

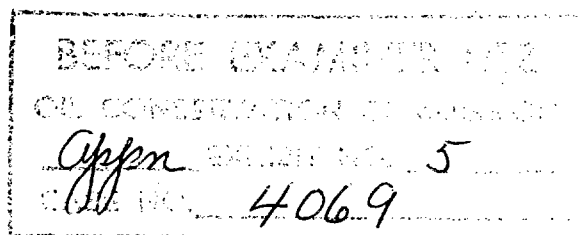
TOM HANSEN COMPANY, INC.

COMPANY Union Oil Co. of California FIELD Wildcat
 LEASE Midway State WELL 1 COUNTY Lea STATE New Mexico
 DATE 1/13-18/69 FORMATION Devonian

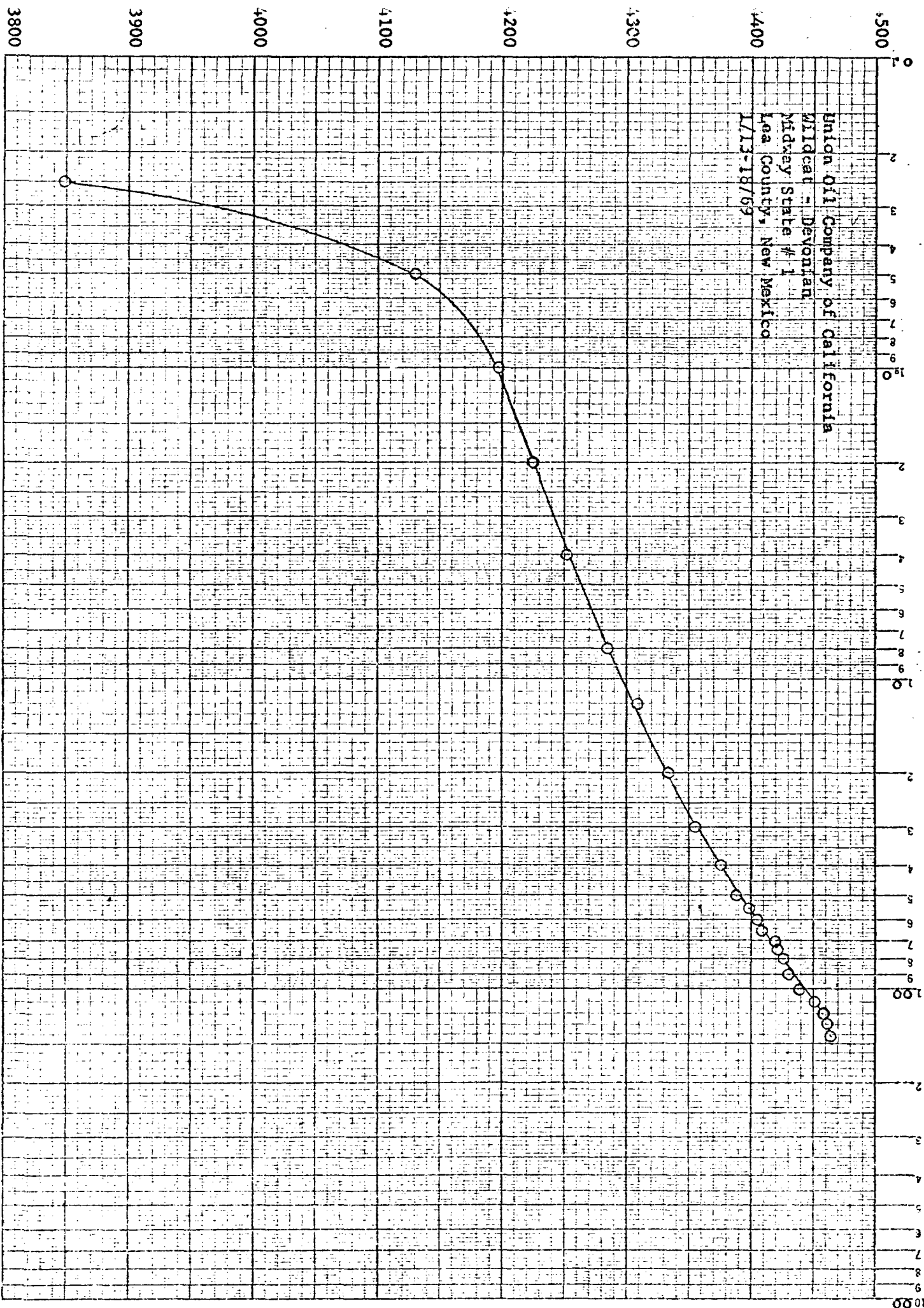
C H R O N O L O G I C A L D A T A

Date	Time	Well Status	Elapsed Time Hrs-Min.	$T + \Delta T$ ΔT	Oil BOPD	Tbg. Press.	BHP @ R. D. 11,350'	BHP @ M. P. 11,498'
1-13-69	08:30	Arrived on location - ran flowing gradient						
	11:30	Instrument on bottom	00 - 00		463	71	3507	3556
	12:30		01 - 00			71	3507	3556
	12:30		02 - 00			71	3490	3539
	13:30	Shut in well	00 - 00					
	13:45		00 - 15	1421.0			3798	3848
	14:00		00 - 30	711.0			4085	4130
	14:30		01 - 00	356.0			4147	4197
	15:30		02 - 00	178.5			4175	4225
	17:30		04 - 00	89.8			4202	4252
	21:30		08 - 00	45.4			4235	4285
1-14-69	01:30		12 - 00	30.6			4259	4309
	09:30		20 - 00	18.8			4284	4334
	19:30		30 - 00	12.8			4305	4355
1-15-69	05:30		40 - 00	9.9			4326	4376
	15:30		50 - 00	8.1			4339	4389
	20:30		55 - 00	7.5			4348	4398
1-16-69	01:30		60 - 00	6.9			4355	4405
	06:30		65 - 00	6.5			4359	4409
	09:00	Pulled bomb & ran gradient traverse	67 - 30	6.3			4363	4413
	12:00	Back on bottom	70 - 30	6.0		690	4370	4420
	16:30		75 - 00	5.7			4372	4422
	21:30		80 - 00	5.4			4376	4426
1-17-69	07:30		90 - 00	4.9			4381	4431
	17:30		100 - 00	4.6			4389	4439
1-18-69	03:30		110 - 00	4.2			4402	4452
	13:30		120 - 00	4.0			4408	4458
	23:30		130 - 00	3.7			4311	4461
1-19-69	12:30		143 - 00	3.5			4414	4464

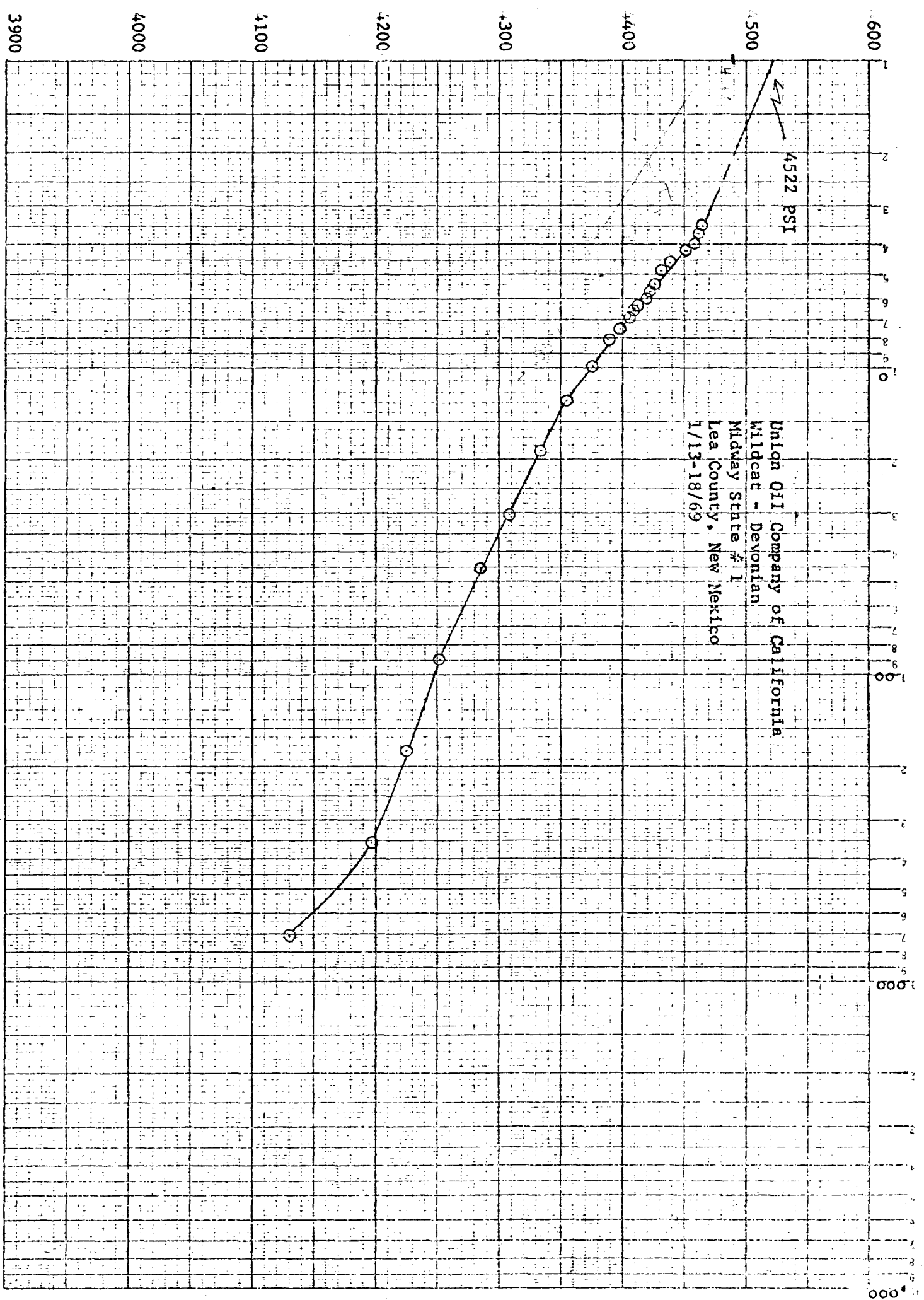
Total Accumulative Production: 6840 Bbls.
 Daily Rate: 463
 T = 355 (hours)



Union Oil Company of California
 Midcat - Devonian
 Midway State # 1
 Lea County, New Mexico
 1/13-18/69



LOG CUMULATIVE SHUT IN TIME: HOURS



$$\frac{T + \Delta T}{T}$$

MIDLAND, TEXAS

LO 3-2025



ODESSA, TEXAS

LO 3-2025

INDIVIDUAL WELL DATA SHEET

Company Union Oil Co. of California Lease Midway State Well No. 1
 Field Wildcat (Devonian) County Lea State New Mexico
 Test Date 1-13-69 Time 08:00 Status of Well Flowing Shut In _____

GRAPHIC ANALYSIS

1000 2000 3000 4000

Depth Feet Pressure Lbs. Sq. In. *Gradient Lbs./Ft.

10 71

5000 1475 .281

8000 2439 .321

10,000 3079 .320

11,000 3390 .311

R. D. - 11,350 3507 .334

Mid Perf. - 11,498 3556 (.334)

Elev.-D.F. Gr. 3818

Pressure Datum Mid Perf.

Top of Pay

Tubing 2 3/8 Depth 11,530

B.H.C. Packer 11,405

Casing 5 1/2 Depth

Perf. 11,476-11,520

Total Depth

Formation Devonian

Casing Press.

Tubing Press. 71

Top of Fluid Flowing

Top of Water

Hrs.-Shut In Flowing

Temp. @ 11,350 = 188 °F

Last Test Date NPT

Press. Last Test

B.H.P. Change

Gain-Loss/Day

Instrument Amerada

Number 21602-N RPG 3

Calibration No. @ °F

Run By Hadorn & Allman

Calculated By Turner

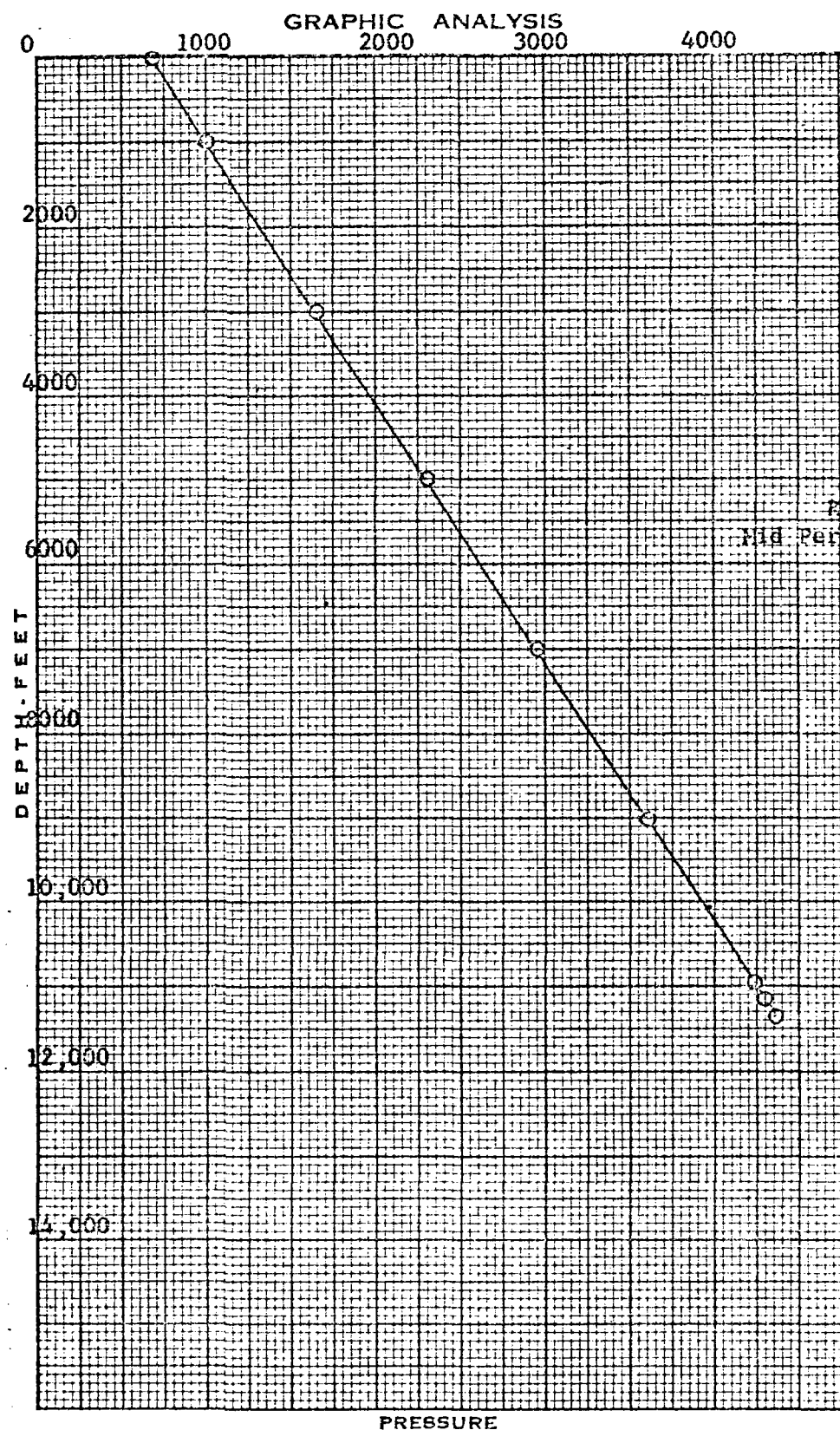
PRESSURE



INDIVIDUAL WELL DATA SHEET

Company Union Oil Co. of California Lease Midway State Well No. 1
 Field Wildcat (Devonian) County Lea State New Mexico
 Test Date 1-16-69 Time 12:00 Status of Well Shut in Shut In 68 hours

GRAPHIC ANALYSIS



Depth Feet	Pressure Lbs. Sq. In.	*Gradient Lbs./Ft.
10	686	
1000	1001	.315
3000	1654	.326
5000	2306	.326
7000	2954	.324
9000	3611	.328
10,950	4233	.319
11,150	4300	.335
P. D. - 11,350	4367	.335
Mid Perf. - 11,498	4417	(.335)
Elev.-D.F.		Gr. 3818
Pressure Datum	Mid Perf.	
Top of Pay		
Tubing	2 3/8	Depth 11,530
B.H.C.		Packer 11,405
Casing		Depth
Perf.	11,476-11,520	
Total Depth		
Formation	Devonian	
Casing Press.		
Tubing Press.	690 DWP	
Top of Fluid	Surface	
Top of Water	None	
Hrs.-Shut In	68	Flowing
Temp. @ 11,350	= 188 °F	
Last Test Date	NPT	
Press. Last Test		
B.H.P. Change		
Gain-Loss/Day		
Instrument	Amerada	
Number	21602-N	RPG 3
Calibration No.	@	°F
Run By	Allman	
Calculated By	Turner	

PRESSURE

CORE LABORATORIES, INC.

Petroleum Reservoir Engineering

DALLAS, TEXAS

Page No. 1

CA-20H

Company UNION OIL COMPANY OF CALIFORNIA File WP-3-3106
 Well MIDWAY STATE NO. 1-12 Date 12-8-68
 Field WILDCAT Elevation _____
 County LEA State NEW MEXICO Drlg. Fluid WATER BASE MUD
 Location 2310 FN & WL SEC 12-T17S-R36E

Lithological Abbreviations

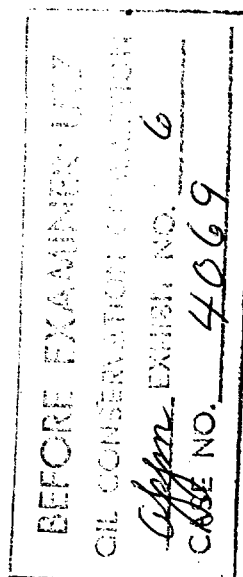
SAND-SS	DOLOMITE-DOL	ANHYDRITE-ANHY	SANDY-SDY	FINE-FN	CRYSTALLINE-XLN	BROWN-BRN	FRACTURED-FRAC	SLIGHTLY-SL/
SHALE-SH	CHERT-CHT	CONGLOMERATE-CONG	SHALY-SHY	MEDIUM-MED	GRAIN-GN	GRAY-GRY	LAMINATED-LAM	VERY-V/
LIME-LM	GYP-SUM-GYP	FOSSILIFEROUS-FO	LIMY-LMY	COARSE-CRSE	GRANULAR-GNR	VUGGY-VGY	STYLOLITIC-STYC	WITH-W/

SAMPLE NUMBER	DEPTH FEET	PERMEABILITY MILLIDARCS		POROSITY PERCENT	RESIDUAL SATURATION PERCENT PORE		DESCRIPTION
		MAX	90°		OIL	WATER	

WHOLE-CORE ANALYSIS

CORE NO. 1 11444-11499

1	11444.0-45.4	2.1	1.3	5.9	11.4	45.3	DOL, VGY
2	45.4-47.1	4.0	1.8	8.6	9.6	52.2	DOL, VGY
3	47.1-48.6	3.0	2.6	7.2	16.0	44.8	DOL, SL/VGY
4	48.6-50.1	4.1	3.4	8.9	14.0	48.0	DOL, SL/VGY
5	50.1-51.7	22	17	7.1	14.0	33.3	DOL, VGY
6	51.7-53.4	14	5.9	8.3	15.6	41.7	DOL, VGY
7	53.4-55.0	11	6.5	5.9	15.0	31.4	DOL, VGY
8	55.0-56.4	2.4	<0.1	6.4	11.4	52.0	DOL, FRAC
9	56.4-58.2	0.8	0.2	4.4	11.4	50.8	DOL, VGY
10	58.2-59.5	2.1	1.8	3.4	8.7	33.5	DOL, VGY
11	59.5-61.0	0.7	0.3	3.0	6.3	43.8	DOL, VGY
12	61.0-62.5	<0.1	<0.1	0.5	0.0	80.0	LM
13	62.5-64.0	2.2	0.6	2.9	9.3	54.2	DOL, SL/VGY
14	64.0-65.2	21	17	7.7	8.6	30.5	DOL, SL/VGY
15	65.2-66.3	14	13	5.2	9.5	36.9	DOL, SL/VGY
16	66.3-67.8	<0.1	<0.1	0.7	0.0	91.2	DOL, SL/VGY
17	67.8-69.5	35	29	6.8	8.0	48.2	FOL, VGY
18	69.5-71.0	119	53	3.0	10.7	68.0	DOL, FRAC, VGY
19	71.0-72.5	11	11	8.3	11.9	45.1	DOL, VGY
20	72.5-74.0	61	23	9.5	10.8	50.8	DOL, VGY
21	74.0-75.3	2.3	0.8	3.4	10.7	62.8	DOL, FRAC, SL/VGY
22	75.3-77.0	113	0.2	3.1	14.5	58.3	DOL, FRAC, VGY
23	77.0-78.5	0.8	<0.1	2.8	11.6	53.4	DOL, VGY, SL/FRAC
24	78.5-80.3	156	127	5.4	9.2	40.2	DOL, VGY
25	80.3-82.0	420	165	3.3	13.2	54.8	DOL, SL, VGY
26	82.0-83.9	0.2	0.2	2.2	1.0	77.8	DOL, FRAC, SL/VGY
27	83.9-85.5	0.2	0.2	3.0	11.9	61.0	DOL, VGY
28	85.5-87.2	333	145	7.5	6.8	42.8	DOL, VGY
29	87.2-88.5	4.6	1.3	6.1	9.6	41.0	DOL, VGY
30	88.5-90.0	4.7	<0.1	3.9	12.2	40.0	DOL, VGY
31	90.0-91.6	20	13	4.2	14.3	42.3	DOL, VGY
32	91.6-93.0	0.8	0.4	4.6	6.7	46.0	DOL, VGY



These analyses, opinions or interpretations are based on observations and materials supplied by the client to whom, and for whose exclusive and confidential use, this report is made. The interpretations or opinions expressed represent the best judgment of Core Laboratories, Inc. (all errors and omissions excepted); but Core Laboratories, Inc. and its officers and employees, assume no responsibility and make no warranty or representations, as to the productivity, proper operations, or profitability of any oil, gas or other mineral well or sand in connection with which such report is used or relied upon.

CORE LABORATORIES, INC.

Petroleum Reservoir Engineering

DALLAS, TEXAS

Page No. 2

CA-20H

Company UNION OIL COMPANY OF CALIFORNIA File WP-3-3106
 Well MIDWAY STATE NO. 1-12 Date 12-8-68
 Field WILDCAT Elevation _____
 County LEA State NEW MEXICO Drilg. Fluid WATER BASE MUD
 Location 2310 FN & WL SEC 12-T17S-R36E

Lithological Abbreviations

SAND-SS	DOLOMITE-DOL	ANHYDRITE-ANHY	SANDY-SDY	FINE-FN	CRYSTALLINE-XLN	BROWN-BRN	FRACTURED-FRAC	SLIGHTLY-SL/
SHALE-SH	CHERT-CHT	CONGLOMERATE-CONG	SHALY-SHY	MEDIUM-MED	GRAIN-GN	GRAY-GRY	LAMINATED-LAM	VERY-V/
LIME-LM	GYP SUM-GYP	FOSSILIFEROUS-FO	LIMY-LMY	COARSE-CRSE	GRANULAR-GNR	VUGGY-VGY	STYLOLITIC-STYC	WITH-W/

SAMPLE NUMBER	DEPTH FEET	PERMEABILITY MILLIDARCYs		POROSITY PERCENT	RESIDUAL SATURATION PERCENT PORE		DESCRIPTION
		MAX	90°		OIL	WATER	
33	11493.0-94.5	1.2	0.8	3.8	20.5	39.5	DOL, VGY
34	94.5-96.2	374	213	7.2	9.5	46.0	DOL, VGY
35	96.2-98.0	*0.1	*0.1	2.6	9.1	84.5	DOL
CORE NO. 2 11500-11541							
36	11500.0-01.6	55	36	4.2	9.1	46.5	DOL, VGY
37	01.6-03.0	*0.2	*0.2	5.4	8.2	50.7	DOL, VGY
38	03.0-04.5	<0.1	<0.1	4.0	5.6	84.0	DOL, SL/VGY, SL/FRAC
39	04.5-06.0	0.2	<0.1	4.3	15.2	68.2	DOL, SL/VGY
40	06.0-07.4	0.7	0.4	4.0	14.2	54.8	DOL, SL/VGY
41	07.4-09.0	1.3	0.9	5.3	8.2	57.2	DOL, VGY
42	09.0-10.5	3.9	1.0	4.7	5.7	47.2	DOL, VGY
43	10.5-11.7	12	2.9	7.0	9.3	46.9	DOL, VGY
44	11.7-13.4	15	<0.1	4.1	25.5	45.2	DOL, FRAC, SL/VGY
45	13.4-15.0	0.1	<0.1	3.5	15.3	57.8	DOL, VGY
46	15.0-16.5	0.9	0.6	2.7	14.3	71.1	DOL, VGY
47	16.5-18.1	0.3	0.3	2.4	16.6	72.5	DOL, SL/VGY, SL/FRAC
48	18.1-19.7	16	3.1	7.7	5.1	56.8	DOL, VGY
49	19.7-20.7	9.4	5.2	9.0	8.4	48.5	DOL, VGY
50	20.7-22.1	1.2	0.8	2.0	11.8	52.8	DOL, SL/FRAC
51	22.1-23.6	3.1	2.6	2.3	27.3	43.1	DOL, SL/FRAC, SL/VGY
52	23.6-25.1	4.9	<0.1	2.3	22.6	47.0	DOL, FRAC
53	25.1-27.0	0.5	<0.1	3.3	9.1	66.2	DOL, FRAC
54	27.0-28.6	0.3	<0.1	2.6	48.5	20.8	DOL, FRAC
55	28.6-30.2	0.6	<0.1	2.8	21.0	43.2	DOL, FRAC
56	30.2-31.4	0.5	<0.1	2.5	25.7	52.8	DOL, FRAC, SL/VGY
57	31.4-32.8	0.1	0.1	2.1	29.2	33.5	DOL, SL/FRAC
58	32.8-34.3	0.1	0.1	3.2	21.3	46.5	DOL
59	34.3-36.0	0.3	0.2	5.5	10.9	25.7	DOL, SL/VGY
60	36.0-37.4	0.1	<0.1	4.1	29.9	12.1	DOL, SL/VGY
61	37.4-38.3	0.6	<0.1	2.1	21.5	58.2	DOL, FRAC, SL/VGY
62	38.3-40.0	0.3	<0.1	2.0	23.2	47.0	DOL, FRAC, SL/VGY
40.0-41.0 LOST CORE							

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CORE LABORATORIES, INC.



Petroleum Reservoir Engineering

COMPANY UNION OIL CO. OF CALIFORNIA FIELD WILDCAT FILE WP-3-3106
WELL MIDWAY STATE NO. 1-11 COUNTY LEA DATE 12-8-68
LOCATION 2310 EN & WL SEC 12-T17S-R36ESTATE NEW MEXICO ELEV. _____

CORE-GAMMA CORRELATION

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VERTICAL SCALE: 5" = 100'

CORE-GAMMA SURFACE LOG
PATENT NO. 2686266

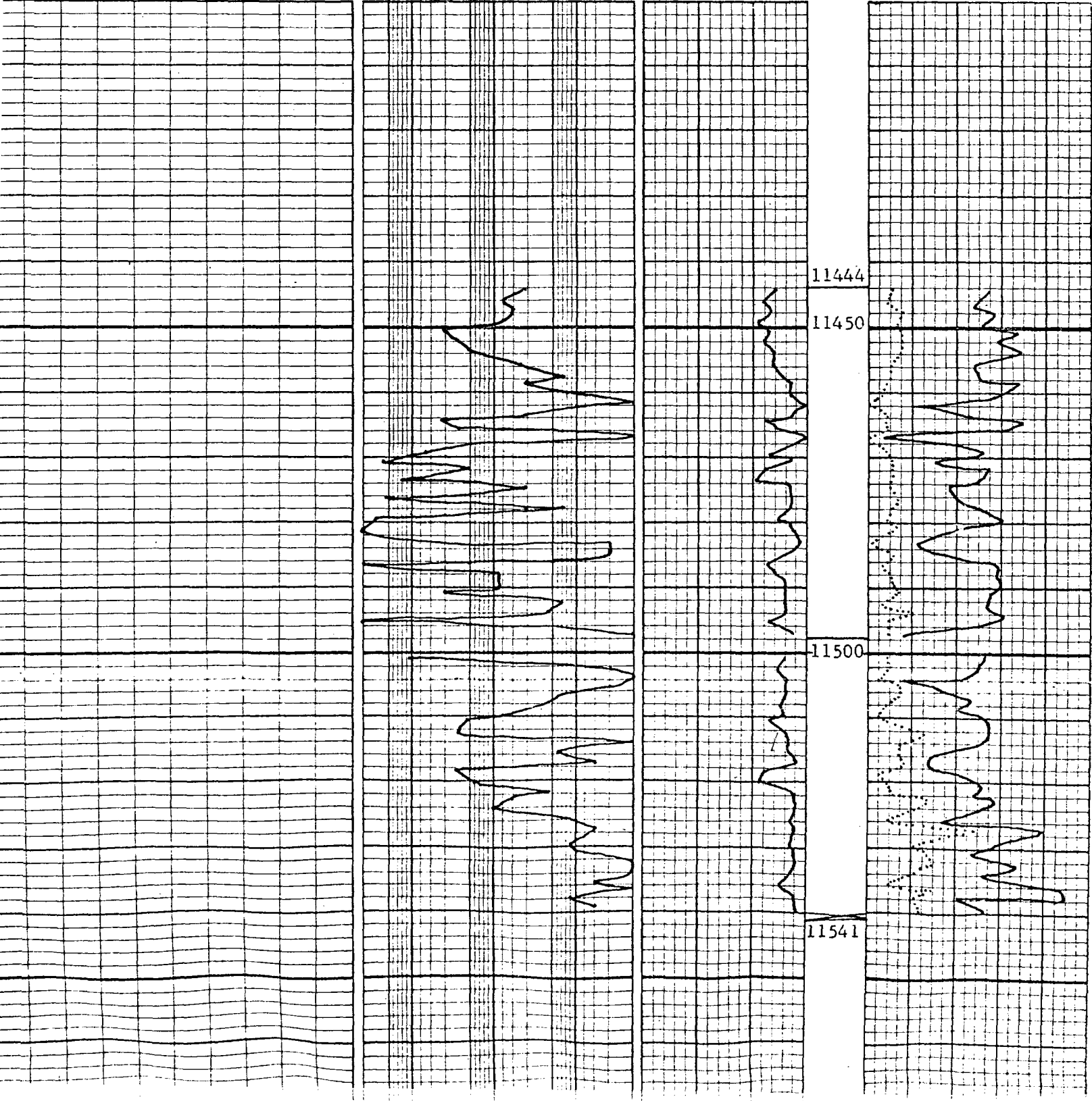
COREGRAPH

GAMMA RAY
RADIATION INCREASE
→

TOTAL WATER
PERCENT TOTAL WATER
80 60 40 20 0

PERMEABILITY
MILLIDARCY
100 50 10 5 1 0.5 0.1
POROSITY
PERCENT
20 10

OIL SATURATION
PERCENT PORE SPACE
0 20 40 60 80



Application
of
Union Oil Company of California
for
New Pool Designation,
Field Rules, and Discovery Allowable
For Its
Midway State No. 1 and No. 2 Wells
Lea County, New Mexico

Case No. 4069

February 26, 1969

BEFORE EXAMINER UTE	
OIL CONSERVATION COMMISSION	
<i>Appen</i>	EXHIBIT NO. <i>7</i>
CASE NO.	<i>4069</i>

Union Oil Company of California
Midway State No. 1 and No. 2 Wells
Undesignated Devonian Pool
Lea County, New Mexico

Status of Reservoir Development

The Union Oil Company of California No. 1 Midway State well was completed December 23, 1968 from perforations at 11,476-520' flowing 538 BOPD on 1/2" choke with 65# tubing pressure and GOR of 170. Treatment on this well consisted of 750 gallons of 15% acid. Cumulative production through 2-23-69 from the No. 1 well is 20,260 barrels of oil. The well indicates capacity equivalent to the initial potential.

The Union Oil Company of California No. 2 well was drilled to 11,600' and is currently in the process of being completed from perforations at 11,578' to 11,594'.

Reservoir and Fluid Properties

A. Oil and Gas Properties

1. Oil Gravity - 49° API @ 60°F
2. Solution Gas Oil Ratio - 170 Cubic Feet/Barrel
3. Gas Gravity - 0.919
4. Gas Analysis

<u>Component</u>	<u>Mol.%</u>	<u>G.P.M.</u>
CO ₂	5.87	
N	2.30	
C ₁	66.32	
C ₂	7.16	
C ₃	7.52	2.064
IC ₄	2.15	0.701
NC ₄	4.19	1.317
IC ₅	1.39	0.507
NC ₅	1.32	0.477
C ₆ ⁺	<u>1.78</u>	<u>0.760</u>
Total	100.00	5.826

5. Hydrogen Sulfide in Gas - 250+ grains per 100 cu.ft.

6. Estimated Formation Volume Factor - 1.15

B. Reservoir Properties

1. Average Net Pay Thickness - 94 feet (cores & logs)

2. Average Porosity - 6.2% (cores & logs)

3. Average Permeability - 12.5 md. (Pressure buildup analysis)

4. Estimated Connate Water Saturation - 35% (logs)

5. Reservoir Temperature - 188°F

6. Original Bottom Hole Pressure - 4490 psig @ 7664 feet subsea

7. Estimated Recovery Factor - 25%

8. Assumed Water Oil Contact - 7780 feet subsea

9. Productivity Index of Midway State No. 1 = 0.5 BOPD/psi

Average Recoverable Reserves for Two Wells

$$\text{Recoverable Oil, bbls/acre foot} = \frac{(7758)(0.062)(0.65)(0.25)}{1.15}$$

$$= 68 \text{ bbls/acre foot}$$

$$= 6,390 \text{ bbls/acre}$$

$$= 255,800 \text{ bbls/40 acres}$$

$$= 511,600 \text{ bbls/80 acres}$$

Economics

A. Oil and Gas Price

1. Gross Oil Price - \$3.16/bbl.

2. Gross Gas Price - \$0.10/mcf

3. Royalty - 12.5%-

4. State Taxes - 6.16% of value

B. Direct Operating Cost

\$300/month per well while flowing

\$600/month per well at initiation of pumping increasing to

\$2000/month per well at abandonment.

C. Economic Limit

$$E.L. = \frac{\$2000}{(\$3.16)(0.875)(0.9384)(30.4)} = 25.4 \text{ BOPD}$$

Assume 30.4 average days per month and no gas sales at abandonment.

D. Average Well Cost

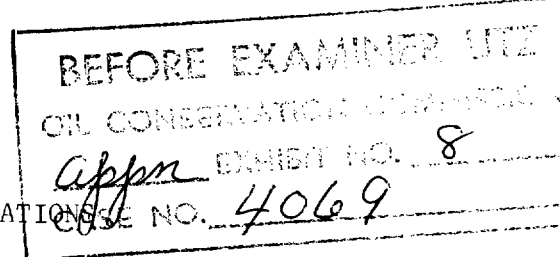
1. Total cost of completed flowing well - \$250,000 including proportionate share of battery with salt water disposal facilities.

2. Total cost of pumping facilities - \$40,000 per well.

E. Estimated Profit After Federal Income Taxes

	<u>40 Acre Well</u>	<u>80 Acre Well</u>
Net Profit, \$	220,611+	655,164
Present Worth @ 6%, \$ ✓	186,593	565,117
@ 7%, \$ ✓	181,480	551,921
@ 8%, \$ ✓	176,509	539,177
@ 9%, \$ ✓	171,673	526,862
Payout, years	1.1	0.8

PROPOSED SPECIAL RULES AND REGULATIONS
FOR THE
MIDWAY DEVONIAN OIL POOL



RULE 1. Each well completed or recompleted in the Midway Devonian Pool or in the Devonian formation within one mile thereof, and not nearer to or within the limits of another designated Devonian pool, shall be spaced, drilled, operated, and produced in accordance with the Special Rules and Regulations hereinafter set forth.

RULE 2. Each well shall be located on a standard unit containing 80 acres, more or less, consisting of the N/2, S/2, E/2, or W/2 of a governmental quarter section; provided, however, that nothing contained herein shall be construed as prohibiting the drilling of a well on each of the quarter-quarter sections in the unit.

RULE 3. The Secretary-Director of the Commission may grant an exception to the requirements of Rule 2 without notice and hearing when an application has been filed for a non-standard unit comprising a governmental quarter-quarter section or lot. All operators offsetting the proposed non-standard unit shall be notified of the application by registered or certified mail, and the application shall state that such notice has been furnished. The Secretary-Director may approve the application upon receipt of written waivers from all offset operators or if no offset operator has entered an objection to the formation of the non-standard unit within 30 days after the Secretary-Director has received the application.

RULE 4. Each well shall be located within 150 feet of the center of a governmental quarter-quarter section or lot.

RULE 5. The Secretary-Director may grant an exception to the requirements of Rule 4 without notice and hearing when an application has been filed for an unorthodox location necessitated by topographical conditions or the recompletion of a well previously drilled to another horizon. All operators offsetting the proposed unorthodox location shall be notified of the application by registered or certified mail, and the application shall state that such notice has been furnished. The Secretary-Director may approve the application upon receipt of written waivers from all offset operators or if no offset operator has entered an objection to the unorthodox location within 20 days after the Secretary-Director has received the application.

RULE 6. A standard proration unit (79 through 81 acres) shall be assigned an 80-acre proportional factor of 6.67 for allowable purposes, and in the event there is more than one well on an 80-acre proration unit, the operator may produce the allowable assigned to the unit from the wells on the unit in any proportion.

The allowable assigned to a non-standard proration unit shall bear the same ratio to a standard allowable as the acreage in such non-standard unit bears to 80 acres.

IT IS FURTHER REQUESTED:

(1) That any well presently drilling to or completed in the Midway Devonian Pool or in the Devonian formation within one mile thereof that will not comply with the well location requirements of Rule 4 is hereby granted an exception to the requirements of said rule. The operator shall notify the Hobbs District Office of the Commission in writing of the name and location of the well within 10 days after receipt of the Oil Conservation Commission order.

(2) That each well presently drilling to or completed in the Midway Devonian Pool or in the Devonian formation within one mile thereof shall receive a 40-acre allowable until a Form C-102 dedicating 80 acres to the well has been filed with the Commission.

(3) That jurisdiction of this cause is retained for the entry of such further orders as the Commission may deem necessary.