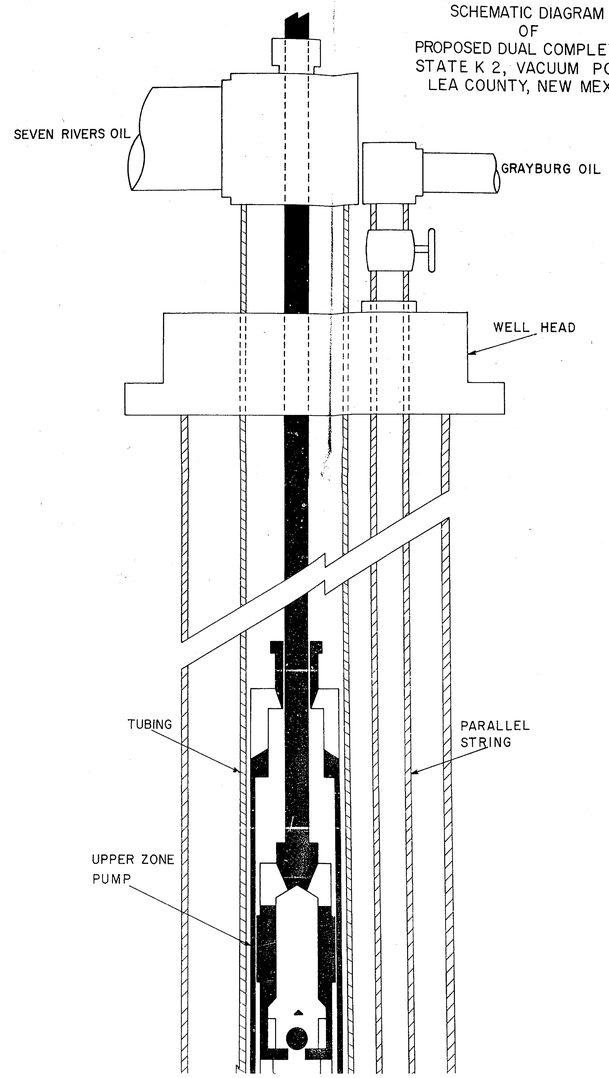

4500
4600
5"/100'
REPEAT
4400
4500
4600
STATISTICAL CHECK
4513'

435

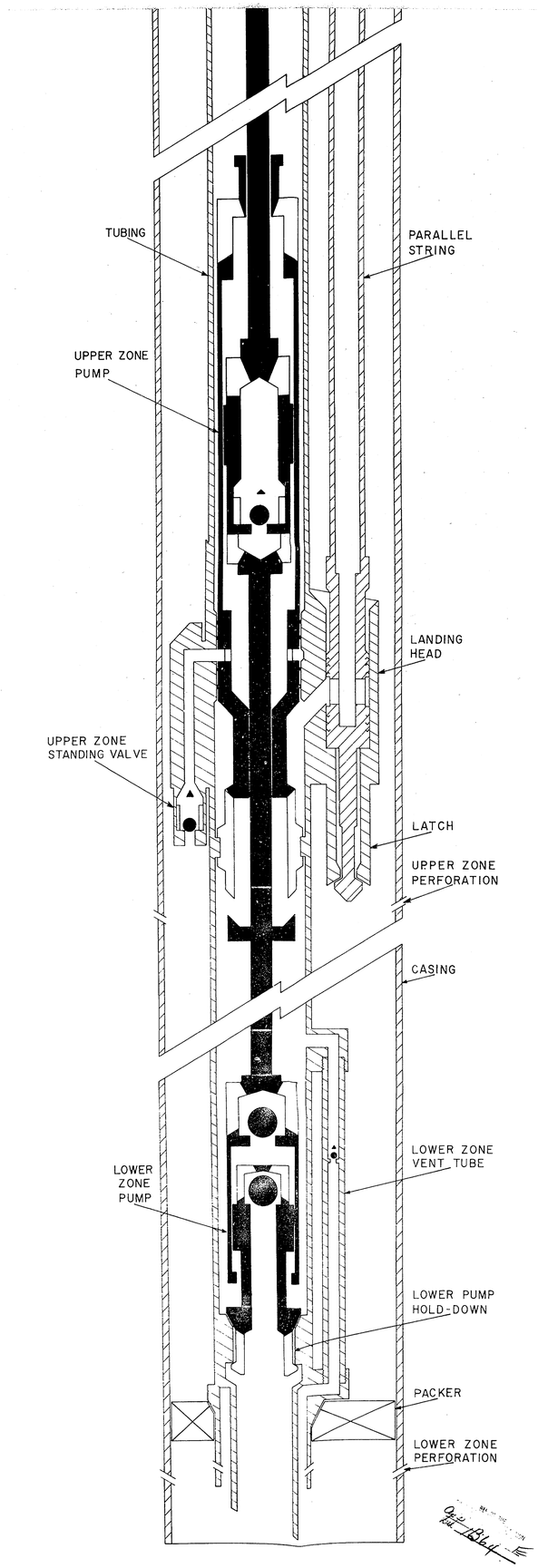

4400
4500
4600
STATISTICAL CHECK
4613'
4710'
EXHIBIT C
COMPANY CITIES SERVICE OIL COMPANY
WELL STATE "A" E-1
FIELD VACUUM
COUNTY, STATE LEA, NEW MEXICO
DATE 12-6-57
LOG NO. 17290
Simultaneous
Radiation Log
PERFORATING GUNS ATLAS CORPORATION

436

SCHEMATIC DIAGRAM
OF
PROPOSED DUAL COMPLETION
STATE K 2, VACUUM POOL
LEA COUNTY, NEW MEXICO



437



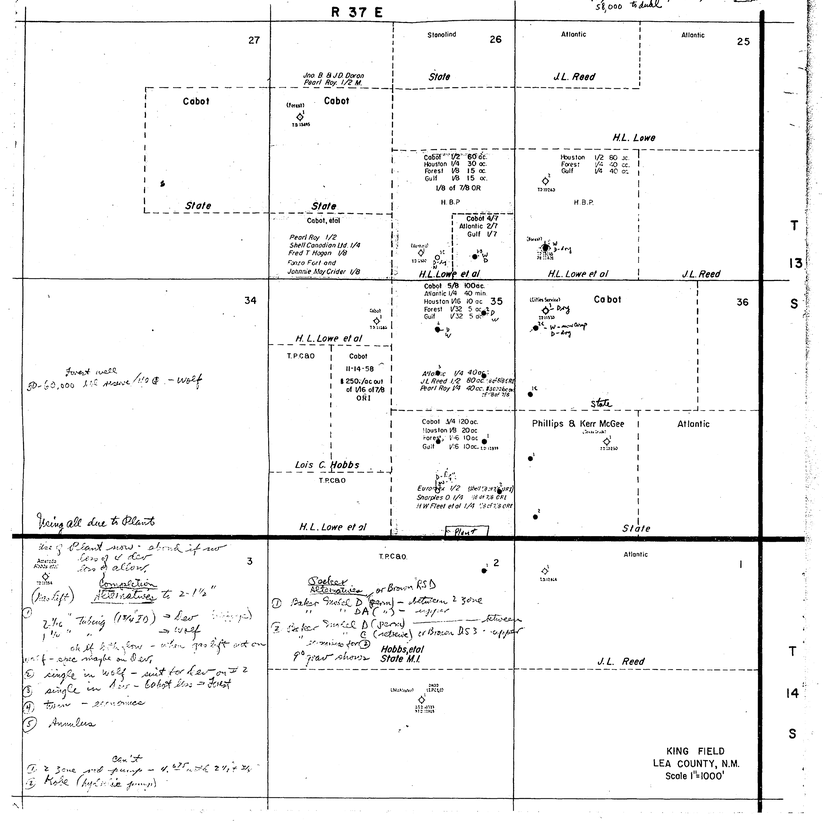
438

EXHIBIT E

LEA COUNTY, N. M.

1/4 RI
$175,000 to work for 320,000 net
$8,000 to drill

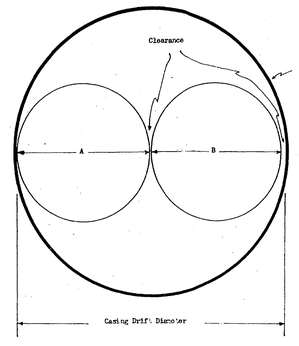
R 37 E



KING FIELD
LEA COUNTY, N.M.
Scale 1"=1000'

EXHIBIT _____

SKETCH TO HELP VISUALIZE CLEARANCE & IT'S IMPORTANCE



Note: A & B are combinations of tubing. (Combinations such as given on Page 1 of this exhibit.)

EXHIBIT 3

COMPARISON OF CLEARANCE USING VARIOUS SIZES OF TUBING IN 5-1/2" 23#/FT CASING

BEFORE THE OIL CONSERVATION COMMISSION
STATE OF NEW MEXICO
CASE 1365 EXHIBIT No. 3
Cabot Corp.

5-1/2 Inch Casing Wt/Ft	Drift ID	1. Joint OD of 1-1/2" Thg. w/Hydril CS Couplings	2. Joint OD of 1-1/2" Non Upset Tubing	3. Joint OD of 1-1/2" EUE Thg.	4. Joint OD of 1-3/4" Special Tubing (Cameo)	5. Joint OD of 2-1/16" Thg. w/Hydrill CS Joints	Combinations of 1,2,3,&5	Clearance - Inches
23	4.545"	2.113"	2.200"	2.500"	2.500"	2.330"	1 & 1	4.545 - (2.113 + 2.113) = 0.319(1
							1 & 2	4.545 - (2.113 + 2.200) = 0.232(2
							1 & 3	4.545 - (2.113 + 2.500) =-0.068
							1 & 4	4.545 - (2.113 + 2.500) =-0.068
							1 & 5	4.545 - (2.113 + 2.330) = 0.102(2
							2 & 2	4.545 - (2.200 + 2.200) = 0.145(4
							2 & 3	4.545 - (2.259 + 2.500) =-0.115
							2 & 4	4.545 - (2.200 + 2.500) =-0.115
							2 & 5	4.545 - (2.200 + 2.330) = 0.015(3
							3 & 3	4.545 - (2.500 + 2.500) =-0.455
							3 & 4	4.545 - (2.500 + 2.500) =-0.455
							3 & 5	4.545 - (2.590 + 2.330) =-0.285
							4 & 4	4.545 - (2.500 + 2.500) =-0.455
							4 & 5	4.545 - (2.500 + 2.330) =-0.285
							> & 5	4.545 - (2.330 + 2.330) =-0.115

(1 If gas lift valves, circulating subs, etc., are run (Joint OD = 2.250). Clearance = 4.545 - (2.113 + 2.250) = 0.182
(2 Prefer to using Hydril CS joint over Non Upset because of greater joint tension factor and greater clearance
(3 If gas lift valves, circulating subs, etc., are used on 1-1/2" string (Joint OD = 2.250) Clearance = 4.545 - (2.250 + 2.330) =-0.035
(4 If gas litt valves, circulating subs, etc., are used on one string (Joint OD = 2.250) Clearance = 4.545 - (2.250 + 2.250) = 0.045
(5 If gas lift valves, circulating subs, etc., are used on 1-1/2" string (Joint OD = 2.250) Clearance = 4.545 - (2.250 + 2.330) =-0.035

JND:sm
4-2-58

Use of Plant now - shrink if new
Use of & dir
Use of allow

Injection
Alternatives
(Pre-Lift)

1) 2-1/2" Tubing (1.995 ID) ⇒ Lear
2) 1-1/2" " ⇒ Wolf
3) all 3 1/2" Csgs - when gas lift not en
Wolf - acre wages or Dist
4) single in Wolf - suit for Lear on = 2
5) single in Lear - Cabot Lea ⇒ Forest
A) Farm - acreages
B) Annulus

Re-Lift
2 zone and group - 4,425' with 2-1/2"
Keck (hydraulic pump)

Forest wells
50-60,000 BO above 1/2 @ - Wolf

Spacing all due to Plants

Baker Model D Perm - between 2 zone
" " DA (") - upper
Baker Model D (Spang G Centerline) between
" " (Spang G Centerline) or Brown DS3 - upper
9 pair shown

Alternative or Brown KSD

439

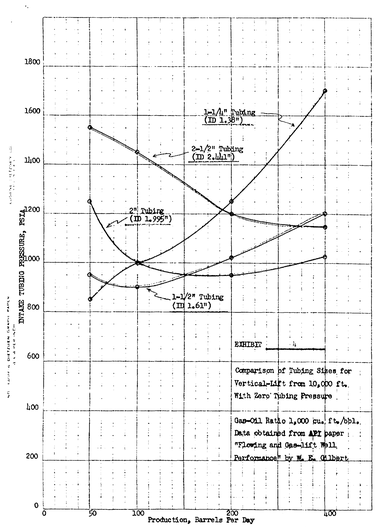


EXHIBIT 4

Comparison of Tubing Sizes for Vertical-Lift from 10,000 ft. With Zero Tubing Pressure

Gas-Oil Ratio 1,000 cu. ft./bbl.
Data obtained from API paper "Flowing and Gas-lift Well Performance" by M. E. Gilbert

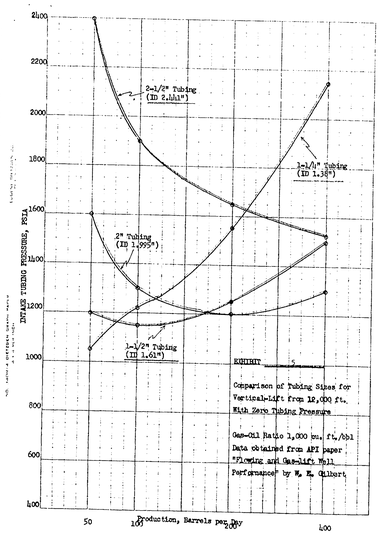


EXHIBIT 5

Comparison of Tubing Sizes for Vertical-Lift from 12,000 ft. With Zero Tubing Pressure

Gas-Oil Ratio 1,000 cu. ft./bbl
Data obtained from API paper "Flowing and Gas-lift Well Performance" by M. E. Gilbert

EXHIBIT 6

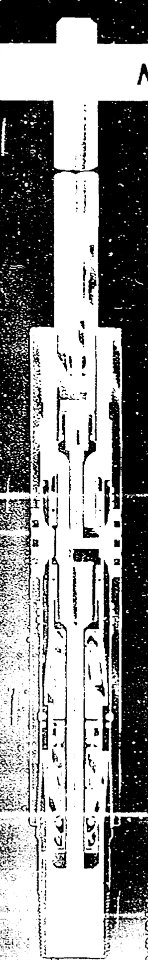
COMPARISON OF INLET TUBING PRESSURES USING 1-1/2" TUBING & 2" TUBING WHEN FLOWING AT VARIOUS PRODUCTION RATES & AGAINST A ZERO TUBING PRESSURE

BEFORE THE OIL CONSERVATION COMMISSION
STATE OF NEW MEXICO
CASE _____ EXHIBIT No. _____

	10,000' DEPTH		12,000' DEPTH	
	1-1/2" Tubing	2" Tubing	1-1/2" Tubing	2" Tubing
50 bbls/day flow rate				
A GOR of 1000 cu. ft./bbl.	950 psi	1250 psi	1200 psi	1600 psi
A GOR of 1200 cu. ft./bbl.	875 psi	1075 psi	1100 psi	1390 psi
100 bbls/day flow rate				
A GOR of 1000 cu. ft./bbl.	900 psi	1000 psi	1150 psi	1300 psi
A GOR of 1200 cu. ft./bbl.	850 psi	850 psi	1075 psi	1140 psi
200 bbls/day flow rate				
A GOR of 1000 cu. ft./bbl.	1025 psi	950 psi	1250 psi	1200 psi
A GOR of 1200 cu. ft./bbl.	1000 psi	850 psi	1225 psi	1050 psi
400 bbls/day flow rate				
A GOR of 1000 cu. ft./bbl.	1210 psi	1025 psi	1500 psi	1300 psi
A GOR of 1200 cu. ft./bbl.	1225 psi	950 psi	1525 psi	1160 psi

Note: Data obtained from curve in Mr. M. E. Gilbert's paper entitled "Flowing and Gas-Lift Well Performance".

MANDRELS FOR RETRIEVABLE VALVES



These mandrels accommodate the gas lift valves described on the opposite page. Both types contain the GOT Sliding Sleeve Valve, through which communication between the casing and tubing may be opened or shut off with wire line tools. The sliding sleeve, which serves as the receiver for the gas lift valve, is fitted with snap rings that engage when the sleeve valve is in full open or fully closed position and thus secure the sleeve against accidental movement. A direct thrust load of 3200 pounds is required to unseat the snap ring from its groove. O-Rings supported by Teflon back-up rings provide the pressure seal around the sleeve. The mandrels are made of high tensile, corrosion-resistant materials, and are designed to outlast the tubing under all conditions.

The sleeve valve is closed on upward movement of the sliding sleeve, and opened on downward [illegible] design of the mandrels and the gas lift valves which they accommodate [illegible] sleeve valve is shifted to open position when a gas lift valve [illegible] shifted to closed position when the valve is retrieved. When circulation between casing and tubing is desired, any or all sleeve valves may be shifted by wire line tools without [illegible] lift valves.

Coupled with the features of the Type "S" Gas Lift Valve, this design provides these advantages:

1. The gas lift valve may be installed or retrieved in one run of the wire line.
2. Undesired communication between the casing and tubing never exists.
3. Gas lift valves may be installed or retrieved without equalizing pressure.
4. Concentric mounting of the gas lift valve facilitates engagement of the fishing tool.
5. Turbulence, erosion and deposits of sand and silt are minimized.
6. All types of valves of the same size are interchangeable in mandrels of the same size.
7. Welding has been eliminated from the mandrels.

TYPE "SSC" MANDREL

This mandrel is designed especially for dual completions and slim holes. It permits two strings of 1¼" upset tubing equipped with wire line retrievable gas lift valves to be run inside 5½" O.D. casing, or two strings of 2" upset to to be run inside 7" O.D. casing, *without clamping*. The flow of fluid is through the gas lift valve.

Circulation between casing and tubing is provided by a series of drilled ports in the body of the mandrel and slots in the sliding sleeve. The total area of the ports and slots is equal to the inside area of the tubing, as a result of which a Type "SSC" Mandrel serves as a *full capacity circulating valve* that may be opened or closed with wire line tools and in which a gas lift valve may be installed whenever desired.

DIMENSIONS AND WEIGHTS

Type	Tubing Size	Outside Diameter	Inside Diameter	Length	Weight
SSC	1¼"	[illegible]	[illegible]	[illegible]	[illegible]
SSC	1½"	[illegible]	[illegible]	[illegible]	[illegible]
SSC	2"	[illegible]	[illegible]	[illegible]	[illegible]
SSC	2"	[illegible]	[illegible]	[illegible]	[illegible]
SSC	2½"	[illegible]	[illegible]	[illegible]	[illegible]

TYPE "V-2" MANDREL

The sliding sleeve in this mandrel contains a fluid by-pass with a flow capacity equal to that of the tubing. The gas inlet port is large enough to pass any required volume of injection gas and provides for emergency circulation between casing and tubing.

DIMENSIONS AND WEIGHTS

Type	Tubing Size	Outside Diameter	Inside Diameter	Length	Weight
V-2	2"	[illegible]	[illegible]	48"	[illegible]
V-2	2½"	[illegible]	[illegible]	48"	[illegible]

FIGURE 1
Type "SSC" Mandrel with Type "S-O" Gas Lift Valve Installed. Sliding sleeve valve is in open position. Fluid flow through the gas lift valve.

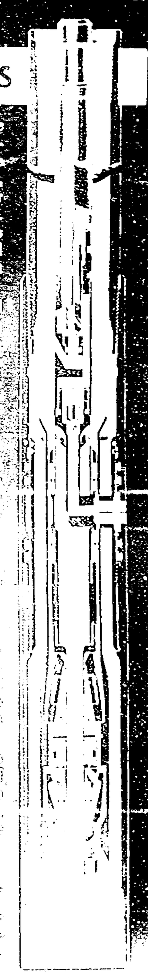
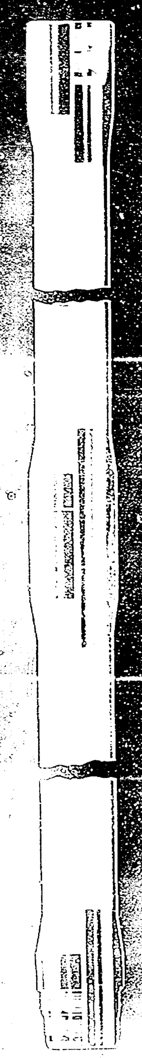


FIGURE 2
Type "V-2" Mandrel with Type S-O Gas Lift Valve Installed. Fluid flows through by-pass in sliding sleeve and through the gas lift valve.

440

HYDRIL "CS" TUBING JOINT

(Patented)



The Hydril "CS" tubing joint was first introduced to the industry in 1947. Since then this joint has proved its merits so conspicuously that most oil and gas producers now prefer Hydril "CS" tubing strings wherever the producing conditions require better tubing. Hydril "CS" tubing strings are now in use in most of the high-pressure producing fields of the country.

This tubing joint is as strong as is needed in the deepest of wells. High pressure is sealed off positively at every joint by three separate sealing surfaces. In torque capacity (to resist over-tonging) this "CS" joint far exceeds the collared type tubing joints.

In corrosive gas or gas-distillate fields the need for flush-bore tubing joints is extreme. Hydril "CS" tubing provides streamline flow through the joints, there being no shoulders to cause eddying in the flow of the corrosive fluid at the joints.

All these advantages combine in the Hydril "CS" tubing joint to make it uniquely suited to solving problems encountered in difficult producing fields. There are many fields where all these advantages are required. The gas-distillate fields generally are deep, and usually are characterized by high pressure and corrosive conditions. In these areas the producing problems can be solved with economy by using tubing equipped with Hydril "CS" joints. It is the excellent performance record of this joint under all these adverse conditions that testifies most graphically to the merit of the Hydril "CS" tubing joint.

ELEVATORS

Hydril "CS" tubing strings can be run on standard tubing elevators using elevator plugs to provide a lifting shoulder equivalent to a tubing collar. When tubing is to be round-tripped several times, time is saved by providing an elevator plug for each stand.

Or, if desired, the elevator plugs can be eliminated and the string handled on slip-type elevators, available for rental for 2⅜", 2⅞" and 3½" "CS" tubing.

HOW THE JOINT MAKES UP

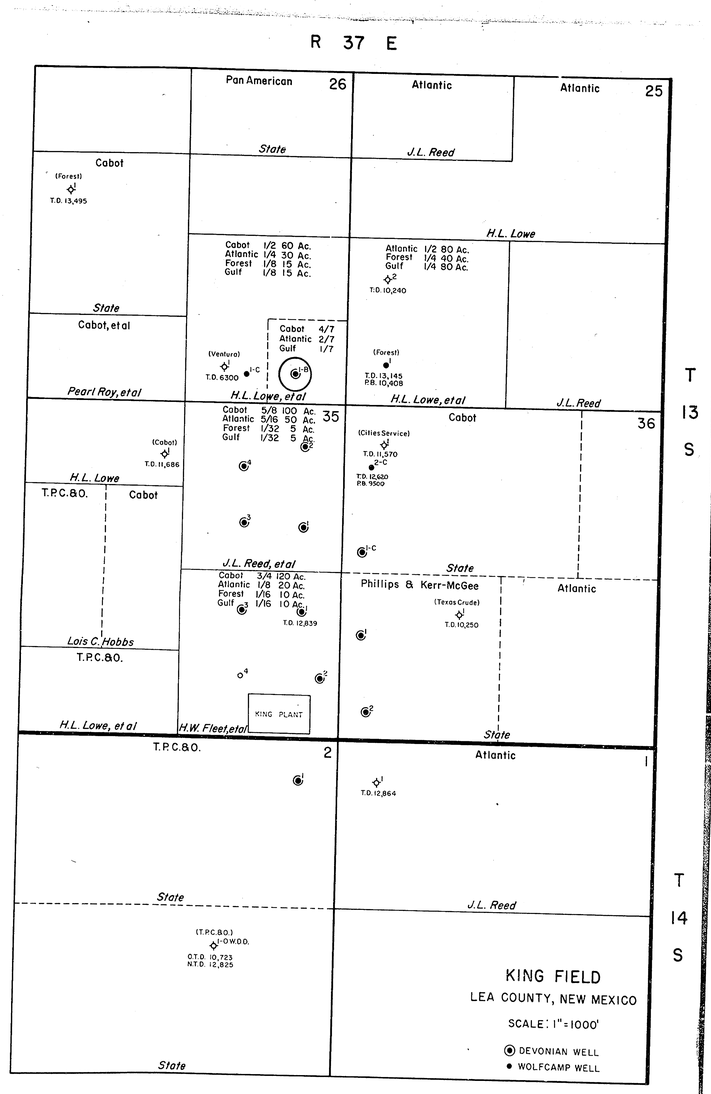
As the pin is stabbed into the box, guiding bevels bring the joint into the full stabbed position and land it on two full starting threads. At this position the joint is loose-fitting to permit free stabbing and easy starting of the threads. During spinning up of the joint, both threads engage so that only a few turns are required for full make-up. The first seating occurs on the 14° internal seal. This contact usually stops free spinning. Moderate further make-up preloads this internal seal, and then the outside shoulder seats. This double seating can usually be achieved by torque application equivalent to that of hand tubing tong make-up. As the joint is further tonged up with power tools (to the make-up torque shown in Table No. 18) the bore shoulder seats, forming a final positive stop. In this made-up position the 14° inside seal and the 30° outside seal both are properly preloaded to establish pressure seals against both low and high pressures. The bore shoulder itself is, of course, a third pressure seal as well as a third and final stop to the make-up of the joint.

Table No. 18
HYDRIL "CS" JOINT FOR EXTERNAL UPSET TUBING

Size (O.D.) & Weight (Nominal)	Tubing: Wall Thick.	Tubing: I.D. (Nominal)	Tubing: Drift Diam. (API)	Joint: Pin Length	Joint: O.D. (Std.)	Joint: O.D. (Special)	Joint: I.D. (Bored)	Joint: Joint Efficiency	Tension* J-55 Min. Yield	Tension* N-80 Min. Yield	Tension* P-105 Min. Yield	Make-up Torque J-55	Make-up Torque N-80
Inches Lbs.	Inches	Inches	Inches	Inches	Inches	Inches	Inches	Percent	1000 Lbs.	1000 Lbs.	1000 Lbs.	Ft-Lbs.	Ft-Lbs.
[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]

Fig. 59
Hydril "CS" Tubing Joints

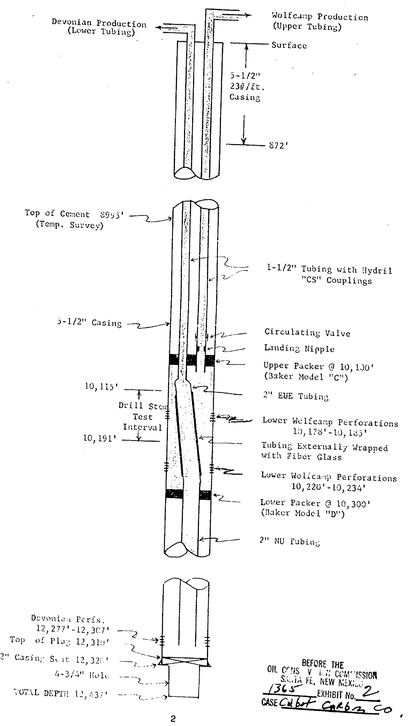
*Pipe Tension Strength Calculated on: J-55 — 55,000 Yield and 75,000 Ultimate; N-80 — 80,000 Yield and [illegible] Ultimate; P-105 — 105,000 Yield and 120,000 Ultimate.
Hydril "A" and "CA" and "CS" threads are interchangeable.
Hydril 4½" O.D. type "A" and "CS" and "FJ" (casing) threads are interchangeable.



441

Dayco Corp.
OCC Case #1365
4/16/58

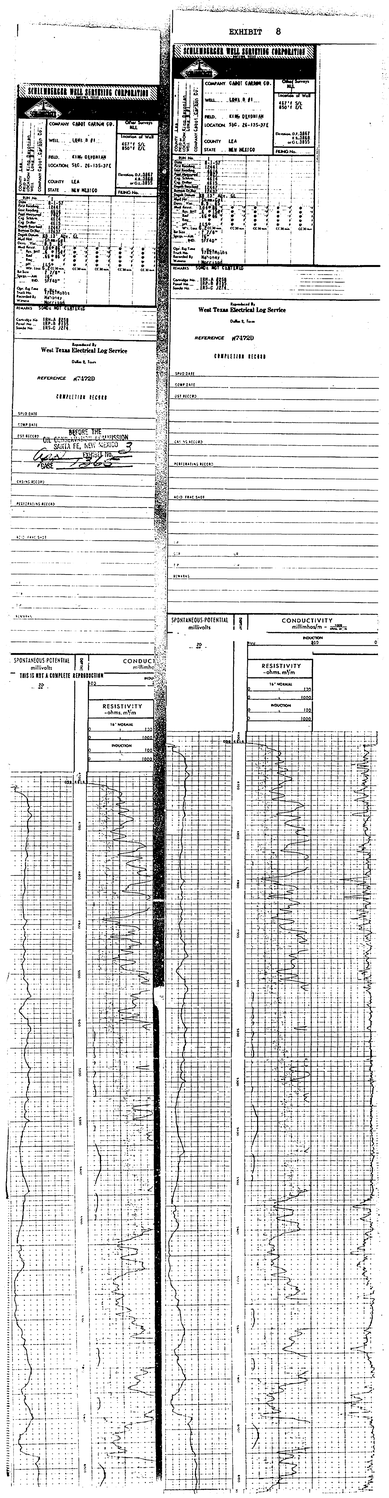
EXHIBIT 2
DIAGRAMMATIC SKETCH
of
DUAL STRING COMPLETION
Proposed for
CABOT CARBON COMPANY'S H. L. LOWE "B" WELL NO. 1
Section 26, Township 13, Range 37 East
Lea County, New Mexico



BEFORE THE
OIL CONSERVATION COMMISSION
Santa Fe, New Mexico
EXHIBIT No. 2
CASE No. 1365 Cabot Carbon Co.

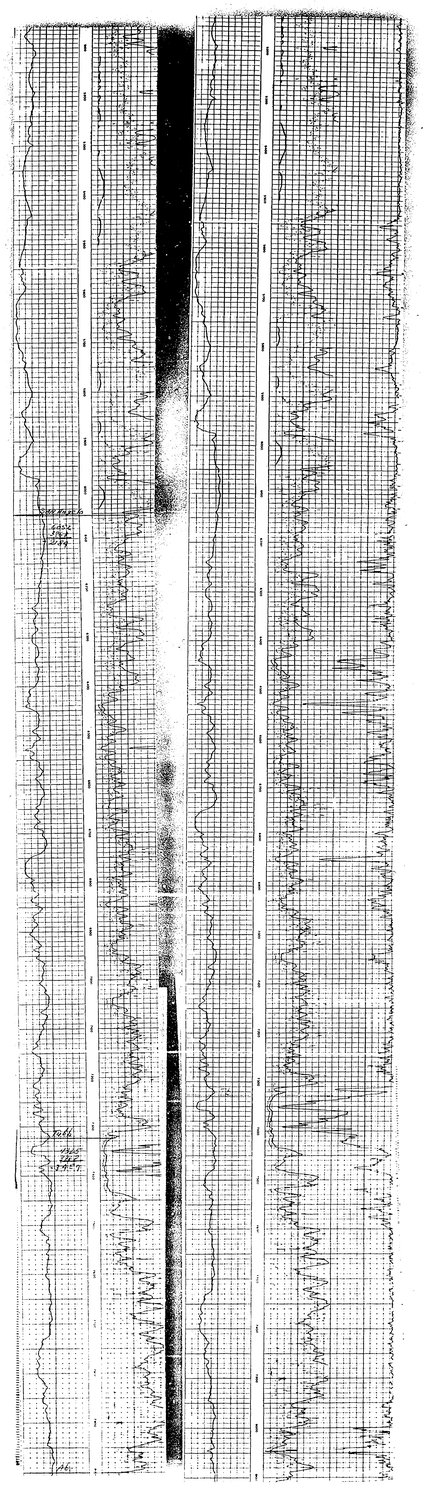
2

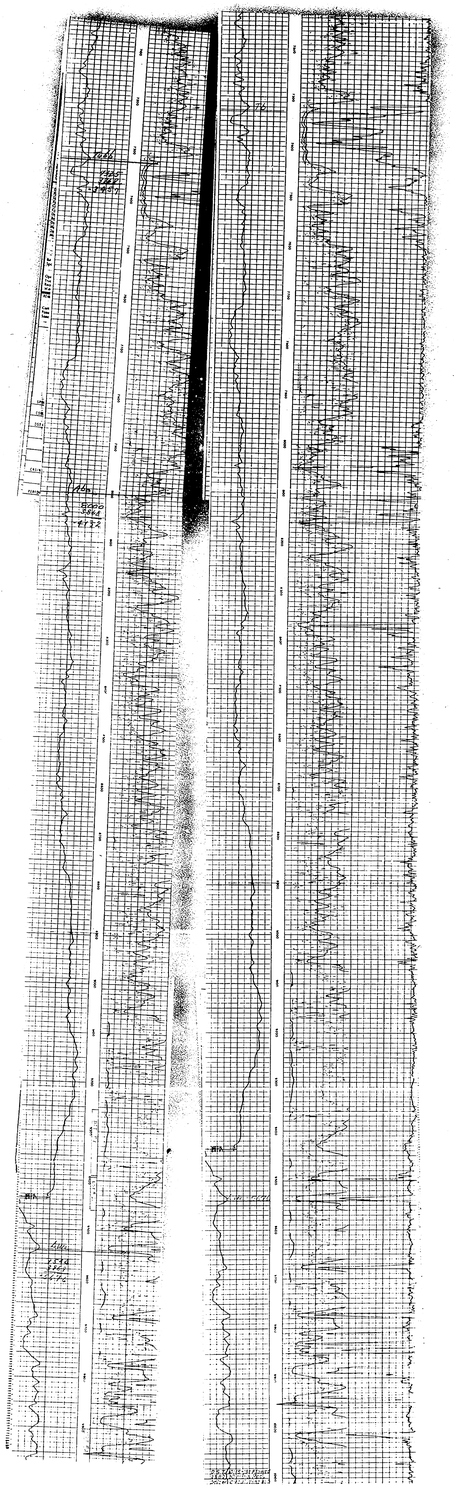
EXHIBIT 8

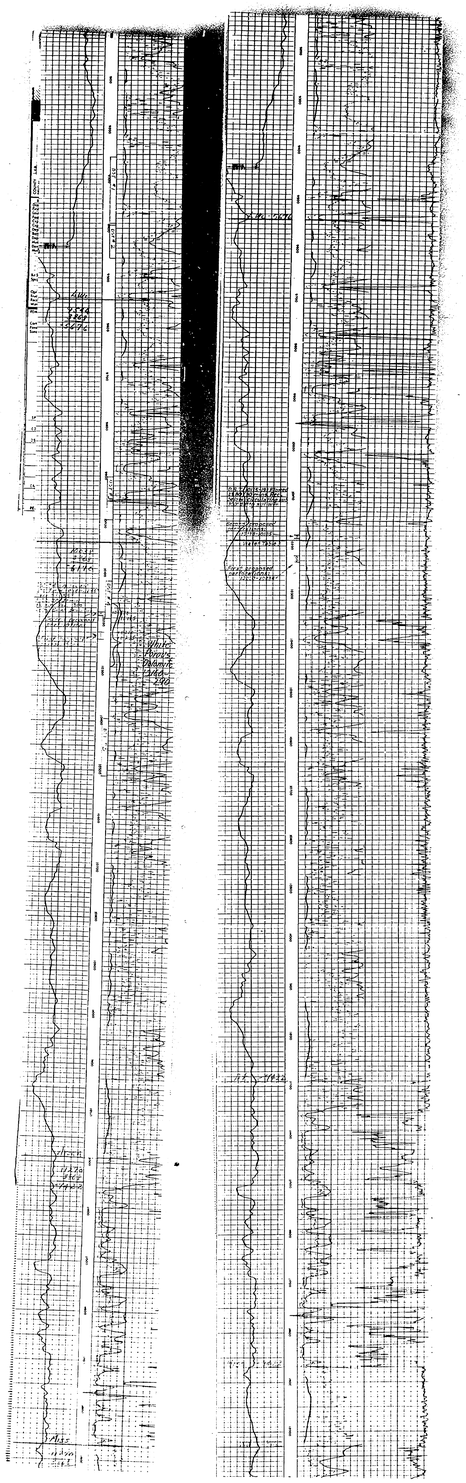


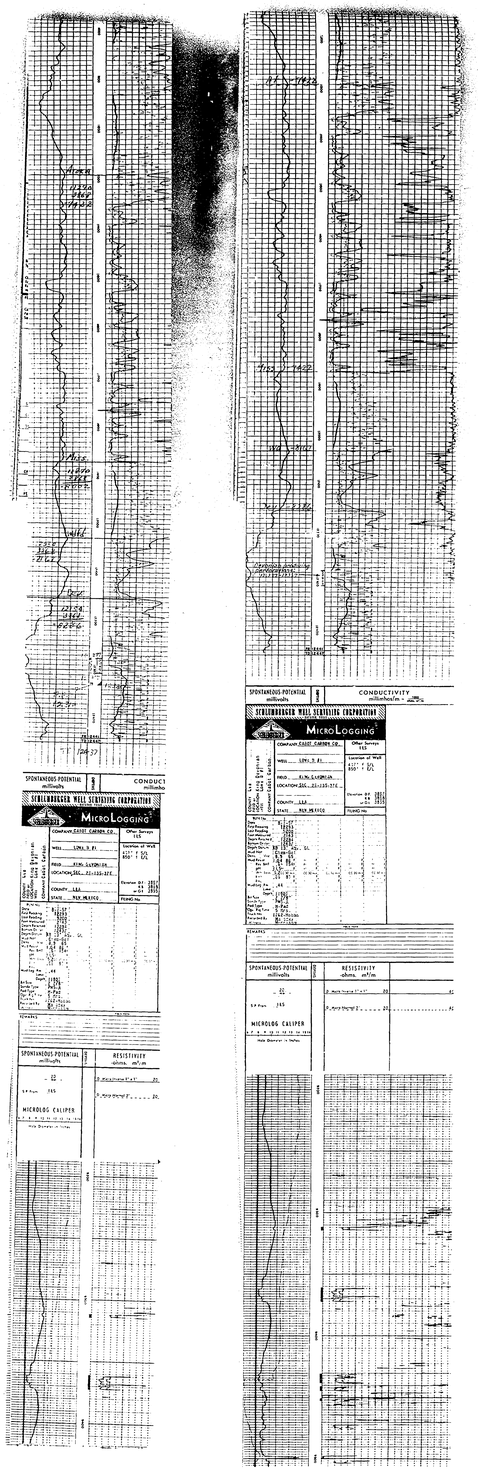
THIS IS NOT A COMPLETE REPRODUCTION

442

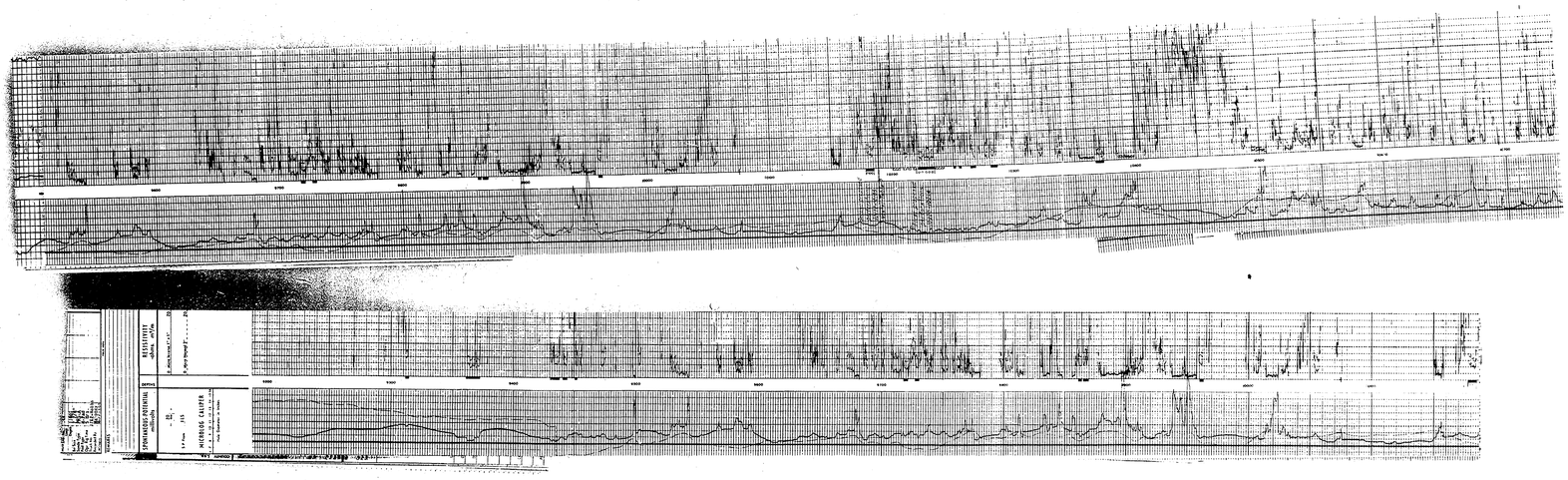







SCHLUMBERGER WELL SURVEYING CORPORATION
MICROLOGGING
COMPANY EAST CANON CO.
WELL LOVA 3 #1
FIELD WILDCAT
COUNTY LEA
STATE NEW MEXICO
SPONTANEOUS POTENTIAL millivolts
RESISTIVITY ohms m²/m
MICROLOG CALIPER
Hole Diameter in Inches

446



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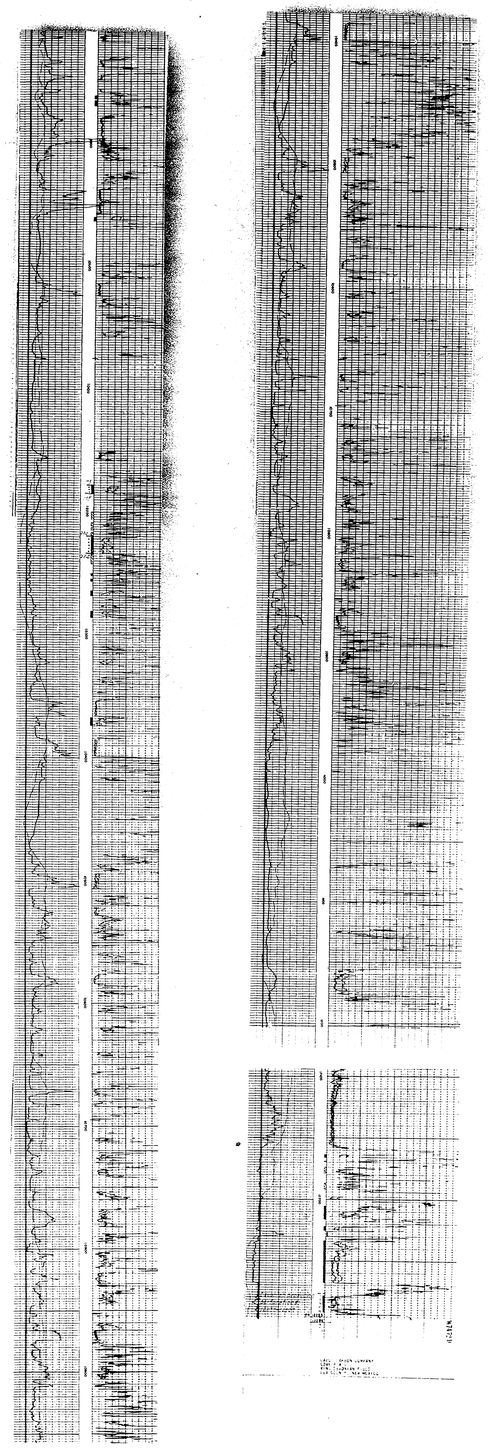
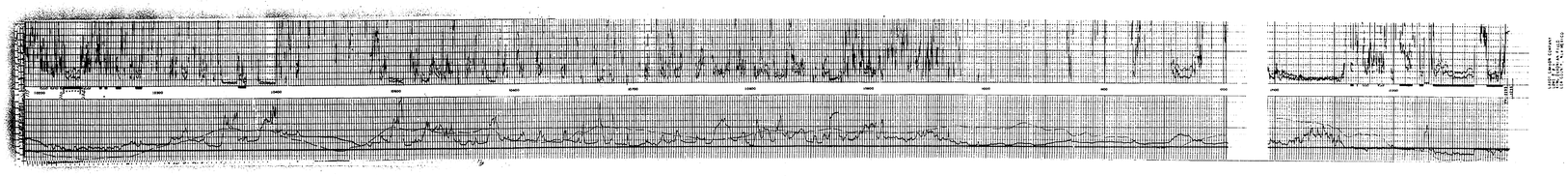




JOHN DALY

CONSULTING
GEOPHYSICS
GEOLOGY

1808 W. MISSOURI
MIDLAND, TEXAS
MUtual 4-1462

SEISMOGRAPH APPRAISAL
ETCHEVERRY RANCH AREA
TPS 14 and 15 S, RS 33 and 34 E,
LEA COUNTY, NEW MEXICO
FOR
FELMONT OIL CORPORATION

OCTOBER 12, 1957

BEFORE THE OIL CONSERVATION COMMISSION
Case 7367 Exhibit No. 2

SUMMARY AND RECOMMENDATIONS

A dome, based upon reliable seismograph data, has been found, the highest measured point of which is located on the west side of the NW¼ of the NW¼ of Sec. 4, T 15 S, R 34 E. This uplift covers the better part of four sections, and shows in excess of 200' of relief. Another dome is found in Secs. 1 and 12, T 15 S, R 33 E. It is recommended that any available acreage on these structures be acquired. It is further recommended that a test be drilled on the former, to the Devonian formation. This should be located as closely as practicable to the highest measured point. The second feature will require more seismograph work before drilling is initiated.

Leads to two possible structures are found in Secs. 27 and 19, T 14 S, R 34 E. The shooting of these leads is recommended, provided that the land situation makes such a course feasible.

INTRODUCTION

The greater portion of the area investigated centers on the common boundary between Tps 14 and 15 S, R 34 E, although three lines extend into R 33 E. It is situated four miles east of the Saunders Field, which produces from the Pennsylvanian and Devonian formations, north of the Townsend Field, which produces from the Wolfcamp formation, and west of the Caudill and Dean Fields, which produce from the Pennsylvanian and Devonian formations.

United Geophysical Company of Pasadena, California, was engaged for the field work. Part of the time two crews were used. One of these employed groups of twelve geophones, spaced thirty feet apart, for each recording trace; the other used groups of eighteen instruments, spaced 20' apart. Forty-eight trace cameras were available, so the outputs of the instrument groups were recorded simultaneously on mixed and unmixed circuits. The holes were offset 5,280', perpendicularly from the centers of the instrument spreads, and the positions of the instruments and shot holes were staggered along the lines, in order to afford up-hole weathering control on the end traces of each instrument spread. This method is not popular with many seismologists, but has proven very successful in this area, as attested by the fact that with it the Caudill Field was discovered. A line a mile and a half long, extending across and beyond Sec. 5, T 15 S, R 34 E, and employing normal incidence shooting was tried, but the record quality was far inferior to that secured from the single hole offset broadside, even though shots fired simultaneously in three deep holes were used for the vertical records - a device that sometimes gives good data in bad areas.

VELOCITY CONTROL AND COMPUTATIONAL PROCEDURES

Velocity surveys from the Hunt - #1 State, Sec. 14, T 15 S, R 34 E; the Shell Oil Company - #1 Williams unit, Sec. 8, T 16 S, R 34 E; the Humble Oil and Refining Company - #1 Federal-Elliott, Sec. 1, T 16 S, R 34 E; and the Ada Oil Company - #1 Coalson, Sec. 13, T 15 S, R 35 E, were available. The velocity was distributed linearly between the Hunt, Humble and Shell wells, and a value projected along the strike so derived checked the experimental data in the Ada-Coalson well, very closely.

The time values were converted to depth according to the following procedure: a value of 0.100 of a sec. was subtracted from each time value, this comprised of: .035 for normal move-out; .037 for instrument lag; and .028 for phase. Correction for this latter category was made because it was evident that the trough which was picked was a second phase of the Mississippian reflection. The remainders were multiplied by one-half the velocities read from the nearest velocity contours, and the datum: +4,000' was subtracted from the products to yield the subsurface elevations.

RESULTS

There were many reliable reflections from the Permian and Pennsylvanian formations, but none was continuous, so no maps were made for these formations. It would have been possible to do so by use of considerable phantom projection, but this course was not elected because of the fact that it would have led to a hybridized map; besides, the structure in the Permian and Pennsylvanian formations is of only secondary interest, in any event, the principal drilling objective being the Devonian formation. Of the pre-Pennsylvanian reflections, the strongest, and the only one of which was nearly continuous, is the Mississippian, and this is the subject of Enclosure I.

Enclosure I, Contours on a Reflection from the Mississippian Formation with Velocity Contours

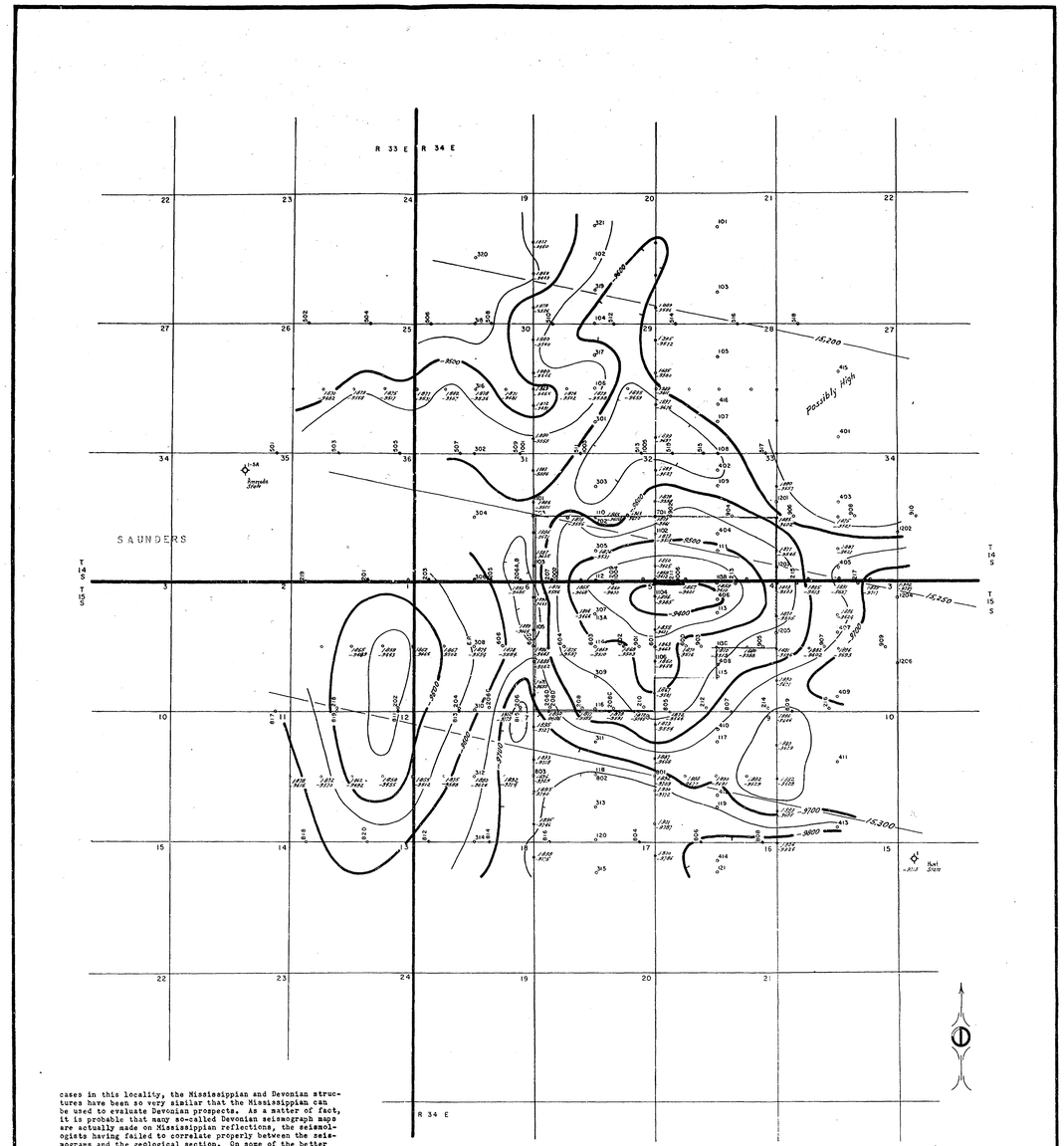
Identification of the subject reflection with the Mississippian formation is based upon two factors: (1) an unconformity which can be recognized on some of the better records, and is believed to be the one between the Pennsylvanian and Mississippian formations; (2) the fact that the depth computations fall within the known range of values for the Mississippian formation, as evinced by the Hunt - #1 State well, Sec. 14, T 15 S, R 34 E. The Mississippian formation is not a drilling objective, but in all known cases in this locality, the Mississippian and Devonian structures have been so very similar that the Mississippian can be used to evaluate Devonian prospects. As a matter of fact, it is probable that many so-called Devonian seismograph maps are actually made on Mississippian reflections, the seismologists having failed to correlate properly between the seismograms and the geological section. On some of the better records, on which the reflection character is well developed, it is evident that the continuous phase which was used in mapping, is the second one.

The structure of principal interest is the dome, the highest measured point of which is on the west line of the NW¼ of the NW¼ Sec. 4, T 15 S, R 34 E. This covers the greater part of four sections, and shows in excess of 200' of relief. The data which define this feature are very reliable and are, specifically, the following lines: the N-S line from the center of Sec. 34, T 14 S, to the center of Sec. 3, T 15 S; a N-S line along the west lines of Sec. 34, T 14 S, and of Secs. 3 and 10, T 15 S; a N-S line along the west lines of Sec. 33, T 14 S, and of Secs. 4 and 9, T 15 S; a N-S line along the west lines of Sec. 32, T 14 S, and of Secs. 5 and 8, T 15 S; an E-W line from the center of Sec. 3 to the W¼ corner of Sec. 5, T 15 S; an E-W line along the south line of Sec. 5, T 15 S; and an E-W line through the center of Sec. 9, T 15 S; all in R 34 E. The other data on this dome are not continuous, but dip components and dip projection of these poorer data tie in with the reliable network. None of these poorer lines may be considered critical.

Another dome is found in Secs. 1 and 12, T 15 S, R 33 E, but has not been completely delineated by the seismograph. It is possible that Sec. 27, T 14 S, R 34 E, is high, and may be the site of still another dome, but the seismograph data were not diagnostic. Another uplift is indicated in Sec. 19, T 14 S, R 34 E.

Respectfully submitted,

450



ETCHEVERRY RANCH AREA
TPS. 14 & 15 S., RS. 33 & 34 E.
LEA COUNTY, NEW MEXICO

ENCLOSURE I
SEISMOGRAPH APPRAISAL FOR
FELMONT OIL CORPORATION
BY JOHN DALY

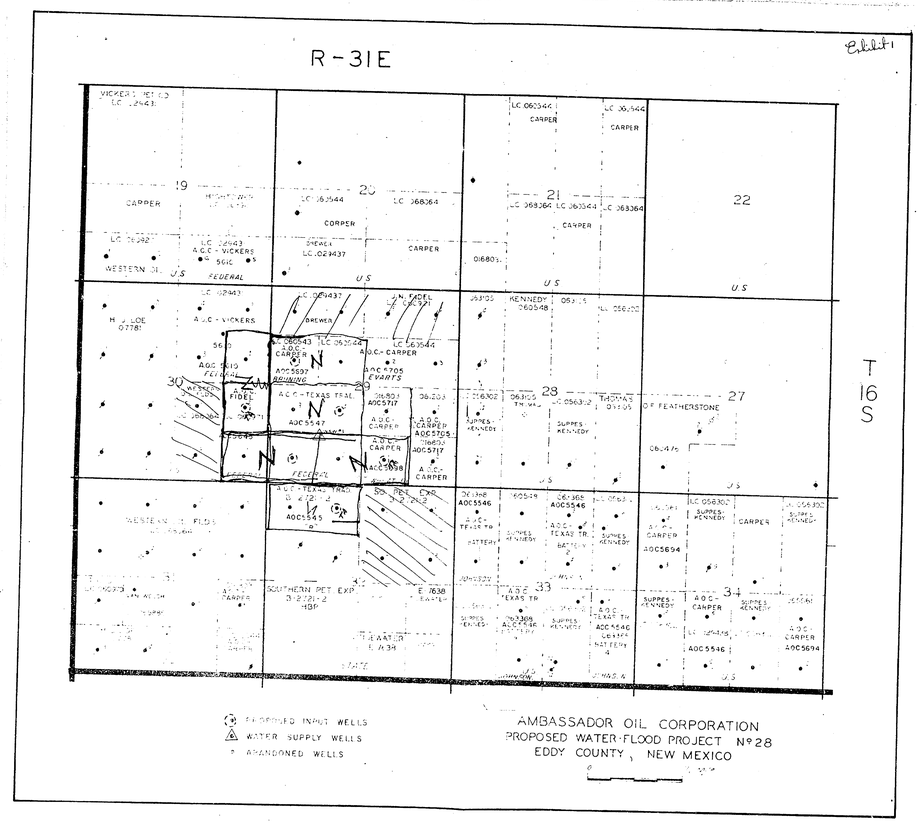
CONTOURS ON A REFLECTION FROM THE
MISSISSIPPIAN FORMATION
WITH VELOCITY CONTOURS

CONTOUR INTERVAL = 50' DATUM: DEPTH: SEA LEVEL TIME = 4000

DATE: 10-12-1957

SCALE: 1"=2000'

Exhibit 1



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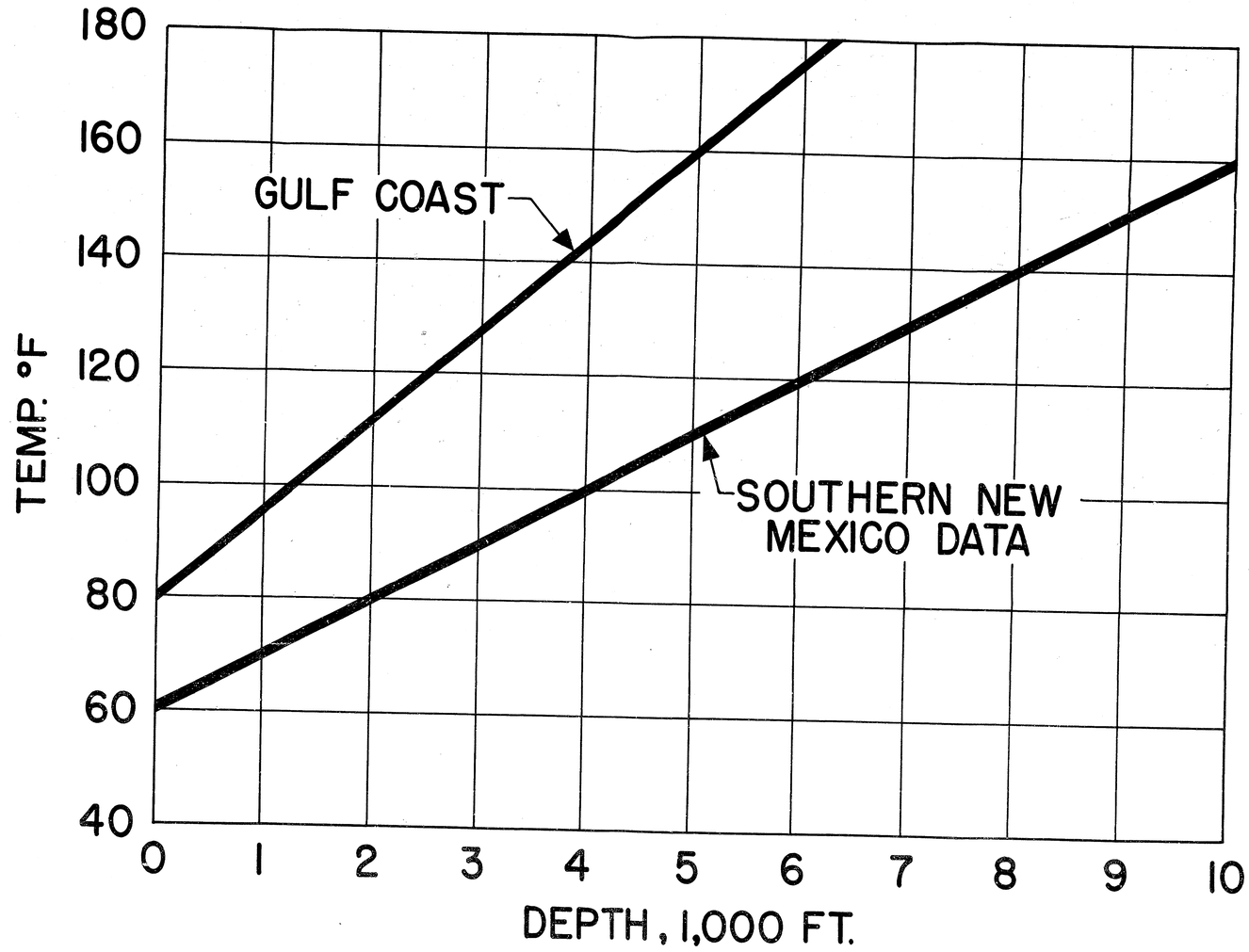
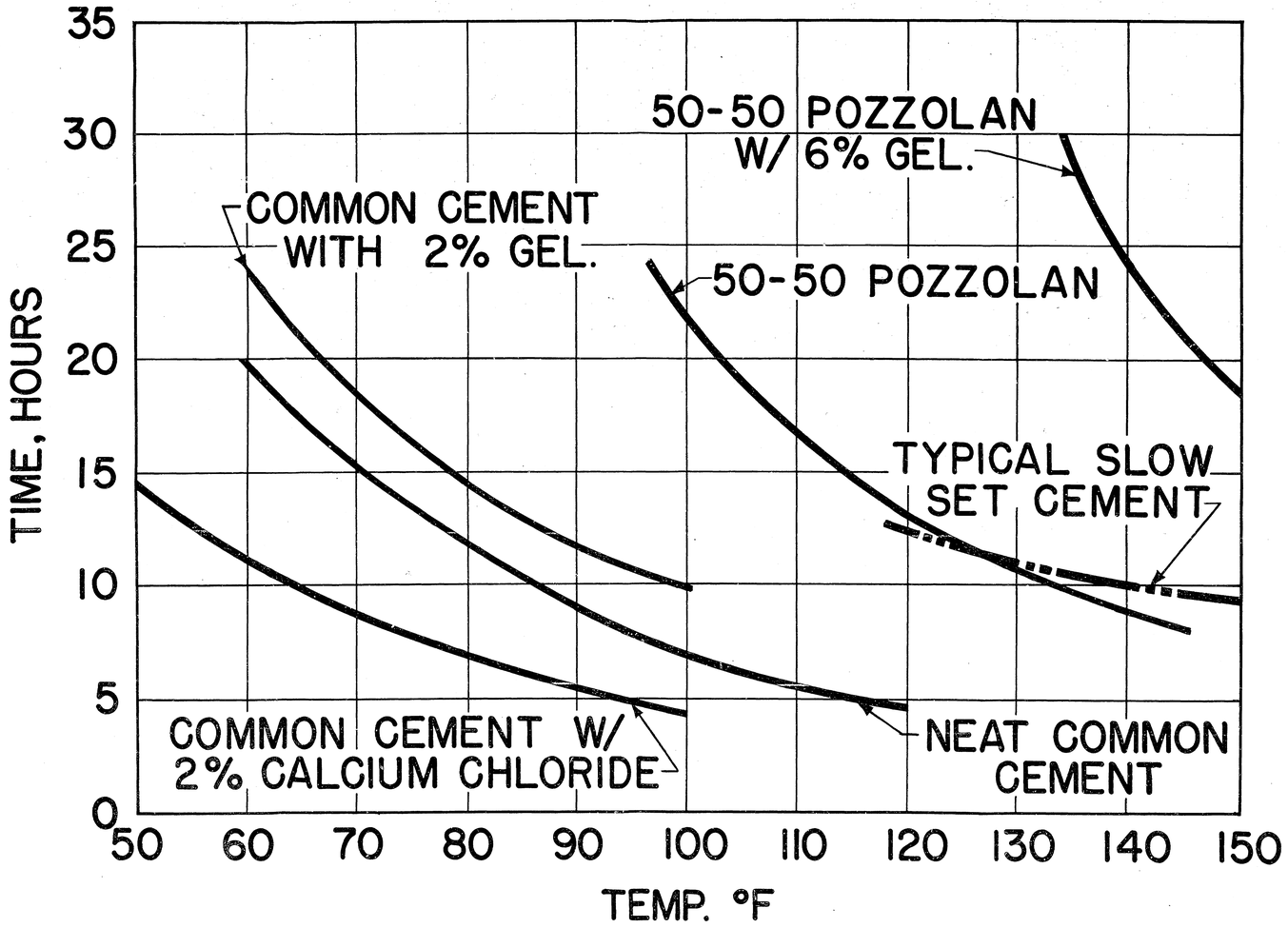


FIG. 1

STATIC SUBSURFACE
TEMPERATURES

BEFORE THE
OIL CONSERVATION COMMISSION
SANTA FE, NEW MEXICO
Case Exhibit No. 1
Case 3



BEFORE THE
OIL CONSERVATION DIVISION
SANTA FE, NEW MEXICO
Halliburton EXHIBIT NO. 2
CASE 1869

FIG. 2

TIME REQUIRED TO REACH 500 P.S.I. COMPRESSIVE STRENGTH

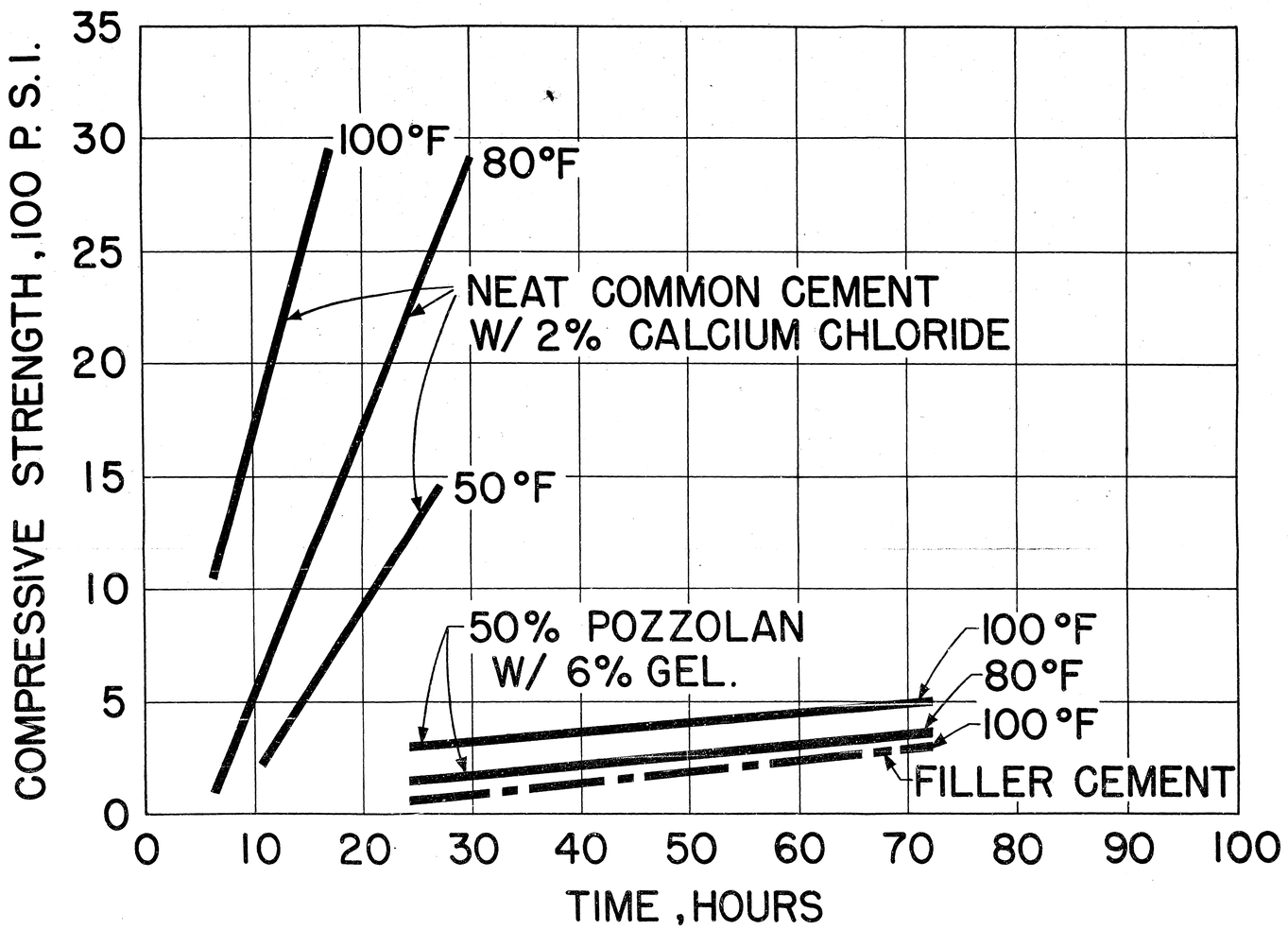


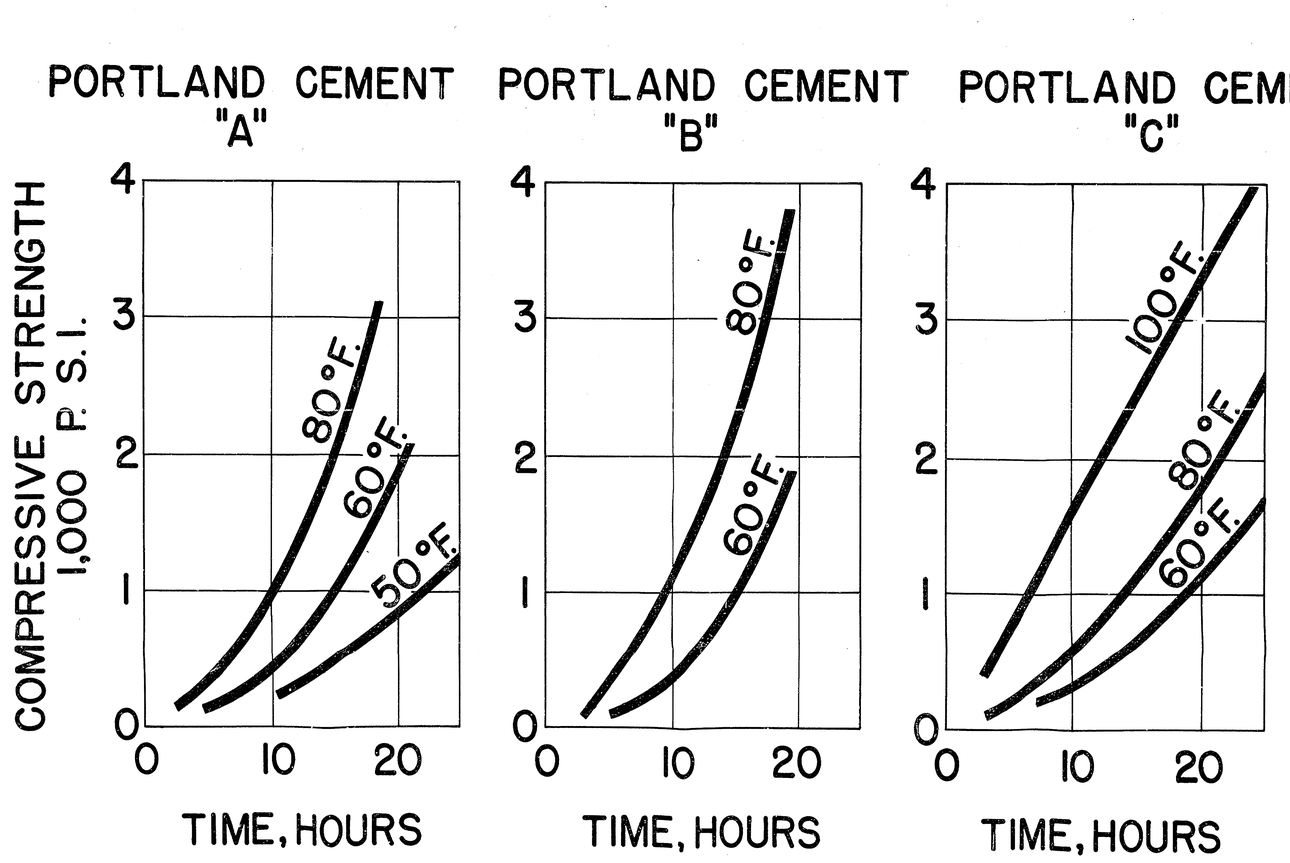
FIG. 3

STRENGTH OF VARIOUS CEMENTS

FIG. 4

STRENGTH OF EXAMPLE ACCELERATED CEMENTS *

* NOTE: 2% CALCIUM CHLORIDE USED WITH ALL CEMENTS TOGETHER WITH 5.2 GAL. WATER PER SACK. SLURRY DENSITY OF ALL CEMENTS = 15.6 #/ GAL.



455

EXHIBIT NO. 4
CASE 1467

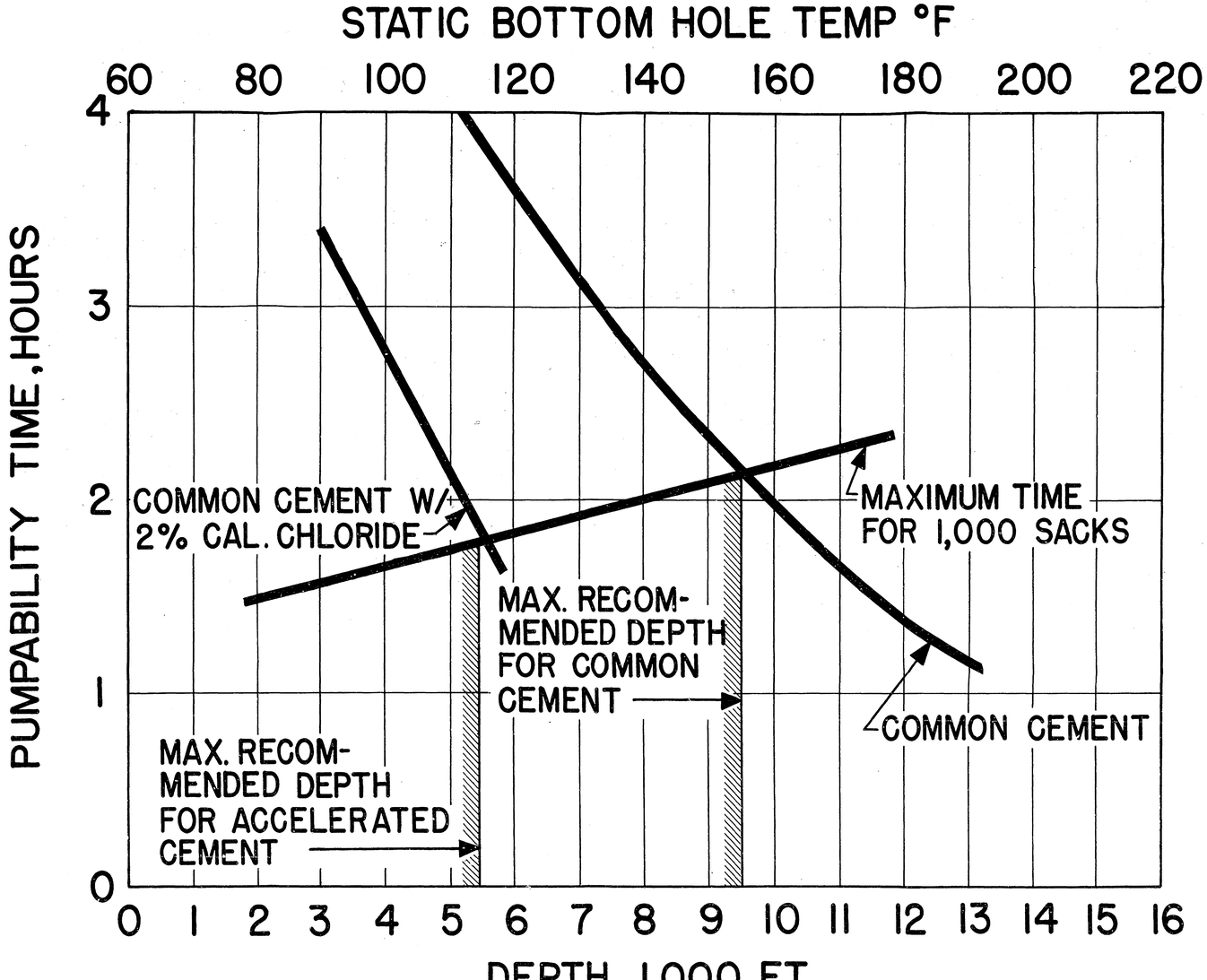


FIG. 5

CEMENT PUMPABILITIES
ESTIMATED FOR NEW MEXICO

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BEFORE THE
OIL CONSERVATION COMMISSION
SANTA FE, NEW MEXICO
EXHIBIT NO.
CASE

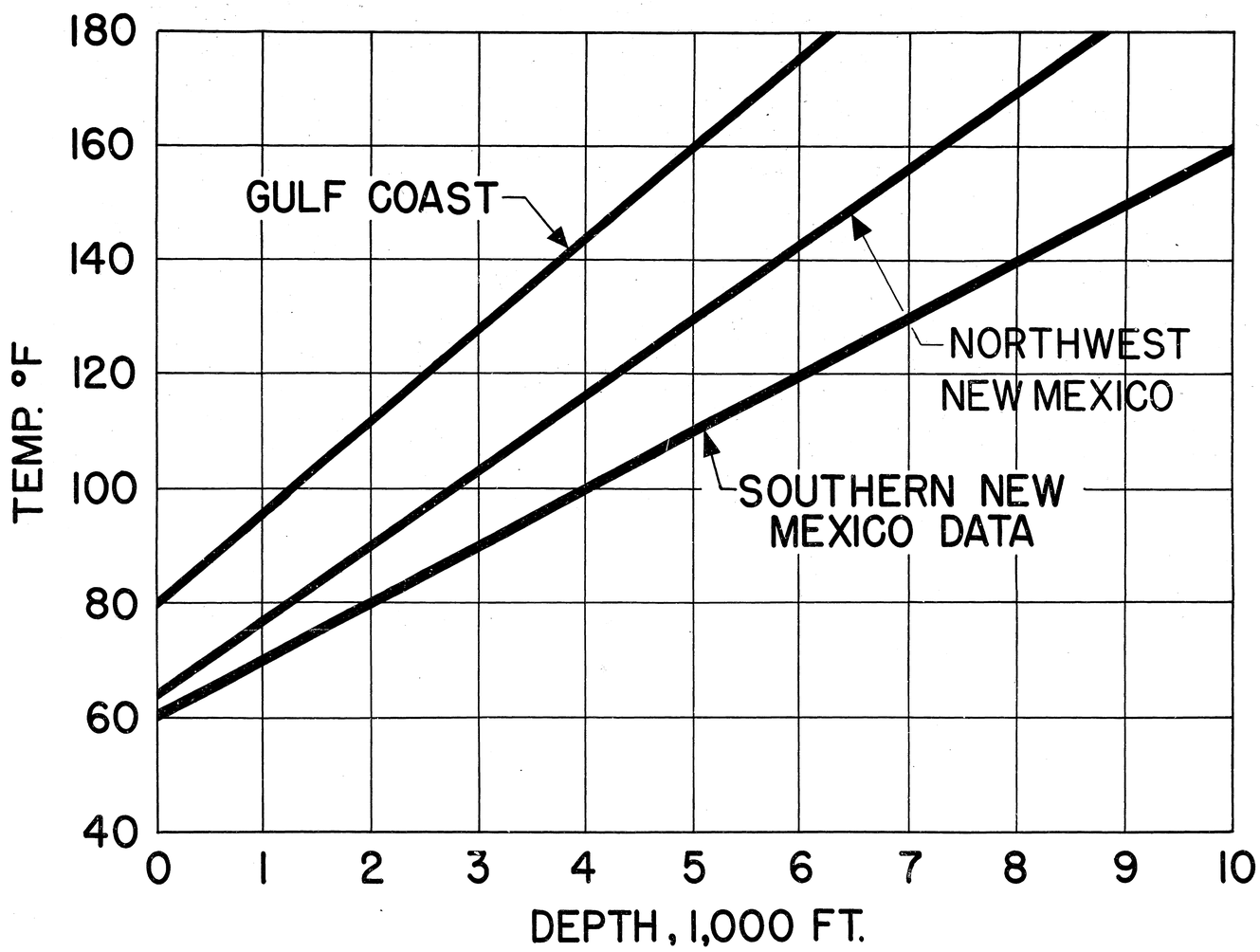

FIG. 6

STATIC SUBSURFACE TEMPERATURES

BEFORE THE
OIL CONS. COMM. EXAMINER
SANTA FE, NEW MEXICO
CASE 784