

**VACA DRAW/PITCHFORK AREA
TGF DESIGNATION - MORROW SANDS**

**SUPPORT FOR 320 ACRE WINDOWS ON
BRINNINSTOOL '21' FEDERAL NO. 1 AND
OCHOA FEDERAL NO. 1**

ENRON OIL AND GAS COMPANY

ENRON OIL AND GAS COMPANY
VACA DRAW/PITCHFORK RANCH AREA TGF DESIGNATION
SUMMARY OF PERMEABILITY AND STABILIZED RATES

Anomalous Wells in TGF Area
Recommended to be excluded by
320 Acre "Windows"

WELL NAME	INTERVAL	PRE-STIM K (MD)	POST-STIM K (MD)	K USED	CALCULATED STABILIZED FLOW RATE (MCFPD)
Brinninstool '21' Federal No. 1	15,759 - 66'	1.0227	-	1.0227	4,150
	15,170 - 383'	0.3016	-	0.3016	4,823
	Average			0.0419	4,823
Ochoa Federal No. 1	15,594 - 908'	0.0419	-	0.0419	388
	15,082 - 236'	0.8692	-	0.8692	8,274
	Average			0.4874	8,274

These wells' reservoirs are limited in extent and are not representative of the TGF area.
Please see volumetric calculations defining limited areal extent.

VACA DRAW/PITCHFORK RANCH AREA TGF DESIGNATION – MORROW SAND

AREAL EXTENT CALCULATION FOR BRINNINSTOOL '21' FEDERAL NO. 1 AND OCHOA FEDERAL NO. 1

BRINNINSTOOL

Interval: 15,159 – 66' Porosity – 9%
Pay Height: 7' Gas Saturation – 61%
Expected Ultimate Production: 1,082 MMCFG
Initial Reservoir Pressure: 10,734 psia
Abandonment Pressure: 500 psia

$$\text{MCF/Acre} = 43.56 \times 0.09 \times 7 \times 0.61 \times (412.18 - 28.72) = 6,419 \text{ MCF/Acre}$$

$$\text{Number of Acres} = 1,082,000/6,419 = 169 \text{ Acres}$$

OCHOA

Interval: 15,082 – 236' Porosity – 8.5%
Pay Height: 26' Gas Saturation – 70%
Expected Ultimate Production: 40 MMCFG
Initial Reservoir Pressure: 9,311 psia
Abandonment Pressure: 500 psia

$$\text{MCF/Acre} = 43.56 \times 0.085 \times 26 \times 0.70 \times (383.50 - 28.72) = 23,908 \text{ MCF/Acre}$$

$$\text{Number of Acres} = 40,000/23,908 = 1.7 \text{ Acres}$$

CASING PROGRAM

VACA DRAW/PITCHFORK RANCH AREA

Sixteen inch surface casing will be set at 650' or to a depth sufficient to seal off all fresh water zones, whichever is deeper and cement circulated to the surface.

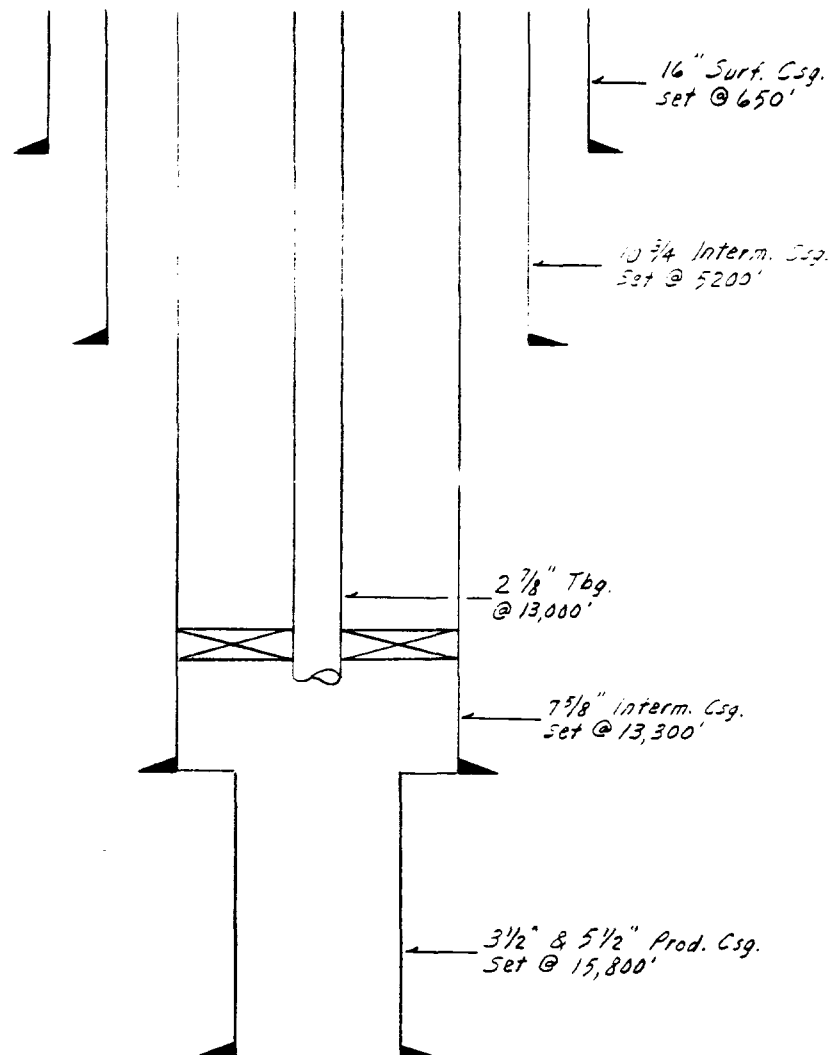
A string of 10 3/4 inch casing will be set at 5,200 feet or to a depth adequate to case off the salt section, whichever is deeper and cement circulated to the surface.

These procedures comply with state regulation designated Rule 106 and Rule 107 and insure protection of freshwater aquifers that may be used for domestic or agricultural water supply.

ENRON OIL & GAS COMPANY

VACA DRAW / PITCHFORK RANCH
— TGF DESIGNATION - MORROW SANDS —

WELLBORE DIAGRAM



ENRON Oil & Gas Company

Drilling AFE

AFE No.	
Enron W. I.	
Enron AFE Amt (DHC)	
(CWC)	
Division/District	Midland
AFE Date	11/21/91

CATEGORY TYPE ☐ Wildcat ☒ Development ☐ Injection ☐ Re-Entry

Lease & Well No. Average Morrow Well	Depth & Formation 15,800' Morrow	Water Depth
Location T-25S-R33E		
County & State Lea County, New Mexico	Field Pitchfork Ranch (Morrow)	
Operator Enron Oil & Gas	Anticipated Spud Date	
Description of Work Drill and complete in Morrow zones		

Intangible Well Cost (Dollars)

Code	Description	Drilling	Completion	Total
5501	Access, Location & Roads W/O Reserve Pit	\$25,000		\$25,000
5502	Rig Move			
5503	Footage Cost @ \$19.75/ Ft	263,000		263,000
5504	Day Work Cost days @ \$4,875	270,000	25,000	295,000
5505	Bits, Reamers & Stabilizers	55,000		55,000
5506	Fuel	2,000		2,000
5507	Water	9,000		9,000
5508	Mud & Chemicals	70,000		70,000
5509	Cementing & Service	55,000	10,000	65,000
5510	Coring			
5511	OH Logging & Testing	70,000		70,000
5512	Mud Logging	11,000		11,000
5513	Perforating		10,000	10,000
5514	Stimulation		240,000	240,000
5515	Transportation	20,000	5,000	25,000
5516	Drilling Overhead	13,000		13,000
5517	Equipment Rental Includes Closed Loop Mud System	160,000	15,000	175,000
5518	Completion Rig			
5519	Other Drilling Expense	85,000	5,000	90,000
5520	Fishing			
5521	Environmental & Safety Charges			
5522	Directional Drilling			
5523	Equipment Usage			
5524	Supervision 65 + 5	28,000	2,000	28,000
	Total Intangibles	\$1,134,000	\$312,000	\$1,446,000

Tangible Well Cost (Dollars)

5101	40' OF	30' * Conductor Casing Contractor			
5102	650' OF	18' * Surface Casing	17,000		17,000
5103	5,200' OF	10-3/4" * Intermediate Casing	101,000		101,000
5103	13,300' OF	7-5/8" * Intermediate Casing	193,000		193,000
5104	2,700' OF	3-1/2" & 5-1/2" * Production Casing		50,000	50,000
5105	13,000' OF	2-7/8" * Tubing		130,000	130,000
5106	Well Head Equipment and Tree		15,000	50,000	65,000
5107	Tanks			9,000	9,000
5108	Flow Lines			14,000	14,000
5109	Valves & Fittings			14,000	14,000
5110	Roads				
5111	Pumping Equipment - Surface				
5112	Production Equipment - Subsurface				
5113	Engines & Motors				
5114	Heater-Treater & Separators			20,000	20,000
5115	Other Equipment			1,000	1,000
5116	Buildings				
5117	Metering Equipment				
5118	Non-Controllable Equipment				
5119	Liner Equipment			50,000	50,000
5121	Construction Cost			43,000	43,000
	Total Tangibles		\$326,000	\$381,000	\$707,000
	Total Well Cost		\$1,460,000	\$693,000	\$2,153,000

Enron Approval

Division	Date	By	Date	By	Date
By R. S. Cate	11/21/91				
By R. L. Ingle	11/21/91				

Joint Operator Approval

Firm	By	Title	Date

**TIGHT GAS SANDS
PERMEABILITY AND STABILIZED FLOW RATE
VACA DRAW / PITCHFORK RANCH AREA**

DATE: 11/23/91

WELL NAME: ANDRIKOPOULOS 1

INTERVAL: 14986-15209' MORROW

STIMULATED ? (Y/N): YES; 5000G BHPBU MATCH

FLOW RATE (MCF/D): 1,080

FLOW TIME (HRS.): 58

FLOWING BHP (psia): 1,058

GAS GRAVITY (γ_g): 0.576

TEMP. DEGREE F (T): 205

RESERVOIR PRESSURE (Pi): 11,421

GAS POROSITY: 0.044

WELLBORE RADIUS (Ft): 0.333

SKIN FACTOR: 0.0

PAY HEIGHT: 19

Z-FACTOR: 1.600

GAS COMPRESSIBILITY: 0.00003

GAS VISCOSITY (cp): 0.0407

SPACING ACRES: 320

FORMATION VOLUME FACTOR (Bg): 0.454

SPACING RADIUS (Ft): 2,106

ASSUMED K (md): 0.0945

RADIUS OF DRAINAGE (Ft): 520.9

CALCULATED K (md): 0.0945

STEADY TIME (HRS.): 2,389.68

STABILIZED FLOW (MCF/D): 891.46

AOE PRESSURE (psia): 246

STABILIZED AOE (MCF/D): 961

**TIGHT GAS SANDS
PERMEABILITY AND STABILIZED FLOW RATE
VACA DRAW / PITCHFORK RANCH AREA**

DATE: 11/21/91

WELL NAME: ANDRIKOPOULOS 1

INTERVAL: 14986-15209' MORROW

STIMULATED ? (Y/N): NO; UNDERBALANCED

FLOW RATE (MCF/D): 237

FLOW TIME (HRS.): 11

FLOWING BHP (psia): 260

GAS GRAVITY (Yg): 0.576

TEMP. DEGREE F (T): 205

RESERVOIR PRESSURE (Pi): 11,044

GAS POROSITY: 0.044

WELLBORE RADIUS (Ft): 0.333

SKIN FACTOR: 0.0

PAY HEIGHT: 19

Z-FACTOR: 1.546

GAS COMPRESSIBILITY: 0.00003

GAS VISCOSITY (cp): 0.0407

SPACING ACRES: 320

FORMATION VOLUME FACTOR (Bg): 0.454

SPACING RADIUS (Ft): 2,106

ASSUMED K (md): 0.0146

RADIUS OF DRAINAGE (Ft): 89.2

CALCULATED K (md): 0.0146

STEADY TIME (HRS.): 15,464.61

STABILIZED FLOW (MCF/D): 143.35

AOF PRESSURE (psia): 246

STABILIZED AOF (MCF/D): 144

TIGHT GAS SANDS
PERMEABILITY AND STABILIZED FLOW RATE
VACA DRAW / PITCHFORK RANCH AREA

DATE: 11/23/91

WELL NAME: ANDRIKOPOULOS 1

INTERVAL: 14986-15209' MORROW

STIMULATED ? (Y/N): YES; 5000G BHPBU MATCH

FLOW RATE (MCF/D): 1,080

FLOW TIME (HRS.): 58

FLOWING BHP (psia): 1,058

GAS GRAVITY (Yg): 0.576

TEMP. DEGREE F (T): 205

RESERVOIR PRESSURE (Pi): 11,421

GAS POROSITY: 0.044

WELLBORE RADIUS (Ft): 0.333

SKIN FACTOR: 1.7

PAY HEIGHT: 19

Z-FACTOR: 1.600

GAS COMPRESSIBILITY: 0.00003

GAS VISCOSITY (cp): 0.0407

SPACING ACRES: 320

FORMATION VOLUME FACTOR (Bg): 0.454

SPACING RADIUS (Ft): 2,106

ASSUMED K (md): 0.1212

RADIUS OF DRAINAGE (Ft): 589.9

CALCULATED K (md): 0.1212

STEADY TIME (HRS.): 1,864.08

STABILIZED FLOW (MCF/D): 908.25

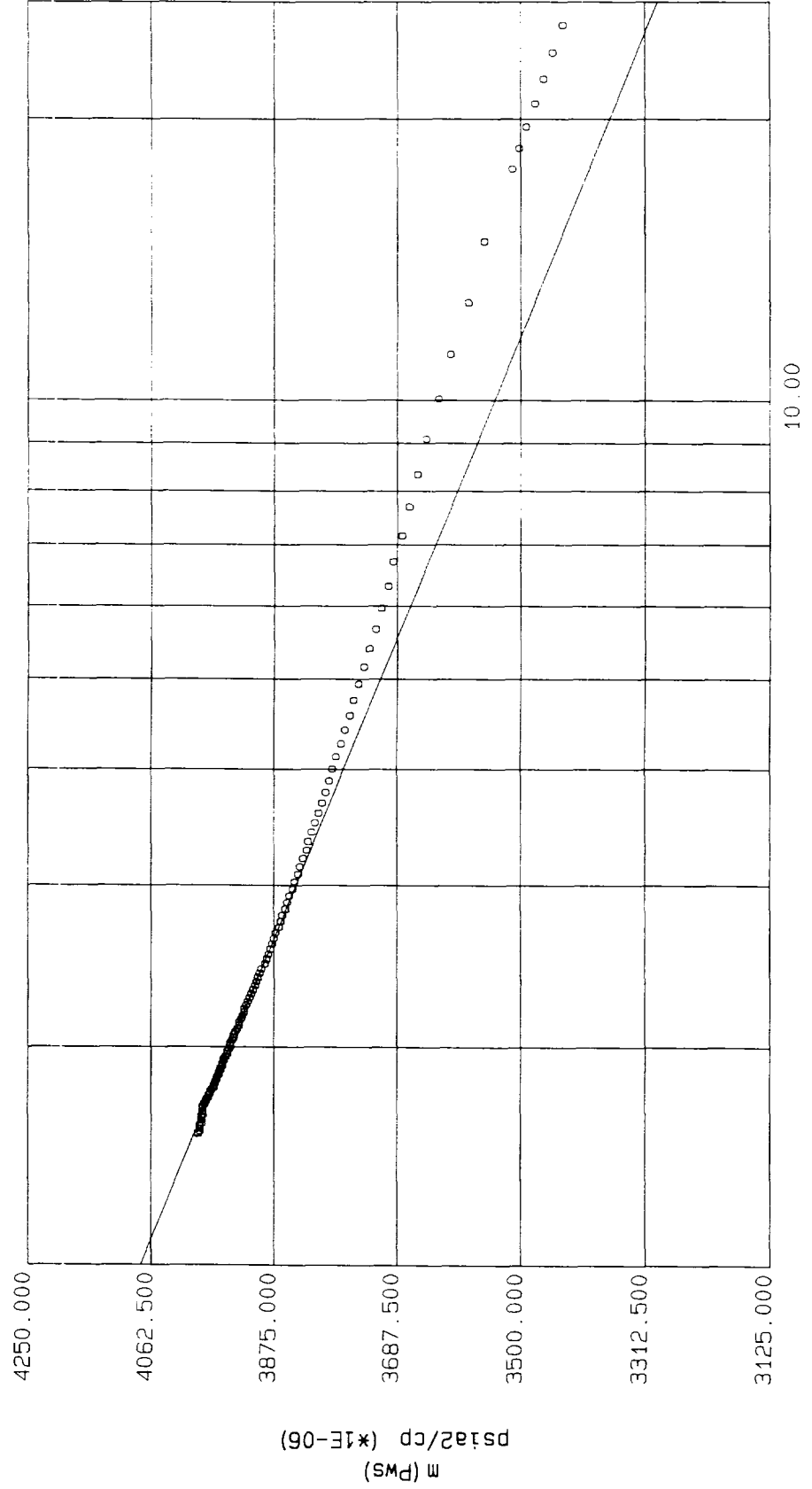
AOF PRESSURE (psia): 246

STABILIZED AOF (MCF/D): 979

ANDRIKOPOULOS FEDERAL NO. 1 - HORNER

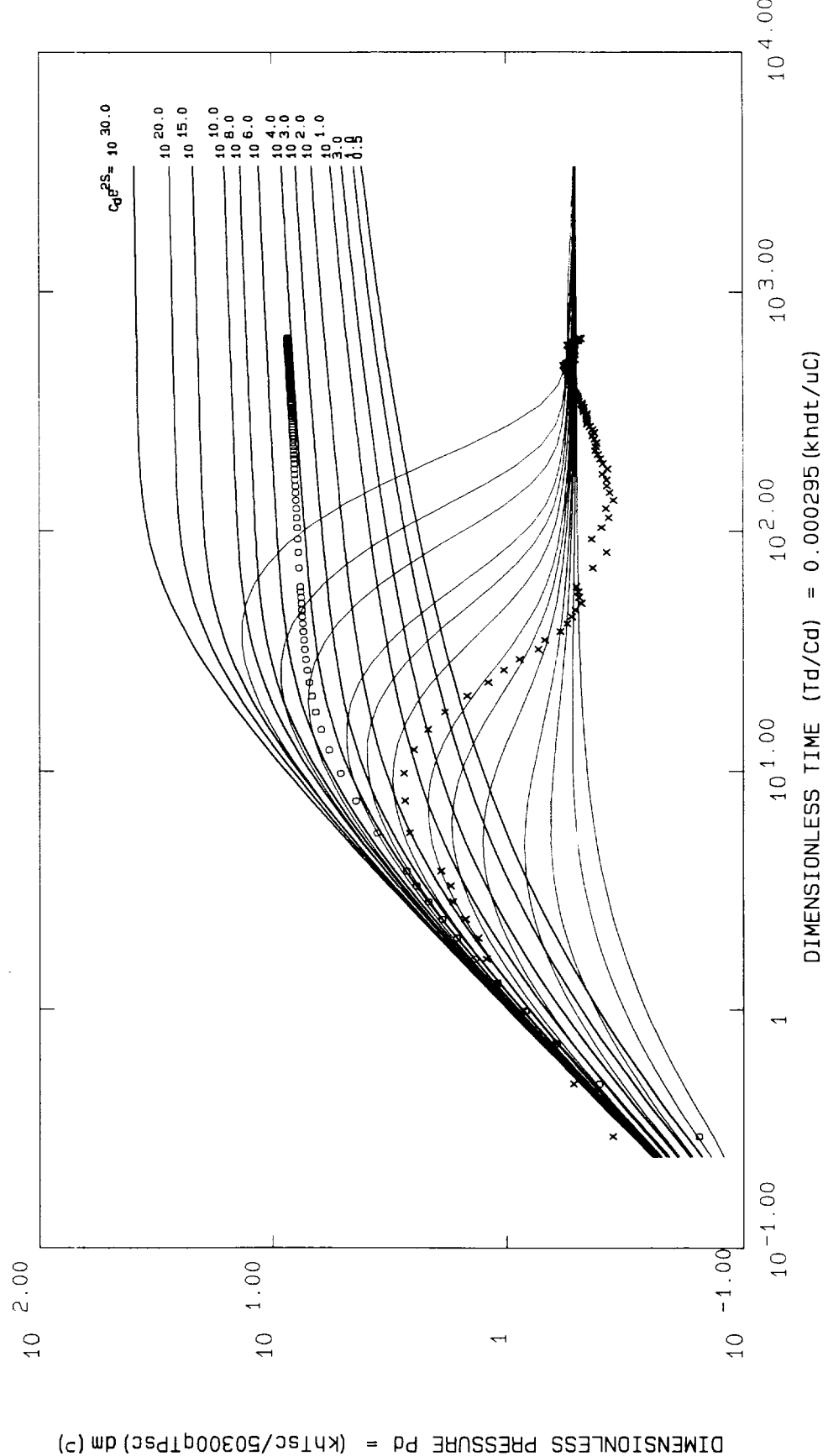
File.....	AMAND GAS	Location.....	LEA COUNTY, NEW MEXICO	Slope.....	-576.724
Company.....	AMOCO	Date.....	4/23/80 - 4/28/80	Intercept.....	4116.741
Well.....	ANDRIKOPOULOS FEDERAL NO. 1	Test.....	BUILDUP PLUG @ 12'28"	Permeability..	0.1081
Field.....	UNDESIGNATED MORROW	Gauge.....	AMERADA	Skin.....	1.738

Pseudo-time from start of test (hours)



PANSYSTEM V1.8 (C) EPS 1991.
ANDRIKOPOULOS FEDERAL NO. 1 - HOMOGENEOUS RESERVOIR

File.....: AMAND. GAS
Location.....: LEA COUNTY, NEW MEXICO
Pd (match).....: 0.0221
dp (match).....: 10.000
Company.....: AMOCO
Date.....: 4/23/80 - 4/28/80
Td (match).....: 14.440
dt (match).....: 1.000
Well.....: ANDRIKOPOULOS FEDERAL NO. 1
Test.....: BUILDUP PLUG @ 12128'
Permeability...: 0.1195
dp (skin).....: 3097.428
Field.....: UNDESIGNATED MURROW
Gauge.....: AMERADA
Skin.....: 2.120
C (Storage) ..: 1.315E-03



E.P.S. Ltd.

PANSYSTEM ANALYSIS PROGRAM

File: AMAND.GAS ,AMAND.PRO

Test type: CRB

Date: 23/11/91 Time: 12:02

RESULTS FROM HORNER ANALYSIS
using Pseudo-pressure and Pseudo time

Line :

Intercept.....:	4116.741
Slope.....:	-576.724
Start of line.....:(	0.4199 , 3875.355)
End of line.....:(	0.2639 , 3964.815)
Coefficient of determination....:	0.9991
Number of points.....:	44

m(p) at dt = 1 hr.....:	3042.311	psia2/cp (*1E-06)
Extrapolated m(p).....:	4116.741	psia2/cp (*1E-06)
Permeability-thickness (kh).....:	2.054	md.ft
Permeability (k).....:	0.1081	md
Total skin factor (s).....:	1.738	
dP skin (constant rate).....:	2872.779	psi
Radius of investigation.....:	217.004	ft
Extrapolated pressure.....:	11421.071	psia
Pressure at dt = 1 hour.....:	8844.791	psia
Flow efficiency.....:	0.7841	

E.P.S. Ltd.

PANSYSTEM ANALYSIS PROGRAM

File: AMAND.GAS ,AMAND.PRO

Test type: CRB

Date: 23/11/91 Time: 12:01

RESULTS FROM A HOMOGENEOUS RESERVOIR TYPE-CURVE MATCH
(WELLBORE STORAGE ANALYSIS)

Data plotted using Agarwal Pseudo Time and $m(p)$

Dim. pressure match point $P_d(\text{match})$:	0.0221	
Dim. time match point $T_d/C_d(\text{match})$:	14.440	
Matched curve $C_{de2S}(\text{match})$:	10000.000	
Pressure match point $dP(\text{match})$:	10.000	
Time match point $dt(\text{match})$:	1.000	
Permeability-thickness (kh).....:	2.270	md.ft
Permeability (k).....:	0.1195	md
Apparent wellbore volume.....:	36.699	bbl
Dim. wellbore storage constant (C_d).....:	144.087	
Storage coefficient (initial).....:	1.315E-03	bbl/psi
Radius of investigation.....:	228.137	ft
dP skin (constant rate).....:	3097.428	psi
Skin factor (S).....:	2.120	

E.P.S. Ltd.

PANSYSTEM ANALYSIS PROGRAM

File: AMAND.GAS ,AMAND.PRO

Test type: CRB

Date: 22/11/91 Time: 15:32

Data Point	Time Time	Pressure psia	m(p) psia2/cp (*1E-06)
1.	0.0000	1058.0000	84.1288
2.	0.0833	1192.0000	106.2301
3.	0.1667	1442.0000	153.9930
4.	0.2500	1929.0000	268.9094
5.	0.3333	2269.0000	364.3337
6.	0.4167	2583.0000	462.1138
7.	0.5000	2936.0000	581.2633
8.	0.5833	3282.0000	705.6891
9.	0.6667	3590.0000	821.6704
10.	0.7500	3885.0000	936.6900
11.	0.8333	4186.0000	1057.1430
12.	0.9167	4486.0000	1179.7174
13.	1.0000	4744.0000	1286.6678
14.	1.2500	5712.0000	1696.1682
15.	1.5000	6592.0000	2074.3564
16.	1.7500	7344.0000	2398.4968
17.	2.0000	8000.0000	2680.9516
18.	2.2500	8465.0000	2880.2956
19.	2.5000	8841.0000	3040.6977
20.	2.7500	9096.0000	3149.0026
21.	3.0000	9280.0000	3226.8823
22.	3.2500	9427.0000	3288.9335
23.	3.5000	9522.0000	3328.9531
24.	3.7500	9611.0000	3366.3916
25.	4.0000	9675.0000	3393.2629
26.	4.2500	9726.0000	3414.6706
27.	4.5000	9777.0000	3436.0366
28.	4.7500	9815.0000	3451.9562
29.	5.0000	9847.0000	3465.3559
30.	5.2500	9879.0000	3478.7316
31.	5.5000	9911.0000	3492.1074
32.	5.7500	9936.0000	3502.5573
33.	6.0000	9962.0000	3513.4230
34.	7.0000	10064.0000	3555.9614
35.	8.0000	10121.0000	3579.7016
36.	9.0000	10185.0000	3606.3437
37.	10.0000	10229.0000	3624.6445
38.	11.0000	10274.0000	3643.3527
39.	12.0000	10306.0000	3656.6567
40.	13.0000	10338.0000	3669.9499
41.	14.0000	10363.0000	3680.3293
42.	15.0000	10395.0000	3693.6145
43.	16.0000	10414.0000	3701.5026
44.	17.0000	10439.0000	3711.8818
45.	18.0000	10459.0000	3720.1743
46.	19.0000	10484.0000	3730.5388
47.	20.0000	10503.0000	3738.4157
48.	21.0000	10522.0000	3746.2929
49.	22.0000	10541.0000	3754.1699
50.	23.0000	10554.0000	3759.5595

E.P.S. Ltd.

PANSYSTEM ANALYSIS PROGRAM

File: AMAND.GAS ,AMAND.PRO

Test type: CRB

Date: 22/11/91 Time: 15:32

Data Point	Time Time	Pressure psia	m(p) psia2/cp (*1E-06)
51.	24.0000	10573.0000	3767.4287
52.	25.0000	10586.0000	3772.8105
53.	26.0000	10605.0000	3780.6760
54.	27.0000	10618.0000	3786.0576
55.	28.0000	10631.0000	3791.4394
56.	29.0000	10643.0000	3796.4069
57.	30.0000	10656.0000	3801.7888
58.	31.0000	10669.0000	3807.1704
59.	32.0000	10682.0000	3812.5507
60.	33.0000	10694.0000	3817.5107
61.	34.0000	10707.0000	3822.8840
62.	35.0000	10713.0000	3825.3640
63.	36.0000	10726.0000	3830.7373
64.	37.0000	10739.0000	3836.1105
65.	38.0000	10745.0000	3838.5908
66.	39.0000	10758.0000	3843.9641
67.	40.0000	10764.0000	3846.4440
68.	41.0000	10777.0000	3851.8173
69.	42.0000	10783.0000	3854.2973
70.	43.0000	10790.0000	3857.1906
71.	44.0000	10803.0000	3862.5620
72.	45.0000	10809.0000	3865.0380
73.	46.0000	10815.0000	3867.5144
74.	47.0000	10828.0000	3872.8793
75.	48.0000	10834.0000	3875.3554
76.	49.0000	10841.0000	3878.2443
77.	50.0000	10847.0000	3880.7204
78.	51.0000	10854.0000	3883.6093
79.	52.0000	10860.0000	3886.0854
80.	53.0000	10866.0000	3888.5615
81.	54.0000	10879.0000	3893.9265
82.	55.0000	10885.0000	3896.4028
83.	56.0000	10892.0000	3899.2915
84.	57.0000	10898.0000	3901.7678
85.	58.0000	10904.0000	3904.2438
86.	59.0000	10911.0000	3907.1328
87.	60.0000	10917.0000	3909.6088
88.	61.0000	10924.0000	3912.4951
89.	62.0000	10930.0000	3914.9672
90.	63.0000	10936.0000	3917.4394
91.	64.0000	10943.0000	3920.3234
92.	65.0000	10943.0000	3920.3234
93.	66.0000	10949.0000	3922.7956
94.	67.0000	10955.0000	3925.2678
95.	68.0000	10962.0000	3928.1520
96.	69.0000	10962.0000	3928.1520
97.	70.0000	10968.0000	3930.6242
98.	71.0000	10975.0000	3933.5083
99.	72.0000	10981.0000	3935.9804
100.	73.0000	10981.0000	3935.9804

E.P.S. Ltd.

PANSYSTEM ANALYSIS PROGRAM

File: AMAND.GAS ,AMAND.PRO

Test type: CRB

Date: 22/11/91 Time: 15:32

Data Point	Time Time	Pressure psia	m(p) psia2/cp (*1E-06)
101.	74.0000	10987.0000	3938.4526
102.	75.0000	10994.0000	3941.3369
103.	76.0000	10994.0000	3941.3369
104.	77.0000	11000.0000	3943.8090
105.	78.0000	11006.0000	3946.2812
106.	79.0000	11006.0000	3946.2812
107.	80.0000	11013.0000	3949.1652
108.	81.0000	11019.0000	3951.6374
109.	82.0000	11019.0000	3951.6374
110.	83.0000	11025.0000	3954.1096
111.	84.0000	11025.0000	3954.1096
112.	85.0000	11032.0000	3956.9938
113.	86.0000	11032.0000	3956.9938
114.	87.0000	11038.0000	3959.4660
115.	88.0000	11038.0000	3959.4660
116.	89.0000	11045.0000	3962.3466
117.	90.0000	11045.0000	3962.3466
118.	91.0000	11051.0000	3964.8146
119.	92.0000	11051.0000	3964.8146
120.	93.0000	11057.0000	3967.2827
121.	94.0000	11057.0000	3967.2827
122.	95.0000	11064.0000	3970.1621
123.	96.0000	11070.0000	3972.6303
124.	97.0000	11070.0000	3972.6303
125.	98.0000	11076.0000	3975.0983
126.	99.0000	11076.0000	3975.0983
127.	100.0000	11083.0000	3977.9777
128.	101.0000	11083.0000	3977.9777
129.	102.0000	11089.0000	3980.4458
130.	103.0000	11089.0000	3980.4458
131.	104.0000	11096.0000	3983.3251
132.	105.0000	11096.0000	3983.3251
133.	106.0000	11096.0000	3983.3251
134.	107.0000	11096.0000	3983.3251
135.	108.0000	11102.0000	3985.7932
136.	109.0000	11102.0000	3985.7932
137.	110.0000	11102.0000	3985.7932
138.	111.0000	11102.0000	3985.7932
139.	112.0000	11108.0000	3988.2612
140.	113.0000	11108.0000	3988.2612
141.	114.0000	11108.0000	3988.2612
142.	115.0000	11108.0000	3988.2612
143.	116.0000	11115.0000	3991.1406
144.	117.0000	11115.0000	3991.1406

15 MINS. FLW EST 33 BLW. R SWB TO PKR. NO FL. WELL MAINTAINED
25" X 8 TO 10 FT FLARE. DRY GAS IN 9-1/2 HRS.

*** 80-04-09 ***

ANDRIKOPOULOS #1, WC MORROW
IDENT 958088-01-5, AUTH TO 15600, DRL-EXP
TO 15800, PBTD 15754, FLW TST, DAYS: SPUD 231, CPER 231
RMKS: 14 HRS SITP 2800#. BLED WELL DOWN. ACD X 5000 GALS 7-1/2X ACD
CONTAINING 1000 SCF N PER 60L X ADDITIVES. MAX PRS 8100# MIN
7060#. ISIP 6850#. AVG INCRATE 5.2 X N. 10 MIN 6730#. TO
REC 176 BLW. LEFT SI 30 MINS. TBG PRS 6300#. OPEN CH WIDE OPEN
X BLED DOWN TO 200# IN 10 HRS. MAINTAINING 200# ON WIDE OPEN
CH. 30 FT FLARE. REC EST 130 BLW. TO REC 46 BLW.

*** 80-04-10 ***

ANDRIKOPOULOS #1, WC MORROW
IDENT 958088-01-5, AUTH TO 15600, DRL-EXP
TO 15800, PBTD 15754, FLW TST, DAYS: SPUD 232, CPER 232
RMKS: FLW EST 3.0 MCFD AT 200# TPF ON 43/64" CH IN 14 HRS. REDUCE CH
TO 23/64" CH. FLW 1260 MCFD AT 650# TPF FOR 6 HRS. LEFT FLW
OVER NIGHT. MOSU 4-9-80.

*** 80-04-11 ***

ANDRIKOPOULOS #1, WC MORROW
IDENT 958088-01-5, AUTH TO 15600, DRL-EXP
TO 15800, PBTD 15754, FLW TST, DAYS: SPUD 233, CPER 233
COSTS: CUM WELL 1297134, EST 1992000
RMKS: FLW EST 1 BW X 1083 MCF IN 24 HRS. TPF 630# ON 23/64" CH.

*** 80-04-14 ***

ANDRIKOPOULOS #1, WC MORROW
IDENT 958088-01-5, AUTH TO 15600, DRL-EXP
TO 15800, PBTD 15754, SI NO GAS CONTRACT, DAYS: SPUD 236, OPER 236
RMKS: FLW 0 BC X EST 1 BW X 1080 MCF IN 24 HRS. SI. TPF 680# ON 22/64"
CH. 48 HR SITP 9100#. FINAL RPT.
FINAL RPT: COMPLETED 04-14-80, RIG RELEASED 12-09-79, TO 15800, PBTD 15754
AMOCO WI 85.7000
HORIZON MORROW, TOP OF PAY 14966, COMP TYPE GAS WELL, EST PER DAY 1080, MCF
PERFS: 14966 15200 TYPE JET. DENSITY 4 SPF
TEST 1. HRS 22/64 278 SUPD 1080 MCFD, CHOKE 22/64 TUBING PRESSURE 680

ILLEGIBLE

IDENT 958088-01-5, AUTH TD 15600, DRL-EXP
TD 15800, PBTD 15754, PREP TO MOSU, DAYS: SPUD 191, OPER 191
COSTS: CUM WELL 1297134, EST 1924000
RMKS: 5 HRS SITP 500#. CFC 0#. R SWB. FL 4000 FT FROM SURF.
SWB 9 HRS X REC 0 OIL X TRACE GAS X 70 BLW. FL 9000 FT FROM
SURF. SCATTERED FL X GAS TC PKR AT 12180. TC REC 15 BLW.

*** 80-03-03 ***

ANDRIKOPOULOS #1, WILDCAT

IDENT 958088-01-5, AUTH TD 15600, DRL-EXP
TD 15800, PBTD 15754, SI, DAYS: SPUD 194, OPER 194
RMKS: 14 HR SITP 500#. CPC 0#. RD X REL X-PERT #15 2-29-80.
MOSU 2-29-80. TO REC 15 BLW. NO FURTHER RPT UNTIL ADDITIONAL
WORK DONE TO WELL.

*** 80-04-01 ***

ANDRIKOPOULOS #1, WILDCAT

IDENT 958088-01-5, AUTH TD 15600, DRL-EXP
TD 15800, PBTD 15754, PREP TO PTG X PKR, DAYS: SPUD 223, OPER 223
RMKS: SITP 6100#. BLEED DOWN IN 1-1/2 HRS. SI CSG PRS 5000#. BLEED DOWN
IN 20 MINS. KILL WELL X 105 BBL BRINE. SPENT 2-1/2 HRS.
TRYING TO REL PKR. UNLATCH ON-OFF TOOL TO EQUALIZE. LATCH
BACK ON X PU 130 JTS. UNABLE TO REL PKR.

*** 80-04-02 ***

ANDRIKOPOULOS #1, WILDCAT

IDENT 958088-01-5, AUTH TD 15600, DRL-EXP
TD 15800, PBTD 15754, PREP TO R FREE POINT ON TBG, DAYS: SPUD 224, OPER 224
RMKS: 14 HRS SITP 1800#. CPC 1800#. WORK 10 HRS TRYING TO REL PKR.
TORQUE TBG X PU 110000# X 10 ROUNDS TORQUE ONLY GET 2
ROUNDS BACK. TORQUE TBG X PU 110000# X PMP DOWN TBG X 65 BBL
BRINE. GOT GOOD CIRC BACK UP ANNULUS. 4 BPM AT 2000#. PKR IN
NEUTRAL POSITION OR IN COMPRESSION. PRS TBG TO 3000# X BLEED BACK
TO 1000# IN 5 MINS. UNABLE TO REL PKR.

*** 80-04-03 ***

ANDRIKOPOULOS #1, WILDCAT

IDENT 958088-01-5, AUTH TD 15600, DRL-EXP
TD 15800, PBTD 15754, PTG X PKR, DAYS: SPUD 225, OPER 225
RMKS: R FREE POINT ON TBG BELOW PKR SET AT 12176. FREE POINT
INDICATED NO MOVEMENT IN TAILPIPE 3 FT BELOW PKR. TORQUE
TBG X PU 10 PTS ABOVE TBG WEIGHT. SHOT 7 FT STRING
CHARGE IN PKR. UNABLE TO REL PKR. R SECOND CHARGE. TORQUE
TBG X PU 4 PTS ABOVE TBG WT. SHOT 7 FT STRING CHARGE IN PKR.
PU 24 PTS OVER TBG WT. PKR REL. PU 10 STDS TBG. SD.

*** 80-04-07 ***

ANDRIKOPOULOS #1, WILDCAT

IDENT 958088-01-5, AUTH TD 15600, DRL-EXP
TD 15800, PBTD 15754, PREP TO SWB TST, DAYS: SPUD 229, OPER 229
RMKS: 4-4-80: PTG X PKR. SET CIBP AT 15400. RAN GAMMA RAY CORRELATION
LOG. 14950-15450. PERF 14988-14995 15096-15102 15206-15209
X-4 JSPP.
4-5-80: R 2-3/8 TAILPIPE X PKR X 2-7/8 TBG. TST 2-7/8 TBG
X 8000# ABOVE SLIPS. PSA 12128. TAILPIPE AT 14874.
4-6-80: R WIRELINE X RETR BLANKING PLUG. DROPPED BAR. NO GAS IN
15 MINS. R WIRELINE THROUGH SHEAR DISC TOOL. R SWB TO PKR. NO FL.
SMALL AMOUNT OF GAS. SD. TC REC 33 ELW. 4-6-80 SD.
NEXT RPT 4-8-80.

*** 80-04-08 ***

ANDRIKOPOULOS #1, WILDCAT

IDENT 958088-01-5, AUTH TD 15600, DRL-EXP
TD 15800, PBTD 15754, FLW TST, DAYS: SPUD 230, OPER 230
RMKS: 40 HRS SITP 7100#. OPEN CH TO 32/64 X BLEED DOWN TO 25# IN 1 HR

ILLEGIBLE

IDENT 958088-01-5, AUTH TO 15600, DRL-EXP
 TO 15800, PBTD 15754, TST TBG IN WELL, DAYS: SPUD 183, OPER 183
 FMKS: 14 HRS CSG PRS 2600#. BLEW DOWN IN 10 MIN TO 0#. R 2-7/8" X
 2-3/8" SWEDGE X 3208 2-3/8" TAILPIPE X 1.81 PROFILE NIPPLE
 1 JT OFF END OF TAILPIPE. TST X 6000# ABOVE SLIPS. R GUIBERSON
 UNI VI PKR X BAKER EL X TOOL. 1.875 PROFILE CUT IN TOP OF PKR,
 TST 18 STD 2-7/8" X 8000# ABOVE SLIPS. SD DUE TO HIGH WINDS.

*** 80-02-22 ***

ANDRIKOPOULOS #1, WILDCAT, X-PERT #15
 IDENT 958088-01-5, AUTH TO 15600, DRL-EXP
 TO 15800, PBTD 15754, PREP TO PERF, DAYS: SPUD 184, OPER 184
 COSTS: CUM WELL 1297134, EST 1900000
 FMKS: R 2-7/8" X TST X 8000# ABOVE SLIPS. CIRC MUD CUT OF LINER X SET
 PKR. INSTALL X TST TREE X 8000#. GUIBERSON PKR UNI VI X BAKER
 EL RECEPTACLE SET AT 12180. 1.875 PROFILE NIPPLE IN TOP OF PKR.
 2-3/8" N-80 TAILPIPE SET AT 15392 X 1.81 PROFILE NIPPLE 1 JT
 FROM END. TST PKR ON BACKSIDE X 500#. OK. R CORRELATION LOG
 FROM 15620-15200.

*** 80-02-25 ***

ANDRIKOPOULOS #1, WILDCAT, X-PERT #15
 IDENT 958088-01-5, AUTH TO 15600, DRL-EXP
 TO 15800, PBTD 15754, SD, DAYS: SPUD 187, OPER 187
 FMKS: 2-23-80: 14 HRS SITP 1600#. BLED DOWN IN 5 MIN. PERF MORROW
 15554-15564 X 2 JSPF. NO SURF PRS AFTER 1 HR. R SWB. FL AT SURF.
 SWB 0 BO X 85 BLW. LAST R FL 8500 FT FROM SURF. FL GAS CUT.
 TO REC 82 BLW. HOLE FULL OF FL WHEN WELL PERF.
 2-24-80: 14 HR SITP 500#. BLED RIGHT OFF. MADE NO FL. R SWB.
 FL 7000 FT FROM SURF. SWB 9 HRS. REC 0 OIL X 40 BLW X WELL
 KICKED OFF. FLW EST 10 BLW IN 1 HR X DIED. R SWB. FL GAS CUT
 FROM SURF TO 10500. NO FLARE X NO GOOD SHOW OF GAS. TO REC
 32 BLW. SD 2-24-80 FOR CREW DAY OFF.

*** 80-02-26 ***

ANDRIKOPOULOS #1, WILDCAT, X-PERT #15
 IDENT 958088-01-5, AUTH TO 15600, DRL-EXP
 TO 15800, PBTD 15754, PREP TO SWB TST, DAYS: SPUD 188, OPER 188
 FMKS: 40 HR SITP 300#. CSG PRS 0#. BLED DOWN IN 1 HR. REC 3 BLW WHILE
 BLEEDING DOWN. R SWB. FL 12180 FT FROM SURF. R SWB EVERY 2
 HRS. FL AT 12180. REC 0 OIL X VERY LITTLE GAS X 3 BLW. TO REC
 29 BLW.

*** 80-02-27 ***

ANDRIKOPOULOS #1, WILDCAT, X-PERT #15
 IDENT 958088-01-5, AUTH TO 15600, DRL-EXP
 TO 15800, PBTD 15754, PREP TO SWB TST, DAYS: SPUD 189, OPER 189
 FMKS: 14 HRS SITP 350#. CSG PRS 0#. BLED DOWN IN 1 HR. NO REC OF ANY
 KIND. R SWB. FIRST R TBG DRY. NO FL. R SWB EVERY 3 HRS. STILL
 DRY. TO REC 29 BLW.

*** 80-02-28 ***

ANDRIKOPOULOS #1, WILDCAT, X-PERT #15
 IDENT 958088-01-5, AUTH TO 15600, DRL-EXP
 TO 15800, PBTD 15754, FLW TST, DAYS: SPUD 190, OPER 190
 FMKS: 14 HR SITP 300#. CSG PRS 0#. BLED DOWN IN 1 HR. R SWB.
 TBG DRY. REC X 2000 GALS 7-1/2X NS AGO X 1000 SCF N PER BBL.
 FLUSH TO PERFS X 60 BBL 4% KCL CONTAINING 1000 SCF N PER BBL.
 MAX TRY PRS 8200#. MIN 5400#. AIR 3.8 BPM. ISIP 6200#. 15
 MIN 5900#. FLW WELL BACK AFTER 15 MIN. SI. WELL DIED IN
 5 HRS. SHUT WELL IN FOR 2 HRS. TBG PRS 350#. REC 0 OIL X N GAS
 X 75 BLW. TO REC 45 BLW.

*** 80-02-29 ***

ANDRIKOPOULOS #1, WILDCAT

LLEGIBLE

APR 10 1980

ANDRIKOPOULOS #1, WC MORROW.

IDENT 958088-01-5, AUTH TO 15600. DRL-EXP.
TD 15800. PBTD 15754. FLW TST. DAYS: SPUD 233. OPER 233
REMARKS: FLW EST 3.0 MMCFD AT 200# TPF ON 43/64" CH. IN 24 HRS. REDUCE ON
TO 23/64" CH. FLW 1260 MMCFD AT 250# TPF FOR 2 HRS. LEFT FLW
OVER NIGHT. MOSU 4-9-80.

APR 11 1980

ANDRIKOPOULOS #1, WC MORROW.

IDENT 958088-01-5, AUTH TO 15600. DRL-EXP.
TD 15800. PBTD 15754. FLW TST. DAYS: SPUD 233. OPER 233
COSTS: CUM WELL 1297134. AUTH O. EST 1992000
REMARKS: FLW EST 1 BW X 1083 MCF IN 24 HRS. TPF 680# ON 23/64" CH.

APR 14 1980

ANDRIKOPOULOS #1, WC MORROW.

IDENT 958088-01-5, AUTH TO 15600. DRL-EXP.
TD 15800. PBTD 15754. FLW TST. DAYS: SPUD 233. OPER 236
REMARKS: FLW 0 BC X EST 1 BW X 1080 MCF IN 24 HRS. SI. TPF 680# ON 22/64" CH.
48 HR SITP 9100#. FINAL RPT.
FINAL REPORT: COMPLETED 04-14-80. RIG RELEASED 12-09-79. TO 15800.
PBTD 15754. AMOCC MI 35.7.
HORIZON MORROW. TOP OF PAY 14986. COMP TYPE GAS WELL.
EST PER DAY 1080 MCF.

PERES: 14986-15209. TYPE JET, DENSITY 4.0 SPG.

ILLEGIBLE

APR 1 1980

ANDRIKOPOULOS #1, WILDCAT.

IDENT 958088-01-5, AUTH TO 15600, DRL-EXP.

TO 15800, PBTD 15754, PREP TO R FREE POINT ON TBG, DAYS: SPUD 223, OPER 223

REMARKS: 11 HRS SITP 1100#. BLED DOWN IN 1-1/2 HRS. AT 100 PWS 1000#, BLED DOWN

IN 20 MINS. KILL WELL 1100 PWS PRIME. SPENT 1-1/2 HRS.

TRYING TO REL PKR. UNABLE TO REL PKR. SWB TOOL TO 1000# BLED BACK

ON X PU 150 PWS. UNABLE TO REL PKR.

APR 2 1980

ANDRIKOPOULOS #1, WILDCAT.

IDENT 958088-01-5, AUTH TO 15600, DRL-EXP.

TO 15800, PBTD 15754, PREP TO R FREE POINT ON TBG, DAYS: SPUD 224,

OPER 224

REMARKS: 14 HRS SITP 1800#. PRS 1800#. WORK 10 HRS TRYING TO REL PKR.

TORQUE TBG X PU 110000#. 10 ROUNDS TORQUE

TORQUE TBG X PU 10000#. 4 ROUNDS TORQUE

PRIME. GOT GOOD CIRC BACK UP ANNULUS. 4 ROUNDS TORQUE

NEUTRAL POSITION OR IN COMPRESSION. PRS TBG TO 1000#. BLED BACK

TO 1000# IN 5 MINS. UNABLE TO REL PKR.

APR 2 1980

ANDRIKOPOULOS #1, WILDCAT.

IDENT 958088-01-5, AUTH TO 15600, DRL-EXP.

TO 15800, PBTD 15754, PTG X PKR, DAYS: SPUD 225, OPER 225

REMARKS: R FREE POINT ON TBG BELOW PKR SET AT 12176. FREE POINT

INDICATED NO MOVEMENT IN TAILPIPE 3 FT BELOW PKR. TORQUE

TBG X PU 10 PTS ABOVE TBG HEIGHT. SHOT 7 FT STRING

CHARGE IN PKR. UNABLE TO REL PKR. R SECOND CHARGE. TORQUE

TBG X PU 4 PTS ABOVE TBG WT. SHOT 7 FT STRING CHARGE IN PKR.

PU 24 PTS OVER TBG WT. PKR REL. PU 10 STDS TBG. SD.

APR 7 1980

ANDRIKOPOULOS #1, WILDCAT.

IDENT 958088-01-5, AUTH TO 15600, DRL-EXP.

TO 15800, PBTD 15754, PREP TO SWB TST, DAYS: SPUD 229, OPER 229

REMARKS: 4-4-80: PTG X PKR. SET SWB. RAN GAMMA RAY CORRELATION

LOG 14950-15450. 4-5-80: 15200-15209

4-5-80: R 2-3/8 TAILPIPE X PKR X 2-7/8 TBG. TST 2-7/8 TBG

X 8000# ABOVE SLIPS. PSA 12128. TAILPIPE AT 14874.

4-6-80: R WIRELINE X RETR. BLANKING PLUG. DROPPED BAR. NO GAS IN

15 MINS. R WIRELINE THROUGH SHEAR DISC TOOL. R SWB TO PKR. NO FL.

SMALL AMOUNT OF GAS. SD. TO REC 33 BLN. 4-6-80 SD.

NEXT RPT 4-8-80.

APR 8 1980

ANDRIKOPOULOS #1, WILDCAT.

IDENT 958088-01-5, AUTH TO 15600, DRL-EXP.

TO 15800, PBTD 15754, FLW TST, DAYS: SPUD 230, OPER 230

REMARKS: 40 HRS SITP 7100#. OPEN CH TO 32/64 X BLED DOWN TO 25# IN 1 HR

15 MINS. FLW EST 33 BLN. R SWB TO PKR. NO FL. WELL MAINTAINED

25# X 8 TO 10 FT FLARE. DRY GAS IN 9-1/2 HRS.

APR 9 1980

ANDRIKOPOULOS #1, WC MORROW.

IDENT 958088-01-5, AUTH TO 15600, DRL-EXP.

TO 15800, PBTD 15754, FLW TST, DAYS: SPUD 231, OPER 231

REMARKS: 14 HRS SITP 2800#. BLED WELL DOWN. ACD X 5000 GALS 7-1/2% ACD

CONTAINING 1000 SCF N PER BBL X ADDITIVES. MAX PRS 8150# MIN

7060#. ISIP 6850#. AVG IN RATE 5.2 X N. TO MIN 6730#. TO

DEC 1760# W. TEST ST 20 MINS

ILLEGIBLE

140 LATIVE REPORT TO - DRL-EXP 40385

PAGE

IDENT 958088-01-5, AUTH TO 15600, DRL-EXP
TO 15800, PBTD 15754, PREP TO MOSU, DAYS: SPUD 191, OPER 191
OSTS: CUM WELL 1297134, EST 1924000
PKKS: 5 HRS SITP 500#, CPC 0#, R SWB, FL 4000 FT FROM SURF,
SWB 9 HRS X REC 2 OIL X TRACE GAS X TO BL, FL 9000 FT FROM
SURF, SCATTERED FL X GAS TO PKR AT 12180, NO REC 13 BL.

*** 40-03-03 ***

ANDRIKOPOULOS #1, WILDCAT

IDENT 958088-01-5, AUTH TO 15600, DRL-EXP
TO 15800, PBTD 15754, SI, DAYS: SPUD 194, OPER 194
PKKS: 14 HR SITP 500#, CPC 0#, RD X REL X-PERT 415 2-29-80,
MOSU 2-29-80, TO REC 15 BL, NO FURTHER RPT UNTIL ADDITIONAL
WORK DONE TO WELL.

*** 80-04-01 ***

ANDRIKOPOULOS #1, WILDCAT

IDENT 958088-01-5, AUTH TO 15600, DRL-EXP
TO 15800, PBTD 15754, PREP TO PTG X PKR, DAYS: SPUD 223, OPER 223
PKKS: SITP 6100#, BLEED DOWN IN 1-1/2 HRS, SI 256 PRS 2000#, BLEED DOWN
IN 20 MINS, KILL WELL X 105 BELS BRINE, OPEN 2-1/2 HRS,
TRYING TO REL PKR, UNLATCH ON-OFF TOOL TO EQUALIZE, LATCH
BACK ON X PU 130 LBS, UNABLE TO REL PKR.

*** 40-04-02 ***

ANDRIKOPOULOS #1, WILDCAT

IDENT 958088-01-5, AUTH TO 15600, DRL-EXP
TO 15800, PBTD 15754, PREP TO R FREE POINT ON TBG, DAYS: SPUD 224, OPER 224
PKKS: 14 HRS SITP 1300#, CPC 1300#, WORK 10 HRS TRYING TO REL PKR,
TORQUE TBG X PU 110000# X 10 ROUNDS TORQUE ONLY GET 2
ROUNDS BACK, TORQUE TBG X PU 110000# X PMP DOWN TBG X 65 SBL
BRINE, GOT GOOD CIRC BACK UP ANNULUS, 4 BPM AT 2000#, PKR IN
NEUTRAL POSITION OR IN COMPRESSION, PRS TBG TO 3000# X BLEED BACK
TO 1000# IN 5 MINS, UNABLE TO REL PKR.

*** 80-04-03 ***

ANDRIKOPOULOS #1, WILDCAT

IDENT 958088-01-5, AUTH TO 15600, DRL-EXP
TO 15800, PBTD 15754, PTG X PKR, DAYS: SPUD 225, OPER 225
PKKS: R FREE POINT ON TBG BELOW PKR SET AT 12176, FREE POINT
INDICATED NO MOVEMENT IN TAILPIPE 3 FT BELOW PKR, TORQUE
TBG X PU 10 PTS ABOVE TBG WEIGHT, SHOT 7 FT STRING
CHARGE IN PKR, UNABLE TO REL PKR, R SECOND CHARGE, TORQUE
TBG X PU 4 PTS ABOVE TBG WT, SHOT 7 FT STRING CHARGE IN PKR,
PU 24 PTS OVER TBG WT, PKR REL, PU 10 STDS TBG, SD.

*** 80-04-07 ***

ANDRIKOPOULOS #1, WILDCAT

IDENT 958088-01-5, AUTH TO 15600, DRL-EXP
TO 15800, PBTD 15754, PREP TO SWB TST, DAYS: SPUD 229, OPER 229
PKKS: 4-4-80: PTG X PKR, SET CIBP AT 15400, RAN GAMMA RAY CORRELATION
LOG, 14950-15450, PERP 14988-14995 15096-15102 15206-15209
X 4 JSPF
4-5-80: R 2-3/8 TAILPIPE X PKR X 2-7/8 TBG, TST 2-7/8 TBG
X 8000# ABOVE SLIPS, PSA 12128, TAILPIPE AT 14874,
4-6-80: R WIRELINE X RETR BLANKING PLUG, DROPPED BAR, NO GAS IN
15 MINS, R WIRELINE THROUGH SHEAR DISC TOOL, R SWB TO PKR, NO FL,
SMALL AMOUNT OF GAS, SD, TC REC 33 ELW, 4-6-80 SD,
NEXT RPT 4-8-80.

*** 80-04-08 ***

ANDRIKOPOULOS #1, WILDCAT

IDENT 958088-01-5, AUTH TO 15600, DRL-EXP
TO 15800, PBTD 15754, FLX TST, DAYS: SPUD 230, OPER 230
PKKS: 30 HRS SITP 7100#, OPEN CH TO 32/64 X BLEED DOWN TO 25# IN 1 HR

ILLEGIBLE

IDENT 958088-01-5, AUTH TO 15600, DRL-EXP
 15800, PBTD 15754, TST TBG IN WELL, DAYS: SPUD 183, OPER 183
 MKS: 14 HRS CSG PRS 2600#. BLEW DOWN IN 10 MIN TO 0#. R 2-7/8" X
 2-3/8" SWEDGE X 3208 2-3/8" TAILPIPE X 1.81 PROFILE NIPPLE
 CUT OFF END OF TAILPIPE, TST X 5000# ABOVE SLIPS, R GUIBERSON
 UNI VI PKR X BAKER SET X 1000. 1.875 PROFILE CUT IN TOP OF PKR.
 TST 18 STD 2-7/8" X 5000# ABOVE SLIPS, DO DUE TO HIGH WINDS.

*** 10-02-22 ***

ANDRIKOPOULOS #1, WILDCAT, X-PERT #15
 IDENT 958088-01-5, AUTH TO 15600, DRL-EXP
 15800, PBTD 15754, PREP TO PERF, DAYS: SPUD 184, OPER 184
 COSTS: CUM WELL 1297134, EST 1900000
 MKS: R 2-7/8" X TST X 3000# ABOVE SLIPS, CIRC MUD CUT OF LINER X SET
 PKR. INSTALL X TST TREE X 8000#. GUIBERSON PKR UNI VI X BAKER
 EL RECEPTACLE SET AT 12180. 1.875 PROFILE NIPPLE IN TOP OF PKR.
 2-3/8" N-80 TAILPIPE SET AT 15392 X 1.81 PROFILE NIPPLE 1 JT
 FROM END. TST PKR ON BACKSIDE X 500#. OK. R CORRELATION LOG
 FROM 15620-15200.

*** 10-02-25 ***

ANDRIKOPOULOS #1, WILDCAT, X-PERT #15
 IDENT 958088-01-5, AUTH TO 15600, DRL-EXP
 15800, PBTD 15754, SD, DAYS: SPUD 187, OPER 187
 MKS: 2-23-80: 14 HRS SITP 1600#. BLEW DOWN IN 5 MIN. PERF MORROW
 15554-16554 X 12-3/8" NO SURF PRS AFTER 1 HR. R SWB. FL AT SURF.
 SWB 0 90 X 85 BLW. LAST R FL 8500 FT FROM SURF. FL GAS CUT.
 TO REC 22 BLW. HOLE FULL OF FL WHEN WELL PERF.
 2-24-80: 14 HR SITP 500#. BLEW RIGHT OFF. MADE NO FL. R SWB.
 FL 7000 FT FROM SURF. SWB 9 HRS. REC 0 OIL X 40 BLW X WELL
 KICKED OFF FLW EST 10 BLW IN 1 HR X DIED. R SWB. FL GAS CUT
 FROM SURF TO 10500. NO FLARE X NO GOOD SHOW OF GAS. TO REC
 32 BLW. SD 2-24-80 FOR CREW DAY OFF.

*** 80-02-26 ***

ANDRIKOPOULOS #1, WILDCAT, X-PERT #15
 IDENT 958088-01-5, AUTH TO 15600, DRL-EXP
 15800, PBTD 15754, PREP TO SWB TST, DAYS: SPUD 188, OPER 188
 MKS: 40 HR SITP 300# CSG PRS 0#. BLEW DOWN IN 1 HR. REC 3 BLW WHILE
 BLEEDING DOWN. R SWB. FL 12180 FT FROM SURF. R SWB EVERY 2
 HRS. FL AT 12180. REC 0 OIL X VERY LITTLE GAS X 3 BLW. TO REC
 29 BLW.

*** 80-02-27 ***

ANDRIKOPOULOS #1, WILDCAT, X-PERT #15
 IDENT 958088-01-5, AUTH TO 15600, DRL-EXP
 15800, PBTD 15754, PREP TO SWB TST, DAYS: SPUD 189, OPER 189
 MKS: 14 HRS SITP 300# CSG PRS 0#. BLEW DOWN IN 1 HR. NO REC OF ANY
 KIND. R SWB. FIRST R TBG DRY. NO FL. R SWB EVERY 3 HRS. STILL
 DRY. TO REC 29 BLW.

*** 80-02-28 ***

ANDRIKOPOULOS #1, WILDCAT, X-PERT #15
 IDENT 958088-01-5, AUTH TO 15600, DRL-EXP
 15800, PBTD 15754, FLW TST, DAYS: SPUD 190, OPER 190
 MKS: 14 HR SITP 300#. CSG PRS 0#. BLEW DOWN IN 1 HR. R SWB.
 TBG DRY. NO FL. 2000 GALS 7-1/2" N-80 X 1000 SCF N PER BBL.
 FLUSH TO PERFS X 60 BBL X KCL CONTAINING 1000 SCF N PER BBL.
 MAX TRT PRS 8200#. MIN 5400#. AIR 3.8 BPM. ISIP 6200#. 15
 MIN 5900#. FLW WELL BACK AFTER 15 MIN. SI. WELL DIED IN
 5 HRS. SHUT WELL IN FOR 2 HRS. TBG PRS 350#. REC 0 OIL X N GAS
 X 75 BLW. TO REC 45 BLW.

*** 80-02-29 ***

ANDRIKOPOULOS #1, WILDCAT

ILLEGIBLE

JARREL SERVICES, INC.

POST OFFICE BOX 1654

PHONE 505 393-8396

HOBBS, NEW MEXICO 88240

COMPANY: Amoco Production CompanyWELL: Andrikopoulos Federal, No. 1FIELD: Undesignated - Morrow

CHRONOLOGICAL PRESSURE DATA

DATE	STATUS OF WELL	TIME	ELAPSED TIME		SURFACE PRESSURE		BHP @ (-11761')	
			HRS.	MIN.	TBG	CSG	14844'	15096' PSI
1980								
4/23	Arrived on Location	9:30 AM	-	-	641	PKR		
	Flowing on 23/64 Choke							
	Installed Lubricator	10:30	1	00	641	-		
	Started Bombs in Hole	10:40	1	10	641	-		
	Bombs set off @ 14844'	12:30 PM	1	50	641	-	1058	1067
	Wireline Tools out							
	of Hole	1:05	0	35	641	-	1058	1067
	Shut in	1:25	0	55	641	-	1058	1067
	Set Plug @ 12128'	1:30	0	05	1000	-	1192	1230
	Shut in	1:35	0	10	-	-	1442	1480
	"	1:40	0	15	-	-	1929	1967
	"	1:45	0	20	-	-	2269	2307
	"	1:50	0	25	-	-	2583	2621
	"	1:55	0	30	-	-	2936	2974
	"	2:00	0	35	-	-	3282	3320
	"	2:05	0	40	-	-	3590	3628
	"	2:10	0	45	-	-	3885	3923
	"	2:15	0	50	-	-	4186	4224
	"	2:20	0	55	-	-	4468	4506
	"	2:25	1	00	1000	-	4744	4782
	"	2:40	1	15	-	-	5712	5750
	"	2:55	1	30	-	-	6592	6630
	"	3:10	1	45	-	-	7344	7382
	"	3:25	2	00	-	-	8000	8038
	"	3:40	2	15	-	-	8465	8503
	"	3:55	2	30	-	-	8841	8879
	"	4:10	2	45	-	-	9096	9134
	"	4:25	3	00	-	-	9280	9318
	"	4:40	3	15	-	-	9427	9465
	"	4:45	3	30	-	-	9522	9560
	"	5:10	3	45	-	-	9611	9649
	"	5:25	4	00	-	-	9675	9713
	"	5:40	4	15	-	-	9726	9764
	"	5:55	4	30	-	-	9777	9815
	"	6:10	4	45	-	-	9815	9853
	"	6:25	5	00	-	-	9847	9885
	"	6:40	5	15	-	-	9879	9917
	"	6:55	5	30	-	-	9911	9949
	"	7:10	5	45	-	-	9936	9974
	"	7:25	6	00	-	-	9962	10000
	"	8:25	7	00	-	-	10064	10102
	"	9:25	8	00	-	-	10121	10159
	"	10:25	9	00	-	-	10185	10223
	"	11:25	10	00	-	-	10229	10267

WELL: Andrikopoulos Federal. No. 1
 PAGE: 2

DATE	STATUS OF WELL	TIME	ELAPSED TIME		SURFACE PRESSURE		BHP @ (-11761)	
			HRS.	MIN.	TBG	CSG	14844'	15096' PSI
4/24/80	Shut in	12:25 AM	11	00	-	-	10274	10312
	"	1:25	12	00	-	-	10306	10344
	"	2:25	13	00	-	-	10338	10376
	"	3:25	14	00	-	-	10363	10401
	"	4:25	15	00	-	-	10395	10433
	"	5:25	16	00	-	-	10414	10452
	"	6:25	17	00	-	-	10439	10477
	"	7:25	18	00	-	-	10459	10497
	"	8:25	19	00	-	-	10484	10522
	"	9:25	20	00	-	-	10503	10541
	"	10:25	21	00	-	-	10522	10560
	"	11:25	22	00	-	-	10541	10579
	"	12:25 PM	23	00	-	-	10554	10592
	"	1:25	24	00	-	-	10573	10601
	"	2:25	25	00	-	-	10586	10624
	"	3:25	26	00	-	-	10605	10643
	"	4:25	27	00	-	-	10618	10656
	"	5:25	28	00	-	-	10631	10669
	"	6:25	29	00	-	-	10643	10681
	"	7:25	30	00	-	-	10656	10694
	"	8:25	31	00	-	-	10669	10707
	"	9:25	32	00	-	-	10682	10720
	"	10:25	33	00	-	-	10694	10732
	"	11:25	34	00	-	-	10707	10745
4/25/80	"	12:25 AM	35	00	-	-	10713	10751
	"	1:25	36	00	-	-	10726	10764
	"	2:25	37	00	-	-	10739	10777
	"	3:25	38	00	-	-	10745	10783
	"	4:25	39	00	-	-	10758	10796
	"	5:25	40	00	-	-	10764	10802
	"	6:25	41	00	-	-	10777	10815
	"	7:25	42	00	-	-	10783	10821
	"	8:25	43	00	-	-	10790	10828
	"	9:25	44	00	-	-	10803	10841
	"	10:25	45	00	-	-	10809	10847
	"	11:25	46	00	-	-	10815	10853
	"	12:25 PM	47	00	-	-	10828	10866
	"	1:25	48	00	-	-	10834	10872
	"	2:25	49	00	-	-	10841	10879
	"	3:25	50	00	-	-	10847	10885
	"	4:25	51	00	-	-	10854	10892
	"	5:25	52	00	-	-	10860	10898
	"	6:25	53	00	-	-	10866	10904
	"	7:25	54	00	-	-	10879	10917
	"	8:25	55	00	-	-	10885	10923
	"	9:25	56	00	-	-	10892	10930
	"	10:25	57	00	-	-	10898	10936
	"	11:25	58	00	-	-	10904	10942
4/26/80	"	12:25 AM	59	00	-	-	10911	10949
	"	1:25	60	00	-	-	10917	10955
	"	2:25	61	00	-	-	10924	10962
	"	3:25	62	00	-	-	10930	10968
	"	4:25	63	00	-	-	10936	10974
	"	5:25	64	00	-	-	10943	10981
	"	6:25	65	00	-	-	10943	10981
	"	7:25	66	00	-	-	10949	10987

WELL: Andrikopoulo. Federal, No. 1

PAGE: 3

DATE	STATUS OF WELL	TIME	ELAPSED TIME		SURFACE PRESSURE		BHP @ (-11761)	
			HRS.	MIN.	TBG	CSG	14844'	15096' PSI
	Shut in	8:25	67	00	-	-	10955	10993
	"	9:25	68	00	-	-	10962	11000
	"	10:25	69	00	-	-	10962	11000
	"	11:25	70	00	-	-	10968	11006
	"	12:25 PM	71	00	-	-	10975	11013
	"	1:25	72	00	-	-	10981	11019
	"	2:25	73	00	-	-	10981	11019
	"	3:25	74	00	-	-	10987	11025
	"	4:25	75	00	-	-	10994	11032
	"	5:25	76	00	-	-	10994	11032
	"	6:25	77	00	-	-	11000	11038
	"	7:25	78	00	-	-	11006	11044
	"	8:25	79	00	-	-	11006	11044
	"	9:25	80	00	-	-	11013	11051
	"	10:25	81	00	-	-	11019	11057
4/27/80	"	11:25	82	00	-	-	11019	11057
	"	12:25 AM	83	00	-	-	11025	11063
	"	1:25	84	00	-	-	11025	11063
	"	2:25	85	00	-	-	11032	11070
	"	3:25	86	00	-	-	11032	11070
	"	4:25	87	00	-	-	11038	11076
	"	5:25	88	00	-	-	11038	11076
	"	6:25	89	00	-	-	11045	11083
	"	7:25	90	00	-	-	11045	11083
	"	8:25	91	00	-	-	11051	11089
	"	9:25	92	00	-	-	11051	11089
	"	10:25	93	00	-	-	11057	11095
	"	11:25	94	00	-	-	11057	11095
	"	12:25 PM	95	00	-	-	11064	11102
	"	1:25	96	00	-	-	11070	11108
	"	2:25	97	00	-	-	11070	11108
	"	3:25	98	00	-	-	11076	11114
	"	4:25	99	00	-	-	11076	11114
	"	5:25	100	00	-	-	11083	11121
	"	6:25	101	00	-	-	11083	11121
	"	7:25	102	00	-	-	11089	11127
	"	8:25	103	00	-	-	11089	11127
	"	9:25	104	00	-	-	11096	11134
	"	10:25	105	00	-	-	11096	11134
4/28/80	"	11:25	106	00	-	-	11096	11134
	"	12:25 AM	107	00	-	-	11096	11134
	"	1:25	108	00	-	-	11102	11140
	"	2:25	109	00	-	-	11102	11140
	"	3:25	110	00	-	-	11102	11140
	"	4:25	111	00	-	-	11102	11140
	"	5:25	112	00	-	-	11108	11146
	"	6:25	113	00	-	-	11108	11146
	"	7:25	114	00	-	-	11108	11146
	"	8:25	115	00	-	-	11108	11146
	"	9:25	116	00	-	-	11115	11153
	Clocks Ran Out	10:25	117	00	-	-	11115	11153
	Equalized Plug	3:25 PM	122	00	-	-		
4/29/80	Pulled Plug & Fished							
	Bombs	10:25 AM	141	00	8898	-		

JARREL SERVICES, INC.

POST OFFICE BOX 1854

PHONES 506 383-5388 - 383-8294

HOBBS, NEW MEXICO 88240

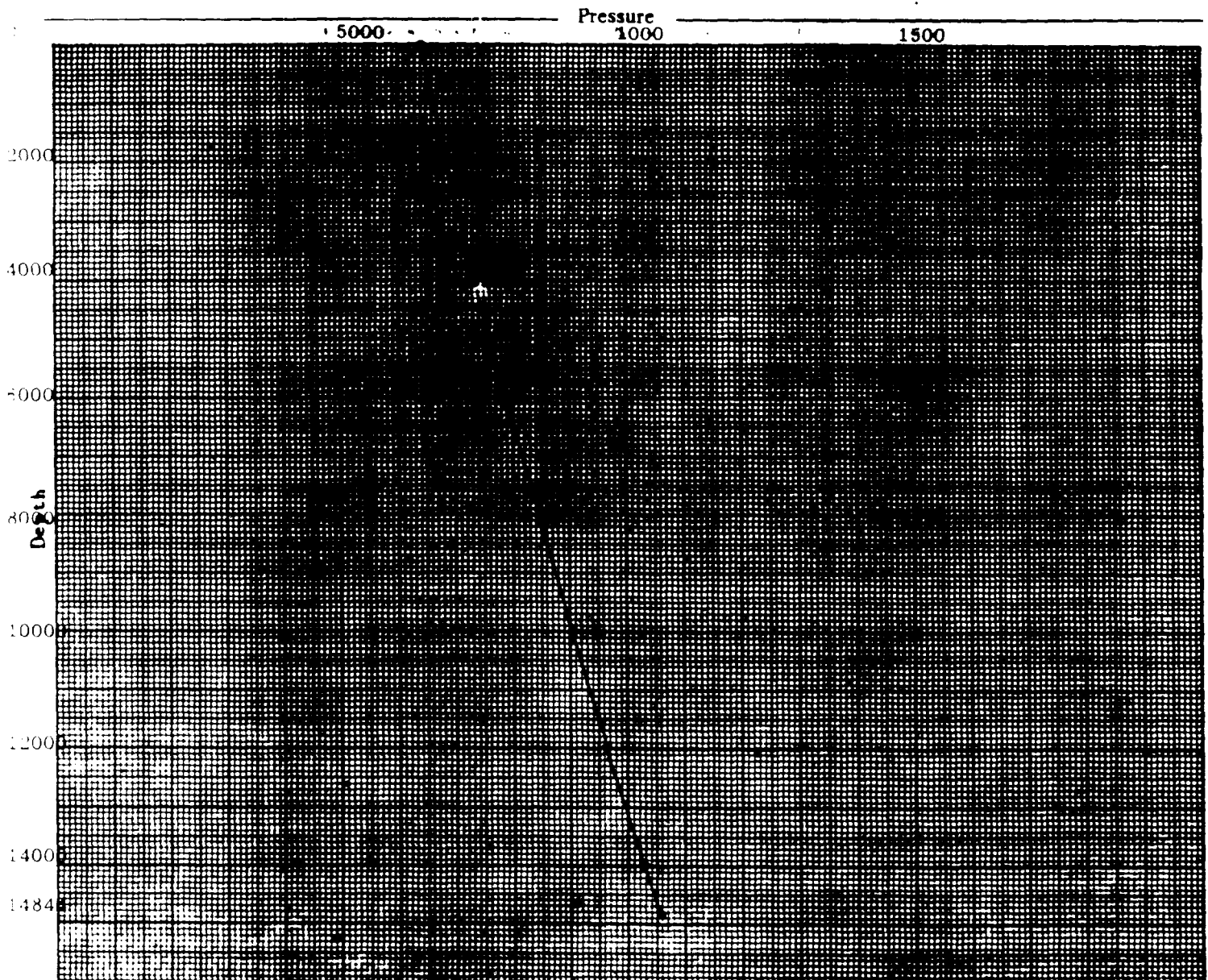
BOTTOM HOLE PRESSURE RECORD

OPERATOR Amoco Production Company
 FIELD Undesignated
 FORMATION Morrow
 LEASE Andrikopoulos Federal WELL #1
 COUNTY Lea STATE New Mexico
 DATE April 23, 1980 TIME 12:30 PM
 Status Flowing
 Test Depth 14844'
 Time S. I. - Last test date -
 Tub Pres. 641 BHP last test -
 Cas. Pres. PKR BHP change -
 Elev. 1335' GL Fluid top Flowing
 Datum -11761' **Water top -
 Temp. @ 205' Run by JSI #16
 Cal. No. A18478N Chart No. 1

Depth	Pressure	Gradient
0	641	-
2000	682	.021
4000	736	.027
6000	787	.026
8000	849	.031
10000	905	.028
12000	965	.030
14000	1028	.032
14844	1058	.036
15096 (-11761)	1067 * **	(.036)

* EXTRAPOLATED PRESSURE

** MIDPOINT OF CASING PERFORATIONS



JARREL SERVICES, INC.

POST OFFICE BOX 1654

PHONE 505 393-5396

HOBBS, NEW MEXICO 88240

AMOCO Production Company

Andrikopoulos Federal #1

April 23, 1980

Time Arrived on Location:	9:30 AM
Flowing Tubing Pressure -	641
Flow Rate	23/64 Chokd
Time Lubricator Installed	10:30 AM
Flowing Tubing Pressure	641
Flow Rate	23/64 Choke
Time began Running Pressure Bombs	10:40 AM
Flowing Tubing Pressure	641
Flow Rate	23/64 Choke
Time Pressure Bombs Landed	12:30 PM
Flowing Tubing Pressure	641
Flow Rate	23/64 Choke
Time WireLine Out	1:05 PM
Flowing Tubing Pressure	641
Flow Rate	23/64 Choke
Time Shut in	1:25 PM
Time Blanking Plug Landed	1:30 PM
Shut In Tubing Pressure	1000
Shut in Tubing Pressure 1 hour after Plug Landed	1000

April 28, 1980

Shut in Tubing Pressure before Retrieving
Blanking Plug and Bombs 1000

April 29, 1980

Shut in Tubing Pressure after Pulling
Plug & Fishing Bombs 8898

09-08-88

EL PASO NATURAL GAS COMPANY
VOLUME ACCOUNTING DEPARTMENT
MEASUREMENT DIVISION
POST OFFICE BOX 1492
EL PASO, TEXAS 79978

MAILEE
00250

CHROMATOGRAPHIC GAS ANALYSIS REPORT

AMOCO PRODUCTION COMPANY
ATTN: DUSTY WEAVER
P. O. BOX 68
HOBBS, NM 88240

ANAL DATE 00-00-00

METER STATION NAME
ANDRIKOPOULOS #1

METER STA 58336
OPER 0203

TYPE CODE	SAMPLE DATE	EFF. DATE	USE MOS	H2S GRAINS	LOCATION
40 ***	02-08-88	09-01-88	07	0	1 J 22

	NORMAL MOL%	GPM
CO2	.43	.000
H2S	.00	.000
N2	.65	.000
METHANE	97.12	.000
ETHANE	1.41	.377
PROPANE	.15	.044
ISO-BUTANE	.04	.013
NORM-BUTANE	.03	.009
ISO-PENTANE	.03	.011
NORM-PENTANE	.02	.007
HEXANE PLUS	.11	.048
	100.00	.509

SPECIFIC GRAVITY .575

MIXTURE HEATING VALUE
(BTU/CF @14.73 PSIA, 60 DEGREES, DRY) 1024

RATIO OF SPECIFIC HEATS 1.305

NO TEST SECURED FOR H2S CONTENT

*** TYPE CODE EXPLANATION: VAL FROM PREV ANAL - NON-PROD OF WELL DURING SCH TEST PER

GXC

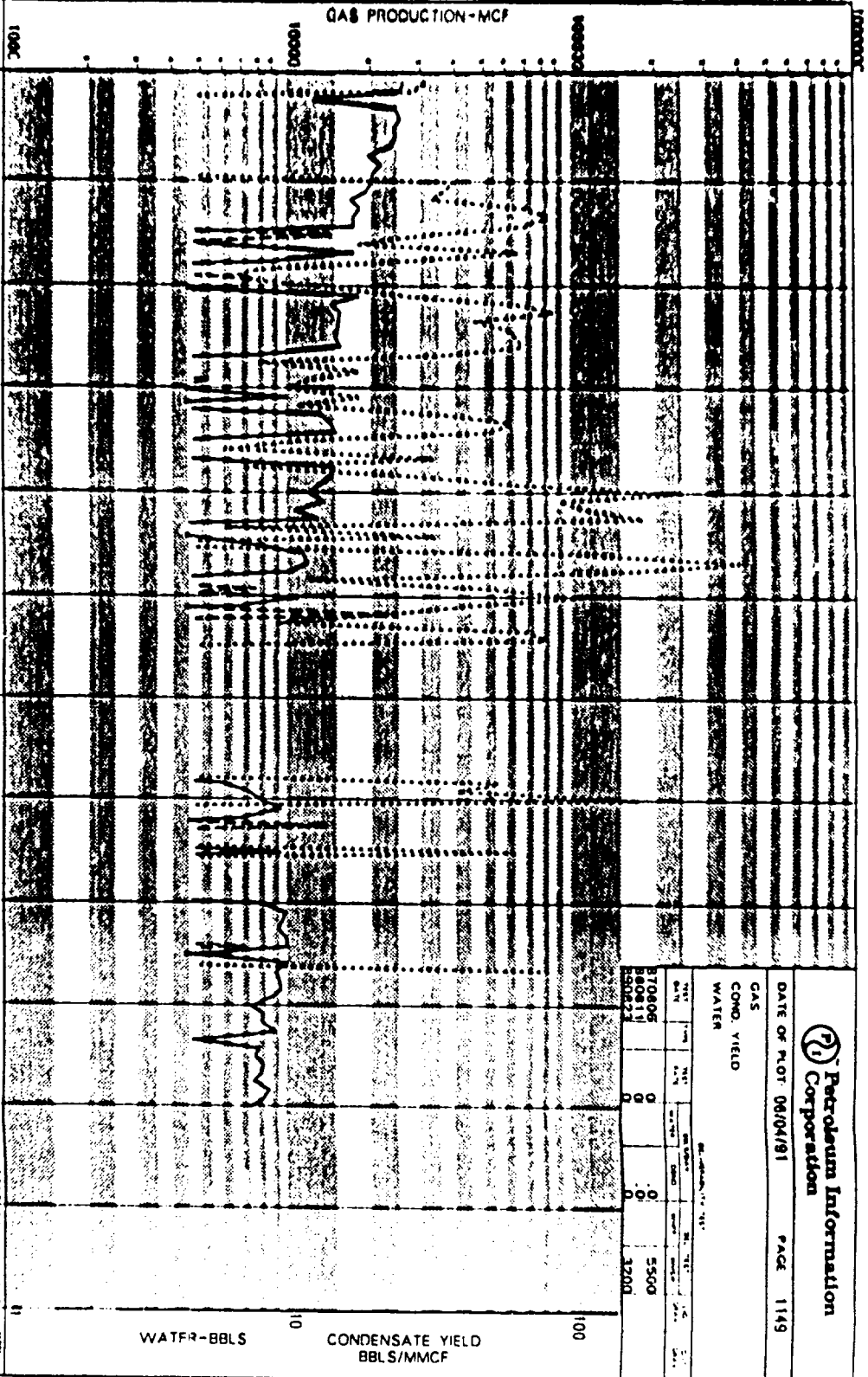
Petroleum Information Corporation

DATE OF PLOT 06/04/91 PAGE 1149

GAS
COND. YIELD
WATER

DATE	TIME	COND.	YIELD	WATER
870806		0	0	5500
880811		0	0	3200
890823		0	0	

GAS PRODUCTION - MCF



WATER-BBLS
CONDENSATE YIELD
BBLS/MMCF

DATE	TIME	COND.	YIELD	WATER
1981	11	126873	430	436
1982	11	126873	315	436
1983	11	126873	193	501
1984	11	117767	153	506
1985	11	98806	168	1247
1986	11	8768	21	724
1987	11	23814	23	258
1988	11	37080	53	65
1989	11	107502	131	343
1990	11	94165	48	81
1991	11	1186755	1928	800601

024 0255 033E ENRON OIL & GAS CO. ANDRIKOPoulos 001 30 025 26438 0000

**TIGHT GAS SANDS
PERMEABILITY AND STABILIZED FLOW RATE
VACA DRAW / PITCHFORK RANCH AREA**

DATE: 11/25/91

WELL NAME: BELL LAKE 2 ST 1

INTERVAL: 15380-458'

STIMULATED ? (Y/N): YES; 3000 G AC D

FLOW RATE (MCF/D): 680

FLOW TIME (HRS.): 158

FLOWING BHP (psia): 6,168

GAS GRAVITY (Yg): 0.604

TEMP. DEGREE F (T): 194

RESERVOIR PRESSURE (Pi): 9,335

GAS POROSITY: 0.057

WELLBORE RADIUS (Ft): 0.250

SKIN FACTOR: -2.4

PAY HEIGHT: 36

Z-FACTOR: 1.380

GAS COMPRESSIBILITY: 0.00005

GAS VISCOSITY (cp): 0.0330

SPACING ACRES: 320

FORMATION VOLUME FACTOR (Bg): 0.496

SPACING RADIUS (Ft): 2,106

ASSUMED K (md): 0.0621

RADIUS OF DRAINAGE (Ft): 526.7

CALCULATED K (md): 0.0621

STEADY TIME (HRS.): 6,370.77

STABILIZED FLOW (MCF/D): 566.31

AOF PRESSURE (psia): 284

STABILIZED AOF (MCF/D): 1,618

TIGHT GAS SANDS
PERMEABILITY AND STABILIZED FLOW RATE
VACA DRAW / PITCHFORK RANCH AREA

DATE: 11/23/91

WELL NAME: BELL LAKE 2 ST 1

INTERVAL: 14819-892

STIMULATED ? (Y/N): YES; 3500 GAL ACID

FLOW RATE (MCF/D): 356

FLOW TIME (HRS.): 297

FLOWING BHP (psia): 1,150

GAS GRAVITY (Yg): 0.604

TEMP. DEGREE F (T): 194

RESERVOIR PRESSURE (Pi): 9,745

GAS POROSITY: 0.120

WELLBORE RADIUS (Ft): 0.250

SKIN FACTOR: 0.0

PAY HEIGHT: 27

Z-FACTOR: 1.377

GAS COMPRESSIBILITY: 0.00005

GAS VISCOSITY (cp): 0.0316

SPACING ACRES: 320

FORMATION VOLUME FACTOR (Bg): 0.500

SPACING RADIUS (Ft): 2,106

ASSUMED K (md): 0.0217

RADIUS OF DRAINAGE (Ft): 300.7

CALCULATED K (md): 0.0217

STEADY TIME (HRS.): 36,726.81

STABILIZED FLOW (MCF/D): 272.40

AOF PRESSURE (psia): 74

STABILIZED AOF (MCF/D): 306

TIGHT GAS SANDS

PERMEABILITY AND STABILIZED FLOW RATE

VACA DRAW / PITCHFORK RANCH AREA

DATE: 11/25/91

WELL NAME: BELL LAKE 2 ST 1

INTERVAL: 15380-458'

STIMULATED ? (Y/N): YES; 3000 G ACID

FLOW RATE (MCF/D): 680

FLOW TIME (HRS.): 158

FLOWING BHP (psia): 6,168

GAS GRAVITY (Yg): 0.604

TEMP. DEGREE F (T): 194

RESERVOIR PRESSURE (Pi): 9,335

GAS POROSITY: 0.057

WELLBORE RADIUS (Ft): 0.250

SKIN FACTOR: 0.0

PAY HEIGHT: 36

Z-FACTOR: 1.380

GAS COMPRESSIBILITY: 0.00005

GAS VISCOSITY (cp): 0.0330

SPACING ACRES: 320

FORMATION VOLUME FACTOR (Bg): 0.496

SPACING RADIUS (Ft): 2,106

ASSUMED K (md): 0.0983

RADIUS OF DRAINAGE (Ft): 662.7

CALCULATED K (md): 0.0983

STEADY TIME (HRS.): 4,022.02

STABILIZED FLOW (MCF/D): 585.15

AO F PRESSURE (psia): 284

STABILIZED AOF (MCF/D): 1,672

TIGHT GAS SANDS

PERMEABILITY AND STABILIZED FLOW RATE

VACA DRAW / PITCHFORK RANCH AREA

DATE: 11/25/91

WELL NAME: *BELL LAKE 2 ST 1*

INTERVAL: 15159-458

STIMULATED ? (Y/N): YES; 5000 GAL ACID

FLOW RATE (MCF/D): 1,100

FLOW TIME (HRS.): 104

FLOWING BHP (psia): 1,630

GAS GRAVITY (Yg): 0.604

TEMP. DEGREE F (T): 194

RESERVOIR PRESSURE (Pi): 8,996

GAS POROSITY: 0.063

WELLBORE RADIUS (Ft): 0.250

SKIN FACTOR: 0.0

PAY HEIGHT: 68

Z-FACTOR: 1.250

GAS COMPRESSIBILITY: 0.00005

GAS VISCOSITY (cp): 0.0302

SPACING ACRES: 320

FORMATION VOLUME FACTOR (Bg): 0.498

SPACING RADIUS (Ft): 2,106

ASSUMED K (md): 0.0295

RADIUS OF DRAINAGE (Ft): 292.9

CALCULATED K (md): 0.0295

STEADY TIME (HRS.): 13,579.25

STABILIZED FLOW (MCF/D): 838.19

AOI PRESSURE (psia): 264

STABILIZED AOI (MCF/D): 994

TIGHT GAS SANDS

PERMEABILITY AND STABILIZED FLOW RATE

VACA DRAW / PITCHFORK RANCH AREA

DATE: 11/25/91

WELL NAME: BELL LAKE 2 ST 1

INTERVAL: 15159-458

STIMULATED ? (Y/N): YES; 5000 GAL ACID

FLOW RATE (MCF/D): 1,100

FLOW TIME (HRS.): 104

FLOWING BHP (psia): 1,630

GAS GRAVITY (Yg): 0.604

TEMP. DEGREE F (T): 194

RESERVOIR PRESSURE (Pi): 8,996

GAS POROSITY: 0.063

WELLBORE RADIUS (Ft): 0.250

SKIN FACTOR: -2.9

PAY HEIGHT: 68

Z-FACTOR: 1.250

GAS COMPRESSIBILITY: 0.00005

GAS VISCOSITY (cp): 0.0302

SPACING ACRES: 320

FORMATION VOLUME FACTOR (Bg): 0.498

SPACING RADIUS (Ft): 2,106

ASSUMED K (md): 0.0142

RADIUS OF DRAINAGE (Ft): 203.2

CALCULATED K (md): 0.0142

STEADY TIME (HRS.): 28,116.14

STABILIZED FLOW (MCF/D): 789.68

AOE PRESSURE (psia): 264

STABILIZED AOE (MCF/D): 936

TIGHT GAS SANDS PERMEABILITY AND STABILIZED FLOW RATE VACA DRAW / PITCHFORK RANCH AREA

DATE: 11/23/91

WELL NAME: *BELL LAKE 2 ST 1*

INTERVAL: 14819-892

STIMULATED ? (Y/N): NO; NATURAL

FLOW RATE (MCF/D): 50

FLOW TIME (HRS.): 16

FLOWING BHP (psia): 74

GAS GRAVITY (Yg): 0.604

TEMP. DEGREE F (T): 194

RESERVOIR PRESSURE (Pi): 9,745

GAS POROSITY: 0.120

WELLBORE RADIUS (Ft): 0.250

SKIN FACTOR: 0.0

PAY HEIGHT: 27

Z-FACTOR: 1.377

GAS COMPRESSIBILITY: 0.00005

GAS VISCOSITY (cp): 0.0316

SPACING ACRES: 320

FORMATION VOLUME FACTOR (Bg): 0.500

SPACING RADIUS (Ft): 2,106

ASSUMED K (md): 0.0015

RADIUS OF DRAINAGE (Ft): 18.3

CALCULATED K (md): 0.0015

STEADY TIME (HRS.): 526,283.35

STABILIZED FLOW (MCF/D): 21.39

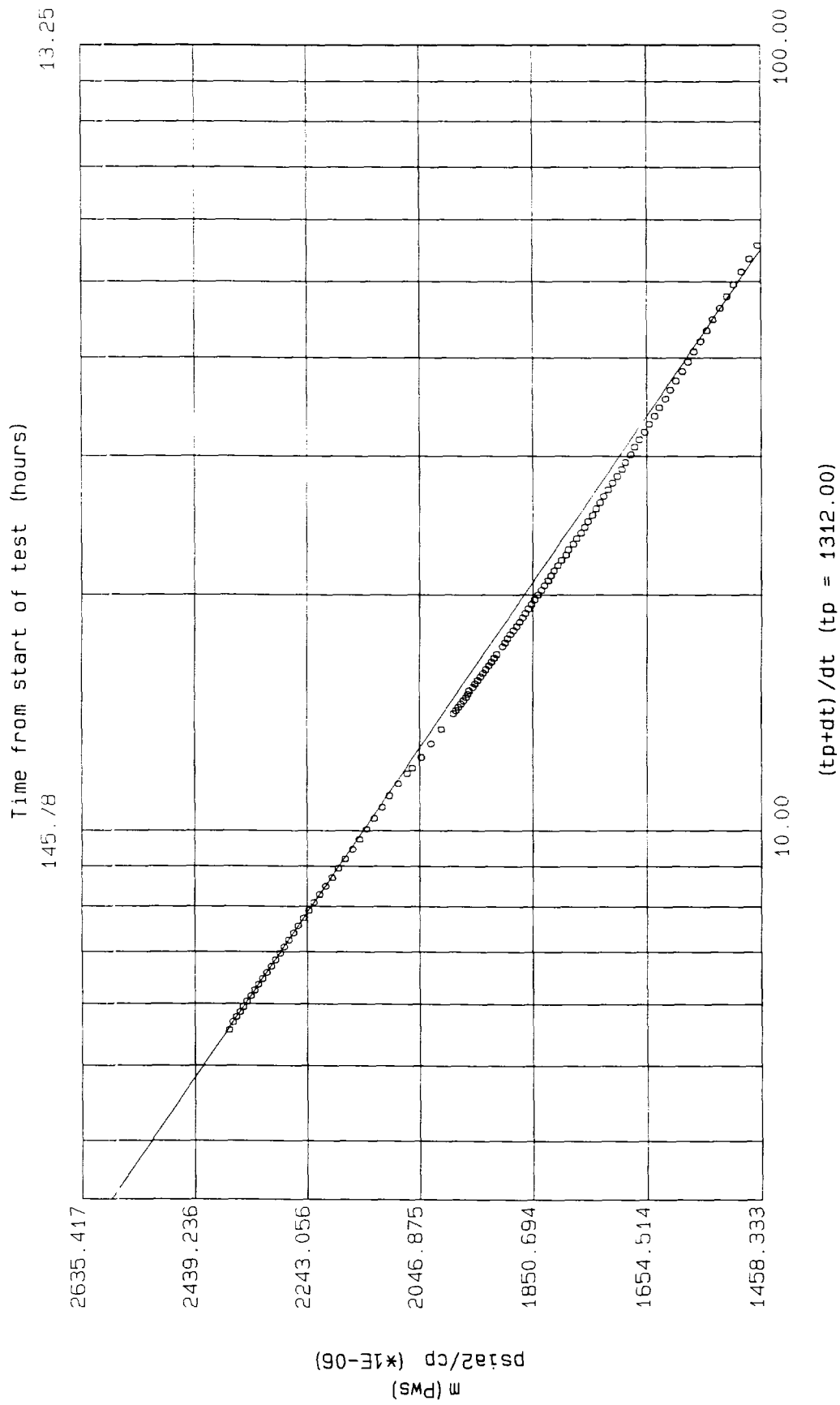
AOE PRESSURE (psia): 74

STABILIZED AOE (MCF/D): 21

PANSYSTEM V1.8 (C) EPS 1991.

BELL LAKE 2 STATE - HORNER

File.....	BELL28.GAS	Location.....	LEA COUNTY, NEW MEXICO	Slope.....	-927.909
Company.....	HNG	Date.....	5/26/82 - 6/7/82	Intercept.....	3073.555
Well.....	BELL LAKE 2 STATE	Test.....	BULLOUP	Permeability.....	9.794E-03
Field.....	VACA DRAW (MORROW)	Gauge.....	AMERADA	Skin.....	-3.046

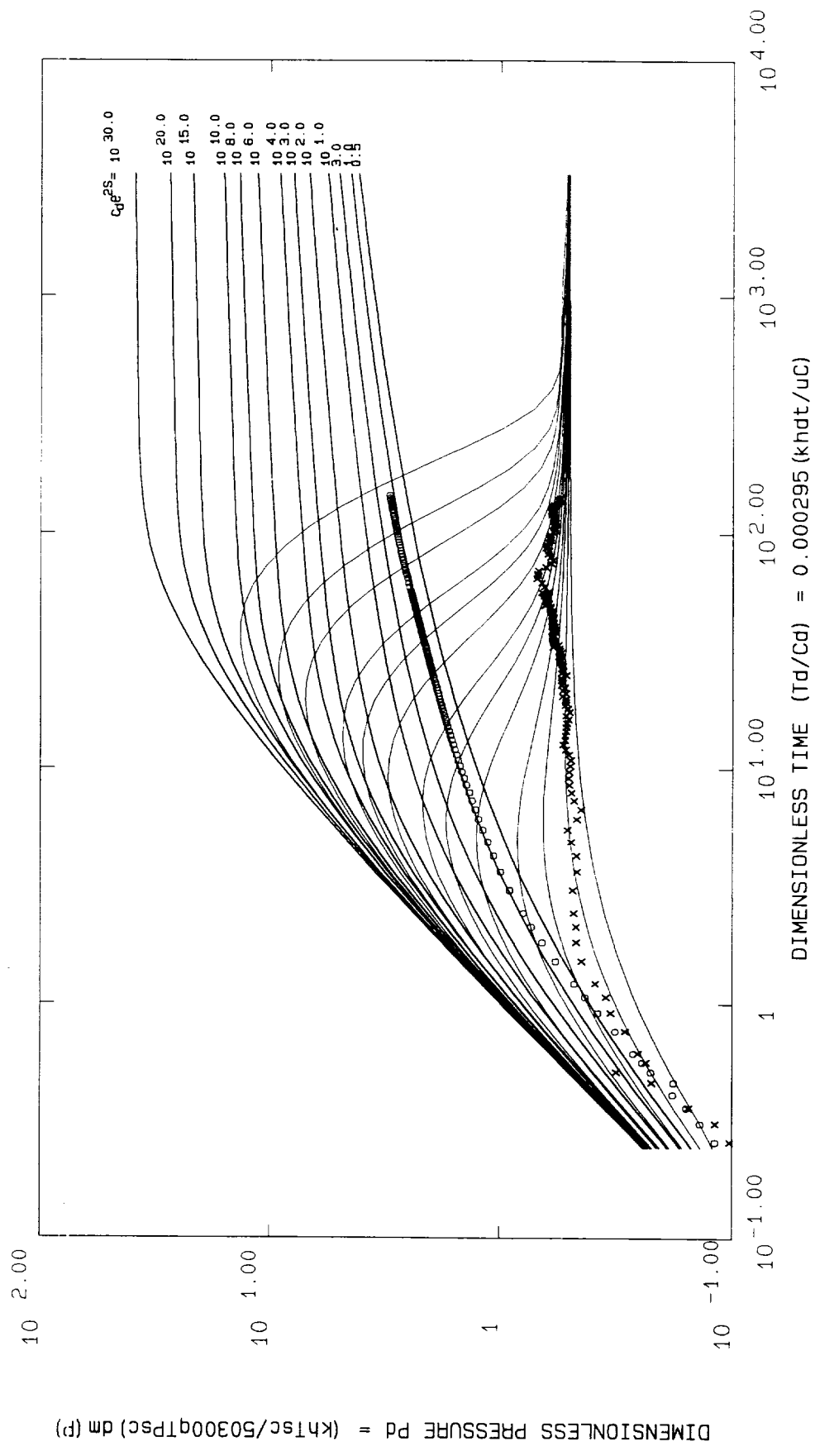


PANSYSTEM V1.8 (C) EPS 1991.

BELL LAKE 2 STATE - HOMOGENEOUS RESERVOIR

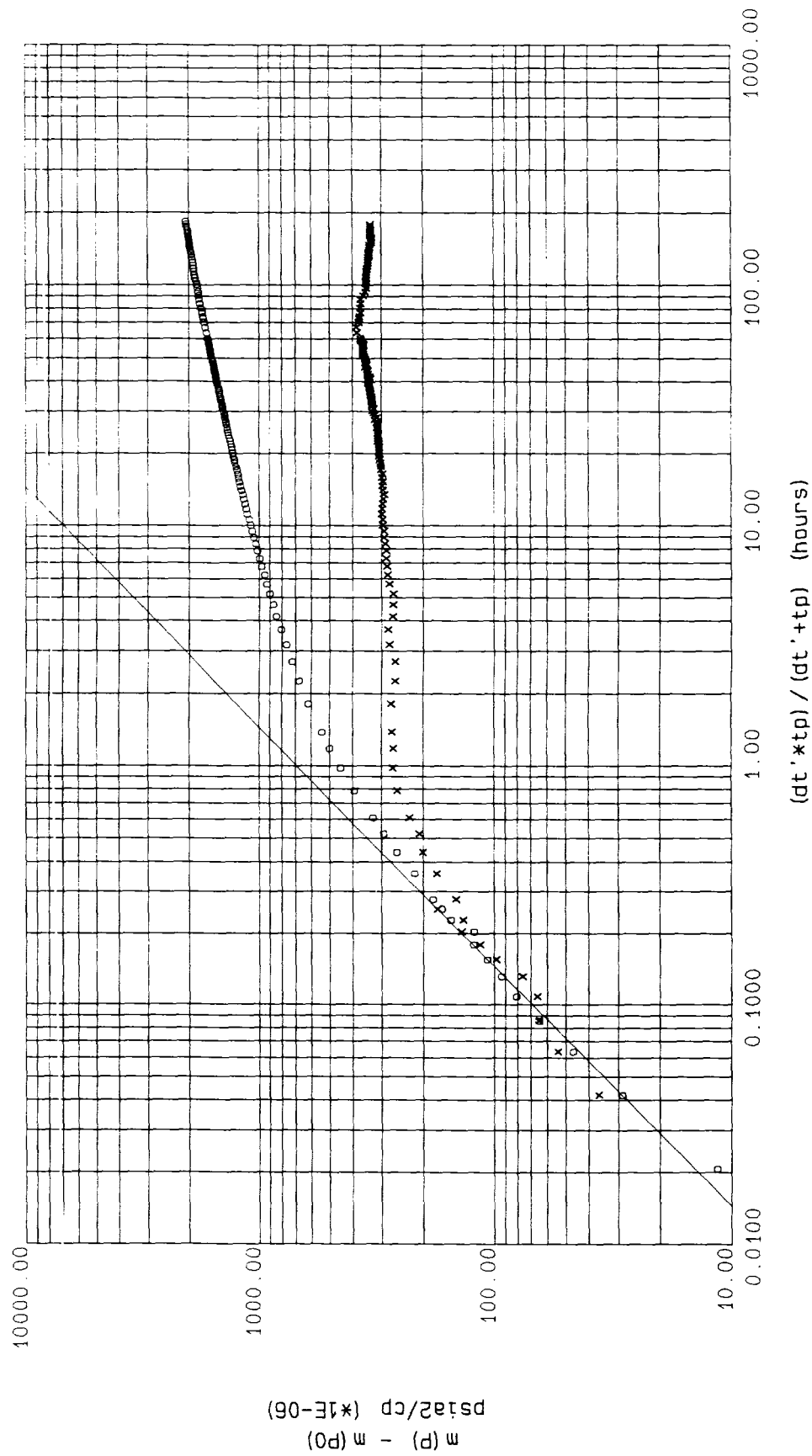
File.....	BELL2B.GAS	Location.....	LEA COUNTY, NEW MEXICO	Pd(match).....	0.0147	dp(match)...	10.000
Company.....	HNG	Date.....	5/26/82 - 6/7/82	Id(match).....	0.6127	dt(match)...	1.000
Well.....	BELL LAKE 2 STATE	Test.....	BUILDUP	Permeability..	0.0116	dp (skin)...	-1.00E+12
Field.....	VACA DRAW (MORROW)	Gauge.....	AMERADA	Skin.....	-2.788	C(Storage)...	0.0129

Data plotted using Real Elapsed Time and m (p)



BELL LAKE 2 STATE - LOG-LOG

File.....	AMAND GAS	Location.....	LEA COUNTY, NEW MEXICO	Slope.....	1.000
Company.....	HNG	Date.....	5/26/82 - 6/7/82	Intercept.....	2.840
Well.....	BELL LAKE 2 STATE	Test.....	BUILDUP	Wellbore Vol.: 141.622	
Field.....	VACA DRAW (MORROW)	Gauge.....	AMERADA	Storage coef.: 7.61E-03	



E.P.S. Ltd.

PANSYSTEM ANALYSIS PROGRAM

File: AMAND.GAS ,AMAND.PRO

Test type: CRB

Date: 22/11/91 Time: 15:45

RESULTS FROM HORNER ANALYSIS
using Pseudo-pressure and Real time

First Line :

Intercept.....:	3127.577
Slope.....:	-340.601
Start of line.....:(	1.389 , 2653.476)
End of line.....:(	1.222 , 2711.111)
Coefficient of determination....:	0.9984
Number of points.....:	7

m(p) at dt = 1 hr.....:	2292.646	psia2/cp (*1E-06)
Extrapolated m(p).....:	3127.577	psia2/cp (*1E-06)
Permeability-thickness (kh).....:	2.199	md.ft
Permeability (k).....:	0.0611	md
Total skin factor (s).....:	-2.398	
dP skin (constant rate).....:	-1692.540	psi
Radius of investigation.....:	165.134	ft
Extrapolated pressure.....:	9100.490	psia
Pressure at dt = 1 hour.....:	7126.403	psia
Flow efficiency.....:	1.571	

PANSYSTEM ANALYSIS PROGRAM

Test type: CRB

Date: 23/11/91 Time: 12:08

```
Company.....: HNG
Well.....: BELL LAKE 2 STATE
Field.....: VACA DRAW (MORROW)
Location.....: LEA COUNTY, NEW MEXICO
Date.....: 5/26/82 - 6/7/82
Test.....: BUILDUP
Gauge.....: AMERADA
```

```
Gauge Depth - Measured...: 15308
                        Vertical...: 15308
Producing Formation..Top: 15419
                        Bottom:
Perforated interval..Top:
                        Bottom:
Depth Reference - MSL...:
Remarks.....:
```

.....

TEST PARAMETERS

Test type - Constant rate buildup

Gas flow rate at surface (Q).....	0.5612	MMscf/day
Pressure prior to shut-in (p(dt=0))....	2137.0000	psia
Time when dt=0.....	0.0000	hr
Equivalent production time (Tp).....	1312.0000	hr

E.P.S. Ltd.

PANSYSTEM ANALYSIS PROGRAM

File: BELL2B.GAS ,BELL2B.PRO

Test type: CRB

Date: 23/11/91 Time: 13:29

Data Point	Time Time	Pressure psia	m(p) psia2/cp (*1E-06)
1.	0.0000	2137.0000	327.6655
2.	0.0833	2177.0000	339.1526
3.	0.1667	2236.0000	356.4340
4.	0.2500	2296.0000	374.2279
5.	0.3333	2357.0000	392.8323
6.	0.4167	2408.0000	408.4862
7.	0.5000	2448.0000	421.0557
8.	0.5833	2492.0000	434.8821
9.	0.6667	2541.0000	450.6198
10.	0.7500	2538.0000	449.6522
11.	0.8333	2633.0000	480.5541
12.	0.9167	2674.0000	494.1026
13.	1.0000	2720.0000	509.4468
14.	1.2500	2827.0000	545.7494
15.	1.5000	2945.0000	586.6418
16.	1.7500	3045.0000	621.9446
17.	2.0000	3136.0000	654.5635
18.	2.5000	3317.0000	720.7442
19.	3.0000	3467.0000	776.8452
20.	3.5000	3600.0000	827.3619
21.	4.0000	3708.0000	868.9683
22.	5.0000	3908.0000	947.1299
23.	6.0000	4052.0000	1004.2558
24.	7.0000	4175.0000	1053.4936
25.	8.0000	4279.0000	1095.4345
26.	9.0000	4381.0000	1136.8173
27.	10.0000	4469.0000	1172.7077
28.	11.0000	4537.0000	1200.5439
29.	12.0000	4603.0000	1227.6250
30.	13.0000	4668.0000	1254.4050
31.	14.0000	4727.0000	1278.7562
32.	15.0000	4785.0000	1302.7449
33.	16.0000	4837.0000	1324.3054
34.	17.0000	4887.0000	1345.0574
35.	18.0000	4932.0000	1363.7756
36.	19.0000	4976.0000	1382.0941
37.	20.0000	5018.0000	1399.6007
38.	21.0000	5060.0000	1417.1347
39.	22.0000	5099.0000	1433.4165
40.	23.0000	5138.0000	1449.7365
41.	24.0000	5172.0000	1463.9652
42.	25.0000	5207.0000	1478.6186
43.	26.0000	5238.0000	1491.6193
44.	27.0000	5271.0000	1505.4589
45.	28.0000	5299.0000	1517.2015
46.	29.0000	5327.0000	1528.9655
47.	30.0000	5356.0000	1541.1505
48.	31.0000	5381.0000	1551.6546
49.	32.0000	5407.0000	1562.5853
50.	33.0000	5434.0000	1573.9539

E.P.S. Ltd.

PANSYSTEM ANALYSIS PROGRAM

File: BELL2B.GAS ,BELL2B.PRO

Test type: CRB

Date: 23/11/91 Time: 13:29

Data Point	Time Time	Pressure psia	m(p) psia2/cp (*1E-06)
51.	34.0000	5459.0000	1584.4804
52.	35.0000	5481.0000	1593.7438
53.	36.0000	5506.0000	1604.2757
54.	37.0000	5530.0000	1614.4024
55.	38.0000	5551.0000	1623.2634
56.	39.0000	5576.0000	1633.8121
57.	40.0000	5594.0000	1641.4072
58.	41.0000	5616.0000	1650.7022
59.	42.0000	5636.0000	1659.1564
60.	43.0000	5657.0000	1668.0334
61.	44.0000	5676.0000	1676.0649
62.	45.0000	5692.0000	1682.8282
63.	46.0000	5713.0000	1691.7138
64.	47.0000	5730.0000	1698.9113
65.	48.0000	5748.0000	1706.5322
66.	49.0000	5766.0000	1714.1530
67.	50.0000	5784.0000	1721.7739
68.	51.0000	5801.0000	1728.9719
69.	52.0000	5816.0000	1735.3311
70.	53.0000	5834.0000	1742.9622
71.	54.0000	5849.0000	1749.3215
72.	55.0000	5866.0000	1756.5286
73.	56.0000	5880.0000	1762.4639
74.	57.0000	5893.0000	1767.9753
75.	58.0000	5911.0000	1775.6115
76.	59.0000	5926.0000	1781.9779
77.	60.0000	5946.0000	1790.4663
78.	61.0000	5955.0000	1794.2861
79.	62.0000	5973.0000	1801.9256
80.	63.0000	5987.0000	1807.8675
81.	64.0000	6002.0000	1814.2346
82.	65.0000	6014.0000	1819.3323
83.	66.0000	6027.0000	1824.8548
84.	67.0000	6042.0000	1831.2270
85.	68.0000	6055.0000	1836.7495
86.	69.0000	6068.0000	1842.2720
87.	70.0000	6081.0000	1847.7945
88.	71.0000	6094.0000	1853.3171
89.	72.0000	6106.0000	1858.4166
90.	73.0000	6119.0000	1863.9429
91.	74.0000	6131.0000	1869.0444
92.	75.0000	6144.0000	1874.5708
93.	76.0000	6155.0000	1879.2470
94.	77.0000	6168.0000	1884.7734
95.	78.0000	6180.0000	1889.8747
96.	79.0000	6192.0000	1894.9760
97.	80.0000	6201.0000	1898.8022
98.	81.0000	6212.0000	1903.4809
99.	83.0000	6235.0000	1913.2635
100.	84.0000	6246.0000	1917.9421

E.P.S. Ltd.

PANSYSTEM ANALYSIS PROGRAM

File: BELL2B.GAS ,BELL2B.PRO

Test type: CRB

Date: 23/11/91 Time: 13:29

Data Point	Time Time	Pressure psia	m(p) psia2/cp (*1E-06)
101.	85.0000	6256.0000	1922.1954
102.	86.0000	6267.0000	1926.8741
103.	87.0000	6279.0000	1931.9780
104.	88.0000	6290.0000	1936.6567
105.	89.0000	6301.0000	1941.3355
106.	90.0000	6312.0000	1946.0157
107.	91.0000	6322.0000	1950.2706
108.	92.0000	6332.0000	1954.5253
109.	93.0000	6347.0000	1960.9075
110.	94.0000	6353.0000	1963.4604
111.	95.0000	6360.0000	1966.4388
112.	96.0000	6371.0000	1971.1191
113.	97.0000	6381.0000	1975.3739
114.	98.0000	6392.0000	1980.0541
115.	99.0000	6401.0000	1983.8835
116.	100.0000	6411.0000	1988.1391
117.	105.0000	6461.0000	2009.4172
118.	110.0000	6503.0000	2027.2907
119.	115.0000	6543.0000	2044.3131
120.	119.0000	6581.0000	2060.4843
121.	121.0000	6601.0000	2068.9956
122.	125.0000	6637.0000	2084.3134
123.	130.0000	6673.0000	2099.6315
124.	135.0000	6705.0000	2113.2475
125.	140.0000	6736.0000	2126.4384
126.	145.0000	6767.0000	2139.6291
127.	150.0000	6796.0000	2151.9687
128.	155.0000	6826.0000	2164.7385
129.	160.0000	6855.0000	2177.0832
130.	165.0000	6882.0000	2188.5766
131.	170.0000	6908.0000	2199.6452
132.	175.0000	6935.0000	2211.1416
133.	180.0000	6960.0000	2221.7863
134.	185.0000	6982.0000	2231.1538
135.	190.0000	7003.0000	2240.0957
136.	195.0000	7026.0000	2249.8898
137.	200.0000	7047.0000	2258.8325
138.	205.0000	7066.0000	2266.9235
139.	210.0000	7085.0000	2275.0144
140.	215.0000	7104.0000	2283.1054
141.	220.0000	7123.0000	2291.1965
142.	225.0000	7141.0000	2298.8618
143.	230.0000	7158.0000	2306.1013
144.	235.0000	7176.0000	2313.7666
145.	240.0000	7193.0000	2321.0061
146.	245.0000	7210.0000	2328.2448
147.	250.0000	7227.0000	2335.4833
148.	255.0000	7243.0000	2342.2958
149.	260.0000	7259.0000	2349.1086
150.	265.0000	7273.0000	2355.0695

E.P.S. Ltd.

PANSYSTEM ANALYSIS PROGRAM

File: BELL2B.GAS ,BELL2B.PRO

Test type: CRB

Date: 23/11/91 Time: 13:29

Data Point	Time Time	Pressure psia	m(p) psia2/cp (*1E-06)
151.	270.0000	7287.0000	2361.0307
152.	275.0000	7301.0000	2366.9916
153.	280.0000	7314.0000	2372.5256
154.	288.0000	7332.0000	2380.1879



KUYKENDALL
Bottom Hole Pressure Service Company
P.O. Box 11296 / A/C 915-337-5241 / Odessa, Texas 79760

STATIC-FLOWING-B. H. PRESSURES

COMPANY H.N.G. Oil Co. Well & No. Bell Lake 2 State No. 1
FIELD Vaca Draw Date 5-26/6-7-82 Instrument No. 33118

DATE	STATUS	SERV. TIME	ELAPSED TIME		D. W. T. TP	BHP PSIG @ 15,308
			HRS.	MIN		
5-26-82	Well Flowing 532 MCFD	10:30			1294	
	Instrument in Lubricator					
	Well Flowing 504 MCFD	11:30			1330	2346
	Instruments on Bottom					
	Flowing 307 MCFD	12:30			1512	2459
	Choke Plugged	13:00			1591	2478
	Back to Flowing	13:30				2239
	Flowing 561 MCFD	14:30			1104	2141
	Flowing 561 MCFD	15:30			1103	2137
	Shut Well In	15:30	00	00		
		15:35	00	05		2177
		15:40	00	10		2236
		15:45	00	15		2296
		15:50	00	20		2357
		15:55	00	25		2408
		16:00	00	30		2448
		16:05	00	35		2492
		16:10	00	40		2541
		16:15	00	45		2538
		16:20	00	50		2633
		16:25	00	55		2674
		16:30	01	00		2720
		16:45	01	15		2827
		17:00	01	30		2945
		17:15	01	45		3045
		17:30	02	00		3136
		18:00	02	30		3317
		18:30	03	00		3467
		19:00	03	30		3600



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STATIC-FLOWING-B. H. PRESSURES

COMPANY H.N.G. Oil Co. Well & No. Bell Lake 2 State No. 1
FIELD Vaca Draw Date 5-26/6-7-82 Instrument No. 33118

DATE	STATUS	SERV. TIME	ELAPSED TIME		D. W. T. TP	BHP PSIG @ 15,308
			HRS.	MIN		
5-26-82		19:30	04	00		3708
		20:30	05	00		3908
		21:30	06	00		4052
		22:30	07	00		4175
		23:30	08	00		4279
5-27-82		00:30	09	00		4381
		01:30	10	00		4469
		02:30	11	00		4537
		03:30	12	00		4603
		04:30	13	00		4668
		05:30	14	00		4727
		06:30	15	00		4785
		07:30	16	00		4837
		08:30	17	00		4887
		09:30	18	00		4932
		10:30	19	00		4976
		11:30	20	00		5018
		12:30	21	00		5060
		13:30	22	00		5099
		14:30	23	00		5138
		15:30	24	00		5172
		16:30	25	00		5207
		17:30	26	00		5238
		18:30	27	00		5271
		19:30	28	00		5299
		20:30	29	00		5327
		21:30	30	00		5356
		22:30	31	00		5381



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STATIC-FLOWING-B. H. PRESSURES

COMPANY H.N.G. Oil Co. Well & No. BEll Lake 2 State No. 1
FIELD Vaca Draw Date 5-26/6-7-82 Instrument No. 33118

DATE	STATUS	SERV. TIME	ELAPSED TIME		D. W. T. TP	BHP PSIG @ 15,308
			HRS.	MIN		
5-27-82		23:30	32	00		5407
5-28-82		00:30	33	00		5434
		01:30	34	00		5459
		02:30	35	00		5481
		03:30	36	00		5506
		04:30	37	00		5530
		05:30	38	00		5551
		06:30	39	00		5576
		07:30	40	00		5594
		08:30	41	00		5616
		09:30	42	00		5636
		10:30	43	00		5657
		11:30	44	00		5676
		12:30	45	00		5692
		13:30	46	00		5713
		14:30	47	00		5730
		15:30	48	00		5748
		16:30	49	00		5766
		17:30	50	00		5748
		18:30	51	00		5801
		19:30	52	00		5816
		20:30	53	00		5834
		21:30	54	00		5849
		22:30	55	00		5866
		23:30	56	00		5880
5-29-82		00:30	57	00		5893
		01:30	58	00		5911
		02:30	59	00		5926



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STATIC-FLOWING-B. H. PRESSURES

COMPANY H.N.G. Oil Co. Well & No. Bell Lake 2 State No. 1
FIELD Vaca Draw Date 5-26/6-7-82 Instrument No. 33118

DATE	STATUS	SERV. TIME	ELAPSED TIME		D. W. T. TP	BHP PSIG @ 15,308
			HRS.	MIN		
5-29-82		03:30	60	00		5946
		04:30	61	00		5955
		05:30	62	00		5973
		06:30	63	00		5987
		07:30	64	00		6002
		08:30	65	00		6014
		09:30	66	00		6027
		10:30	67	00		6042
		11:30	68	00		6055
		12:30	69	00		6068
		13:30	70	00		6081
		14:30	71	00		6094
		15:30	72	00		6106
		16:30	73	00		6119
		17:30	74	00		6131
		18:30	75	00		6144
		19:30	76	00		6155
		20:30	77	00		6168
		21:39	78	00		6180
		22:30	79	00		6192
		23:30	80	00		6201
5-30-82		00:30	81	00		6212
		01:30	82	00		5792
		02:30	83	00		6235
		03:30	84	00		6246
		04:30	85	00		6256
		05:30	86	00		6267
		06:30	87	00		6279



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STATIC-FLOWING-B. H. PRESSURES

COMPANY H.N.G. Oil Co. Well & No. Bell Lake 2 State No. 1
FIELD Vaca Draw Date 5-26/6-7-82 Instrument No. 33118

DATE	STATUS	SERV. TIME	ELAPSED TIME		D. W. T. TP	BHP PSIG @ 15,308
			HRS.	MIN		
5-30-82		07:30	88	00		6290
		08:30	89	00		6301
		09:30	90	00		6312
		10:30	91	00		6322
		11:30	92	00		6332
		12:30	93	00		6347
		13:30	94	00		6353
		14:30	95	00		6360
		15:30	96	00		6371
		16:30	97	00		6381
		17:30	98	00		6392
		18:30	99	00		6401
		19:30	100	00		6411
5-31-82		00:30	105	00		6461
		05:30	110	00		6503
		10:30	115	00		6543
	Instruments off Bottom	14:30	119	00	4944	6581
	Instruments on Bottom	17:00	121	30		6601
6-1-82		20:30	125	00		6637
		01:30	130	00		6673
		06:30	135	00		6705
		11:30	140	00		6736
		16:30	145	00		6767
6-2-82		21:30	150	00		6796
		02:30	155	00		6826
		07:30	160	00		6855
		12:30	165	00		6882
		17:30	170	00		6908



KUYKENDALL
Bottom Hole Pressure Service Company
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STATIC-FLOWING-B. H. PRESSURES

COMPANY H.N.G. Cil CO. Well & No. Bell Lake 2 State No. 1
FIELD Vaca Draw Date 5-26/6-7-82 Instrument No. 33118

DATE	STATUS	SERV. TIME	ELAPSED TIME		D. W. T. TP	BHP PSIG @ 15,308
			HRS.	MIN		
6-2-82		22:30	175	00		6935
6-3-82		03:30	180	00		6960
		08:30	185	00		6982
		13:30	190	00		7003
		18:30	195	00		7026
		23:30	200	00		7047
6-4-82		04:30	205	00		7066
		09:30	210	00		7085
		14:30	215	00		7104
		19:30	220	00		7123
6-5-82		00:30	225	00		7141
		05:30	230	00		7158
		10:30	235	00		7176
		15:30	240	00		7193
		20:30	245	00		7210
6-6-82		01:30	250	00		7227
		06:30	255	00		7243
		11:30	260	00		7259
		16:30	265	00		7273
		21:30	270	00		7287
6-7-82		02:30	275	00		7301
		07:30	280	00		7314
		15:30	288	00	5601	7332



KUYKENDALL
Bottom Hole Pressure Service Company
P.O. Box 11296 / A/C 915-337-5241 / Odessa, Texas 79760

BOTTOM HOLE PRESSURE REPORT

Operator H.N.G. Oil Co. Lease Bell Lake 2 State Well No. 1
Field Vaca Draw Reservoir Morrow Datum 15,308 M.P.
Test Date 6-7-82 Well Status Shut In Hours Shut In 288
Tubing 2 7/8 Depth _____ End _____ Packer 13,054 S. N. _____
Casing 4 1/2 15.1# Depth _____ Perf. 15,157 - 15,458 Total Depth 15,809

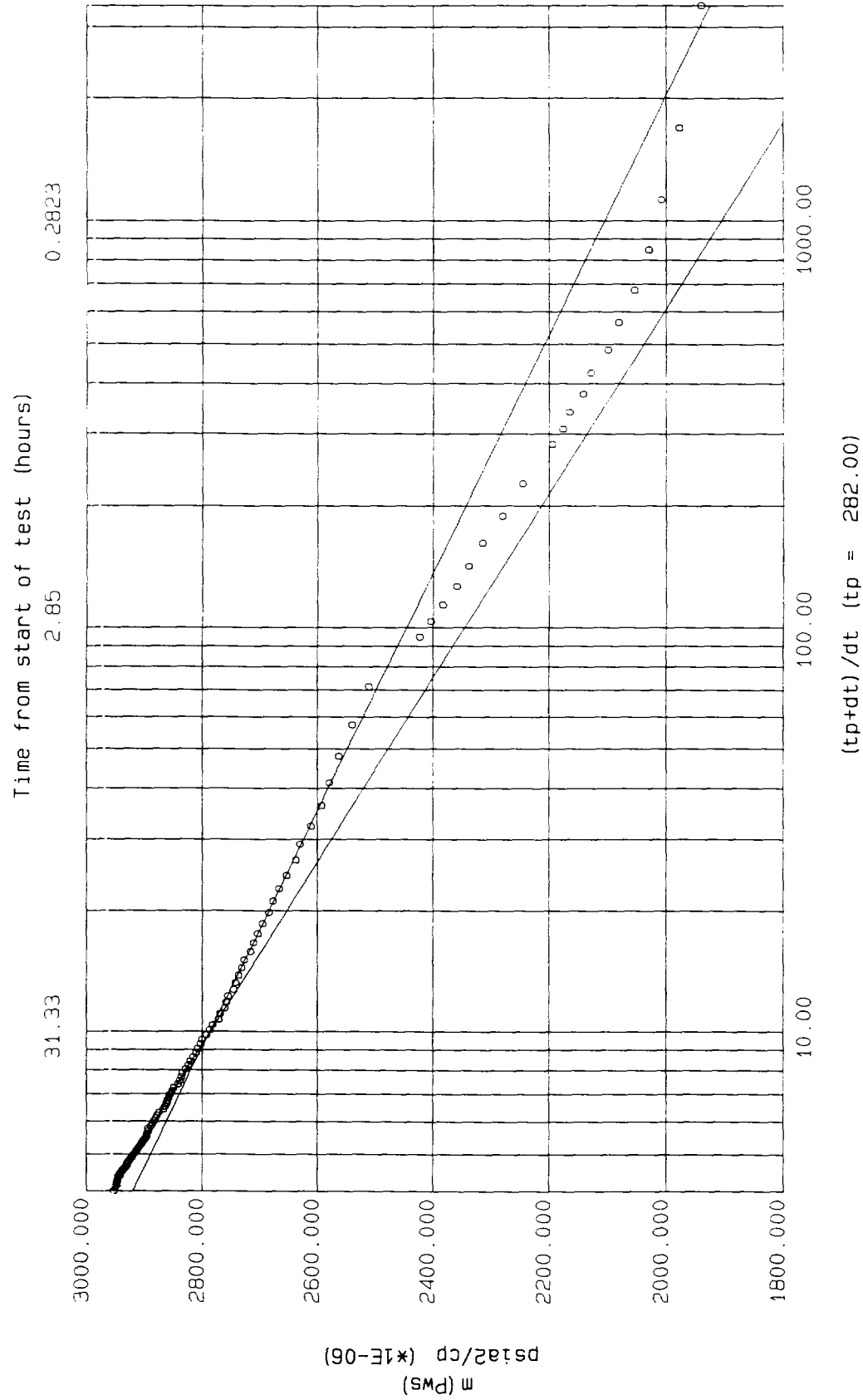
	Depth	Press. Lbs/Sq. In.	Δ Press.	Gradient Lbs/Ft.
Tubing Press. 5601	-0-	5601		
Casing Press.	2000	5839	238	.119
Top of Fluid.	4000	6071	232	.116
Top of Water.	6000	6312	241	.121
Temp. @ °F.	8000	6538	226	.113
Elev. KB. Gl.	10000	6768	230	.115
Last Test Date.	12000	6988	220	.110
Press. Last Test.	14000	7202	214	.107
Change. Per Day.	15100	7311	109	.099
Inst. No. 33118 Cal. 5-82	15150	7316	5	.100
Tested By. Pyle	15200	7321	5	.100
Calcu. By. Spruell	15250	7326	5	.100
Prod. Index. Bbls/day/lb.	15308	7332	6	.103
Drop.				
Cumulative prod.				
Remarks:				

PANSYSTEM V1.8 (C) EPS 1991.

BELL LAKE 2 STATE - HORNER

Line 1 Line 2

File.....	AMAND GAS	Location.....	LEA COUNTY, NEW MEXICO	Slope.....	-340.601	-439.812
Company.....	HNG	Date.....	4/23/81 - 4/27/81	Intercept..	3127.577	3225.567
Well.....	BELL LAKE 2 STATE	Test.....	BULLOUP	Permeability..	0.0611	0.0473
Field.....	VACA DRAW (MORROW)	Instrument.....	AMERADA	Skin.....	-2.398	-2.962

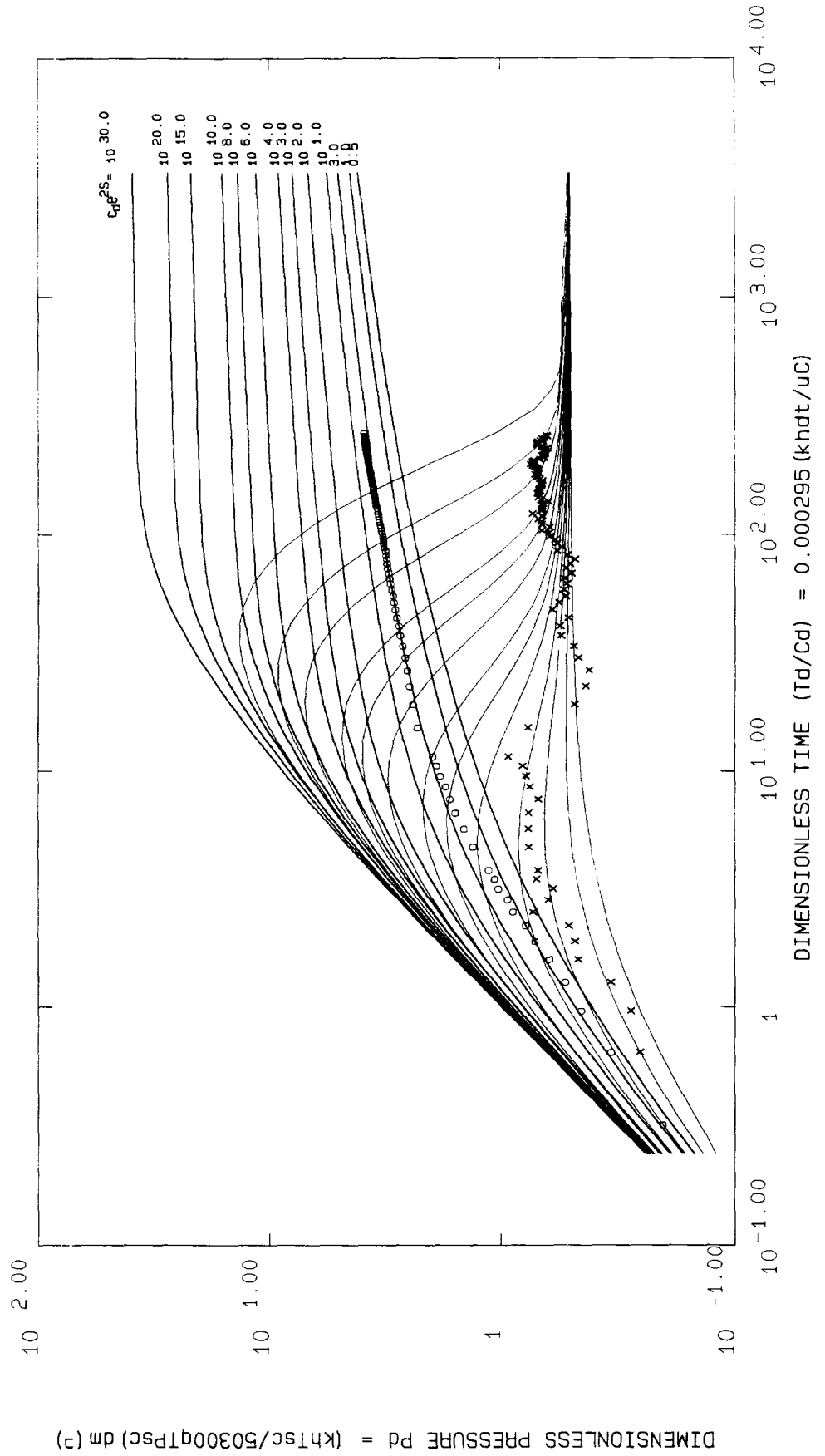


PANSYSTEM V1.8 (C) EPS 1991.

BELL LAKE 2 STATE - HOMOGENEOUS RESERVOIR

File.....	AMAND.GAS	Location.....	LEA COUNTY, NEW MEXICO	Pd(match).....	0.0365	dp(match).....	10.000
Company.....	HNG	Date.....	4/23/81 - 4/27/81	Id(match).....	3.847	dt(match).....	1.000
Well.....	BELL LAKE 2 STATE	Test.....	BULLOUP	Permeability.....	0.0660	dp(skin).....	1425.816
Field.....	VACA DRAW (MORROW)	Instrument.....	AMERADA	Skin.....	-2.190	C(Storage).....	6.213E-03

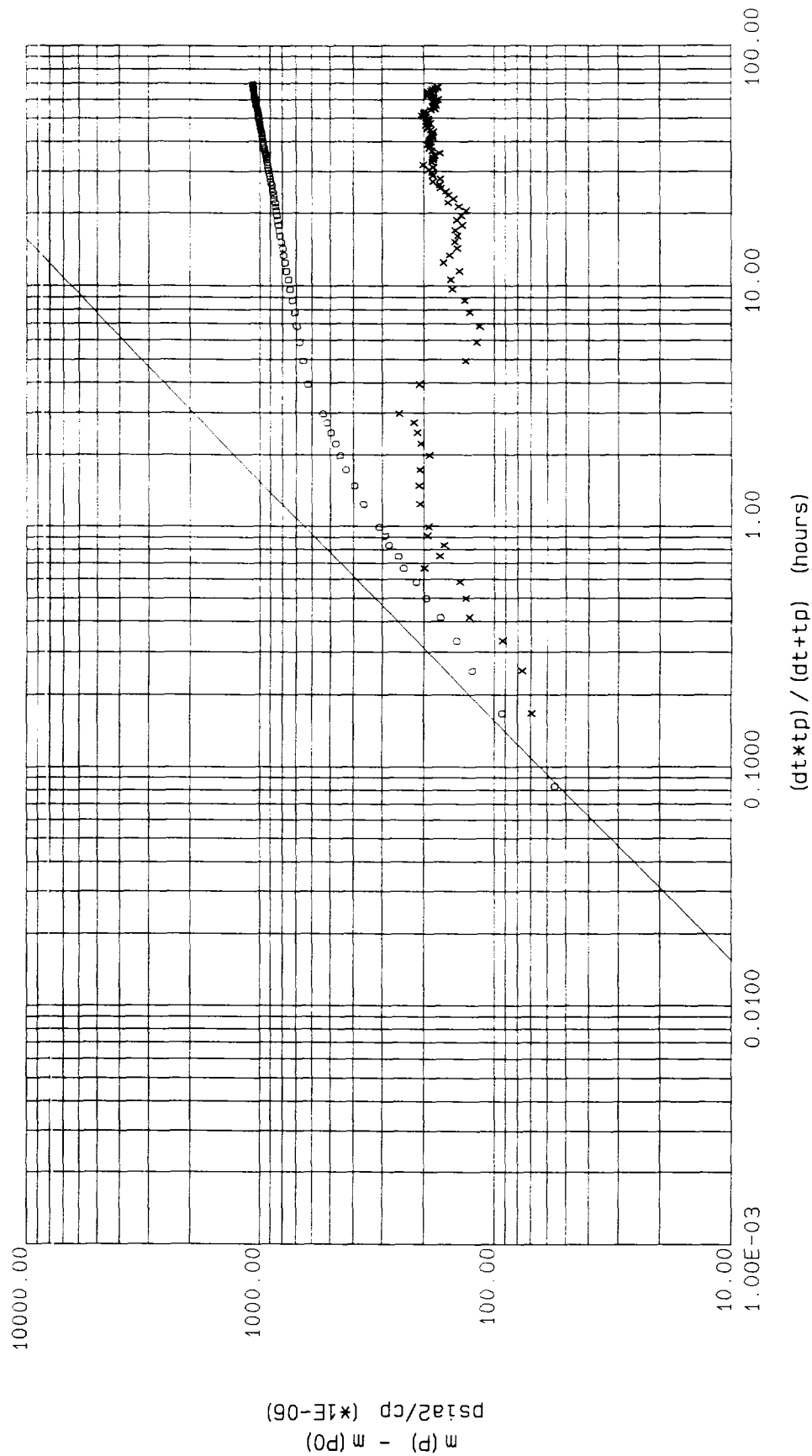
Data plotted using Real Elapsed Time and m(p)



PANSYSTEM V1.8 (C) EPS 1991.

BELL LAKE 2 STATE - LOG-LOG

File.....	AMAND GAS	Location.....	LEA COUNTY, NEW MEXICO	Slope.....	1.000
Company.....	ING	Date.....	4/23/81 - 4/27/81	Intercept.....	2.809
Well.....	BELL LAKE 2 STATE	Test.....	BUILDUP	Wellbore Vol.: 184.471	
Field.....	VACA DRAW (MORROW)	Instrument.....	AMERADIA	Storage coef.: 9.913E-03	



PANSYSTEM ANALYSIS PROGRAM

Test type: CRB

Date: 22/11/91 Time: 15:41

[illegible]

TEST PARAMETERS

Test type - Constant rate buildup

Gas flow rate at surface (Q).....	0.6803	MMscf/day
Pressure prior to shut-in (p(dt=0))....	6168.0000	psia
Time when dt=0.....	0.0000	hr
Equivalent production time (Tp).....	282.0000	hr

E.P.S. Ltd.

PANSYSTEM ANALYSIS PROGRAM

File: AMAND.GAS ,AMAND.PRO

Test type: CRB

Date: 22/11/91 Time: 15:41

RESERVOIR CONSTANTS

Formation thickness (h).....:	36.000 ft
Average formation porosity (0).....:	0.1100
Well radius (rw).....:	0.3300 ft

GAS COMPOSITION Mol percent (Optional)

Nitrogen...:	.255	CO2.....:	.884	H2S.....:	.000	Methane...:	.000
Ethane....:	.000	Propane...:	.000	Iso-Butane:	.000	n-Butane...:	.000
IsoPentane:	.000	n-Pentane..:	.000	Hexanes...:	.000	C 7 +.....:	.000
							C7+ mol wt:100.198

RESERVOIR VARIABLES

Reservoir pressure.....:	8700.000	psia
Temperature (T).....:	213.000	deg F
Water saturation (Sw).....:	0.1800	
Water compressibility (Cw).....:	2.766E-06	psi-1
Formation compressibility (Cf).....:	4.674E-06	psi-1
Gas gravity.....:	0.6000	sp grav
Initial gas viscosity (ui).....:	0.0320	cp
Initial z-factor (zi).....:	1.294	
Gas compressibility (Cg).....:	5.374E-05	psi-1
Initial system compressibility (Ct).....:	4.924E-05	psi-1

E.P.S. Ltd.

PANSYSTEM ANALYSIS PROGRAM

File: BELL2A.GAS ,BELL2A.PRO

Test type: CRB

Date: 22/11/91 Time: 16:38

Data Point	Time Time	Pressure psia	m(p) psia2/cp (*1E-06)
1.	0.0000	6168.0000	1884.7734
2.	0.0833	6299.0000	1940.4847
3.	0.1667	6386.0000	1977.5013
4.	0.2500	6461.0000	2009.4172
5.	0.3333	6511.0000	2030.6951
6.	0.4167	6567.0000	2054.5266
7.	0.5000	6629.0000	2080.9096
8.	0.5833	6673.0000	2099.6315
9.	0.6667	6741.0000	2128.5659
10.	0.7500	6773.0000	2142.1821
11.	0.8333	6829.0000	2166.0156
12.	0.9167	6854.0000	2176.6577
13.	1.0000	6897.0000	2194.9619
14.	1.2500	7016.0000	2245.6315
15.	1.5000	7097.0000	2280.1245
16.	1.7500	7178.0000	2314.6184
17.	2.0000	7234.0000	2338.4638
18.	2.2500	7283.0000	2359.3273
19.	2.5000	7340.0000	2383.5935
20.	2.7500	7389.0000	2404.4523
21.	3.0000	7433.0000	2423.1777
22.	4.0000	7639.0000	2510.8017
23.	5.0000	7707.0000	2539.7065
24.	6.0000	7763.0000	2563.4965
25.	7.0000	7801.0000	2579.6396
26.	8.0000	7832.0000	2592.7990
27.	9.0000	7875.0000	2611.0524
28.	10.0000	7919.0000	2629.7236
29.	11.0000	7938.0000	2637.7824
30.	12.0000	7975.0000	2653.4755
31.	13.0000	8006.0000	2666.6215
32.	14.0000	8031.0000	2677.2153
33.	15.0000	8049.0000	2684.8427
34.	16.0000	8074.0000	2695.4365
35.	17.0000	8093.0000	2703.4877
36.	18.0000	8111.0000	2711.1105
37.	19.0000	8123.0000	2716.1904
38.	20.0000	8148.0000	2726.7734
39.	21.0000	8160.0000	2731.8532
40.	22.0000	8173.0000	2737.3562
41.	23.0000	8185.0000	2742.4360
42.	24.0000	8191.0000	2744.9760
43.	25.0000	8216.0000	2755.5517
44.	26.0000	8222.0000	2758.0891
45.	27.0000	8228.0000	2760.6262
46.	28.0000	8247.0000	2768.6608
47.	29.0000	8253.0000	2771.1979
48.	30.0000	8278.0000	2781.7697
49.	31.0000	8290.0000	2786.8442
50.	32.0000	8302.0000	2791.9177

E.P.S. Ltd.

PANSYSTEM ANALYSIS PROGRAM

File: BELL2A.GAS ,BELL2A.PRO

Test type: CRB

Date: 22/11/91 Time: 16:38

Data Point	Time Time	Pressure psia	m(p) psia2/cp (*1E-06)
51.	33.0000	8321.0000	2799.9428
52.	34.0000	8327.0000	2802.4770
53.	35.0000	8340.0000	2807.9677
54.	36.0000	8346.0000	2810.5019
55.	37.0000	8358.0000	2815.5705
56.	38.0000	8370.0000	2820.6389
57.	39.0000	8377.0000	2823.5954
58.	40.0000	8389.0000	2828.6640
59.	41.0000	8401.0000	2833.7319
60.	42.0000	8407.0000	2836.2629
61.	43.0000	8414.0000	2839.2160
62.	44.0000	8420.0000	2841.7470
63.	45.0000	8438.0000	2849.3403
64.	46.0000	8444.0000	2851.8715
65.	47.0000	8451.0000	2854.8244
66.	48.0000	8457.0000	2857.3554
67.	49.0000	8463.0000	2859.8867
68.	50.0000	8469.0000	2862.4177
69.	51.0000	8475.0000	2864.9487
70.	52.0000	8481.0000	2867.4799
71.	53.0000	8500.0000	2875.4951
72.	54.0000	8506.0000	2878.0229
73.	55.0000	8512.0000	2880.5507
74.	56.0000	8519.0000	2883.4997
75.	57.0000	8525.0000	2886.0275
76.	58.0000	8531.0000	2888.5554
77.	59.0000	8543.0000	2893.6110
78.	60.0000	8543.0000	2893.6110
79.	61.0000	8549.0000	2896.1386
80.	62.0000	8549.0000	2896.1386
81.	63.0000	8556.0000	2899.0878
82.	64.0000	8562.0000	2901.6157
83.	65.0000	8568.0000	2904.1435
84.	66.0000	8574.0000	2906.6711
85.	67.0000	8580.0000	2909.1989
86.	68.0000	8586.0000	2911.7268
87.	69.0000	8593.0000	2914.6760
88.	70.0000	8599.0000	2917.2036
89.	71.0000	8605.0000	2919.7287
90.	72.0000	8611.0000	2922.2531
91.	73.0000	8617.0000	2924.7775
92.	74.0000	8623.0000	2927.3020
93.	75.0000	8630.0000	2930.2473
94.	76.0000	8630.0000	2930.2473
95.	77.0000	8636.0000	2932.7717
96.	78.0000	8642.0000	2935.2961
97.	79.0000	8648.0000	2937.8205
98.	80.0000	8654.0000	2940.3449
99.	81.0000	8660.0000	2942.8693
100.	82.0000	8660.0000	2942.8693

E.P.S. Ltd.

PANSYSTEM ANALYSIS PROGRAM

File: BELL2A.GAS ,BELL2A.PRO

Test type: CRB

Date: 22/11/91 Time: 16:38

Data Point	Time Time	Pressure psia	m(p) psia2/cp (*1E-06)
101.	83.0000	8667.0000	2945.8144
102.	84.0000	8667.0000	2945.8144
103.	85.0000	8667.0000	2945.8144
104.	86.0000	8673.0000	2948.3391
105.	87.0000	8673.0000	2948.3391
106.	88.0000	8673.0000	2948.3391
107.	89.0000	8679.0000	2950.8635
108.	92.0000	8685.0000	2953.3879

E.P.S. Ltd.

PANSYSTEM ANALYSIS PROGRAM

File: AMAND.GAS ,AMAND.PRO

Test type: CRB

Date: 22/11/91 Time: 15:45

RESULTS FROM HORNER ANALYSIS
using Pseudo-pressure and Real time

Second Line :

Intercept.....:	3225.567
Slope.....:	-439.812
Start of line.....:(	0.7743 , 2886.028)
End of line.....:(	0.6822 , 2927.302)
Coefficient of determination....:	0.9877
Number of points.....:	18

m(p) at dt = 1 hr.....:	2147.437	psia2/cp (*1E-06)
Extrapolated m(p).....:	3225.567	psia2/cp (*1E-06)
Permeability-thickness (kh).....:	1.703	md.ft
Permeability (k).....:	0.0473	md
Total skin factor (s).....:	-2.962	
dP skin (constant rate).....:	-2762.970	psi
Radius of investigation.....:	145.320	ft
Extrapolated pressure.....:	9335.470	psia
Pressure at dt = 1 hour.....:	6785.350	psia
Flow efficiency.....:	1.844	

JARREL SERVICES, INC.

POST OFFICE BOX 1854

PHONE 805 393-5396

HOBBS, NEW MEXICO 88240

COMPANY: HNG Oil Company

WELL: Bell Lake Federal 2, No. 1

FIELD: Undesignated - Morrow

CHRONOLOGICAL PRESSURE DATA

DATE	STATUS OF WELL	TIME	ELAPSED TIME		SURFACE PRESSURE		BHP @ (-11954) 15419' PSIG
			HRS.	MIN.	TBG	CSG	
1981							
4/23	Flowing on 4/64" Choke. Run Flowing Gradient w/ Tandem Bombs & hung Bomb @ 15419'	3:45 PM	-	-	4283	PKR	6168
	Shut in	4:45	1	00	4283	-	6168
	"	4:50	0	05	-	-	6299
	"	4:55	0	10	-	-	6386
	"	5:00	0	15	-	-	6461
	"	5:05	0	20	-	-	6511
	"	5:10	0	25	-	-	6567
	"	5:15	0	30	-	-	6629
	"	5:20	0	35	-	-	6673
	"	5:25	0	40	-	-	6741
	"	5:30	0	45	-	-	6773
	"	5:35	0	50	-	-	6829
	"	5:40	0	55	-	-	6854
	"	5:45	1	00	-	-	6897
	"	6:00	1	15	-	-	7016
	"	6:15	1	30	-	-	7097
	"	6:30	1	45	-	-	7178
	"	6:45	2	00	-	-	7234
	"	7:00	2	15	-	-	7283
	"	7:15	2	30	-	-	7340
	"	7:30	2	45	-	-	7389
	"	7:45	3	00	-	-	7433
	"	8:45	4	00	-	-	7639
	"	9:45	5	00	-	-	7707
	"	10:45	6	00	-	-	7763
	"	11:45	7	00	-	-	7801
4/24	"	12:45 AM	8	00	-	-	7832
	"	1:45	9	00	-	-	7875
	"	2:45	10	00	-	-	7919
	"	3:45	11	00	-	-	7938
	"	4:45	12	00	-	-	7975
	"	5:45	13	00	-	-	8006
	"	6:45	14	00	-	-	8031
	"	7:45	15	00	-	-	8049
	"	8:45	16	00	-	-	8074
	"	9:45	17	00	-	-	8093
	"	10:45	18	00	-	-	8111
	"	11:45	19	00	-	-	8123
	"	12:45 PM	20	00	-	-	8148
	"	1:45	21	00	-	-	8160
	"	2:45	22	00	-	-	8173
	"	3:45	23	00	-	-	8185

Total 7650 MFR produced

Last note 4283 FPR for 680 MFRD

for 282 MFR

DATE	STATUS OF WELL	TIME	ELAPSED TIME		SURFACE PRESSURE		BHP @ (-11954) 15419' PSIG
			HRS.	MIN.	TBG	CSG	
4/25	Shut in	4:45	24	00	- 12	-	8191 8205
	"	5:45	25	00	-	-	8216
	"	6:45	26	00	-	-	8222
	"	7:45	27	00	-	-	8228
	"	8:45	28	00	- 11.1	-	8247 8201
	"	9:45	29	00	-	-	8253
	"	10:45	30	00	-	-	8278
	"	11:45	31	00	-	-	8290
	"	12:45 AM	32	00	- 2.9	-	8302 8316
	"	1:45	33	00	-	-	8321
	"	2:45	34	00	-	-	8327
	"	3:45	35	00	-	-	8340
	"	4:45	36	00	- 6.6	-	8346 8260
	"	5:45	37	00	-	-	8358
	"	6:45	38	00	-	-	8370
	"	7:45	39	00	-	-	8377
	"	8:45	40	00	- 1.0	-	8389 8403
	"	9:45	41	00	-	-	8401
	"	10:45	42	00	-	-	8407
	"	11:45	43	00	-	-	8414
	"	12:45 PM	44	00	- 7.9	-	8420 8434
	"	1:45	45	00	-	-	8438
	"	2:45	46	00	-	-	8444
	"	3:45	47	00	-	-	8451
	"	4:45	48	00	- 2.1	-	8457 8471
4/26	"	5:45	49	00	-	-	8463
	"	6:45	50	00	-	-	8469
	"	7:45	51	00	-	-	8475
	"	8:45	52	00	-	-	8481 8495
	"	9:45	53	00	-	-	8500
	"	10:45	54	00	-	-	8506
	"	11:45	55	00	-	-	8512
	"	12:45 AM	56	00	- 6.0	-	8519 8533
	"	1:45	57	00	-	-	8525
	"	2:45	58	00	-	-	8531
	"	3:45	59	00	-	-	8543
	"	4:45	60	00	- 1.1	-	8543 8557
	"	5:45	61	00	-	-	8549
	"	6:45	62	00	-	-	8549
	"	7:45	63	00	-	-	8556
	"	8:45	64	00	- 5.9	-	8562 8576
	"	9:45	65	00	-	-	8568
	"	10:45	66	00	-	-	8574
	"	11:45	67	00	-	-	8580
	"	12:45 PM	68	00	- 5.6	-	8586 8600
	"	1:45	69	00	-	-	8593
	"	2:45	70	00	-	-	8599
	"	3:45	71	00	-	-	8605
	"	4:45	72	00	- 1.0	-	8611 8625
	"	5:45	73	00	-	-	8617
	"	6:45	74	00	-	-	8623
	"	7:45	75	00	-	-	8630
	"	8:45	76	00	- 1.0	-	8630 8644
	"	9:45	77	00	-	-	8636
	"	10:45	78	00	- 1.6	-	8642 8656

WELL: Bell Lake Fe al 2, No. 1
 PAGE: 3

DATE	STATUS OF WELL	TIME	ELASPED TIME		SURFACE PRESSURE		BHP @ (-11954) 15419' PSIG
			HRS.	MIN.	TBG	CSG	
4/27	Shut in	11:45	79	00	- 4.63	-	8648 8662
	"	12:45 AM	80	00	-	-	8654
	"	1:45	81	00	- 4.76	-	8660 8674
	"	2:45	82	00	- 4.73	-	8660 8677
	"	3:45	83	00	-	-	8667
	"	4:45	84	00	- 4.85	-	8667 8681
	"	5:45	85	00	-	-	8667
	"	6:45	86	00	- 4.76	-	8673 8687
	"	7:45	87	00	-	-	8673
	"	8:45	88	00	- 4.70	-	8673 8687
	Pulled Bombs	9:45	89	00	- 4.77	-	8679 8693
	Run Static Gradient	12:45	92	00	6766 4.71	-	8685 8699

Well
File

JARREL SERVICES, I.C.

POST OFFICE BOX 1854

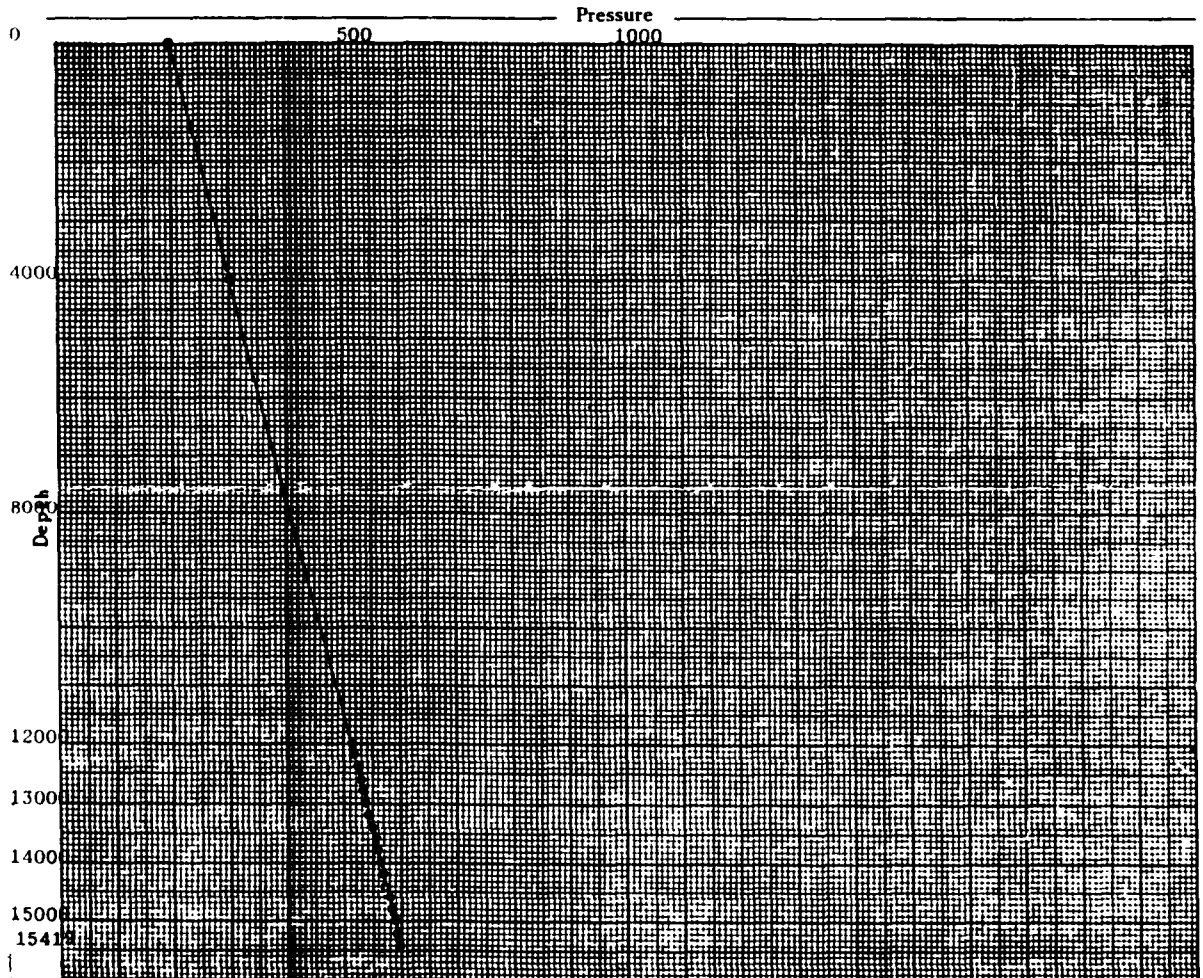
PHONES 505 383-5386 - 383-8274

HOBBS, NEW MEXICO 88240

BOTTOM HOLE PRESSURE RECORD

OPERATOR HNG Oil Company
FIELD Undesignated
FORMATION Morrow
LEASE Bell Lake Federal 2 WELL #1
COUNTY Lea STATE New Mexico
DATE 4/9/81 TIME 8:00 PM
Status Flowing
Test Depth 15419'
Time S. I. - Last test date -
Tub Pres. 1998 190A BHP last test -
Cas. Pres. PKR BHP change -
Elev. 3465' G.L. Fluid top Flowing
Datum (-11954)**Water top -
Temp. @ 194 F Run by JSI #24
Cal. No. A21106N Chart No. 1

Depth Pressure Gradient



JARREL SERVICES, INC.

POST OFFICE BOX 1654

PHONE 505 393-5396

HOBBS, NEW MEXICO 88240

BOTTOM HOLE PRESSURE RECORD

DEPTH	PRESSURE	GRADIENT
0	199	-
4000	302	.026
8000	406	.026
12000	514	.027
12200	519	.025
12400	525	.030
12600	530	.025
12800	534	.020
13000	539	.025
13200	544	.025
13400	550	.030
13600	555	.025
13800	559	.020
14000	564	.025
14200	569	.025
14400	573	.020
14600	578	.025
14800	584	.030
15000	589	.025
15200	594	.025
15419 (-11954)	598 **	.018

** MIDPOINT OF CASING PERFORATIONS

OIL CONSERVATION DIVISION

P. O. BOX 2088

SANTA FE, NEW MEXICO 87501

Form C-103
Revised 10-1-78

NO. OF COPIES RECEIVED	
DISTRIBUTION	
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FILE	
U.S.O.S.	
LAND OFFICE	
OPERATOR	

5a. Indicate Type of Lease	
State ☒	Fee ☐
5. State Oil & Gas Lease No.	
L-5114	

SUNDRY NOTICES AND REPORTS ON WELLS
(DO NOT USE THIS FORM FOR PROPOSALS TO DRILL OR TO DEEPEN OR PLUG BACK TO A DIFFERENT RESERVOIR.
 USE "APPLICATION FOR PERMIT -" (FORM C-101) FOR SUCH PROPOSALS.)

1. ☐ OIL WELL ☒ GAS WELL ☐ OTHER-		7. Unit Agreement Name
2. Name of Operator HNG OIL COMPANY		8. Farm or Lease Name Bell Lake 2 State
3. Address of Operator P. O. Box 2267, Midland, Texas 79702		9. Well No. 1
4. Location of Well UNIT LETTER <u>H</u> <u>1980</u> FEET FROM THE <u>north</u> LINE AND <u>660</u> FEET FROM THE <u>east</u> LINE, SECTION <u>2</u> TOWNSHIP <u>25S</u> RANGE <u>33E</u> NMPM.		10. Field and Pool, or Wildcat Vaca Draw /Morrow/
11. Elevation (Show whether DF, RT, GR, etc.) 3465' GR		12. County Lea

16. Check Appropriate Box To Indicate Nature of Notice, Report or Other Data
 NOTICE OF INTENTION TO: SUBSEQUENT REPORT OF: 8/24/84

PERFORM REMEDIAL WORK ☐	PLUS AND ABANDON ☐	REMEDIAL WORK ☐	ALTERING CASING ☐
TEMPORARILY ABANDON ☐	CHANGE PLANS ☐	COMMENCE DRILLING OPNS. ☐	PLUS AND ABANDONMENT ☐
PULL OR ALTER CASING ☐	OTHER ☐	CASING TEST AND CEMENT JOBS ☐	OTHER ☒ Plugged back to Upper Morrow

17. Describe Proposed or Completed Operations (Clearly state all pertinent details, and give pertinent dates, including estimated date of starting any proposed work) SEE RULE 1703.

8/28/84 - Set Otis WB pkr w/model R profile nipple (1.710" ID) with Otis PR plug in place at 15,067'. TIW Seal assy on 2-7/8" prod. tubing, set at 13,054 feet.

8/29/84 - Perforate the Morrow 14,819' to 14,892' (24 holes .26" dia).

9/5/84 - PBDT 15,620'. Otis wireline packer with plug at 15,000'. Acidized perfs with 3500 gals 7-1/2% Mor Flo BC acid.

9/6/84 - Open to sales line w/600 Mcf/day. SITP 6000 psi.

9/12/84 - 24 hrs on sales 369 Mcf gas, 6 BO, 27 BW, 1150 FTP, 2850 CP.

I hereby certify that the information above is true and complete to the best of my knowledge and belief.

SIGNED Betty Seldon TITLE Regulatory Analyst DATE 9/14/84

APPROVED BY _____ TITLE _____ DATE _____

CONDITIONS OF APPROVAL, IF ANY:

BELL LAKE "2" STATE #1 (WILDCAT ROW)
AFE NO. 2514 WI .06757291
Lea County, New Mexico

4-7-81 24 hrs flowing to test; FTP 1500 psi, 12/64" Choke, 1.0 MMCF, 4-5 BPPH, trace oil.

4-8-81 5 hrs. flow on 12/64" chk; 1500 FTP 1.0 MMCFPD gas rate; 4-5 BPPH; 3 hrs. SI; SITP 3825 psi; 2 hrs. flow on 8/64" chk; FTP 3450 psi; 750 MCFPD gas; 3 BPPH; 4 hrs. SI for equipment repair SITP 5200 psi; 10 hrs. flow on 4/64" to 6/64" chk; FTP to 3875 psi; 740 MCFPD gas; no fluid.

4-9-81 3 hrs. flow on 6/64" chk; 3450 FTP; 750 MCFPD gas rate; no fluid; 6 hrs. flow on 11/64" chk; FTP decr to 1550 psi; rate 2.0 MMCFPD down to 740 MCFPD, 3-4 BPPH; 1 hr. flow on 18/64" chk; FTP 1100 psi; 2.4 MMCFPD; 6 BPPH; 14 hrs. continue to open well to 48/64" chk; press decr to 225 psi rate 1.1 MMCFPD; water 0-2 BPPH; stable for last 10 hrs.

4-10-81 24 hrs. flow on 48/64"; 200 psi FTP; gas rate 1.05 MMCFPD to 900 MCFPD this am; rec 5 BF; in 24 hrs w/tr oil; run static pressure survey with well flowing.

4-11-81 5 hrs. flow to test 48/46" chk; FTP 220 psi; rec 1 MMCFPD; no fluid; 7 hrs. RU Jarrel Wireline attempt to set collar stop 12,850-12,950'; would not set; attempt to run tbg stop; stopped @ 1775'; lost tool in hole; rec all equipment; RD Wireline; 1 hr. install Cameron BPV in hanger; release rig 8:00 pm on 4-10-81.

BELL LAKE "2" STATE #1 (WILDCAT MORROW)
AFE NO. 2514 WI .06757291
Lea County, New Mexico

4-15-81 2 hrs SI; 2 hrs RU & remove Cameron BPV; SITP 6800 psi; 20 hrs SI; SITP 6800 psi; prep to run BHP static survey.

4-16-81 1 hr SI; SITP 6780 (DWT); 7 hrs RU Jerral Services, run BHP bomb on WL w/stops @ 4000', 8000', 12000' @ 200' intervals thereafter to 15,508', TOH w/tools, RD WL company; 16 hrs well SI.

4-17-81 5 hrs. well SI; hook up test equipment SITP 6780 psi; 19 hrs. flow well; rate 1.3 MMCFPD to 780 MCFPD this am; FTP 5150 psi.

4-18-81 24 hrs. flowing to test: FTP 5100 psi; 680 MCF (holding 500 psi back press) tr cond.

4-19-81 24 hrs. flowing to test: 4825 FTP 720 MCF 0 BF (600 psi back pressure).

4-20-81 24 hrs. flowing to test: 4150 FTP 680 MCF 0 BF (850 psi back pressure).

4-21-81 24 hrs. flow to test; FTP 4150 psi; 750 MCFPD no fluid; holding 800 psi back press.

4-22-81 24 hrs flow to test; FTP 4150 psi, 750 MCF gas, no fluid (800 psi back pressure)

4-23-81 5-1/2 hrs. flow to test: FTP 4150 psi; 750 MCF; 0 BF; 5-1/2 hrs. SI; SITP 5850 psi; 13 hrs. flow to test: FTP 4325 psi; 680 MCF; 0 BF.

4-24-81 Ran bottom hole pressure bomb; SI for build-up. DFR.

4-28-81 Pull BHP bombs; DFR wait on results.

5-5-81 1 hrs well SI SITP 7500 psi; 2 hrs flow to pit on 8/64" choke, FTP 5000 psi; 2 hrs RU Halliburton, pump 1000 gals 10% Moro flow acid inhibited for 48 hrs, followed by 74 bbls 1% KCL wtr; Max press 6000 psi @ 2 BPPH, ISDP, 3500 psi; 7 hrs RU NL McCullough; perf Morrow zone w/1 11/16" Omega tbg gun @ 15,159', 164, 166, 168, 170, 174, 176, 184, 186 (9 holes - .025"); 12 hrs SIFN: SITP 2500 psi, continue perf this AM.

5-6-81 9 hrs. finish perf w/McCullough w/1-9/16" Omega II thru tbg gun perfs @ 15,157'; 58'; 59'; 64'; 66'; 68'; 70'; 72'; 74'; 76'; 84'; 86'; 88'; 94'; 96'; 98'; total 16 holes (.25 dia) left in hole 1-1-9/16 btm decentralizer 6-1-9/16" Omega II perforating guns select fire (2-9/16" OD X 7.5' long) @ PBD 15,620'; 2 hrs. open to pit rec 100 BW; w/acid cut fluid last 20 bbls good show of gas; 2 hrs. RU Halliburton; acidize w/5000 gals Morflo BC acid w/40 7/8" ball sin acid; avg press 7140; AIR 4.5 BPM; good ball action; achieve complete ballout to 10,000 psi @ 0 rate; release balls off perfs; continue flush w/1% KCL; ISDP 4600 psi; 15 MSIP 4300 psi; RD Howco; prep to test; BLTR 219; 5 hrs. flow to pit SITP 4250; bled to 100 psi in 15 min; rec 40 BF; press incr to 1300 psi; rec 105 BF; 2 hrs. SI; 4 hrs. flow thru prod unit on 9/64" chk; FTP 2650 psi to 2100 psi; rate 540 MCFPD to 1.15 MMCFPD; rec 8-10 BPPH; total rec 183 BF; BLTR 36.

5-7-81 24 hrs. flow to test; FTP 1400 psi 12/64" chk; rec 3 bbls fluid per hr; flowing 1.15 MMCF per day; rec 164 bbls fluid last 24 hrs; BLTR +288. + 12R

5-8-81 6 hrs. flow to test on 12/64" chk; 960 MCFPD gas rate; 1.5 BPPH; FTP 1150 psi BLTR +137; 18 hrs. SI for BU.

5-9-81 5 hrs. SI; SITP 6200 psi (23 hr buildup); 19 hrs. flow to test; opened @ 1.6 MMCFPD rate; decreasing throughout flow period to 390 MCFPD @ 3900 psi & choke froze off; fluid decreasing from 1/8 BPPH to 0 fluid last 12 hrs; shut well in.

5-10-81 Well SI.

5-11-81

BELL LAKE "2" STATE #1 (WILDCAT MCKINROW)
 AFE NO. 2514 WI .06757291
 Lea County, New Mexico

- 3-24-81 (81) 15,588' (61') lm & sh; 23 hrs. drilled; 1 hr. trip; Bit #20; 6-1/8"; Smith; F-3; BN2607; Jets 3-20; In @ 15,456'; 132'; 57-1/4 hrs; 35,000#; RPM 40; Pump #1; Liner 5"; Stroke 18"; SPM 34; GPM 185; 1900#; MW 12.0; Visc. 39; YP 13; PV 14; Gels 8/12; API WL 7.2; Cake 1/32; PH 10.5; 3% oil; Chlorides 118,000; 16% solids; 1 hr. chain out 5 stnds & TIH; 23 hrs. drlg; Mixed 1 sx XCPolymer with 3 sx caustic.
- 3-25-81 (82) 15,639' (51'); 90% sh & 10% lm; 24 hrs drld; Bit #20; 6 1/8"; Smith; F-3; BN2607; Jets 3-20; In @ 15,456'; 183'; 81 1/4 hrs; 35,000#; RPM 40; Pmp #1; Lnr 5"; Stroke 18"; SPM 38; GPM 185; 1900#; MW 12.0; Visc 38; YP 12; PV 19; Gels 8/12; API WL 5.6; Cake 1/32; PH 11; 3% Oil; Chlo 111,000; 17% Solid; 24 hrs drlg; Mixed 2 sx XC Polymer w/4 sx caustic.
- 3-26-81 (83) 15,691' (52') 90% sh, 10% lm; 23 hrs. drilled; 1/2 hr. trip; 1/2 hr. others; Bit #20; 6-1/8"; Smith; F-3; BN2607; Jets 3-20; In @ 15,456'; Out @ 15,691'; 235'; 96-1/4 hrs; 35,000#; RPM 40; Pump #1; Liner 5"; Stroke 18"; SPM 38; GPM 185; 1900#; MW 12.1+; Visc. 39; YP 13; PV 14; Gels 5/6; API WL 11.4; Cake 1/32; PH 11; 3% oil; Chlorides 105,000; 17% solids; 23 hrs. drlg; 1/2 hr. slug DP; 1/2 hr. TOH; Mixed 1 sx drispac.
- 3-27-81 (84) 15,718' (27') sh & lm; 14 hrs. drilled; 8-1/2 hrs. trip; 1-1/2 hrs. others; Bit #21; 6-1/8"; H; J-33; HN455; Jets 3-20; In @ 15,691'; 27'; 14 hrs; 35,000#; RPM 40; Pump #1; Liner 5"; Stroke 18"; SPM 34; GPM 185; 1900#; MW 12.1; Visc. 38; YP 12; PV 16; Gels 4/5; API WL 9.2; Cake 2/32; PH 10.5; 3% oil; Chlorides 104,000; 17% solids; 1 hr. POH; 1/2 hr. CDL; 3-1/2 hrs. POH; 1/4 hr. change bit & check BHA; 4 hrs. TIH; 3/4 hr. fill DP & wash 40' to btm; 14 hrs. drlg.
- 3-28-81 (85) 15,750' (32') sh & lm; 17 hrs. drilled; 4 hrs. trip; 3 hrs. others; Bit #21; 6-1/8"; H; J-33; HN495; Jets 3-20; In @ 15,691'; Out @ 15,750'; 59'; 31 hrs; 35,000#; RPM 40; Pump #1; Liner 5"; Stroke 18"; SPM 36; GPM 190; 1900#; MW 12.1; Visc. 38; YP 16; PV 16; Gels 3/7; API WL 15.2; Cake 1/32; PH 11.5; 3% oil; Chlorides 110,000; 17% solids; 17 hrs. drlg; 4 hrs. circ; 3 hrs. POH SLN.
- 3-29-81 (86) 15,750'; 7-3/4 hrs. trip; 16-1/4 hrs. others; sh & lm; Bit #21; 6-1/8"; H; J-33; HN495; Jets 3-20; In @ 15,669'; Out @ 15,750'; 59'; 31 hrs; 30,000#; RPM 40; Pump #1; Liner 5"; Stroke 18"; SPM 34; GPM 185; 1900#; MW 12.6; Visc. 40; YP 20; PV 15; Gels 5/7; API WL 8.4; Cake 1/32; PH 10; 3% oil; Chlorides 92,000; 18% solids; 3-1/2 hrs. POH; 1/2 hr. RU Schlumberger; 7 hrs. logging; 1/2 hr. RD loggers; 4-1/4 hrs. TIH; 1/4 hr. PU Kelly & break circ; 1-3/4 hrs. wash 155' to btm; 6-1/4 hrs. circ & cond mud; Mixed 2 sx drispac, 1 sx XC-Polymer with 150 sx densimin; DNC \$993.00; TMC \$141,322.00.
- 3-30-81 (87) Corrected TD 15,810'; 11-3/4 hrs. drilled; 12-1/4 hrs. others; MW 12.6; Visc. 40; YP 20; PV 15; Gels 5/7; API WL 8.4; Cake 1/32; PH 10.0; 3% oil; Chlorides 92,000; 18% solids; Ca 280; 5-1/2 hrs. steel line measured out of hole for log; 1/4 hr. rig up Schlumberger; 11 hrs. logging; 1/2 hr. rig down Schlumberger; 1 hr. rig up csg tools; 3 hrs. ran 4-1/2" liner (62 jts); 3/4 hr. rig down csg tools; 3-1/4 hrs. break circ; ran in hole w/DP; steel line measurement and rabbitt; will circ and cmt today.
- 3-31-81 (88) 15,810'; 10-1/4 hrs. trip; 13-3/4 hrs. others; Bit #22 RR; 6-1/8"; H; J-55; FH737; Jets 3-20; 2-1/2 hrs. TIH w/liner on DP; 1/2 hr. hng liner; 5 hrs. circ & WO pump time tests; 1-1/2 hrs. cmt; 1/2 hr. pull 15 stnds; 6 hrs. circ; 1/4 hr. slug; 4-3/4 hrs. POH; 3 hrs. TIH.
- 4-1-81 (89) 15,810'; 2 1/2 hrs TIH; 3/4 hrs wash to btm; 3/4 hrs circ off gas; 1/2 hrs wash to btm & tag cmt @ 12,799'; 3 1/2 hrs drlg & cmt to top of lines; 3 hrs circ; 4 hrs POH; 1 1/2 hrs LD DP & DC; 3 1/2 hrs PU 2 3/8" work string.
- 4-2-81 (90) 15,810'; 17 hrs. drilled; 5-1/4 hrs. trip; 1-3/4 hrs. others; cmt; Pump #2; Liner 5"; Stroke 16"; SPM 28; GPM 111; 1600#; MW 12.6; Visc. 40; YP 20; PV 15; Gels 5/7; API WL 8.4; Cake 1/32; PH 10.0; 3% oil; Chlorides 92,000; 18% solids; 1 hr. PU 3-5/8" mill & 2-3/8" workstring; 1/4 hr. RD PU machine & power tongs; 2-3/4 hrs. strap in hole w/3-1/2" DP; 1-1/2 hrs. circ; wash thru TOL; 1-1/2 hrs. TIH; 17 hrs. drill cmt from 15,377' to 15,633'.
- 4-3-81 (91) PBTD 15,635'; 24 hrs. others; Pump #2; Liner 5"; Stroke 16"; SPM 111; GPM 27; 1600#; MW 10.0; Visc. 28; PH 7; 1/2 hr. drill cmt to 15,635'; 3 hrs. circ; 1/4 hr. RU Howco; 4-3/4 hrs. displace mud w/104/gal brine & sweep hole; 1/2 hr. pull to 15,490' and spot; 6-1/2 hrs. LD 3-1/2" drill pipe; 1/2 hr. TIH w/ 3-1/2" DP; 1-1/2 hrs. LD DP; 1/2 hr. RU to LD 2-3/8" workstring; 4 hrs. LD workstring; 1-1/2 hrs. change BOP rams to 2-7/8"; 1/2 hr. RU to run 2-7/8" tbg.
- 4-4-81 (92) PBTD 15,635'; 24 hrs. others; MW 10; Visc. 28; PH 10.5; 1/2 hr. change out pipe rams; 1/2 hr. PU 3-3/4" OD TIW seal assembly; 10-3/4 hrs. PU & TIH 2-7/8" 8.70# & 7.90 C-75 production tbg; 1/2 hr. RD PU machine; 3/4 hr. sting into PBR test seals to 1000 psi; 1/2 hr. space out tbg w/25,000# slackoff; 3-1/2 hrs. circ; packed fluid; 1/2 hr. land 2-7/8" tbg; 4-3/4 hrs. ND BOP; NU 2-9/16" 10,000 psi tree; 1/2 hr. test tree to 10,000 psi; 1 hr. RU Schlumberger; prep to perf.
- 4-5-81 (93) PBTD 15,635'; 24 hrs. others; MW 10; 4 hrs. RU Schlumberger; run GR-CCL from 15,612-12,800'; 9 hrs. perforate the Morrow w/1-11/16" Hyperdome thru tbg gun 15,380'; 82'; 84'; 86'; 15,423'; 26'; 32'; 35'; 38'; 41'; 44'; 47'; 52'; 54'; 56'; 58'; total 16 holes (.25 hole) RD Schlumberger; 2 hrs. RU Halliburton break down perfs w/spot acid; pump 20 bbls 2% KCL water; break @ 4600 psi; pump 4.1 BPM @ 5600 psi ISIP 3600; RD Howco; 9 hrs. open to pit; 26/64"chk; rec 100 bbls wtr w/show of gas; est 500 NCFPD @ end of flow.
- 4-6-81 (94) WL 15,612'; 24 hrs. others; MW 10; 2-1/2 hrs. flow to pit on 30/64" chk; FTP 0 to 30 psi; rec no fluid; est 500 NCFPD; 2 hrs. RU Howco; acidize w/3000 gals morflo BC acid w/32 7/8" ball sealers; max press 9000 psi @ ballout; treat @ 8000 psi @ 6 BPM avg press 2300 psi @ 5.6 BPM; flush w/10 bbls 2% KCL

BELL LAKE "2" STATE #1 (WILDCAT MORROW)
FE NO. 2514 WI .6757291
Lea County, New Mexico

- 5-12-81 SITP 6800 psi; 24 hrs open to test increasing choke from 7/64" to 13/64", rate decreasing 1.6 MMCFPD to 1.1 MMCFPD; Last 12 hrs rate stable @ 1.1 MMCFPD and 3 1/2 BFPH, 1300 psi FTP.
- 5-13-81 24 hrs. flowing to test; 1125 psi FTP; 1 BWPH; 1.0 MMCF gas (600 psi back press).
- 5-14-81 24 hrs. flow to test: FTP 1050 psi; 3 BWPH (1% oil); 960 MCF gas.
- 5-15-81 3 hrs. flow to test; FTP 1025 psi on 14/64" chk; 940 MCFPD; 1 BFPH; 1-1/2 hrs. RU Tom Hansen; flow well to test unit; 1/4 hr. SI; RU lubricator SITP 1150; 3 hrs. stabilize flow; run horizontal spinner; temp log 13,000' to 15,500'; 1 hr. RD Tom Hansen; 15-1/2 hrs. SI.
- 5-16-81 24 hrs. SI; DFR.

BELL LAKE "2" STATE #1 (WILDCAT MORROW)
AFE NO. 2514 WI .06757291
Lea County, New Mexico

- 5-20-81 PBDT 15,612'; 2 hrs. RU Halliburton & load tbg w/1000 gals 10% Morflo acid followed by 78 bbl 1% KCL wtr; tbg press 6800 psi; 3800 psi; 8 hrs. RU Schlumberger; perf Morrow zone w/1-9/16" thru tbg gun, Hyperdome II @ 15,157'; 158'; 159'; 164'; 166'; 168'; 170'; 172'; 174'; 176'; 184'; 186'; 188'; 194'; 196'; 198'; (hole size .25" 16 holes) RD Schlumberger; 1 hr. pump 20 bbls 1% KCL water; 2.8 BPM @ 6800 psi; ISDP 5600; RD Halliburton; BLTR 136; 1 hr. flow to pit 24/64" chk; rec 35 BW w/show gas; 12 hrs. flow to test unit 8/64" chk; FTP 3600 psi decreasing to 2000 psi this am; gas rate 1.4 MMCFPD decr to 1.0 MMCFPD this am; rec 130 BLW; BLTR 6 cont testing.
- 5-21-81 PBDT 15,612'; 9 hrs. flow well to pit; 12/64" chk; FTP 2000 1400# gas rate 1 MMCF PD w/2 bbl water per hr; 2 hrs. RU Halliburton acidized perfs w/6000 gals Marflo BC acid w/60 7/8" ball sealers in acid; good ball action; did not achieve ball out averg inj rate 6.3 bbls per min @ 6300#; max press 7100# @ 6.1 bbls per min; flushed w/110 bbls 1% KCL water; LDP 4800# rigged down Halliburton; load recovered 243; 5 hrs. flow to pit; SITP 4100 psi; press decreased to 50 psi & back to 500 psi; rec 110 BF; 3 hrs. SI SITP 2900 psi; 5 hrs. flow thru production unit; gas rate 1.1 MMCFPD to 1.0 MMCFPD; press to 1600 psi; water 6-12 BWPH; total rec 162 BW; BLTR 81.
- 5-22-81 8 hrs. flowing to test: 14/64" chk; FTP 1200 psi; 1.25 MMCFPD; 8 BWPH; 16 hrs. flowing on 12/64" chk; FTP 1450; 1.1 MMCFPD; 8 BWPH; tot rec 192 BW; BLTR +111.
- 5-23-81 24 hrs. flow to test on 12/64" chk; FTP 1450 psi 1.1 MMCFPD 3 BWPH; rec 72 BW; BLTR +183.
- 5-24-81 Flow FTP 1350 psi; 3 BWPH 1.15 MMCFPD.
- 5-25-81 Flow FTP 1300 psi 1-1/2 BWPH; tr oil; 1.1 MMCFPD.
- 5-26-81 4-1/2 hrs. flowing; FTP 1200 psi 1-1/2 BWPH tr oil; 1.1 MMCFPD 19-1/2 hrs. SI.
- 5-27-81 24 hrs SI; SITP 5275 psi; DFR pending further activity.
- 6-1-81 Run 4 pt; SITP 6431'; 1st rate 6228 psi 510 MCF; 2nd rate 5997 psi 790 MCF; 3rd rate 5548 psi 1300 MCF; 4th rate 4955 psi; 1700 MCF; SI well; DFR wait on results.
- 6-18-81 OFFICIAL RRC POTENTIAL TEST dated 5-29-81; flowed 1732 MCFPD; dry gas on 7/64" chk; FTP 4900; AOF 3458 MCFPD; gas grav .6036.

BELL LAKE
AFE NO. 3
Lea County, New Mexico

8-27-84 PBDT 15,260' Morrow 15,159'-15,458'; RU; 4 hrs WSI, Install anchors; 4 hrs MI RU Cox WSU; 16 hrs SIFN; EDWC \$960.

8-28-84 PBDT 15,620'; Morrow 15,159'-15,458'; 4 hrs Install back press valve ND 2-9/16" 10M Tree; NU 7-1/16" 10M BOP; 1-1/2 Hr RU Howco, Load tbg w/ 10# Brine; 2-1/2 hrs Pull out of PBR; Brk Circ circ w/ 10# brine cont 1.5% Baroid Coat 1270; 8 hrs RU Wes Tex Power Tongs, TOH w/prod tbg & seal assy; 8 hrs Redress Seal assy, WO pkr; EDWC \$9,260; ETWC \$10,220.

8-29-84 PBDT 15,000'; 9 hrs RU Apollo Perforators, set Otis WB pkr w/model R profile nipple (1.710" ID) with Otis PR plug in place @ 15,067'; Btm of 2-3/8" 5.95# PH 6 Tail pipe @ 15,076'; 8 hrs TIH w/3-3/4" TIW Seal assy on 2-7/8" prod tbg; 3 hrs Displ tbg w/Nitrogen; 1 hr land tbg w/25,000# salckoff; 3 hrs ND BOP, NU 2-9/16" 10 M Tree; EDWC \$13,940; ETWC \$24,160.

8-30-84 PBDT 15,000'; 1 hr Tst 7-1/16 10M flange to 8000 psi; 7 hrs RU Apollo Perforators, tst lubricator to 5000 psi, perforate the Morrow w/a 1-11/16" Co Winder thru tbg gun @ 14,819'-14,892', 24 holes (.26" Dia), hold 3000 psi on lubricator while perforating; Press incr to 3200 psi after perforating RD Apollo Perforators, opn to pit, 3200 psi to 0 in 5 min, Rec N₂, no gas, no fluid; 16 hrs Opn to pit, show of gas to surf @ 10:00 PM followed by 4 BW; 5' gas flare w/occasional spray of wtr this AM; EDWC \$16,500; ETWC \$40,660.

8-31-84 24 hrs WSI.

9-1-84 SITP 5200; SICP 650; 1/2 hr Opn to pit on opn ck, est 2 MMCFD, no fluid FTP 350, CP 450.

9-2-84 24 hrs WSI, connect to PL, WO acid job, SITP 5900.

9-3-84 SITP 6700.

9-4-84 SITP 7200.

9-5-84 SITP 7100; Blew well to 5900 psi & put thru prod unit @ 2.0 MMCFPD rate; Flowed 3 hrs with press decr to line press (780 psi) @ 0 rate; Prep to acidize.

9-6-84 PBDT 15,620'; Otis WL pkr w/plug @ 15,000'; 4 hrs Well opn to sales; 2 hrs RU Howco, acidize perfs 14,819'-42'; 3500 gal 7-1/2% Mor Flo BC acid flush w/2% KCl wtr w/25 7/8" BS in acid - tbg loaded when 33 bbls pmpd max psi 8600 @ 2.9 bpm; Ave psi 8500 @ 3.5 bpm; 600 psi incr when all balls hit perfs press incr to 8600 @ 2.9 bpm, released balls & continued flush @ 8500 psi @ 4 bpm; ISIP 5600 RD Howco BLTR 238; 16 hrs Flow to pit; FTP to 25 psi on opn chk slowly incr to 95 psi on 40/64" chk CP 2250 to 3000 rec est 238 BW, SI to blind TP; EDWC \$12,007.

9-7-84 SITP 6000 psi, opn well to sales line @ 3:00 PM w/600 MCFPD rate.

9-8-84 Rate decr to 245 MCFPD @ 4500 FTP, opened to 500 MCFPD, decr to 200 MCFPD @ 3500 FTP; Rec 8 BO, 48 BW.

9-9-84 24 hrs Flow to sales 223 MCF, 6 BO, 0 wtr, 3450 FTP, 2750 CP. - 57 hrs

9-10-84 24 hrs Flow to sales 314 MCF, 11 BO, 24 BW, 2650 CP, line press 900 psi.

9-11-84 24 hrs On sales 369 MCF gas, 19 BO, 42 BW, 1500 FTP, 2725 CP.

9-12-84 24 hrs on sales 380 MCF, 0 BO, 21 BW, 1400 FTP, 2800 CP.

9-13-84 24 hrs on sales 369 MCF gas, 6 BO, 27 BW, 1150 FTP, 2850 CP.

9-14-84 24 hrs On sales @ 367 mcf G, 11 BO, 36 BW; 1000 FTP, 2900 CP.

9-15-84 SICP 2950, 24 hrs Flow to sales 367 MCF, 6 BO, 33 BW, FTP 975.

9-16-84 SICP 3000, 24 hrs Flow to sales 358 MCF, 17 BO, 33 BW, 900 FTP.

9-17-84 SICP 3050, 24 hrs Flow to sales 361 MCF, 8 BO, 30 BW, 875 FTP.

9-18-84 SICP 2900; 24 hrs Flow to sales 353 MCF 8 BO, 18 BW FTP 750 psi.

9-19-84 SICP 3000; 24 hrs Flow to sales, 356 MCF; 6 BO; 30 BW, FTP 825; DFR, carry on daily sales rpt. 297 hrs

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- 3-25-81 (82) 15,639' (51'); 90% sh & 10% 1m; 24 hrs drld; Bit #20; 6 1/8"; Smith; F-3; BN2607; Jets 3-20; In @ 15,456'; 183'; 81 1/4 hrs; 35,000#; RPM 40; Pmp #1; Lnr 5"; Stroke 18"; SPM 38; GPM 185; 1900#; MW 12.0; Visc 38; YP 12; PV 19; Gels 8/12; API WL 5.6; Cake 1/32; PH 11; 3% Oil; Chlo 111,000; 17% Solid; 24 hrs drlg; Mixed 2 sx XC Polymer w/4 sx caustic.
- 3-26-81 (83) 15,691' (52') 90% sh, 10% 1m; 23 hrs. drilled; 1/2 hr. trip; 1/2 hr. others; Bit #20; 6-1/8"; Smith; F-3; BN2607; Jets 3-20; In @ 15,456'; Out @ 15,691'; 235'; 96-1/4 hrs; 35,000#; RPM 40; Pump #1; Liner 5"; Stroke 18"; SPM 38; GPM 185; 1900#; MW 12.1+; Visc. 39; YP 13; PV 14; Gels 5/6; API WL 11.4; Cake 1/32; PH 11; 3% oil; Chlorides 105,000; 17% solids; 23 hrs. drlg; 1/2 hr. slug DP; 1/2 hr. TOH; Mixed 1 sx drispac.
- 3-27-81 (84) 15,718' (27') sh & 1m; 14 hrs. drilled; 8-1/2 hrs. trip; 1-1/2 hrs. others; Bit #21; 6-1/8"; H; J-33; HN455; Jets 3-20; In @ 15,691'; 27'; 14 hrs; 35,000#; RPM 40; Pump #1; Liner 5"; Stroke 18"; SPM 34; GPM 185; 1900#; MW 12.1; Visc. 38; YP 12; PV 16; Gels 4/5; API WL 9.2; Cake 2/32; PH 10.5; 3% oil; Chlorides 104,000; 17% solids; 1 hr. POH; 1/2 hr. CDL; 3-1/2 hrs. POH; 1/4 hr. change bit & check BHA; 4 hrs. TIH; 3/4 hr. fill DP & wash 40' to btm; 14 hrs. drlg.
- 3-28-81 (85) 15,750' (32') sh & 1m; 17 hrs. drilled; 4 hrs. trip; 3 hrs. others; Bit #21; 6-1/8"; H; J-33; HN495; Jets 3-20; In @ 15,691'; Out @ 15,750'; 59'; 31 hrs; 35,000#; RPM 40; Pump #1; Liner 5"; Stroke 18"; SPM 36; GPM 190; 1900#; MW 12.1; Visc. 38; YP 16; PV 16; Gels 3/7; API WL 15.2; Cake 1/32; PH 11.5; 3% oil; Chlorides 110,000; 17% solids; 17 hrs. drlg; 4 hrs. circ; 3 hrs. POH SLM.
- 3-29-81 (86) 15,750'; 7-3/4 hrs. trip; 16-1/4 hrs. others; sh & 1m; Bit #21; 6-1/8"; H; J-33; HN495; Jets 3-20; In @ 15,669'; Out @ 15,750'; 59'; 31 hrs; 30,000#; RPM 40; Pump #1; Liner 5"; Stroke 18"; SPM 34; GPM 185; 1900#; MW 12.6; Visc. 40; YP 20; PV 15; Gels 5/7; API WL 8.4; Cake 1/32; PH 10; 3% oil; Chlorides 92,000; 18% solids; 3-1/2 hrs. POH; 1/2 hr. RU Schlumberger; 7 hrs. logging; 1/2 hr. RD loggers; 4-1/4 hrs. TIH; 1/4 hr. PU Kelly & break circ; 1-3/4 hrs. wash 155' to btm; 6-1/4 hrs. circ & cond mud; Mixed 2 sx drispac, 1 sx XC-Polymer with 150 sx densimin; DMC \$993.00; TMC \$141,322.00.
- 3-30-81 (87) Corrected TD 15,810'; 11-3/4 hrs. drilled; 12-1/4 hrs. others; MW 12.6; Visc. 40; YP 20; PV 15; Gels 5/7; API WL 8.4; Cake 1/32; PH 10.0; 3% oil; Chlorides 92,000; 18% solids; Ca 280; 5-1/2 hrs. steel line measured out of hole for log; 1/4 hr. rig up Schlumberger; 11 hrs. logging; 1/2 hr. rig down Schlumberger; 1 hr. rig up csg tools; 3 hrs. ran 4-1/2" liner (62 jts); 3/4 hr. rig down csg tools; 3-1/4 hrs. break circ; ran in hole w/DP; steel line measurement and rabbitt; will circ and cmt today.
- 3-31-81 (88) 15,810'; 10-1/4 hrs. trip; 13-3/4 hrs. others; Bit #22 RR; 6-1/8"; H; J-55; FH737; Jets 3-20; 2-1/2 hrs. TIH w/liner on DP; 1/2 hr. hng liner; 5 hrs. circ & WO pump time tests; 1-1/2 hrs. cmt; 1/2 hr. pull 15 stnds; 6 hrs. circ; 1/4 hr. slug; 4-3/4 hrs. POH; 3 hrs. TIH.
- 4-1-81 (89) 15,810'; 2 1/2 hrs TIH; 3/4 hrs wash to btm; 3/4 hrs circ off gas; 1/2 hrs wash to btm & tag cmt @ 12,799'; 3 1/2 hrs drlg & cmt to top of lines; 3 hrs circ; 4 hrs POH; 1 1/2 hrs LD DP & DC; 3 1/2 hrs PU 2 3/8" work string.
- 4-2-81 (90) 15,810'; 17 hrs. drilled; 5-1/4 hrs. trip; 1-3/4 hrs. others; cmt; Pump #2; Liner 5"; Stroke 16"; SPM 28; GPM 111; 1600#; MW 12.6; Visc. 40; YP 20; PV 15; Gels 5/7; API WL 8.4; Cake 1/32; PH 10.0; 3% oil; Chlorides 92,000; 18% solids; 1 hr. PU 3-5/8" mill & 2-3/8" workstring; 1/4 hr. RD PU machine & power tongs; 2-3/4 hrs. strap in hole w/3-1/2" DP; 1-1/2 hrs. circ; wash thru TOL; 1-1/2 hrs. TIH; 17 hrs. drill cmt from 15,377' to 15,633'.
- 4-3-81 (91) PBTD 15,635'; 24 hrs. others; Pump #2; Liner 5"; Stroke 16"; SPM 111; GPM 27; 1600#; MW 10.0; Visc. 28; PH 7; 1/2 hr. drill cmt to 15,635'; 3 hrs. circ; 1/4 hr. RU Howco; 4-3/4 hrs. displace mud w/10#/gal brine & sweep hole; 1/2 hr. pull to 15,490' and spot; 6-1/2 hrs. LD 3-1/2" drill pipe; 1/2 hr. TIH w/ 3-1/2" DP; 1-1/2 hrs. LD DP; 1/2 hr. RU to LD 2-3/8" workstring; 4 hrs. LD workstring; 1-1/2 hrs. change BOP rams to 2-7/8"; 1/2 hr. RU to run 2-7/8" tbg.
- 4-4-81 (92) PBTD 15,635'; 24 hrs. others; MW 10; Visc. 28; PH 10.5; 1/2 hr. change out pipe rams; 1/2 hr. PU 3-3/4" OD TIW seal assembly; 10-3/4 hrs. PU & TIH 2-7/8" 8.70# & 7.90 C-75 production tbg; 1/2 hr. RD PU machine; 3/4 hr. sting into PBR test seals to 1000 psi; 1/2 hr. space out tbg w/25,000# slackoff; 3-1/2 hrs. circ; packed fluid; 1/2 hr. land 2-7/8" tbg; 4-3/4 hrs. ND BOP; NU 2-9/16" 10,000 psi tree; 1/2 hr. test tree to 10,000 psi; 1 hr. RU Schlumberger; prep to perf.
- 4-5-81 (93) PBTD 15,635'; 24 hrs. others; MW 10; 4 hrs. RU Schlumberger; run CR-CCL from 15,612-12,800'; 9 hrs. perforate the Morrow w/1-11/16" Hyperdome thru tbg gun 15,380'; 82'; 84'; 86'; 15,423'; 26'; 32'; 35'; 38'; 41'; 44'; 47'; 52'; 54'; 56'; 58'; total 16 holes (.25 hole) RD Schlumberger; 2 hrs. RU Halliburton break down perfs w/spot acid; pump 20 bbls 2% KCL water; break @ 4600 psi; pump 4.1 BPM @ 5600 psi ISIP 3600; RD Howco; 9 hrs. open to pit; 26/64"chk; rec 100 bbls wtr w/show of gas; est 500 MCFPD @ end of flow.
- 4-6-81 (94) WL 15,612'; 24 hrs. others; MW 10; 2-1/2 hrs. flow to pit on 30/64" chk; FTP 0 to 30 psi; rec no fluid; est 500 MCFPD; 2 hrs. RU Howco; acidize w/3000 gals morflo BC acid w/32 7/8" ball sealers; max press 9000 psi @ ballout; treat @ 8000 psi @ 6 BPM avg press 2300 psi @ 5.6 BPM; flush w/10 bbls 2% KCL wtr; ISDP 4100 psi; 10 MSIP 3800 psi; BLTR 180; RD Howco; 19-1/2 hrs. SITP 3750 psi; open well on 12/64" chk; press down to 0 psi on 1 hr; gas to surface in 2-1/2 hrs; tbg press increased throughout

BELL LAKE "2" STATE #1 (WILDCAT MORROW)
AFE NO. 2514 WI .06757291
Lea County, New Mexico

4-7-81 24 hrs flowing to test; FTP 1500 psi, 12/64" Choke, 1.0 MMCF, 4-5 BFPH, trace oil.

4-8-81 5 hrs. flow on 12/64" chk; 1500 FTP 1.0 MMCFPD gas rate; 4-5 BWPB; 3 hrs. SI; SITP 3825 psi; 2 hrs. flow on 8/64" chk; FTP 3450 psi; 750 MCFPD gas; 3 BWPB; 4 hrs. SI for equipment repair SITP 5200 psi; 10 hrs. flow on 4/64" to 6/64" chk; FTP to 3875 psi; 740 MCFPD gas; no fluid.

4-9-81 3 hrs. flow on 6/64" chk; 3450 FTP; 750 MCFPD gas rate; no fluid; 6 hrs. flow on 11/64" chk; FTP decr to 1550 psi; rate 2.0 MMCFPD down to 740 MCFPD, 3-4 BWPB; 1 hr. flow on 18/64" chk; FTP 1100 psi; 2.4 MMCFPD; 6 BWPB; 14 hrs. continue to open well to 48/64" chk; press decr to 225 psi rate 1.1 MMCFPD; water 0-2 BPH; stable for last 10 hrs.

4-10-81 24 hrs. flow on 48/64"; 200 psi FTP; gas rate 1.05 MMCFPD to 900 MCFPD this am; rec 5 BF; in 24 hrs w/tr oil; run static pressure survey with well flowing.

4-11-81 5 hrs. flow to test 48/64" chk; FTP 220 psi; rec 1 MMCFPD; no fluid; 7 hrs. RU Jarrel Wireline attempt to set collar stop 12,850-12,950'; would not set; attempt to run tbg stop; stopped @ 1775'; lost tool in hole; rec all equipment; RD Wireline; 1 hr. install Cameron BPV in hanger; release rig 8:00 pm on 4-10-81.

BELL LAKE "2" STATE #1 (WILDCAT MORROW)
AFE NO. 2514 WI .06757291
Lea County, New Mexico

4-15-81 2 hrs SI; 2 hrs RU & remove Cameron BPV; SITP 6800 psi; 20 hrs SI; SITP 6800 psi; prep to run BHP static survey.

4-16-81 1 hr SI; SITP 6780 (DWT); 7 hrs RU Jerral Services, run BHP bomb on WL w/stops @ 4000', 8000', 12000' @ 200' intervals thereafter to 15,508', TOH w/tools, RD WL company; 16 hrs well SI.

4-17-81 5 hrs. well SI; hook up test equipment SITP 6780 psi; 19 hrs. flow well; rate 1.3 MMCFPD to 780 MCFPD this am; FTP 5150 psi.

4-18-81 24 hrs. flowing to test: FTP 5100 psi; 680 MCF (holding 500 psi back press) tr cond.

4-19-81 24 hrs. flowing to test: 4825 FTP 720 MCF 0 BF (600 psi back pressure).

4-20-81 24 hrs. flowing to test: 4150 FTP 680 MCF 0 BF (850 psi back pressure).

4-21-81 24 hrs. flow to test; FTP 4150 psi; 750 MCFPD no fluid; holding 800 psi back press.

4-22-81 24 hrs flow to test; FTP 4150 psi, 750 MCF gas, no fluid (800 psi back pressure)

4-23-81 5-1/2 hrs. flow to test: FTP 4150 psi; 750 MCF; 0 BF; 5-1/2 hrs. SI; SITP 5850 psi; 13 hrs. flow to test: FTP 4325 psi; 680 MCF; 0 BF.

4-24-81 Ran bottom hole pressure bomb; SI for build-up. DFR. *Stab 4150 psi*

4-28-81 Pull BHP bombs; DFR wait on results. *760 psi*

5-5-81 1 hrs well SI SITP 7500 psi; 2 hrs flow to pit on 8/64" choke, FTP 5000 psi; 2 hrs RU Halliburton, pump 1000 gals 10% Moro flow acid inhibited for 48 hrs, followed by 74 bbls 1% KCL wtr; Max press 6000 psi @ 2 BPM, ISDP, 3500 psi; 7 hrs RU NL McCullough; perf Morrow zone w/1 11/16" Omega tbg gun @ 15,159', 164, 166, 168, 170, 174, 176, 184, 186 (9 holes - .025"); 12 hrs SIFN: SITP 2500 psi, continue perf this AM.

5-6-81 9 hrs. finish perf w/McCullough w/1-9/16" Omega II thru tbg gun perfs @ 15,157'; 58'; 59'; 64'; 66'; 68'; 70'; 72'; 74'; 76'; 84'; 86'; 88'; 94'; 96'; 98'; total 16 holes (.25 dia) left in hole 1-1-9/16 btm decentralizer 6-1-9/16" Omega II perforating guns select fire (2-9/16" OD X 7.5' long) @ PBTD 15,620'; 2 hrs. open to pit rec 100 BW; w/acid cut fluid last 20 bbls good show of gas; 2 hrs. RU Halliburton; acidize w/5000 gals Morflo BC acid w/40 7/8" ball sin acid; avg press 7140; AIR 4.5 BPM; good ball action; achieve complete ballout to 10,000 psi @ 0 rate; release balls off perfs; continue flush w/1% KCL; ISDP 4600 psi; 15 MSIP 4300 psi; RD Howco; prep to test; BLTR 219; 5 hrs. flow to pit SITP 4250; bled to 100 psi in 15 min; rec 40 BF; press incr to 1300 psi; rec 105 BF; 2 hrs. SI; 4 hrs. flow thru prod unit on 9/64" chk; FTP 2650 psi to 2100 psi; rate 540 MCFPD to 1.15 MMCFPD; rec 8-10 BFPB; total rec 183 BF; BLTR 36.

5-7-81 24 hrs. flow to test; FTP 1400 psi 12/64" chk; rec 3 bbls fluid per hr; flowing 1.15 MMCF per day; rec 164 bbls fluid last 24 hrs; BLTR +488. +128

5-8-81 6 hrs. flow to test on 12/64" chk; 960 MCFPD gas rate; 1.5 BFPB; FTP 1150 psi BLTR +137; 18 hrs. SI for BU.

5-9-81 5 hrs. SI; SITP 6200 psi (23 hr buildup); 19 hrs. flow to test; opened @ 1.6 MMCFPD rate; decreasing throughout flow period to 390 MCFPD @ 3900 psi & choke froze off; fluid decreasing from 1/8 BPH to 0 fluid last 12 hrs; shut well in.

5-10-81 Well SI.

5-11-81 Well SI.

MULTIPOINT AND ONE POINT BACK PRESSURE TEST FOR GAS WELL

Type Test ☒ Initial ☐ Annual ☐ Special				Test Date 5/29/81	
Company HNG Oil Company				Correction None	
Pool Vaca Draw				Formation Morrow	
Completion Date 5/21/81		Total Depth 15810'		Plug Back TD 15612'	
Casing Size 4 1/2"		WT. 15.1		Elevation 3465' GL	
ID 3.826		Set At 15809'		Perforations From 15157' To 15458'	
Tubing Size 2 7/8"		WT. 7.9		Perforations Open Ended	
ID 2.323		Set At 13054'		From To	
Type Well - Single - Drivenhead - G.C. or G.O. Multiple Single				Packer Set At 13054'	
Producing Thru Tubing		Reservoir Temp. °F 213 # 15304		Mem Annual Temp. °F 60°	
Baro. Press. - P _a 13.2		State New Mexico		County Lea	
L 15304	H -	G _g 0.6036	% CO ₂ 0.884	% N ₂ 0.255	% H ₂ S -
Prover -		Meter Run 6.065		Turns F	

FLOW DATA							TUBING DATA		CASING DATA		Duration of Flow
NO.	Prover Line Size	X	Orifice Size	Press. p.s.i.g.	Diff. h _w	Temp. °F	Press. p.s.i.g. DWT	Temp. °F	Press. p.s.i.g.	Temp. °F	
SI							6431		PACKER		95.25 hrs.
1.	6.065	2/64	1.250	530	5	90	6228	60			1.0 hr
2.	6.065	4/64	1.250	480	13	84	5997	60			1.0 hr
3.	6.065	5.5/64	1.250	520	33	88	5548	60			1.0 hr
4.	6.065	7/64	1.250	490	64	84	4955	60			1.0 hr
5.											

RATE OF FLOW CALCULATIONS							
NO.	Coefficient (24 Hour)	$\sqrt{h_w P_m}$	Pressure P _m	Flow Temp. Factor F _t	Gravity Factor F _g	Super Compress. Factor, F _{sp}	Rate of Flow Q, Mhd
1	7.405	52.12	543.2	0.9723	1.287	1.038	501.31
2	7.405	80.07	493.2	0.9777	1.287	1.035	772.18
3	7.405	132.65	533.2	0.9741	1.287	1.037	1277.01
4	7.405	179.46	503.2	0.9777	1.287	1.036	1732.35
5							

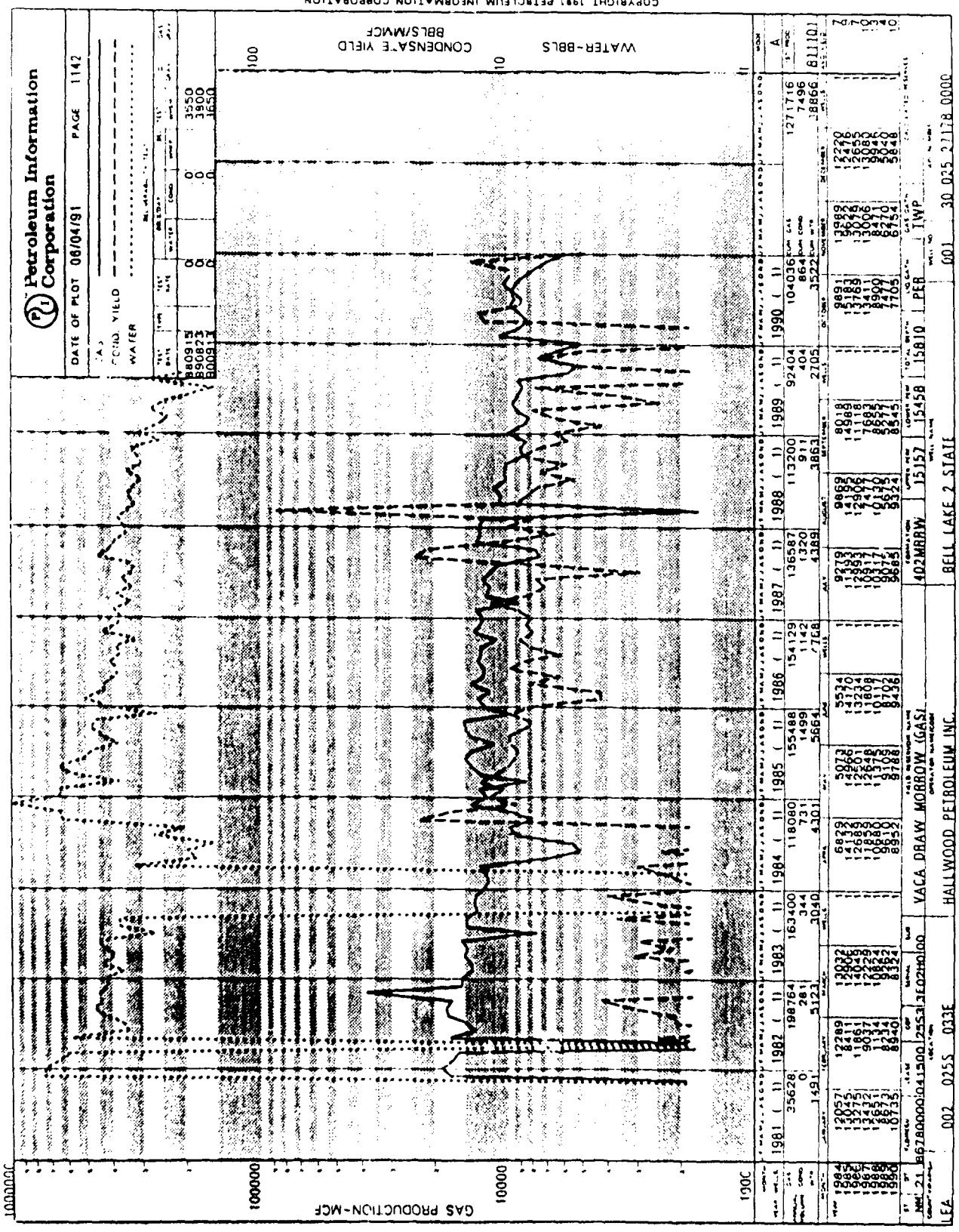
NO.	P _r	Temp. °R	T _r	Z	Gas Liquid Hydrocarbon Ratio	Dry Gas	Mcf/hol.
1	0.81	550	1.55	0.928	A.P.I. Gravity of Liquid Hydrocarbons	-	Deg.
2	0.73	544	1.54	0.933	Specific Gravity Separator Gas	0.6036	X X X X X X X X
3	0.79	548	1.55	0.930	Specific Gravity Flowing Fluid	X X X X X	
4	0.75	544	1.54	0.932	Critical Pressure	674 P.S.I.A.	P.S.I.A.
5					Critical Temperature	354 °R	°R

P _r 8309.2	P _w 69042.8	(1) $\frac{P_r^2}{P_r^2 - P_w^2} = 18.01$	(2) $\left[\frac{P_r^2}{P_r^2 - P_w^2} \right]^n = 6.897$
NO.	P _w *	P _w ²	P _r ² - P _w ²
1	8075.2	65208.9	3833.9
2	7820.2	61155.5	7887.3
3	7328.2	53702.5	15340.3
4	6667.2	44451.6	24591.2
5			

Absolute Open Flow 3458		Mcf @ 15.025	Angle of Slope 54° 47'	Slope, n 0.668
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Remarks: * BOTTOM HOLE PRESSURE @ (-11839) 15304' USED FOR PRESSURE CALCULATIONS

Approved By Division	Conducted By: JARREL SERVICES, INC.	Calculated By: Joe A. Coleman	Checked By: PE #2208 Joe A. Coleman
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C 11

**TIGHT GAS SANDS
PERMEABILITY AND STABILIZED FLOW RATE
VACA DRAW / PITCHFORK RANCH AREA**

DATE: 11/25/91

WELL NAME: BELL LAKE 11 NO. 1

INTERVAL: 14883-977'

STIMULATED ? (Y/N): YES; 3000 GAL ACID

FLOW RATE (MCF/D): 1,100

FLOW TIME (HRS.): 166

FLOWING BHP (psia): 3,852

GAS GRAVITY (Yg): 0.573

TEMP. DEGREE F (T): 239

RESERVOIR PRESSURE (Pi): 10,391

GAS POROSITY: 0.080

WELLBORE RADIUS (Ft): 0.250

SKIN FACTOR: 0.0

PAY HEIGHT: 20

Z-FACTOR: 1.416

GAS COMPRESSIBILITY: 0.000046

GAS VISCOSITY (cp): 0.0323

SPACING ACRES: 320

FORMATION VOLUME FACTOR (Bg): 0.480

SPACING RADIUS (Ft): 2,106

ASSUMED K (md): 0.1324

RADIUS OF DRAINAGE (Ft): 701.3

CALCULATED K (md): 0.1324

STEADY TIME (HRS.): 3,775.43

STABILIZED FLOW (MCF/D): 954.06

AOF PRESSURE (psia): 264

STABILIZED AOF (MCF/D): 1,478

**TIGHT GAS SANDS
PERMEABILITY AND STABILIZED FLOW RATE
VACA DRAW / PITCHFORK RANCH AREA**

DATE: 11/26/91

WELL NAME: BELL LAKE 11 NO. 1

INTERVAL: 14883-977'

STIMULATED ? (Y/N): YES; 3000 GAL ACID

FLOW RATE (MCF/D): 1,300

FLOW TIME (HRS.): 215

FLOWING BHP (psia): 5,789

GAS GRAVITY (Yg): 0.573

TEMP. DEGREE F (T): 239

RESERVOIR PRESSURE (Pi): 10,391

GAS POROSITY: 0.080

WELLBORE RADIUS (Ft): 0.250

SKIN FACTOR: 0.0

PAY HEIGHT: 20

Z-FACTOR: 1.416

GAS COMPRESSIBILITY: 0.000046

GAS VISCOSITY (cp): 0.0323

SPACING ACRES: 320

FORMATION VOLUME FACTOR (Bg): 0.480

SPACING RADIUS (Ft): 2,106

ASSUMED K (md): 0.2352

RADIUS OF DRAINAGE (Ft): 1063.7

CALCULATED K (md): 0.2352

STEADY TIME (HRS.): 2,125.13

STABILIZED FLOW (MCF/D): 1192.87

AO F PRESSURE (psia): 294

STABILIZED AOF (MCF/D): 2,617

BELL LAKE "H" FEDERAL #1 (WILDCAT)
 AFE NO. 2305 WI .7996186
 Lea County, New Mexico

- 6-21-80 (78) 15,132' (31') 100% lm, 2300 units gas; 24 hrs. drilled; Bit #15: 6-1/8"; Smith: F-3; AR6552; Jets 3-20; In @ 15,069'; 113'; 39-1/4 hrs; 35,000#; RPM 45; Pump #1; Liner 5"; Stroke 18; SPM 32; GPM 155; 2200#; MW 13.8; Visc. 55; YP 14; PV 35; Gels 7/18; API WL 1.8; 55% oil; Chlorides 315,000; 27% solids; O/W 75/25; 24 hrs. drlg; Mixed 5 drums E-Z mud with 25 gals diesel.
- 6-22-80 (79) 15,194' (12') 80% lm, 20% cht; 2200 units gas; 9-3/4 hrs. drilled; 8-1/4 hrs. trip; 6 hrs. others; Bit #15: 6-1/8"; Smith: F-3; AR6552; Jets 3-20; In @ 15,069'; Out @ 15,185'; 116'; 93 hrs; 35,000#; RPM 45; T-8; B-8; G-1/4; Bit #16: 6-1/8"; Smith: F-5; AL8904; Jets 3-20; In @ 15,185'; 9'; 5-1/2 hrs; Pump #1; Liner 5"; Stroke 18; SPM 32; GPM 155; 2200#; MW 13.8; Visc. 55; YP 11; PV 29; Gels 5/12; API WL 2.8; 58% oil; Chlorides 315,000; 26% solids; O/W 78/22; 3-3/4 hrs. drlg; 1/2 hr. Totco & slug; 4-1/4 hrs. POH; 2-3/4 hrs. check DC's; 3/4 hr. PU navidrill. bit & subs; 4 hrs. TIH; 1/2 hr. drlg; 1-1/4 hrs. circ off gas; 5-1/2 hrs. drlg.
- 6-23-80 (80) 15,202' (8') 60% sh, 40% lm; 8 hrs. drilled; 9-1/2 hrs. trip; 6-1/2 hrs. others; Bit #16: 6-1/8"; Smith: F-5; BL9304; Jets 3-20; In @ 15,185'; Out @ 15,197'; 12'; 8 hrs; 5/10,000#; RPM 350; T-4; B-8; Bit #17: 6-1/8"; H; J-55; AS960; Jets 3-20; In @ 15,197'; 5'; 6 hrs; 35,000#; RPM 45; Pump #1; Liner 5"; Stroke 18; SPM 32; GPM 155; 2200#; MW 13.8; Visc. 58; YP 11; PV 29; Gels 5/12; API WL 2.8; 58% oil; Chloride 315,000; 26% solids; O/W 78/22; 2-1/2 hrs. drlg w/navi drill; 1/2 hr. slug; 5 hrs. trip; 1-1/2 hrs. LD N drill PU BHA; 4-1/2 hrs. TIH; 3-1/2 hrs. circ off gas; 1/2 hr. wash 60' to btm; Mixed 15 sx petrotone.
- 6-24-80 (81) 15,232' (30') 90% sh, 10% lm; 24 hrs. drilled; Bit #17: 6-1/8"; H; J-55; AS960; Jets 3-20; In @ 15,192'; 35'; 30 hrs; 35,000#; RPM 45; Pump #1; Liner 5"; Stroke 18; SPM 32; GPM 155; 2300#; MW 13.8; Visc. 54; YP 14; PV 30; Gels 7/16; API WL 3.2/12.5; 25% solids; O/W 77/23; 24 hrs. drlg; Mixed 25 sx CaCl with 33 bbls diesel.
- 6-25-80 (82) 15,275' (43') sh, sd & lm; 18 3/4 hrs drilled; 1 2/4 hrs trip; 3 1/2 hrs other; Bit #17: 6 1/8"; H; J-55; AS960; Jets 3-20; In @ 15,197'; 98'; 46 1/2 hrs; 35,000#; RPM 45; Pump #1; Liner 5; Stroke 18; SPM 32; GPM 155; 2200#; MW 13.4; Visc 49; YP 14; PV 32; Gels 7/14; API WL 4.4/18.0; 59% Oil; 320,000 Chlorides; 25 % Solids; O/W 79/21; 6 1/2 hrs drlg; 1 hr pull 30 stands ; 3 hrs circ lower MW; 3/4 hrs TIH; 1/2 hr circ off gas; 11 1/4 hrs drlg; mix 34 sx mica with 20 bbls die 1 sx geltone.
- 6-26-80 (83) 15,322' (47') lm & sh; 24 hrs. drilled; Bit #17: 6-1/8"; H; J-55; AS960; Jets 3-20; In @ 15,197'; 143'; 70-1/2 hrs; 35,000#; RPM 45; Pump #1; Liner 5"; Stroke 18; SPM 32; GPM 155; 2200#; MW 13.5; Visc. 47; YP 12; PV 28; Gels 7/12; API WL 4.0/12.8; Cake 1/32; 62% oil; Chlorides 330,000; 24% Solids; O/W 82/18; 24 hrs. drlg; Mixed 31 bbls diesel with 300 sx barite.
- 6-27-80 (84) 15,388' (66') lm & sh; 24 hrs. drilled; Bit #17: 6-1/8"; H; J-55; AS960; Jets 3-20; In @ 15,191'; 191'; 94-1/2 hrs; 35,000#; RPM 45; Pump #1; Liner 5"; Stroke 18; SPM 32; GPM 155; 2200#; MW 13.4; Visc. 50; YP 14; PV 35; Gels 3/15; API WL 10.6; 64% oil; Chlorides 344,000; O/W 84/16; 24 hrs. drlg; Mixed 7 sx geltone, 22 sx mica with 3 bbls diesel.
- 6-28-80 (85) 15,455' (67') 100% sh; 24 hrs. drilled; Bit #17: 6-1/8"; HTC; J-55; AS960; Jets 3-20; In @ 15,197'; 258'; 118-1/2 hrs; 35,000#; RPM 45; Pump #1; Liner 5"; Stroke 18; SPM 32; GPM 155; 2200#; MW 13.4; Visc. 49; YP 16; PV 37; Gels 8/14; API WL 1.8; 64% oil; Chlorides 330,000; 24% Solids; O/W 84/16; 24 hrs. drlg; Mixed 4 sx geltone with 11 sx petrol.
- 6-29-80 (86) 15,494' (39') sd, lm & sh; 19-1/2 hrs drilled; 2 hrs. trip; 2-1/2 hrs. others; Bit #17: 6-1/8"; H; J-55; AS960; Jets 3-20; In @ 15,197'; Out @ 15,494'; 297'; 138 hrs; 35,000#; RPM 45; Pump #1; Liner 5"; Stroke 18; SPM 32; GPM 155; 2200#; MW 13.3; Visc. 48; YP 11; PV 26; Gels 6/12; API WL 1.2/11.7; Cake 1/32; 64% oil; Chlorides 334,000; 24% solids; O/W 84/16; 19-1/2 hrs drlg; 2 hrs. lost 60 bbls mud pull 30 stnds; 2-1/2 hrs. circ & cut wt to 13.3 ppg.
- 6-30-80 (87) 15,494'; 5 hrs. trip; 19 hrs. others; Bit #17: 6-1/8"; H; J-55; AS960; Jets 3-20; In @ 15,197'; Out @ 15,494'; 297'; 138 hrs; Pump #1; Liner 5"; Stroke 18; SPM 32; GPM 155; 2200#; MW 13.6; Visc. 47; YP 11; PV 24; Gels 6/12; API WL 1.2/8.4; Chlorides 330,000; 24% Solids; O/W 84/16; 2 hrs. circ & cut wt to 13.3; 3/4 hr. TIH; 10-1/2 hrs circ & build vol; 2-1/4 hrs. pull 70 stnds hole not taking fluid; 1/4 hr. check well for flow; 1-3/4 hrs. TIH; 6-1/4 hrs. circ off gas & mix LCM; Mixed 60 sx mica, 25 sx walnut, 200 sx barite, 100 bbls diesel, 2 drums EZ mud, 2 drums driltreat, 15 drums geltone, 10 drums petrotone, 10 drums CaCl, 5 drums lm with 32 drums C mica.
- 7-1-80 (88) 15,494' 10-1/4 hrs. trip; 13-3/4 hrs. others; Bit #17: 6-1/8"; HTC; J-55; AS960; Jets 3-20; In @ 15,197'; Out @ 15,494'; 297'; 138 hrs; 35,000#; RPM 45; T-8; B-8; G-In; Pump #1; Liner 5"; Stroke 18; SPM 32; GPM 155; 2200#; MW 13.3; Visc. 54; YP 15; PV 34; Gels 6/12; API WL 3.0; 62% oil; Chlorides 300,000; 26% solids; O/W 83/17; 2-3/4 hrs. pull 50 stands well flowing; 1 hr. TIH; 3 hrs. circ off gas; 3/4 hr. spot LCM (75 bbls pill) on btm; 1/2 hr. pull 10 stands; 10 hrs. circ & raise mud wt & spot LCM on btm; 6 hrs. TOH for bit; Mixed 100 sx walnut hulls with 100 sx mica.
- 7-2-80 (89) 15,535' (41') 90% sd; 10% sh; 16 1/2 hrs drld; 5 1/4 hrs trip; 2 1/4 hrs other; Bit #18: 6 1/8"; H; J-55; HP 329; Jets 3-20; In @ 15,494'; 41'; 16 1/2 hrs; 35,000#; RPM 45; Pmp #1; Liner 5; Stroke 18, SPM 32; GPM 155; Press 2200 ; MW 13.5; Visc 50; YP 12; PV 36; Gels 6/12; API WL 2°; 60% Oil; Chlo 300,000; 24% Solids; O/W 79/21; 5 1/2 hrs TIH; 1 1/2 hrs Ream 30' to btm; 3/4 hrs circ off gas; 16 1/4 hrs drlg; Mixed 10 sx gel; 25 bbl diesel.
- 7-3-80 (90) 15,582' (47') 80% lm, 10% sd, 10% sh; 24 hrs. drilled; Bit #18: 6-1/8"; H; J-55; HT3229; Jets 3-20; In @ 15,494'; 88'; 40-1/2 hrs; 35,000#; RPM 45; Pump #1; Liner 5"; Stroke 18; SPM 32; GPM 155; 2200#; MW 13.4+; Visc. 50; YP 12; PV 36; Gels 6/12; API WL 2.5/14.0; 64% oil; Chlorides 300,000; 25% Solids; O/W 80/20; 24 hrs. drlg.

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| 7-4-80 | (91) | 15,630' (48') sh & lm; 24 hrs. drilled; Bit #18 6-1/8"; H; J-55; AT329; Jets 3-20; In @ 15,494'; 134'; 44-1/2 hrs; 35,000#; RPM 45; Pump #1; Liner 5"; Stroke 18; SPM 32; GPM 155; 2200#; MW 13.4; Visc. 50; YP 13; PV 27; Gels 3/4; API WL 4.4; Cake 2/32; 63% oil; Chlorides 305,000; 24% Solids; O/W 82/18; 24 hrs. drlg. |
| 7-5-80 | (92) | 15,698' (68') sh; 24 hrs. drilled; Bit #18 6-1/8"; H; J-55; AT329; Jets 3-20; In @ 15,494'; 204'; 88-1/2 hr 35,000#; RPM 45; Pump #1; Liner 5"; Stroke 18; SPM 32; GPM 155; 2200#; MW 13.4; Visc. 50; YP 16; PV 26; Gels 10/16; API WL 5.4; 64% oil; Chlorides 300,000; 26% Solids; O/W 86/14; 24 hrs. drlg. |
| 7-6-80 | (93) | 15,768' (70') sh; 24 hrs. drilled; Bit #18 6-1/8"; H; J-55; NT; In @ 15,494'; 274'; 112-1/2 hrs; 35,000# RPM 45; Pump #1; Liner 5"; Stroke 18; SPM 32; GPM 155; 2200#; MW 13.4; Visc. 51; YP 15; PV 27; Gels 10/16; API WL 6.0; Cake 2/32; 64% oil; Chlorides 300,000; 26% solids; O/W 86/14; 24 hrs. drlg; Mixed 50 sx lm. |
| 7-7-80 | (94) | 15,802' (42') 40% lm, 40% Sh, 20% Sd; 16-1/4 hrs. drilled; 5 hrs. trip; 2-3/4 hrs. others; Bit #18; 6-1/8"; H; J-55; AT329; Jets 3-20; In @ 15,494'; Out @ 15,802'; 308'; 122 hrs; 35,000#; RPM 45; Pump #1; Liner 5"; Stroke 18; SPM 32; GPM 155; 2050#; MW 13.7; Visc. 53; YP 12; PV 30; Gels 2/12; API WL 4.4; Cake 1/32; 64% oil; Chlorides 300,000; 25% Solids; 16-1/4 hrs. drlg; 2-3/4 hrs. circ & raise MW; 5 hrs. POH. |
| 7-8-80 | (95) | 15,833' (23') 90% sh, 10% sd; 15-3/4 hrs drilled; 6-1/2 hrs. trip; 1-3/4 hrs. others; Bit #19; 6-1/8"; Smith; F-5; AL9043; Jets 3-20; In @ 15,810'; 23'; 15-3/4 hrs; 35,000#; RPM 45; Pump #1; Liner 5"; Stroke 18; SPM 32; GPM 155; 2200#; MW 13.4; Visc. 49; YP 14; PV 26; Gels 11/14; API WL 6.4; Cake 2/32; 65% oil; Chlorides 305,000; 25% Solids; O/W 87/13; 6-1/2 hrs. finish trip; 3/4 hr. wash 60' to btm; 1/4 hr. drlg; 1 hr. circ off gas; 15-1/2 hrs. drlg. |
| 7-9-80 | (96) | 15,895' (62') 50% sh 30 % lm 10 % ch; 24 hrs drld; Bit #19; 6 1/8"; SM; F-5; AL9043; Jets 3-20; In @ 15,810; 85'; 34 3/4 hrs; 35,000#; RPM 45; Pump #1; Liner 5; Stroke 18; SPM 32; GPM 155; 2200#; MW 13.4; VISC 48; YP 11; PV 20; GELS 7/14; API WL 6.8; 66 % Oil; Chlo 260,000; 24 % Solids; 87/13; 24 hrs drlg. |
| 7-10-80 | (97) | 15,920' (35') 100% sh; 10-1/2 hrs. drilled; 1-1/2 hrs. trip; 12 hrs. others; Bit #19; 6-1/8"; Smith; F-5; AL9043; Jets 3-20; In @ 15,810'; 120'; 50-1/2 hrs; 35,000#; RPM 45; Pump #1; Liner 5"; Stroke 18; SPM 32; GPM 155; 2200#; MW 13.8+; Visc. 50; YP 10; PV 24; Gels 7/14; API WL 6.4; 65% oil; Chlorides 290,000; 25% Solids; O/W 87/13; 10-1/2 hrs. drlg; 8-1/2 hrs. circ & raise MW to 13.9#/gal; losing fluid; 1-1/2 hrs. mix LC slug; spot on btm; 3/4 hr. pull 10 stds; 1/2 hrs. circ; losing fluid; 1 hr. pull 20 stds; 1-1/4 hrs. circ w/13.8 #/gal; losing 10 bbl/hr; Mixed 102 sx mica with 50 sx walnut hulls. |
| 7-11-80 | (98) | 15,930' 9-1/4 hrs. trip; 14-3/4 hrs. others; Bit #19; 6-1/8"; Smith; F-5; AL9043; Jets 3-20; In @ 15,810'; Out @ 15,930'; 120'; 50-1/2 hrs; T-4; B-4; G-0; Pump #1; Liner 5"; Stroke 18"; SPM 32; GPM 155; 2200#; MW 13.8; Visc. 50; YP 15; PV 32; Gels 10/17; API WL 6; HT 22.6; Cake 2/32; 60% oil; Chlorides 215,000; 26% solids; O/W 81/19; 1-1/2 hrs. circ & cut mud wt to 13.8 #/gal; 1 hr. CDL; 6 hrs. circ & mix LCM; 1-1/2 hrs. TIH to btm; 7-3/4 hrs. POH to log; 1/2 hr. RU Schlumberger; 6 hrs. run Density Neutron & Gamma Ray. |
| 7-12-80 | (99) | 15,930'; 8 hrs. drilled; 16 hrs. others; Pump #1; Liner 5-1/2"; Stroke 18"; SPM 30; GPM 150; 2200#; MW 13.3; Visc. 50; YP 10; PV 24; Gels 7/11; API WL 5.2; Cake 1/32; 63% oil; Chlorides 215,000; 25% Solids; O/W 82/13; 4-1/2 hrs. running logs, went to 13,702'; RD loggers; 5 hrs. RU casers. run 4-1/2" liner; RD casers; 6-1/2 hrs. TIH w/liner to 13,702'; 1 hr. wash through tight spot; 1-1/2 hrs. circ off gas; 1-1/2 hrs. finish TIH to 15,835'; 2 hrs. washing on bridge & attempt to hang liner; 2 hrs. circ off gas. |
| 7-13-80 | (100) | Pump #2; Liner 5-1/2"; Stroke 16"; SPM 23; GPM 218; 1100#; MW 13.8; Visc. 50; YP 10; PV 24; Gels 7/11; API WL 5.6/10; 63% oil; Chlorides 210,000; 25% Solids; O/W 84/16; 3/4 hr. circ off gas; 1/2 hr. hung liner; 4-1/4 hrs. circ; 1-1/4 hrs. cmt liner; 3/4 hr. pull 20 stds; 1/2 hr. circ lost 1 bbl/min; 4 hrs. WOC; 7 hrs. circ & WOC; 1 hr. TIH tag top of liner; 1-1/2 hrs. circ off gas. |
| 7-14-80 | (101) | 15,130'; MW 14.0; Visc. 51; YP 10; PV 24; Gels 7/11; API WL 54; 63% oil; Chlorides 210,000; 25% solids; O/W 84/16; 9-3/4 hrs. circ & raise; 4-1/4 hrs. TOH; 8-1/4 hrs. PU WS to top of liner; 1-3/4 hrs. circ gas off. |
| 7-15-80 | (102) | 15,930'; 5-1/2 hrs. drilled; 6 hrs. trip; 12-1/2 hrs. others; cement; Pump #1 ;Liner 5"; Stroke 18; SPM 32; GPM 155; 1500#; MW 14.0; Visc. 51; YP 10; PV 24; Gels 7/11; API WL 4.6; Cake 2/32; 63% oil; Chlorides 210,000; 25% solids; O/W 84/16; 2-1/4 hrs. circ gas off; 3/4 hr. TIH; 1-3/4 hr. drlg cmt; 1 hr. circ off gas; 1 hr. drlg cmt; 1-3/4 hrs. TIH; 2-1/4 hrs. drlg cmt; 3/4 hr. TIH; 1 hr. circ off gas; 1/2 hr. drlg cmt; 4 hrs. circ; 4-1/2 hrs. pump slug & POH; 2-3/4 hrs. RU tongs & break down workstring. |
| 7-16-80 | (103) | 15,824' PBTD; Pmp #2; Lnr 5; Stroke 16; SPM 32; GPM 155; 1700#; MW 14; Visc 51; YP 10; PV 24; Gels 7/11; API WL 5.6; 63% oil; Chlo 210,000; 25% solids; O/W 84/16; 1 1/2 hrs RU Welex; 3 1/4 hr run bond log to 12,638' TOL; 1 3/4 hrs WO smaller tool; 6 3/4 hrs run bond log to 15,750'; 3/4 hrs RD Welex; 6 hrs TIH w/ 7" RTTS pkr; 3/4 hrs replace rot head; 2 3/4 hrs circ off gas; 60 bbl gain. 2,000 psi BP; 1/2 hrs pull 5 stds & set packer @ 12,139'. |
| 7-17-80 | (104) | PBTD 15,824'; 9 hrs. trip; 15 hrs. others; Pump #1 ;Liner 5"; Stroke 18; SPM 32; GPM 155; 2000#; MW 14.0; Visc. 51; YP 10; PV 24; Gels 7/11; API WL 5.6; 62% oil; Chlorides 210,000; 25% solids; O/W 84/16; 1/4 hr. pull 5 stds & single; 1/4 hrs. set RTTS @ 12,158'; 2-1/2 hrs. pressure up to 4750 psi; 1/4 hr. RD Howco; 3 hrs. circ off gas; 4-1/2 hrs. POH; 3/4 hr. LD pkr; PU dress mill & csg scraper; 4-1/2 hrs. TIH; 1/2 hr. dress top of liner; |

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- 7-18-80 (105) PBTD 15,824'; 14-3/4 hrs. trip; 9-1/4 hrs. others; 3-3/4 hrs. TIH w/SN pkr; 2-1/4 hrs. drop ball break circ; work tool & set pkr; 2-1/2 hrs. circ; 4 hrs. POH; 1 hr. RU to run 2-3/8" workstring; 1-1/2 hrs. TIH w/2-3/3" DP; 4 hrs. TIH w/3-1/2" DP; 1-1/2 hrs. work mill thru SN pkr; 1-1/2 hrs. TIH; 1 hr. RU Howco to displace; 1 hr. displacing hole w/10 ppg brine.
- 7-19-80 (106) PBTD 15,824'; 15-1/2 hrs. drilled; 8-1/2 hrs. others; MW 10; Visc. 28; 2-1/2 hrs. displace mud w/ 10# brine; 1/2 hr. RD Howco; 1/4 hr. pull tbq to 15,530'; 3-1/2 hrs. RU Western spot 500 gals 10% acetic acid containing 10% WSA-1; and inhibited for 96 hrs @ 2150 from 15,530 to 14,550'; spot 23 KCL wtr containing 10% WSA-1; 2 gals/1000 LT-30; and 1 gals/1000 clay master from 14,550' to 12,650' 1/2 hr. pull 12 stds drillpipe; 3/4 hr. RU LD machine; 3 hrs. LD drillpipe; 1 hr. run 3-1/2" DP out of derrick; 6 hrs. LD DP; 3/4 hr. RU power tongs; 3-1/2 hrs. LD 2-3/8" workstring; 1/2 hr. power tongs; 1-1/4 hrs. GIH w/drill collars and lay down DC.
- 7-20-80 (107) PBTD 15,824'; 24 hrs. others; MW 10; Visc. 28; PH 10.5; 1-1/2 hrs. LD drlg collars break Kelly; 1-1/4 hrs. strap 2-7/8" tbq; 1-1/4 hrs. change rams to 2-7/8"; 1/2 hr. RU to run 2-7/8" tbq; 10 hr run 23' by 3-3/4"; TIW seal assembly & 2-7/8" 7.9# P-105; PH 6; CB; 1 hr. string into PBR; space out tbq w/25,000 slack off; pressure up on annulus to 1000 psi to test SA; 3 hrs. pull out of PBR install cameron hanger. circ pkr fluid; 10#/gal brine; 1.5% wt coat 1270; PH 10.5; 1/2 hr. insta back pressure valve 2 hrs. RU Nowsco; disp tbq w/N2; 1/2 hr. install wrap around & land tbq; 2-1/2 hrs. ND BOP.
- 7-21-80 (108) PBTD 15,824'; 24 hrs. others; MW 10.1; Visc. 28; PH 10.5; 1 hr. ND BOP; 2-3/4 hrs. NU Cameron 2-9/16" by 10,000 psi tree; 6-3/4 hrs. RU Schlumberger perf Morrow; with @ 2-1/8" DC Scaioip Hyperdome; perfs @ 15,447'; 50'; 53'; 56'; 59'; 62'; 65'; 68'; 71'; 75'; 78'; 82'; total 12 holes size .34; 1-1/2 hrs. RU Nowsco; BD perf w/spot acid BDP 8200 psi; 2 hrs. flow N2 back; 2-1/2 hrs. flow pit; flow gas cut with mud; 2 hrs. flow to pit; flow to pit est 3/4 million; tree plugging w/mud & cuttings; 1-1/4 hrs. SI SITP 1100 psi; 1-3/4 hrs. flow to pit; 1-1/2 hrs. SI; SITP 850 psi; 1 hr. flow to pit.
- 7-22-80 (109) 24 hrs. flow well to pit for approximately 1 hr; rec gas and 15 BFPH; well loads up; SI for approx 1 hr and build up pressure (400-500 psi); flow well to pit and continue to clean up; repeat proced
- 7-23-80 (110) 24 hrs testing; SI for 2 hrs open to pit for 1 hr; Rec 15 BFPH, mud & wtr; SI pressure building from (750 to 950 psi); Continue to clean up. *BAL CMT?*
- 7-24-80 24 hrs testing, SI for 2 hrs. flow for 1 hr. rec 15-20 BW & mud each flow period, 5 % to 20% mud; SI press 950 psi; last SI period 3 hrs. built to 1350 psi. continue to clean up.
- 7-25-80 1 hr SI; 1 hr flow to pit; rec mud & wtr; good flow of gas; 2 hrs SI SITP 900psi; 1 hr flow to pit FTP decreasing to 0; SI; 2 hrs RU Western Co; 2 1/4 hrs acidize w/3500 gals 7 1/2% MS acid w/500 SCF N2/bbl; pump at a total rate of 5.6 BPM @ 7,700psi; drop 18 7/8" ball sealers. good ball action, NO ball out; flush w/2% kcl wtr w/500 SCF N2/bbl; ISIP 5,650*; RD Western Co; 2 1/4 hrs flow to pit FTP 4,850 to 0 psi; had gas to surface in 1 1/4 hrs; rec 125 BF; 2 hr SI SITP 650 psi; 1 3/4 hrs flow to pit FTP 650 to 0 psi; rec a little gas, mud, wtr & spent acid; 4 hrs SI SITP 900 psi; 1 hr flow to pit FTP 900 to 0 psi; no sign of spent acid; rec 10 bbls mud & wtr; 3 hrs SI SITP 875; 3/4 hr flow to pit FTP 875 to 0 psi; rec 5 bbls mud & wtr sample taken; Total rec 145 BF; BLTR 23.
- 7-26-80 5 hrs. SI; 1 hr. open to pit; rec wtr & mud w/show of gas; 10 hrs. wait on coil tbq unit; 1 hr. RU coil tbq; 3-1/2 hrs. jetting from 2000'; rec wtr & mud; show of gas; 3-1/2 hrs. lower coil tbq to 9500'; rec wtr; no mud; show of gas; rec est 20 BF.
- 7-27-80 15 hrs. jetting from 9500'; jet every 3 hrs; rec 4 BWPH; with estimated 300 MCF gas; 9 hrs. lower coil tbq to 11,000'; jetting 8-10 BWPH w/est 300 MCF gas.
- 7-28-80 4 hrs. jetting from 11,030'; rec 8-10 BWPH w/est 300 MCFPD; 20 hrs. lower coil tbq to 12,000'; rec 8-10 BWPH w/est 300 MCFPD; rec total 705 bbls fluid since treatment.
- 7-29-80 3 hrs. jetting; 1 hr. POH w/coil tbq; 1/2 hr. RD Nowsco; 5-1/2 hrs. flow to pit; 2 hrs. RU Western Company; pump 125 BFW; establish inj rate 3 BPM @ 5500 psi; 2 hrs. batch mix 100 sx Class H cmt w/.4% TF-4; pump @ 3 BPM & 4500 psi; displace w/750 gals 10% acetic acid containing 10% WSA-1 & inhibited for 72 hrs @ 200'; finish displacement w/2% KCL water to 15,350'; ISDP 5000 psi; 10 hrs. SIFN
- 7-30-80 (117) 24 hrs other; 1 1/2 hrs WOC; 2 hrs RU Dresser Atlas; 1 1/2 RU Western Co. pressure up on tbq 7,500 psi to test sq. held OK; 3 hrs run 2 1/8" decentralized perf gun, found top of cmt @ 14,820' rig down Dresser Atlas; 4 hrs called for handling tools & truck, waiting on same; 1 hr nipple down CIW tree; 11 hrs NU BOP.
- 7-31-80 (118) 1-1/2 hrs. drilled; 17 hrs. trip; 5-1/2 hrs. others; 1 hr. NU BOP; 1 hr. RU power tongs; 1-3/4 hrs. circ hole w/10# brine; 5-1/4 hrs. pull out hole w/2-7/8" tbq; 4-1/2 hrs. PU 2-3/8" workstring; 1/2 hr. change elevators; 6 hrs. TIH w/2-7/8" tbq; tag cmt @ 14,865 SLM; 1 hr. rev circ acid out of hole; 1-1/2 hrs. LD 15 jts of 2-7/8" tbq; run 4 std into hole; 1-1/2 hrs. drlg cmt.

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- 3-1-80 (119) 15,350' (485') cmt; Bit 3 5/8" Walker McDonald; Pmp# 2; Liner 5 1/2"; Stroke 16"; SPM 28; 2,000#; MW 10.0; Visc 28; 6 1/4 hrs drlg cmt; 1 3/4 hrs cir stand back Kelly; 1 1/4 hrs RU Western Co. spot 750 gals 10% acetic acid, 10% WSA-1, WT to 10.3 #1 gal, inhibited for 72 hrs @ 200° & spot at 15,300'; SLM; spot 2% KCL wtr across liner top; 4 1/2 hrs pull out hole w/2 7/8" tbg; 3 1/2 hrs lay 2 3/8" work string; 1 hr WO perf; 5 3/4 hrs RU DA run 3 1/2" jumbo jet perf gun; gun hung up in liner top @ 12,700', attempt to work loose.
- 3-2-80 (120) PBTD 15,350'; 1-1/2 hrs. attempt to pull gun loose; pull out of rope socket; left 3-1/2" gun in hole; RD DA; 3 hrs. RU & pick up 2-3/8" workstring tbg & stand it in derrick; 1 hr. PU fishing tools; 2-1/2 hrs. TIH w/2-3/8"; workstring; 6-1/2 hrs. TIH w/2-7/8" tbg; push fish to PBTD & latch on to fish; 5-1/2 hrs. TOH w/2-7/8" tbg; 1-1/2 hrs. TOH w/2-7/8" workstring; 1/2 hr. LD fish & fishing tool; 1-1/2 hrs. RU DA perforate the morrow with 2-7/8" decentralized slim cone jumbo jet; perforate from 15,210' to 15,220'; 1 shot/ft; total of 10 holes; RD DA.
- 8-3-80 (121) PBTD 15,350' 5-1/2 hrs. LD 2-3/8" workstring; 5 hrs. PU TIW seal assembly; TIH w/2-7/8" tbg; 1/2 string into PBR; test to 1000 psi; 2 hrs. pull out of PBR; RU Howco & circ hole w/450 bbls of pkr fluid; 1/2 hr. displace tbg w/60 bbls 2% KCL & 10% Musoi; 1/2 hr. string into PBR & Land tbg; 4-1/2 hrs. ND BOP & NU tree; test to 10,000 psi; 1 hr. RU Howco & test lines; 1/2 hr. break down perf w/spotted acid; BDP 5900 psi @ 2-1/2 BPM; ISIP 6200 psi; 4 hrs. flow to pit; zero pressure; well died.
- 8-4-80 (122) PBTD 15,350'; 5 hrs. WO Howco; 1 hr. RU Howco & test lines; 1-1/2 hrs. acidize w/2500 gals of 7-1/2 morrow flow BC acid; 10% Musoi; 2 gals claysta; 500 SCF N2/bbl drop 15 7/8" ball sealers; ATP 6900 psi @ 3.1 BPM max treat press 7300 psi; ISIP 6200 psi; BLTR 148; 1/2 hr. RD Howco; 2 hrs. 45 psi on 12/64" to 0 psi on 1" chk; rec 75 BF; 4 hrs. WO Otis; 2 hrs. RU Otis & start in hole; 1 hr. TIH w/coil tbg to 8000'; jetting; 1 hr. TIH w/coil tbg to 8000'; jet rec 2 BF; 1 hr. TIH w/coil tbg to 12,000'; jet rec 2 BF; 3 hrs. shut down; 1 hr. jetting @ 12,000'; rec 2 BF; will shut down for 3 hrs.
- 8-5-80 Jetting @ 12,000'; jetted 3 times in 24 hrs; rec 1 BW each time; pull out of hole w/coiled tbg; Camer setting BP valve @ 7 am.
- 8-6-80 Set back pressure valve; release rig @ 8:00 am; DFR.
- 8-13-80 3 hrs move in & rig up well serv unit; 16 hrs SIFN.
- 8-14-80 1 hr. remove Cameron back pressure valve; bleed pressure from tbg; 1/2 hr. RU kill truck & load tbg; 3-1/2 hrs. ND tree & NU BOP; 5-1/2 hrs. TOH w/2-7/8" tbg; 13-1/2 hrs. SIFN; prep to run cmt retainer.
- 8-15-80 2 hrs. RU Dresser Atlas; TIH w/2 by 3.5" Pengo ret to 15,100'; set ret setting tool failed to shear off; 2 hrs. attempt to free setting tool; 1 hr. pull out of rope socket and TOH w/wireline RD DA; 3 hrs. PU & stand back in derrick 2-3/8" workstring; 16 hrs. SIFN; prep to fish for setting tool.
- 8-16-80 6-1/2 hrs. RU Fishing Tools; TIH on 2-7/8" tbg to 15,100'; latch on fish; pull setting tool off retainer; 6 hrs. TOH w/tbg & fish.
- 8-17-80 6 hrs. cmt ret leaking WO NL McCullough; 1-1/2 hrs. RU McCullough TIH w/2 by 3-1/2" super mac CIBP to 15,038'; & set; 1 hr. TOH w/WL; 1 hr. RD WL Co; 14-1/2 hrs. SIFN.
- 8-18-80 24 hrs. SIFN; prep to TIH w/tbg this am; spot cmt plug.
- 8-19-80 5-1/2 hrs. TIH w/2-3/8" workstring and 2-7/8" tubing; tagged CIBP @ 15,038'; 1-1/2 hrs. RU Howco & break circ spot 25 sx of Class "C" cement; pull 1 jt & rev circ 110 bbls; 1 hr. pull 1 jt & spot 500 gals of 10% MSA; 3 hrs. TOH w/8500 of 2-7/8" tbg; 13 hrs. SIFN; prep to finish TOH; perf today.
- 8-20-80 2 hrs TOH w/workstring; 4 hrs RU DA perforate Morrow w/3 1/8" select fire Jumbo Jet Gun; 14,883, 84, 85, 86, 87, 88, 93, 94, 14,976, 77; (hole size .31); RD DA; 2 hrs LD 2 3/8 workstring; 5 hrs TIH w/3 3/4" TIW seal assembly on 417 jts 2 7/8" 7.90#/ft P-105 PH-6 tbg; 11 hrs SIFN SITP O prep to circ packer fluid.
- 8-21-80 PBTD 15,033'; 1 hr. mix 120 bbls pk FL; 2 hrs. RU Halliburton & circ 120 bbls of pkr fluid; displace tbg w/2% KCL 10% musoi; 1/2 hr. string into PBR & test seal assembly to 1500 psi; ok; 1 hr. install wrap around, land tbg w/25,000# slack off; 3 hrs. ND BOP & NU tree; remove BPV & test tree to 10,000 psi; ok; 1 hr. RU Howco test line; acidize w/3000 gals of Morflow BC 10% musoi & 500 SCF N2/bbl; drop 15 7/8" ball sealers; BDP 6100 psi; max press 7500#; ATP 7100 psi @ 3 BPM; ISIP 5800; BLTR 261; 1/2 hr. RD Howco; 15 hrs. flow to pit; rec 250 BW; FTP this am 100 psi on 24/64" chk; gas will burn; BLTR 11; est 500 MCF.
- 8-22-80 11 hrs. flowing to pit on 24/64" chk @ 200 psi; est rec 25 BF; 13 hrs. flowing thru production unit; FTP @ start 350 psi on 24/64" chk; buildup to 1400 psi FTP @ 7:00 am FTP was 1200 psi on 24/64" producing 800-900 MCF in 13 hrs; rec 86 BF.
- 8-23-80 24 hrs flowing on 24/64" choke; FTP 1175 to 1350 psi, gas rate 900 MCFPD to 1.1 MMCFPD; Rec 175 BW.
- 8-24-80 24 hrs flowing to test on 24/64" choke, FTP 1250-1300 psi; Rec 165 BF, 5% oil; Gas rate 800-900 MCFPD.
- 8-25-80 24 hrs flowing to test on 24/64" choke; FTP 1300-1350 psi; Rec 149 BF, 5% oil; Gas rate 800-900 MCFPD.

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8-26-80 24 hrs Flow to test on 24/64" choke; FTP 1350-1375. Gas rate avg 1.1 MMCFPD; Rec 143 BF; 5% Oil.

8-27-80 11 hrs. flow to test FTP 350 increasing to 1625 on 24/64" chk; 3/4 hr. SI repair leak SITP 2925; 12-1/4 hrs. flow to test; FTP 2800 psi on 24/64" chk; flowing 1.1 MMCF PD rec 124 BF 2-5% oil.

8-28-80 7 hrs. flowing on 24/64" chk; FTP 2800 psi 1.1 MMCFPD rate 6 BFPH; 17 hrs. increased rate to 1.35 MMCFPD; FTP 2050 psi; 5-1/2 BFPH; rec 120 BF w/tr oil in 24 hrs.

8-29-80 24 hrs. flow to test; at noon increased rate to 1.5 MMCFPD; in 4 hrs wtr increased from 5 BPH to 7 BPH; FTP 2000 psi; rec 152 BF w/tr oil; (choke cut out, size unknown).

8-30-80 8 hrs. flow to test; pressure increased to 4300 psi w/4 BFPH & 1.3 MMCFPD rate; 1-1/2 hrs. shut in to hook up safety valve on csg; SITP 7500 psi; 14-1/2 hrs. open well to 1.6 MMCFPD rate; press down to 5300 psi in 30 min this am; FTP 4400 psi; 1.4 MMCFPD & 3 BFPH; rec 24 hrs; 89 BF.

8-31-80 Well flowing 1.2 MMCFPD @ 4350 psi FTP; repaired chk; flowed on 12/64" chk; 1.8 MMCFPD @ 2900 psi FTP w/8 BFPH decreasing to 1.45 MMCFPD @ 2700 psi; pinched chk to 11/64" flow 1.35 MMCFPD @ 3400 psi w/6 BFPH (2% oil) shut well in.

9-1-80 SITP 8200 psi.

9-2-80 SITP 8225 psi.

9-3-80 18 hrs flowing from 1.3 to 1.4 MMCFPD. No water for first 5-6 hrs. Later avg 3-9 BWPH @ 1.4 MMCFPD @ 3200 psi FTP prep to run production log.

9-4-80 2 hrs. flow well to test 1.4 MMCFPD on 8/64" chk; FTP 3200 psi; rec 10 BW; 10 hrs. SI; RU McCullough run temp survey from 14,500' to 15,010'; RD McCullough; 12 hrs. well SI.

9-5-80 24 hrs. SI; will acidize this am.

9-6-80 4 hrs. WSIN; SITP 8200; 3 hrs. RU Howco; acidize perfs w/6000 gals Morflo BC 7-1/2% acid, 15-7/8" ball sealers in first 2000 gals; pump @ 6.6 BPM @ 10,000 psi; rate dec to 5.5 BPM when balls hit perfs; surge balls off perfs; continue flush w/2% KCL wtr; ISIP 6600 psi; 15' 5600 max treating press 10,000 psi; ATP 9250'; max rate 7 BPM; min rate 5.5 BPM; BLTR 239; RD Howco; prepare to test; BLTR 239; 3 hrs. open to pit (SITP 5600 psi) on 3/64" chk; press to 2700 psi; 12 BFPH; 2 hrs. flow thru prod unit; 1 MMCFPD; FTP 2650 psi; 12 BFPH; 4 hrs. SI; repair prod unit; 4 hrs. SITP 4400 psi; open thru prod unit; 1.5 MMCFPD @ 2950 psi FTP; 12 BFPH est total rec 185 BF; BLTR 55.

9-7-80 14 hrs. flow thru production unit 1.5 MMCFPD @ 2950 psi; water decreasing to 3 BPH; 4 hrs. SI to repair production unit; SITP 7400 psi; 6 hrs. flow @ 1.3 MMCFPD @ 3700 psi; FTP w/3 BWPH.

9-8-80 Ran BHP bomb in hole for buildup and 4 point test; DFR WO results. *CANT FIND*

10-2-80 OFFICIAL REC POTENTIAL TEST: dated 9-11-80; flowed 931 MCF/D, FTP 1703, AOF 1356 MCF/D; gas gravity .573.

10-3-81 SITP 4975 psi; On sales to Transwestern PL @ 10 am 9-2-81 @ 550 MCFPD @ 2400 psi. DFR

10-6-81 *Correction to report of 10-5-81 - should have read - On sales to Transwestern PL @ 10 am 10-2-81

10-16-81 RU coiled tbg & nitrogen unit & TIH to 10,000'; Alternately jetting & shutting dwn; Jetting dry; Moved to 11,000' & jetted dry; Recovered 56 BF; Shut down 9 hrs & jetted 1 hr; rec 20 BF; Jetted dry; FTP 25 psi after jetting; Flowing mist; SD; released jetting equip; DFR Pending further activity.

1-12-82 Plug Back to Wolfcamp; 2 hrs open to pit, TP 4000 psi to 0 psi in 45 min; bleed press off csg; 9 hrs RU Howco; load Annulus w/ 10# Brine took 1.5 bbls, load tbg & establish injection rate, 3 BPM, @ 7000 psi increasing to 3 BPM @ 6500 psi, squeeze morrow perfs 14,883 to 14,977 with 100 sx class H cmt w/1% Halad 22A mixed at 16.2 ppg, displace w/1 bbl fresh wtr, 7 bbl 10# brine, 10 bbls 10% Acetic acid inhibited for 72 hrs at 200°, displace cmt to 14,250 w/2% KCL wtr, max press 7000 psi, ISDP 6600 psi; 13 hrs SIFN; test squeeze this am; EDWC \$6,942.

1-13-82 2 hrs. WOC; 2 hrs. RU Halliburton; test squeeze to 8000 psi; held ok; 6 hrs. WO McCullough; 1 hr. move in & RU McCullough; 13 hrs. SIFN; EDWC \$3640.00; ETWC \$10,480.00.

1-14-82 24 hrs SI due to weather; move in pmp truck prepare to perf this am;

BELL LAKE "11" #1
AFE NO. 2811
Lea County, New Mexico

1-15-82 2 hrs Thaw line & tree; 5 hrs RU NL McCullough, Test lubricator to 6400 psi perforate the Wolfcamp 13,684-13,693, 10 holes using a 1-9/16" Omega Jet perforating gun, hole size (.25" dia), hold 1800 psi on tbg while perforating, increase in press to 2600 psi upon perforating, RD NL McCullough, SITP 4400psi; RU BJ Hughes; pmp spot acid away, displace 7 bbls into formation break @ 6000 psi, ISDP 5600 psi; 2 hrs flow to pit on 26/64" chk, FTP 4800 to 0 psi, rec 80 BW w/ show of gas at end of flow; 1-1/2 hrs RU BJ Hughes; acidize wolfcamp w/2500 gals 10% MorFlo BC Acid w/15-7/8" Ball sealers in acid, flush w/slick fresh wtr, Max press 10,000 psi @ 2.8 BPM, Ave rate 5 BPM @ 8000 psi, ISDP 5000 psi, good ball action, BLTR 158, RD BJ Hughes; 1/2 hr flow to pit FTP 4900 to 100 psi in 5 min, Gas to surf in 15 min w/press to 2200 psi increasing to 4600 psi rec 125 BW; 1/2 hr SI to connect to production unit, SITP 7400 psi; 2-1/2 hrs flow thru prod. unit FTP 7800 psi to 6800 psi Rate 1.5 MMCFPD to 1.8 MMCFPD, Rec 33 BW BLTR 0; 10 hrs SI WO Transwestern to change orifice plate, prep to test down pipeline; EDWC \$21,010; ETWC \$31,490.

1-16-82 4 hrs SI SITP 8100 psi; 1 hr open well to adjust prod unit; pipeline frozen; 6 hrs SI SITP 7800 psi; 5 hrs flow 1.9 MMCFPD @ 6600 psi, rec 12 BO, 9 BW; 8 hrs SI supply lines frozen, SITP 8300 psi;

1-17-82 24 hrs flow 1.65 MMCF @ 6600 psi FTP, 3 BO, 12 BW

1-18-82 24 hrs flow 1.7 MMCF @ 6600 psi FTP, 4 BO, 14 BW, line press 810 psi.

1-19-82 24 hrs Flow 1.7 MMCF @ 6600 FTP Rec 2 BO, 13 BW, PRP Prep to run potential test

1-24-82 attempt to run BHP bombs in hole for 4 point test, found ice in tree, could not get down; SD

1-25-82 24 hrs SI

1-26-82 RU Halliburton; SITP 8200 psi; Load csg w/5 Bbl 2% Kcl -2700 psi; Displace lines w/methanol; pumped 6 bbls methanol @ .4 BPM (alternately pmp 1 bbl & SD); RU Jarrell services & made dummy run to 1000'-no ice; TOH; Run bombs in hole making gradient steps on bottom @ 2:45 pm; Ran 4-Pt. test as follows:

<u>TIME</u>	<u>RATE</u>	<u>FTP</u>	
2 hrs 15 min	1 MM	7445 psi	1st rate
1 hr 15 min	1.5MM	7052	2nd
5 hrs	1.95MM	6500	3rd
1 hr	2.8MM	5635	4th
8 hrs	2.2MM	5880	Extended rate

At end of 7 hrs well making 5 BCPH; TOH left btm bomb in hole; left well on 2.2 MMCFPD rate; prep to fish bomb;

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

Form C-122
Revised 9-1-60

TO: *Shiloh*

10-1-80

Type Test ☒ Initial ☐ Annual ☐ Special		Test Date 9-11-80	
Company HNG Oil Company		Location None	
Pool Wildcat		Formation Morrow	
Completion Date 8-21-80	Total Depth 15,930	Plug back To 15,033'	Elevation 3408 GL
Field or Lease Name Bell Lake 11 Federal			Well No. 1
Csg. Size 7"	Orifice 26#	Set At 12,934'	Perforations From 14,883 To 14,977
Trg. Size 2 7/8	Orifice 6.7	Set At 12,667'	Perforations From To
Type Well - Single - Production - G.G. or G.O. Multiple Single		Packer Set At 12,667	County Lea
Producing Thru TBG.	Reservoir Temp. °F 239 @ 14930	Mean Annual Temp. °F 68	State New Mexico
L 12667	H 12667	Gg .573	% CO ₂ None
			% N ₂ None
			% H ₂ S None
			Prover X
			Meter Run Flange

FLOW DATA						TUBING DATA		CASING DATA		Duration of Flow	
NO.	Prover 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						68	8215.2	78	Packer		
1.	4.026		1.250	500	11	73	6394.2	75	In		60 Min.
2.	4.026		1.250	500	14	77	4887.2	78	Well		60 Min.
3.	4.026		1.250	510	16	70	3398.2	78			60 Min.
4.	4.026		1.250	510	12	90	1703.2	81			60 Min.
5.											

RATE OF FLOW CALCULATIONS							
NO.	Coefficient (24 Hour)	$\sqrt{h_w P_m}$	Pressure P _m	Flow Temp. Factor Ft.	Gravity Factor Fg	Super Compens. Factor, F _{sp}	Rate of Flow Q, Mscf/d
1	7.469	75.13	513.2	.9877	1.321	1.040	761
2	7.469	84.76	513.2	.9831	1.321	1.031	848
3	7.469	91.49	523.2	.9905	1.321	1.041	931
4	7.469	75.86	523.2	.9723	1.321	1.031	750
5							

NO.	P ₁	Temp. °R	T ₁	Z	Gas Liquid Hydrocarbon Ratio	No Fluid Produced	Mcf/Day
1	.76	533	1.54	.924	A.P.L. Gravity of Liquid Hydrocarbons		
2	.76	537	1.55	.941	Specific Gravity Separator Gas	.573	XXXXXXXXXX
3	.78	530	1.53	.922	Specific Gravity Flowing Fluid	XXXXXX	
4	.78	550	1.59	.940	Critical Pressure	672	P.S.I.A. F.I.A.A.
5					Critical Temperature	346	R R

r _c 10,391.2 r _w ² 107977			
NO.	r _c ²	r _w ²	r _c ² - r _w ²
1	7988.2	63811	44166
2	7432.2	55238	55739
3	6738.2	45403	62574
4	5546.2	30760	77217
5			

(1) $\frac{P_c^2}{P_c^2 - P_w^2} = 1.7256$

(2) $\left[\frac{P_c^2}{P_c^2 - P_w^2} \right]^n = 1.4565$

ACF = Q $\left[\frac{P_c^2}{P_c^2 - P_w^2} \right]^n = 1356$

1356

Absolute Open Flow	1356	Mcf/d @ 14.625	Angle of Slope θ	58°	Flow Co. n	.6256
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Remarks: PW Substituted for PT - Measured with Amerada
Instrument No. 33122 0 - 11,000# Element
Third flow rate used for open flow calculations

Approved By Commission	Conducted By: Richburg	Calculated By: Richburg	Checked By: Spruell
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MULTIPOINT AND ONE POINT BACK PRESSURE TEST FOR GAS WELL

Type Test ☒ Initial ☐ Annual ☐ Special				Test Date 1/25/82	
Company HNG Oil Company			Connection Transwestern		
Well Vaca Draw			Formation Wolfcamp		Unit
Completion Date 1/15/82		Total Depth 15,930'	Plug Back TD 14883'		Elevation 3408'
Name of Lease Name Bell Lake 11 Federal					Well No. 1
Cas. Size 4 1/2" Liner	Wt. 15.1	d 3.826	Set At 15909	Perforations: From 13684 To 13693	
Tub. Size 2 7/8"	Wt. 6.50	d 2.441	Set At 12666'	Perforations: Open Ender From To	
Type Well - Single - Bradenhead - G.C. or G.O. Multiple Single				Packer Set At 12666'	
Producing Thru Tubing		Reservoir Temp. °F 1	Mean Annual Temp. °F 60		Baro. Press. - P _a 13.2
County Lea		State New Mexico			
L 13688'	H -	G _g 0.9017	% CO ₂ 0.738	% N ₂ 2.555	% H ₂ S -
Prover -		Meter Run 2"		Taps F	

FLOW DATA						TUBING DATA		CASING DATA		Duration of Flow	
NO.	Prover Line Size	X	Orifice Size	Press. p.s.i.g.	Diff. h _w	Temp. °F	Press. p.s.i.g. W.T.	Temp. °F	Press. p.s.i.g.		Temp. °F
51							8130				45.0 hrs
1	2"	1.375	800	8	54	7445	60	PACKER			2.25 hr
2	2"	1.375	800	18	54	7050	60				1.25 hr
3	2"	1.375	800	31	52	6500	60				1.00 hr
4	2"	1.375	805	40	51	5750	60				8.00 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. Compres. Factor, F _{sp}	Rate of Flow Q, Mscf/d
1	10.20	80.66	813.2	1.006	1.053	1.206	1051.07
2	10.20	120.99	813.2	1.006	1.053	1.206	1576.61
3	10.20	158.77	813.2	1.008	1.053	1.218	2093.65
4	10.20	180.21	818.2	1.009	1.053	1.222	2395.82
5							

NO.	P _r	Temp. °R	T _r	Z	Gas Liquid Hydrocarbon Ratio	Mcf/bbl.
1	1.23	514	1.17	0.687	37.309	
2	1.23	514	1.17	0.687	61.7	
3	1.23	512	1.16	0.674	0.9017	XXXXXX
4	1.24	511	1.16	0.671	XXXXXX	
5						

P _r 10735.2 P _w ² 115244.5				Gas Liquid Hydrocarbon Ratio 37.309 Mcf/bbl. A.P.I. Gravity of Liquid Hydrocarbons 61.7 Deg. Specific Gravity Separator Gas 0.9017 Specific Gravity Flowing Fluid XXXXX Critical Pressure 661 P.S.I.A. Critical Temperature 441 °R	
NO.	P _r ²	P _w ²	P _r ² - P _w ²	(1) $\frac{P_r^2}{P_r^2 - P_w^2} = 2.881$	(2) $\left[\frac{P_r^2}{P_r^2 - P_w^2} \right]^n = 2.359$
1	9882.2	97657.9	17586.6	$AOF = Q \left[\frac{P_r^2}{P_r^2 - P_w^2} \right]^n = 4938$	
2	9452.2	89344.1	25900.4		
3	8674.2	75241.1	40003.4		
4	8222.2	67604.6	47639.9		
5					

Absolute Open Flow 4938	Mcf @ 15.025	Angle of Slope 50° 58'	Slope, n 0.811
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Remarks: * BOTTOM HOLE PRESSURE @ (-10280) 13688' USED FOR PRESSURE CALCULATIONS
WELL PRODUCED 24.84 BD in 12.5 HOURS = 47.69 BD/D

Approved By Division	Conducted By: JERREL WELL TESTING, INC	Calculated By: JOE A. COLEMAN	Checked By: PE #2208 Joe A. Coleman
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TIGHT GAS SANDS
PERMEABILITY AND STABILIZED FLOW RATE
VACA DRAW / PITCHFORK RANCH AREA

DATE: 11/22/91

WELL NAME: BRINNINSTOOL NO. 1

INTERVAL: 15759-65

STIMULATED ? (Y/N): NO; 20 BBL ACID SPOT

FLOW RATE (MCF/D): 2,574

FLOW TIME (HRS.): 14

FLOWING BHP (psia): 5,302

GAS GRAVITY (Yg): 0.571

TEMP. DEGREE F (T): 208

RESERVOIR PRESSURE (Pi): 10,734

GAS POROSITY: 0.085

WELLBORE RADIUS (Ft): 0.250

SKIN FACTOR: 0.0

PAY HEIGHT: 7

Z-FACTOR: 1.448

GAS COMPRESSIBILITY: 0.00004

GAS VISCOSITY (cp): 0.0337

SPACING ACRES: 320

FORMATION VOLUME FACTOR (Bg): 0.454

SPACING RADIUS (Ft): 2,106

ASSUMED K (md): 1.0227

RADIUS OF DRAINAGE (Ft): 576.5

CALCULATED K (md): 1.0227

STEADY TIME (HRS.): 471.07

STABILIZED FLOW (MCF/D): 2171.67

AOE PRESSURE (psia): 354

STABILIZED AOE (MCF/D): 4,150

TIGHT GAS SANDS

PERMEABILITY AND STABILIZED FLOW RATE

VACA DRAW / PITCHFORK RANCH AREA

DATE: 11/22/91

WELL NAME: BRINNINSTOOL NO. 1

INTERVAL: 15170-765'

STIMULATED ? (Y/N): NO; NATURAL

FLOW RATE (MCF/D): 1,600

FLOW TIME (HRS.): 9

FLOWING BHP (psia): 6,476

GAS GRAVITY (Yg): 0.571

TEMP. DEGREE F (T): 208

RESERVOIR PRESSURE (Pi): 8,500

GAS POROSITY: 0.060

WELLBORE RADIUS (Ft): 0.250

SKIN FACTOR: 0.0

PAY HEIGHT: 41

Z-FACTOR: 1.275

GAS COMPRESSIBILITY: 0.00005

GAS VISCOSITY (cp): 0.0306

SPACING ACRES: 320

FORMATION VOLUME FACTOR (Bg): 0.512

SPACING RADIUS (Ft): 2,106

ASSUMED K (md): 0.2648

RADIUS OF DRAINAGE (Ft): 262.8

CALCULATED K (md): 0.2648

STEADY TIME (HRS.): 1,457.79

STABILIZED FLOW (MCF/D): 1198.25

AOE PRESSURE (psia): 354

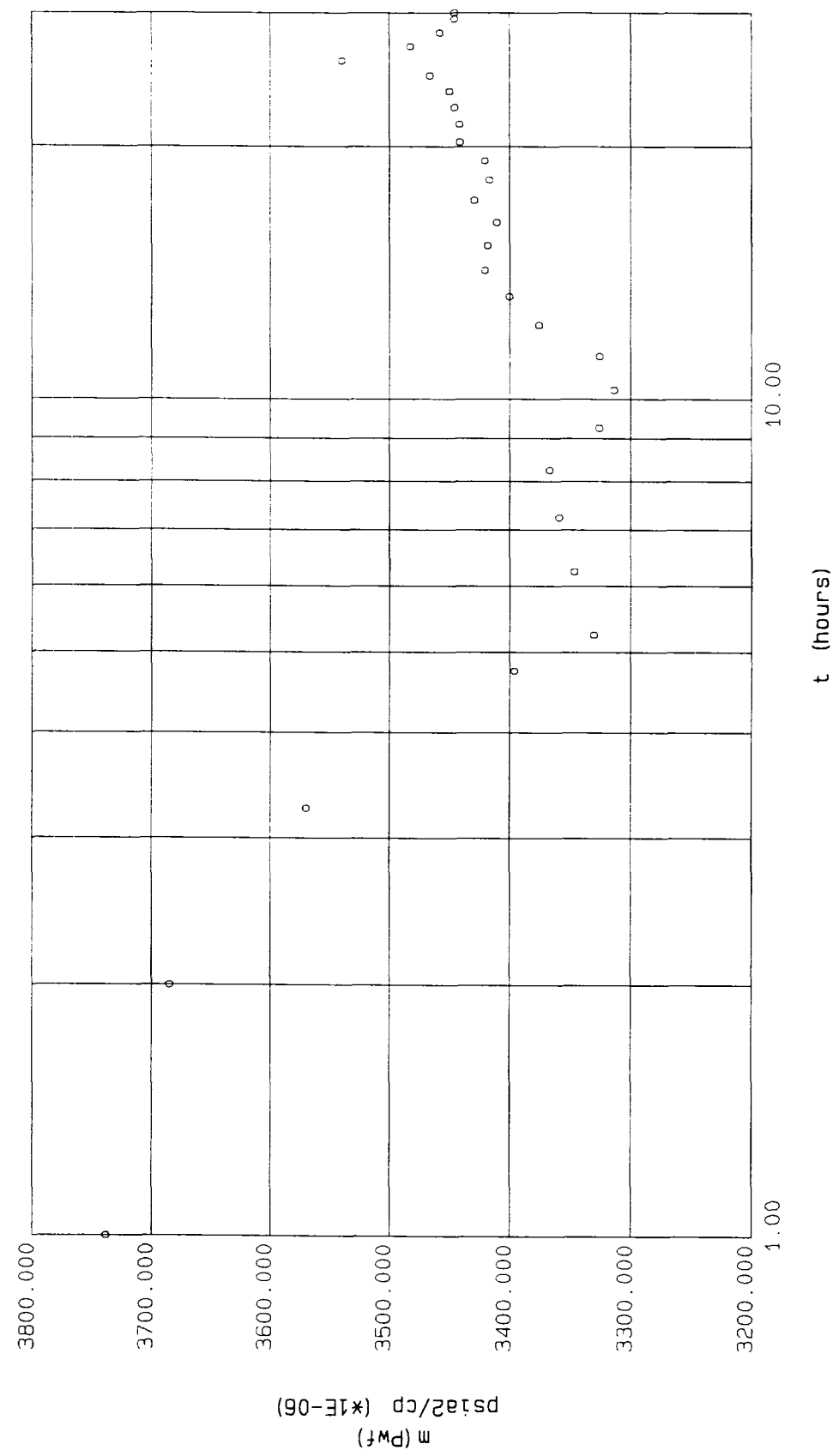
STABILIZED AOE (MCF/D): 4,823

NOT GOOD TEST
NOT ENOUGH FLOW TIME

BRINNINSTOOL 21 FEDERAL #1 - SEMILOG DRAWDOWN

PANSYSTEM V1.8 (C) EPS 1991.

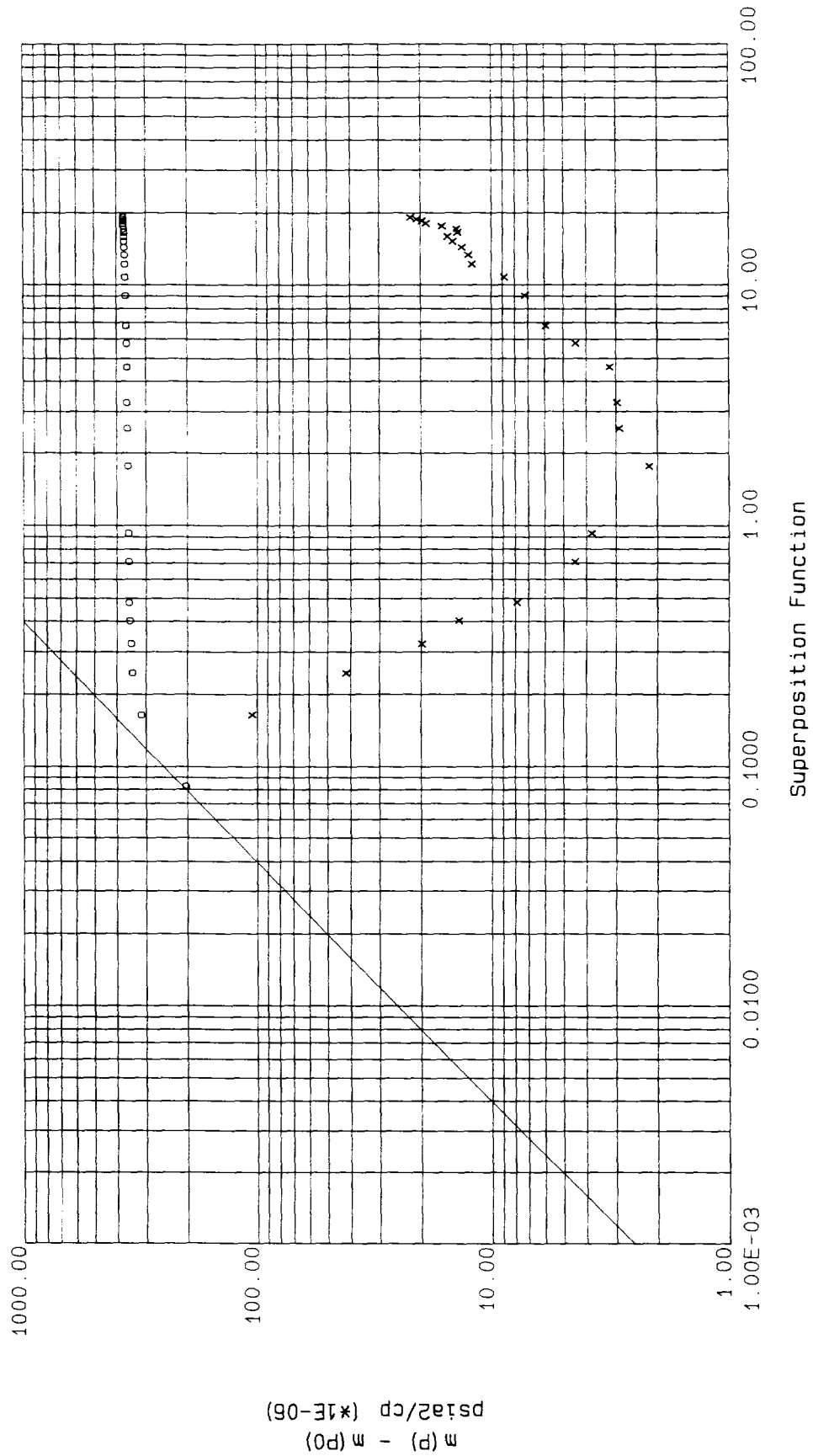
File..... BRINN. GAS
 Company..... ENRON OIL & GAS COMPANY
 Well..... BRINNINSTOOL 21 FEDERAL #1
 Field..... UNDESIGNATED MORROW
 Location..... LEA COUNTY, NEW MEXICO
 Date..... 1/13/88 - 1/18/88
 Test..... 4 PT AND BUILDUP
 Gauge..... AMERADA



PANSYSTEM V1.8 (C) EPS 1991.

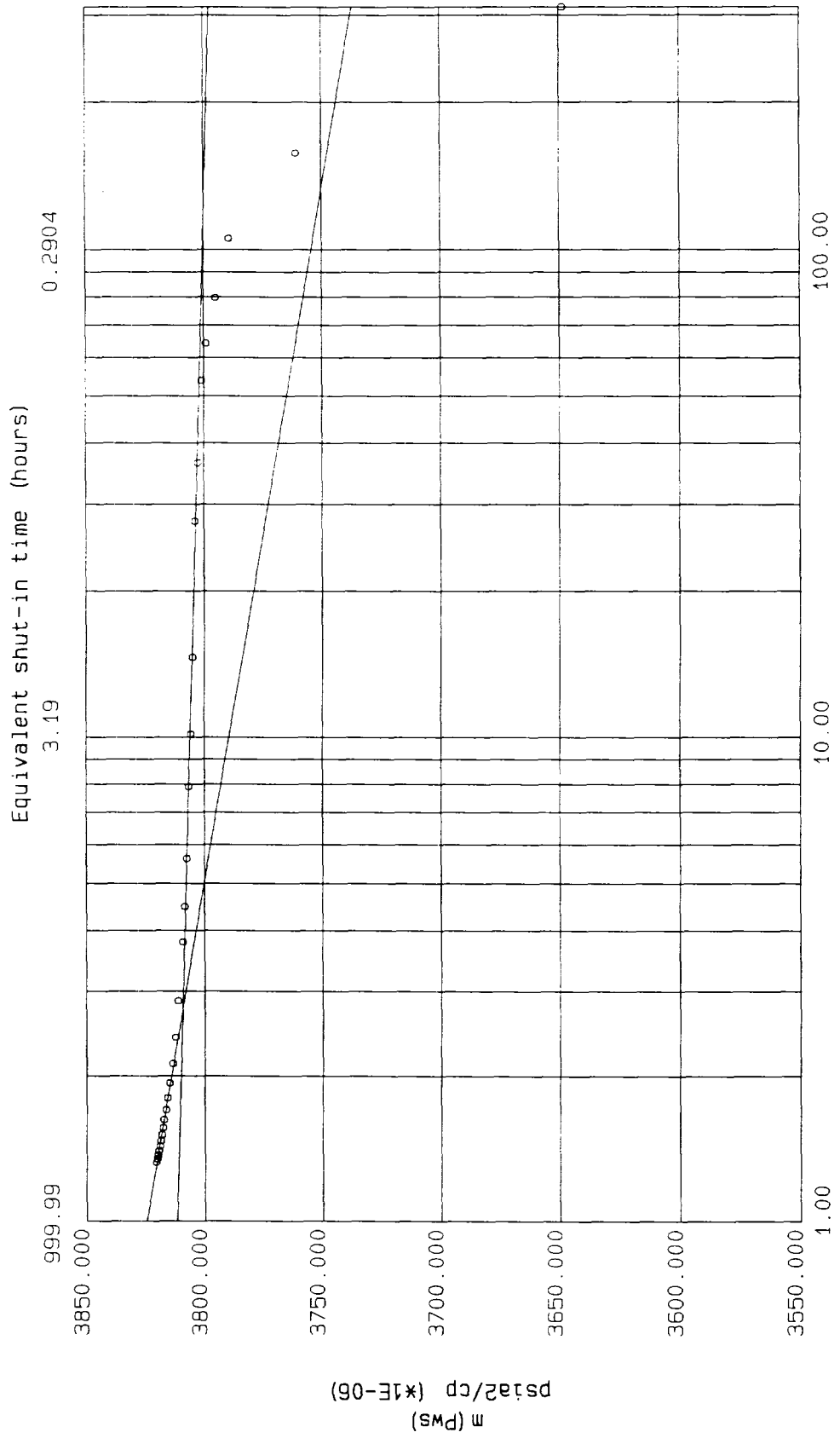
BRINNINSTOOL 21 FEDERAL #1 - LOG-LOG

File.....	BRINN GAS	Location.....	LEA COUNTY, NEW MEXICO	Slope.....	1.000
Company.....	ENRON OIL & GAS COMPANY	Date.....	1/13/88 - 1/18/88	Intercept.....	3.403
Well.....	BRINNINSTOOL 21 FEDERAL #1	Test.....	4 PT AND BUILDUP	Wellbore Vol.:	246.174
Field.....	UNDESIGNATED MORROW	Gauge.....	AMERADA	Storage coef.:	9.529E-03



PANSYSTEM V1.8 (C) EPS 1991. BRINNINSTOOL 21 FEDERAL #1 - VARIABLE RATE BUILDUP

File.....	BRINN. GAS	Location.....	LEA COUNTY, NEW MEXICO	Slope.....	-5.761	-35.160
Company.....	ENRON OIL & GAS COMPANY	Date.....	1/13/88 - 1/18/88	Intercept.....	3811.875	3824.761
Well.....	BRINNINSTOOL 21 FEDERAL #1	Test.....	4 PT AND BUILDUP	Permeability..	78.630	12.882
Field.....	UNDESIGNATED MORROW	Gauge.....	AMERADA	Skin.....	64.120	4.242



E.P.S. Ltd.

PANSYSTEM ANALYSIS PROGRAM

File: BRINN.GAS ,BELL2B.PRO

Test type: VRB

Date: 23/11/91 Time: 14:06

Data Point	Time Hours	Pressure psia	m(p) psia2/cp (*1E-06)
1.	0.0000	10721.0000	3844.9316
2.	1.0000	10466.0000	3738.8129
3.	2.0000	10337.0000	3685.0065
4.	3.2500	10062.0000	3570.0327
5.	4.7500	9649.0000	3396.3688
6.	5.2500	9493.0000	3330.4406
7.	6.2500	9532.0000	3346.9335
8.	7.2500	9561.0000	3359.1977
9.	8.2500	9580.0000	3367.2329
10.	9.2500	9483.0000	3326.2116
11.	10.2500	9454.0000	3313.9245
12.	11.2500	9483.0000	3326.2116
13.	12.2500	9600.0000	3375.6909
14.	13.2500	9659.0000	3400.5888
15.	14.2500	9707.0000	3420.8449
16.	15.2500	9702.0000	3418.7351
17.	16.2500	9683.0000	3410.7170
18.	17.2500	9727.0000	3429.2785
19.	18.2500	9698.0000	3417.0471
20.	19.2500	9707.0000	3420.8449
21.	20.2500	9756.0000	3441.4899
22.	21.2500	9756.0000	3441.4899
23.	22.2500	9766.0000	3445.7006
24.	23.2500	9776.0000	3449.9116
25.	24.2500	9815.0000	3466.3334
26.	25.2500	9990.0000	3539.8522
27.	26.2500	9854.0000	3482.7424
28.	27.2500	9795.0000	3457.9121
29.	28.2500	9766.0000	3445.7006
30.	28.7500	9766.0000	3445.7006
31.	28.8333	10250.0000	3648.6687
32.	28.9167	10519.0000	3760.8947
33.	29.0000	10587.0000	3789.2094
34.	29.0833	10601.0000	3795.0339
35.	29.1667	10611.0000	3799.1943
36.	29.2500	10615.0000	3800.8583
37.	29.5000	10619.0000	3802.5224
38.	29.7500	10622.0000	3803.7705
39.	30.7500	10625.0000	3805.0185
40.	31.7500	10627.0000	3805.8505
41.	32.7500	10629.0000	3806.6826
42.	34.7500	10631.0000	3807.5148
43.	36.7500	10633.0000	3808.3469
44.	38.7500	10635.0000	3809.1789
45.	43.7500	10640.0000	3811.2590
46.	48.7500	10643.0000	3812.5070
47.	53.7500	10646.0000	3813.7551
48.	58.7500	10649.0000	3815.0031
49.	63.7500	10651.0000	3815.8354
50.	68.7500	10653.0000	3816.6674

E.P.S. Ltd.

PANSYSTEM ANALYSIS PROGRAM

File: BRINN.GAS ,BELL2B.PRO

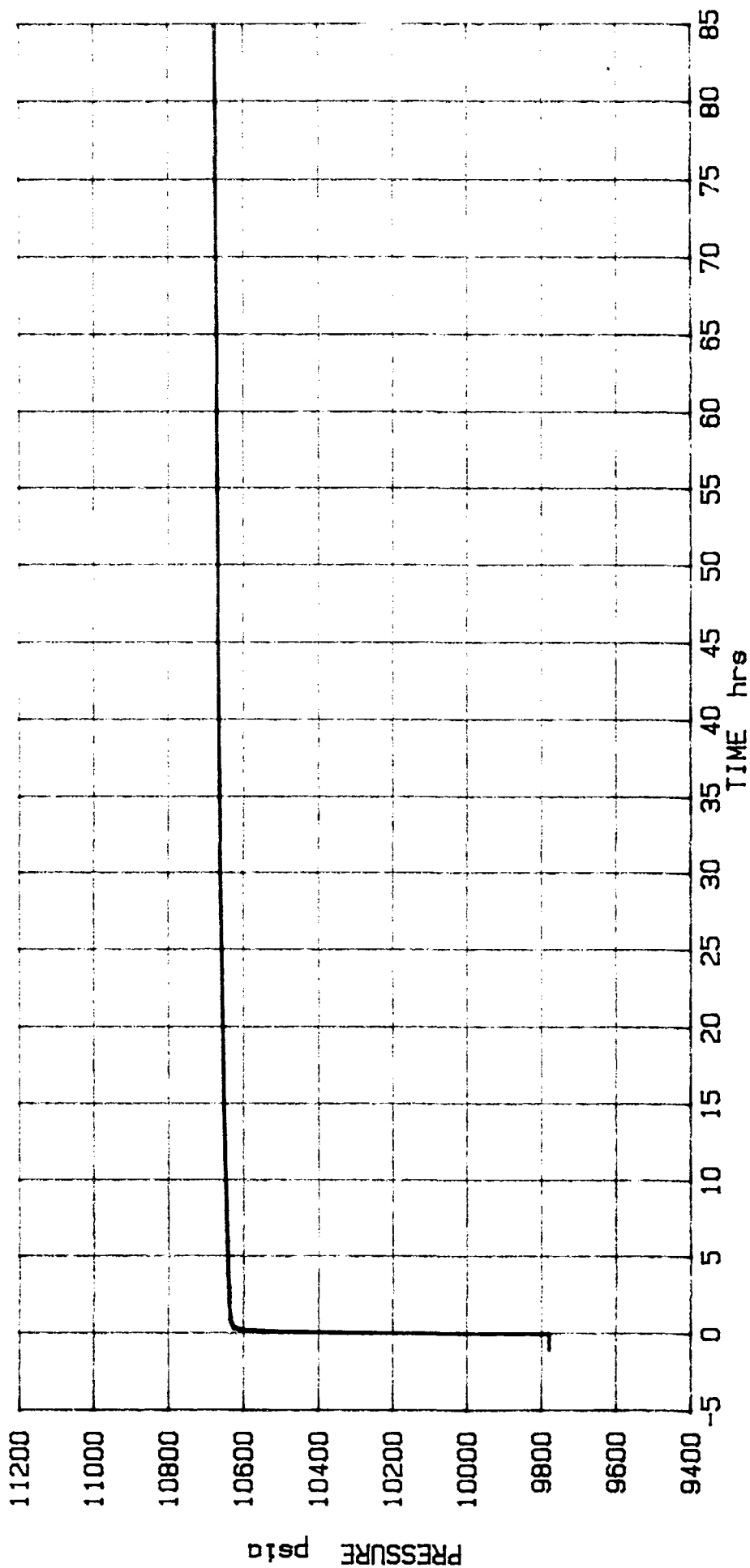
Test type: VRB

Date: 23/11/91 Time: 14:06

Data Point	Time Hours	Pressure psia	m(p) psia2/cp (*1E-06)
51.	73.7500	10655.0000	3817.4995
52.	78.7500	10656.0000	3817.9155
53.	83.7500	10657.0000	3818.3315
54.	88.7500	10658.0000	3818.7475
55.	93.7500	10659.0000	3819.1635
56.	98.7500	10660.0000	3819.5795
57.	103.7500	10661.0000	3819.9956
58.	108.7500	10662.0000	3820.4116
59.	113.7500	10663.0000	3820.8276

TEST DATE: 01/13/88 TO 01/18/88
TEST DEPTH: 15762 ft
ELEMENT NO: 13807
RANGE: 15925 psig
CLOCK: 23639
RANGE: 120 hrs
OPERATOR: Newman

Enron Oil & Gas Company
Brinninstool 21 Federal #1
Undesignated - Morrow
JARREL SERVICES, INC.
Box 1230 Hobbs, N.M. 88240 (505) 393-1736



JARREL SERVICES, INC.
 PHONE (505) 393-1736
 HOBBS, NEW MEXICO, 88240

PRESSURE TRANSIENT TEST DATA

COMPANY: Enron Oil & Gas Company CONTACT: Rick Schatz
 LEASE: Brinningwood 21 Federal WELL: 01
 FIELD: Undesignated ZONE: Morrow
 COUNTY: Lea STATE: New Mexico
 STATUS: Build-up following 9-apt. & 24 hr. flow OPERATOR: Newman

PERFORATIONS FROM: 15,759.0' TO: 15,763.0'
 DEPTH: 15,762.0' TEMPERATURE: 208.0°F

ELEMENT: 21480 RANGE: 15225 psig
 CLOCK: 02147 RANGE: 120 hrs
 ELEMENT: 13607 RANGE: 15925 psig
 CLOCK: 23649 RANGE: 120 hrs

SURFACE PRESSURE MEASUREMENTS

EVENT	DATE	TIME	DEAD WEIGHT PRESSURE
START CLOCK	01/13/88	08:30:00	8,785.0 psig
SET ELEMENT	01/13/88	11:00:00	8,785.0 psig
WELL SHUT IN	01/14/88	19:30:00	7,635.0 psig
TEST ENDED	01/18/88	08:30:00	8,687.0 psig

SUBSURFACE PRESSURE MEASUREMENTS

DATE	TIME	t hrs	GAUGE PRESSURE psig	ABSOLUTE PRESSURE psia	RESERVOIR PRESSURE psia
01/14/88	18:30:00	-1.000	9,766.0	9,779.2	9,779.2
01/14/88	19:30:00	0.000	9,766.0	9,779.2	9,779.2
01/14/88	19:35:00	.083	10,250.0	10,263.2	10,263.2
01/14/88	19:40:00	.167	10,519.0	10,532.2	10,532.2
01/14/88	19:45:00	.250	10,587.0	10,600.2	10,600.2
01/14/88	19:50:00	.333	10,601.0	10,614.2	10,614.2
01/14/88	19:55:00	.417	10,611.0	10,624.2	10,624.2
01/14/88	20:00:00	.500	10,615.0	10,628.2	10,628.2
01/14/88	20:15:00	.750	10,619.0	10,632.2	10,632.2
01/14/88	20:30:00	1.000	10,622.0	10,635.2	10,635.2
01/14/88	21:30:00	2.000	10,625.0	10,638.2	10,638.2
01/14/88	22:30:00	3.000	10,627.0	10,640.2	10,640.2
01/14/88	23:30:00	4.000	10,629.0	10,642.2	10,642.2
01/15/88	01:30:00	6.000	10,631.0	10,644.2	10,644.2
01/15/88	03:30:00	8.000	10,633.0	10,646.2	10,646.2
01/15/88	05:30:00	10.000	10,635.0	10,648.2	10,648.2
01/15/88	10:30:00	15.000	10,640.0	10,653.2	10,653.2
01/15/88	15:30:00	20.000	10,643.0	10,656.2	10,656.2
01/15/88	20:30:00	25.000	10,646.0	10,659.2	10,659.2
01/16/88	01:30:00	30.000	10,649.0	10,662.2	10,662.2
01/16/88	06:30:00	35.000	10,651.0	10,664.2	10,664.2
01/16/88	11:30:00	40.000	10,653.0	10,666.2	10,666.2

ILLEGIBLE

GARREL SERVICES, INC.
PHONE (505) 393-1736
HOBBS, NEW MEXICO, 88240

PRESSURE TRANSIENT TEST DATA

SUBSURFACE PRESSURE MEASUREMENTS

DATE	TIME	t hrs	GAUGE PRESSURE psig	ABSOLUTE PRESSURE psia	RESERVOIR PRESSURE psia
01/16/88	16:30:00	45.000	10,655.0	10,668.2	10,668.2
01/16/88	21:30:00	50.000	10,656.0	10,669.2	10,669.2
01/17/88	02:30:00	55.000	10,657.0	10,670.2	10,670.2
01/17/88	07:30:00	60.000	10,658.0	10,671.2	10,671.2
01/17/88	12:30:00	65.000	10,659.0	10,672.2	10,672.2
01/17/88	17:30:00	70.000	10,660.0	10,673.2	10,673.2
01/17/88	22:30:00	75.000	10,661.0	10,674.2	10,674.2
01/18/88	03:30:00	80.000	10,662.0	10,675.2	10,675.2
01/18/88	08:30:00	85.000	10,663.0	10,676.2	10,676.2

ILLEGIBLE

SUGGESTED FIELD DATA SHEET (Not Required To File)

Type Test ☐ Initial ☐ Annual ☒ Special		Test Date 1-13-87	Lease No. or Serial No. N.M. 26394
Company ENRON		Connection NONE	Allottee
Flow KOCAL	Reservoir MORROW	Location	Unit 0
Completion Date 1-8-88	Total Depth 16050'	Plug Back TD 15,954'	Elevation 3364 G.L. 27.5 L.B.
Csg. Size 4 1/2	Set At 15.1	Perforations: From 15,994	To 15,765'
Tub. Size 2 7/8	Set At 7.9	Perforations: From 12,889	To OPEN ENDED
Type Completion (Describe) SINGLE	Packer Set At 12,889	County or Portion LEA	Farm or Lease Name BRINNINSTOCK 21
Production Test TBB	Reservoir Temp. F 60°	Mean Annual Temp. F 13.2	Baro. Press. - P _a 13.2
L	H	G _g	% CO ₂
			% N ₂
			% H ₂ S
			Prover
			Meter Run 3
			Fig.

DATE	TIME	Wellhead Working Pressure			METER OR PROVER				REMARKS
Time of Reading	Hour	Tub. Pslg.	Csg. Pslg.	Temp. F	Pressure Pslg.	Diff.	Temp. F	Orifice	(Include liquid production data) Type-A.P.I. Gravity-A-mount
11:00	10	8785						1.375	ON BOTTOM w/BHP @ 11:00
11:30	30	8785							D.W.T
12:00	10	8785							
1:00	20	8785							PRE-HEAT BATH @ 1:00
2:45	10	8785	4425	60°	750	10"	58°	1.375	BEGIN TEST @ 2:45
3:00	15	8460	4425	60°	760	11"	64°	1.375	CUT BACK RATE
3:15	30	8550	4425	60°	760	9"	71°	1.375	
3:30	45	8550	4425	60°	760	9"	75°	1.375	NO FLUID
3:45	10	8550	4425	60°	760	9"	75°	1.375	END RATE I - 1.060 MMCF/DAY
4:00	15	8398	4425	60°	760	18"	73°	1.375	BEGIN RATE II
4:15	30	8398	4450	60°	760°	17"	73°	1.375	
4:30	45	8398	4450	60°	760°	17"	74°	1.375	TRACES OF DISTILLATE
4:45	20	8398	4450	60°	760°	16"	73°	1.375	END RATE II - 1.430 MMCF/DAY
5:00	25	8150	4450	60°	760	38"	73°	1.375	BEGIN RATE III
5:15	30	8133	4475	60°	760	37"	74°	1.375	
5:30	45	8130	4500	60°	760°	37"	73°	1.375	
5:45	30	8141	4500	60°	780	35"	73°	1.375	
6:00	35	8141	4500	60°	780	37"	73°	1.375	END RATE III - 2.200 MMCF/DAY
6:15	30	7768	4500	60°	780	71"	62°	1.375	BEGIN RATE IV
6:30	45	7705	4525	60°	780	71"	60°	1.375	
6:45	40	7705	4525	60°	780	72"	60°	1.375	
7:00	45	7655	4575	60°	780	72"	63°	1.375	
7:15	40	7669	4600	60°	780	72"	61°	1.375	
7:30	45	7669	4600	60°	780	71"	60°	1.375	END RATE IV - 3.150 MMCF/DAY
8:00	30	7520	4625	60°	780	72°	61°	1.375	BEGIN 24 HR. RATE
9:00	10	7549	4650	60°	780	72°	62°	1.375	3.000 MMCF/DAY
10:00	30	7680	4700	60°	780	68°	57°	1.375	2.930 MMCF/DAY
11:00	30	7675	4700	60°	780	64°	53°	1.375	2.850 MMCF/DAY
12:00	40	7568	4700	60°	780	72"	54°	1.375	3.000 MMCF/DAY
1:00	30	7550	4750	60°	780	74°	62°	1.375	3.020 MMCF/DAY
2:00	30	7600	4775	60	780	78°	63°	1.375	3.130 MMCF/DAY

SUGGESTED FIELD DATA SHEET (Not Required To File)

Test Type ☐ Initial ☐ Annual ☒ Special	Test Date 1-14-88	Lease No. or Section No. N.M. 26394
Company ENEON	Connection None	Allotted
Flow W. LOCAT	Reservoir Morrow	Location Unit 0
Completion Date 1-8-88	Total Depth 16050'	Plug Back TD 15954'
	Elevation 3364 G.C.	27.5 K. 0
Case Size 4 1/2	Set At 15.994	Perforations: From To 15,759' 15,765'
Tag Size 2 7/8	Set At 12,889	Perforations: From To OPEN ENDED
Type Completion (Describe) SINGLE	Packer Set At 12,889	Form or Lease Name BEINNINGSTOCK XI
Production Test T89	Reservoir Temp. F 60°	Baro. Press. - P _a 13.2
	Mean Annual Temp. F 60°	Well No. FEO #1
	% CO ₂	Sec. XI
	% N ₂	Two-Port. 255
	% H ₂ S	33E
	Prover	Country or Parish LEO
	Meter Run 3"	State N.M.
		Fig.

DATE		Wellhead Working Pressure				METER OR PROVER				REMARKS	
Time of Reading	hrs.	Tbg. Psig.	Csg. Psig.	Temp. F	Pressure Psig.	Diff.	Temp. F	Grifice		(Include liquid production details) Type-A.P.I. Gravity - Amount	
3:00	17.30	7680	4800	60°	780	82"	64°	1.375	3.210	mmcf/day	
4:00	18.30	7684	4800	60°	780	76"	64°	1.375	3.100	mmcf/day	
5:00	19.30	7733	4800	60°	780	73"	68°	1.375	3.075	mmcf/day	
6:00	20.30	7740	4800	60°	780	73"	67°	1.375	3.075	mmcf/day	
7:00	21.30	7740	4825	60°	780	74"	72°	1.375	3.100	mmcf/day	
8:00	22.30	7740	4825	60°	780	72"	74°	1.375	3.000	mmcf/day	
9:00	23.30	7705	4850	60°	780	69"	72°	1.375	2.950	mmcf/day	
10:00	24.30	7770	4875	60°	780	73"	68°	1.375	3.075	mmcf/day	
11:00	25.30	7705	4900	60°	780	70"	67°	1.375	2.975	mmcf/day	
12:00	26.30	7650	100	60°	780	68"	68°	1.375	2.900	mmcf/day	
1:00	27.30	7355	125	60°	780	70"	70°	1.375	2.975	mmcf/day	
2:00	28.30	7650	125	60°	780	69"	72°	1.375	2.950	mmcf/day	
3:00	29.30	7600	125	60°	780	70"	63°	1.375	2.975	mmcf/day	
4:00	30.30	6500	2600	60°	780	42"	56°	1.375	2.300	mmcf/day	
5:00	31.30	7250	2600	60°	780	55"	59°	1.375	2.700	mmcf/day	
6:00	32.30	7575	2600	60°	780	63"	65°	1.375	2.900	mmcf/day	
7:00	23.30	7650	2650	60°	780	67"	73°	1.375	2.875	mmcf/day	
7:30	24.0	7655	2650	60	780	67"	74°	1.375	2.875	mmcf/day	
										4:00 PM WELL UNLOADING	
										APPROX. 4 BBL H ₂ O PER	
										No. Oil	
										THERE WAS TRACE'S OF DISTILLATE	
										DURING A-PT, BUT TO SMALL TO	
										MEASURE. DURING THE 24 HR FLOW	
										WELL MADE APPROX. 2 BBL'S	
										OF DISTILLATE, AND APPROX. 12 BBL'S	
										OF WATER, WELL UNLOADED HEAVY	
										FLUID XI HRS INTO EXTENDED RATE	
										SPECIFIC GRAVITY OF 38 @ 60°	

BRINNINSTOOL "21" FED No. 1 (EW-Gas)
 660' FSL & 1980' FEL
 Section 21-25S-33E
 Lea County, New Mexico
 Red Hills
 Vaca Draw Prospect

Oper: Enron Oil & Gas Company
16,000' Morrow
EOG %: 50 WI, 41.25 NRI
 AFE No.
 SC No. N/A
 Product Call %: 50

05-29-91 PRESENT OPERATION: Perf Morrow Zones

8 hr MIRU Jarrel Wireline Service, TIH w/perf guns to 15,369'; guns would not fire; TOH, had bad primer cord; SDFN; EDWC \$0; ETWC \$925.

05-30-91 PRESENT OPERATION: Flow Test

10 hr MIRU Jarrel Wireline Service, perf Morrow zone from 15,170-76', 15,349-54'; 15,369-71', and 15,379-83' total of 38 holes on shot 15,170-76'; press incr from 1800 psi to 6200 psi; RD Jarrel Wireline; 5 hr well SI, TP 5100, CP 500; 9 hr flow test well @ 1600 MCF, TP 4900, CP 500, BP 100; 0 BO, 0 BW; EDWC \$9,220; ETWC \$10,145.

05-31-91 PRESENT OPERATION: Flow Test

6 hr well SI, TP 5700, CP 750; 18 hr flowed 2500 MCF, TP 5100, CP 750, LP 890, 0 BO, 0 BW; EDWC \$0; ETWC \$10,145.

Date	MCFD	FTP	LP	BOPD	BWPD
05-31-91	2100	3900	890	8	0
06-01-91	2000	5400	890	8	0
06-02-91	2246	3800	890	3	0
06-04-91	1680	2200	880	22	0
06-05-91	2472	1700	860	0	62
06-06-91	1809	2100	840	0	99
06-07-91	1678	1300	820	0	102
06-08-91	1651	1100	850	0	85
06-09-91	1412	1000	870	0	82
06-10-91	1285	1000	900	0	43
06-11-91	1263	1000	900	0	49
06-12-91	1188	1000	910	0	37
06-13-91	1119	1000	920	3	50
06-15-91	1087	1000	860	0	31
06-16-91	1009	980	890	0	34
06-17-91	1087	1000	860	0	31
06-18-91	916	980	915	0	21
06-19-91	918	950	920	0	43
06-20-91	778	950	880	0	25
06-21-91	778	950	880	0	21
06-22-91	782	940	890	0	17
06-23-91	646	950	910	0	10
06-24-91	795	970	920	0	2
06-25-91	639	920	890	0	2
06-26-91	532	1000	900	0	0
06-27-91	642	890	870	0	0
06-28-91	642	900	870	0	0
06-29-91	642	900	870	0	0
06-30-91	639	920	890	0	0

105 HPS .1015 MD

345 HPS

Revel
 Stabilized

BRINNINSTOOL "21" FED No. 1 (EW-Gas)

660' FSL & 1980' FEL

Section 21-25S-33E

Lea County, New Mexico

Red Hills

Vaca Draw Prospect

Oper: Enron Oil & Gas Company

16,000' MorrowEOG %: 50 WI, 41.25 NRI

AFE No.

SC No. N/A

Product Call %: 50

<u>Date</u>	<u>MCFD</u>	<u>FTP</u>	<u>LP</u>	<u>BOPD</u>	<u>BWPD</u>
07-01-91	642	920	900	0	0
07-02-91	623	910	890	0	0
07-03-91	599	900	870	0	0
07-04-91	632	910	870	0	0
07-05-91	569	890	870	0	0
07-06-91	565	850	870	0	0
07-07-91	548	850	820	0	0
07-08-91	548	850	820	0	0
07-09-91	531	840	820	0	0
07-10-91	528	820	810	0	0
07-11-91	524	810	800	0	0
07-12-91	524	810	800	0	0
07-16-91	419	340	810	0	10
07-17-91	402	330	780	0	8
07-18-91	372	330	820	0	4
07-19-91	374	330	900	0	6
07-20-91	363	320	780	0	0
07-21-91	363	320	780	0	0
07-22-91	360	320	770	0	0
07-23-91	360	320	770	0	8
07-24-91	331	290	770	0	0
07-25-91	321	300	780	0	0
07-26-91	320	300	780	0	0
07-27-91	329	280	750	0	0
07-28-91	301	280	750	0	0
07-29-91	329	301	750	0	0
07-30-91	287	280	760	0	0
07-31-91	287	280	760	0	0
08-01-91	293	260	760	0	0

This well was completed in the Morrow "D" sand through perforations 15,759' to 15,766' in January, 1988, flowing 2,978' MCFD, 0 BO and 3 BW on a 10/64" choke with 3,500 psig FTP. The producing rates and pressures steadily declined to 100 MCFD with 240 psig FTP. This workover perforated additional Morrow sands from 15,170' to 15,383' (OA). Production from these additional sands is being commingled with the Morrow "D" production and the well is now flowing 640 MCFD and 2 BWPD on a 48/64" chk w/920 psi FTP. Wellhead compression is being installed to lower the FTP to 200 psi. The estimated cost of this workover is \$10,150 compared to the AFE cost of \$35,000. FINAL REPORT.

BRINNINSTOOL "21" FED NO. 1 (EW-GAS)
660' FSL & 1980' FEL Sec. 21-25S-33E
Lea County, New Mexico
Wildcat
Vaca Draw Prospect

Oper: ENRON OIL & GAS COMPANY (CNG)
16,000' Morrow
Parker Drilling Rig No. 65
EOG #: 50 WI
AFE No. 0014646002 (DHC) \$1,281,500
SC No. 12-24

- 12-27-87 (83) 15,935' 90% sh & 10% sd (128'); 24 hr drlg; 200 un BGG; bit #18; 6-1/8"; HTC; J33; PB306; jets 3/20; in @ 15,626'; 309'; 65-1/4 hr; 35,000#; RPM 50; pmp #1; lnr 4"; stroke 10"; SPM 82; GPM 134; 1900#; mud wt 14.3; vis 59; YP 8; PV 19; gels 3/12; API WL 18.0, 6.0; cake 2/32, 4/32; O 62%; wtr 10%; ES 980; chl 287,000; solids 28%; O/W 86/14; LCM 12#/BBL; 24 hr drlg; EDWC \$6,234; ETWC \$1,253,748.
- 12-28-87 (84) 16,050' 80% sh, 10% lm & 10% sd (115'); 23 hr drlg; 1 hr other; 250 un BGG; bit #18; 6-1/8"; HTC; J33; PB306; jets 3/20; in @ 15,626'; out @ 16,050'; 424'; 88-1/4 hr; 35,000#; RPM 50; pmp #1; lnr 4"; stroke 10"; SPM 82; GPM 134; 1900#; mud wt 14.3; vis 59; YP 7; PV 19; gels 3/12; API WL 17.8, 6.0; cake 2/32, 3/32; O 63%; wtr 10%; ES 1000; chl 286,000; solids 27%; O/W 86/14; LCM 12#/BBL; 23 hr drlg; 1 hr circ; EDWC \$6,185; ETWC \$1,259,934.
- 12-29-87 (85) 16,050' (0'); 7 hr trip; 17 hr other; 1-1/2^o @ 16,030' S69E; bit #18; 6-1/8"; HTC; J33; PB306; jets 3/20; in @ 15,626'; out @ 16,050'; 424'; 88-1/4 hr; 35,000#; RPM 50; I-2, O-2, D-NO, L-A, B-F, G-I, O-NO, R-LOG; pmp #1; lnr 4"; stroke 10"; SPM 82; GPM 134; 1900#; mud wt 14.3; vis 59; YP 7; PV 19; gels 3/12; API WL 17.8, 6.0; cake 2/32, 3/32; O 63%; wtr 10%; ES 1000; chl 286,000; solids 27%; O/W 86/14; LCM 12#/BBL; 2-1/2 hr circ; 1 hr drop multi-shot; 7 hr multi-shot & strap OOH; 13-1/2 hr RU Schlum & log CDL & LDT, DFL & BHC; EDWC \$7,060; ETWC \$1,266,994.
- 12-30-87 (86) TD 16,050' (0'); 5-1/4 hr trip; 18-3/4 hr other; bit RR #18; 6-1/8"; HTC; J33; PB306; jets 3/20; in @ 16,050'; pmp #1; lnr 4"; stroke 10"; SPM 82; GPM 134; 1900#; mud wt 14.3+; vis 60; YP 9; PV 19; gels 3/15; API WL 17.8, 6.0; cake 2/32, 3/32; O 63%; wtr 10%; ES 1050; chl 286,000; solids 27%; O/W 86/14; LCM 12#/BBL; 12-1/2 hr logging - run GR Den Neutron, Caliper, Dual Induction, Sonic, RFT; 5-1/4 hr TIH; 1-1/4 hr wash 60' to btm & circ; 1 hr circ, 20 BBL gain, 400 psi CP; 3-3/4 hr circ; EDWC \$45,930; ETWC \$1,312,924.
- 12-31-87 (87) TD 16,050' (0'); 16-1/2 hr trip; 7-1/2 hr other; bit RR #18; 6-1/8"; HTC; J33; PB306; jets 3/20; in @ 16,050'; pmp #1; lnr 4"; stroke 10"; SPM 82; GPM 134; 1900#; mud wt 14.4; vis 60; YP 9; PV 19; gels 3/15; API WL 17.8, 6.0; cake 2/32, 3/32; O 63%; wtr 10%; ES 1050; chl 286,000; solids 27%; O/W 86/14; LCM 12#/BBL; 6-1/2 hr circ, WOO; 5-1/2 hr pmp slug, POH; 5-1/2 hr RU & run 4-1/2" csg- 71 jts; 1 hr PU liner hanger, circ, RD PU machine and csg tools; 5-1/2 hr RIH w/4-1/2" liner; EDWC \$57,687; ETWC \$1,370,611.

BRINNINSTOOL "21" FED NO. 1 (EW-GAS)
660' FSL & 1980' FEL Sec. 21-25S-33E
Lea County, New Mexico
Wildcat
Vaca Draw Prospect

Oper: ENRON OIL & GAS COMPANY (CNG)
16,000' Morrow
Parker Drilling Rig No. 65
EOG %: 50 WI
AFE No. 0014646002 (DHC) \$1,281,500
SC No. 12-24

- 1-1-88 (88) TD 16,050' (0'); 11-3/4 hr trip; 12-1/4 hr other; bit RR #17; 6-1/8"; Smith; F-3; KC9309; jets 3/20; in @ 16,050'; pmp #1; lnr 4"; stroke 10"; SPM 82; GPM 134; 1900#; mud wt 14.4; vis 60; YP 9; PV 19; gels 3/15; API WL 17.8, 6.0; cake 2/32, 3/32; O 63%; wtr 10%; ES 1050; chl 286,000; solids 27%; O/W 86/14; 2-3/4 hr TIH w/4-1/2" liner & 3-1/2" DP; 1 hr circ & hang liner @ 12,889'; 3-1/2 hr circ, 12 BBL gain, CP 400 psi; 1-3/4 hr cmt w/425 sx class "H"; 1/2 hr pull 20 stds DP; 4-1/2 hr circ; 4-1/2 hr TOH; 4-1/4 hr TIH w/6-1/8" bit; 1-1/2 hr circ; EDWC \$50,126; ETWC \$1,420,737.
- 1-2-88 (89) PBDT 15,954'; 15-1/4 hr drlg cmt; 3/4 hr trip; 8 hr other; bit RR #17; 6-1/8"; Smith; F-3; KC9309; jets 3/20; in @ 12,057'; 800'; 15-1/4 hr; 20/30,000#; RPM 50; pmp #1; lnr 4"; stroke 10"; SPM 82; GPM 134; 1900#; mud wt 14.3; vis 60; YP 9; PV 19; gels 3/15; API WL 17.8, 6.0; cake 2/32, 3/32; O 63%; wtr 10%; ES 1050; chl 286,000; solids 27%; O/W 86/14; 8 hr circ; 3/4 hr TIH tag cmt @ 12,057'; 15-1/4 hr drlg cmt 12,057' to 12,857'; EDWC \$5,255; ETWC \$1,425,992.
- 1-3-88 (90) PBDT 15,954'; 3-1/2 hr drlg cmt; 10 hr trip; 10-1/2 hr other; bit RR #17; 6-1/8"; Smith; F-3; KC9309; jets 3/20; in @ 12,057'; out @ 12,889'; 832'; 16-3/4 hr; 10/30,000#; RPM 50; mill #1; 3-9/16"; Enron; in @ 15,884'; out @ 15,954'; 70'; 1/2 hr; 5/8,000#; RPM 35; pmp #1; lnr 4"; stroke 10"; SPM 62; GPM 101; 2000#; mud wt 14.4; vis 60; YP 9; PV 19; gels 3/15; API WL 17.8, 6.0; cake 2/32, 3/32; O 63%; wtr 10%; ES 1120; chl 286,000; solids 28%; O/W 86/14; 1-1/2 hr drlg cmt 12,857-12,889'; 1/2 hr tst lnr top to 2000 psi; 3-3/4 hr TOH; RU & LD 60 jts 3-1/2" DP & 36 DCs; 5-1/4 hr RU tbg tongs & PU 97 jts 2-3/8" work string; 3-3/4 hr TIH to top of liner @ 12,889'; 1-1/2 hr drlg 10' cmt in liner top; 2-1/2 hr TIH; 1/2 hr wash 70' to FC 15,884-15,954'; 1-1/2 hr circ; EDWC \$6,165; ETWC \$1,432,157.
- 1-4-88 (91) PBDT 15,954'; 13 hr trip; 11 hr other; mud wt 14.3; vis 60; YP 9; PV 19; gels 3/15; API WL 17.8, 6.0; cake 2/32, 3/32; O 63%; wtr 10%; ES 1120; chl 286,000; solids 28%; O/W 86/14; 1/2 hr circ; 5-3/4 hr TOH; 3-3/4 hr PU dress out mill & TIH; 1/2 hr dress top of liner & PBR @ 12,889'; 3-1/2 hr TOH; 3-1/2 hr WO Schlumberger; 1-1/4 hr RU Schlumberger; 5-1/4 hr run velocity survey; EDWC \$5,255; ETWC \$1,437,412.
- 1-5-88 (92) PBDT 15,954'; 4-3/4 hr trip; 19-1/4 hr other; mud wt 10; vis 28; pH 11; 12-3/4 hr run velocity survey & cmt bond log; 4-1/4 hr TIH; 5 hr RU Halliburton & displace w/10# packer fluid; 1 hr TOH to 15,780' & spot 1000 gal 10% acedic acid; 1/2 hr RD Halliburton & RU LD machine; 1/2 hr LD 3-1/2" DP; EDWC \$26,194; ETWC \$1,463,606.

BRINNINSTOOL "21" FED NO. 1 (EW-GAS)
660' FSL & 1980' FEL Sec. 21-25S-33E
Lea County, New Mexico
Wildcat
Vaca Draw Prospect

Oper: ENRON OIL & GAS COMPANY (CNG)
16,000' Morrow
Parker Drilling Rig No. 65
EOG %: 50 WI
AFE No. 0014646002 (DHC) \$1,281,500
SC No. 12-24

- 1-6-88 (93) PBTB 15,954'; 21 hr trip; 3 hr other; mud wt 10; vis 28; pH 11; 9 hr LD DP & 2-3/8" workstring; 1-1/2 hr chg top pipe rams to 2-7/8"; 12 hr PU 409 jts 2-7/8" prod tbg 7.9#, C-75, Ph-6, CB; 1/4 hr stung into PBR & tst annulas to 1000 psi; 3/4 hr space out & land tbg w/25000 - 5.5' slack off & install BP valve; 2-1/2 hr RD LD machine & tongs & ND BOPs; EDWC \$10,328; ETWC \$1,473,934.
- 1-7-88 (94) PBTB 15,954'; 24 hr other; mud wt 10; vis 28; pH 11; 3 hr ND BOPs; 3 hrs NU 7-1/16 x 10,000 tree & tst to 10,000 psi; 2 hr RU Schlumberger & Halliburton & tst lines to 10,000 psi; 2-1/2 hr perforate 15,759 - 15,765-1/2', 14 shots, 2 SPF, 0 psi to 3200 psi; instant lost perf gun @ 3360'; pulled out of rope socket; 5-1/2 hr WO Schlumberger sinker bars; 2 hr run sinker bar to 13,100', 200' below tbg & SA; 1 hr RD Schlumberger & RU Halliburton; 1/2 hr brk down "D" sand w/20 BBL spot 10% acedic acid, SITP 3100, SICP 3100; pmpd 6-1/2 BBL @ 1 BPM; broke @ 5400 to 4900; incr rate to 3 BPM @ 5500 psi; pmpd 20 BBL total spot acid; ISIP 4000; 15 min 3300; avg 5400 @ 3 BPM; total 128 BLTR; 4-1/2 hr flow well to pit; open @ 2:30 am to 3:00 am on 16/64" ck; 3300 to 1400 psi; 3:00 am to 4:00 am on 24/64" ck; 1400 to 700 psi; incr to 1600 psi; 4:00 am to 4:15 on 18/64" ck 1600 to 3000 psi; 4:25 am gas to surface; 3200 psi; 4:45 am water; 4100 psi; 5:00 am on 16/64" ck; 4400 psi; rec 128 BBL fluid; BLTR 0; rig release @ 12:00 noon 1-7-88; EDWC \$197,073; ETWC \$1,671,007.
- 1-8-88 PBTB 15,954'; 3 hr flow to pit on 16/64" ck; FTP 4200#; CP 3100#; 6 hr flow thru tst separator flwg 2574 MCF on 10/64" ck; FTP 3900#; CP 3100#; BP 700#; 0 BW; 0 BO; 3 hr flow to tst 400 MCF on 14/64" ck; FTP 2400#; CP 3100#; BP 700#; 9 BO; 1 BW; 12 hr flow to test 2978 MCF on 10/64" ck; FTP 3500#; CP 3100#; BP 700; 0 BO; 3 BW; chl 48,000 ppm; EDWC \$5,308; ETWC \$1,676,315.
- 01-09-88 8 hr SI, SITP 8900#.
- 01-10-88 24 hr SI, SITP 9000#, 32 hr tot SI.
- 01-11-88 24 hr SI, SITP 9000#, 56 hr tot SI.
- 01-12-88 24 hr SI, SITP 9000#, 80 hr tot SI time.
- 01-13-88 24 hr SI, SITP 9000#, CP 4375#, 104 hr tot SI time.

BRINNINSTOOL "21" FED NO. 1 (EW-GAS)
660' FSL & 1980' FEL Sec. 21-25S-33E
Lea County, New Mexico
Wildcat
Vaca Draw Prospect

Oper: ENRON OIL & GAS COMPANY (CNG)
16,000' Morrow
EOG %: 50 WI, 41.25 NRI
AFE No 0014646003 (ACP) (CWC) \$1,723,700
SC No 12-24
Product Call %: 50

01-14-88 24 hr SI, SITP 8785# (DW); run 4-pt.

4-pt run 1-13-88: SITP 8785 psig, BHP bombs @ 15,762'

<u>TIME</u>	<u>RATE</u>	<u>FTP</u>	<u>FLUIDS</u>
1.0	1.060 MM	8550 psig	0
2.0	1.430 MM	8398 psig	0
1.25	2.200 MM	8141 psig	0
1.5	3.150 MM	7669 psig	0

Field plot CAOF 9.2 MMCFD; 4th rate extended for 24 hr draw dn;
1-14-88 9:00 AM FARO 3.000 MM @ 7740 psig w/tr of fl; well to be
SI for 72 hr BU @ 7:30 PM.

01-15-88 11-1/2 hr extend flo of final pt on 4 pt; 12-1/2 hr SI.

01-16-88 thru 01-18-88 SI w/BP bombs in hole for BHP BU; SITP 8800# gauge.

01-19-88 SITP 8700#, SICP 4300# - 96 hr; 14 hr att to pull press bombs,
WH frozen; steam WL lub & WH; unable to pull; pmpd hot wtr in
cellar; unable to pull WL; 10 hr SIFN; EDWC \$300; ETWC
\$1,724,000.

01-20-88 6 hr pmpd 3 BBL Methanol in lub; TOH w/WL; RD WL un; 2 hr set BP
valve; SI @ 3 PM; DROP FROM REPORT PENDING FURTHER ACTIVITY.

02-04-88 This exploratory well was drilled to a total depth of 16,050'
and was completed on 1-7-88 in the Morrow "D" sd fr 15,759' to
15,765.5'; after brk dn w/20 BBL 10% acetic ac the well flwd
3000 MCFD, 0 BCPD & 3 BWPD on a 10/64" ck w/7740 psig FTP; the 4
pt yielded a CAOF of 11,200 MCFD; the well is currently shut-in
waiting on a gas sales line. The estimated well cost is
\$1,772,500 compared to the AFE cost of \$1,723,700; FINAL REPORT.

04-19-88 SITP 8400 psi; FIRST SALES TO TRANSWESTERN @ 3:30 PM MDT
4-18-88, rate 3900 MCFPD, FTP 7500 psi; FINAL REPORT.

MULTIPOINT AND ONE POINT BACK PRESSURE TEST FOR GAS WELL

Type Test ☒ Initial ☐ Annual ☐ Special				Test Date 1-13-88	
Company Enron Oil & Gas Company				Connection None	
Pool Undesignated				Formation Morrow	
Completion Date 1-7-88		Total Depth 16050'		Elevation 27.5 KB 3364' GL	
Farm or Lease Name Brinninstool 21 Federal					
Cas. Size 4 1/2"	Wt. 15.10#	d 3.826	Set At 16047	Perforations: From 15759' To 15766'	
Trg. Size 2 7/8"	Wt. 7.9#	d 2.323	Set At 12889'	Perforations: From Open To Ended	
Type Well - Single - Brdenhead - G.G. or G.O. Multiple Single				Packer Set At 12889'	
Producing Thru Tubing				Reservoir Temp. °F 208 @ 15762'	
Mean Annual Temp. °F 60°				Baro. Press. - P _a 13.2	
State New Mexico				County Lea	
L -	H -	G _g 0.571	% CO ₂ 0.983	% N ₂ 0.139	% H ₂ S -
Prover -		Meter Run 3.068		Taps Flg.	

FLOW DATA						TUBING DATA		CASING DATA		Duration of Flow	
NO.	Prover Line Size	X	Orifice Size	Press. p.s.i.g.	Diff. h _w	Temp. °F	Press. p.s.i.g. DWT	Temp. °F	Press. p.s.i.g.	Temp. °F	Duration of Flow
SI							3785		PACKER		72 hrs
1.	3.068	X	1.375	760	9	75	8550	60			1.0 hrs
2.	3.068	X	1.375	760	16	73	8398	60			1.0 hrs
3.	3.068	X	1.375	780	37	73	8141	60			1.25 hrs
4.	3.068	X	1.375	780	71	60	7669	60			1.5 hrs
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 _{pv}	Rate of Flow Q, Mscf/d
1	9.249	83.42	773.2	0.9859	1.323	1.052	1058.70
2	9.249	111.23	773.2	0.9877	1.323	1.052	1414.22
3	9.249	171.31	793.2	0.9877	1.323	1.054	2182.24
4	9.249	237.31	793.2	1.0000	1.323	1.059	3075.15
5							

NO.	P _r	Temp. °R	T _r	Z	Gas Liquid Hydrocarbon Ratio TSTM	Mcf/bbl.
1	1.15	535	1.56	0.903	38	
2	1.15	533	1.56	0.903	0.571	X X X X X X X X
3	1.18	533	1.56	0.901	X X X X X	
4	1.18	520	1.52	0.891	675	P.S.I.A. P.S.I.A.
5					342	R R

P _c 10734.2* P _c ² 115223.0				
NO.	P _t ²	P _w	P _w ²	P _c ² - P _w ²
1		10479.2	109813.6	5409.4
2		10350.2	107126.6	8096.4
3		10075.2	101509.7	13713.3
4		9662.2	93358.1	21864.9
5				

(1) $\frac{P_c^2}{P_c^2 - P_w^2} = 5.270$

AOF = Q $\left[\frac{P_c^2}{P_c^2 - P_w^2} \right]^n = 11058.239$

(2) $\left[\frac{P_c^2}{P_c^2 - P_w^2} \right]^n = 3.596$

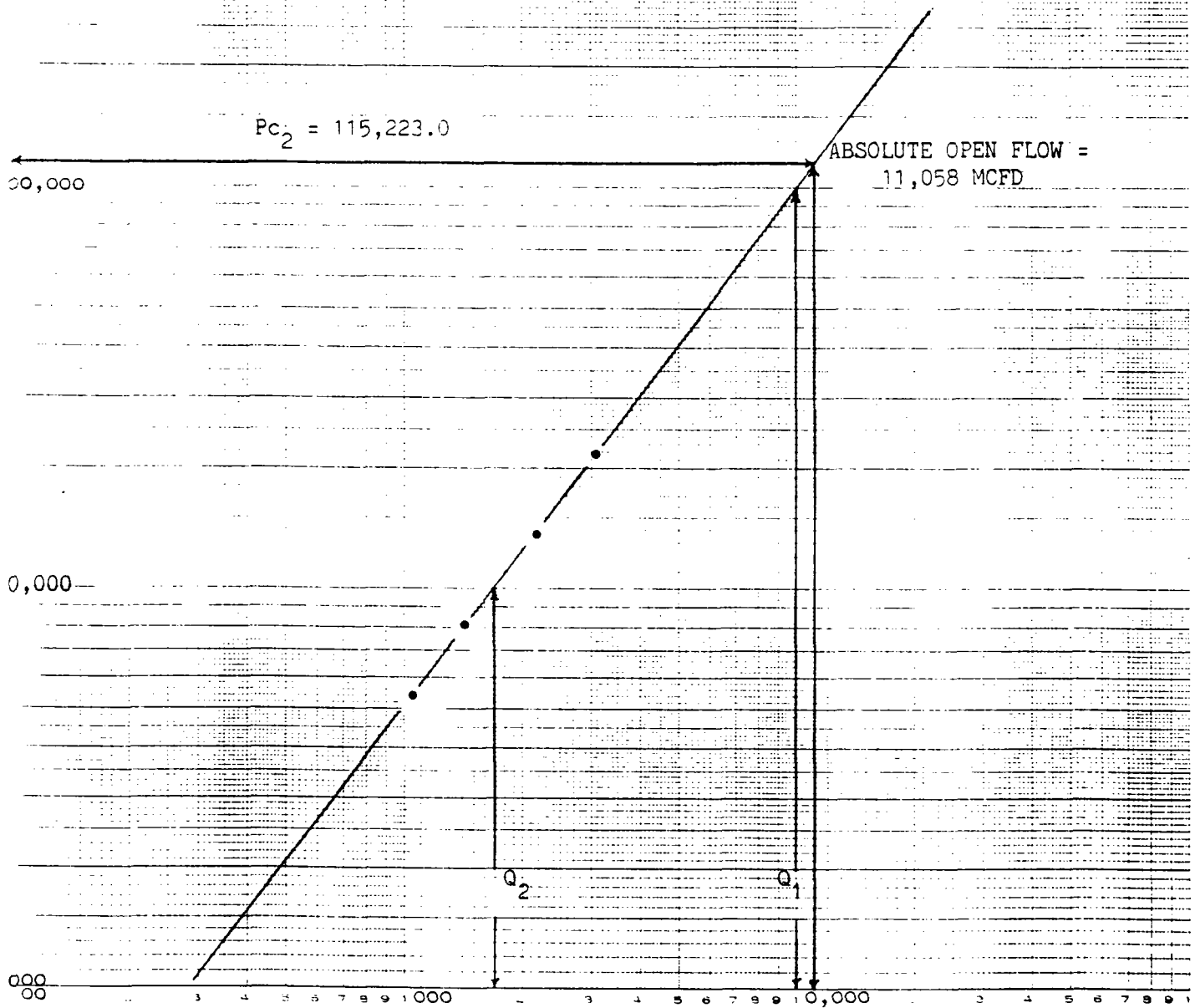
Absolute Open Flow	11,058	Mscf @ 15.025	Angle of Slope @	52° 24'	Slope, n	0.770
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Remarks: * Bottom Hole Pressures @ 15762' (-12398) Used for Pressure Calculations

Approved By Division	Conducted By: Larrel Services, Inc.	Calculated By: D. Dickenson	Checked By: D. Dickenson
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COMPANY: Enron Oil & Gas Company
 WELL: Brinninstool 21 Federal, No. 1
 LOCATION: 0 21 25s 33e
 COUNTY: Lea
 DATE: January 13, 1988

$P_{C2} - P_{W2}$ (thousands)



$Q = \text{MCFD}$
 $Q_1 = 10,000 \text{ MCFD}; \text{Log } Q_1 = 4.000000$

$Q_2 = 1,700 \text{ MCFD}; \text{Log } Q_2 = 3.230449$

$N = 0.769551 = 0.770$

TIGHT GAS SANDS
PERMEABILITY AND STABILIZED FLOW RATE
VACA DRAW / PITCHFORK RANCH AREA

DATE: 11/21/91

WELL NAME: DIAMOND 6 FED 1

INTERVAL: 14897-15556' MORROW

STIMULATED ? (Y/N): YES; 5000 GAL ACID

FLOW RATE (MCF/D): 5,300

FLOW TIME (HRS.): 8

FLOWING BHP (psia): 8,215

GAS GRAVITY (Yg): 0.580

TEMP. DEGREE F (T): 222

RESERVOIR PRESSURE (Pi): 9,824

GAS POROSITY: 0.062

WELLBORE RADIUS (Ft): 0.250

SKIN FACTOR: 0.0

PAY HEIGHT: 61

Z-FACTOR: 1.376

GAS COMPRESSIBILITY: 0.00005

GAS VISCOSITY (cp): 0.0322

SPACING ACRES: 320

FORMATION VOLUME FACTOR (Bg): 0.482

SPACING RADIUS (Ft): 2,106

ASSUMED K (md): 0.7871

RADIUS OF DRAINAGE (Ft): 409.6

CALCULATED K (md): 0.7871

STEADY TIME (HRS.): 533.21

STABILIZED FLOW (MCF/D): 4253.04

AOE PRESSURE (psia): 314

STABILIZED AOE (MCF/D): 25,138

**TIGHT GAS SANDS
PERMEABILITY AND STABILIZED FLOW RATE
VACA DRAW / PITCHFORK RANCH AREA**

DATE: 11/21/91

WELL NAME: DIAMOND 6 FED 1

INTERVAL: 14897-15556' MORROW

STIMULATED ? (Y/N): NO; 4 BBL SPOT ACID

FLOW RATE (MCF/D): 2,000

FLOW TIME (HRS.): 13

FLOWING BHP (psia): 1,087

GAS GRAVITY (Yg): 0.580

TEMP. DEGREE F (T): 222

RESERVOIR PRESSURE (Pi): 9,824

GAS POROSITY: 0.062

WELLBORE RADIUS (Ft): 0.250

SKIN FACTOR: 0.0

PAY HEIGHT: 61

Z-FACTOR: 1.376

GAS COMPRESSIBILITY: 0.00005

GAS VISCOSITY (cp): 0.0322

SPACING ACRES: 320

FORMATION VOLUME FACTOR (Bg): 0.482

SPACING RADIUS (Ft): 2,106

ASSUMED K (md): 0.045

RADIUS OF DRAINAGE (Ft): 124.8

CALCULATED K (md): 0.0449

STEADY TIME (HRS.): 9,341.27

STABILIZED FLOW (MCF/D): 1318.25

AOE PRESSURE (psia): 246

STABILIZED AOE (MCF/D): 1,445

- 10-30-82 (50) 15,587' 50% Sd 10% Sh 20% Lm (129'); 22- $\frac{1}{2}$ hrs Drlg; $\frac{1}{2}$ hr Tri 1 hr Other; Bit #14; 6-1/8"; Smith; F-3; CN6704; Jets 3/20; In @ 15,458'; 129'; 22- $\frac{1}{2}$ hrs; 35,000#; RPM 50; Pmp #1; Lnr 4- $\frac{1}{2}$ "; Stroke 10"; SPM 70; GPM 142; 2300#; MW 13.4; Visc 59; YP 11; PV 32; Gels 2/3; Cake 2/3; HT 19; Chl 288,000; Solids 23%; Wtr 54%; O/W 71/29; $\frac{1}{2}$ hr Trip; 1 hr Inst rot head; Rm 30' to btm; 22- $\frac{1}{2}$ hrs Drlg; EDWC \$7,000; ETWC \$1,467,867.
- 10-31-82 (51) 15,660' 80% Sh 10% Sd 10% Lm (73'); 11-3/4 hrs Drlg; 8 hrs Trip; 5- $\frac{1}{2}$ hrs Other; Bit #14; 6-1/8"; Smith; F-3; CN6704; Jets 3/20; In @ 15,458'; Out @ 15,660'; 202'; 34- $\frac{1}{2}$ hrs; 35,000#; RPM 50; T-2; B-2; G-I; Pmp #1; Lnr 4- $\frac{1}{2}$ "; Stroke 10"; SPM 70; GPM 142; 2300#; MW 13.5; Visc 55; YP 8; PV 27; Gels 2/3; Cake 2/32; Oil 55%; Chl 280,000; Solids 25%; O/W 73/27; $\frac{1}{2}$ hr Drlg; $\frac{1}{2}$ hr Serv rig; 11- $\frac{1}{2}$ hrs Drlg; 4- $\frac{1}{2}$ hrs Circ; 8 hrs POH w/SLM; $\frac{1}{2}$ hr RU Schlum; EDWC \$8,000; ETWC \$1,475,867.
- 11-1-82 (52) TD 15,660'; 6- $\frac{1}{2}$ hrs Trip; 17- $\frac{1}{2}$ hrs Other; MW 13.5; Visc 55; YP 8; PV 27; Gels 2/3; API WL 18; Cake 2/32; Oil 55%; Chl 280,000; Solids 25%; O/W 73/27; 16 hrs Logging; 1 hr RU csg tools & crew; 2- $\frac{1}{2}$ hrs Run on its 4- $\frac{1}{2}$ " csg; $\frac{1}{2}$ hr RD csg crew; 4 hrs TIH w/SLM; EDWC \$11,000; ETWC \$1,486,867.
- 11-2-82 (53) TD 15,660'; 11- $\frac{1}{2}$ hrs Trip; 12- $\frac{1}{2}$ hrs Other; Pmp #1; Lnr 4- $\frac{1}{2}$ "; Stroke 10"; SPM 80; GPM 160; 2000# MW 13.5; Visc 55; YP 8; PV 27; Gels 2/3; HT 18; Cake 2/32; Oil 55%; Chl 280,000; Solids 25%; O/W 73/27; 3 hrs TIH w/lmr; 1 hr Circ & attempt to hang lnr; 3 hrs Circ; 1- $\frac{1}{2}$ hrs Cmt; $\frac{1}{2}$ hr Pull 15 stds; 4- $\frac{1}{2}$ hrs Circ; 4 hrs TOH; 1 hr Run DC & excess DP in hole; 3-3/4 hrs RU & LD DP & DC; 1-3/4 hrs RU & PU workstring; EDWC \$84,261; ETWC \$1,571,128.
- 11-3-82 (54) TD 15,660'; 15 hrs Trip; 9 hrs Other; MW 13.5; Visc 55; YP 8; PV 27; Gels 2/3; API WL 18; Cake 2/32; Oil 55%; Chl 28,000; Solids 25%; O/W 73/27; 3 hrs PU 2-3/8" tbg & std in derrick; 2- $\frac{1}{2}$ hrs TIH w/bit; 1- $\frac{1}{2}$ hrs Circ; 1 hr TIH; 5- $\frac{1}{2}$ hrs Drlg cmt 12,635-13,056'; 2 hrs Circ; 4 hrs POH; 3 hrs TIH w/3-5/8" mill; EDWC \$23,000; ETWC \$1,603,601.
- 11-4-82 (55) PBTD 13,613'; 24 hrs Other; MW 10; Visc 28; 1- $\frac{1}{2}$ hrs TIH w/3-5/8" mill; 1-3/4 hrs Dress off TOL; 1-3/4 hrs TIH to PBTD @ 13,613'; 1- $\frac{1}{2}$ hrs Circ; 3 hrs RU Western Co; Circ hole w/40 bbls gelled sweep 200 bbls 10 ppg brine; Displ hole w/10 ppg pkr fluid 1.5% Baroid 1270, pH 10.5; 3 hrs Spot 750 gal 10% Acetic Acid, wt 10.2 ppg, inhb 96 hrs @ 15,580; 1 hr TOH to 14,700'; Rev circ 120 bbls pkr fluid; $\frac{1}{2}$ hr RU LD Mach; RD Western; 10 hrs TOH; LD DP; EDWC \$17,400; ETWC \$1,706,231.
- 11-5-82 (56) PBTD 15,613'; 24 hrs Other; MW 10; Visc 28; 3 hrs LD workstring tbg & mill; 1 hr LD DC; Brk Kelly; 1 hr Inst 2-7/8" rams; 11 hrs PU & TIH w/prod tbg; space out w/20,000# slackoff; Press annulus to 1,000 psi; Held OD; Pull out of PBR, inst BPV; 3 hrs RU Western; Displ tbg w/8- $\frac{1}{2}$ bbls 10% Acetic Acid followed by 110,000 SCF N₂; 4 hrs Land tbg; ND BOP; 1 hr NU 2-9/16 x 10 m CIW tree; EDWC \$16,461; ETWC \$1,722,693.
- 11-6-82 (57) PBTD 15,613'; 24 hrs Other; MW 10; Visc 28; pH 10.5; 6 hrs RU Western; RU McCull; Run GR-CCL 15,597-13,000'; 6 hrs Perf Morrow Zone w/2-1/8" thru tbg gun; Nuline chg, .32" dia hole @ 15,234'; 249'; 275'; 277'; 279'; 299'; 15,301'; 15,556'; Total 9 holes; Psi incr from 3,400 to 3,600 after perf; TOH w/perf gun; $\frac{1}{2}$ hr Press up on tbg w/Nitrogen; Brk dwn psi 6,800; Displ 4 bbls spot acid into form; 4- $\frac{1}{2}$ hrs Cont perf @ 14,897'; 898'; 899'; 14,900'; 01'; 11'; 12'; 13'; 14'; 15,003'; 05'; 07'; 09'; 11'; 13'; 15'; 17'; Tot 26 holes; 1-3/4 hrs RD McCull; Tbg psi incr from 4,000 to 6,200; $\frac{1}{2}$ hr Inst flange on tree; NU FL; 5 hrs Flow to pit; Rec Nitrogen w/snow of Gas; Last hr 16/64" chk; 525 FTP; 400 MCF @ 2 BPM wtr & mud; Csg psi bldg from 2,500 to 3,500 in 75 min; EDWC \$467,706 (incl tbg & tree); ETWC \$2,190,399.
- 11-7-82 (58) PBTD 15,613'; 5 hrs Flow to pit on 16/64" chk; FTP 525 psi incr to 750 psi; 600 MCF incr to 2,000 MCFPD; 3 hrs Flow to pit; FTP 525 to 750; 2,000 MCFPD; No fluid last 4 hrs; BLTR 0; 16 hrs WSI; SITP 7,000 psi; SICP 3,700 psi; No incr in est press last 19 hrs; EDWC \$12,000; ETWC \$2,212,399.
- 11-8-82 (59) PBTD 15,613'; 2 hrs Opn well on 32/64" chk; Rec good show gas; No fluid; 7,000 psi decr to 3,000 psi; 2 hrs RU Western; Acidz w/5,000 gal 7.5% Morrow Flow BC acid cont 32 BS; Displ w/slick 2% KCl wtr; Max psi 7,400 psi; Ave psi 6,500 @ 5.9BPM; ISIP 5,200 psi; BLTR 200; Good ball action; Had two 100 psi incr, three 200 psi incr three 300 psi incr when balls hit perfs; RD Western; Prep to tst; 2 hrs Opn well to pit @ 4,100 SITP; Rec all ld; Press incr to 6,300 psi; 1 hr Flow thru prod unit @ 3.3 MMCFPD to 3.7 MMCFPD w/FTP 6,300 psi to 7,050 psi; 3 hrs Incr rate to 5.0 MMCFPD; Stab last 2 hrs @ 5.3 MMCFPD @ 6,450m FTP; Rec 5 BW; 1 hr Set BPV; Rel rig @ 6:00 PM; 13 hrs SI; DFR; WO PL connection; EDWC \$21,400; ETWC \$2,233,400. *8 hrs*
- 11-11-82 Correction to Report Dated 11-6-82; Perfs should read-6 hrs Perf Morrow Zone w/2-1/8" thru tbg gun; Nuline chg, .32" dia hole @ 15,234'; 249' 285'; 287'; 289'; 297'; ~~299'; 15,301'; 15,556'.~~
- 12-16-82 Updated ETWC \$2,333,400
- 2-19-83 SITP 7750 psi; Jarrell Well Testing conducting 4 pt test; 20 min into 4th rate Transwestern sales line plugged; SD test.
- 2-20-83 24 hrs WSI; SITP 7700 psi.
- 2-21-83 WSI.
- 2-22-83 SI; Prep to put on sales.
- 3-23-83 SITP 7700; On sales to Transwestern @ 9:00 AM, 2-22-83; Rate 3.0 MMCFPD @ 7100 psi FTP; DFR; Carry on gas sales report.
- 3-1-83 Official Potential Test dated 2-18-83; Flwd 6939 MCFPD; FTP 6818; AOF 9,784.4 MCFPD; Gas Grav .5803.

MULTIPOINT AND ONE POINT BACK PRESSURE TEST FOR GAS WELL

Type Test ☒ Initial ☐ Annual ☐ Special					Test Date 2/18/83				
Company HNG Oil Company				Connection Trans Western					
Pool Wildcat				Formation Merrow				Unit	
Completion Date 11/7/82		Total Depth 15660'		Plug Back TD 15613'		Elevation 3441'GL		Farm or Lease Name Diamond 6 Federal	
Coq. Size 4 1/2" Liner	Wt. 15.5	d 3.826	Set At 15660'	Perforations: From 14897' To 15556'				Well No. 1	
Tng. Size 2 7/8"	Wt. 7.9	d 2.323	Set At 14695'	Perforations: Open Ended From To				Unit Sec. Twp. Rge. G 6 25s 34e	
Type Well - Single - Broadhead - G.C. or G.O. Multiple Single					Packer Set At 14695'		County Lea		
Producing Thru Tubing		Reservoir Temp. °F 222° 15570'		Mean Annual Temp. °F 60		Baro. Press. - P _a 13.2		State New Mexico	
L 15570'	H -	G _g 0.5803	% CO ₂ 0.636	% N ₂ 0.411	% H ₂ S -	Prover -	Meter Run 3.068	Taps F	

FLOW DATA						TUBING DATA		CASING DATA		Duration of Flow	
NO.	Prover Line Size	X	Orifice Size	Press. p.s.i.g.	Diff. h _w	Temp. °F	Press. p.s.i.g. DWT	Temp. °F	Press. p.s.i.g.		Temp. °F
SI							7723	60	PACKER		72.0 hrs
1.	3.068 **		2.250	745	4	90	7449	60			1.0 hr
2.	3.068		2.250	755	10	77	7015	60			1.0 hr
3.	3.068		2.250	790	25	46	5444	60			2.75 hrs
4.	3.068		2.250	980	28	46	4300	60			0.25 hr
5.											

RATE OF FLOW CALCULATIONS							
NO.	Coefficient (24 Hour)	$\sqrt{h_w P_m}$	Pressure P _m	Flow Temp. Factor F _t	Gravity Factor F _g	Super Compress. Factor, F _{sp}	Rate of Flow Q, Mcf/d
1	28.78	55.07	758.2	0.9723	1.313	1.047	2118.45
2	28.78	87.65	768.2	0.9840	1.313	1.053	3431.87
3	28.78	141.70	803.2	1.014	1.313	1.070	5809.61
4	28.78	166.76	993.2	1.014	1.313	1.086	6939.29
5							

NO.	R _g	Temp. °R	T _g	Z	Gas Liquid Hydrocarbon Ratio	Dry Gas	Mcf/bbl.
1	1.12	550	1.59	0.913	A.P.I. Gravity of Liquid Hydrocarbons	-	Deg.
2	1.14	537	1.55	0.902	Specific Gravity Separator Gas	0.5803	XXXXXX
3	1.19	506	1.46	0.873	Specific Gravity Flowing Fluid	XXXXX	
4	1.47	506	1.46	0.848	Critical Pressure	675	P.S.I.A.
5					Critical Temperature	346	R

P _c 9823.2 P _c ² 96495.3			
NO.	P _i ²	P _w *	P _w ²
1		9556.2	91321.0
2		9156.2	83836.0
3		7724.2	59663.3
4		6818.2	46487.9
5			

(1) $\frac{P_c^2}{P_c^2 - P_w^2} = 1.93$

AOF = Q $\left[\frac{P_c^2}{P_c^2 - P_w^2} \right]^n = 9784.4$

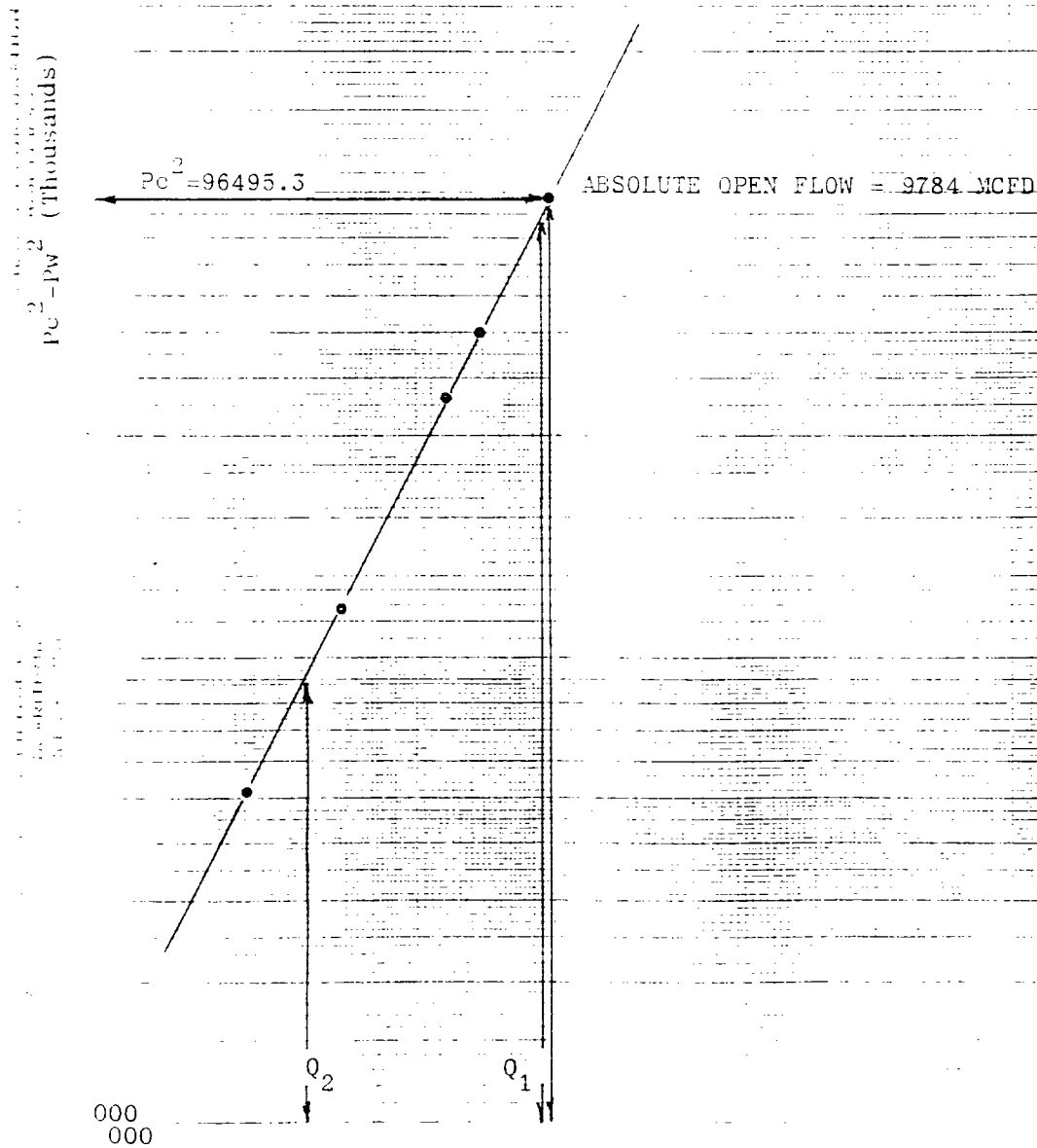
(2) $\left[\frac{P_c^2}{P_c^2 - P_w^2} \right]^n = 1.41$

Absolute Open Flow	9784	Mcf/d @ 15.025	Angle of Slope @	62° 37'	Slope, n	0.518
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Remarks: * BOTTOM HOLE PRESSURE @ (-12129)15570' USED FOR PRESSURE CALCULATIONS
** DIAPHRAM ACTUATED CHOKE

Approved By Division	Conducted By: JARREL WELL TESTING, INC	Calculated By: Joe A. Coleman	Checked By: PE # 2208 Joe A. Coleman
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COMPANY: HNG Oil Company
 WELL: Diamond 6 Federal, No. 1
 LOCATION: G 6 25s 34e
 COUNTY: Lea
 DATE: February 18, 1983

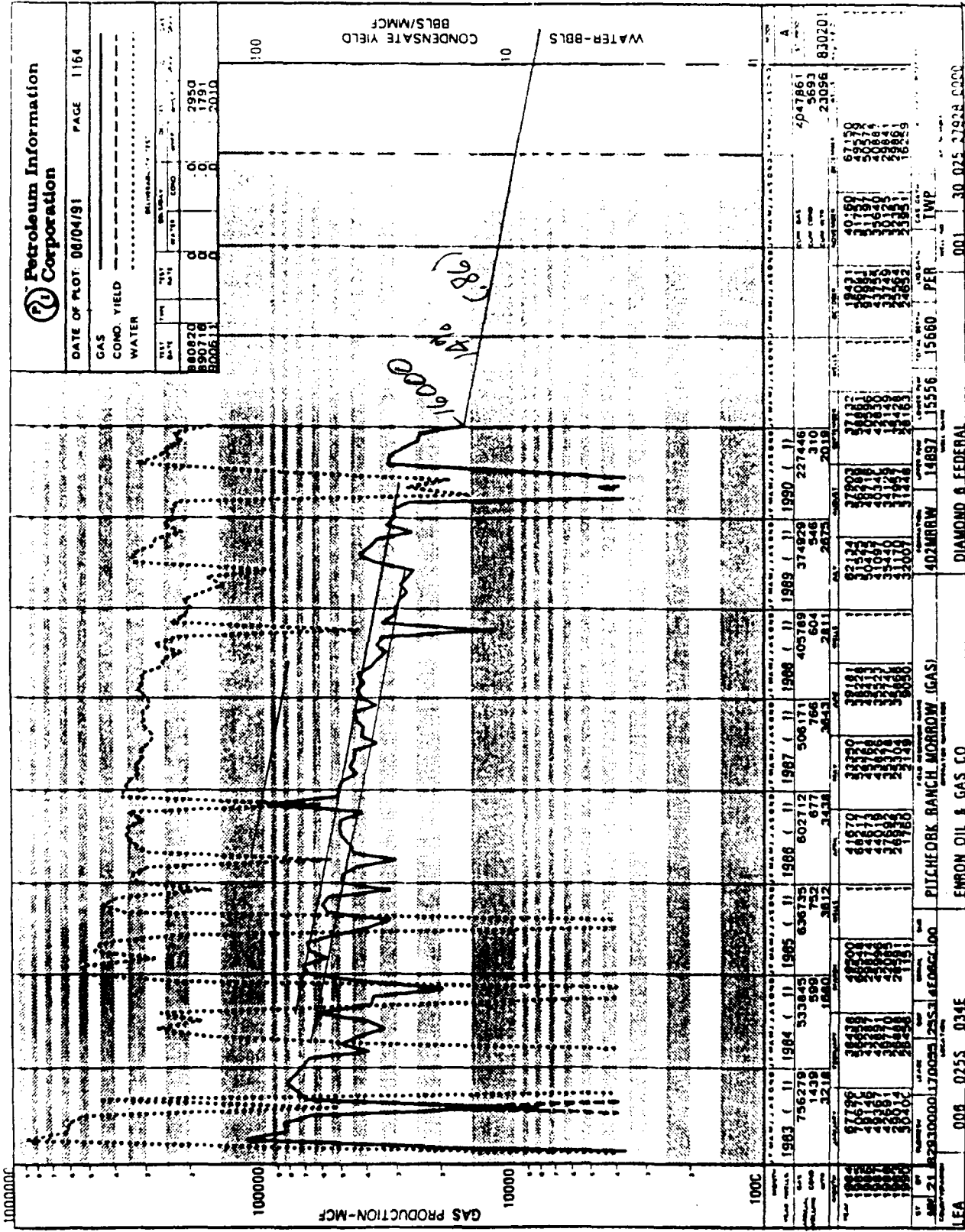


Q-MCFD

$$Q_1 = 9400 \text{ MCFD}; \quad \text{Log } Q_1 = 3.97315$$

$$Q_2 = 2850 \text{ MCFD}; \quad \text{Log } Q_2 = 3.45485$$

$$N = \frac{0.51828}{0.518} = 0.518$$



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Petroleum Information Corporation

DATE OF PLOT: 08/04/91 PAGE 1164

GAS	COND. YIELD	WATER
880820	0	0
890716	0	0
890611	0	0
2950	1791	3010

Aug. 18954 MCFG, mo. + 26 B
 1.12 Sum. 4048
 Rem. 1194
 EIP. 52421 MCFG + 6000 RC

TIGHT GAS SANDS

PERMEABILITY AND STABILIZED FLOW RATE

VACA DRAW / PITCHFORK RANCH AREA

DATE: 11/22/91

WELL NAME: HALF 6 FED 1

INTERVAL: 15288-360'

STIMULATED ? (Y/N): NO; NATURAL

FLOW RATE (MCF/D): 1,700

FLOW TIME (HRS.): 249

FLOWING BHP (psia): 1,828

GAS GRAVITY (Yg): 0.607

TEMP. DEGREE F (T): 200

RESERVOIR PRESSURE (Pi): 4,574

GAS POROSITY: 0.085

WELLBORE RADIUS (Ft): 0.250

SKIN FACTOR: 0.0

PAY HEIGHT: 36

Z-FACTOR: 0.989

GAS COMPRESSIBILITY: 0.000135

GAS VISCOSITY (cp): 0.0240

SPACING ACRES: 320

FORMATION VOLUME FACTOR (Bg): 0.719

SPACING RADIUS (Ft): 2,106

ASSUMED K (md): 0.3099

RADIUS OF DRAINAGE (Ft): 863.2

CALCULATED K (md): 0.3099

STEADY TIME (HRS.): 3,736.05

STABILIZED FLOW (MCF/D): 1517.09

AOF PRESSURE (psia): 284

STABILIZED AOF (MCF/D): 2,370

MULTIPOINT AND ONE POINT BACK PRESSURE TEST FOR GAS WELL

Type Test ☒ Initial ☐ Annual ☐ Special					Test Date 2-5-91				
Company Enron Oil & Gas Company				Connection Llano					
Pool Pitchfork Ranch				Formation Morrow				Unit J	
Completion Date 12-15-90		Total Depth 15,675'		Plug Back TD 15,406		Elevation 3465 KB		Farm or Lease Name Half 6 Fed. Com.	
Eq. Size 3 1/2"	Wt. 6.5	d 2.441	Set At 15,406	Perforations: From 15,288 To 15,360			Well No. 1		
Trg. Size 2 7/8"	Wt. 6.5	d 2.441	Set At 14,564	Perforations: From OPEN To ENDED			Unit Sec. Twp. Rge. 0 6 25s 34e		
Type Well - Single - Brdenhead - G.G. or G.O. Multiple Single				Packer Set At 14,564'		County Lea			
Producing Thru Tubing		Reservoir Temp. °F 60		Mean Annual Temp. °F 60		Baro. Press. - P _a 13.2		State New Mexico	
L 15288	H 15288	C _g .607	% CO ₂ 1.19	% N ₂ .16	% H ₂ S -	Prover	Meter Run 4.026	Taps FLG	

FLOW DATA						TUBING DATA		CASING DATA		Duration of Flow	
NO.	Prover 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							3265		PKR		24 hrs.
1.	4 x 2.000			915	7.00	78	3142		"		1 hr.
2.	4 x 2.000			915	12.00	78	3072		"		1 hr.
3.	4 x 2.000			920	26.00	78	2942		"		1 hr.
4.	4 x 2.000			930	48.00	80	2738		"		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 _{sp}	Rate of Flow Q, Mscf/d
1	19.81	80.61	928.2	.9831	1.284	1.073	2,163
2	19.81	105.54	928.2	.9831	1.284	1.073	2,832
3	19.81	155.77	933.2	.9831	1.284	1.073	4,180
4	19.81	212.78	943.2	.9813	1.284	1.074	5,704
5.							

NO.	P _r	Temp. °R	T _r	Z	Gas Liquid Hydrocarbon Ratio 620.0 Mcl/ubl.	
1	1.39	538	1.50	.869	A.P.I. Gravity of Liquid Hydrocarbons 51.0 Deg.	
2	1.39	538	1.50	.869	Specific Gravity Separator Gas .607	
3	1.39	538	1.50	.869	Specific Gravity Flowing Fluid .607	
4	1.41	540	1.51	.867	Critical Pressure * 667 P.S.I.A.	
5					Critical Temperature * 357 °R	

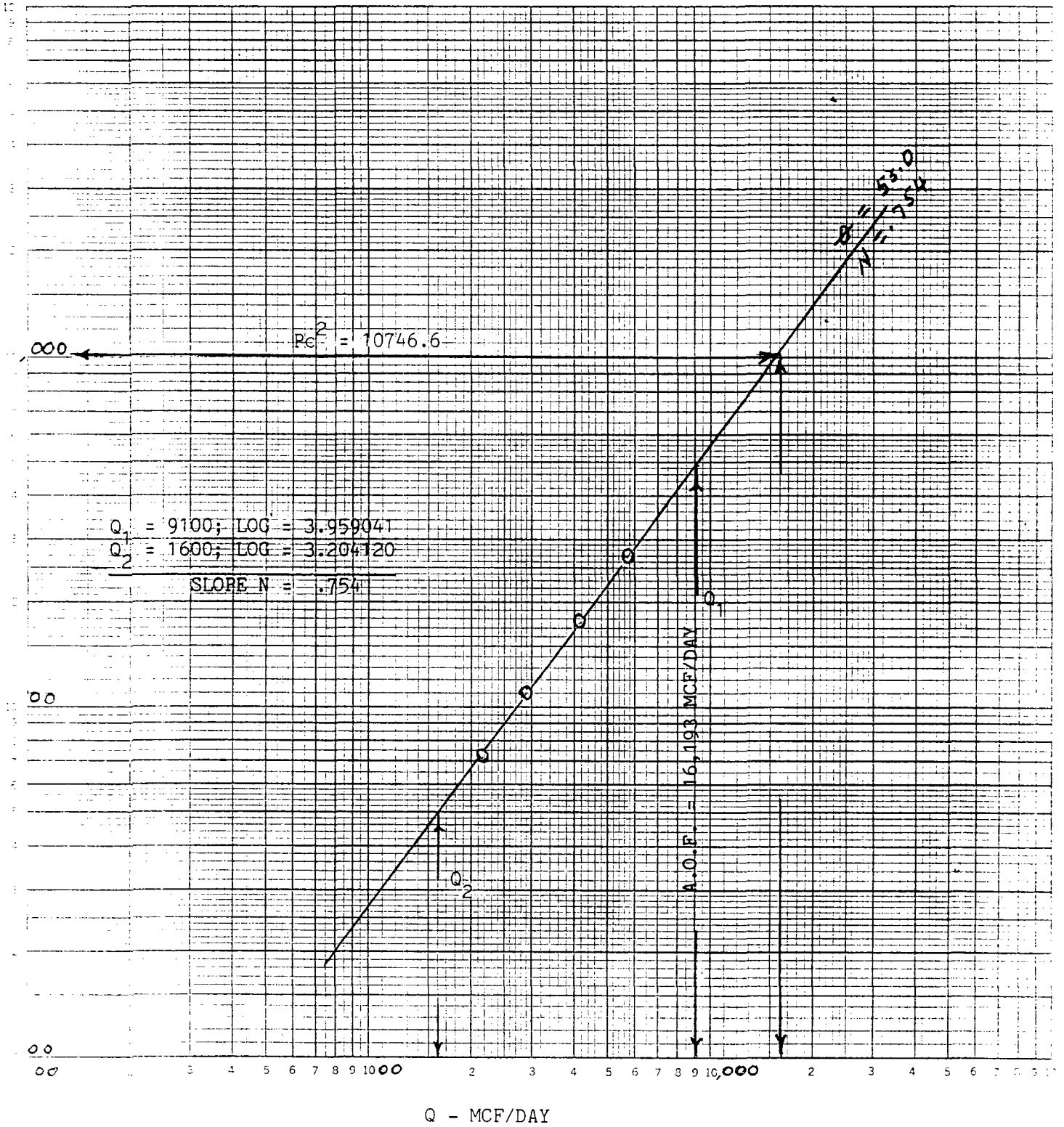
P _r 3278.2 P _w 10746.6					(1) $\frac{P_r^2}{P_r^2 - P_w^2} = 3.990$		(2) $\left[\frac{P_r^2}{P_r^2 - P_w^2} \right]^n = 2.839$	
NO.	P _r ²	P _w ²	P _r ² - P _w ²		$AOF = Q \left[\frac{P_r^2}{P_r^2 - P_w^2} \right]^n = 16.193$			
1	3167.8	10035.0	711.6					
2	3106.2	9648.5	1098.1					
3	3000.5	9003.0	1742.6					
4	2837.8	8053.1	2693.5					
5								

Absolute Open Flow 16,193 Mscf/d @ 15.025		Angle of Slope @ 53.0		Slope, n .754	
Remarks: Well produced 1.00 BBL 51.0 API condensate during test					
* Corrected to 1.19% Co ₂					
Approved By Division Conducted By: Calculated By: Checked By:					

Enron Oil & Gas Company
 Half 6 Fed. Com. No. 1
 0 - 6 - 24s - 34e
 Lea County, New Mexico
 2-5-91

467400

467400



HALF 6 FEDERAL COM. No. 1 (DW-GAS)
 990' FSL & 1980' FEL
 Section 6-25S-34E
 Lea County, New Mexico
 Pitchfork Ranch Field
 Marshall Prospect

Oper: ENRON OIL & GAS COMPANY
15,450' Morrow
EOG %: 77.950 WL 62.850 NRI
 AFE No. 0195100011
 CPC: \$1,364,500, CWC: \$1,720,500
 SC No. N/A
 Product Call %: 77.950

02-03-91 PRESENT OPERATION: Well SI for press test

24 hr SITP 3200#; CP 0#; EDWC \$0; ETWC \$2,052,454.

02-04-91 PRESENT OPERATION: Well SI for press test

24 hr SITP 3200#; CP 0#; EDWC \$0; ETWC \$2,052,454.

02-05-91 PRESENT OPERATION: Well SI for press test

24 hr SITP 3200#; CP 0#; EDWC \$0; ETWC \$2,052,454.

02-06-91 PRESENT OPERATION: Flowing to sales

4 hr DWSITP 3262 psi/72 hrs.; POH with dual Amerada pressure bombs set at 15,324'; RIH, run gradient pressures; measured BHP 4519 psig; 4 hr POH & start 4-point test as follows:

Stage	MCFD	TP	CP	CHK	BW	BO
1st	2120	3142	0	4/64"	0	0
2nd	2800	3072	0	6/64"	0	0
3rd	4090	2942	0	10/64"	0	0
4th	5500	2738	0	16/64"	0	1

16 hr flowed 2200 MCFD; TP 3000; CP 0; LP 930; 10 BO; 6 BW; 5/64" chk; EDWC \$3,750; ETWC \$2,056,204.

02-07-91 PRESENT OPERATION: Flowing to sales

24 hr well flowing 2464 MCF; TP 3000; CP 200; LP 900; 12 BO, 15 BW; EDWC \$0; ETWC \$2,056,204.

02-08-91 PRESENT OPERATION: Flowing to sales

24 hr well flowing 2556 MCF; TP 3000#; CP 300#; LP 880#; 8 BO, 0 BW; EDWC \$0; ETWC \$2,056,204.

Flow Time							
DATE	Hours	MCFG	BO	BW	FTP	CP	LP
02-09-91	24	2451	2	3	3000	200	890
02-10-91	24	2527	3	3	3000	400	860
02-11-91	24	2715	0	6	3000	400	910

CAOF from 4-pt run on 02-05-91 16,193 MCFD; FINAL REPORT

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15,450' Morrow
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AFE No. 0195100011
CPC: \$1,364,500, CWC: \$1,720,5
SC No. N/A
Product Call %: 77.950

12-13-90 (92) PRESENT OPERATION: LD DP & DC

TD 15,675'; PBTD 15,406'; pmp #1 lnr & stroke 5 x 8-1/2; SPM 49; GPM 106; 2400#; MW 8.4; vis 28 FW; 1 hr LD 1-1/2" DP; 1-1/2 hr ND rot head, RU Schlumberger; 5 hr run cmt bond log w/3000 psi press; loggers TD 15,390'; 1/2 hr RD Schlum, NU rot head; 5-1/2 hr TTH w/Lindsey honing mill; 2 hr milling PBR on 3-1/2" liner; 3 hr circ btm up, RU LD machine; 5-1/2 hr LD DP & DC's; EDMC \$0; ETMC \$115,366; EDWC \$26,345; ETWC \$1,696,187.

12-14-90 (93) PRESENT OPERATION: Displace hole w/pkr fluid

TD 15,675'; PBTD 15,406'; MW 8.4 FW pkr fluid; 5 hr LD 2-7/8" DP & 3-1/2" DC's; 1 hr break kelly & RU to run 2-7/8" tbg; 9-1/2 hr run 2-7/8" tbg; 1-1/2 hr space out; 3 hr WO Howco & lay reverse line; 1 hr press 2-7/8" tbg to 7000#, OK; 1-1/2 hr pump 250 gal xylene & 500 gal 7-1/2% HCl acid w/corrosion inhibitor & reverse out; 1-1/2 hr displace FW in hole w/pkr fluid; EDMC \$1,861; ETMC \$117,227; EDWC \$93,420; ETWC \$1,789,667.

12-15-90 (94) PRESENT OPERATION: Shut well in

TD 15,675'; PBTD 15,406'; 1-1/4 hr finish displacing hole w/2% KCL pkr fluid; install BPV; 2 hr RU Cudd, displace tub w/120,000 SCF of N2; max press 4350 psig; 1/4 hr land tbg w/20,000# compression; 3-1/2 hr ND BOPs; 1 hr NU tree; test wraparound w/oct to 4500# and test tree to 10,000#, ok; remove BPV; TP 4400 psig, bled to 500 psig; install tree; 5-1/2 hr RU Schlumberger; attempted to perf; misrun, could not correlate with CCL; 2 hr ran strip log (PDC Log); 2-1/2 hr perf w/Schlumberger select fire w/4 JSPF from 15,288' to 15,300', 15,340'-15,354', 15,356'-15,360'; 6 hr flow well; after perforating tbg psi 1375#; at 11:00 PM opened well on 16/64" chk; tbg psi 825#; at 2:30 AM tbg psi 1200#, flaring gas; at 3:00 AM 20/64" chk, tbg psi 1175#; at 4:00 AM 20/64" chk, tbg psi 856#, fluid to surf; at 5:00 AM 20/64" chk, tbg psi 850#; stabilized at 850# unloading water; shut well in at 5:00 AM; est MCF/Day 2.1 MMCFD; EDWC \$30,616; ETWC \$1,820,223.

HALF 6 FEDERAL COM. No. 1 (DW-GAS)

990' FSL & 1980' FEL
Section 6-25S-34E
Lea County, New Mexico
Pitchfork Ranch Field
Marshall Prospect

Oper: ENRON OIL & GAS COMPANY
15,450' Morrow
EOG %: 77.950 WI, 62.850 NRI
AFE No. 0195100011
CPC: \$1,364,500, CWC: \$1,720,5
SC No. N/A
Product Call %: 77.950

12-16-90 (95) PRESENT OPERATION: Release rig on standby

TD 15,675'; PBTD 15,406'; 2 hr shut well in @ 850 psi; built up to 2700 psi; 14-1/2 hr flowing well into pit; 3 hr shut well in; RU Well Testers; tbq press built up to 3600 psi; 4-1/2 hr testing well; release rig on standby @ 5:00 PM; EDWC \$5,468; ETWC \$1,825,691.

TIME	CHK	TBG	WIR	CUM WIR	MCFD
9:30	Shut in to RU test unit.				
10:30		2000	Shut in		
1:30 AM	14/64	3600	0	0	1874
2:00	14/64	3100	0	0	1530
3:00	18/64	1200	2	2	1641
4:00	18/64	920	0	2	1326
5:00	18/64	920	1	3	1326
6:00	20/64	725	0	3	1370
7:00	20/64	700	0	3	1326

12-17-90 (96) PRESENT OPERATION: SI BU

2 hr flowing 1,326 MCF; TP 700; CP 600; BP 150 psi; 20/64" chk; 0 BO, 0 BW; 5 hr flowing 1,286 MCF; TP 350; CP 60; BP 150 psi; 32/64" chk; 0 BO, 0 BW; 5 hr flowing 1,326 MCF; TP 285; CP 60; BP 150 psi; 48/64" chk; 1.5 BO, 5 BW; chl 61,000 PPM; 12 hr SI; SITP 3540 psig/12 hrs; SICP 120 psig; EDWC \$2,020; ETWC \$1,827,711.

12-18-90 (97) PRESENT OPERATION: Set BP Valve in Wellhead

24 SITP 3575; CP 120; SI 36 hrs; EDWC \$0; ETWC \$1,827,711.

12-19-90 (98) PRESENT OPERATION: Setting production equip

22 SITP 3575; CP 120; SI 60 hrs; 2 hr RU FMC; set BP valve in 10,000# tree; RD FMC; EDWC \$662; ETWC \$1,828,773.

12-20-90 (99) RD McVay Rig #10; EDWC \$0; ETWC \$1,828,773.

12-21-90 RD McVay Rig #10; EDWC \$0; ETWC \$1,828,773.

Calc
EAP: 4942

HALF 6 FEDERAL COM. No. 1 (DW-GAS)

990' FSL & 1980' FEL
Section 6-25S-34E
Lea County, New Mexico
Pitchfork Ranch Field
Marshall Prospect

Oper: ENRON OIL & GAS COMPANY

15,450' Morrow

EOG %: 77.950 WI, 62.850 NRI

AFE No. 0195100011

CPC: \$1,364,500, CWC: \$1,720,500

SC No. N/A

Product Call %: 77.950

12-22-90 2 hr RU FMC; release back pressure valve; RD FMC; 22 hr SITP 3575; CP 120; SI 132 hrs; EDWC \$0; ETWC \$1,829,620.

12-23-90 24 hr SITP 3575; CP 120; SI 156 hrs; EDWC \$0; ETWC \$1,829,620.

12-24-90 24 hr SITP 3575; CP 120; SI 180 hrs; EDWC \$0; ETWC \$1,829,620.

12-25-90 24 hr SITP 3575; CP 120; SI 204 hrs; EDWC \$0; ETWC \$1,829,620.

12-26-90 24 hr SITP 3575; CP 120; SI 228 hrs; EDWC \$0; ETWC \$1,829,620.

12-27-90 24 hr SITP 3575; CP 120; SI 252 hrs; EDWC \$0; ETWC \$1,829,620.

12-28-90 24 hr SITP 3575; CP 120; SI 276 hrs; EDWC \$0; ETWC \$1,829,620.

12-29-90 PRESENT OPERATION: Well to Sales (Initial Prod)

SITP 3575; CP 120; SI 300 hrs; initial prod time on 3:00 pm 12-28-90 @ 1600 MCF; TP 2500; CP 200; LP 1000; 12/64" chk; sell to Enron Pipeline; EDWC \$0; ETWC \$1,829,620.

12-30-90 PRESENT OPERATION: Well to Sales

24 hr flowed 884 MCF; TP 2200; CP 200; LP 1000; 0 BO, 1 BW; EDWC \$0; ETWC \$1,829,620.

12-31-90 PRESENT OPERATION: Well to Sales

24 hr flowed 1695 MCF; TP 1400; CP 200; OP 1050; 18/64" chk; 0 BO, 0 BW; EDWC \$0; ETWC \$1,829,620.

01-01-91 PRESENT OPERATION: Well to Sales

24 hr flowed 1587 MCF; TP 1350; CP 200; LP 1030; 18/64" chk; 0 BO, 3 BW; EDWC \$0; ETWC \$1,829,620.

01-02-91 PRESENT OPERATION: Well to Sales

24 hr flowed 1541 MCF; TP 1325; CP 200; LP 900; 19/64" chk; 0 BO, 6 BW; EDWC \$0; ETWC \$1,829,620.

HALF 6 FEDERAL COM. No. 1 (DW-GAS)
 990' FSL & 1980' FEL
 Section 6-25S-34E
 Lea County, New Mexico
 Pitchfork Ranch Field
 Marshall Prospect

Oper: ENRON OIL & GAS COMPANY
 15,450' Morrow
 EOG #: 77.950 WI, 62.850 NRI
 AFE No. 0195100011
 CPC: \$1,364,500, CWC: \$1,720,500
 SC No. N/A
 Product Call #: 77.950

PRESENT OPERATION: Well to Sales

Date	Flow Time		MCFG	BO	BW	FTP
	Hours					
01-03-91	24		1616	0	0	1325
01-04-91	24		1640	0	6	1300
01-05-91	24		1596	0	21	1325
01-06-91	24		1588	0	6	1325
01-07-91	24		1691	0	3	1250
01-08-91	24		1700	0	3	1250
01-09-91	24		1700	0	3	1250
01-10-91	24		1780	0	12	1225
01-11-91	24		1774	0	3	1200
01-12-91	24		1767	0	3	1200
01-13-91	24		1756	0	6	1200
01-14-91	24		1695	0	2	1200
01-15-91	24		1661	0	3	1150

SI well, prep for acid job.

249 hrs

145 hrs

01-16-91

PRESENT OPERATION: Frac Morrow "C" Zone

TP 3400; CP 2000; SI 21 hr; 3 hr MIRU Howco, lay & test lines to 11,000 psi; acidize well w/2000 gals mod 101 acid, followed by 4000 gals Alco foam gel, 60 1.3 ball sealers, flush w/80 bbls 2% KCL, all fluids contained 750 SCF/bbl N2 as follows:

Stage	Volume & Description	Rate BPM	Press
1	2000 gal mod 101 acid 750 SCF/N2/bbl	7.5	7800
2	400 gal Alco gel 60 ball sealers & 750 SCF/N2/bbl	10.5	7800
3	3360 gals 2% KCL w/750 SCF/N2/bbl	11	9100

Avg rate 11 BPM, avg press 8800; max psi 9200; good ball action; ISIP 5500; 5 min 3700; 10 min 3000; 15 min 270; TBLTR 228 bbls; 1 hr RD Howco; TP 2100; CP 500; 3 hr flow well to pit 48/64" chk; TP 100; CP 500; rec 80 bbls; 1-1/2 hr RU Jarrel WL Serv; PU 23' gauge ring, RIH to 15,406 PBTD; knocked off frac balls; TOH, RD Jarrel; TP 2000; CP 600; 9-1/2 hr flow well to pit flaring gas 20/64" chk; TP 750; CP 600; 1.700 MCF; 4 BO; 60 BW; 6 hr pinch chk flowing 1.700 MCF; TP 1250; CP 650; 16/64" chk; 6 BO; 40 BW; TBLR 180; TBTR 48; EDWC \$28,824; ETWC \$1,954,635.

HALF 6 FEDERAL COM. No. 1 (DW-GAS)

990' FSL & 1980' FEL

Section 6-25S-34E

Lea County, New Mexico

Pitchfork Ranch Field

Marshall Prospect

Oper: ENRON OIL & GAS COMPANY

15,450' Morrow

EOG %: 77.950 WI, 62.850 NRI

AFE No. 0195100011

CPC: \$1,364,500, CWC: \$1,720,500

SC No. N/A

Product Call %: 77.950

Flow Test							Remarks
Time	MCFD	BO	BW	Chk	FTP	CP	
11:00 pm	-	-	-		2100	500	
12:00	-	-	25	20/64	1200	500	
1:00	-	-	35	48/64	200	500	
2:00	-	-	20	"	100	500	
3:30	-	-			2000	600	Well SI
5:00	1700	-	20	20/64	750	600	
7:00	1700	-	10	"	750	600	
9:00	1700	-	5	"	750	600	
12:00 am	1700	-	20	"	750	650	
1:00	1700	-	5	"	750	650	
2:00	1400	1	15	16/64	1000	650	
3:00	1600	1	13	"	1100	650	
4:00	1700	2	12	"	1250	650	
5:00	1700	1	14	"	1250	650	
6:00	1700	1	6	16/64	1250	650	

01-17-91

PRESENT OPERATION: Flow back frac

SITP 3456; CP 1320; WI 4 hr; 5 hr MIRU Howco, lay & test lines to 11,000 psi; frac Morrow C Zone from 15,288'-360' w/41,727 gal 60 quality CO2 Alco foam & 35,000# 20/40 mesh interprop plus as follows:

Stage	Volume & Description	Rate BPM	Press
1	22,000 gal Prepad	18.5	8,400
2	1,814 gals w/0.5 ppg prop	19.1	8,200
3	3,700 gals w/1.0 ppg prop	19	8,100
4	5,800 gals w/2.0 ppg prop	19	8,900
5	4,650 gals w/3.0 ppg prop	18.2	9,375
Ran out of sand; go to flush; cut stage short by 1850 gals			
6	flush w/3,100 gals Alco foam	17	10,900

Avg rate 18 BPM; avg press 8807 psi; max press 11,238; ISIP 10,826; 5 min 8931; 10 min 8116; 15 min 7036; TBTR 397 (159 bbls wtr & 238 bbls methanol); maintained 3000 psig annulus press during treatment; 1 hr RD Howco; 1 hr well SI; TP 2700; CP 500; 10 hr open well to pit flow back frac recovering frac fluid & large amts of prop; TP 1500; CP 800; sand cut out flow line, SI well; 3 hr well SI to repair flowline; TP 2500; CP 800; 2 hr well flowing to pit @ 2200 MCF; TP 1500; CP 800; 16/64" chk; heavy prop & frac fluid prop cut out choke body; SI well; rec 185 BW, 0 BO; 2 hr well SI, wait on chk; TP 2700; CP 800; 24 hr TBLR 185; TBLTR 212; EDWC \$100,207; ETWC \$2,054,842.

Petrochem Information Corporation									
DATE OF PLOT 06/04/91 PAGE 1165									
GAS COND. YIELD WATER									
B10123 5704 0 32655.1 0 507									
10000									
1000									
100									
GAS PRODUCTION-MCF									
1990 (1) 7383									
1990 0 0 0 0 0 0 0 0 0 0									
PITCHEORK RANCH MORROW (GAS)									
402MRW 15288 15360 15675 EOT TWP									
ENRON OIL & GAS CO.									
008 0255 034E									
001 30 025 30982 000									

HALF 6 FEDERAL COM. No. 1 (DW-GAS)

990' FSL & 1980' FEL

Section 6-25S-34E

Lea County, New Mexico

Pitchfork Ranch Field

Marshall Prospect

Oper: ENRON OIL & GAS COMPANY

15,450' MorrowEOG %: 77.950 WL, 62.850 NRI

AFE No. 0195100011

CPC: \$1,364,500, CWC: \$1,720,500

SC No. N/A

Product Call %: 77.950

01-18-91

PRESENT OPERATION: Put well to sales this am

7 hr flowing to pit @ 3800 MCFD & 40 BW on a 1/4" chk w/2600 psig FTP; 1/2 hr SD check choke seat; cut out, replace w/18/64" positive choke; TP 3100; CP 1200; open well to pit; 9-1/2 hr Flowed 4000 MCFD & 12 BW on an 18/64" chk w/2200 psig FTP; had trace of oil, and prop cleaned up; 7 hr SI well @ 12:00 am for BU; TP 3300; CP 1200; TBR 237; TBLTR 160; EDWC \$2,612; ETWC \$2,057,454.

01-19-91

PRESENT OPERATION: Well To Sales

3 hr well SI; TP 3300; CP 400; SI 10 hr; 21 hr flowed 4337 MCF; TP 2400; CP 400; LP 910; 39 BO, 32 BW; TBF 269; TBLTR 128; EDWC \$0; ETWC \$2,057,454.

PRESENT OPERATION: Well To Sales

Date	Flow hrs	MCFG	BO	BW	FTP	CHK	LP	Total LWR	BLWTR	Remarks
01-20-91	24	5227	12	70	2420	18/64	920	339	58	
01-21-91	24	5340	14	33	2420	19/64	920	372	25	Some gelled wtr
01-22-91	24	5419	14	37	2420	19/64	890	409	-	Total frac load 3978
01-23-91	24	5935	13	16	2300	20/64	870			
01-24-91	24	5936	14	46	2200	20/64	870			
01-25-91	24	6087	16	49	2300	20/64	900			
01-26-91	24	6137	0	70	2310	22/64	930			
01-27-91	24	6188	12	23	2320	22/64	930			
01-28-91	24	6188	14	29	2340	22/64	930			
01-29-91	24	6521	17	64	2220	22/64	900			<i>stable 261 Hrs</i>
01-30-91	24	6494	15	38	2220	22/64	880			
01-31-91	24	6448	16	29	2220	22/64	930			
02-01-91	24	6465	15	32	2220	22/64	860			

02-02-91

PRESENT OPERATION: Well to sales

7 hr flowed 6427 MCF; TP 2220#; CP 700#; LP 860#; 17 BO, 41 BW; 22/64"; MIRU Jarrel WL Serv; ran Dual Amerada Press bombs; hang @ mid-perf; flow well 4 hr w/bombs on perfs; SI well for 72 hr; 17 hr well SI; SITP 3200#; CP 0#; EDWC \$0; ETWC \$2,052,454.

Petroleum Information Corporation
 DATE OF PLOT 06/04/81 PAGE 1165
 GAS
 COND. YIELD
 WATER

GAS PRODUCTION-MCF
 10000
 1000
 100

CONDENSATE YIELD RBL S/MMCF
 1100
 100

WATFR-BBL S
 7383

DATE OF PLOT	PAGE	GAS	COND. YIELD	WATER
06/04/81	1165	GAS	COND. YIELD	WATER

PITCHFORK RANCH, MORROW (GAS)
 WELL 402MRW DATE 15388
 ENGON OIL & GAS CO.
 008 0755 034E

TIGHT GAS SANDS
PERMEABILITY AND STABILIZED FLOW RATE
VACA DRAW / PITCHFORK RANCH AREA

DATE: 11/24/91

WELL NAME: JAVELINA BASIN 1

INTERVAL: 15154-420

STIMULATED ? (Y/N): YES; 5000 G ACID +N2

FLOW RATE (MCF/D): 1,231

FLOW TIME (HRS.): 4

FLOWING BHP (psia): 4,577

GAS GRAVITY (Yg): 0.577

TEMP. DEGREE F (T): 218

RESERVOIR PRESSURE (Pi): 9,014

GAS POROSITY: 0.057

WELLBORE RADIUS (Ft): 0.250

SKIN FACTOR: 0.0

PAY HEIGHT: 18

Z-FACTOR: 1.321

GAS COMPRESSIBILITY: 0.00005

GAS VISCOSITY (cp): 0.0302

SPACING ACRES: 320

FORMATION VOLUME FACTOR (Bg): 0.500

SPACING RADIUS (Ft): 2,106

ASSUMED K (md): 0.1859

RADIUS OF DRAINAGE (Ft): 151.6

CALCULATED K (md): 0.1859

STEADY TIME (HRS.): 1,946.48

STABILIZED FLOW (MCF/D): 840.20

AO F PRESSURE (psia): 284

STABILIZED AOF (MCF/D): 1,653

TIGHT GAS SANDS
PERMEABILITY AND STABILIZED FLOW RATE
VACA DRAW / PITCHFORK RANCH AREA

DATE: 11/22/91

WELL NAME: JAVELINA BASIN 1

INTERVAL: 14594-604'

STIMULATED ? (Y/N): YES; 2500 GAL ACID

FLOW RATE (MCF/D): 101

FLOW TIME (HRS.): 24

FLOWING BHP (psia): 1,293

GAS GRAVITY (Yg): 0.577

TEMP. DEGREE F (T): 218

RESERVOIR PRESSURE (Pi): 9,210

GAS POROSITY: 0.110

WELLBORE RADIUS (Ft): 0.250

SKIN FACTOR: 0.0

PAY HEIGHT: 4

Z-FACTOR: 1.330

GAS COMPRESSIBILITY: 0.00005

GAS VISCOSITY (cp): 0.0306

SPACING ACRES: 320

FORMATION VOLUME FACTOR (Bg): 0.493

SPACING RADIUS (Ft): 2,106

ASSUMED K (md): 0.0367

RADIUS OF DRAINAGE (Ft): 118.0

CALCULATED K (md): 0.0367

STEADY TIME (HRS.): 19,264.84

STABILIZED FLOW (MCF/D): 65.88

AOF PRESSURE (psia): 76

STABILIZED AOF (MCF/D): 76

Petroleum Information.

COUNTY LEA **WELL** Wildcat **STATION**
OP STONE PETROLEUM CORP., THE **NO** 30-025-28003
NO 1 **UNIT** Javalina Basin Unit **MAP**
Sec 17, T25S, R34E **D-NO**
1980 FNL, 1980 FEL of Sec **4-2-81**
33 mi SE/Halfway **SPD** 11-5-82 **2-24-83**

CIC	WELL CLASS: INIT WD FIN WDD LSE CODE			
	FORMATION	DATUM	FORMATION	DATUM
13 3/8-588-500 BX				
10 3/4-5172-2825 BX				
7-13,600-795 BX				
5 1/2-lnr-13,099-15,820-235 BX				
1 7/8-13,058				
	15,825 (MRRW)			

IP (Morrow) Perme 15,154-420 CAOP 1546 MCFGPD
Qty (Gas) 5765 SIWHP 7080; SIBHP 8041

CONTR Parker #65 **OPR** SELL 3335 GL

11-1-82
 11-8-82 Drig 588
 11-16-82 Drig 3152
 11-30-82 Drig 10,617
 12-7-82 Drig 13,137
 12-14-82 Drig 13,604
 12-20-82 Drig 14,074
 12-28-82 TD 14,639; Circ
 1-11-83 Drig 15,509
 1-18-83 TD 15,825; Rng Lnr
 1-24-83 TD 15,825; PBD 15,607; 4001
 1-27-83 TD 15,825; PBD 15,607; 4001
 Perme (Morrow) 15,154-156
 15,389-392, 15,418-420
 3-7-83 TD 15,825; PBD 15,607; 4001
 Annul (15,154-420) 5000 gals + 100
 per bbl

LEA

STONE PETROLEUM
CORP., THE

Wildcat

1 Javelina Basin Unit

Sec 17, T25S, R34E

NM

Page #2

4-4-83

TD 15,825; FBD 15,607; Complete

(Morrow) FOUR POINT GAUGES:

Flwd 466 MCFGPD, chk (NR), 60 mins, TP 5860

Flwd 765 MCFGPD, chk (NR), 60 mins, TP 4908

Flwd 968 MCFGPD, chk (NR), 60 mins, TP 4115

Flwd 1231 MCFGPD, chk (NR), 60 mins, TP 3365

Morrow Discovery

LOG TOPS: Delaware 5320, Cherry Canyon 6190,

First Bone Spring 9300, Wolfcamp 12,378, Atoka

14,598, Morrow 14,878

BHT 218 deg @ 15,287

4-9-83

COMPLETION ISSUED

4-2-31 NM

IC 30-025-70837-82

UNITED STATES
DEPARTMENT OF THE INTERIOR
BUREAU OF LAND MANAGEMENT

APPLICATION FOR PERMIT TO DRILL, DEEPEN, OR PLUG BACK

1. TYPE OF WORK

DRILL ☐

DEEPEN ☐

PLUG BACK ☒

2. TYPE OF WELL

OIL
WELL ☐

GAS
WELL ☒

OTHER

SINGLE
BONE ☒

MULTIPLE
BONE ☐

3. NAME OF OPERATOR

The Stone Petroleum Corporation

4. ADDRESS OF OPERATOR

P.O. Box 52382, Lafayette, Louisiana 70505

5. LOCATION OF WELL (Report location clearly and in accordance with any State requirements*)

At surface 1,980' FNL and 1,980' FEL of Section 17

At proposed prod. zone Same

6. DISTANCE IN MILES AND DIRECTION FROM NEAREST TOWN OR POST OFFICE*

17 miles west of Jal, New Mexico

7. DISTANCE FROM PROPOSED*

LOCATION TO NEAREST
PROPERTY OR LEASE LINE, FT.
(Also to nearest drig. unit line, if any)

1,980'

8. NO. OF ACRES IN LEASE

800

9. NO. OF ACRES ASSIGNED

TO THIS WELL

320

10. DISTANCE FROM PROPOSED LOCATION*

TO NEAREST WELL, DRILLING, COMPLETED,
OR APPLIED FOR, ON THIS LEASE, FT.

-

11. PROPOSED DEPTH

15,825'

12. ROTARY OR CABLE TOOLS

rotary

13. ELEVATIONS (Show whether DP, RT, GR, etc.)

3334.9' GR

14. APPROX. DATE WORK WILL START*

Upon Approval

15.

PROPOSED Casing AND CEMENTING PROGRAM

SIZE OF HOLE	SIZE OF CASING	WEIGHT PER FOOT	SETTING DEPTH	QUANTITY OF CEMENT
26"	20"	Conductor Csg.	40'	cement to surface
17-1/2"	13-3/8"	54.5	588'	500
12-1/4"	10-3/4"	45.5	5,172'	2,825
9-1/2"	7-5/8"	33.7	13,600'	795
6-1/2"	5-1/2"	23.0	13,097'-15,820'	235

Load tubing with salt water sufficient to kill well. Set thru-tubing bridge plug at 15,000' in 5-1/2" casing. Dump 370' of cement on top. Perforate 14,598'-14,603' (Atoka) with 4 JSI. Clean up well through production equipment and run 4-Point test. The Atoka is the only remaining hydrocarbon-bearing zone in the well. Present completion (Middle Morrow) at 15,154'-56'; 15,175'-178'; 15,389'-92'; 15,418'-20' is producing 30 MCFTD at line pressure (810-830 psig).

IN ABOVE SPACE DESCRIBE PROPOSED PROGRAM: If proposal is to deepen or plug back, give data on present productive zone and proposed new productive zone. If proposal is to drill or deepen directionally, give pertinent data on subsurface locations and measured and true vertical depths. Give blowout prevention program, if any.

16.

SIGNED Michael E. Martin TITLE Sr. Operations & Reservoir Engr. 6-4-85

(This space for Federal or State office use)

PERMIT NO.

APPROVAL DATE

Orig. Spt. Casing 5-1/2"

APPROVED BY

TITLE

DATE

CONDITIONS OF APPROVAL, IF ANY:

*See Instructions On Reverse Side

OPERATOR		AUTHORIZATION TO TRANSPORT OIL AND NATURAL GAS	
PERMITS OFFICE			
Operator			
The Stone Petroleum Corporation			
Address			
P. O. Box 52807, Lafayette, LA 70505			
Reason(s) for filing (Check proper box)		Other (Please explain)	
New Well ☒	Change in Transporter of:		
Recompletion ☐	Oil ☐	Dry Gas ☐	
Change in Ownership ☐	Casinghead Gas ☐	Condensate ☐	

If change of ownership give name and address of previous owner _____

DESCRIPTION OF WELL AND LEASE

Lease Name	Well No.	Pool Name, including Formation	Kind of Lease	Lease
Javelina Basin Unit	1	South Pitchfork Ranch (Morrow)	State, Federal or Fee Federal	221-10
Location				
Unit Letter	G	: 1,980 Feet From The	FNL Line and	1,980 Feet From The
			FEL	
Line of Section	17	Township	25S	Range
			34E	NMPM
			Lea	C

DESIGNATION OF TRANSPORTER OF OIL AND NATURAL GAS

Name of Authorized Transporter of Oil ☐ or Condensate ☐	Address (Give address to which approved copy of this form is to be sent)
None - Dry Gas	-----
Name of Authorized Transporter of Casinghead Gas ☐ or Dry Gas ☒	Address (Give address to which approved copy of this form is to be sent)
Transwestern Pipeline Company	P. O. Box 2521, Houston, TX 77001
If well produces oil or liquids, give location of tanks.	Unit Sec. Twp. Rgr.
n/a	no

If this production is commingled with that from any other lease or pool, give commingling order number: n/a

COMPLETION DATA

Designate Type of Completion - (X)	Oil Well	Gas Well	New Well	Workover	Deepen	Plug back	Some other	Full
		X	X					
Date Spudded	Date Compl. Ready to Prod.	Total Depth	P.B.T.D.					
11/05/82	2/24/83	15,825'	15,607'					
Elevations (DF, RKB, RT, GR, etc.)	Name of Producing Formation	Top Oil/Gas Pay	Tubing Depth					
3,334.9' GR	Middle Morrow	15,154'	13,058'					
Perforations			Depth Casing Shoe					
15,154' - 156'; 15,175' - 178'; 15,389' - 392'; 15,418' - 420'			15,820'					

TUBING, CASING, AND CEMENTING RECORD

HOLE SIZE	CASING & TUBING SIZE	DEPTH SET	SACKS CEMENT
17 1/2"	13 3/8"	588'	500
12 1/4"	10 3/4"	5,172'	2,825
9 1/2"	7 5/8"	13,600'	795
6 1/2"	5 1/2"	13,097' - 15,820'	235
	5 7/8"	13,058'	

TEST DATA AND REQUEST FOR ALLOWABLE OIL WELL (Test must be after recovery of total volume of load oil and must be equal to or exceed testable for this depth or be for full 24 hours)

Date First New Oil Run To Tanks	Date of Test	Producing Method (Flow, pump, gas lift, etc.)	
Length of Test	Tubing Pressure	Casing Pressure	Choke Size
Actual Prod. During Test	Oil-Bbls.	Water-Bbls.	Gas-MCF

AS WELL

Actual Prod. Test-MCF/D	Length of Test	Bbls. Condensate/MMCF	Gravity of Condensate
1,231	1 hour	0	----
Casing Method (pilot, back pr.)	Tubing Pressure (Shut-in)	Casing Pressure (Shut-in)	Choke Size
Back Pressure	7,080	packer	8/16"

CERTIFICATE OF COMPLIANCE

I hereby certify that the rules and regulations of the Oil Conservation

OIL CONSERVATION DIVISION
MAY 8 1984
APPROVED _____ 19

UNITED STATES
DEPARTMENT OF THE INTERIOR
GEOLOGICAL SURVEY

SUNDRY NOTICES AND REPORTS ON WELLS

(Do not use this form for proposals to drill or to deepen or plug back to a different reservoir. Use Form 9-331-C for such proposals.)

1. oil ☐ gas ☒ other ☐

2. NAME OF OPERATOR

The Stone Petroleum Corporation

3. ADDRESS OF OPERATOR

1620 Mid-America Tower, Oklahoma City, OK

4. LOCATION OF WELL (REPORT LOCATION CLEARLY. See space 17 below.)

AT SURFACE: 1980'FNL & 1980'FEL

AT TOP PROD. INTERVAL:

AT TOTAL DEPTH: same

16. CHECK APPROPRIATE BOX TO INDICATE NATURE OF NOTICE, REPORT, OR OTHER DATA

REQUEST FOR APPROVAL TO:

SUBSEQUENT REPORT OF:

TEST WATER SHUT-OFF ☐
FRACTURE TREAT ☐
SHOOT OR ACIDIZE ☐
REPAIR WELL ☐
PULL OR ALTER CASING ☐
MULTIPLE COMPLETE ☐
CHANGE ZONES ☐
ABANDON* ☐

☐
☐
☐
☐
☐
☐
☐
☐

(other) Completion

5. LEASE

DNM-19005

6. IF INDIAN, ALLOTTEE OR TRIBAL NAME

N/A

7. UNIT AGREEMENT NAME

Javelina Basin Unit

8. FARM OR LEASE NAME

N/A

9. WELL NO.

1

10. FIELD OR WILDCAT NAME

Wildcat

11. SEC., T., R., M., OR BLK. AND SURVEY OR AREA

Sec. 17-T25S-R34E

12. COUNTY OR PARISH 13. STATE

Lea New Mexico

14. API NO.

15. ELEVATIONS (SHOW DF, KOB, AND WD)

3334.9 GR

(NOTE: Report results of multiple completion or zone change on Form 9-330.) 1983

17. DESCRIBE PROPOSED OR COMPLETED OPERATIONS (Clearly state all pertinent details, and give pertinent dates, including estimated date of starting any proposed work. If well is directionally drilled, give subsurface locations and measured and true vertical depths for all markers and zones pertinent to this work.)*

Perforated Lower Morrow 15,695-15,712' w/2 JSPF. Breakdown with 4,000 gallons Inverol with 750 SCF Nitrogen per barrel. Treated at 3BPM at 8,000 psi. Swabbed back load. Well would not flow. Made 100% formation water. Set Schlumberger "Plus-Plug" in 5-1/2" liner to abandon Lower Morrow. Top of plug at 15,632'. Dumped 25' of cement. PBD now 15,607'. Perforated Middle Morrow 15,154-15,156', 15,175-15,178', 15,389-15,392' and 15,418-15,420' w/2 JSPF. Acidized with 5,000 gallons 7-1/2% 'MS' Acid with 1000 SCF Nitrogen per barrel. Treated at 6.3BPM at 8,000 psi. Now testing.

Subsurface Safety Valve: Manu. and Type

Set @

Fl

18. I hereby certify that the foregoing is true and correct

SIGNED

Bradley T. Ketz

TITLE Reg. Drilling Mgr. DATE February 22, 1983

APPROVED BY
CONDITIONS OF APPROVAL IF ANY:

(ORIG. SGD.) DAVID R. GLASS

DATE

MAR 17 1983

MINERAL MANAGEMENT SERVICE
FEDERAL BUREAU OF GEOLOGY

*See Instructions on Reverse Side

U. S. GEOLOGICAL SURVEY UNITED STATES

SUBMIT IN DUPLICATE*

P. O. BOX 1980 DEPARTMENT OF THE INTERIOR
HOBBS, NEW MEXICO 88240

WELL COMPLETION OR RECOMPLETION REPORT AND LOG*

1a. TYPE OF WELL: OIL WELL ☐ GAS WELL ☒ DRY ☐		MAR 3 1983		5. LEASE DESIGNATION AND SERIAL NO. NM-19005	
b. TYPE OF COMPLETION: NEW WELL ☒ WORK OVER ☐ DEEP-EN ☐ PLUG BACK ☐ DIFF. REVR. ☐		OIL & GAS		6. IF INDIAN, ACT. TITLE OR TRUST NAME N/A	
2. NAME OF OPERATOR The Stone Petroleum Corporation		MINERALS MGMT. SERVICE ROSWELL, NEW MEXICO		7. UNIT AGREEMENT NAME Javelina Basin Unit	
3. ADDRESS OF OPERATOR 1620 Mid-America Tower, Oklahoma City, Oklahoma 73102				8. FARM OR LEASE NAME	
4. LOCATION OF WELL (Report location clearly and in accordance with any State requirements)* At surface 1,980'FNL & 1,980'FEL At top prod. interval reported below At total depth Same		14. PERMIT NO. DATE ISSUED		9. WELL NO. 1	
15. DATE RECD'D 11/5/82		16. DATE T.D. REACHED 1/15/83		10. FIELD AND T.O. OR WILDCAT wildcat	
17. DATE COMPL. (Ready to prod.) 2/24/83		18. ELEVATIONS (DT, RKR, RT, GR, ETC.)* 3,334.9 GR		11. SEC. T. R. M. OR BLOCK AND SURVEY OR AREA Sec. 17-T25S-R34E	
20. TOTAL DEPTH, MD & TVD 15,825'		21. PLUG BACK T.D., MD & TVD 15,607'		12. COUNTY OR PARISH Lea	
22. IF MULTIPLE COMPL. HOW MANY*		23. INTERVAL DRILLED BY 100%		13. STATE New Mexico	
24. PRODUCING INTERVAL(S), OF THIS COMPLETION (TOP, BOTTOM, NAME (MD AND T.D.)) 15,154-15,156', 15,175-15,178', 15,389-15,392', 15,418-15,420' Middle Morrow		25. WAS WELL LOGGED No		19. ELEV. CASINGHEAD	
26. TYPE ELECTRIC AND OTHER LOGS RUN FDC-CNL, DIL, Dipmeter, Cyberlook		27. WAS WELL CURED No			
28. CASING RECORD (Report all strings set in well)					
CASING SIZE	WEIGHT, LB./FT.	DEPTH SET (MD)	HOLE SIZE	CEMENTING RECORD	AMOUNT CEMENTED
13-3/8"	54.50	588'	17-1/2"	250sx Lite + 250sx "C"	0
10-3/4"	45.50	5,172'	12-1/4"	2400sx Lite + 425sx "C"	0
7-5/8"	33.70	13,600'	9-1/2"	795sx "H"	0
29. LINER RECORD					
SIZE	TOP (MD)	BOTTOM (MD)	BACKS CEMENT*	SCREEN (MD)	
5-1/2"	13,099'	15,820'	235	-	
30. TUBING RECORD					
SIZE	DEPTH SET (MD)	BACKS SET (MD)			
2-7/8	13,058'	15,058'			
31. PERFORATION RECORD (Interval, size and number)					
15,154-15,156'	2'	4 holes			
15,175-15,178'	3'	6 holes			
15,389-15,392'	3'	6 holes			
15,418-15,420'	2'	4 holes			
32. ACID, SHOT, FRACTURE, CEMENT SQUEEZE, ETC.					
DEPTH INTERVAL (MD)		AMOUNT AND KIND OF MATERIAL USED			
15,154-15,420'		5,000gal 7-1/2% MS Acid w/1000 SCE N ₂ /bb1.			
33. PRODUCTION					
DATE FIRST PRODUCTION		PRODUCTION METHOD (Flowing, gas lift, pumping—size and type of pump)		WELL STATUS (Producing or Shut-in) KOPL	
		Flowing		Shut-in KOPL	
DATE OF TEST	HOURS TESTED	CHOKE SIZE	PROD'N. FOR TEST PERIOD	OIL - BBL	GAS - MCF
2/24/83	4	8/64		0	205
FLOW. TUBING PRESS.	CASING PRESSURE	CALCULATED 24-HOUR RATE	OIL - BBL	GAS - MCF	WATER - BBL
3365	0		0	1,231	0
34. FLIMPORATION OF GAS (Solid, hard for fuel, vented, etc.) Vented					
35. LIST OF ATTACHMENTS FDC-CNL, Dipmeter, DIL					
36. I hereby certify that the foregoing and attached information is complete and correct as determined from all available records					
SIGNED <i>Bradley T. Hite</i>		REGIONAL DRILLING MANAGER MAR 17 1983		DATE March 1, 1983	

*(See Instructions and Spaces for Additional Data on Reverse Side)

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

Revised

Type Test ☒ Initial ☐ Annual ☐ Special						Test Date 2-24-83			
Company The Stone Petroleum Corp.				Connection To Atmosphere					
Pool Wildcat				Formation Morrow				Unit	
Completion Date		Total Depth 15825'		Plug Back TD 15607'		Elevation 3335 G.L.		Farm or Lease Name Javelina Basin I	
Casing Size/ 5 1/2" Liner		Wt. 29.7#		d 6.875		Set At 13600		Perforations: From 15154' To 15420'	
5 1/2" Liner		23#		4.670		13099-15820		Well No. #1	
Tub. Size 2 7/8"		Wt. 7.9#		d 2.259		Set At 13058'		Perforations: From Open ended To	
								Unit Sec. Twp. G 17 25S 3E	
Type Well - Single - Freedomhead - G.C. or G.O. Multiple Single						Packer Set At 13208'		County Lea	
Producing Thru Tubing		Reservoir Temp. °F 218° @ 15287"		Mean Annual Temp. °F 60°		Bore. Press. - P _g 13.2#		State New Mexico	
L 15287'		H 15287'		G _g .5765		% CO ₂ .0062		% N ₂ .0032	
								% H ₂ S	
								Prev. r	
								Meter Run 4.026"	
								Tape Flg.	

FLOW DATA						TUBING DATA		CASING DATA		Durat of Flow
NO.	Prover Line Size	X	Orifice Size	Press. p.s.i.g.	Diff. In. Hg	Temp. °F	Press. p.s.i.g.	Temp. °F	Press. p.s.i.g.	
SI							7080#			
1.	4.026"	x	1.00"	510#	10"	72°	5860#	60°	PKR	60°
2.	4.026"	x	1.00"	540#	25"	65°	4908#	60°	PKR	60°
3.	4.026"	x	1.00"	540#	41"	78°	4115#	60°	PKR	60°
4.	4.026"	x	1.00"	545#	65"	72°	3365#	60°	PKR	60°
5.										

RATE OF FLOW CALCULATIONS							
NO.	Coefficient (24 Hour)	$\sqrt{h/P_m}$	Pressure P _m	Flow Temp. Factor F _t	Gravity Factor F _g	Super Compress. Factor, F _{sp}	Rate of Flow Q, Mcfd
1	4.753	72.33	523.2	.9887	1.317	1.041	466
2	4.753	117.60	553.2	.9952	1.317	1.044	765
3	4.753	150.60	553.2	.9831	1.317	1.044	968
4	4.753	190.48	558.2	.9887	1.317	1.044	1231
5							

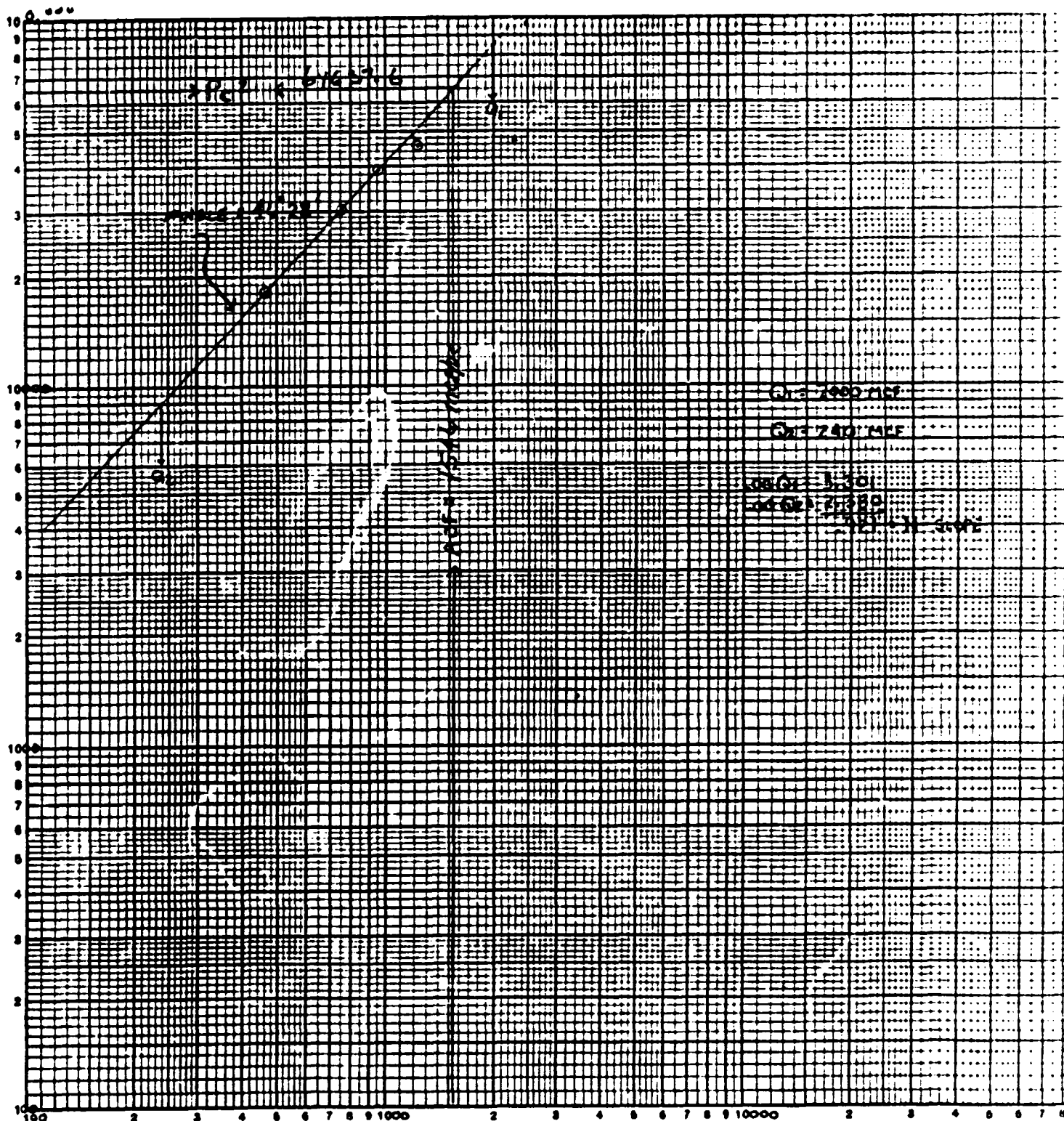
NO.	P _g	Temp. °R	T _g	Z	Gas Liquid Hydrocarbon Ratio Dry Gas	Mcf.
1	.779	532	1.52	.922	A.P.I. Gravity of Liquid Hydrocarbons	
2	.823	525	1.51	.918	Specific Gravity Separator Gas .5765	XXXXXXXXXX
3	.823	538	1.54	.918	Specific Gravity Flowing Fluid XXXXX	
4	.831	532	1.52	.918	Critical Pressure 672	P.S.I.A.
5					Critical Temperature 350	R

P _g 8041.0	P _g 64657.6					
NO	P _g ²	P _w	R _g ²	P _g ² - R _g ²	(1) $\frac{P_g^2}{P_g^2 - R_g^2} = 1.662$	(2) $\left[\frac{P_g^2}{P_g^2 - R_g^2} \right]^n = 1.597$
1	34494.5	6821.0	46526.0	18131.6		
2	24218.2	5869.0	34445.2	30212.4		
3	17042.0	5076.0	25765.8	38891.8		
4	11412.2	4326.0	18714.3	45943.3		
5						

Absolute Open Flow 1546 Mcfd @ 15.025				Angle of Slope @ 46° 28'		Slope, n .921	
Remarks:							

Approved By Commission:	Conducted By: JDW	Calculated By: JDW	Checked By: MCT
-------------------------	----------------------	-----------------------	--------------------

$P_{c2} - P_{w2}$



Q MCFD

TIGHT GAS SANDS

PERMEABILITY AND STABILIZED FLOW RATE

VACA DRAW / PITCHFORK RANCH AREA

DATE: 11/24/91

WELL NAME: LONGWAY DRAW 1

INTERVAL: 15605-10

STIMULATED ? (Y/N): NO, SPOT; YES, 2000 GAL ACID +CO2

FLOW RATE (MCF/D): 141

FLOW TIME (HRS.): 48

FLOWING BHP (psia): 147

GAS GRAVITY (Yg): 0.583

TEMP. DEGREE F (T): 221

RESERVOIR PRESSURE (Pi): 8,500

GAS POROSITY: 0.045

WELLBORE RADIUS (Ft): 0.333

SKIN FACTOR: 0.0

PAY HEIGHT: 14

Z-FACTOR: 1.275

GAS COMPRESSIBILITY: 0.00005

GAS VISCOSITY (cp): 0.0306

SPACING ACRES: 320

FORMATION VOLUME FACTOR (Bg): 0.512

SPACING RADIUS (Ft): 2,106

ASSUMED K (md): 0.0145

RADIUS OF DRAINAGE (Ft): 164.0

CALCULATED K (md): 0.0145

STEADY TIME (HRS.): 19,916.59

STABILIZED FLOW (MCF/D): 96.02

AOE PRESSURE (psia): 74

STABILIZED AOE (MCF/D): 97

TIGHT GAS SANDS

PERMEABILITY AND STABILIZED FLOW RATE

VACA DRAW / PITCHFORK RANCH AREA

DATE: 11/24/91

WELL NAME: LONGWAY DRAW 1

INTERVAL: 14829-15289'

STIMULATED ? (Y/N): YES; 2000 GAL ACID

FLOW RATE (MCF/D): 1,100

FLOW TIME (HRS.): 152

FLOWING BHP (psia): 713

GAS GRAVITY (Yg): 0.583

TEMP. DEGREE F (T): 221

RESERVOIR PRESSURE (Pi): 9,986

GAS POROSITY: 0.054

WELLBORE RADIUS (Ft): 0.333

SKIN FACTOR: 0.0

PAY HEIGHT: 39

Z-FACTOR: 1.376

GAS COMPRESSIBILITY: 0.00005

GAS VISCOSITY (cp): 0.0322

SPACING ACRES: 320

FORMATION VOLUME FACTOR (Bg): 0.481

SPACING RADIUS (Ft): 2,106

ASSUMED K (md): 0.0429

RADIUS OF DRAINAGE (Ft): 446.6

CALCULATED K (md): 0.0429

STEADY TIME (HRS.): 8,518.27

STABILIZED FLOW (MCF/D): 886.82

AOE PRESSURE (psia): 234

STABILIZED AOE (MCF/D): 933

**TIGHT GAS SANDS
PERMEABILITY AND STABILIZED FLOW RATE
VACA DRAW / PITCHFORK RANCH AREA**

DATE: 11/24/91

WELL NAME: LONGWAY DRAW 1

INTERVAL: 14829-15289'

STIMULATED ? (Y/N): YES; 2000 GAL ACID

FLOW RATE (MCF/D): 1,100

FLOW TIME (HRS.): 152

FLOWING BHP (psia): 713

GAS GRAVITY (Yg): 0.583

TEMP. DEGREE F (T): 221

RESERVOIR PRESSURE (Pi): 9,986

GAS POROSITY: 0.054

WELLBORE RADIUS (Ft): 0.333

SKIN FACTOR: -0.6

PAY HEIGHT: 39

Z-FACTOR: 1.376

GAS COMPRESSIBILITY: 0.00005

GAS VISCOSITY (cp): 0.0322

SPACING ACRES: 320

FORMATION VOLUME FACTOR (Bg): 0.481

SPACING RADIUS (Ft): 2,106

ASSUMED K (md): 0.0387

RADIUS OF DRAINAGE (Ft): 424.2

CALCULATED K (md): 0.0387

STEADY TIME (HRS.): 9,442.59

STABILIZED FLOW (MCF/D): 879.74

AOE PRESSURE (psia): 234

STABILIZED AOE (MCF/D): 925

**TIGHT GAS SANDS
PERMEABILITY AND STABILIZED FLOW RATE
VACA DRAW / PITCHFORK RANCH AREA**

DATE: 11/24/91

WELL NAME: LONGWAY DRAW 1

INTERVAL: 15047-289'

STIMULATED ? (Y/N): YES; 5000 GAL ACID + CO2

FLOW RATE (MCF/D): 504

FLOW TIME (HRS.): 24

FLOWING BHP (psia): 635

GAS GRAVITY (Yg): 0.583

TEMP. DEGREE F (T): 221

RESERVOIR PRESSURE (Pi): 9,039

GAS POROSITY: 0.056

WELLBORE RADIUS (Ft): 0.333

SKIN FACTOR: 0.0

PAY HEIGHT: 28

Z-FACTOR: 1.350

GAS COMPRESSIBILITY: 0.00005

GAS VISCOSITY (cp): 0.0318

SPACING ACRES: 320

FORMATION VOLUME FACTOR (Bg): 0.493

SPACING RADIUS (Ft): 2,106

ASSUMED K (md): 0.0249

RADIUS OF DRAINAGE (Ft): 133.6

CALCULATED K (md): 0.0249

STEADY TIME (HRS.): 15,056.07

STABILIZED FLOW (MCF/D): 330.31

AOF PRESSURE (psia): 104

STABILIZED AOF (MCF/D): 351



ARC



PRESSURE DATA

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ARC PRESSURE DATA, INC.

ENRON OIL & GAS COMPANY
LONGWAY DRAW FED COM #1
PITCHFORK RANCH (MORROW)
LEA COUNTY, NEW MEXICO
PRESSURE BUILDUP ANALYSIS
TEST DATES: 6/27-7/5/90

ENGINEER: CHAD R. MAJOR

* ARC Pressure Data, Inc. is not responsible for any cost due to circumstances or consequences arising from the utilization of any results or observation given in this report as suggestions for further criteria to enhance production or performance on the subject well.



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ARC PRESSURE DATA, INC.

October 02, 1990

Enron Oil & Gas Company
P.O. Box 2267
Midland, Texas 79702

Attn: C.B. Lackey

The following report is a pressure transient analysis of the buildup test conducted on the Longway Draw Fed Com #1 in Lea County, New Mexico; 6/27-7/5/90.

Variable-rate superposition was utilized to model the varied rate history prior to shut-in. Pseudo-pressure and pseudo-time were used to account for pressure-dependent properties for a compressible system.

Through conventional semi-log (superposition time) analysis, the effective permeability to gas for the system was calculated to be 0.067 millidarcies. A total skin of -0.58 was determined. This is nearly neutral in terms of improvement to flow near the wellbore. The radius investigated by the shut-in transient based on the average layer system properties came to 288 feet.

Derivative type-curve evaluation resulted in an effective permeability to gas of 0.073 millidarcies. A total skin of -0.10 was calculated. The radius investigated is near 301 feet. These results support the findings of the straight-line analysis on the semilog plot.

The pressure tried to level off near 9164.9 psia before decreasing due to interlayer crossflow at late times. The properties of the two or three layers may be markedly different in order for the pressure drop to occur at such a late time. It is not possible to evaluate the layers separately using just this transient test.

Analytical simulation using a homogeneous model and the calculated properties for the multi-layer system verified the probability of the flowing pressure prior to shut-in. This was only possible by using different storage factors for flowing and shut-in periods. The crossflow effects were not modelled since individual layer properties and pressures

007 MC 27C 6/27-7/5/90
14 H. W/33' $K = .025$

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ARC PRESSURE DATA, INC.**RESERVOIR CONSTANTS**

Formation thickness (h).....	14.000 ft
Average formation porosity (0).....	0.0682
Well radius (rw).....	0.3000 ft
Gauge depth.....	14693 ft
Datum depth.....	15030 ft

GAS COMPOSITION Mol percent (Optional)

Nitrogen...	.490	CO2.....	.900	H2S.....	.000	Methane...	94.590
Ethane....	2.470	Propane...	.450	Iso-Butane:	.060	n-Butane...	.080
IsoPentane:	.020	n-Pentane..	.150	Hexanes....	.790	C 7 +.....	.000
							C7+ mol wt:100.198

RESERVOIR VARIABLES

Estimated initial pressure.....	9039.000 psia
Temperature (T).....	200.000 deg F
Water saturation (Sw).....	0.2740
Water compressibility (Cw).....	2.654E-06 psi-1
Formation compressibility (Cf).....	5.699E-06 psi-1
Gas gravity.....	0.6054 sp grav
Initial gas viscosity (ui).....	0.0332 cp
Initial z-factor (zi).....	1.316
Gas compressibility (Cg).....	5.427E-05 psi-1
Initial system compressibility (Ct).....	4.583E-05 psi-1

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ARC PRESSURE DATA, INC.

PRESSURE VERSUS PSEUDO-PRESSURE AND PEUDO-TIME TABLE

Data Point	Pressure psia	m(p) psia ² /cp (*1E-06)	I(p) psi.hrs/cP (*1E-07)
1.	0.0000	0.0000	0.0000
2.	100.0000	0.7821	0.0533
3.	200.0000	3.1330	0.2114
4.	300.0000	7.0496	0.4711
5.	400.0000	12.5212	0.8289
6.	500.0000	19.5385	1.2818
7.	600.0000	28.0748	1.8259
8.	700.0000	38.0721	2.4559
9.	800.0000	49.5252	3.1700
10.	900.0000	62.4272	3.9666
11.	1000.0000	76.7782	4.8453
12.	1100.0000	92.5951	5.8066
13.	1200.0000	109.8193	6.8469
14.	1300.0000	128.4152	7.9646
15.	1400.0000	148.3537	9.1587
16.	1500.0000	169.5665	10.4263
17.	1600.0000	192.0186	11.7668
18.	1700.0000	215.6774	13.1800
19.	1800.0000	240.5092	14.6661
20.	1900.0000	266.4798	16.2254
21.	2000.0000	293.5542	17.8585
22.	2100.0000	321.6643	19.5641
23.	2200.0000	350.7318	21.3404
24.	2300.0000	380.7167	23.1883
25.	2400.0000	411.5799	25.1085
26.	2500.0000	443.2828	27.1020
27.	2600.0000	475.7872	29.1698
28.	2700.0000	509.0528	31.3127
29.	2800.0000	543.0015	33.5290
30.	2900.0000	577.5779	35.8186
31.	3000.0000	612.7462	38.1823
32.	3100.0000	648.4713	40.6209
33.	3200.0000	684.7195	43.1353
34.	3300.0000	721.4584	45.7262
35.	3400.0000	758.6564	48.3944
36.	3500.0000	796.2833	51.1406
37.	3600.0000	834.3102	53.9654
38.	3700.0000	872.7094	56.8695
39.	3800.0000	911.4540	59.8533
40.	3900.0000	950.5188	62.9172
41.	4000.0000	989.8793	66.0618
42.	4100.0000	1029.5100	69.2872
43.	4200.0000	1069.3859	72.5934
44.	4300.0000	1109.4849	75.9807
45.	4400.0000	1149.7879	79.4491
46.	4500.0000	1190.2760	82.9989
47.	4600.0000	1230.9310	86.6301
48.	4700.0000	1271.7359	90.3429
49.	4800.0000	1312.6739	94.1371
50.	4900.0000	1353.7309	98.0128

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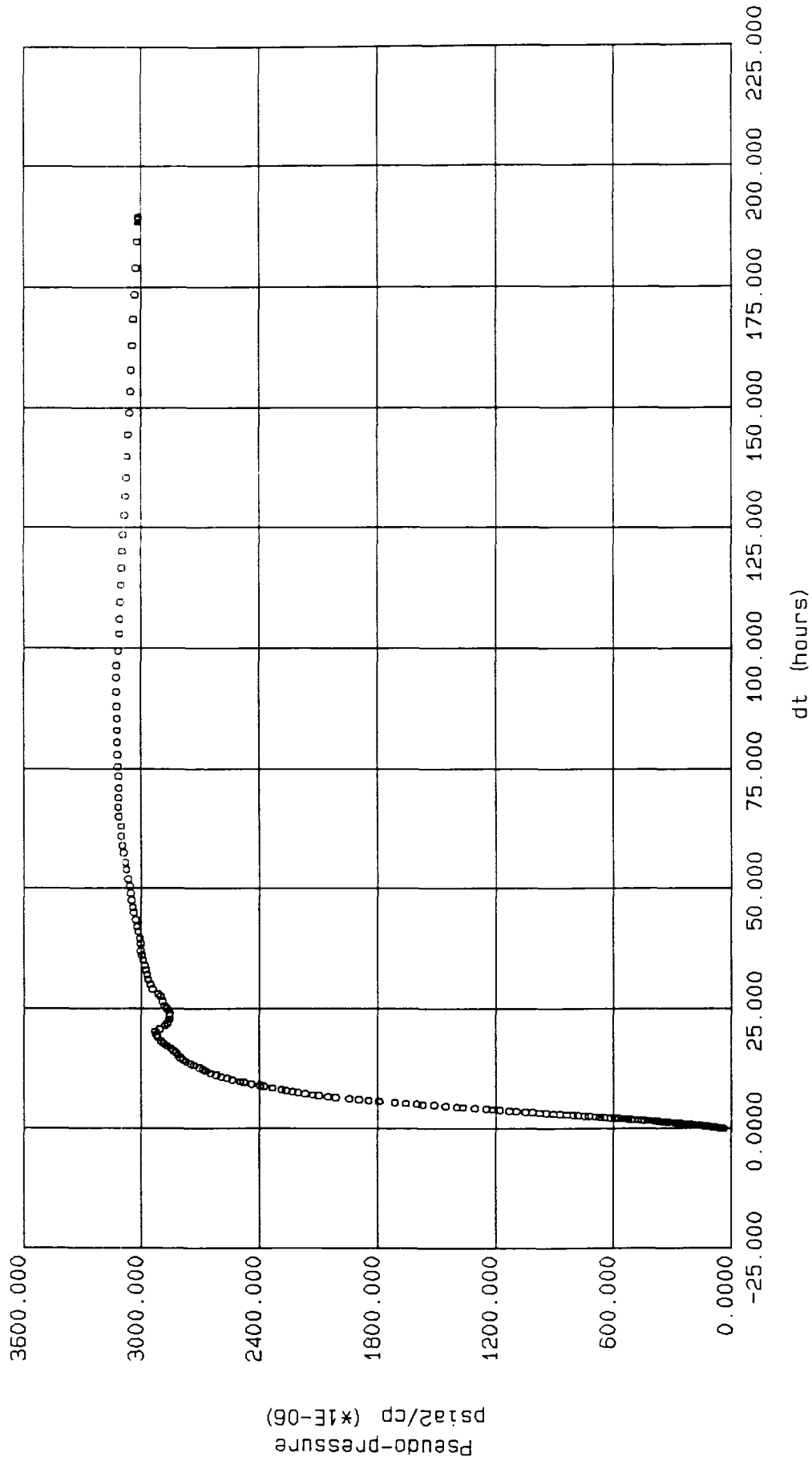
Data Point	Pressure psia	m(p) psia2/cp (*1E-06)	I(p) psi.hrs/cp (*1E-07)
51.	5000.0000	1394.8909	101.9698
52.	5100.0000	1436.1419	106.0080
53.	5200.0000	1477.4699	110.1272
54.	5300.0000	1518.8630	114.3273
55.	5400.0000	1560.3129	118.6084
56.	5500.0000	1601.8449	122.9740
57.	5600.0000	1643.4530	127.4243
58.	5700.0000	1685.1269	131.9592
59.	5800.0000	1726.8549	136.5783
60.	5900.0000	1768.6290	141.2812
61.	6000.0000	1810.4399	146.0676
62.	6100.0000	1852.2790	150.9371
63.	6200.0000	1894.1369	155.8892
64.	6300.0000	1936.0080	160.9234
65.	6400.0000	1977.8830	166.0394
66.	6500.0000	2019.7559	171.2364
67.	6600.0000	2061.6201	176.5141
68.	6700.0000	2103.4699	181.8719
69.	6800.0000	2145.3210	187.3120
70.	6900.0000	2187.1809	192.8357
71.	7000.0000	2229.0458	198.4426
72.	7100.0000	2270.9089	204.1320
73.	7200.0000	2312.7661	209.9033
74.	7300.0000	2354.6101	215.7559
75.	7400.0000	2396.4379	221.6890
76.	7500.0000	2438.2451	227.7021
77.	7600.0000	2480.0258	233.7945
78.	7700.0000	2521.7770	239.9654
79.	7800.0000	2563.4938	246.2141
80.	7900.0000	2605.1740	252.5399
81.	8000.0000	2646.8129	258.9420
82.	8100.0000	2688.4069	265.4197
83.	8200.0000	2729.9550	271.9722
84.	8300.0000	2771.4509	278.5988
85.	8400.0000	2812.8940	285.2985
86.	8500.0000	2854.2810	292.0707
87.	8600.0000	2895.6079	298.9145
88.	8700.0000	2936.8750	305.8292
89.	8800.0000	2978.0778	312.8138
90.	8900.0000	3019.2160	319.8676
91.	9000.0000	3060.2849	326.9897
92.	9100.0000	3101.2849	334.1794
93.	9200.0000	3142.2128	341.4358
94.	9300.0000	3183.0668	348.7580
95.	9400.0000	3223.8469	356.1452
96.	9500.0000	3264.5500	363.5966
97.	9600.0000	3305.1750	371.1113
98.	9700.0000	3345.7199	378.6885
99.	9800.0000	3386.1840	386.3274
100.	9900.0000	3426.5668	394.0271
101.	10000.0000	3466.8659	401.7867

ARC

PANSYSTEM V1.7 (C) EPDS 1990.

CARTESIAN

File.....: BZI GAS
 COMPANY.....: ENRON OIL & GAS COMPANY
 LEASE & WELL #:.....: LONGWAY DRAW FED. COM. #1
 FIELD (FORMATION).....: PITCHFORK RANCH (MORROW)
 COUNTY, STATE.....: LEA COUNTY, NEW MEXICO
 TEST TYPE.....: PRESSURE BUILDUP TEST
 TEST DATES.....: 6/27-7/5/90
 GAUGE TYPE & NO.: QUARTZ TRANSDUCER

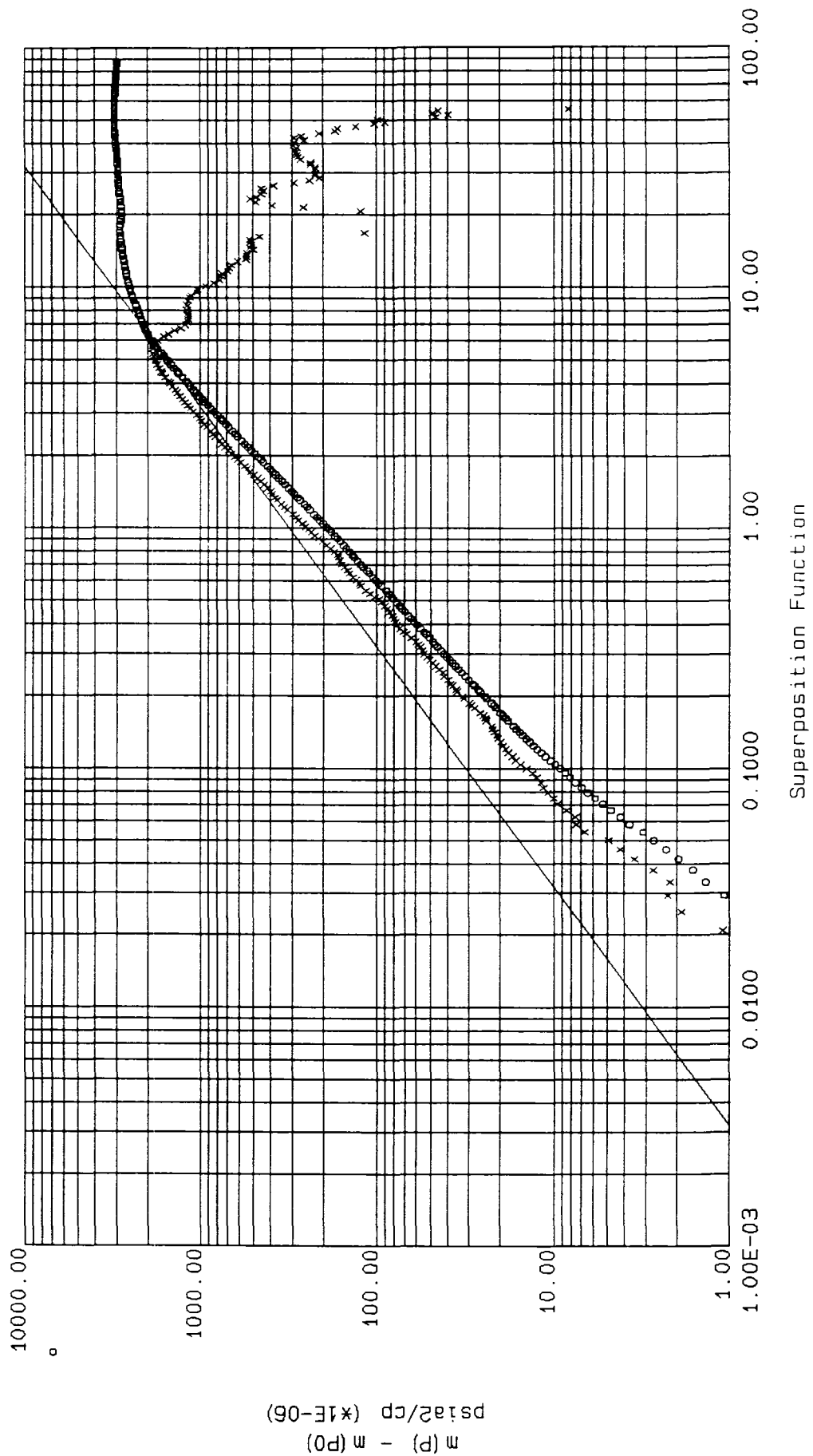




PANSYSTEM V1.7 (C) EPDS 1990.

LOG-LOG

File.....: BZI.GAS
COUNTY, STATE.....: LEA COUNTY, NEW MEXICO
Slope.....: 0.0000
COMPANY.....: ENRON OIL & GAS COMPANY
TEST TYPE.....: PRESSURE BUILDUP TEST
Intercept.....: 0.0000
LEASE & WELL #: LONGWAY DRAW FED. COM. #1
TEST DATES.....: 6/27-7/5/90
FIELD (FORMATION).....: PITCHFORK RANCH (MORRIS)
GAUGE TYPE & NO.: QUARTZ TRANSDUCER

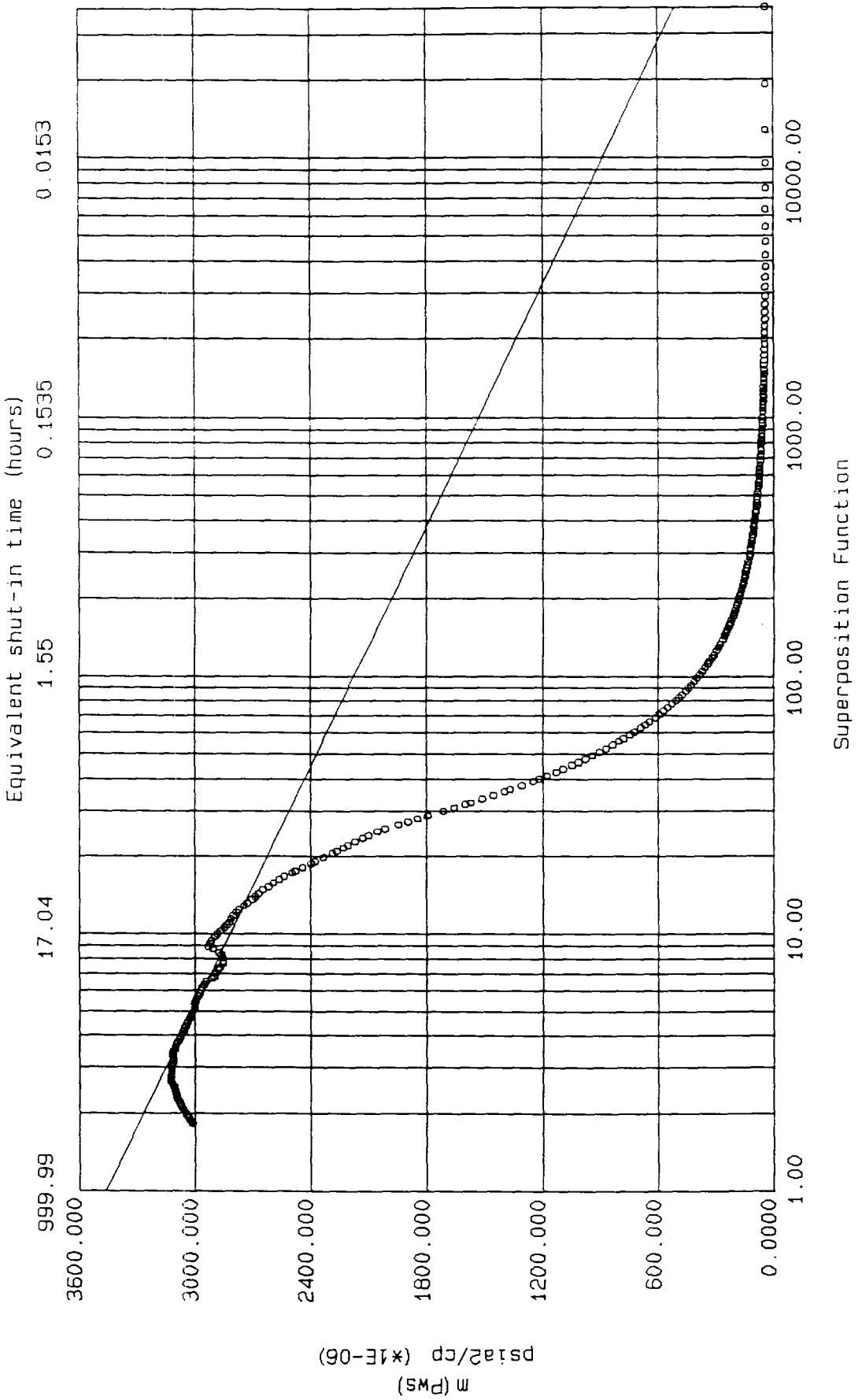


ARC

PANSYSTEM V1.7 (C) EPDS 1990.

VRB

File.....	BZT GAS	COUNTY, STATE.....	LEA COUNTY, NEW MEXICO	Slope.....	-643.069
COMPANY.....	ENRON OIL & GAS COMPANY	TEST TYPE.....	PRESSURE BUILDUP TEST	Intercept.....	3461.505
LEASE & WELL #.....	LONGWAY DRAW FED. CON. #1	TEST DATES.....	6/27-7/5/90	Permeability..	0.0673
FIELD (FORMATION).....	PITCHFORK RANCH (MORBON)	GAUGE TYPE & NO.	QUARTZ TRANSDUCER	Skin.....	-0.5861



ARC

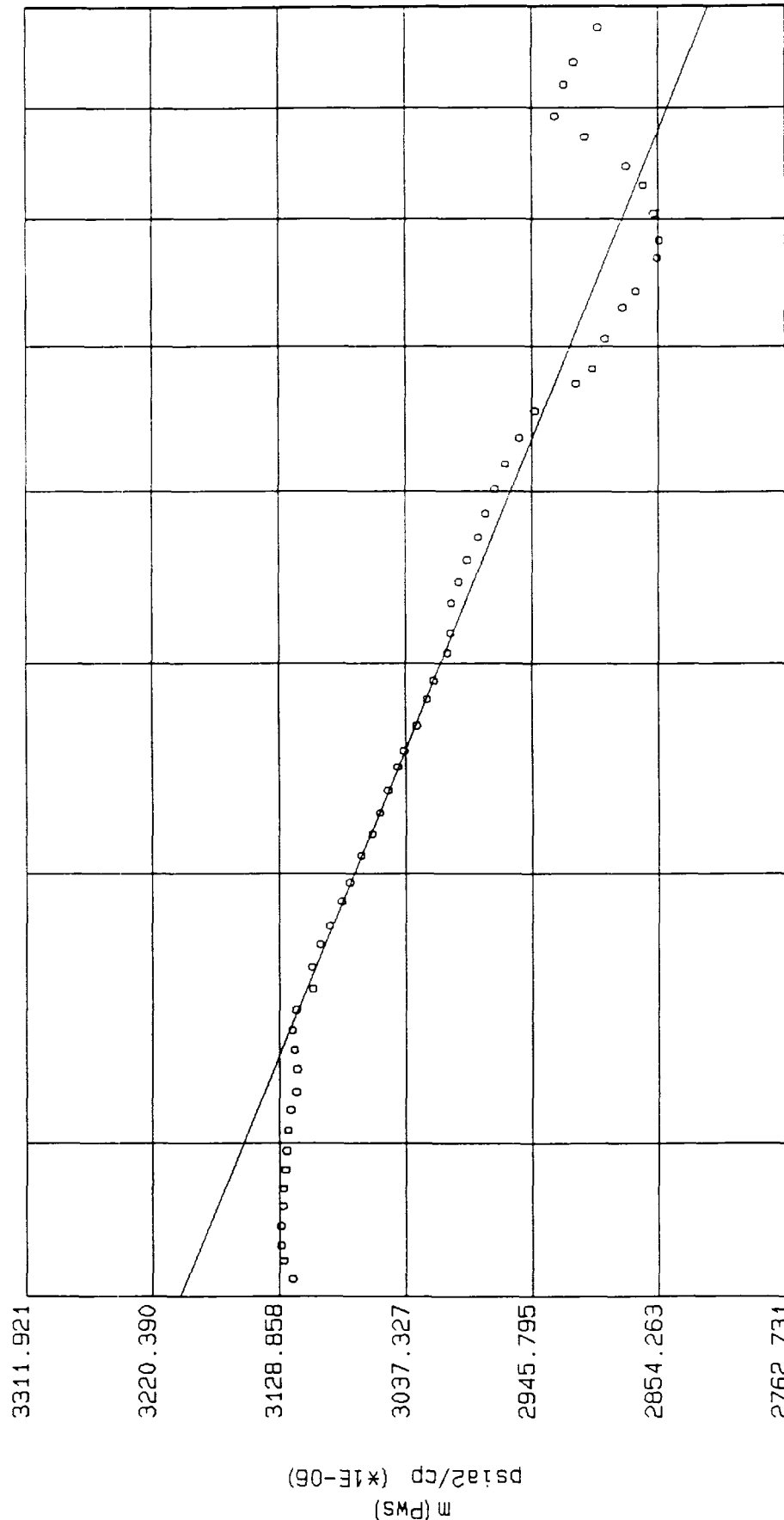
PANSYSTEM V1.7 (C) EPDS 1990.

VRB

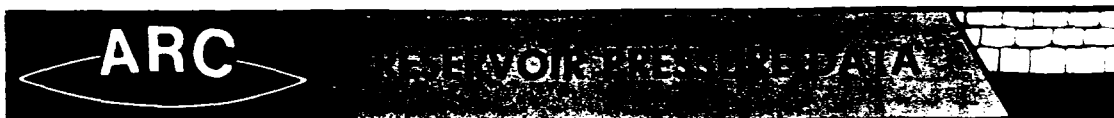
File.....	: BZI GAS	COUNTY, STATE.....	: LEA COUNTY, NEW MEXICO	Slope.....	: -643.069
COMPANY.....	: ENRON OIL & GAS COMPANY	TEST TYPE.....	: PRESSURE BUILDUP TEST	Intercept.....	: 3461.506
LEASE & WELL #.....	: LONGWAY DRAW FED. COM. #1	TEST DATES.....	: 6/27-7/5/90	Permeability.....	: 0.0669
FIELD (FORMATION).....	: PITCHFORK RANCH (MORROW)	GAUGE TYPE & NO.	: QUARTZ TRANSDUCER	Skin.....	: -0.5837

Equivalent shut-in time (hours)

17.04



Superposition Function



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ARC PRESSURE DATA, INC.

RESULTS FROM SEMILOG ANALYSIS using Pseudo-pressure and Superposition Time

Line :

Intercept.....:	3461.506
Slope.....:	-643.069
Start of line.....:(	0.6825 , 3022.086)
End of line.....:(	0.6199 , 3061.857)
Coefficient of determination.....:	0.9965
Number of points.....:	7

m(p) at dt = 1 hr.....:	2054.344 psia ² /cp (*1E-06)
Extrapolated m(p).....:	3461.506 psia ² /cp (*1E-06)
Permeability-thickness (kh).....:	0.9372 md.ft
Permeability (k).....:	0.0669 md
Total skin factor (s).....:	-0.5837
dP skin (constant rate).....:	-713.098 psi
Radius of investigation.....:	288.463 ft
Extrapolated pressure.....:	9986.699 psia
Pressure at dt = 1 hour.....:	6582.620 psia

LONGWAY DRAW FED COM NO. 1 (WO-GAS)
1980' FS & EL, SEC 8-25S-34E
Lea County, N.M.
Pitchfork Ranch Morrow Field

Oper: ENRON OIL & GAS COMPANY
15,700' Morrow
EOG %: 50% WI 42.1875% NRI
AFE No: \$110,800
SC No.: 12-104
Product Call %: 50

06-16-90 CURRENT OPERATION: Flow Test

Formation Morrow "C" & "B". SITP 7619 DWP CP 30. 6 hrs MIRU Jarra WL Service, RIH w/1-1/4" sinker bars, start hitting tight spots @ 10,500', couldn't get passed 12,965' POH, bad dragging, possible cracked tbg.; 8 hrs open well to pit blow down. EDWC: \$1,300 ETWC: \$1,300.

<u>TIME</u>	<u>MCFD</u>	<u>BO</u>	<u>BW</u>	<u>CHOKE</u>	<u>FTP</u>	<u>CP</u>
9:00pm		0	0	6/64	7619	30
9:30pm		0	0	12/64	4800	30
9:45pm		0	0	24/64	3000	30
10:00pm		0	0	32/64	1500	30
10:15pm		0	0	32/64	500	30
10:30pm		0	0	32/64	75	30
11:00pm		0	0	32/64	75	30
12:00am		0	0	32/64	75	30
2:00am	320	0	0	12/64	400	30
6:00am	320	0	0	12/64	400	30

06-17-90 PRESENT OPERATION: Flow Test

24 hrs flowing 320 MCF, TP 400, CP 30, 12/64" choke 0 BO, 0 BW.
EDWC: \$400 ETWC: \$1,700.

06-18-90 PRESENT OPERATION: Flow Test

24 hrs flowing 320 MCF, TP 400, CP 30 12/64" choke 0 BO, 0 BW.
EDWC: \$0 ETWC: \$1,700.

LONGWAY DRAW FED COM NO. 1 (WO-GAS)
1980' FS & EL, SEC 8-25S-34E
Lea County, N.M.
Pitchfork Ranch Morrow Field

Oper: ENRON OIL & GAS COMPANY
15,700' Morrow
EOG %: 50% WI 42.1875% NRI
AFE No: \$110,800
SC No.: 12-104
Product Call %: 50

06-19-90 PRESENT OPERATION: TOH

3 hr MIRU Permian Well Serv; 1 hr RU Hall; load annulus w/40 bbls 10 ppg brine cont 1 gpt Losurf 300 + 1 gpt Cla-Sta XP; load tbg w/86 bbls 10 ppg brine w/same additives; 4 hr ND WH; NU BOP; 3 hr unseat Guiberson Uni-VI pkr; 2 hr strap OOH w/70 stds 2-7/8" 6.5# P-105 ABC Mod tbg; 11 hr SIFN; EDWC \$4,565; ETWC \$6,265.

06-20-90 CURRENT OPERATION: Testing in hole w/tbg

3 hr fin strapout of hole w/pkr & 322 jts of 2-7/8" 6.5# P-105 tbg; have a total of 462 jts of tbg & a total of 15,000.30' of tbg; 21 hr SI WO seal rings out of Houston for the threadmaster tbg couplings; EDWC \$2,300; ETWC \$8,565.

06-21-90 4-1/2 hr TIH w/Guiberson 5" x 2-7/8" Uni-VI prk & 2-7/8" x 2-3/8" X/over & 271 jts 2-7/8" tbg; testing to 10,000 psi & well started flowing; 2 hr WO kill truck; 1-1/2 hr RU Halliburton pump truck & circ out gas & kill tbg; 2 hr fin TIH w/180 jts tbg; testing to 10,000 psi; 3-1/2 hr hook up pump truck & pump 500 gals Xylene & 500 gal 15% HCL acid followed by 600 bbl 10# brine wtr containing 1% P-chem pkr 100 pkr fluid down tbg @ 3 BPM; 2 hr ND BOP & set pkr, 15,000# comp & NE tree, pkr set @ 14,678.11'; 1/2 hr test pkr to 1000# on annulus, held OK; 8 hr SIFN; EDWC \$14,083; ETWC \$22,648.

06-22-90 PRESENT OPERATION: SIFN

3 hr swab fluid level down to 10,000'; 4 hr RU Schlumberger & perforate the Warren sand w/2 SPF using 1-11/16 semi-expendable strip gun 0" phased & decentralized as follows: 14,829'-33', 14,836'-40' & 14,863'-65'; total of 23 0.32 dia holes; 1 hr RD Schlumberger & RU to swab; 2 hr 1st run FL 500', pulled 1500' fluid & well started flowing, flowed well until water cleaned up; swabbed & flowed 77 bbl of a 86 bbl load; 2 hr switched well to flare pit on 12/64" chk 320 psi; well pulled on down to 100 psi on 12/64" chk; 2 hr open well on 3/4" chk, tbg 25 psi; 560 MCFD, no wtr; 10 hr SIFN; EDWC \$10,202; ETWC \$32,850.

LONGWAY DRAW FED COM NO. 1 (WO-GAS)
 1980' FS & EL, SEC 8-25S-34E
 Lea County, N.M.
 Pitchfork Ranch Morrow Field

Oper: ENRON OIL & GAS COMPANY
 15,700' Morrow
 EOG %: 50% WI 42.1875% NRI
 AFE No: \$110,800
 SC No.: 12-104
 Product Call %: 50

06-23-90 PRESENT OPERATION: Flow testing

SITP 4450 psig/12 hrs; 2 hr RU Halliburton & acidized Morrow
 perfs from 14,829' to 15,289' (OA) as follows:

	TOTAL BPM	TP, psig
500 gal MOD 101 acid	2.8	4400
30,000 SCF N2		6100
1500 gal MOD 101 w/1000 SCF/bbl N2 & 66 balls (1.1 SG)	2.5	7500
4000 gal 2% KCL wtr w/1000 SCF N2 as flush	3.3	7500

ISIP 6800; 5 min 6600; 10 min 6600; 15 min 6500 psig; avg rate &
 press: 3 BPM @ 7600 psig; had some ball action, did not ball
 out; have 107 BLWTR; pressured the annulus to 3500 psig during
 the treatment; 1-1/2 hr RD Halliburton & RU flowlines; 20-1/2 hr
 flow to test tank & rec'd 113 BW & 3 BC; EDWC \$14,186; ETWC
 \$47,036.

TIME	MCFD	BO	BW	CHK	FTP	REMARKS
11:30 am						SITP 6000 psig, open well to tank
12:00			30	16/64	2000	
1:00 pm			16	"	1500	
2:00			12	"	1000	
3:00			10	22/64	700	
4:00			10	"	500	
5:00			8	"	300	
6:00			5	Open	100	
7:00	1100		2	"	85	
8:00	1100		2	"	"	
9:00	1100		1	"	"	
10:00	1100		2	"	"	
11:00	1100		2	"	"	
12:00	1100		1	"	"	
1:00 am	1100		2	"	"	13.5 Hrs
2:00	1000	1	2	"	80	
3:00	950	0	2	"	75	
4:00	900	1	1	"	70	
5:00	850	0	2	"	60	
6:00	850	0	1	"	60	
7:00	850	1	2	Open	60	

LONGWAY DRAW FED COM NO. 1 (WO-GAS)
1980' FS & EL, SEC 8-25S-34E
Lea County, N.M.
Pitchfork Ranch Morrow Field

Oper: ENRON OIL & GAS COMPANY
15,700' Morrow
EOG %: 50% WI 42.1875% NRI
AFE No: \$110,800
SC No.: 12-104
Product Call %: 50

06-24-90

PRESENT OPERATION: Flowing well to test tank

24 hr flowing well to test tank on a 48/64" chk; TP 55#: CP 1100; est MCF 800; 45 total bbls fluid (40 bbls wtr, 5 bbls oil); EDWC \$1,060; ETWC \$48,096.

TIME		MCFD	BO	BW	CHK	FTP	CP
7:00	am	950	1	2	48/64	70	1100
9:00		920	0	2	"	64	1100
11:00		900	1	2	"	60	1100
1:00	pm	880	0	2	"	60	1100
3:00		850	0	2	"	60	1100
5:00		870	1	2	"	60	1100
7:00		850	0	2	"	60	1100
9:00		860	0	1	24/64	120	1100
11:00		850	1	3	48/64	55	1100
1:00	am	820	0	2	"	55	1100
3:00		800	0	2	"	55	1100
5:00		800	0	2	"	55	1100
7:00		800	1	2	48/64	55	1100

06-25-90

PRESENT OPERATION: Flowing well to test tank

24 hr flowing well to test tank on a 48/64" chk; TP 55#: CP 1000#; est MCF 780; 43 total bbls fluid (40 bbls wtr, 3 bbls oil); EDWC \$1,060; ETWC \$49,156.

TIME		MCFD	BO	BW	CHK	FTP	CP
7:00	am	800	0	2	48/64	55	1000
11:00		780	1	2	"	55	"
3:00	pm	780	0	2	"	53	"
7:00		780	1	2	"	53	"
11:00		770	0	2	"	53	1100
3:00	am	770	0	2	"	53	"
7:00		780	1	2	"	53	"

06-26-90

PRESENT OPERATION: Flow test well

8-1/2 hr flow test well on 48/64" chk; TP 50; CP 1000; 725 MCFD; 16 BF; 15 BW; 1 BO; 6 hr hook up test equip; SI well; TP 4300; CP 1000; 1-1/2 hr blew well down to pit; TP 100; CP 1000; 8 hr flowing 495 MCF; TP 67; CP 1000; PB 67; 16 BF; 15 BW; 1 BO; EDWC \$2,260; ETWC \$51,416.

LONGWAY DRAW FED COM NO. 1 (WO-GAS)
1980' FS & EL, SEC 8-25S-34E
Lea County, N.M.
Pitchfork Ranch Morrow Field

Oper: ENRON OIL & GAS COMPANY
15,700' Morrow
EOG %: 50% WI 42.1875% NRI
AFE No: \$110,800
SC No.: 12-104
Product Call %: 50

06-27-90 PRESENT OPERATION: SI for 168 hrs BU

2 hr flowing 507 MCF; TP 67; CP 4000; BP 67; 6 BF; 6 BW; 0 BO;
6-3/4 hr MIRU Schlumberger WLS; ran a production logging suite; log across perms from 14,829'-15,078'; log showed that all zones are producing & bridge plug was not leaking; POH w/tool & RD Schlumberger WL; well SI 45 min; TP 750#; CP 100#; 15-1/4 hr open well to test; flowing 560 MCF; TP 67; CP 1000; BP 67; 48/64" chk; 36 BF; 34 BW; 2 BO; EDWC \$7,931; ETWC \$59,347.

06-28-90 PRESENT OPERATION: SIBU

6 days @ 152 hrs

2 hr flowed 550 MCF; TP 67; CP 1000; BP 67; 5 BF; 5 BW; 0 BO;
5-1/2 hr MIRU ARC WL; RIH w/press bombs set @ 14,671'; flow well 2 hr @ 550 MCF; TP 67; CP 1000; BP 67; 6 BF; 6 BW; 0 BO;
16-1/2 hr SIBU @ 1:30; EDWC \$1,100; ETWC \$60,447.

06-29-90 PRESENT OPERATION: SIBU

24 hr SITP 6700; CP 1700; SI 24 hr; EDWC \$0; ETWC \$60,447.

06-30-90 PRESENT OPERATION: SIBU

24 hr SITP 7100; CP 2200; SI 48 hr; EDWC \$0; ETWC \$60,447.

07-01-90 PRESENT OPERATION: SIBU

24 hr SITP 7100; CP 2200; SI 72 hr; EDWC \$0; ETWC \$60,447.

07-02-90 PRESENT OPERATION: SIBU

24 hr SITP 7250; CP 2200; SI 96 hr; EDWC \$0; ETWC \$60,447.

07-03-90 PRESENT OPERATION: SIBU

24 hr SITP 7250; CP 2200; SI 120 hr; EDWC \$0; ETWC \$60,447.

07-04-90 PRESENT OPERATION: SIBU

24 hr SITP 7250; CP 2200; SI 168 hr; EDWC \$0; ETWC \$60,447.

07-05-90 PRESENT OPERATION: SIBU

24 hr SITP 7250; CP 2200; SI 192 hr; EDWC \$0; ETWC \$60,447.

LONGWAY DRAW FED COM NO. 1 (WO-GAS)
1980' FS & EL, SEC 8-25S-34E
Lea County, N.M.
Pitchfork Ranch Morrow Field

Oper: ENRON OIL & GAS COMPANY
15,700' Morrow
EOG %: 50% WI 42.1875% NRI
AFE No: \$110,800
SC No.: 12-104
Product Call %: 50

07-06-90 PRESENT OPERATION: SIBU

18 hr SITP 7150; CP 2200; SI 168 hr; 6 hr MIRU ARC WL; RIH, pull bombs out of hole; BHP 8847 psi @ 14,671'; RIH, ran stat & grad, TOH; RD ARC; EDWC \$0; ETWC \$60,447.

07-07-90 PRESENT OPERATION: SIBU

24 hr SITP 6900; CP 2200; SI 192 hrs; EDWC \$0; ETWC \$60,447.

07-08-90 PRESENT OPERATION: SIBU

24 hr SITP 6900; CP 2200; SI 216 hrs; EDWC \$0; ETWC \$60,447.

07-09-90 PRESENT OPERATION: SIBU

24 hr SITP 6900; CP 2200; SI 240 hrs; EDWC \$0; ETWC \$60,447.

07-10-90 PRESENT OPERATION: SIBU

24 hr SITP 6900; CP 2200; SI 268 hrs; EDWC \$0; ETWC \$60,447.

07-11-90 PRESENT OPERATION: SI WO PL

24 hr SITP 6900; CP 2200; SI 292 hrs; EDWC \$8,575; ETWC \$69,022.

07-12-90 PRESENT OPERATION: SI WO PL

24 hr SITP 6900; CP 2200; SI 316 hrs; EDWC \$0; ETWC \$69,022.

07-13-90 PRESENT OPERATION: SI WOPL

24 hr SITP 6900; CP 2200; SI 340 hrs; this well will be fracture treated after the pipeline connection is made; the anticipated PL connection date is 7-24-90; DFR until further activity; EDWC \$0; ETWC \$69,022.

LONGWAY DRAW FED COM NO. 1 (WO-GAS)
 1980' FS & EL, SEC 8-25S-34E
 Lea County, N.M.
 Pitchfork Ranch Morrow Field

Oper: ENRON OIL & GAS COMPANY
 15,700' Morrow
 EOG #: 50% WI 42.1875% NRI
 AFE No: \$110,800
 SC No.: 12-104
 Product Call #: 50

08-10-90 PRESENT OPERATION: Initial Production

Initial production on at 7:15 pm 08-9-90; SITP 6650; CP 1700;
put on @ 570 MCF, 5/64" chk; TP 4400; CP 1700; LP 840; Enron
Pipeline purchaser.

	<u>MCFG</u>	<u>BC</u>	<u>BW</u>	<u>FTP</u>	<u>CHK</u>	<u>Remarks</u>
08-11-90	463	0	0	4650	5/64	Flowed 24 hrs
08-12-90	477	0	0	4625	5/64	Flowed 24 hrs

	<u>MCFG</u>	<u>BC</u>	<u>BW</u>	<u>FTP</u>	<u>CHK</u>	<u>Remarks</u>
08-13-90	477	0	0	4625	5/64	Flowed 24 hrs

	<u>MCFG</u>	<u>BC</u>	<u>BW</u>	<u>FTP</u>	<u>CHK</u>	<u>LP</u>	<u>CP</u>	<u>Remarks</u>
08-14-90	488	0	0	4450	5/64	880	1600	Incr to 10/64" ck
08-15-90	1196	0	3	2350	10/64	840	1600	
08-16-90	1133	0	2	2000	10/64	880	1500	
08-17-90	988	3	23	1950	10/64	910	1500	
08-18-90	957	0	23	1900	10/64	890	1500	
08-19-90	873	0	23	1850	10/64	890	1300	
08-20-90	847	0	22	1700	10/64	880	1100	

This Pitchfork Ranch Morrow well is completed in the Morrow "B", "C" and Warren Sands through perforations 14,829' to 15,289', overall. After acid treatment, the well flowed 988 MCFD, 3 BCPD and 23 BWPD on a 10/64" choke with 1950 psig FTP. The well was put to sales to Transwestern on August 9, 1990. The estimated cost of this workover is \$116,772 as compared to the AFE of \$110,000. FINAL REPORT.

DRILLING REPORT

3/ Bcm-Rowell
Bcm-Rowell
Shawm-Inc
Page 6:

MYCO - Longway Draw Fed Com #1 (Unit J) 8-25S-34E Lea Co., NM

3-23-84 Drilling 15261' shale and lime. Made 47' in 23-1/2 hours, 2'/hour. MW 12.5, Vis 40, pH 10, WL 15.4, FC 2/32, CL 179000, Solids 15%, KCL 4%, Calcium 100. WOB 30-35000#; RPM 45; SPM 66; PP 2800#. DC \$8880; TCTD \$1,350,338

3-24-84 Drilling 15341' sand and shale. Made 80' in 23-1/2 hours, 3.4'/hour. MW 12.7, Vis 40, pH 9.5, WL 14, FC 2/32, CL 180000, Solids 15, KCL 4%, Calcium 120. Drilling breaks: 15290-97' (7') 6-9"/ft; 15336-48' (12') under 10"/ft. DC \$8780; TCTD \$1,359,118

3-25-84 Drilling 15382' shale. Made 41' in 14 hours, 2.9'/hour. MW 12.7, Vis 40, pH 9, WL 14, FC 2/32, CL 179000, Solids 15%, KCL 4%, Calcium 80. Deviation 15366' 2-1/4°. WOB 30-35000#; RPM 44; SPM 64; PP 2850#. DC \$11990; TCTD \$1,371,108

3-26-84 Drilling 15434' shale. Made 52' in 23-1/2 hours, 2.2'/hour MW 12.6, Vis 40, pH 9, WL 14.6, FC 2/32, CL 179000, Solids 15%, KCL 4%, Calcium 80. WOB 35000#; RPM 44; SPM 64; PP 2850#. DC \$8030; TCTD \$1,379,138

3-27-84 Drilling 15493' 90% shale and 10% sand. Made 59' in 23-1/2 hours, 2.5' per hour. MW 12.7, Vis 40, pH 9.6, WL 15.9, CL 180000, Solids 16%, KCL 4%. Average units of gas 150; Max 400; CGG 400. DC \$13,642; TC \$1,392,780

3-28-84 Drilling 15548' shale and sand. Made 55' in 23 hours, 2.4' hour. MW 12.8, Vis 40, pH 9.5, WL 14, FC 2/32, CL 182000, Solids 16.8, KCL 4%. WOB 35000#; RPM 44; SPM 64; PP 2850#. DC \$10780; TCTD \$1,403,580

3-29-84 Drilling 15575' shale. Made 27' in 12 hours, 2.2'/hour. MW 12.8, Vis 41, pH 8.5, WL 16, FC 2/32, CL 178000, Solids 16%, KCL 4%, Calcium 160. Deviation 15560' 2-1/2°. At 15560', circulated 1 hour. Tripped for new bit. Had 11 bbl gain after trip. DC \$13426; TCTD \$1,416,986

3-30-84 Drilling 15637' shale (trace of sand). Made 62' in 23-1/2 hours, 2.6'/hour. MW 12.8, Vis 40, pH 9.5, WL 14.6, FC 2/32, CL 177000, Solids 17%, KCL 4%, Calcium 140. Drilling break: 15611-15626 (15'); 6-13"/ft. WOB 35000#; RPM 64; SPM 64; PP 2850#. DC \$8030; TCTD \$1,425,016

3-31-84 Drilling 15682' shale. Made 45' in 22 hours, 2'/hour. MW 12.8, Vis 39, pH 10.5, WL 16.6, FC 2/32, CL 180000, Solids 17%, KCL 4%, Calcium 180. WOB 35000; RPM 62; SPM 62; PP 2800#. DC \$9637; TCTD \$1,434,653

4-1-84 TD 15700'. Logging. MW 12.8, Vis 42, pH 9, WL 14.6, FC 2/32, CL 172000, Solids 17.5%, KCL 4%, Calcium 200. Deviation 15700' 1-1/2°. Reached TD 2:30 PM 3-31-84. Circulated 6 hours. Loggers TD 15696'. DC \$18022; TCTD \$1,452,675

4-2-84 TD 15700'. Running casing. WM 12.8, Vis 41, pH 9, WL 16, FC 2/32, CL 172000, Solids 17%, KCL 4%, Calcium 200. DC \$115,030; TCTD \$1,567,705

4-3-84 TD 15700'. WOC. MW 12.8, Vis 41. Ran 61 joints of 5" SFJ P110 18# Range 3 (2488.76') MWL float shoe, landing collar and MWL ESB single cone hanger with a tieback (Total 2500.29'). Hung liner. Circulated 3 hours. Pumped 20 bbls ASP-1 spacer (14 ppg). Cemented with 365 sacks Class "H" with 1.25% Flo-lok 1. Batch mixed at 15.6 ppg. Displaced with 10 bbls ASP-1 spacer and 121 bbls 12.8# fluid. Plug did not bump. Job completed at 5:45 PM 4-2-84. Shoe at 15700'. Float collar at 15658'. Top liner at 13200'. WOC. POOH to 12000'. Circulate 4 hours. POOH. GIH with bit. DC \$37958; TCTD \$1,605,663

1 MW Float shoe	.166
1 joint 5" SFJ 18# casing	39.42
1 MWL landing collar	.75
60 joints 5" SFJ 18# casing	2499.32
1 MWL ESB single cone hanger w/tieback	9.14
TOTAL	2500.29

DRILLING REPORT

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MYCO - Longway Draw Fed Com #1 (Unit J) 8-25S-34E Lea Co., NM

4-4-84 TD 15700'. Top of liner at 13200'. Rig repair. MW 13.3, Vis 43, PH 9.5, WL 18, FC 2/32, CL 172000, Solids 18.5%, Calcium 320. WOC. TIH to 12000. Circulate. 16 barrel gain. TIH to 12750'. Circulate. 10 barrel gain. Cut drilling line. Wash from 12750-13200' (top of liner). No cement. Raised mud weight to 13.3. Started trip out of hole. Pulled 2 stands drill pipe. Shut down for rig repairs - input chain on compound to drawworks.

4-5-84 TD 15700'. Top of liner at 13200'. Testing liner. Finished rig repair. POOH. Picked up RTTS packer. TIH to 12905'. Tested top of liner with 5000#. Western Company could not pump in. Waited on brine water. Displaced drill pipe with 80 barrels 10# brine. Set packer. Differential tested liner. Flowed 18 gallons in 3-1/2 hours.

4-6-84 TD 15700'. Top of liner at 13200'. Rigging up to lay down excess drillpipe and drill collars. Opened by-pass to RTTS packer. Reversed out brine water. Rig down Western Company. TOOH with RTTS packer. TIH w/MWL mill assembly. Dress tie-back. Circulate 3 hours. TOOH with mill. TIH with excess drillpipe and drill collars. DC \$17,619; TC \$1,637,375

4-7-84 TD 15700'. Drilling cement. Laid down excess drill pipe and drill collars. Picked up 4-3/32" mill, casing scraper, 3 3-1/8" drill collars and 72 joints of 2-7/8" drill pipe. TIH to 15529'. Drill cement plugs from 15529-15615'. DC \$12749; TC \$1,650,124

4-8-84 TD 15700'; PBTD 15658'. Differentially testing liner. Drill cement from 15615-15658'. Circulate 5 hours. Condition mud for storage. Rigged up Western Company. Displaced hole with 10# brine. Rigged down Western. Differentially testing liner. DC \$9480; TC \$1,659,604

4-9-84 TD 15700'; PBTD 15658'. Top of liner at 13200'. Laying down drill pipe. Differential tested liner top for 15 hours. Rigged up BC Services. Laying down drill pipe. DC \$6955; TC \$1,666,559

4-10-84 TD 15700'; PBTD 15658'. Top of liner at 13200'. Cleaning pits. Finished laying down drill pipe and drill collars. Broke kelly. Laid down all rental tools. Nipped down BOP. NU wellhead. Cleaning pits. DC \$12,244; TC \$1,678,803

4-11-84 TD 15700'; PBTD 15658'. Top of liner at 13200'. Rigging down. Cleaned pits. Released rig at 9:00 AM 4-10-84. Rigged down mud-gas separator. Cleaned mud storage tanks. Installed pressure relief valve on wellhead. DC \$9255; TC \$1,688,058

4-12-84 TD 15700'; PBTD 15658'. Top of liner at 13200'. Rigging down. DC \$6155; TC \$1,688,963

4-13-84 TD 15700'; PBTD 15658'. Top of liner at 13200'. Waiting on completion unit.

4-14-16-84 TD 15700'; PBTD 15658'. Top of liner at 13200'. Waiting on completion unit. TEMPORARILY DROPPED FROM REPORT UNTIL OPERATIONS RESUME.

5-8-84 TD 15700'; PBTD 15658'. Move in and rig up completion unit. Nipple up BOP and tested. Prep to run tubing, spot acid and perforate.

5-9-84 TD 15700'; PBTD 15658'. Ran 480 joints 2-7/8" P105 tube scope tubing in hole to 15618'. Spot 250 gallons 7-1/2% MS acid. Pull up and set Uni VI packer at 14954'. Install tree and tested to 2000#, OK. Rig up CRC and test lubricators. WIH on wireline and perforated 15605-610' with 6 .25" holes. Broke formation at 6700#. Avg 8000# @ 3.2 BPM. ISDP 4900#. Flowing well back.

5-10-84 TD 15700'; PBTD 15658'. Swabbed dry in 27 runs, gas TSTM on 1/2" choke. Set on 1/4" choke at 4:30 AM (5-10) for gas measurement.

DRILLING REPORT

Page 8:

MYCO - Longway Draw Fed Com #1 (Unit J) 8-25S-34E Lea Co., NM

5-11-84 TD 15700'; PBDT 15658'. Stabilized flow 96# on 1/4" choke = 141 mcj. Prep to install 72 hour bomb. DC 82315; TCTD 3167,963 WATER ANALYSIS:

Sp Gravity	1.13 @ 63°	H ₂ S	none
pH	6	Sod & Pot	36679
Calcium	14159	Sulfate	1451
Iron	very strong/trace	Bicarbonate	399
Chlorides	84071		

5-12-14-84 TD 15700'; PBDT 15658'. Bled down to swab. First run recovered 500' gas cut fluid. 2nd run 200' gas cut fluid, 3rd run dry. Wait one hour. On 4th swab run, dry. Ran 72 hour bottom hole pressure bomb @ 12:00 NOON. Prep to pull bomb. DC 83345; TCTD 8171,308 WATER ANALYSIS:

Sp Gravity	1.105 @ 78°	Resistivity	.08 @ 60°
pH	5.3	Fe	trace/strong
H ₂ S	0	Sod & Pot	45000
Bicarbonate	600	Calcium	10000
Sulfate	700	Magnesium	2400
Sod Chloride	155000	Chloride	94000
KCL	0	Hardness	35000
Sodium	45000		

5-15-84 TD 15700'; PBDT 15658'. 72 hour SITP 8500# surface. Pull Bottom Hole Pressure bomb and blew down. Swab from seating nipple, dry. DC 85315; TCTD 8176623

5-16-84 TD 15700'; PBDT 15658'. SITP 1900#. Re-acidized perforations 15605-10' with 2000 gallons 7-1/2% MS acid, 2000 gallons Co2 and 4 ball sealers. Treating pressures: Max 10000#; Min 8400#; Avg 9400# 2 4 BPM. ISDP 6800#; 10 minutes 6600#. Flow down, TSTM on 1/2" choke. Swabbing Load. DC 810405

5-17-84 TD 15700'; PBDT 15658'. Flow with 6' flare. Rig up swab and tag fluid at 11000', swab off seating nipple on 3rd run. Sixth run recovered 200' scattered fluid. Shut in one hour. Swab 1500' scattered fluid. Shut in 1 hour. Swab 200' scattered fluid. Set on 1/4" choke at 25# @ 5:15 PM. Flowing 37# on 1/4" choke at 5:30 PM, 35# at 6:00 PM. Left flowing on 1/4" choke. WATER ANALYSIS:

(15605-10')

Sp Gravity	1.080	Resistivity	.10 @ 60°
pH	5.8	Fe	good/very strong
H ₂ S	none	Hardness	45000
Calcium	14000	Magnesium	2400
Sod & Pot	25000	Sulfate	100
Bicarbonate	700	Chlorides	70000
Sod Chlorides	115000	Sodium	25000
KCL	0	Potassium	0

5-18-84 TD 15700'; PBDT 15658'. Overnight flow on 1/4" choke - 80#. Tag fluid 1500' from surface. 2nd, 3rd and 4th swab runs dry. Flow on 1/4" choke at 74# at 1:30 PM; 2:45 PM 80#; 3:00 82#; 4:00 87#; 5:00 89#. Shut in. Prep to perforate.

5-19-84 TD 15700'; PBDT 15658'. Overnight SITP 1950#. Rig up CRC and run in hole with gums. Pressure tubing with N2 to 4200#. WIH on wireline with and perforated 15331-336' with 10 .25" holes. POOH. Pressure increase to 4500#. Flow back on 1/2" choke, GTS in 9 minutes, TSTM in one hour. Tag fluid level 11000'. Made 4 swab runs, pulling 300'/run. EDC 811542; ETCTD 8200,585

5-20-21-84 TD 15700'; PBDT 15658'. Overnight SITP 1800#. Tag fluid level 10500'. Made 5 swab runs in 7 hours, recovered 21.5 bbls water. EDC 82028; ETCTD 8200,613

DRILLING REPORT

Page 9:

MYCO - Longway Draw Fed Com #1 (Unit J) 8-25S-34E Lea Co., NM

5-20-21-84

WATER ANALYSIS:

(depth 15331-336')	5-18-84	5-19-84
Sp Gravity	1.050 @ 78°	1.07 @ 78°
Resistivity	.12 @ 78°	.10 @ 78°
pH	6.3	6.65
Iron	good/very strong	faint/good
Sulfate	70	220
H2S	none	none
Bicarbonate	305	488
Hardness	2800	11900
Chlorides	48400	68000
Calcium	832	4000
Sod Chloride	30231.89	111860
Magnesium	174.96	461
Sod & Pot	30231.89	
KCL	0	0

5-22-84

TD 15700'; PBTD 15658'. Flow for 38 hours, recovered 22.7 bbls water. Swabbing - 1st run 18 bbls; 2nd run 9.1 bbls; 3rd run 9.1 bbls; 4th run 7.8 bbls, 5th run 0 bbls. Total load for day - 66.7 bbls. Total water recovered = 88.4 bbls. Killed well 1:00 PM. ND BOP, release packer and pull tubing. PRESENT OPERATION: running bridge plug and packer. DC \$13570; TCTD \$203,713

5-23-84

TD 15700'; PBTD 15658'. RIH with RBP and set 15436'. Test to 5000#, OK. Set Uni VI packer 15251'. Nipple up tree and test to 10000#. Swabbed 85.8 bbls 10# brine load water in 13 swab runs. Final fluid level 12750'. Very small show of gas. Left open to test tank overnight. DC \$3055; TCTD \$209322

5-24-84

TD 15700'; PBTD 15658'. Tag fluid level 7400'. Swabbed 53 bbls water in 9 hours, on hard vacuum after each swab run. Final fluid level 12000'. Now 49-bbls overload.

WATER ANALYSIS: (15331-36')

Sp Gravity	1.020 @ 78°	Resistivity	.17 @ 78°
pH	7	Fe	very faint/trace
H2S	none	Hardness	3000
Calcium	800	Magnesium	240
Sod & Pot	9300	Sulfate	50
Bicarbonate	700	Chlorides	16000
Sod Chlorides	26000	KCL	0

DC \$1500; TCTD \$210,822

5-25-84

TD 15700'; PBTD 15658'. No report.

WATER ANALYSIS:

	<u>Date Sampled</u>	<u>Date Received</u>	<u>Date Sampled</u>
	5-23-84	5-23-84	5-24-84
Sp grav	1.015 @ 80°F	1.020	1.025 @ 82°F
PH	7.0	7.0	6.5
Iron	Faint trace	None/None	Slight trace
H2S	None	None	None
Hardness		3000	
Calcium	788	800	780
Magnesium	1197	249	2371
Sod & Pot	6066	9300	4998
Resistivity	0.28 @ 72°F	0.34 @ 60°F	0.26 @ 80°F
Sulfate	167	50	127
Bicarbonate	553	700	512
Chloride	13,793	16,000	16,610
Sod Chloride		26,000	
Sodium		9300	
Potassium		None	
KCL		0%	

MYCO - Longway Draw Fed Com #1 (Unit J) 8-25S-34E Lea Co., NM

5-26-28-84 TD 15700'; PBTD 15658'. No report.

5-29-84 TD 15700'; PBTD 15658'. Fluid at 6100'. Loaded tubing with 35 barrels 2% KCL water and break formation at 4900# to 4200#. Pumped 1.2 BPM at 4600#. Run RA Tracer survey. All fluid in zone. Released packer and nipped up BOP. Pulled tubing and run Baker retrievematic packer at 14977' and spot 2 sacks of sand. Spearhead cement with 250 gallons 7-1/2% MS acid and squeezed perfs 15331-15336' w/100 sacks Class "H" with 1.25% CF-1, 2% salt, .2% WR-2. Pumped 2.2 BPM at 3400#. Squeezed to 5500# with 75 sacks in formation. Reversed out. Pulled tubing. Prep to run bit and collars and drill out. DC \$22,885; TC \$234,835

5-30-84 TD 15700'; PBTD 15658'. RIH w/4-1/4" bit, casing scraper, 6 3-1/2" drill collars and tubing. Present Operation: drilling cement.

5-31-84 TD 15700'; PBTD 15658'. Drilled out cement and test squeeze perforations to 4500#. Cleaned sand off bridge plug and POOH. Laying down drill collars, scraper and bit. DC \$5792; TC \$240,627

6-1-84 TD 15700'; PBTD 15658'. Replace brake drums and drilling line on pulling unit. Run in hole and release packer. POOH with bridge plug.

6-2-4-84 TD 15700'; PBTD 15658'. Pull tubing and RBP. RIH with Uni VI packer and set 15555'. On/off tool with 1.81" profile nipple set 15548'. Nipple up wellhead and flowlines. Swabbed dry. Flowed 37 hours at 78# on 1/4" choke = 134000 cu ft. Prep to swab and treat. TCTD \$249,204

6-5-84 TD 15700'; PBTD 15658'. Flowed 38# on 1/4" choke. Fluid level 5000'. Swabbed to seating nipple at 15555', recovered 8 bbls fluid total. Swabbed 2.7 bbls water in 6 hours. Re-acidized perforations 15605-610' with 6000 gallons 7-1/2% MS acid, 6000 gallons gelled KCL water and 39 tons CO₂. Treating pressures: Min 9600#; Max 11200#; Avg 10200# @ 5.7 BPM. Flowing back on 1/2" choke.

WATER ANALYSIS: (15605-610')

Sp Gravity	1.06 @ 71°	Resistivity	.11 @ 71°
pH	7	Magnesium	2292
H ₂ S	none	Iron	strong
Sod & Pot	16656	Sulfate	2358
Calcium	4905	Bicarbonate	1082
Chlorides	41000		

6-6-84 TD 15700'; PBTD 15658'. Slugging fluid 10-20# on 1/2" choke. Tag scattered fluid at 3500', swabbed off seating nipple until 6:00 PM. Put on 1/2" choke overnight. DC 41728; TCTD \$278,612

6-7-84 TD 15700'; PBTD 15658'. Gas TSTM. Made one swab run. Flowing 20-110# on 1/2" choke, slugging fluid.

WATER ANALYSIS: (15605-610') 6-6-84

Sp Gravity	1.060 @ 82°	Resistivity	.12 @ 82°
pH	6.5	Sulfate	500
Iron	faint/v.strong	Bicarbonate	915
H ₂ S	none	Chloride	56000
Hardness	5000	Sod Chloride	92120
Magnesium	631.8	KCL	0%
Sod & Pot	34610.4		

6-8-84 TD 15700'; PBTD 15658'. Flowing 40-50# with fine spray of water. Making 1 BPH. Running Bottom Hole Pressure bomb.

6-9-11-84 TD 15700'; PBTD 15658'. Prep to pull bottom hole pressure bomb.

6-12-84 TD 15700'; PBTD 15658'. Pulled Bottom Hole Pressure bomb. 72 hour SIBHP was 7305 @ 15610' and gaining 6-8#/hour. 72 hour TP 3815 psi. Blow down and load tubing with 60 bbls. Reverse tubing and POOH. RIH with RBP, set 15314'. Run Uni VI packer and set 15019'. Tested to 5000#, OK. Pull BOP, nipple up tree. Swab to 5900'. WIH on wireline with Tubing gun and perforated 15047-1/2 to 15289' with 10 .25" holes as follows: 15047-1/2, 049, 050, 070, 078, 283, 284, 287, 288 and 289'. Swabbing with no show of gas. DC \$18262

6-13-84 TD 15700'; PBTD 15658'. No report.

DRILLING REPORT

Page 11:

MYCO - Longway Draw Fed Com #1 (Unit J) 8-25S-34E Lea Co., NM

6-14-84 TD 15700'; PBTD 15658'. Overnight SITP 350#. Swabbing off seating nipple, no fluid. Acidized with 5000 gallons 7-1/2% MS acid, 29 tons CO2 and 10 ball sealers. Load and break on perforations, pressure increase at 11400# to 10050# @ 6-1/2 BPM. 2 balls on perf, pressure increase from 10050 to 10900#. Break to 10400#. 4 balls on perf, pressure increase from 10400-12300#. No break. 6 balls on perf, pressure increase from 12300-14400#. Broke to 13000#. 8 balls on perf, pressure increase from 13000-14800#. Slow rate to 2.4 BPM at 14000#. 10 balls on perfs, balled out. Shut in, bled off to 5000#. Release ball sealers, continue flushing and casing increase from 5000-60000#. Bled off casing. Treating pressures: Min 10050#; Max 14800#; Avg 13005 @ 5 BPM, 21 bbls underflush. Flow back on 3/4" choke at 11:00 AM. Test tubing hanger to 2000#, OK. Unloading water and casing on vacuum. Killed to change packer. DC \$35705; TCTD \$337,483

6-15-84 TD 15700'; PBTD 15658'. TOH. TIH with Guiberson Uni VI packer at 15009'. Blowing down tubing to install tree.

6-16-18-84 TD 15700'; PBTD 15658'. Nippled up tree, test to 10000#. Flow to test tank at 9 AM 95# on 1/2" choke and 70# on 1/2" choke till 5 PM. SITP 4700#, blow down to 70# on 1/2" choke. Running Bottom Hole Pressure bomb. TCTD \$348,155

6-19-84 TD 15700'; PBTD 15658'. Bottom Hole Pressure bomb in hole.

6-20-84 TD 15700'; PBTD 15658'. Pulled Bottom Hole Pressure bomb. Flowing on 1/2" choke.

6-21-84 TD 15700'; PBTD 15658'. Pull Bottom Hole Pressure bomb = 72 hour SI 6972; BHR @ 15009 - 9039#.

6-22-84 TD 15700'; PBTD 15658'. Flowed 36 hours at 80# on 1/2" choke = 582 mcf. Running 120 hour Bottom Hole Pressure bomb.

6-23-25-84 TD 15700'; PBTD 15658'. Running 120 hour Bottom Hole Pressure bomb.

6-26-84 TD 15700'; PBTD 15658'. No report.

6-27-84 TD 15700'; PBTD 15658'. No report.

6-28-84 TD 15700'; PBTD 15658'. Pulling pressure bomb.

6-29-84 TD 15700'; PBTD 15658'. Pulled pressure bomb from well.

6-30/7-2-84 TD 15700'; PBTD 15658'. No report.

7-3-84 TD 15700'; PBTD 15658'. No report.

7-4-5-84 TD 15700'; PBTD 15658'. No report.

7-6-84 TD 15700'; PBTD 15658'. No report.

7-7-9-84 TD 15700'; PBTD 15658'. No report.

7-10-84 TD 15700'; PBTD 15658'. On a 24 hour Official Potential test taken 7-3-84 well flowed 455 psi on 16/64" choke = 504 MCFPD through perforations 15047.5 - 15289' Morrow. SIWOPLC. FINAL REPORT.

MULTIPOINT AND ONE POINT BACK PRESSURE TEST FOR GAS WELL

Type Test ☒ Initial ☐ Annual ☐ Special						Test Date 9/5/90			
Company Enron Oil & Gas Company				Connection Enron Pipeline Corp.					
Pool Pitchfork Ranch				Formation Morrow				Unit	
Completion Date 6/23/90		Total Depth 15,700		Plug Back TD 15,658		Elevation 3348' GL		Farm or Lease Name Longway Draw Fed. Com.	
Cas. Size 5"	Wt. 18 #	d 4.276	Set At 15,700	Perforations: From 14,829 To 14,865		Well No. 1			
Tub. Size 2 7/8	Wt. 6.4 #	d 2.441	Set At 14,678	Perforations: From Open To Ended		Unit Sec. Twp. Rge. J 8 25s 34e			
Type Well - Single - Bradenhead - G.C. or G.O. Multiple Single						Packer Set At 14,678		County Lea	
Producing Thru TBG		Reservoir Temp. °F 221 @ 14,678		Mean Annual Temp. °F 60		Baro. Press. - P _a 13.2		State New Mexico	
L 14678	H 14678	Cg 0.583	% CO ₂ 0.55	% N ₂ 0.42	% H ₂ S -	Prover -	Meter Run 3.068	Tups FLG	

FLOW DATA							TUBING DATA		CASING DATA		Duration of Flow
NO.	Prover 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							5900		PKR		72 hrs.
1.	3.068	10/64	1.000	785	9.50	96	5680		"		1 hr.
2.	3.068	14/64	1.000	795	19.50	74	5282		"		1 hr.
3.	3.068	16/64	1.000	800	35.00	60	4781		"		1 hr.
4.	3.068	17/64	1.000	810	62.00	58	4179		"		1 hr.
5.											

RATE OF FLOW CALCULATIONS							
NO.	Coefficient (24 Hour)	$\sqrt{h_w P_m}$	Pressure P _m	Flow Temp. Factor F _t	Gravity Factor F _g	Super Compress. Factor, F _{sp}	Rate of Flow Q, Mscf/d
1	4.789	87.08	798.2	.9671	1.310	1.062	561
2	4.789	125.54	808.2	.9868	1.310	1.064	827
3	4.789	168.71	813.2	1.000	1.310	1.073	1,136
4	4.789	225.92	823.2	1.002	1.310	1.074	1,519
5.							

NO.	P _r	Temp. °R	T _r	Z	Gas Liquid Hydrocarbon Ratio _____ Dry Gas _____ Mcf/bbl.
1	1.18	556	1.58	.886	A.P.I. Gravity of Liquid Hydrocarbons _____ Dry _____ Deg.
2	1.20	534	1.52	.884	Specific Gravity Separator Gas .583 _____ XXXXXXXXXX
3	1.21	520	1.48	.868	Specific Gravity Flowing Fluid _____ XXXXX
4	1.22	518	1.48	.867	Critical Pressure _____ 672 _____ P.S.I.A. _____ P.S.I.A.
5					Critical Temperature _____ 350 _____ R _____ °F

P _r 5913.2 P _r ² 34965.9				
NO.	P _r ²	P _w	P _w ²	P _r ² - P _w ²
1		5693.8	32418.8	2547.1
2		5296.4	28052.1	6913.8
3		4796.6	23007.8	11958.1
4		4196.9	17613.9	17352.0
5				

(1) $\frac{P_r^2}{P_r^2 - P_w^2} = 2.015$

AOF = Q $\left[\frac{P_r^2}{P_r^2 - P_w^2} \right]^n = 2.408$

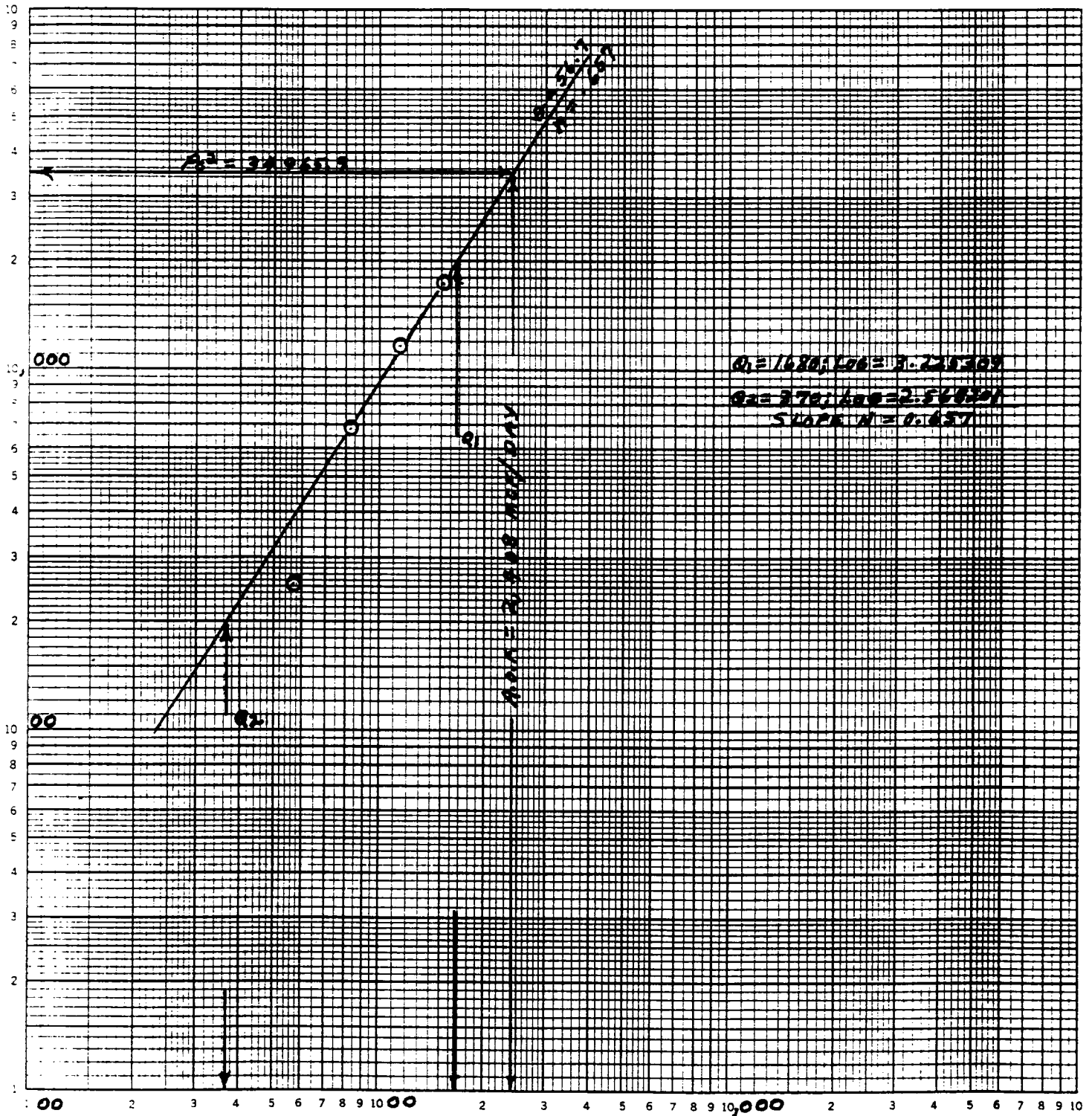
(2) $\left[\frac{P_r^2}{P_r^2 - P_w^2} \right]^n = 1.585$

Absolute Open Flow _____ 2,408 _____ Mscf @ 15.025	Angle of Slope @ _____ 56.7°	Slope, n _____ 0.657
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Remarks: Made 2.1 BBLS H₂O in 4 hours.

Approved By Division _____	Conducted By: _____ Jamel Sarmadon, Inc.	Calculated By: _____ Bob Murray	Checked By: _____ Bob Murray
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10/100


$$Q = MCF/DAY$$

MULTIPOINT AND ONE POINT BACK PRESSURE TEST FOR GAS WELL

Type Test ☒ Initial ☐ Annual ☐ Special				Test Date 9/5/90	
Company Enron Oil & Gas Company				Connection Enron Pipeline Corp.	
Pool South Pitchfork Ranch				Formation Morrow	
Completion Date 6/23/90		Total Depth 15,700		Plug Back TD 15,658	
				Elevation 3348' GL	
Farm or Lease Name Longway Draw Fed. Com					
Csg. Size 5"		Wt. 18 #		Set At 15,700	
				Perforations From 14,829 To 14,865	
Trg. Size 2 7/8		Wt. 6.4 #		Set At 14,678	
				Perforations From Open To Ended	
Type Well - Single - Drilled - G.G. or G.O. Multiple Single				Packer Set At 14,678	
Producing Thru TBG		Reservoir Temp. °F 221 @ 14,678		Mean Annual Temp. °F 60	
				Baro. Press. - P _a 13.2	
L 14678		H 14678		Cg 0.583	
				% CO ₂ 0.55	
				% N ₂ 0.42	
				% H ₂ S -	
Prover -		Meter Run 3.068		Taps FLG	

FLOW DATA							TUBING DATA		CASING DATA		Duration of Flow
NO.	Prover 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							5900		PKR		72 hrs.
1.	3.068	10/64	1.000	785	9.50	96	5680		"		1 hr.
2.	3.068	14/64	1.000	795	19.50	74	5282		"		1 hr.
3.	3.068	16/64	1.000	800	35.00	60	4781		"		1 hr.
4.	3.068	17/64	1.000	810	62.00	58	4179		"		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 _{sp}	Rate of Flow Q, Mscf/d
1	4.789	87.08	798.2	.9671	1.310	1.062	561
2	4.789	125.54	808.2	.9868	1.310	1.064	827
3	4.789	168.71	813.2	1.000	1.310	1.073	1,136
4	4.789	225.92	823.2	1.002	1.310	1.074	1,519
5							

NO.	P _r	Temp. °R	T _r	Z	Gas Liquid Hydrocarbon Ratio	A.P.I. Gravity of Liquid Hydrocarbons	Specific Gravity Separator Gas	Specific Gravity Flowing Fluid	Critical Pressure	Critical Temperature
1	1.18	556	1.58	.886	Dry Gas	Dry	.583	X X X X X X X X	672	350
2	1.20	534	1.52	.884						
3	1.21	520	1.48	.868						
4	1.22	518	1.48	.867						
5										

NO.	P _r ²	P _w ²	P _w ² - P _r ²	(1) $\frac{P_r^2}{P_r^2 - P_w^2} =$	(2) $\left[\frac{P_r^2}{P_r^2 - P_w^2} \right]^n =$
1	5693.8	32418.8	2547.1	2.015	1.585
2	5296.4	28052.1	6913.8		
3	4796.6	23007.8	11958.1		
4	4196.9	17613.9	17352.0		
5					

Absolute Open Flow 2,408		Mscf @ 15.025		Angle of Slope @ 50.7°		Slope, n 0.657	
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Remarks: Made 2.1 BBLS H₂O in 4 hours.

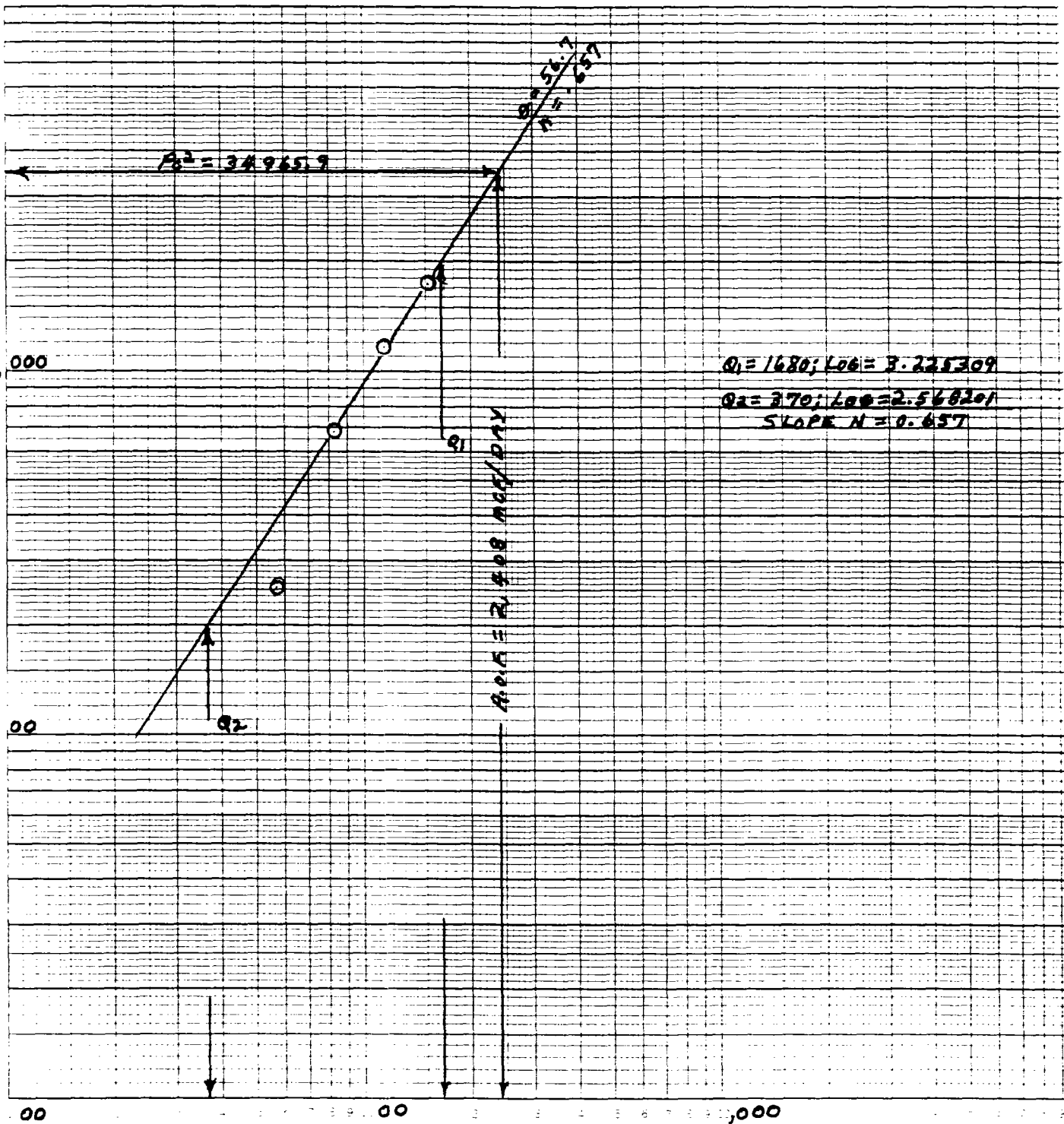
Approved By Division _____ Conducted By: _____ Calculated By: _____ Checked By: _____

Betty Seldon
Enron Oil & Gas Co.
9/13/90

COMPANY: Enron Oil & Gas Company
 WELL: Longway Draw Federal Com #1
 LOCATION: J 8 25s 34e
 COUNTY: Lea
 DATE: September 5, 1990

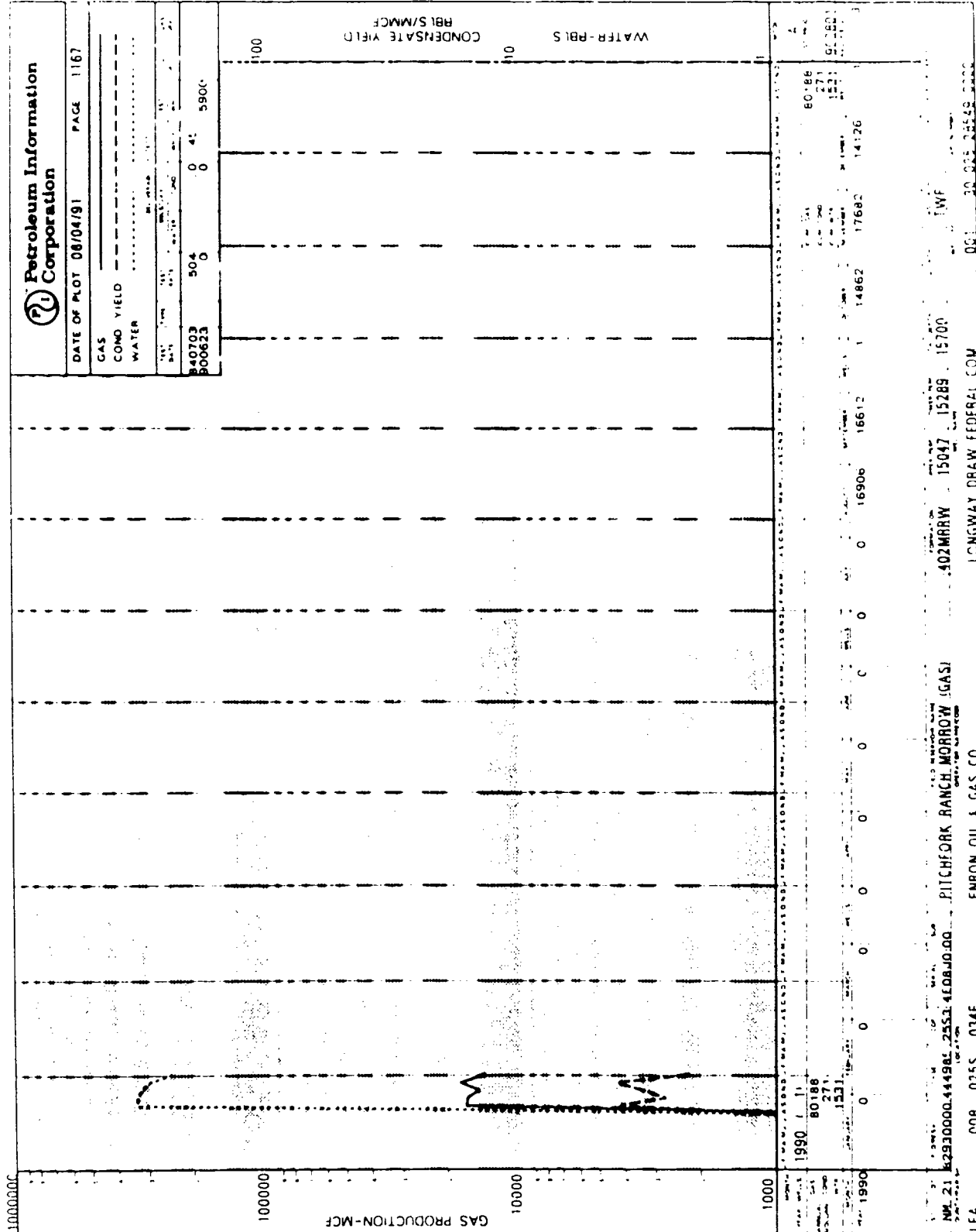
$P_C^2 - P_W^2$ (THOUSANDS)
 467400

LOGARITHMIC 3 X 3 COATES
 W. L. KOEHL & ASSOCIATES



Q = MCF/DAY

1000000



92 400

TIGHT GAS SANDS

PERMEABILITY AND STABILIZED FLOW RATE

VACA DRAW / PITCHFORK RANCH AREA

DATE: 11/25/91

WELL NAME: OCHOA FED 1

INTERVAL: 15082-236'

STIMULATED ? (Y/N): NO; NATURAL

FLOW RATE (MCF/D): 2,400

FLOW TIME (HRS.): 24

FLOWING BHP (psia): 7,244

GAS GRAVITY (Yg): 0.575

TEMP. DEGREE F (T): 221

RESERVOIR PRESSURE (Pi): 9,311

GAS POROSITY: 0.060

WELLBORE RADIUS (Ft): 0.250

SKIN FACTOR: 0.0

PAY HEIGHT: 21

Z-FACTOR: 1.335

GAS COMPRESSIBILITY: 0.00005

GAS VISCOSITY (cp): 0.0312

SPACING ACRES: 320

FORMATION VOLUME FACTOR (Bg): 0.490

SPACING RADIUS (Ft): 2,106

ASSUMED K (md): 0.8692

RADIUS OF DRAINAGE (Ft): 769.9

CALCULATED K (md): 0.8692

STEADY TIME (HRS.): 452.77

STABILIZED FLOW (MCF/D): 2108.63

AOE PRESSURE (psia): 1200

STABILIZED AOE (MCF/D): 8,274

TIGHT GAS SANDS

PERMEABILITY AND STABILIZED FLOW RATE

VACA DRAW / PITCHFORK RANCH AREA

DATE: 11/24/91

WELL NAME: OCHOA FED 1

INTERVAL: 15594-908

STIMULATED ? (Y/N): NO;110 BBL H2O + METH

FLOW RATE (MCF/D): 450

FLOW TIME (HRS.): 96

FLOWING BHP (psia): 998

GAS GRAVITY (Yg): 0.575

TEMP. DEGREE F (T): 221

RESERVOIR PRESSURE (Pi): 9,311

GAS POROSITY: 0.060

WELLBORE RADIUS (Ft): 0.250

SKIN FACTOR: 0.0

PAY HEIGHT: 18

Z-FACTOR: 1.335

GAS COMPRESSIBILITY: 0.00005

GAS VISCOSITY (cp): 0.0312

SPACING ACRES: 320

FORMATION VOLUME FACTOR (Bg): 0.490

SPACING RADIUS (Ft): 2,106

ASSUMED K (md): 0.0419

RADIUS OF DRAINAGE (Ft): 338.1

CALCULATED K (md): 0.0419

STEADY TIME (HRS.): 9,384.92

STABILIZED FLOW (MCF/D): 350.69

AOE PRESSURE (psia): 114

STABILIZED AOE (MCF/D): 388

TIGHT GAS SANDS

PERMEABILITY AND STABILIZED FLOW RATE

VACA DRAW / PITCHFORK RANCH AREA

DATE: 11/24/91

WELL NAME: OCHOA FED 1

INTERVAL: 15898-908

STIMULATED ? (Y/N): NO; 40 BBL H2O + METH

FLOW RATE (MCF/D): 285

FLOW TIME (HRS.): 6

FLOWING BHP (psia): 713

GAS GRAVITY (Yg): 0.575

TEMP. DEGREE F (T): 221

RESERVOIR PRESSURE (Pi): 9,311

GAS POROSITY: 0.075

WELLBORE RADIUS (Ft): 0.250

SKIN FACTOR: 0.0

PAY HEIGHT: 4

Z-FACTOR: 1.335

GAS COMPRESSIBILITY: 0.00005

GAS VISCOSITY (cp): 0.0312

SPACING ACRES: 320

FORMATION VOLUME FACTOR (Bg): 0.490

SPACING RADIUS (Ft): 2,106

ASSUMED K (md): 0.0962

RADIUS OF DRAINAGE (Ft): 114.5

CALCULATED K (md): 0.0962

STEADY TIME (HRS.): 5,114.19

STABILIZED FLOW (MCF/D): 184.89

AOF PRESSURE (psia): 104

STABILIZED AOF (MCF/D): 198

TIGHT GAS SANDS

PERMEABILITY AND STABILIZED FLOW RATE

VACA DRAW / PITCHFORK RANCH AREA

DATE: 11/24/91

WELL NAME: OCHOA FED 1

INTERVAL: 15082-236'

STIMULATED ? (Y/N): NO; NATURAL

FLOW RATE (MCF/D): 318

FLOW TIME (HRS.): 4

FLOWING BHP (psia): 984

GAS GRAVITY (Yg): 0.575

TEMP. DEGREE F (T): 221

RESERVOIR PRESSURE (Pi): 8,500

GAS POROSITY: 0.060

WELLBORE RADIUS (Ft): 0.250

SKIN FACTOR: 0.0

PAY HEIGHT: 21

Z-FACTOR: 1.275

GAS COMPRESSIBILITY: 0.00005

GAS VISCOSITY (cp): 0.0306

SPACING ACRES: 320

FORMATION VOLUME FACTOR (Bg): 0.512

SPACING RADIUS (Ft): 2,106

ASSUMED K (md): 0.0201

RADIUS OF DRAINAGE (Ft): 48.3

CALCULATED K (md): 0.0201

STEADY TIME (HRS.): 19,189.32

STABILIZED FLOW (MCF/D): 173.14

AOE PRESSURE (psia): 114

STABILIZED AOE (MCF/D): 193

LEA COUNTY NEW MEXICO WILDCAT
Well: THE SUPERIOR OIL CO, 1 Ochoa Federal Result: GAS WFD
Locn: 31 mi SE/Halfway; 1980'FNL,1980' FEL Sec 15-25S-33E

15,499'

Spud:11-20-81;Comp:3-18-83;Elev:3369' Grd; TD:16,335'MRRW;PB:

Casing: 13-3/8"4991'/4860 sx;9-5/8"12,607'/990 sx;7-5/8"lnr

12,290-15,427'/950 sx;5"lnr 15,228-16,334'/240 sx;2-7/8"

14,505', 1" 14,496'

ProdZone:(Morrow),Prod thru Perfs 15,082-236'

IPCAOF: 337 MCFGPD,Dry, SIWHP 4849#,SIBHP NR,Grav(gas).5746

Comp Info:ran CNL, FDC, DILL, LITH, DENL,GRL,SONL,BHC,CORL

logs;Perf (Morrow)15,898-908',F/1/4 BWPB 10/64"ch, Perf (Morr)

15,594-608, 15,610-622' natural; F/30 MCFGPD 1/8"ch,TP 341#

Perf (Morr)15,594-608, 15,610-622', F/450 MCFGPD +24 BW 1/4"

ch, BP @ 15,499';Perf (Morr)15,082-092', 15,096-106'; F/2400

MCFGPD 8/64"ch, TP 5600#,Perf (Morr)15,115-124, 15,222-236';

(Morrow) 4 pt.test:F/680 MCFGPD/60 mi n s, TP 3450#,F/812

MCFGPD/60 mins,TP 2400#,F/716 MCFGPD/60 mins, TP 1675#,F/

318 MCFGPD/45 mins, TP 687#,BHT 221 deg @ 15,159'; C/



Petroleum Information Corporation Cont'd on card 37-A

A Subsidiary of A.C. Nielsen Company

Date: 8-17-83 Card No. 37 dh

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REPRODUCTION PROHIBITED

OCHOA FEDERAL #1, LEA CO., NEW MEXICO
COMPLETION

CONFIDENTIAL

APE \$4,644,000. COST \$5,172,000.

OPERATION: GFOH W/TBG & SEAL ASSEMBLY. RU MCCULLOUGH, RIH W/BAKER MODEL
EDB" PKR SET AT 14,500'. RIH W/SEAL ASSEMBLY & 2-7/8" TBG
TO 13,300'. SIFN.

OCHOA FEDERAL #1, EEA CO., NEW MEXICO
COMPLETION

APE \$4,644,000. COST \$5,183,500.

OPERATION: GFIN W/TBG. SPACED OUT ON PKR AT 14,500' W/8000'. ND BOP,
NU TREE. TESTED TO 8000 PSI. RDMO POOL 121. RU COILED TBG.
RIH TO 15,250'. CIRC HOLE W/32 KCL BRINE W/2 GPT CLA STA.
3 GPT NON IONIC SURFACTANT. POH TO 2000' JETTED DRY. POH.
RDMO COILED TBG UNIT.

OCHOA FEDERAL #1, LEA CO., NEW MEXICO
COMPLETION

CONFIDENTIAL

APE \$4,644,000. COST \$5,202,000.

OPERATION: MIRU MCCULLOUGH & PRESS CONTROL EQUIPMENT. RIH W/2"
PERFORATING GUN. PERFORATED 15,082-92' & 15,096' TO 15,106'
2 JSPP. POH. RDMO MCCULLOUGH. SITP 5000 PSI. RU DAVIS
TESTING CO. PREP TO BEGIN FLOW TEST.

OCHOA FEDERAL #1, LEA CO., NEW MEXICO
COMPLETION

CONFIDENTIAL

APE \$4,644,000. COST \$5,202,000.

OPERATION: PREPARING TO PERF. SEE PROD SUMMARY FOR FLOW TEST.

OCHOA FEDERAL #1, LEA CO., NEW MEXICO
COMPLETION

CONFIDENTIAL

APE \$4,644,000. COST \$5,208,000.

OPERATION: PERF 15,115' TO 15,124'.

AFE \$4,644,000. COST \$5,162,000.
OPERATION: SITP - 4200 PSI. OPENED TO PIT ON 1/4" CK. BLED TO 0 PSI
6" GAS FLARE. OPENED ON 18/64" CK. FLOWING HEADS OF WTR.
OPEN ON 24/64" CK. UNLOADING HEAD OF WTR.

OCHOA FEDERAL #1, LEA CO., NEW MEXICO
COMPLETION

AFE \$4,644,000. COST \$5,162,000.

OPERATION: RIH WITH COIL TBG & JETTED DRY TO 15,910'.

CONFIDENTIAL

OCHOA FEDERAL #1, LEA CO., NEW MEXICO
COMPLETION

AFE \$4,644,000. COST \$5,177,000.

OPERATION: PUMPED 110 BBLS 70% FW & 30% METHANOL INTO PERFS AT
7300# @ 4 BPM. OPEN TO PIT ON 10/64" CK. UNLOADING WTR.

CONFIDENTIAL

OCHOA FEDERAL #1, LEA CO., NEW MEXICO
COMPLETION

AFE \$4,644,000. COST \$5,181,000.

OPERATION: FLOWED ON 10/64" CK AT 1400#.

CONFIDENTIAL

OCHOA FEDERAL #1, LEA CO., NEW MEXICO
COMPLETION

AFE \$4,644,000. COST \$5,189,000.

OPERATION: FARO 440 MCF/D, 243 BHPD, FTP 760# ON 14/64" CHK.

CONFIDENTIAL

OCHOA FEDERAL #1, LEA CO., NEW MEXICO
COMPLETION

AFE \$4,644,000. COST \$5,197,000.

OPERATION: FLOWED ON 1/4" CHK AT 770#, 450 MCF/D, 24 BHPD, SHUT WELL
IN. RDMO TESTERS.

CONFIDENTIAL

4 Jan = 96 hrs

OCHOA FEDERAL #1, LEA CO., NEW MEXICO
COMPLETION

AFE \$4,644,000. COST \$5,198,000.

OPERATION: 15 HR SITP 5280 PSI. 26 HR SITP 6000 PSI.

CONFIDENTIAL

COMPLETION

AFE \$4,644,000. COST \$5,051,900.

OPERATION: POH. RAN 7-5/8" RTTS TOOL & SET @ 12,390'. TEST TBG TO 2500#. POH. SET RBP @ 12,390'. SPOT SAND ON PLUG. POH. SET 9-5/8" RTTS TOOL @ 11,730 TO 700'. FOUND LEAK AT TOP OF 9-5/8" CSG. CSG JUMPED OUT OF SLIPS AND FELL 20'.

CONFIDENTIAL

OCHOA FEDERAL #1, LEA CO., NEW MEXICO
COMPLETION

AFE \$4,644,000. COST \$5,064,900.

OPERATION: RU CSG JACKS, LATCHED CSG W/SPEAR & PULLED CSG ABOVE WELLHEAD & SPEAR RELEASED.

CONFIDENTIAL

OCHOA FEDERAL #1, LEA CO., NEW MEXICO
COMPLETION

AFE \$4,644,000. COST \$5,077,900.

OPERATION: RU PADS UNDER CSG JACKS. RIH W/CSG SPEAR. PICKED UP 9-5/8" CSG. SET SLIPS. RDMO JACKS. CUT 9-5/8" CSG. NU BOPS, TSTD CSG TO 1500#. RIH W/RBP RETRIEVING TOOL TO 12,390'. WASHED SAND OFF PLUG & SOH W/RBP.

CONFIDENTIAL

OCHOA FEDERAL #1, LEA CO., NEW MEXICO
COMPLETION

AFE \$4,644,000. COST \$5,084,900.

OPERATION: POH W/RBP. RU JARREL SLICKLINE. RAN 1-9/16" IMPRESSION BLOCK TO TOP OF PLUG. FOUND BOLT ON TOP OF PLUG. RIH W/GRAPPLE. POH. REC BOLT. RDMO W/L. RU TO RUN TBG. RU TBG TESTERS. RIH W/100 STANDS, TESTING TO 8000 PSI.

CONFIDENTIAL

OCHOA FEDERAL #1, LEA CO., NEW MEXICO
COMPLETION

AFE \$4,644,000. COST \$5,102,900.

OPERATION: FIN TO 15,552' W/SEAL ASSY & TBG. SPACED OUT TBG. ND BOPS. NU TREE. TESTED TREE TO 8000 PSI. RDMO TBG TESTERS. DISPL WOLF W/1000 BBLS 10# BRINE PKR FLUID. REPAIRED TBG HEAD.

CONFIDENTIAL

CONFIDENTIAL

COMPLETION
AFE \$4,110,000. COST \$4,785,500.
OPERATION: RIN W/TBG TO 12,594'.

OCHOA FEDERAL #1, LEA CO., NEW MEXICO
COMPLETION
AFE \$4,110,000. COST \$4,799,400.
OPERATION: FINISH RIN W/TBG. ND BOPS. NU TREE.

CONFIDENTIAL
MAY 1982

OCHOA FEDERAL #1, LEA CO., NEW MEXICO
COMPLETION
AFE \$4,110,000. COST \$4,813,600.
OPERATION: CIRC 450 BBL 12.5 PPG WTR OUT OF ANNULUS W/10 PPG BRINE.
LOST CIRCULATION. SET PLUG IN SLIDING SLEEVE. PUMP 450 BBL
10 PPG BRINE. CASING WENT ON VACUUM. RAN SHIFTING TOOL,
CLOSED SLIDING SLEEVE. TESTED TBG TO 2000 PSI. PUMPED INTO
CSG-TBG ANNULUS ON VAC A 5 BPM.

OCHOA FEDERAL #1, LEA CO., NEW MEXICO
COMPLETION
AFE \$4,110,000. COST \$4,938,900.
OPERATION: PULLED BLANKING PLUG FROM BAKER MOD.1 SLIDING SLEEVE.
SITP 400 PSI. DROPPED BAR TO FIRE VANN GUN, SITP INCREASED
TO 600 PSI. RU OTIS TEST EQUIPMENT. SITP 1000 PSI. OPEN ON
8/64" CHK. FTP DROPPED TO 0 INSTANTLY. FARO 3 BWPH TO PIT
W/ 0 PSI.

CONFIDENTIAL

OCHOA FEDERAL #1, LEA CO., NEW MEXICO
COMPLETION
AFE \$4,110,000. COST \$5,016,900.
OPERATION: FLOW 27 BBL GAS CUT WTR. FLOW DRY GAS W/SLUGS WTR ON 20/64"
CHK W/75 PSI TO 130 PSI. MIRU COIL TBG UNIT. JET WELL DRY
FROM 8900' TO 14,000'. FLOW WELL THRU SEPERATOR ON 8/64"
CHK. WELL STABILIZED FARO 144 MCF/D W/512 PSI FTP.

OCHOA FEDERAL #1, LEA CO., NEW MEXICO
COMPLETION
AFE \$4,110,000. COST \$5,020,200.
OPERATION: FARO 143 MCF/D ON 1/8" CHK. FTP 500#.

CONFIDENTIAL

OPERATION: PERP 15,908 TO 15,898'. SWAB TO 10,000'. WELL STARTED FLWG
GAS W/50 PSI FTP ON 3/4" CHK. SIFN.

OCHOA FEDERAL #1, LEA CO., NEW MEXICO
COMPLETION

CONFIDENTIAL

AFE \$4,110,000. COST \$4,598,000. MAY 13 1982

OPERATION: SITP 1200 PSI. OPEN ON 1/4" CHK. BLEED TO 0 PSI IN ONE HR.

M TAGGED FHV AT 7000' W/SWAB. MIRU CUDD COILED TBG UNIT &
BJ N2 UNIT. RIH W/COILED TBG TO 6000'. BEARING BROKE ON IN-
JECTOR HEAD. POH W/COIL TBG.

OCHOA FEDERAL #1, LEA CO., NEW MEXICO
COMPLETION

CONFIDENTIAL

AFE \$4,110,000. COST \$4,613,000. MAY 14 1982

OPERATION: MIRU CUDD COIL TBG UNIT & BJ N2. RIH & JET WELL DRY TO
15,925'. POH.

OCHOA FEDERAL #1, LEA CO., NEW MEXICO
COMPLETION

CONFIDENTIAL

AFE \$4,110,000. COST \$4,665,000. MAY 17 1982

OPERATION: BROKE DOWN PERFS 15,598-15,908' W/40 BBL OF 30% METHANOL &
70% WTR W/5% KCL, 2 GPT CLAY STAY & 3 GPT NON IONIC SUR-
FACTANT. JET W/COIL TBG & N2 TO 13,500'.

OCHOA FEDERAL #1, LEA CO., NEW MEXICO
COMPLETION

CONFIDENTIAL

AFE \$4,110,000. COST \$4,663,000. MAY 18 1982

OPERATION: SITP 3000 PSI. RAN BHP SURVEY W/GRADIENT STOPS. SITP-4450.

OCHOA FEDERAL #1, LEA CO., NEW MEXICO
COMPLETION

MAY 19 1982

AFE \$4,110,000. COST \$4,729,000.

OPERATION: SITP 6700 PSI. FLOW 6 HRS ON 10/64" CHK TO 500 PSI FTP.
LOAD TBG W/10 PPG BRINE ISIP 0. 20 MIN SITP 600 PSI. 1 HR
SITP 1000 PSI. 9300# EST

OCHOA FEDERAL #1, LEA CO., NEW MEXICO
COMPLETION

CONFIDENTIAL

AFE \$4,110,000. COST \$4,732,000. MAY 20 1982

OPERATION: SITP 2500 PSI. MI 3 FRAC TANKS & 1200 BBL 12.5 PPG CABR
WTR. RU KILL LINES.

OCHOA FEDERAL #1, LEA CO., NEW MEXICO
COMPLETION

AFE \$4,110,000. COST \$4,371,400. **CONFIDENTIAL**

OPERATION: DISPLACED MUD W/10# BRINE AT 15,228'. DRILLED TO 15290'.

OCHOA FEDERAL #1, LEA CO., NEW MEXICO MAY 03 1982

COMPLETION

AFE \$4,110,000. COST \$4,397,800.

OPERATION: DRILLED TO 16,255'. POH. RAN GR-CCL TO TOL. COULD NOT GET IN LINER. **CONFIDENTIAL**

OCHOA FEDERAL #1, LEA CO., NEW MEXICO
COMPLETION

AFE \$4,110,000. COST \$4,404,600. MAY 04 1982

OPERATION: RIH W/MILL. WORKED JUNK OFF TOL. RIH TO 16,255'. **CONFIDENTIAL**

OCHOA FEDERAL #1, LEA CO., NEW MEXICO

COMPLETION

AFE \$4,110,000. COST \$4,409,865. MAY 05 1982

OPERATION: POH. SCHL RAN GR-CCL TO 16,221' & LOGGING PANEL FAILED, POH. **CONFIDENTIAL**

OCHOA FEDERAL #1, LEA CO., NEW MEXICO
COMPLETION

AFE \$4,110,000. COST \$4,425,865. MAY 06 1982

OPERATION: RAN GR-CCL-CBL FROM 16,221' TO 12,290'. SIH W/PKR & TBG. **CONFIDENTIAL**

OCHOA FEDERAL #1, LEA CO., NEW MEXICO
COMPLETION

AFE \$4,110,000. COST \$4,438,900. MAY 07 1982

OPERATION: RIH TO 15,905'.

OCHOA FEDERAL #1, LEA CO., NEW MEXICO
COMPLETION

AFE \$4,110,000. COST \$4,456,900. MAY 10 1982

OPERATION: CIRC W/COMPLETION FLUID. SET PKR AT 15,462'. NU TREE. SWBD TEG TO 2500'. **CONFIDENTIAL**

RIH W/OVERSHOT, COULD NOT LATCH PLUG. RDMO WIRELINE.
OPERATIONS SUSPENDED.

OCHOA FEDERAL #1, Wildcat, Lea County, New Mexico

7/15 288 Hour SITP 6900#, CP 1100#.

OCHOA FEDERAL #1, Wildcat, Lea County, New Mexico
Intent: Complete in Morfrow 15,082-92; 15,096-100'

7/17 FINAL COMPLETION REPORT. FLOWING GAS WELL.

CCN 1PA 432

DC \$22,500.

AC \$906,600.

Completed \$4,644,000.

TC \$5,224,000

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

Form C-
Revised

Type Test ☒ Initial ☐ Annual ☐ Special				Test Date 3-18-83	
Company THE SUPERIOR OIL COMPANY			Connection TRANSWESTERN		
Pool Un-designated			Formation MORROW		Unit
Completion Date		Total Depth 16,335'	Plug Back TD 15,450'		Elevation
Farm or Lease Name Orchoa Federal					Well No. 1
Cgt. Size 7 5/8"	Wt. 42.7#	d 8.775	Set At 12650	Perforations: From 15,082 To 15,236'	Unit Sec. Twp. G 15 25S
Trb. Size 2 7/8"	Wt. 23.2	d 4.000	Set At 1225-16335	Perforations: From OPENENDED	County Lea
Type Well - Single - Noddenhead - G.C. or G.O. Multiple SINGLE				Packer Set At 14,500'	State New Mexico
Producing Thru TUBING		Reservoir Temp. °F 221° @ 15,159'	Mean Annual Temp. °F 60°		Baro. Press. - P _g 13.2
L 15,159	M 15,159'	G _g .5746	% CO ₂ .721	% N ₂ .338	% H ₂ S Prover
				Meter Run 2"	Tape Flange

FLOW DATA						TUBING DATA		CASING DATA		Dur. of Flow	
NO.	Prover Line Size	x	Orifice Size	Press. p.s.i.g.	Diff. h ₂ O	Temp. °F	Press. p.s.i.g.	Temp. °F	Press. p.s.i.g.		Temp. °F
SI							4849#		PKR		24
1.	2.00"	x	1.125"	687#	9"	87°	3450	60°			1
2.	2.00"	x	1.125"	687	13"	94	2400	60			1
3.	2.00	x	1.125	687	10"	88	1675	60			1
4.	2.00	x	1.125	687	2"	97	687	60			45
5.											

RATE OF FLOW CALCULATIONS							
NO.	Coefficient (24 Hour)	$\sqrt{h P_m}$	Pressure P _m	Flow Temp. Factor Ft.	Gravity Factor F _g	Super Compress. Factor, F _{sp}	Rate of Flow Q, Mc/d
1	6.393	79.38	700.2 #	.9750	1.319	1.042	680
2	6.393	95.41	700.2	.9688	1.139	1.042	812
3	6.393	83.68	700.2	.9741	1.139	1.042	716
4	6.393	37.42	700.2	.9662	1.139	1.042	318
5							

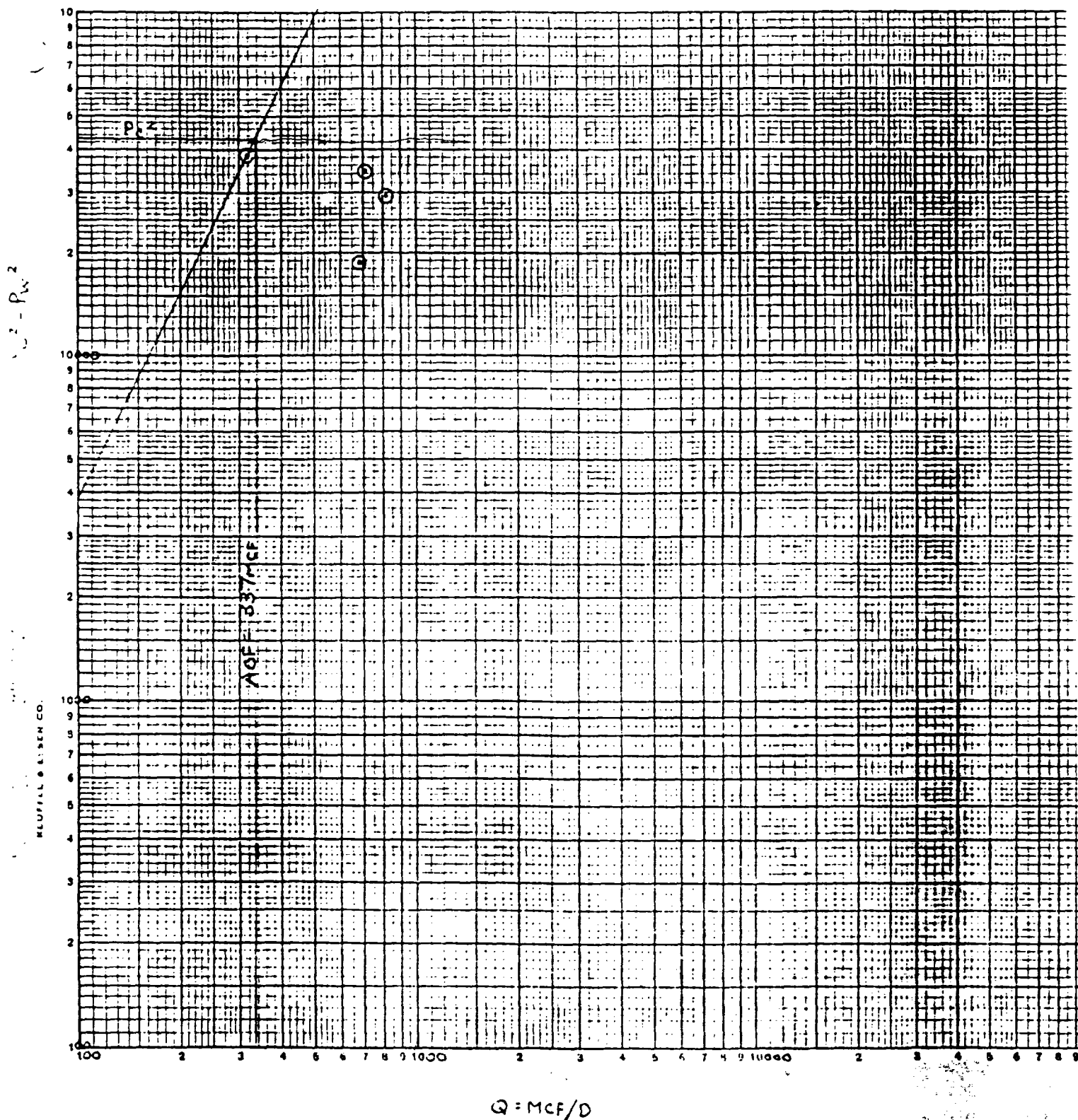
NO.	R ₁	Temp. °R	T ₁	Z	Gas Liquid Hydrocarbon Ratio <u>Dry Gas</u> Mc
1	1.036	547	1.576	.921	A.P.I. Gravity of Liquid Hydrocarbons
2	1.036	554	1.596	.921	Specific Gravity Separator Gas <u>.5746</u> XXXXXXXX
3	1.036	548	1.579	.921	Specific Gravity Flowing Fluid <u>XXXXXX</u>
4	1.036	557	1.605	.921	Critical Pressure <u>676</u> P.S.I.A. P.
5					Critical Temperature <u>347</u>

NO.	P ₁ ²	P _w	P ₂ ²	P ₂ ² - P _w ²	(1) $\frac{P_2^2}{P_2^2 - P_w^2} = 1.12$	(2) $\left[\frac{P_2^2}{P_2^2 - P_w^2} \right]^n = 1.06$
1	11902.5	4957	24572.6	18789.6	$AOI = 1.2 \left[\frac{P_2^2}{P_2^2 - P_w^2} \right]^n = 337$ <i>~ run after online</i>	
2	5760.0	3710	13764.1	29598.1		
3	2805.6	2967	8803.1	34559.1		
4	472.0	2167	4695.9	38666.3		
5						

Absolute Open Flow <u>337</u> Mc/d @ 15,025	Angle of Slope @ <u>63.5°</u>	Slope, n <u>.50</u>
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Remarks: No reasonable alignment of points. A 63.5° Angle was drawn thru low rate and .500 was used as N Slope and for all calculations.

Approved by Commission:	Conducted By: W.S. & T.B.	Calculated By: JDW	Checked By: JDW.
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UNITED DEPARTMENT OF GEOLOGICAL

WELL COMPLETION OR RECON

1. TYPE OF WELL: OIL WELL ☐ GAS WELL ☒

2. TYPE OF COMPLETION:

NEW WELL ☒ WORK OVER ☐ DEEP-EN ☐ PLUG BACK ☐

3. NAME OF OPERATOR

The Superior Oil Company

4. ADDRESS OF OPERATOR

P.O. Box 3901 Midland, Texas 79702

5. LOCATION OF WELL (Report location clearly and in accordance with any State or Federal requirements)

At surface 1980 FNL & 1980 FEL of Sec. 15

At top prod. interval reported below

At total depth same

cc: Central Files.
G. E. Tate
Ed Mondragon
(1) Ernie Hanson
(2) Clyde Bell
Land Dept.
Exploration
W. Hammel
G. Bannantine
B. Weeks
Jerry Paris
A. Fontenot
C. Stoecker

Midland Production
Midland Production
Midland Production
Andrews Subarea
Pecos Subarea
Midland Land
Midland Exploration
Midland Scouting
Regulatory Mgr. — The Woodlands
Sales Mgr. — The Woodlands
Controllers Off. — The Woodlands
Prop. Admin. 1st City Nat'l Bank
Joint Interest — The Woodlands

Form approved.
Secret Bureau No.

LEASE DESIGNATION AND

NW-25079

INDIAN, ALLOTTEE OR

NET AGREEMENT NAME

ARM OF LEASE NAME

Ochoa Federal

WELL NO.

1

10. FIELD AND POOL, OR WELL

Wildcat (Morrow)

11. SECTION, T. & M., OR BLOCK, OR AREA

Sec. 15, T25S.

12. COUNTY OF

Lea

13. STATE

14. PERMIT NO. NA DATE ISSUED Nov. 1982

15. DATE EXPLODED 11-20-81 16. DATE T.D. REACHED 4-4-82 17. DATE COMPL. (Ready to prod.) 7-12-82 18. ELEVATIONS (TD, RBS, ET, GL, ETC.)* GL: 3369 19. ELEV. CASE NA

20. TOTAL DEPTH, MD & TVD 16335 21. PLUG BACK T.D., MD & TVD 15499 22. IF MULTIPLE COMPL. HOW MANY? 23. INTERVALS DRILLED BY X 24. ROTARY TOOLS CABLE

25. PRODUCING INTERVAL(S), OF THIS COMPLETION—TOP, BOTTOM, NAME (MD AND TVD)* 15082-15236' Morrow 26. WAS DR. STARTED NO

27. TYPE ELECTRIC AND OTHER LOGS RUN CNL-FDC, DLL-LTD-GR-Sonic-BHC 28. WAS WELL NO

CASING RECORD (Report all strings set in well)					
CASING SIZE	WEIGHT, LB/FT	DEPTH SET, MD	HOLE SIZE	CEMENTING RECORD	AMOUNT
30"	-	40'	36"	Read Mix	None
20"	94#	610'	26"	1200 SXS CL C - add	None
13 3/8"	68#	4991'	17 1/2"	4860 SXS CL C	None
9 5/8"	47#	12607'	12 1/2"	900 SXS CL H - add	None

LINER RECORD				TUBING RECORD			
SIZE	T.D. (MD)	BOTTOM (MD)	SACKS CEMENT*	SCREEN (MD)	SIZE	DEPTH SET (MD)	PACKED
7 5/8"	12290	15427	960 SX H		2 7/8"	14505	1450
5"	15222	16334	240 SX H		1"	14496	1549

29. PERFORATION RECORD (Wirelogs, size and number)		30. ACID, SHOT, FRACTURE, CEMENT SQUEEZE, ET	
DEPTH INTERVAL (MD)	AMOUNT AND KIND OF MATERIAL	DEPTH INTERVAL (MD)	AMOUNT AND KIND OF MATERIAL
15594-15908	Perf: closed off by BP		
15534	FSG Blanking Plug		
15082-15236	Perf		

31. PRODUCTION							
DATE FIRST PRODUCTION	PRODUCTION METHOD (Flowing, gas lift, pumping—size and type of pump)	WELL STATUS (Producing, shut-in)					
7-3-82	Flowing	Producing					
DATE OF TEST	HOLES TESTED	CHOKER SIZE	PROD. FOR TEST PERIOD	OIL—BBL.	GAS—MCF.	WATER—BBL.	GAS-OIL R
3-18-83	3.75	7/64		0	102	0	Drv Ga
FLOW, TUBING PRESS.	CASING PRESSURE	CALCULATED 24-HOUR RATE	OIL—BBL.	GAS—MCF.	WATER—BBL.	OIL GRAVITY-API	
667	0		0	318	0		

32. DISPOSITION OF GAS (Sold, used for fuel, vented, etc.) Sold TEST WITNESSED BY D. S. Walker

33. LIST OF ATTACHMENTS C-122

34. I hereby certify that the foregoing and attached information is complete and correct as determined from all available records—
SIGNED G.E. Tate TITLE Div. Oper. Supt. DATE 7-28-83

U.S. OIL & GAS COMMISSION
P.O. BOX 1290
ROBBS, NEW MEXICO 88240

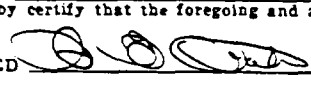
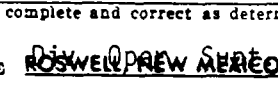
UNITED STATES
DEPARTMENT OF THE INTERIOR
GEOLOGICAL SURVEY

SUBMIT IN DUPLICATE*

(See other instructions on reverse side)

Form approved.
Budget Bureau No. 40-R305.5.

WELL COMPLETION OR RECOMPLETION REPORT AND LOG

1. TYPE OF WELL: OIL WELL ☐ GAS WELL ☒ DRY ☐ Other ☐		2. NAME OF OPERATOR The Superior Oil Company		3. ADDRESS OF OPERATOR P.O. Box 3901 Midland, Texas 79702		4. LOCATION OF WELL (Report location clearly and in accordance with any State requirements)* At surface 1980 FNL & 1980 FEL of Sec. 15 At top prod. interval reported below At total depth same		5. LEASE DESIGNATION AND SERIAL NO. NM-26079		6. IF INDIAN, ALLOTTEE OR TRIBE NAME		7. UNIT AGREEMENT NAME		8. FARM OR LEASE NAME Ochoa Federal		9. WELL NO. 1		10. FIELD AND POOL, OR WILDCAT Wildcat (Morrow)		11. SEC. T. R. M., OR BLOCK AND SURVEY OR AREA Sec.15, T25S, R33E		12. COUNTY OR PARISH Lea		13. STATE NM			
12. TYPE OF COMPLETION: NEW WELL ☒ WORK OVER ☐ DEEP-EN ☐ PLUG BACK ☐ DIFF. RESVR. ☐ Other ☐		14. PERMIT NO. NA		DATE ISSUED Nov. 1981		15. DATE SPUNDED 11-20-81		16. DATE T.D. REACHED 4-4-82		17. DATE COMPL. (Ready to prod.) 7-12-82		18. ELEVATIONS (DF. RNB, RT, GR, ETC.)* GL: 3369		19. ELEV. CASINGHEAD NA		20. TOTAL DEPTH, MD & TVD 16335		21. PLUG BACK T.D., MD & TVD 15499		22. IF MULTIPLE COMPL., HOW MANY*		23. INTERVALS DRILLED BY →		ROTARY TOOLS X		CABLE TOOLS	
24. PRODUCING INTERVAL(S), OF THIS COMPLETION—TOP, BOTTOM, NAME (MD AND TVD)* 15082-15236' Morrow														25. WAS DIRECTIONAL SURVEY MADE NO													
26. TYPE ELECTRIC AND OTHER LOGS RUN CNL-FDC, DLL-LTD-GR-Sonic-BHC														27. WAS WELL CORED NO													
28. CASING RECORD (Report all strings set in well)																											
CASING SIZE		WEIGHT, LB./FT.		DEPTH SET (MD)		HOLE SIZE		CEMENTING RECORD								AMOUNT PULLED											
30"		-		40'		36"		ReadiMix								None											
20"		94#		610'		26"		1200 sxs Cl C + add								None											
13 3/8"		68#		4991'		17 1/2"		4860 sxs Cl C								None											
9 5/8"		47#		12607'		12 1/4"		990 sxs Cl H + add								None											
29. LINER RECORD												30. TUBING RECORD															
SIZE		TOP (MD)		BOTTOM (MD)		SACKS CEMENT*		SCREEN (MD)		SIZE		DEPTH SET (MD)		PACKER SET (MD)													
7 5/8"		12290		15427		950 SX H				2 7/8"		14505		14500													
5"		15228		16334		240 SX H				1"		14496		15499													
31. PERFORATION RECORD (Interval, size and number) 15594-622 & 15898-908 closed off by BP 15082-106, 15115-124, 15222-236												32. ACID, SHOT, FRACTURE, CEMENT SQUEEZE, ETC.															
DEPTH INTERVAL (MD)						AMOUNT AND KIND OF MATERIAL USED																					
15594-15908						Perf; closed off by blanking																					
15534						FSG Blanking Plug																					
15082-15236						Perf																					
33. PRODUCTION																											
DATE FIRST PRODUCTION 7-3-82				PRODUCTION METHOD (Flowing, gas lift, pumping—size and type of pump) Flowing										WELL STATUS (Producing or shut-in) Producing													
DATE OF TEST 3-18-83		HOLES TESTED 3.75		CHUCK SIZE 7/64		PROD'N. FOR TEST PERIOD →		OIL—BBL. 0		GAS—MCF. 102		WATER—BBL. 0		GAS-OIL RATIO Dry Gas													
FLOW. TUBING PRESS. 687		CASING PRESSURE 0		CALCULATED 24-HOUR RATE →		OIL—BBL. 0		GAS—MCF. ACCEPTED FOR RECORD		WATER—BBL. 0		OIL GRAVITY-API (CORR.)															
34. DISPOSITION OF GAS (Sold, used for fuel, vented, etc.) Sold												TEST WITNESSED BY D. S. Walker															
35. LIST OF ATTACHMENTS C-122												36. I hereby certify that the foregoing and attached information is complete and correct as determined from all available records— SIGNED  G.E. Tate TITLE  DIXWELL DATE 7-28-83															

*(See Instructions and Spaces for Additional Data on Reverse Side)

INSTRUCTIONS

General: This form is designed for submitting a complete and correct well completion report and log on all types of lands and leases to either a Federal agency or a State agency, or both, pursuant to applicable Federal and/or State laws and regulations. Any necessary special instructions concerning the use of this form and the number of copies to be submitted, particularly with regard to local, area, or regional procedures and practices, either are shown below or will be issued by, or may be obtained from, the local Federal and/or State office. See instructions on Items 22 and 24, and 33, below regarding separate reports for separate completions.

If not filed prior to the time this summary record is submitted, copies of all currently available logs (drillers, geologists, sample and core analysis, all types electric, etc.), formation and pressure tests, and directional surveys, should be attached hereto, to the extent required by applicable Federal and/or State laws and regulations. All attachments should be listed on this form, see Item 35.

Item 4: If there are no applicable State requirements, locations on Federal or Indian land should be described in accordance with Federal requirements. Consult local State or Federal office for specific instructions.

Item 18: Indicate which elevation is used as reference (where not otherwise shown) for depth measurements given in other spaces on this form and in any attachments.

Items 22 and 24: If this well is completed for separate production from more than one interval zone (multiple completion), so state in Item 22 and in Item 24 show the producing interval, or intervals, top(s), bottom(s) and name(s) (if any) for only the interval reported in Item 33. Submit a separate report (page) on this form, adequately identified, for each additional interval to be separately produced, showing the additional data pertinent to such interval.

Item 27: "Sacks Cement": Attached supplemental records for this well should show the details of any multiple stage cementing and the location of the cementing tool.

Item 33: Submit a separate completion report on this form for each interval to be separately produced. (See instruction for Items 22 and 24 above.)

37. SUMMARY OF POROSITY ZONES: SHOW ALL IMPORTANT ZONES OF POROSITY AND CONTENT THEREOF; CORED INTERVALS; AND ALL DRILL-STEM TESTS, INCLUDING DEPTH INTERVAL, FLOW, CURRIUM USED, TIME TOOL OPEN, FLOWING, AND RECOVERY			38. GEOLOGIC MARKERS		
FORMATION	TOP	BOTTOM	NAME	MEAN DEPTH	TRUE VERT. DEPTH
Rustler	1110	5025	Rustler	1110	
Lamar	5025	5065	Lamar	5025	
Bell Canyon	5065	6340	Bell Canyon	5065	
Cherry Canyon	6340	7460	Cherry Canyon	6340	
Brushy Canyon	7460	9178	Brushy Canyon	7460	
Bone Springs	9178	12308	Bone Springs	9178	
Wolfcamp	12308	13762	Wolfcamp	12308	
Permo Penn	13762	14005	Permo Penn	13762	
Strawn	14005	14370	Strawn	14005	
Atoka	14370	15080	Atoka	14370	
Morrow	15080	16335 TD	Morrow	15080	

Oil Conservation
SANTA FE
AUG 11 1983

RECEIVED
AUG 9 1983
OFFICE

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

Form
Rev 1

Type Test ☒ Initial ☐ Annual ☐ Special		Test Date 3-18-83	
Company THE SUPERIOR OIL COMPANY		Connection TRANSWESTERN	
Pool Wildcat		Formation MORROW	
Completion Date 7-12-82	Total Depth 16,335'	Plug back TD 15499'	Elevation GL: 3369
Form or Lease Name Ochoa Federal			Well No. 1
Casing 7 5/8" Liner	wt. 42.7# 33.7#	d 8.775 8.765	Set At 12650 12290-15417
Perforations: From 15,082 To 15,236'			
Tool Joint Liner 2 7/8"	wt. 23.2# 6.5#	d 4.000 2.441	Set At 15235-16335 14,500
Perforations: From OPENENDED			
Type Well - Single - Blindhead - G.C. or G.O. Multiple SINGLE		Packer Set At 14,500'	County Lea
Producing Thru TUBING	Reservoir Temp. °F 221° @ 15,159'	Mean Annual Temp. °F 60°	Baro. Press. - P _a 13.2
State New Mexico			
L 15,159	H 15,159'	C _g .5746	% CO ₂ .721
		% N ₂ .338	% H ₂ S
Prover		Meter Run 2"	Type F1

FLOW DATA						TUBING DATA		CASING DATA		
NO.	Prover Line Size	X	Orifice Size	Press. p.s.i.g.	Diff. h ₂ O"	Temp. °F	Press. p.s.i.g.	Temp. °F	Press. p.s.i.g.	Temp. °F
SI							4849#		DVD	
1.	2.00"	x	1.125"	697#	9"	87°	3450	60°		
2.	2.00"	x	1.125"	697	13"	84	2400	60		
3.	2.00	x	1.125	687	10"	88	1675	60		
4.	2.00	x	1.125	687	2"	87	687	60		
5.										

RATE OF FLOW CALCULATIONS							
NO.	Coefficient (24 Hour)	$\sqrt{h \cdot P_m}$	Pressure P _m	Flow Temp. Factor Ft.	Gravity Factor F _g	Super. Compens. Factor, F _{sp}	Rate of Flow O. Mc
1	6.393	79.38	700 2 #	.9750	1.319	1.042	680
2	6.393	95.41	700 2	.9688	1.139	1.042	812
3	6.393	83.68	700 2	.9741	1.139	1.042	716
4	6.393	37.42	700 2	.9662	1.139	1.042	318
5							

NO.	P _r	Temp. °R	T _r	Z	Gas Liquid Hydrocarbon Ratio	Dry Gas
1	1.036	547	1.576	.921	A.P.I. Gravity of Liquid Hydrocarbons	
2	1.036	554	1.596	.921	Specific Gravity Separator Gas	.5746
3	1.036	548	1.570	.921	Specific Gravity Flowing Fluid	X X X X X
4	1.036	557	1.605	.921	Critical Pressure	676 P.S.I.A.
5					Critical Temperature	347 °R

NO.	P _r ²	P _w ²	P _w ²	P _r ² - P _w ²
1	11902.5	4957	24572.6	18789.6
2	5760.0	3710	13764.1	29598.1
3	2805.6	2967	8803.1	34559.1
4	472.0	2167	4695.9	38666.3
5				

(1) $\frac{P_r^2}{P_r^2 - P_w^2} = 1.12$

AOF = 0 $\left[\frac{P_r^2}{P_r^2 - P_w^2} \right]^n = 337$

(2) $\left[\frac{P_r^2}{P_r^2 - P_w^2} \right]^n = 1.0$

Absolute Open Flow	337	Mold # 15.025	Angle of Slope @	63.5°	Slope, n	5
--------------------	-----	---------------	------------------	-------	----------	---

Remarks: No reasonable alignment of points. A 63.5° Angle was drawn thru low rate and .500 was used as N Slope and for all calculations.

Approved By Commission:	Conducted By:	Calculated By:	Checked By:
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OIL CONSERVATION DIVISION

P. O. BOX 2088

SANTA FE, NEW MEXICO 87501

REQUEST FOR ALLOWABLE
AND
AUTHORIZATION TO TRANSPORT OIL AND NATURAL GAS

OPERATOR	
PRODUCTION OFFICE	
TRANSPORTER	
LAND OFFICE	
FILE	
U.S. B.	
DISTRIBUTION	
SANTA FE	
FILE	
OPERATOR	
PRODUCTION OFFICE	
TRANSPORTER	
LAND OFFICE	
FILE	
U.S. B.	
DISTRIBUTION	
SANTA FE	
FILE	

The Superior Oil Company

Address

P.O. Box 3901, Midland, Texas 79702

Reason(s) for filing (Check proper box)

New Well

☒

Recompletion

☐

Change in Ownership

☐

Change in Transporter of:

Oil

☐

Casinghead Gas

☐

Dry Gas

☐

Condensate

☐

Other (Please explain)

If change of ownership give name
and address of previous owner

DESCRIPTION OF WELL AND LEASE

Lease Name	Well No.	Pool Name	Kind of Lease	N.M. Case					
Ochoa Federal	1	Wildcat (Morrow)	State, Federal or Fee Federal	26079					
Location	Unit Letter	G	1980	Feet From The	North	Line and	1980	Feet From The	East
Line of Section	15	Township	25S	Range	33E	N.M.P.M.	Lea	Co.	

DESIGNATION OF TRANSPORTER OF OIL AND NATURAL GAS

Name of Authorized Transporter of Oil	or Condensate	Address (Give address to which approved copy of this form is to be sent)				
Southern Union Refining Company	☒	P.O. Box 980, Hobbs, NM 88240				
Name of Authorized Transporter of Casinghead Gas	or Dry Gas	Address (Give address to which approved copy of this form is to be sent)				
Transwestern Pipeline Company	☒	P.O. Box 2521, Houston, Texas 77001				
If well produces oil or liquids, give location of tanks.	Unit	Sec.	Twp.	Range.	Is gas actually connected?	when
	G	15	25S	33E	Yes	3-4-83

If this production is commingled with that from any other lease or pool, give commingling order number:

COMPLETION DATA

Designate Type of Completion - (X)	Oil well	Gas well	New well	Workover	Deepen	Plug Back	Same Well	Plt. R
			X					
Date Spudded	Date Compl. Ready to Prod.	Total Depth	P.B.T.D.					
11-20-82	7-12-82	16,335'	15,499'					
Elevations (UF, RAB, RT, GR, etc.)	Name of Producing Formation	Top Oil/Gas Pay	Tubing Depth					
3369' GR	Morrow	15,082	14,505					
Perforations			Depth Casing Shoe					
15682-15236			16,334'					

TUBING, CASING, AND CEMENTING RECORD			
HOLE SIZE	CASING & TUBING SIZE	DEPTH SET	SACKS CEMENT
26"	20"	610'	1200
17 1/2"	13 3/8"	4991'	4860
12 1/2"	9 5/8"	12,607'	990
Liner 8 1/2 & 6 1/2"	7 5/8 & 5"	15,547 & 16,332'	950 and 240

TEST DATA AND REQUEST FOR ALLOWABLE
OIL WELL (Test must be after recovery of total volume of load oil and must be equal to or exceed top c
able for this depth or be for full 24 hours)

Date First New Oil Run To Tanks	Date of Test	Producing Method (Flow, pump, gas lift, etc.)	
Length of Test	Tubing Pressure	Casing Pressure	Choke Size
Actual Prod. During Test	Oil-Bbls.	Water-Bbls.	Gas-MCF

GAS WELL

Actual Prod. Test-MCF/D	Length of Test	Bbls. Condensate/MCF	Gravity of Condensate
102	3.75 hrs	0	NA
Testing Method (pilot, back pr.)	Tubing Pressure (Shot-in)	Casing Pressure (Shot-in)	Choke Size
Back Pressure	687	0	7/64"

CERTIFICATE OF COMPLIANCE

I hereby certify that the rules and regulations of the Oil Conservation
Division have been complied with and that the information given
above is true and complete to the best of my knowledge and belief.

G. E. Tate

(Signature)

G. E. Tate

Division Operations Superintendent

(Title)

7-28-83

(Date)

OIL CONSERVATION DIVISION

APPROVED JUL 29 1983

BY

TITLE DISTRICT 1 SUPERVISOR

This form is to be filed in compliance with RULE 1104.

If this is a request for allowable for a newly drilled or deeper
well, this form must be accompanied by a tabulation of the deviat
tests taken on the well in accordance with RULE 111.All sections of this form must be filled out completely for all
able on new and recompleted wells.Fill out only Sections I, II, III, and VI for changes of ow
well name or number, or transporter, or other such change of conditSeparate Form C-104 must be filed for each pool in multi
compleated wells.

Petroleum Information									
DATE OF PLOT: 01/25/90 PAGE 1284									
GAS COND. YIELD: WATER									
SUBSAMPLING TEST									
TEST DATE	TEST TYPE	TEST WATER	TEST COND	TEST TEL	TEST LOG	TEST DATE	TEST TYPE	TEST WATER	TEST LOG
3/20/90					9002				
3/20/90					9002				
3/20/90					9002				

GAS PRODUCTION-MCF									
WATER/BBL									
CONDENSATE YIELD									
BBL/MMCF									
10000	1000	100	10	1	0.1	0.01	0.001	0.0001	0.00001
10000	1000	100	10	1	0.1	0.01	0.001	0.0001	0.00001
10000	1000	100	10	1	0.1	0.01	0.001	0.0001	0.00001

WELL DATA									
WELL NAME	WELL NO	WELL TYPE	WELL DATE	WELL DEPTH	WELL PROD	WELL INJ	WELL TEST	WELL LOG	WELL REMARKS
LEA UNDES MORROW (GAS)	015 0255 033E	PM	1983	1578	1578	1578	1578	1578	1578
LEA UNDES MORROW (GAS)	015 0255 033E	PM	1984	1578	1578	1578	1578	1578	1578
LEA UNDES MORROW (GAS)	015 0255 033E	PM	1985	1578	1578	1578	1578	1578	1578

WELL SUMMARY									
WELL NAME	WELL NO	WELL TYPE	WELL DATE	WELL DEPTH	WELL PROD	WELL INJ	WELL TEST	WELL LOG	WELL REMARKS
LEA UNDES MORROW (GAS)	015 0255 033E	PM	1983	1578	1578	1578	1578	1578	1578
LEA UNDES MORROW (GAS)	015 0255 033E	PM	1984	1578	1578	1578	1578	1578	1578
LEA UNDES MORROW (GAS)	015 0255 033E	PM	1985	1578	1578	1578	1578	1578	1578

TIGHT GAS SANDS
PERMEABILITY AND STABILIZED FLOW RATE
VACA DRAW / PITCHFORK RANCH AREA

DATE: 11/26/91

WELL NAME: RED HILLS UNIT 1

INTERVAL: 14840-64'

STIMULATED ? (Y/N): YES; 5000 GAL ACID

FLOW RATE (MCF/D): 2,300

FLOW TIME (HRS.): 12

FLOWING BHP (psia): 790

GAS GRAVITY (Yg): 0.580

TEMP. DEGREE F (T): 210

RESERVOIR PRESSURE (Pi): 7,419

GAS POROSITY: 0.030

WELLBORE RADIUS (Ft): 0.333

SKIN FACTOR: 0.0

PAY HEIGHT: 10

Z-FACTOR: 1.190

GAS COMPRESSIBILITY: 0.000074

GAS VISCOSITY (cp): 0.0280

SPACING ACRES: 320

FORMATION VOLUME FACTOR (Bg): 0.542

SPACING RADIUS (Ft): 2,106

ASSUMED K (md): 0.4881

RADIUS OF DRAINAGE (Ft): 500.6

CALCULATED K (md): 0.4881

STEADY TIME (HRS.): 535.43

STABILIZED FLOW (MCF/D): 1887.05

AOE PRESSURE (psia): 294

STABILIZED AOE (MCF/D): 2,028

TIGHT GAS SANDS

PERMEABILITY AND STABILIZED FLOW RATE

VACA DRAW / PITCHFORK RANCH AREA

DATE: 11/25/91

WELL NAME: RED HILLS UNIT 1

INTERVAL: 14840-64'

STIMULATED ? (Y/N): NO;48 BBL ACID

FLOW RATE (MCF/D): 1,360

FLOW TIME (HRS.): 5

FLOWING BHP (psia): 590

GAS GRAVITY (Yg): 0.580

TEMP. DEGREE F (T): 210

RESERVOIR PRESSURE (Pi): 7,419

GAS POROSITY: 0.030

WELLBORE RADIUS (Ft): 0.333

SKIN FACTOR: 0.0

PAY HEIGHT: 10

Z-FACTOR: 1.190

GAS COMPRESSIBILITY: 0.000074

GAS VISCOSITY (cp): 0.0280

SPACING ACRES: 320

FORMATION VOLUME FACTOR (Bg): 0.542

SPACING RADIUS (Ft): 2,106

ASSUMED K (md): 0.247

RADIUS OF DRAINAGE (Ft): 229.9

CALCULATED K (md): 0.2470

STEADY TIME (HRS.): 1,058.28

STABILIZED FLOW (MCF/D): 983.55

AOE PRESSURE (psia): 284

STABILIZED AOE (MCF/D): 1,028

UNITED STATES
DEPARTMENT OF THE INTERIOR
GEOLOGICAL SURVEY

SUBMIT IN DUPLICATE*

(See other in-
structions on
reverse side)Form approved,
Budget Bureau No. 42-R335.5.

5. LEASE DESIGNATION AND SERIAL NO.

NM 19859

6. IF INDIAN, ALLOTTEE OR TRIBE NAME

7. LEASE AGREEMENT NAME

8. FARM OR LEASE NAME

491a 4 Deep Com.

9. WELL NO.

1

10. FIELD AND POOL, OR WILDCAT

Wildcat Area

11. SEC., T., R., M., OR BLOCK AND SURVEY OR AREA

4, T-25-S, R-33-E

12. COUNTY OR PARISH

Lea

13. STATE

New Mexico

WELL COMPLETION OR RECOMPLETION REPORT AND LOG*

1a. TYPE OF WELL:

OIL WELL ☐GAS WELL ☒WATER ☐

Other

b. TYPE OF COMPLETION:

NEW WELL ☒WORK OVER ☐DEEP-EN ☐PLUG BACK ☐DIFF. REVER. ☐

Other

2. NAME OF OPERATOR

Oryx Energy Company

3. ADDRESS OF OPERATOR

P.O. Box 1861, Midland, Texas 79702

4. LOCATION OF WELL (Report location clearly and in accordance with any State requirements)*

At surface

At top prod. interval reported below

G, 1975' FNL & 1980' FEL

At total depth

14. PERMIT NO.

DATE ISSUED

15. DATE SPUDDED

5-6-90

16. DATE T.D. REACHED

7-12-90

17. DATE COMPL. (Ready to prod.)

7-18-90

18. ELEVATIONS (DF, REB, RT, GR, ETC.)*

3442.5' GR

19. ELEV. CASINGHEAD

20. TOTAL DEPTH, MD & TVD

15,700'

21. PLUG, BACK T.D., MD & TVD

15050'

22. IF MULTIPLE COMPL., HOW MANY*

23. INTERVALS DRILLED BY

ROTARY TOOLS

CABLE TOOLS

X

24. PRODUCING INTERVAL(S), OF THIS COMPLETION—TOP, BOTTOM, NAME (MD AND TVD)*

14, 276' - 14,334' Atoka

25. WAS DIRECTIONAL SURVEY MADE

No

26. TYPE ELECTRIC AND OTHER LOGS RUN

DLL/MSFL & CNL/LDT, DIL-Dual Spaced Neutron-Spectral Density

27. WAS WELL CORED

No

28. CASING RECORD (Report all strings set in well)

CASING SIZE	WEIGHT, LB./FT.	DEPTH SET (MD)	HOLE SIZE	CEMENTING RECORD	AMOUNT PULLED
13 3/8"	54.50#	650'	17 1/2"	630 SXS 'C'	123 SXS
9 5/8"	35#	5100'	12 1/4"	2215 SXS 'C'	692 SXS
7"	25#	13,085'	8 3/4"	1350 SXS 'H'	TOT 10,320' T.S.

29. LINER RECORD

SIZE	TOP (MD)	BOTTOM (MD)	BACKS CEMENT*	SCREEN (MD)	SIZE	DEPTH SET (MD)	PACKER SET (MD)
4 1/2"	12,868'	15,698'	655 SXS		2 7/8"	14,176'	14,176'

31. PERFORATION RECORD (Interval, size and number)

15,490'-15,594', 6JSPF, 456 Holes, Morrow
Blanking Plug @ 15,426' w/25 SXS CMT @
15,360'. Tagged Plug @ 15,050 PBDT

4,276'-14,334' 6JSPF, Atoka

32. ACID, SHOT, FRACTURE, CEMENT SQUEEZE, ETC.

DEPTH INTERVAL (MD)	AMOUNT AND KIND OF MATERIAL USED
15,490-15,594	330,000 SCF Nitrogen
14,276-14,334	210,000 SCF Nitrogen
	Acid Frac'd w/29,000 GLS WF-20
	± 30,000 GLS 20% HCL

33. PRODUCTION

DATE FIRST PRODUCTION		PRODUCTION METHOD (Flowing, gas lift, pumping—size and type of pump)				WELL STATUS (Producing or shut-in)	
8-20-90		Flowing				Producing	
DATE OF TEST	HOURS TESTED	CHOKS SIZE	PROD'N. FOR TEST PERIOD	OIL—BSL.	GAS—MCF.	WATER—BSL.	GAS-OIL RATIO
9-26-90		14/64"	→				
FLOW, TUBING PRESS.	CASING PRESSURE	CALCULATED 24-HOUR RATE	OIL—BSL.	GAS—MCF.	WATER—BSL.	OIL GRAVITY-API (CORR.)	
5245	0	→	46	11200	0	48.5	

34. DISPOSITION OF GAS (Sold, used for fuel, vented, etc.)

Sold-Transwestern Pipeline Co. Connected 9-18-90

TEST WITNESSED BY

35. LIST OF ATTACHMENTS

C-122 Pressure Curve, Inclination, C-104, 3160-5,

36. I hereby certify that the foregoing and attached information is complete and correct as determined from all available records

SIGNED

Maria L. Perez

TITLE

Proration Analyst

DATE

10-10-90

*(See Instructions and Spaces for Additional Data on Reverse Side)

CONFIDENTIAL

INSTRUCTIONS

General: This form is designed for submitting a complete and correct well completion report and log on all types of lands and leases to either a Federal agency or a State agency, or both, pursuant to applicable Federal and/or State laws and regulations. Any necessary special instructions concerning the use of this form and the number of copies to be submitted, particularly with regard to local, area, or regional procedures and practices, either are shown below or will be issued by, or may be obtained from, the local Federal and/or State office. See instructions on items 22 and 24, and 33, below regarding separate reports for separate completions.

If not filed prior to the time this summary record is submitted, copies of all currently available logs (drillers, geologists, sample and core analysis, all types electric, etc.), formation and pressure tests, and directional surveys, should be attached hereto, to the extent required by applicable Federal and/or State laws and regulations. All attachments should be listed on this form, see item 35.

Item 4: If there are no applicable State requirements, locations on Federal or Indian land should be described in accordance with Federal requirements. Consult local State or Federal office for specific instructions.

Item 18: Indicate which elevation is used as reference (where not otherwise shown) for depth measurements given in other spaces on this form and in any attachments.

Items 22 and 24: If this well is completed for separate production from more than one interval zone (multiple completion), so state in item 22, and in item 24 show the producing interval, or intervals, top(s), bottom(s) and name(s) (if any) for only the interval reported in item 33. Submit a separate report (page) on this form, adequately identified, for each additional interval to be separately produced, showing the additional data pertinent to such interval.

Item 29: "Sacks Cement": Attached supplemental records for this well should show the details of any multiple stage cementing and the location of the cementing tool.

Item 33: Submit a separate completion report on this form for each interval to be separately produced. (See instruction for items 22 and 24 above.)

37. SUMMARY OF POROUS ZONES: SHOW ALL IMPORTANT ZONES OF POROSITY AND CONTENTS THEREOF: CORED INTERVALS; AND ALL DRILL-STEM TESTS, INCLUDING DEPTH INTERVAL TESTED, CUSHION USED, TIME TOOL OPEN, FLOWING AND SHUT-IN PRESSURES, AND RECOVERIES				38. GEOLOGIC MARKERS		
FORMATION	TOP	BOTTOM	DESCRIPTION, CONTENTS, ETC.	NAME	MEAS. DEPTH	TRUS. VERT. DEPTH
Bell Canyon	5144	5150	Sandstone	Rustler	1142	
Brushy Canyon	8930	8970	Sandstone	Castille	3711	
Bone Spring	9220	9350	Limestone	Bell Canyon	5140	
Bone Spring	11650	11660	Limestone	Cherry Canyon	6140	
Atoka	14250	14340	Limestone	Brushy Canyon	7584	
Morrow	15220	15270	Limestone	Bone Spring	9175	
Morrow	15340	15360	Sandstone	Wolfcamp	12210	
				Strawn	14094	
				Atoka	14258	
				Atoka "C"	14588	
				Upper Morrow	14960	
				Middle Morrow	15230	

REC
SEP 24 1991
OCC
NOBBS OFFICE

NEW MEXICO OIL CONSERVATION COMMISSION
MISCELLANEOUS REPORTS ON WELLS

(Submit to appropriate District Office as per Commission Rule 1106)

COMPANY The Pure Oil Company - P. O. Box 671 - Midland, Texas
(Address)

LEASE Red Hills Unit WELL NO. 1 UNIT 0 S 32 T 25-S R 33-P
DATE WORK PERFORMED 11-14-64 POOL Undesignated
1-28-65

This is a Report of: (Check appropriate block) ☐ Results of Test of Casing Shut-off

☐ Beginning Drilling Operations

☐ Remedial Work

☐ Plugging

☒ Other Well Completion

Detailed account of work done, nature and quantity of materials used and results obtained. Drilled DM tool at 13,405', milled retainer at 14,812', circulated hole clean to 14,869', PRTD. Set a Baker Model "D" Packer at 13,740'. Perforated Wolfcamp zone 13,440'-46' (24 Shots), 13,469' (20 Shots), 13,490'-98' (32 Shots), 13,504'-12' (32 Shots), 13,622'-43' (80 Shots), 13,659'-6' (32 Shots), total 56' with 220 shots. Ran dual string tubing; Wolfcamp string, 2-7/8" set at 12,112', Penn. string set at 13,805' (see attachment for details). Acidized Wolfcamp with 24 bbl (1008 gal.) mud acid. Filled casing-tubing annulus with anti-freeze. Released drilling rig 12-18-64. Shut in pressures after 97 hours: Wolfcamp, 8891 psi at surface, at 12,000', 10855 psi at 13,554' extrapolated to 11,101 psi. Shut in pressures after 98 hours, Penn zone: Surface 5,794 psi, at 12,000' 7,108 psi, at 14,663' extrapolated 7,385 psi. Well shut in, installing his pressure separation equipment. 12-26-64 all equipment connected and tested, and well connected to El Paso Natural Gas Co. sales line. 12-26-64 thru 1-4-65 flowing well at various rate to test and adjust surface equipment. Started potential test at 1:00 PM 1-4-65.

EXTRA
1-28-65

FILL IN BELOW FOR REMEDIAL WORK REPORTS ONLY

Original Well Data:

DF Elev. _____ TD _____ PBD _____ Prod. Int. _____ Compl Date _____
Tbng. Dia _____ Tbng Depth _____ Oil String Dia _____ Oil String Depth _____
Perf Interval (s) _____
Open Hole Interval _____ Producing Formation (s) _____

RESULTS OF WORKOVER:

BEFORE AFTER

Date of Test _____
Oil Production, bbls. per day _____
Gas Production, Mcf per day _____
Water Production, bbls. per day _____
Gas-Oil Ratio, cu. ft. per bbl. _____
Gas Well Potential, Mcf per day _____
Witnessed by _____

(Company)

OIL CONSERVATION COMMISSION

I hereby certify that the information given above is true and complete to the best of my knowledge.

Name _____
Title _____
Date _____

Name D. Wilkinson
Position District Office Manager
Company The Pure Oil Company

17,590' PBD - Drilled out SVDC retainer and cement 14,716' to 14,815', circulated to 14,875'. Drilled out SVDC retainer and cement 14,875' to 14,976', circulated to 15,117'. Drilled out SVDC retainer and cement 15,117' to 15,196', circulated to 15,904'. Drilled cement 15,904' to 16,150'. Ran cement bond log 12,000' to 16,000'. Set DC bridge plug at 15,660', set RTTS tool at 15,392'. Perforated Penn one shot each at 15,442', 15,447', 15,458', 15,468', 15,486', 15,490', and 15,530'. Pumped in water and pressured up, no results, tested and found RTTS tool leaking. Re-perforated Penn one shot each at 15,442', 15,447', 15,458', 15,468', 15,486', 15,490', and 15,530'. Ran and set RTTS tool at 15,426', spotted acid, water and mud in tubi pressured up, had leak, pulled out of hole. Perforated Penn one shot each at 15,034', 15,041', 15,060', 15,081', 15,124', 15,126', and 15,138'. Ran and set RTTS tool at 15,003'. Pumped 26 barrels BD acid. Flowed back 22 bbls. water and died, pumped in 20 bbls. water, flowed back 8 bbls. water and died. Squeezed perforations 15,034' to 15,138' with 200 sacks cement. Perforated 2 shots per foot at 14,840', 14,844', 14,852', 14,856', and 14,864'. Acidized with 48 bbls. acid, flowed to pit 18-1/2 hours, turned through separator 2-1/2 hours, 32/64" choke, rate of 1.36 MMCFD. Flowed 4-1/2 hours, 5/8" choke, 1.36 MMCFD, TP 350# to 420#. Acidized with 5,000 gallons 15% HCL acid. Flowed to pit to clean up, 1/2 hour through separator, maximum 2.2 MMCFD. 12 hours flowed through separator, 1/2" choke, rate of 2.3 MMCFD, 25 barrels water per MMCF, surface pressure 600#. Killed well. Set 6-5/8" DC bridge plug at 14,812'. Perforated Penn zone 1 shot per foot 14,607'-11', 14,618'-32', 14,643'-52', 14,658'-62', 14,706'-12', 14,716'-21', 14,737'-42', 14,748'-52', 14,758'-64', 14,772'-76', 14,784'-88', total 65 shots. Opened well to pit to clean up, pressure 2400# to 2500#. 18 hours flowed through separator, 16/64" choke, rate of 7.65 MMCFD, estimated 6 bbls. liquid hydrocarbons per MMCF, well head pressure 5400#. 6 hours flowed, 18/64" choke, rate of 10.7 MMCFD, 11 barrels condensate per MMCF. Killed well, set bridge plug at 14,550'. Perforated Penn zone 14,350'-58', 14,400'-08', 14,416'-32', 14,438'-52', 14,462'-70', 14,476'-84', 14,488'-94'. Set packer at 14,325'. Acidized with 2,000 gallons BD acid. Flowed back acid and load water and died. Squeezed perforations 14,350' to 14,494' with 200 sacks cement. Perforated 13,596'-97' with 4 shots. Flowed back mud. Squeezed perforations with 200 sacks cement. 8 hours WOC. Squeezed perforations 13,596'-97' with 200 sacks cement. Tested perforations with 2000#, held 30 minutes, OK. Perforated 6-5/8" casing 13,659'-67' and 13,622'-43' one shot per foot. Set SVDC tool at 13,560'. 24 hours flowed to pit to clean up, 6-3/4 hours flowed through separator, 18/64" choke, rate of 9.6 MMCFD, 24.9 barrels condensate per MMCF, FTP 4750#. 4-1/2 hours flowed, 28/64" choke, rate of 12.1 MMCFD, 28 barrels condensate per MMCF, FTP 2400#. Checked SVDC tool with 2000#, held 40 minutes OK. Perforated 6-5/8" casing in Wolfcamp zone, 1 shot per foot 13,440'-46', 13,469'-74', 13,490'-98', 13,504'-12', total 27 shots. Set RTTS tool at 13,400'. Flowed well to pit to clean up, 12-1/2 hours flowed through separator, 18/64" choke, rate of 9.6 MMCFD, 30 barrels condensate per MMCF, pressure 5125#. 12-3/4 hours flowed, 20/64" choke, rate of 12.3 MMCFD, pressure 3125#. Killed well, set DM retainer at 13,420', squeezed Wolfcamp perforations 13,440' to 13,512' with 200 sacks cement. After WOC, ran in hole, drilled retainer, cement, and circulated to 13,695', mud gas cut. Set DM retainer at 13,405' squeezed Lower Wolfcamp perforations with 200 sacks cement. 23 hours WOC. Drilling on DM tool at 13,405'.

TIGHT GAS SANDS

PERMEABILITY AND STABILIZED FLOW RATE

VACA DRAW / PITCHFORK RANCH AREA

DATE: 11/22/91

WELL NAME: VACA DRAW UNIT 1

INTERVAL: 14954-15716'

STIMULATED ? (Y/N): NO; NOT REPORTED

FLOW RATE (MCF/D): 400

FLOW TIME (HRS.): 48

FLOWING BHP (psia): 214

GAS GRAVITY (γ_g): 0.580

TEMP. DEGREE F (T): 221

RESERVOIR PRESSURE (Pi): 8,500

GAS POROSITY: 0.060

WELLBORE RADIUS (Ft): 0.250

SKIN FACTOR: 0.0

PAY HEIGHT: 62

Z-FACTOR: 1.275

GAS COMPRESSIBILITY: 0.00005

GAS VISCOSITY (cp): 0.0300

SPACING ACRES: 320

FORMATION VOLUME FACTOR (Bg): 0.518

SPACING RADIUS (Ft): 2,106

ASSUMED K (md): 0.0092

RADIUS OF DRAINAGE (Ft): 114.3

CALCULATED K (md): 0.0092

STEADY TIME (HRS.): 41,208.73

STABILIZED FLOW (MCF/D): 259.38

AO F PRESSURE (psia): 164

STABILIZED AO F (MCF/D): 261

**TIGHT GAS SANDS
PERMEABILITY AND STABILIZED FLOW RATE
VACA DRAW / PITCHFORK RANCH AREA**

DATE: 11/22/91

WELL NAME: VACA DRAW UNIT 1

INTERVAL: 14954-15716'

STIMULATED ? (Y/N): YES; 6000 GAL ACID

FLOW RATE (MCF/D): 90

FLOW TIME (HRS.): 144

FLOWING BHP (psia): 357

GAS GRAVITY (Yg): 0.580

TEMP. DEGREE F (T): 221

RESERVOIR PRESSURE (Pi): 8,500

GAS POROSITY: 0.060

WELLBORE RADIUS (Ft): 0.250

SKIN FACTOR: 0.0

PAY HEIGHT: 62

Z-FACTOR: 1.275

GAS COMPRESSIBILITY: 0.00005

GAS VISCOSITY (cp): 0.0300

SPACING ACRES: 320

FORMATION VOLUME FACTOR (Bg): 0.518

SPACING RADIUS (Ft): 2,106

ASSUMED K (md): 0.002

RADIUS OF DRAINAGE (Ft): 92.3

CALCULATED K (md): 0.0020

STEADY TIME (HRS.): 187,442.40

STABILIZED FLOW (MCF/D): 56.04

AOE PRESSURE (psia): 164

STABILIZED AOE (MCF/D): 57

TIGHT GAS SANDS

PERMEABILITY AND STABILIZED FLOW RATE

VACA DRAW / PITCHFORK RANCH AREA

DATE: 11/22/91

WELL NAME: VACA DRAW UNIT 1

INTERVAL: 15291-322'

STIMULATED ? (Y/N): NO; 240 BBL H2O

FLOW RATE (MCF/D): 30

FLOW TIME (HRS.): 24

FLOWING BHP (psia): 200

GAS GRAVITY (Yg): 0.580

TEMP. DEGREE F (T): 221

RESERVOIR PRESSURE (Pi): 8,500

GAS POROSITY: 0.040

WELLBORE RADIUS (Ft): 0.250

SKIN FACTOR: 0.0

PAY HEIGHT: 36

Z-FACTOR: 1.275

GAS COMPRESSIBILITY: 0.00005

GAS VISCOSITY (cp): 0.0300

SPACING ACRES: 320

FORMATION VOLUME FACTOR (Bg): 0.518

SPACING RADIUS (Ft): 2,106

ASSUMED K (md): 0.0009

RADIUS OF DRAINAGE (Ft): 31.0

CALCULATED K (md): 0.0009

STEADY TIME (HRS.): 281,441.13

STABILIZED FLOW (MCF/D): 14.73

AOF PRESSURE (psia): 64

STABILIZED AOF (MCF/D): 15

VACA DRAW UNIT (LEA COUNTY)

March 21, 1972: TD 17,609' - PBTD 17,599' - ran Gamma Ray Neutron 17,599 to 13,000 - perfed 17,527 - 533, 538, 546, 550, 555, 559, 565, 569, 579. Now picking up tbq. testing to 8000 psi internally 271 joints in hole. *DEVONIAN*

March 22, 1972: Finished running tbq. - total 498 joints plus 3 Pup joints - spaced out and landed tbq. w/ Seal Assembly in P3R @ 16,781.

March 26, 1972: gas vol. est 100 MCF per day - rec. 1/2 to 1 bbls. water per hr. - testing natural.

March 27, 1972: acidized w/ 5000 gal 15% Hydrochloric acid.

March 29, 1972: est. gas vol. 1 Mil. cu. ft. per day - rec. 5 bbls. water per hr. - stab. flow. Re-perfed 16,579, 563, 565 559.

March 31, 1972: perfed hyper jet @ 17,538, 533, & 527 - treated w/ 30,000 gal 15% RA 5 HCL acid.

April 1, 1972: Gas vol. est 750 MCFPD - water load is rec. plus 2054 bbls.

April 3, 1972: Set Halliburton SV cmt. retainer in 7 3/4" OD csg. @ 16,780'. Prep to GIH to plug back.

April 4, 1972: cmt. thru SV retainer @ 16,780 w/ 50 sx. - pulled out of retainer, cmt. on top of retainer w/ 30 sx. - set Baker Model "D" Packer @ 15,250'. TD 17,609' - P.B.T.D. 16,705'.

April 5, 1972: Landed 2 7/8" in packer @ 15,250'.

April 6, 1972: Perfed 15,291, 293, 298, 301, 303, 308, 310, 312, 314, 316, 318, 320, 322, total of 26 holes.

April 7, 1972: Pumped in 240 bbls. 2% Potassium Chloride water.

April 11, 1972: est. gas vol. 30 MCFD - water load rec. plus 23 bbls. - My-T-Frac treatment, pumped 200 bbls. slick water pad w/ 2% Potassium Chloride & 165 bbls. jelled frac fluid. Gas vol. 0.5 to 1.5 MMCFPD - rec. 3 bbls. water per hr. - released rig @ 4:00 a.m. April 11, 1972 & contd. testing.

July 1, 1972: Swabbed 10 hrs. - lowered fluid level 4500' to 3000' swabbed approx. 1 bbl. per hr. fluid - very small show of gas.

July 8, 1972: Finished GIH w/ mill - cut over Model D packer @ 15,250'

July 9, 1972: pushed Model D Packer to 16,000'.

VACA DRAW UNIT

July 14, 1972: Re-ran tbg. - set packer @ 14,902' - retrieved tbg. plug - tbg. dry perf. w/ Bann Tool Co. - tbg. conveyed guns w/ deep penetrating .40 holes w/ 4 shots per ft. @ 14,954' to 14,970', 15,183', 193, 294, 330, 512, 516, 520, 530, 534, 571, 710, & 716 - had good show of gas - decr. to slight show gas by 8 p.m. checked fluid level @ 11,000' - left well OTP.

August 3, 1972: Pulled tbg - retrieved 16' of perf gun - top 6' fired - bottom 10' did not fire - bottom of gun ruptured & split remainder of perf gun in hole.

August 4, 1972: Washed hole clean w/ fresh water to top of perf guns @ 15,425' - reversed out very heavy mud w/ good show of gas could not push guns down w/ 25,000# wt.

August 9, 1972: OTP over night on 3/4" choke - making est. 200 to 400 MCF - perfed 14,960' to 970, 15,183, 193, 294, 330 w/ Van Tool Co. 1 & 11/16 Ceramic jet tbg. gun - 40.24" holes per ft. no incr. in gas - making est. 200 to 400 MCF & slugging some fluid - left OTP over night.

October 24, 1972: OTP on 1/4" choke 11 days - TP 0 - CP 700 Well making very slight show of gas - very little fluid - C.I. to press up @ 6 p.m. 10/23/72.