

NEW MEXICO OIL CONSERVATION COMMISSION
MULTIPOINT AND ONE POINT BACK PRESSURE TEST FOR GAS WELL

Form C-122
 Revised 9-1-65

Type Test ☒ Initial ☐ Annual ☐ Special						Test Date 9-7-84	
Company Energy Reserves Group, Inc.				Connection To Air			
Pool South Peterson				Formation Fusselman		Unit A	
Completion Date 8-24-84		Total Depth 7981'		Plug Back TD 7936'		Elevation 4389 G.L.	
Casing Size 5 1/2"		Wt. 17# 15.5#		d 4.892 4.950		Set At 7981'	
Perforations: From 7815 To 7837		Well No. 2		Farm or Lease Name Miller 10		Unit Sec. Twp. Rge. A 10 6S 33E	
Type Well - Single - Fractured - G.G. or G.O. Multiple Single		Packer Set At NONE		County Roosevelt		State New Mexico	
Producing Thru Tubing 152" @ 7780		Mean Annual Temp. °F 60°		Baro. Press. - P _a 13.2		Meter Run 4"	
L 7780		H 7780		G _g .710		Taps Flange	
% CO ₂ 1.821		% N ₂ 8.160		% H ₂ S Provel		Meter Run 4"	

FLOW DATA							TUBING DATA		CASING DATA		Duration of Flow
NO.	Provel Line Size	X	Orifice Size	Press. p.s.i.g.	Diff. h _w	Temp. °F	Press. p.s.i.g.	Temp. °F	Press. p.s.i.g.	Temp. °F	
SI							2030	79	2030	CHOKE	24 Hrs.
1.	4	x	1.000	450	10.0	90°	1914	78	1955	6/64	1 Hr.
2.	4	x	1.000	450	17.0	86	1780	76	1850	8/64	1 Hr.
3.	4	x	1.000	480	46.0	83	1615	75	1695	10/64	1 Hr.
4.	4	x	1.000	480	48.0	80	1462	74	1540	12/64	1 Hr.
5.											

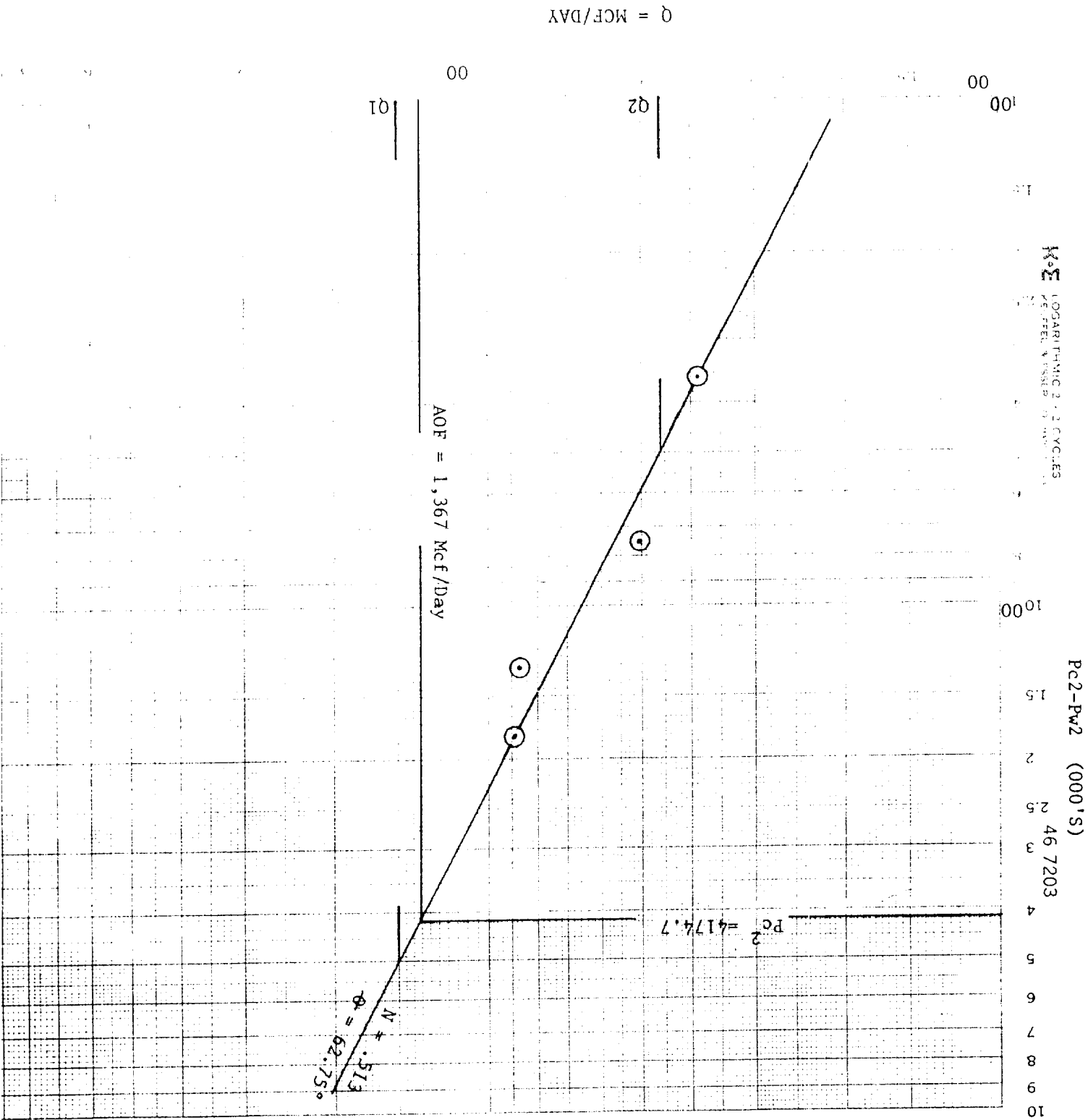
RATE OF FLOW CALCULATIONS							
NO.	Coefficient (24 Hour)	$\sqrt{h_w P_m}$	Pressure P _m	Flow Temp. Factor Ft.	Gravity Factor F _g	Super Compress. Factor, F _{py}	Rate of Flow O, Mcfd
1	4.753	68.06	463.2	.9723	1.187	1.038	388
2	4.753	88.74	463.2	.9759	1.187	1.039	508
3	4.753	150.62	493.2	.9786	1.187	1.043	867
4	4.753	153.86	493.2	.9813	1.187	1.044	889
5							

NO.	P _i	Temp. °R	T _r	Z	Gas Liquid Hydrocarbon Ratio 36.833 Mcf/bbl.
1	.70	550	1.49	.928	A.P.I. Gravity of Liquid Hydrocarbons 65.8 @ 60° Deg.
2	.70	546	1.48	.926	Specific Gravity Separator Gas .710 XXXXXXXXXX
3	.75	543	1.47	.920	Specific Gravity Flowing Fluid XXXXXX .781
4	.75	540	1.46	.918	Critical Pressure 662 P.S.I.A. 660 P.S.I.A.
5					Critical Temperature 370 R 393 R

NO.	P _i ²	P _w ²	P _e ²	P _e ² - P _w ²	(1) $\frac{P_e^2}{P_e^2 - P_w^2} = 2.312$	(2) $\left[\frac{P_e^2}{P_e^2 - P_w^2} \right]^n = 1.537$
1	2557.2	1953.3	3815.3	359.4	$AOF = Q \left[\frac{P_e^2}{P_e^2 - P_w^2} \right]^n = 1367$	
2	2421.2	1850.8	3425.3	749.4		
3	2209.2	1692.4	2864.0	1310.7		
4	2002.2	1539.2	2369.1	1805.6		
5	2663.2					

Absolute Open Flow 1,367 Mcfd @ 15.025		Angle of Slope 62.75°		Slope, n 513	
Remarks: 3 bbls. condensate produced during test. * Bottom Hole Pressure Bomb set @ 7780'					
Approved By Commission:		Conducted By: W.S.		Calculated By: R.P.	
				Checked By: R.P.	

Q1 Log 1500 = 3.176091
 Q2 Log 460 = 2.662758
 N = .513
 $\theta = 62.75^\circ$



WORK SHEET FOR CALCULATION OF WELLHEAD PRESSURE (P_{wh} or P_w)

Form C-122F
Adopted 9-1-65

FROM KNOWN BOTTOM HOLE PRESSURE (P₁)

COMPANY

Ellery, Inc.

LEASE Group, Inc. M.H. 10

WELL NO. 2

DATE

9.2.64

LOCATION: Unit

A

Section

10

Township

6S

Range

E 3 E

L

7790 H

7790 LH

LH

1,000 G.M.I.

.781 %CO₂

1.821 %N₂

8.160 %H₂S

GH

6084

P_{cr}

660

T_{cr}

343

1st Rate

2nd Rate

3rd Rate

4th Rate

LINE	1	2	3	4	5	6	7	8
1	T _w (W.H. • R)	534	534	534	534	534	534	534
2	T _s (B.H. • R)	612	612	612	612	612	612	612
3	T = (T _w + T _s)	573	573	573	573	573	573	573
4	Z (Est.)	.742	.739	.740	.741	.740	.747	.757
5	TZ	425.2	423.4	424.0	424.6	424.0	428.0	433.8
6	GH/TZ	14.310	14.368	14.348	14.329	14.348	14.214	14.026
7	e ^s (Table XIV)	1.710	1.714	1.713	1.711	1.713	1.704	1.708
8	P ₁ or P _s	2557.2	2557.2	2421.2	2421.2	2209.2	2209.2	2002.2
9	P ₁ ² or P _s ²	6539.3	6539.3	5862.2	5862.2	4880.6	4880.6	4008.8
10	P _c ² = P ₁ ² /e ^s or P _w ² = P _s ² /e ^s	3823.6	3815.3	3422.9	3425.3	2849.7	2864.0	2365.1
11	P _c or P _w	195.5	195.3	185.0	185.0	168.8	169.2	153.2
12	P - (P _w + P _s) or (P _c + P ₁)	2256.3	2255.2	2135.6	2136.0	1948.7	1950.8	1770.7
13	P _f = (P/P _{cr})	3.42	3.42	3.24	3.24	2.95	2.96	2.68
14	T _f = (T/T _{cr})	1.46	1.46	1.46	1.46	1.46	1.46	1.46
15	Z (Table XI)	.729	.739	.741	.741	.747	.747	.757

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HONORABLE OFFICE

SUGGESTED FIELD DATA SHEET (Not Required To File)

Type Test	☒ INITIAL	☐ ANNUAL	☐ SPECIAL	Test Date	7-7-84	Lease No. or Serial No.	
Company	Energy Reserves Group, INC.				Connection	To Air	Allottee
Field	South Peterson				Location	Fuselman	Unit
Completion Date	8-24-84		Total Depth	7981		Flag Back TD	7936'
Csg Size	5 1/2"		WT 17	4.845		Set At	7981'
Tbg Size	2 3/8"		WT 15.5	4.950		Set At	7981'
Type Completion (Describe)	Single				Perforation From	7815 - 7857	
Producing Thru	Tubing				Perforation From	To	
Reservoir Temp. F	60°				Mean Annual Temp. F	60°	
Baro. Press. - P _a	13.2				Packer Set At	11.5'	
State	New Mexico				County or Parish	Roosevelt	
Prover	7780				Meter Run	4026	

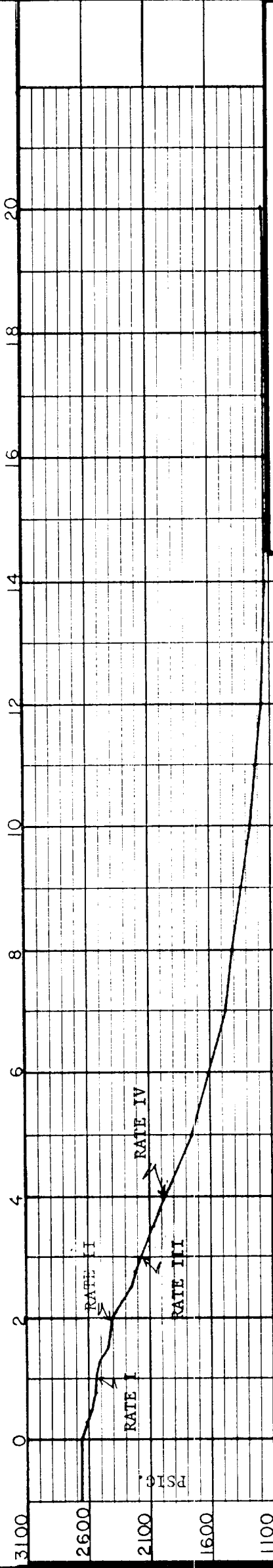
DATE	ELAP. TIME	Wellhead Working Pressure			METER OR PROVER				REMARKS
		Tbg. Psig	Csg. Psig	Temp F	Pressure Psig	Diff.	Temp F	Orifice	
Time of Reading	Hrs.								(Include Liquid Production data) Type-A.P.I. Gravity-Amount
2:30 PM		1460	1570		480	48	80°	1.000	1607.6 852 mcf/day 1 barrel/14
3:30		1295	1370		480	66	75°	1.000	1610.0 1003.5 mcf/day
4:30		1181	1250		480	53	74	1.000	1611.8 900.1 mcf/day
5:30		1078	1165		480	44	74	1.000	1613.2 820.1 mcf/day
6:30		1000	1110		475	36	72	1.000	1614.2 739.5 mcf/day
7:30		935	1070		475	31	66	1.000	1615.3 164.1 mcf/day
8:30		885	1009		475	41	73	1.000	1616.7 788.4 mcf/day
9:30		835	960		475	38	70	1.000	1617.5 761.1 mcf/day
10:30		797	925		475	30	70	1.000	1618.9 676.3 mcf/day
11:30		770	900		475	28	67	1.000	1619.9 654.0 mcf/day
12:30		745	880		470	26	69	1.000	1620.9 626.9 mcf/day
1:30		728	870		470	24	67	1.000	1621.8 602.9 mcf/day
2:30		717	865		470	22	66	1.000	1622.6 591.3 mcf/day
3:30		710	860		470	22	72	1.000	1623.2 575.1 mcf/day
4:30		707	875		460	22	74	1.000	1623.4 560.0 mcf/day
5:30		707	880		450	21	72	1.000	1624.8 550.1 mcf/day
6:30		707	885		455	21	70	1.000	1625.5 554.1 mcf/day
									App. Gravity 65.8 @ 60°
									Ann 16 In. Well made 17.9 barrels of Fluid

TEST DATE: SEPTEMBER 7 to 8, 1984
TEST DEPTH: 7780 FEET

ELEMENT NO: 14659-N
RANGE: 0-3650 PSI
CLOCK NO: 26286
RANGE: 0-24 Hours

NOTE: See tabulation of times and pressures on attached sheet.

TIME IN HOURS



ENERGY RESERVES GROUP, INC.

MILLER 10 NO. 2

Bottom Hole Pressure 4-POINT TEST AND BOTTOM HOLE
PRESSURE DRAW-DOWN TEST.

JOHN W. WEST ENGINEERING CO. HOBBS, NEW MEXICO

Date: 9-11-84 Drawn by: bsm Scale: as shown

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FEDERAL BUREAU OF INVESTIGATION

ENERGY RESERVES GROUP, INC.
 MILLER 10 NO. 2
 BOTTOM HOLE PRESSURE 4-POINT TEST AND
 DRAW-DOWN TEST.
 TABULATION OF TIMES AND PRESSURES

TEST CONDUCTED BY:
 JOHN WEST ENGINEERING COMPANY

TEST DATE: SEPTEMBER 7 to 8, 1984
 TEST DEPTH: 7780 FEET
 ELEMENT NO: 14659-N (0-3650 Psi)
 OPERATOR: W.S.

<u>DATE</u>	<u>TIME</u>	<u>CUM HRS./MIN.</u>	<u>PSIG @ 7780 FEET</u>
9-7-84	9:30 A.M.		2650 gauge reached 7780 feet
	10:30 A.M.	00 Hrs. 00 Min.	2645 6/64 Choke
	10:45 A.M.	00 15	2615
	11:00 A.M.	00 30	2586
	11:15 A.M.	00 45	2559
	11:30 A.M.	01 00	2544 End Rate I
	11:45 A.M.	01 15	2504 8/64 Choke
	12:00 Noon	01 30	2462
	12:15 P.M.	01 45	2428
	12:30 P.M.	02 00	2408 End Rate II
	12:45 P.M.	02 15	2335 10/64 Choke
	1:00 P.M.	02 30	2283
	1:15 P.M.	02 45	2232
	1:30 P.M.	03 00	2196 End Rate III
	1:45 P.M.	03 15	2139 12/64 Choke
	2:00 P.M.	03 30	2092
	2:15 P.M.	03 45	2029
	2:30 P.M.	04 00	1989 End Rate IV
	3:30 P.M.	05 00	1759 Begin Draw-Down Test.
	4:30 P.M.	06 00	1601 14/64 Choke
	5:30 P.M.	07 00	1489
	6:30 P.M.	08 00	1412
	7:30 P.M.	09 00	1358
	8:30 P.M.	10 00	1283
	9:30 P.M.	11 00	1217
	10:30 P.M.	12 00	1175
9-7-84	11:30 P.M.	13 00	1146
9-8-84	12:30 A.M.	14 00	1128
	1:30 A.M.	15 00	1117
	2:30 A.M.	16 00	1111
	3:30 A.M.	17 00	1117
	4:30 A.M.	18 00	1122
	5:30 A.M.	19 00	1122
9-8-84	6:30 A.M.	20 00	1124 End Draw-Down Test.



PHONE 505/393-3581

P. O. BOX 1161

611 W. SNYDER

HOBBS, NEW MEXICO 88240

ANALYSIS CERTIFICATE

CLIENT: JOHN WEST ENGINEERING ANALYSIS NUMBER: 4270
ADDRESS: 412 N DAL PASO DATE OF RUN: 9 10 84
CITY, STATE: HOBBS NM 88240 DATE SECURED: 9 7 84

SAMPLE IDENT: ENERGY RESERVES GROUP - MILLER 10 W #2
SAMPLING PRESS: SAMPLING TEMP:

***** GAS ANALYSIS *****

	MOLE PERCENT	GAL/ MCF
NITROGEN	8.159	
CARBON DIOXIDE	1.821	
METHANE	76.838	
ETHANE	6.824	1.820
PROPANE	4.148	1.139
ISO-BUTANE	0.503	0.164
NORMAL BUTANE	1.173	0.369
ISO-PENTANE	0.180	0.066
NORMAL PENTANE	0.227	0.082
HEXANES	0.127	0.052
TOTAL	100.000	3.692

PROPANE GPM: 1.14 BUTANES GPM: 0.53
ETHANE GPM: 1.82 PENTANES PLUS GPM: 0.20

SPECIFIC GRAV (CALC): 0.7139
MOLE WEIGHT: 20.68

HHV-BTU/CU FT	PRESSURE (PSIA)	WET	DRY
14.696		1059	1078
14.650		1056	1075
14.730		1062	1081
14.735		1062	1081

DEANE SIMPSON

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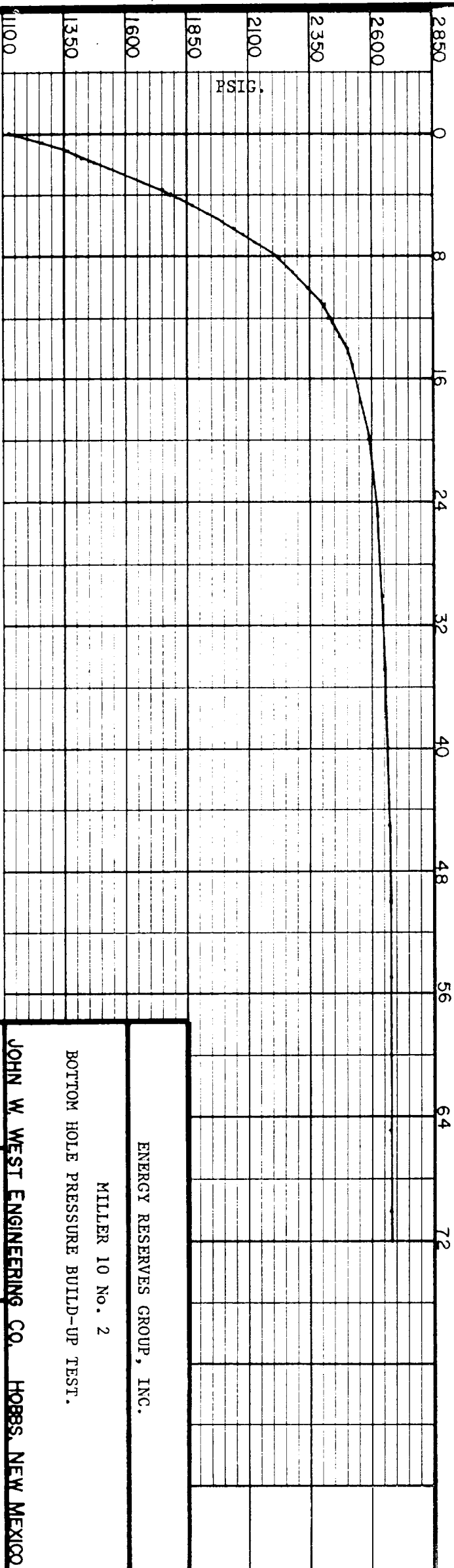
U.S. HOUSE OF REPRESENTATIVES
LEGISLATIVE OFFICE

TEST DATE: SEPTEMBER 8-11, 1984
TEST DEPTH: 7780 FEET

ELEMENT NO: 14659-N
RANGE: 0-3650 PSI
CLOCK NO: 10835
RANGE: 0-72 Hours

NOTE: See tabulation of times and pressures on attached sheet.

TIME IN HOURS



ENERGY RESERVES GROUP, INC.

MILLER 10 No. 2
BOTTOM HOLE PRESSURE BUILD-UP TEST.

JOHN W. WEST ENGINEERING CO., HOBBBS, NEW MEXICO
Date: 9-12-84 Drawn by: bsm Scale: as shown

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NO. 100-100000
NO. 100-100000

ENERGY RESERVES GROUP, INC.
 MILLER 10 No. 2
 BOTTOM HOLE PRESSURE BUILD-UP TEST
 TABULATION OF TIMES AND PRESSURES

TEST CONDUCTED BY:
 JOHN WEST ENGINEERING COMPANY

TEST DATE: SEPTEMBER 8 to 11, 1984
 TEST DEPTH: 7780 FEET
 ELEMENT NO: 14659-N
 OPERATOR: W.S.

<u>DATE</u>	<u>TIME</u>	<u>CUM HRS./MIN.</u>	<u>PSIG @ 7780 FEET</u>
9-8-84	6:30 A.M.	00 Hrs. 00 Min.	1124 gauge out to change charts.
	6:45 A.M.	00 15	1190
	7:00 A.M.	00 30	1263
	7:30 A.M.	01 00	1358 gauge back to 7780'
	7:45 A.M.	01 15	1400
	8:00 A.M.	01 30	1427
	8:15 A.M.	01 45	1476
	8:30 A.M.	02 00	1513
	9:00 A.M.	02 30	1579
	9:30 A.M.	03 00	1673
	10:00 A.M.	03 30	1752
	10:30 A.M.	04 00	1832
	11:00 A.M.	04 30	1881
	11:30 A.M.	05 00	1943
	12:00 Noon	05 30	1996
	12:30 P.M.	06 00	2047
	1:00 P.M.	06 30	2087
	1:30 P.M.	07 00	2138
	2:30 P.M.	08 00	2223
	3:30 P.M.	09 00	2286
	4:30 P.M.	10 00	2348
	5:30 P.M.	11 00	2413
	6:30 P.M.	12 00	2433
	7:30 P.M.	13 00	2469
	8:30 P.M.	14 00	2504
9-8-84	9:30 P.M.	15 00	2526
9-9-84	2:30 A.M.	20 00	2595
	7:30 A.M.	25 00	2626
	12:30 P.M.	30 00	2645
	5:30 P.M.	35 99	2656
9-9-84	10:30 P.M.	40 00	2665
9-10-84	3:30 A.M.	45 00	2669
	8:30 A.M.	50 00	2672
	1:30 P.M.	55 00	2676
	6:30 P.M.	60 00	2676
9-10-84	11:30 P.M.	65 00	2681
9-11-84	4:30 A.M.	70 00	2685
9-11-84	6:30 A.M.	72 00	2685 Off bottom, end of test.