

Jason Kellahin
W. Thomas Kellahin
Karen Aubrey

KELLAHIN and KELLAHIN
Attorneys at Law
El Patio - 117 North Guadalupe
Post Office Box 2265
Santa Fe, New Mexico 87504-2265

Telephone 982-4285
Area Code 505

January 23, 1985

RECEIVED
JAN 23 1985
OIL CONSERVATION DIVISION

Mr. Richard L. Stamets
Oil Conservation Division
P. O. Box 2088
Santa Fe, New Mexico 87501

"Hand Delivered"

Re: Texas American Oil Corporation
Waterflood application
Proposed Etz State Grayburg Waterflood
Section 16, T17S, R30E
Eddy County, New Mexico

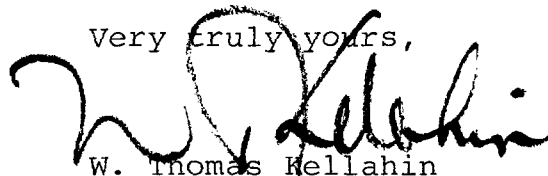
Case 8481

Dear Mr. Stamets:

In accordance with my conversation with Mr. Michael Stogner of the Division yesterday, he has placed the referenced application on the Examiner docket for hearing on February 13, 1985.

Please find enclosed the original and one copy of the Division Form C-108 with attachments for this case. A copy of the Form C-108 has been sent certified mail return receipt to all the parties, as required by Division rules.

Very truly yours,


W. Thomas Kellahin

WTK:ca
Enc.

cc: James Draper
Texas American Oil Corporation
300 West Wall, Suite 400
Midland, Texas 79701

All parties - Mailing List

KELLAHIN and KELLAHIN

Texas American Oil Corporation
Waterflood Application
Proposed Etz State Grayburg Waterflood

Mr. Les A. Clements
Oil Conservation Division
P. O. Drawer DD
Artesia, New Mexico 88210

Mr. Ray Graham
Office of Land Commission
P. O. Box 1148
Santa Fe, New Mexico 87501

Arco Oil & Gas
Attn: Allen Harvey
P. O. Box 1610
Midland, Texas 79702

LaRue & Muncy
Attn: Martin Muncy
P. O. Box 196
Artesia, New Mexico 88210

BelNorth Petroleum Corporation
Attn: Glenda Howard
One Petroleum Center
Building 6, Suite 201
3300 North "A"
Midland, Texas 79705

Kennedy Oil Company
ATTN: Robert B. Kennedy
P. O. Box 151
Artesia, New Mexico 88210

Texaco, Inc.
500 N. Loraine
Midland, Texas 79701

Damson Oil Corporation
731 W. Wadley
Midland, TEXAS 79707

Phillips Oil Company
500 W. Texas
Midland, Texas 79701

Getty Oil Company
550 W. Texas
Midland, Texas 79701

Gulf Oil Company
15 Smith Road
Midland, Texas 79707

CASE 8481: Application of Texas American Oil Corporation for a waterflood project, Eddy County, New Mexico. Applicant, in the above-styled cause, seeks authority to institute a waterflood project by the injection of water into the Grayburg and San Andres formations through four certain wells on its Etz State, Etz "B" State, Etz "C" State, and Randel State Leases located in portions of Section 16, Township 17 South, Range 30 East, Grayburg-Jackson Pool.

~~Catonasch~~
(May 1982) ~~RE.~~ - Tom Fullenham
Sgt.

James Drapper

- B.S. Ch. E. VT Boston
- T Am Oil 2 1/2 yrs. ago
- 1500 psi max. pressure
- will be willing to run 3 RT on their inj. well
- no exp. submitted to show before here ✓

- pressure on Am

Order Issued _____
Continued To _____
Dismissed _____
Order Finalized _____

Jason Kellahin
W. Thomas Kellahin
Karen Aubrey

KELLAHIN and KELLAHIN
Attorneys at Law
El Patio - 117 North Guadalupe
Post Office Box 2265
Santa Fe, New Mexico 87504-2265

Telephone 982-4285
Area Code 505

February 22, 1985

Mr. Michael E. Stogner
Oil Conservation Division
P. O. Box 2088
Santa Fe, New Mexico 87501

"Hand Delivered"

Re: Texas American Oil Corporation
OCD Case 8481

Dear Mr. Stogner:

On February 13, 1985, you heard the referenced application of Texas American Oil Corporation, for approval of a waterflood project adjacent to a project operated by Anadarko Production Company, which was approved for surface injection pressure in excess of the .2 psi per foot of depth guideline.

You requested two items from Mr. James B. Draper, Texas American Oil Corporation's expert witness: (1) a calculation of the cement tops for the wells within the area of review. That list is enclosed. (2) the step rate tests available from the Anadarko waterflood. That tabulation is enclosed.

The lowest of the three fracture pressure shown on the Anadarko step rate tests is 1470 psi. On behalf of Texas American Oil Corporation, we would request that it be authorized to inject water up to a surface pressure of 1470 psi.

Should you desire that I prepare a draft order, please let me know.

Very truly yours,



W. Thomas Kellahin

WTK:ca
Enc.

cc: James B. Draper
Texas American Oil Corporation
300 West Wall, Suite 400
Midland, Texas 79701

ATTACHMENT "A"

WELL NAME, NUMBER, OPERATOR	LOCATION UNIT, SEC., TWP., RANGE	TYPE	DATE		DEPTH		CALCULATED TOPS OF CEMENT
			SPUDDED	COMPLETED	TD	PBTD	
Griessler "B" #3 Flynn, et al	330' FSL, 330' FEL Unit P, Sec. 8, T17S, R30E	P&A	10-15-41	1-28-42	3267'	-	See plugging detail sheet
Loco Hills "B" Federal #8 Anadarko Production Co.	1980' FSL, 1980' FWL, Unit K, Sec. 9, T17S, R30E	Oil Producer	7-10-72	7-28-72	2869'	2856'	(TOC - surface)
Federal-Gulf #1 F. Welch	330' FSL, 330' FWL Unit M, Sec. 9, T17S, R30E	P&A	5-16-59 P&A on completion	7-13-59	3475'	-	See plugging detail sheet
Holder "CB" Federal NCT-B #3 Gulf Oil Corp.	660' FSL, 660' FWL Unit M, Sec. 9, T17S, R30E	P&A	8-30-72 Plugged in 1978	9-28-72			See plugging detail sheet
Loco Hills "B" Federal #7 Anadarko Production Co.	660' FSL, 1980' FWL Unit N, Sec. 9, T17S, R30E	Oil Producer	7-03-72 Well converted to Water Injection 1-25-83	7-16-72	2859'	2848'	(TOC - surface)

WELL NAME, NUMBER, OPERATOR	LOCATION		TYPE	DATE		DEPTH		CALCULATED TOPS OF CEMENT
	UNIT, SEC., TWP., RANGE			SPUDED	COMPLETED	TD	PBTD	
Loco Hills "B" Federal #6 Anadarko Production Co.	660' FSL, 1980' FEL Unit 0, Sec. 9, T17S, R30E		Oil Producer	6-27-72	7-08-72	2869'	2866'	(TOC - surface)

WELL NAME, NUMBER, OPERATOR	LOCATION UNIT, SEC., TWP., RANGE	TYPE	DATE		DEPTH		CALCULATED TOPS OF CEMENT
			SPUDED	COMPLETED	TD	P8TD	
State "BE" #2 Getty Oil Co.	660' FNL, 660' FEL Unit A, Sec. 16, T17S, R30E	Oil Producer	11-28-72	12-24-72	3950'	3948'	(TOC - surface)
State "BE" #1 Getty Oil Co.	990' FNL, 2310 FEL Unit B, Sec. 16, T17S, R30E	Oil Producer	8-25-72	9-25-72	3950'	3865'	(TOC-400')
Randel State #3 Texas American	660' FNL, 1980' FWL Unit C, Sec. 16, T17S, R30E	Oil Producer Proposed W1W	6-04-72	7-11-72	3947'	3914'	(TOC - 1313')
Randal State #4 Texas American	660' FNL, 660' FWL Unit D, Sec. 16, T17S, R30E	Oil Producer	6-24-72	7-20-72	3950'	3915'	(TOC - 487')
Etz C State #17 Texas American	1880' FNL, 660' FWL Unit E, Sec. 16, T17S, R30E	Oil Producer Proposed W1W	6-14-72	7-15-72	3950'	3891'	(TOC - 1316')

WELL NAME, NUMBER, OPERATOR	LOCATION UNIT, SEC., TWP., RANGE	TYPE	DATE		DEPTH		CALCULATED TOPS OF CEMENT
			SPUDED	COMPLETED	TD	P8TD	
Etz C State #19 Texas American	1980' FNL, 1980' FWL Unit F, Sec. 16, T17S, R30E	Oil Producer	8-22-63	12-31-63	11,300'	3915'	(TOC - 1020' TS)
Etz B State #18 Texas American	1980' FNL, 1980' FEL Unit G, Sec. 16, T17S, R30E	Oil Producer Proposed WTW	7-03-72	7-26-72	4050'	4019'	(TOC - 584')
Randel State #5 Texas American	1980' FNL, 660' FEL Unit H, Sec. 16, T17S, R30E	Oil Producer	7-14-72	8-24-72	4050'	4012'	(TOC - 583')
Etz State #5 Texas American	2310' FSL, 990' FEL Unit I, Sec. 16, T17S, R30E	Oil Producer	8-06-38	1/15/39	3413'	2135'	(TOC 1455')

WELL NAME, NUMBER, OPERATOR	LOCATION UNIT, SEC., TWP., RANGE	TYPE	DATE		DEPTH		CALCULATED TOPS OF CEMENT
			SPUDED	COMPLETED	TD	PBTD	
Etz State #26 Texas American	1625' FSL, 2630' FWL Unit K, Sec. 16, T17S, R30E	011 Producer	9-27-75	9-01-76	2863'	2830'	(TOC - 883')
Etz A State #16 Texas American	1650' FSL, 660' FWL Unit L, Sec. 16, T17S, R30E	011 Producer	12-12-71	1-13-72	4000'	-	(TOC - 1227')
Etz A State #2 Texas American	1980' FSL, 660' FWL Unit L, Sec. 16, T17S, R30E	Water Inject. Well	2-09-36	7-11-36	3270'	2226'	(TOC - 706')
McCullough State #1 Larue & B.N. Muncy, Jr.	330' FSL, 990' FWL Unit M, Sec. 16, T17S, R30E	011 Producer			3502'	3502'	(TOC - 1662')
Etz State #1 Texas American	660' FSL, 1980' FWL Unit N, Sec. 16, T17S, R30E	011 Producer	9-07-35	12-15-35	3320'	3214'	(TOC - 1700')
Etz State #23 Texas American	990' FSL, 1650' FEL Unit N, Sec. 16, T17S, R30E	011 Producer	11-14-72	12-08-72	4050'	4019'	(TOC - 585')

WELL NAME, NUMBER, OPERATOR	LOCATION		TYPE	DATE		DEPTH		CALCULATED TOPS OF CEMENT
	UNIT, SEC., TWP., RANGE			SPUDED	COMPLETED	TD	PBTD	
Etz State #20 Texas American	980' FSL, 660' FEL Unit I, Sec. 16, T17S, R30E	Oil Producer Proposed WIW		7-24-72	8-24-72	4050'	3947'	(TOC - 586')
Etz State #5 Etz Oil Co.	1350' FSL, 330' FEL Unit I, Sec. 16, T17S, R30E	P&A		8-06-38	1-15-39	3300'	-	See plugging detail sheet
Etz J State #15 Texas American	1650' FSL, 1650' FEL Unit J, Sec. 16, T17S, R30E	Oil Producer		2-23-71	4-10-71	4010'	4010'	(TOC - 1375')
Etz State #3 Texas American	3630' FNL, 3300' FEL Unit K, Sec. 16, T17S, R30E	Oil Producer Proposed WIW		8-08-36	11-20-36	3253'	-	(TOC - 2168')
Etz State #24 Texas American	2310' FSL, 2310 FWL Unit K, Sec. 16, T17S, R30E	Oil Producer		11-24-72	12-21-72	4050'	4020'	TOC @ 1530 (AL)

WELL NAME, NUMBER, OPERATOR	LOCATION UNIT, SEC., TWP., RANGE	TYPE	DATE		TD	DEPTH		CALCULATED TOPS OF CEMENT
			SPUDDED	COMPLETED		PBT	PBT D	
Etz J State #1 Texas American	330' FSL, 1980' FEL Unit N, Sec. 16, T17S, R30E	Oil Producer Proposed WIM	8-15-37	10-14-37	3275'	-		(TOC - 1874')
Etz J State #22 Texas American	990' FSL, 2310' FEL Unit O, Sec. 16, T17S, R30E	Oil Producer	11-04-72	11-26-72	4050'	4008'		(TOC - 587')
Etz J State #25 Texas American	330' FSL, 1650' FEL Unit O, Sec. 16, T17S, R30E	Oil Producer	7-28-74	11-18-74	3000'	2982'		(TOC - 1025')

WELL NAME, NUMBER, OPERATOR	LOCATION UNIT, SEC., TWP., RANGE	TYPE	DATE		TD	DEPTH		CALCULATED TOPS OF CEMENT
			SPUDED	COMPLETED		PBTD		
Collier Federal #1 Texas American	660' FNL, 660' FEL Unit A, Sec. 17, T17S, R30E	Oil Producer Proposed WIM	12-21-71	1-26-72	3320'	3300'	(TOC - 1234')	
Arco Federal #3 Phillips	1980' FNL, 1980' FEL Unit G, Sec. 17, T17S, R30E	Oil Producer	5-01-72	6-11-72	3697'	3690'	(TOC - 1502')	
McIntyre "D" #1 Texas American	1980' FNL, 660' FEL Unit H, Sec. 17, T17S, R30E	Oil Producer	5-09-72	2-04-73	3251'	3221'	(TOC - 1618')	
McIntyre "D" #2 Texas American	2310' FNL, 330' FEL Unit H, Sec. 17, T17S, R30E	Oil Producer	5-06-74	11-27-74	2850'	2833'	(TOC - 875')	
McIntyre "D" #3 Texas American	1650' FNL, 330' FEL Unit H, Sec. 17, T17S, R30E	Oil Producer	6-13-74	11-16-74	2850'	2833'	(TOC - 875')	
Govt.-McIntyre "F" #1 Phillips	1980' FSL, 660' FEL Unit I, Sec. 17, T17S, R30E	Oil Producer	5-06-72	7-01-72	3750'	3744'	(TOC - 677')	

ATTACHMENT "B"

WELL NAME Thundaga DATE 3-26-70
COMPANY REPRESENTATIVE

WELL NO. 5-10 LEASE Federal A LOCATION Feddy N.M.

ME TEST DATA

PART SHOP	TIME	RATE	PRESSURE	VOLUME
6:30				
DRIVE LEASE	10:00	-	820	
	10:05	200	835	13353
PART TEST	10:30	300	890	13360
	10:35	400	920	13369
COMPLETE TEST	5:35	500	980	13379
	1:05	600	1040	13392
PART LEASE	5:50	700	1100	13407
	1:35	800	1160	13424
DRIVE SHOP	8:15	900	1210	13441
	2:05	1000	1270	13462
LIVING TIME	5 hrs	1090	1330	13486
	2:35	1200	1385	13509
STING TIME	7 hrs	1300	1430	13535
	3:05	1600	1530	13567
MILEAGE	294	1700	1555	

TOTAL

TOTAL FLUID INJECTED PRIOR
TESTING

BILLING 8 hr min 400.00
5 hr @ 10.00 50.00
294 m @ 25¢/ml 73.50

DATE OF LAST TEST
D. PERF
PACKER

BOTTOM
G. SIZE
B SIZE
WATER WEIGHT #GAL.

TOTAL CHARGE THIS TEST

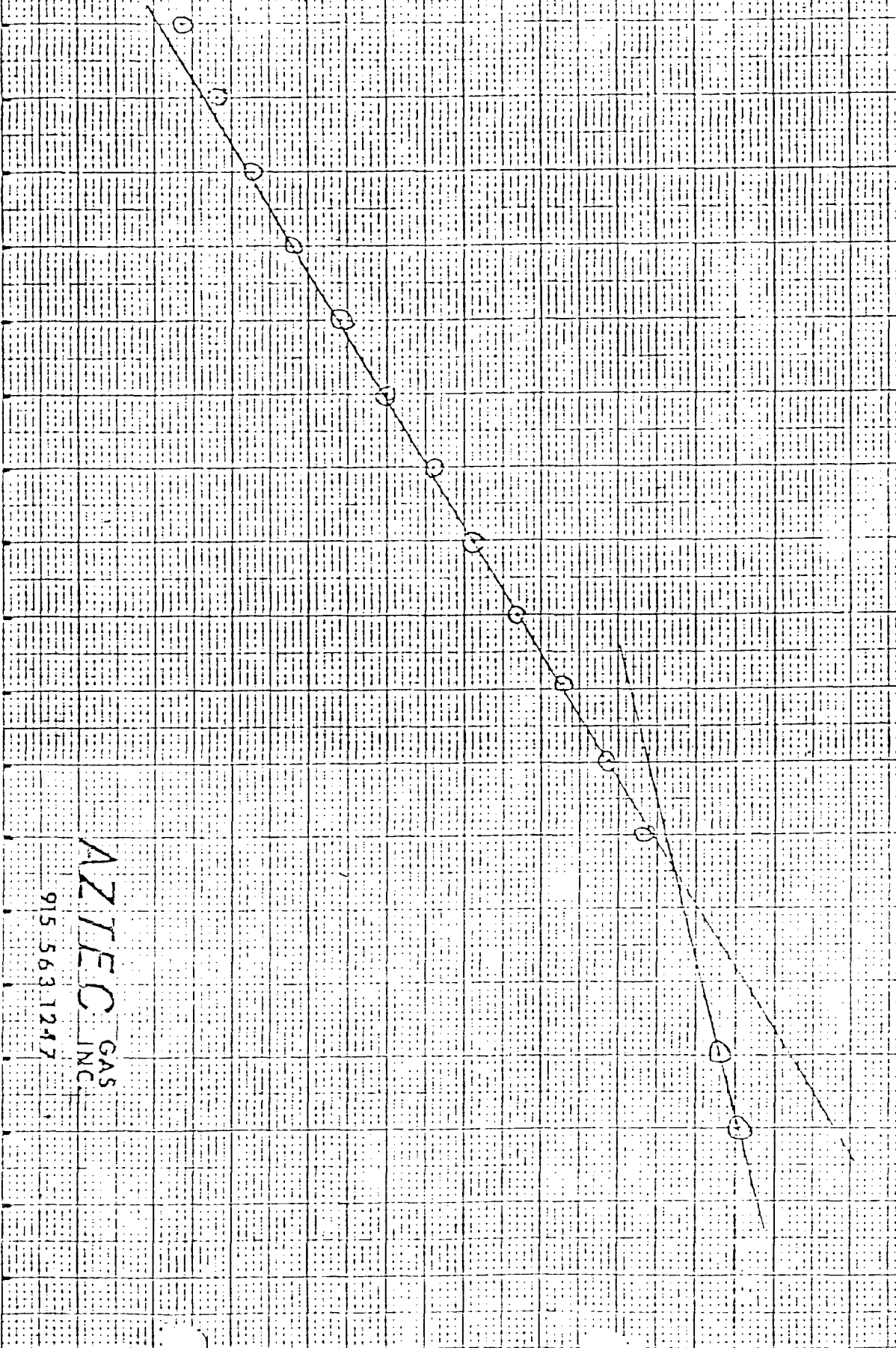
\$ 523.50

FRAC POINT 1470 PSI 1350 BPD
FOOT I.I. PST

DESCRIPTION OF WORK

WELL MASTER COMPANY REPRESENTATIVE

COMPANY Hendrick
 WELL 5-10
 FIELD 17th/11th-H
 DATE 3-26-79



AZTEC GAS
 INC.

915 563 1247

100 200 300 400 500 600 700 800 900 1000 1100 1200 1300 1400 1500 1600 1700 1800

well file

DATE 7-10-68

COMPANY
REPRESENTATIVE

LOCATION

TEST DATA

TOTAL

BILLING 2 hr min @ 4.50
5.5 hr @ 10.00 =
295 min @ 25.00 73.75

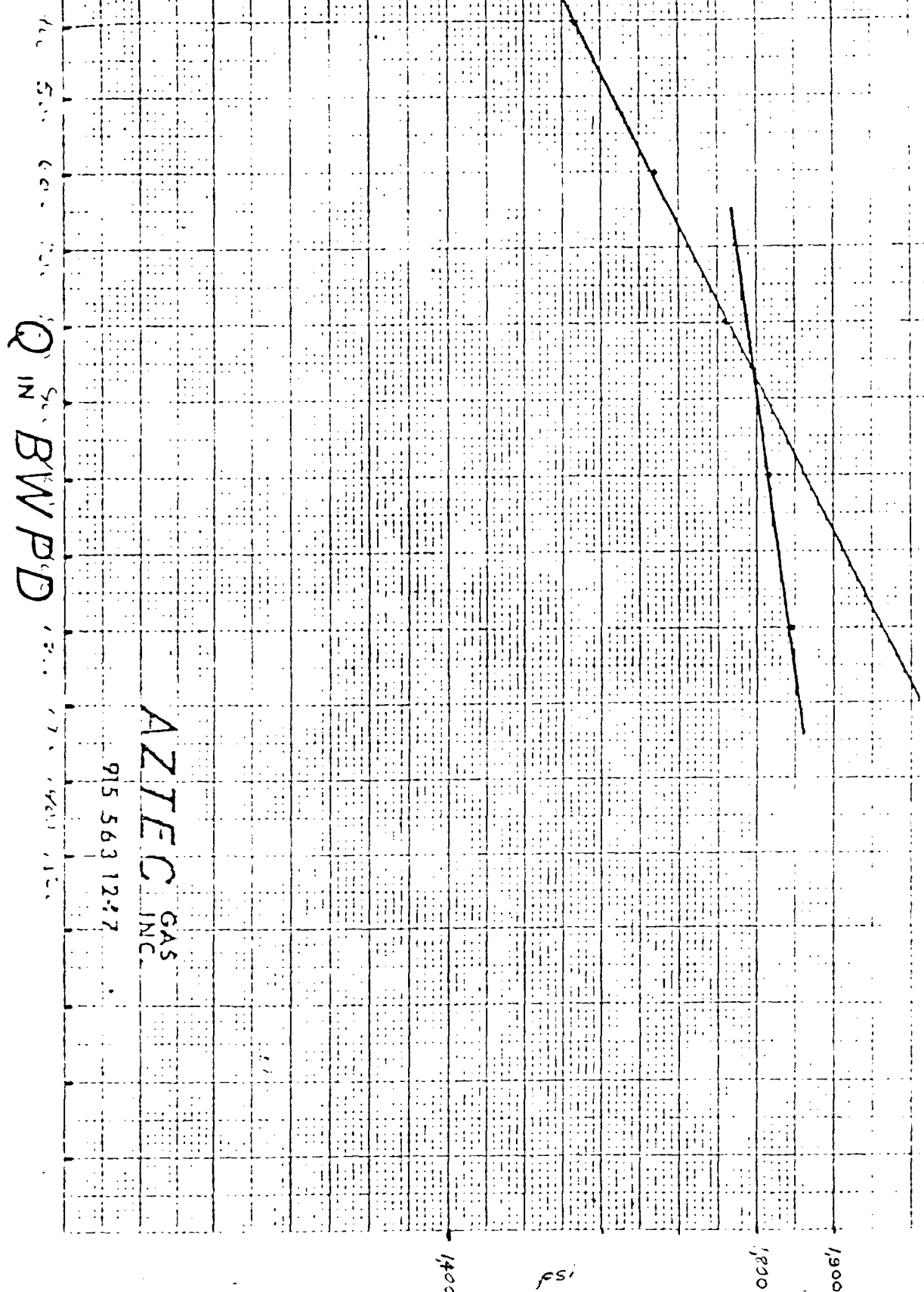
TOTAL CHARGE THIS TEST

FRAC POINT 1795 PSI 865 BPD
BPD
PST

COMPANY REPRESENTATIVE

STEP RATE TEST

COMPANY LAKE ARROWHEAD
 WELL 2-10
 FIELD LAKE ARROWHEAD
 DATE 3-26-71



AZTEC GAS INC.

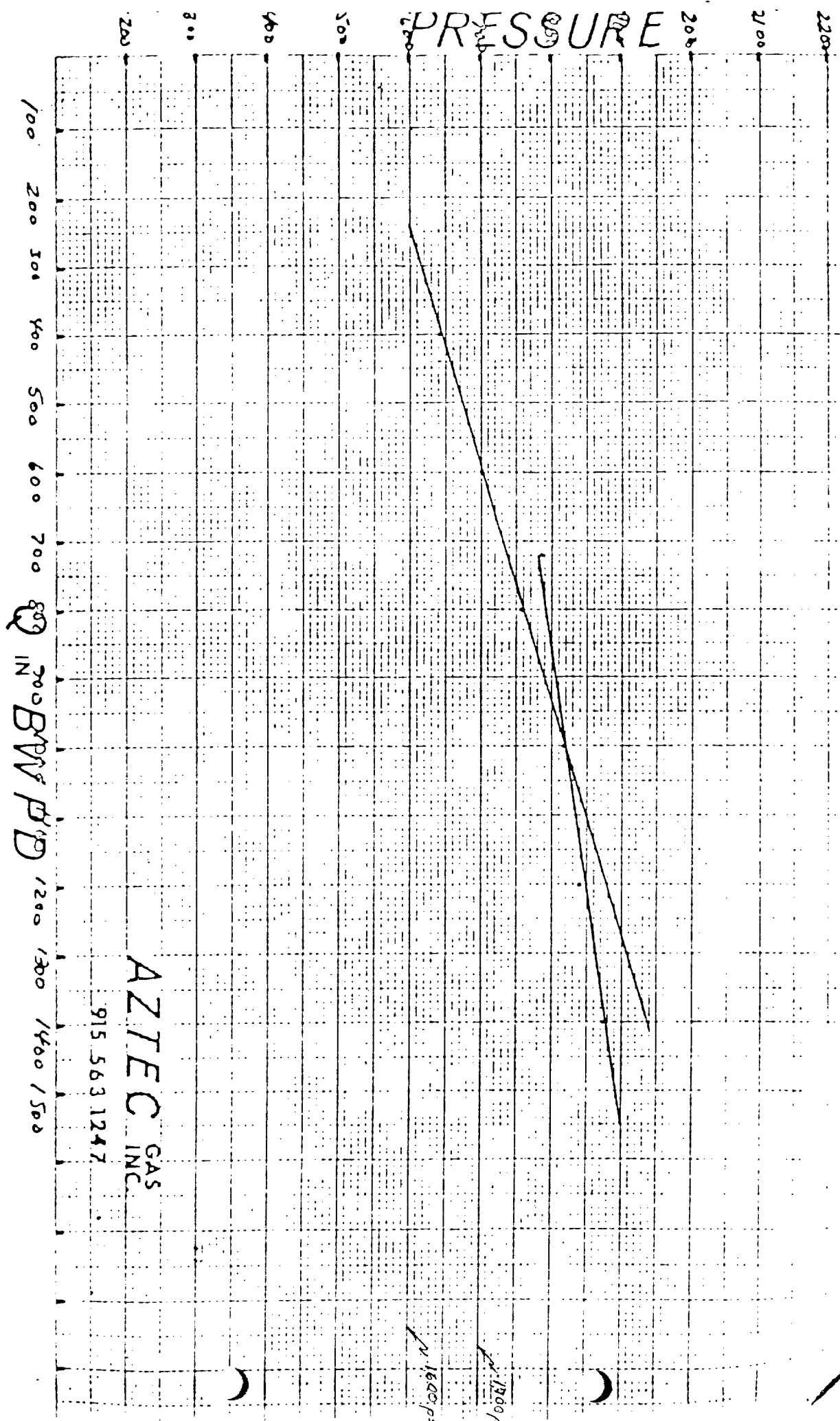
915 563 1247

DESCRIPTION OF WORK _____

STER HJ COMPANY REPRESENTATIVE [Signature]

COUNTRY USA
 WELL 4
 FIELD Edwards
 DATE 3-27-79

PRESSURE



IN BVP D 1200 1300 1400 1500

AZTEC GAS
 INC.
 915 563 1247

1700
 1600 ps



STATE OF NEW MEXICO

ENERGY, MINERALS AND NATURAL RESOURCES DEPARTMENT

OIL CONSERVATION DIVISION

GARREY CARRUTHERS
GOVERNOR

POST OFFICE BOX 2088
STATE LAND OFFICE BUILDING
SANTA FE, NEW MEXICO 87504
(505) 827-5800

April 13, 1989

Devon Energy Corporation
1500 Mid America Tower
20 N. Broadway
Oklahoma City, OK 73102-8260

Attention: J. M. Duckworth

RE: Injection Pressure Increase
Etz-Randal State Cooperative
Waterflood Project,
Eddy County, New Mexico

Dear Mr. Duckworth:

Reference is made to your request dated March 28, 1989, to increase the surface injection pressure on four wells within the Etz-Randal State Cooperative Waterflood Project. This request is based on a step rate tests conducted on these wells on March 15-17, 1989. The results of the tests have been reviewed by my staff and we feel an increase in injection pressure on two of the subject wells is justified at this time.

You are therefore authorized to increase the surface injection pressure on the following wells.

WELL AND LOCATION

MAXIMUM INJECTION
SURFACE PRESSURE

18
T-17S, R-30E, NMPM; and

1090 PSIG

3
T-17S, R-30E, NMPM,

1280 PSIG

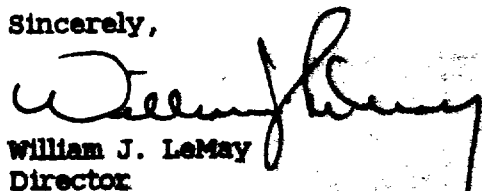
Both in Eddy County, New Mexico.

ILLEGIBLE

Injection Pressure Increase
Devon Energy Corporation
April 13, 1989
Page 2

The Division Director may rescind this injection pressure increase if it becomes apparent that the injected water is not being confined to the injection zone or is endangering any fresh water aquifers.

Sincerely,



William J. LeMay
Director

cc: OCD - Artesia
~~_____~~
T. Gallegos
D. Catanach

ILLEGIBLE

COMPANY: Dexon Energy Corporation
ADDRESS: 1500 Mid America Tower, 20 North Broadway
CITY, STATE, ZIP: Oklahoma City, Oklahoma 73102-8260
ATTENTION: J. M. Dickworth

Re: Injection Pressure Increase
Etz-Randal State Cooperative
Water Flood Project
Eddy County, New Mexico

Dear Sir:

Reference is made to your request dated March 28, 1989, to increase the surface injection pressure on four wells within the Etz-Randal State Cooperative Water Flood Project. This request is based on a step rate test(s) conducted on the these well(s) on during March 15-17, 1989. The results of the test(s) have been reviewed by my staff and we feel an increase in injection pressure on the these well(s) is justified at this time.

Two of the subject

You are therefore authorized to increase the surface injection pressure on the following well(s):

<u>Well & Location</u>	<u>Maximum Injection Surface Pressure</u>
<u>Etz B" State Well No. 18</u> <u>Unit C, Section 16, T-17S, R-23E, NMAN</u>	<u>1090 PSIG</u>
<u>Randal State ^{Well} No. 3</u> <u>Unit C, Section 16, T-17S, R-23E, NMAN</u>	<u>1280 PSIG</u>
<u>Both in Eddy County, New Mexico</u>	

The Division Director may rescind this injection pressure increase if it becomes apparent that the injected water is not being confined to the injection zone or is endangering any fresh water aquifers.

xc: OCD- Dickson T. Gallegos
File- C-2 E&F1 D. Catanach

Sincerely,
William J. LeMay

DEVON
ENERGY
CORPORATION

1500 Mid-America Tower
20 North Broadway
Oklahoma City, Oklahoma 73102-8260

405/235-3611
TWX 910-831-3277

March 28, 1989

New Mexico Oil Conservation Division
P.O. Box 2088
Santa Fe, New Mexico 87504

APR - 3 1989

Attn: Mr. David Catanach, U.I.C. Director

Re: Etz State & Randal State Leases
Step Rate Tests
Grayburg Jackson Field
Eddy County, New Mexico

Gentlemen:

Enclosed are graphs and data sheets for the step rate tests performed on Devon Energy Corporation's injection wells in the Grayburg - Jackson Field. We respectfully request that the allowable wellhead pressures be increased as follows:

<u>Wellname</u>	<u>Current Top Pressure</u>	<u>Requested Top Pressure</u>
Etz State #24	1030 psi	1035 psi
Etz 'B' State #18	1030 psi	1159 psi
Etz 'C' State #17	1030 psi	1045 psi
Randal State #3	1030 psi	1330 psi

Please note that all requested pressures are based upon the 'least squares curve fit' calculations which are attached. Where necessary, the bottom hole pressure or wellhead pressure was calculated using the empirical data obtained on wells which had complete data.

If you have further questions concerning this request, please call me at (405) 235-3611.

Sincerely,


J. M. Duckworth
District Engineer

Wellname	Measured			Measured			Calculated			Calculated			Corrected						Y	Curve
	Wellhead	Tubing	Pressure	psig	Measured Rate	Bottom Hole Pressure	psig	Bottom Hole Pressure	psig	Calculated Hydrostatic Pressure	Bottom Hole Pressure	psig	Percentage Correction	Bottom Hole Pressure	psig	X	Y	X^2	X*Y	Fit
=====																				
Randall State #3																				
	635.90				60.48	n/a		1,251.59	0.12	1,251.59	1,887.37	(1.00)	1,888.50	60.48	635.90	3,658	38,459	643.04		
	703.60				152.64	n/a		1,251.59	0.65	1,251.59	1,954.54	(1.00)	1,935.00	152.64	703.60	23,299	107,398	697.42		
	797.10				288.00	n/a		1,251.59	2.09	1,251.59	2,046.60	(1.00)	2,026.13	288.00	797.10	82,944	229,565	777.28		
Perfs 2564-2795	1,009.90				748.80	n/a		1,251.59	12.27	1,251.59	2,249.22	(1.00)	2,226.73	748.80	1,009.90	560,701	756,213	1,049.15		
No Bomb	1,261.50				1,065.60	n/a		1,251.59	23.59	1,251.59	2,489.50	(1.00)	2,464.61	1,065.60	1,261.50	1,135,503	1,344,254	1,236.06		
Pkr @ 2445	1,374.70				1,353.60	n/a		1,251.59	36.74	1,251.59	2,589.55	(5.74)	2,440.91	1,353.60	1,374.70	1,832,233	1,860,794	1,369.85		
5 1/2 csg	1,548.20				1,900.80	n/a		1,251.59	68.89	1,251.59	2,730.90	(5.74)	2,574.15	1,900.80	1,548.20	3,613,041	2,942,819	1,539.48		
2 3/8 tbg	1,713.00				2,476.80	n/a		1,251.59	112.47	1,251.59	2,852.12	(5.74)	2,688.40	2,476.80	1,713.00	6,134,538	4,242,758	1,718.04		
	1,928.40				3,110.40	n/a		1,251.59	171.50	1,251.59	3,008.49	(5.74)	2,835.80	3,110.40	1,928.40	9,674,588	5,998,095	1,914.45		

																11,157.12	10,972.30	23,060,506	17,520,355	

Least Squares Curve Fit - Points 1 thru 5

Least Squares Curve Fit - Points 6 thru 9

1,806.106 2.316 2,475.889
2.316 5 4,408
1,072.327 2.316 2,041.362

733,779 0 434,527

a= 0.59
b= 607.36
y= 0.59x+607.36

21,254,400 8.842 15,044,466
8,842 4 6,564
19,543,473 8.842 14,509,729

1,710,927 0 534,738

a= 0.31
b= 950.23
y= 0.31x+950.23

APR - 3 1989

Intercept of Two Curves

Curve 1: y= 0.59x+607.36
Curve 2: y= 0.31x+950.23

Solution: x= 1,224
 y= 1,330

2000

1900

1800

1700

1600

1500

1400

1300

1200

1100

1000

900

800

700

600

△ RECORDED WELLHEAD PRESSURE
○ CORRECTED WELLHEAD PRESSURE BASED ON 2 3/8" TUBING

DEVON ENERGY CO.

Randel State No. 3

Step-rate Injection Test

Note: The Bottom Hole Pressure Probe
would only go to 217 Feet.

PSIG

WELLHEAD PRESSURE

B W P D

0

400

800

1200

1600

2000

2400

2800

3200

JOHN WEST ENGINEERING CO.
Step Rate Injection Test

Well Name Randel St. 3
CO. Name Devon Energy Co.

Date 3-17-89

Remarks	Time	Tbg. Press.	Rate B P D	Total	B H P	Tbg. Press.	Rate G P M	HEAD LOSS
				SURFACE ONLY				
	8:20	560						
	8:25	596.2	72.00	.25				
	8:30	608.3	60.48	.46				
1	8:35	635.9	60.48	.67		635.8	1.88	0.14
	8:40	668.6	167.04	1.25				
	8:45	627.3	155.52	1.79				
2	8:50	703.6	152.64	2.32		702.9	4.62	0.73
Change Meters & Pump								
	8:55	670		0				
	9:00	726.10	316.80	1.1				
	9:05	774.40	316.80	2.2				
3	9:10	797.10	288.00	3.2		794.6	8.96	2.50
	9:15	888.90	748.80	5.8				
	9:20	956.40	748.80	8.4				
4	9:25	1009.90	748.80	11.0		996.9	21.84	12.98
	9:30	1113.40	1094.40	14.8				
	9:35	1177.20	1123.20	18.7				
5	9:40	1261.50	1065.60	22.4		1235.3	31.92	26.20
	9:45	1315.00	1382.40	27.2				
	9:50	1349.40	1411.20	32.10				
6	9:55	1374.70	1353.60	36.8		1334.3	40.32	40.36
	10:00	1501.3	1929.60	43.5				
	10:05	1522.90	1872.00	50.0				
7	10:10	1548.20	1900.80	56.6		1475.5	55.44	72.75
	10:15	1695.20	2505.6	65.3				
	10:20	1703.80	2419.20	73.7				
8	10:30	1713.0	2476.80	82.3		1594.3	72.24	118.71

Step Rate Injection Test

Well Name Randel St. 3

Date 3-17-89

CO. Name Devon Energy Co.

Page 2

[illegible]

Wellname	Measured		Measured		Calculated		Calculated		Corrected				Y
	Wellhead	psig	Bottom	Hole	Pressure	Friction	Hydrostatic	Wellhead	Wellhead	Wellhead	Percentage	Tubing	
	Tubing	Rate	Pressure	Pressure	Loss	psig	Pressure	Pressure	Pressure	Pressure	Correction	Pressure	Curve
		BWPD	psig	psig	psig	psig	psig	psig	psig	psig	%	psig	Fit

Rtz 'C' State #17	493.80	43.20	1,574.00	0.06	1,251.59	322.47	1.00	325.70	43.20	325.70	1.866	14,070	312.28
	528.00	106.56	1,586.10	0.33	1,251.59	334.84	1.00	338.19	106.56	338.19	11.355	36,038	329.39
	542.20	296.64	1,624.50	2.23	1,251.59	375.14	1.00	378.89	296.64	378.89	87.995	112,393	380.71
Perfs 2532-2776	459.00	604.80	1,693.60	8.33	1,251.59	450.34	1.00	454.84	604.80	454.84	365.783	275,089	463.92
Bomb @ 2570	564.60	1,094.40	1,796.00	24.98	1,251.59	569.39	1.00	575.09	1,094.40	575.09	1,197.711	629,374	596.11
Pkr @ 2465	619.00	1,670.40	1,918.90	54.67	1,251.59	721.98	5.74	763.42	1,670.40	763.42	2,790.236	1,275,216	751.63
5 1/2 csg	651.70	2,217.60	2,025.50	92.39	1,251.59	866.30	5.74	916.03	2,217.60	916.03	4,917.750	2,031,389	899.37
2 3/8 tbg	1,050.10	2,908.80	2,123.50	152.71	1,251.59	1,024.62	5.74	1,083.43	2,908.80	1,083.43	8,461,117	3,151,491	1,075.48
	850.20	3,657.60	2,198.10	233.40	1,251.59	1,179.91	5.74	1,247.64	3,657.60	1,247.64	13,378,038	4,563,375	1,225.24
	1,537.60	5,011.20	2,266.00	418.18	1,251.59	1,432.59	5.74	1,514.82	5,011.20	1,514.82	25,112,125	7,591,064	1,495.96

									17,611.20	7,598.05	56,323,978	19,679,499	

Least Squares Curve Fit - Points 1 thru 7

Least Squares Curve Fit - Points 8 thru 10

9,372,697 6,034 4,373,569
6,034 7 3,752
5,200,618 6,034 3,234,145

861.94

46,951,281 11,578 15,305,930
11,578 3 3,846
44,680,274 11,578 14,842,077

4,172,078 0 1,139,424

2,271,007 0 463,852

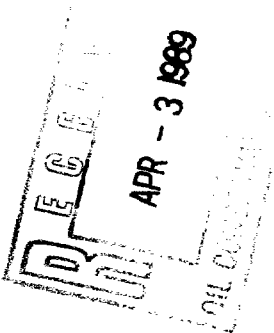
a= 0.27
b= 300.62
y= 0.27x+300.62

a= 0.20
b= 493.72
y= 0.20x+493.72

Intercept of Two Curves

Curve 1: y= 0.27x+300.62
Curve 2: y= 0.20x+493.72

Solution: x= 2,759
y= 1,045



□ BOTTOM HOLE PRESSURE @ 2,570 FEET

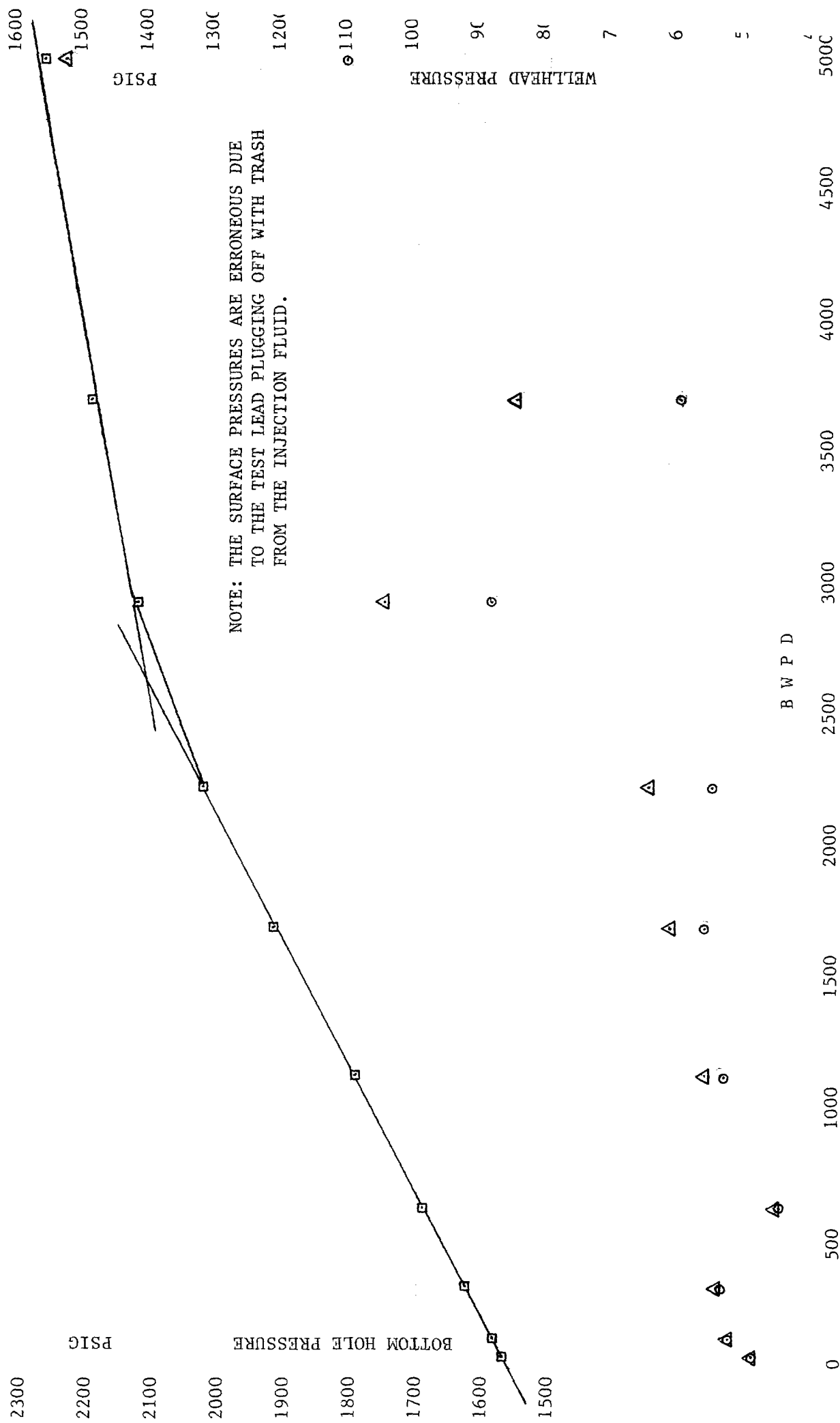
△ RECORDED WELLHEAD PRESSURE

○ CORRECTED WELLHEAD PRESSURE BASED ON 2 3/8" TUBING

DEVON ENERGY CO.

ETZ "C" No. 17

Step-rate Injection Test



JOHN WEST ENGINEERING CO.
Step Rate Injection Test

Well Name ETZ C-17
CO. Name Devon Energy Co.

Date 3-16-89

Remarks	Time	Tbg. Press.	Rate B P D	Total	B H P	Tbg. Press.	Rate G P M	HEAD LOSS
	SET BOMB @ 2570'							
	8:15	480		0				
	8:20	496	57.60	.20	1571.40			
	8:25	493	46.08	.36	1572.60			
1	8:30	493.8	43.20	.51	1574.0	493.7	1.43	0.08
	8:35	513.9	120.96	.93	1580.50			
	8:40	521.10	118.08	1.34	1584.10			
2	8:45	528.00	106.56	1.71	1586.10	527.6	3.36	0.41
	8:50	525.6	331.20	2.86	1603.20			
	8:55	534.2	313.92	3.95	1617.70			
3	9:00	542.2	296.64	4.98	1624.50	539.6	9.16	2.60
Change meters & pumps								
	9:05	510		0				
	9:10	538.6	604.80	2.1	1650.60			
	9:15	486	633.60	4.3	1678.00			
4	9:20	459.0	604.80	6.4	1693.60	450.0	17.92	9.00
	9:25	521.5	1123.20	10.3	1744.50			
	9:30	548.20	1152.00	14.3	1773.60			
5	9:35	564.60	1094.40	18.1	1796.00	537.1	32.76	27.49
	9:40	610.4	1699.20	24.0	1855.50			
	9:45	623.0	1699.20	29.9	1890.70			
6	9:50	619.0	1670.40	35.7	1918.90	560.5	49.28	58.50
	9:55	654.70	2246.40	43.5	1968.60			
	10:00	659.60	2188.80	51.1	2000.50			
7	10:05	651.70	2217.60	58.8	2025.50	555.0	64.69	96.75
	10:10	1006.80	2937.60	69.0	2073.30			
	10:15	1034.98	2908.80	79.1	2101.80			
8	10:20	1050.10	2908.80	89.2	2123.50	889.3	85.12	160.80

Step Rate Injection Test

Well Name ETZ C-17

Date 3-16-89

CO. Name Devon Energy Co.

Page 2

[illegible]

Wellname	Measured		Measured		Calculated		Calculated		Difference				Y
	Wellhead	psig	Bottom	Hole	Tubing	Friction	Hydrostatic	Wellhead	Between	M. lbg	Pr		Curve
	Pressure	Rate	Pressure	Pressure	Loss	psig	Pressure	Pressure	%	X	Y	X^2	Y^2
	psig	BWPD	psig	psig	psig	psig	psig	psig					

Btz 'B' State #18													
	712.30	432.00	1,909.00	4.44	1,251.59	661.85	7.08	432.00	712.30	186,624	307,714		
	823.90	835.20	2,046.70	15.05	1,251.59	810.16	1.67	835.20	823.90	697,559	688,121		822.25
	940.30	1,008.00	2,143.60	21.32	1,251.59	913.33	2.87	1,008.00	940.30	1,016,064	947,822		931.11
Perfs 2551-2798	1,061.90	1,209.60	2,232.10	29.88	1,251.59	1,010.39	4.85	1,209.60	1,061.90	1,463,132	1,284,474		1,058.12
Bomb @ 2570	1,168.60	1,468.80	2,306.40	42.81	1,251.59	1,097.62	6.07	1,468.80	1,168.60	2,157,373	1,716,440		1,196.48
Pkr @ 2449	1,259.00	1,785.60	2,364.60	61.46	1,251.59	1,174.47	6.71	1,785.60	1,259.00	3,188,367	2,248,070		1,316.87
5 1/2 csg	1,410.60	2,160.00	2,411.10	87.44	1,251.59	1,246.95	11.60	2,160.00	1,410.60	4,665,600	3,046,896		1,459.14
2 3/8 tbg	1,520.00	2,476.80	2,443.80	112.67	1,251.59	1,304.88	14.15	2,476.80	1,520.00	6,134,538	3,764,736		1,579.52

										11,376.00	8,896.60	19,509,238	14,004,274

Least Squares Curve Fit - Points 2 thru 4

3,176,755	3,053	2,920,418											
3,053	3	2,826											
3,106,529	3,053	2,875,839											

70,226	0	44,579											
a=	0.63												
b=	296.07												
y=	0.63x+296.07												

16,145,879	7,891	10,776,142											
7,891	4	5,358											
15,567,759	7,891	10,570,657											

578,120	0	205,485											
a=	0.36												
b=	638.34												
y=	0.36x+638.34												

DECLARATION

APR - 3 1989

PHL CONSULTING

Intercept of Two Curves

Curve 1: y= 0.61x+296.07

Curve 2: y= 0.38x+638.34

Solution: x= 1,369

y= 1,159

□ BOTTOM HOLE PRESSURE @ 2,570 FEET

△ RECORDED WELLHEAD PRESSURE

○ CORRECTED WELLHEAD PRESSURE BASED ON 2 3/8" TUBING

PSIG

BOTTOM HOLE PRESSURE

WELLHEAD PRESSURE

DEVON ENERGY CO.

ETZ "B" No. 18

Step-rate Injection Test

B W P D

400

700

1000

1300

1600

1900

2200

2500

2800

2500

2400

2300

2200

2100

2000

1900

1600

1500

1400

1300

1200

1100

1000

900

800

700

JOHN WEST ENGINEERING CO.
Step Rate Injection Test

Well Name ETZ B 18
CO. Name Devon Energy Co.

Date 3-16-89

Remarks	Time	Tbg. Press.	Rate B P D	Total	B H P	Tbg. Press.	Rate G P M	HEAD LOSS
	BOMB SET @ 2570'							
	12:50	530	432	0	1779.80			
	12:55	609.60	460.80	1.5	1845.5			
	1:00	641.10	460.80	3.1	1881.5			
1	1:05	712.30	432.00	4.6	1909.0	707.4	12.88	4.89
	1:10	765.9	864.00	7.6	1973.90			
	1:15	800.8	835.20	10.5	2015.50			
2	1:20	823.9	835.20	13.4	2046.70	807.7	24.64	16.23
	1:25	883.9	1008.0	16.9	2088.10			
	1:30	914.8	979.20	20.3	2117.70			
3	1:35	940.3	1008.00	23.8	2143.60	918.2	29.12	22.10
	1:40	996.1	1238.40	28.1	2181.20			
	1:45	1018.80	1238.40	32.4	2208.60			
4	1:50	1061.90	1209.60	36.6	2232.10	1029.4	35.84	32.46
	1:55	1129.3	1497.60	41.8	2264.50			
	2:00	1152.10	1440.00	46.8	2288.20			
5	2:05	1168.60	1468.80	51.9	2306.40	1123.5	42.84	45.15
	2:10	1260.0	1814.40	58.2	2333.50			
	2:15	1268.90	1785.60	64.4	2351.0			
6	2:20	1259.00	1785.60	70.6	2364.6	1193.6	52.36	65.45
	2:25	1396.3	2246.40	78.4	2386.30			
	2:30	1405.40	2131.30	85.8	2399.90			
7	2:35	1410.60	2160.00	93.3	2411.10	1316.9	63.56	93.68
	2:40	1505.40	2592.0	102.3	2425.30			
	2:45	1513.00	2505.60	111.0	2435.70			
8	2:50	1520.00	2476.80	119.6	2443.80	1396.6	73.79	123.45
FALL-OFF	2:55	1150.70			2409.0			
	3:00	1138.			2395.80			
	3:05	1129			2386.60			

Wellname	Measured Wellhead		Measured Bottom Hole Pressure		Calculated Tubing Friction Loss		Calculated Wellhead Pressure		Difference Between M. Tbg Pr & Calc Tbg Pr		Y		Curve	
	psig		psig		psig		psig		%		X^2	X^Y	Fit	
Rtz State #24	436.30	48.96	1,678.60	0.08	1,241.85	436.83	(0.12)	48.96		436.30	2,397	21,361	427.40	
	425.80	83.52	1,690.00	0.21	1,241.85	448.36	(5.30)	83.52		425.80	6,976	35,563	439.84	
	473.40	161.28	1,714.80	0.71	1,241.85	473.66	(0.06)	161.28		473.40	26,011	76,350	467.83	
Perts 2533-2779	503.60	296.64	1,746.00	2.20	1,241.85	506.35	(0.55)	296.64		503.60	87,995	149,388	516.56	
Bomb # 2550	571.10	403.20	1,789.90	3.89	1,241.85	551.94	3.36	403.20		571.10	162,570	230,208	554.92	
Pkr # 2437	636.20	702.72	1,870.00	10.87	1,241.85	639.02	(0.44)	702.72		636.20	493,815	447,070	602.75	
5 1/2 csg	752.00	921.60	1,966.60	17.97	1,241.85	742.72	1.23	921.60		752.00	849,347	693,043	741.55	
2 3/8 tbg	896.60	1,296.00	2,061.70	33.78	1,241.85	853.63	4.79	1,296.00		896.60	1,679,616	1,161,994	876.33	
	980.00	1,641.60	2,152.30	52.34	1,241.85	962.79	1.76	1,641.60		980.00	2,094,851	1,608,768	1,000.75	
	1,094.50	2,073.60	2,230.80	80.67	1,241.85	1,069.62	2.27	2,073.60		1,094.50	4,299,817	2,269,555		
	1,199.50	2,563.20	2,294.30	119.46	1,241.85	1,171.91	2.30	2,563.20		1,199.50	6,569,994	3,074,558	1,208.40	
	1,329.90	3,139.20	2,344.20	173.88	1,241.85	1,276.23	4.04	3,139.20		1,329.90	9,854,577	4,174,822	1,329.36	
	1,425.90	3,657.76	2,379.10	230.79	1,241.85	1,368.04	4.06	3,657.76		1,425.90	13,379,208	5,215,600	1,438.26	
	1,622.00	4,579.20	2,413.10	349.89	1,241.85	1,521.14	6.22	4,579.20		1,622.00	20,969,073	7,427,462	1,631.76	
										21,568.48	12,346.80	61,076,247	26,585,803	

Least Squares Curve Fit - Points 1 thru 9

Least Squares Curve Fit - Points 11 thru 14

6,003,578 5,556 4,423,805
5,556 9 5,675
3,429,311 5,556 3,503,064

617.28
50,772,852 13,939 19,892,443
13,939 4 5,577
48,576,439 13,939 19,435,998
2,196,412 0 456,445

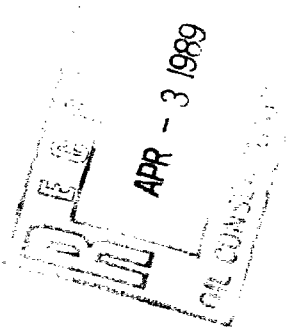
a= 0.36
b= 409.77
y= 0.36x+409.77

a= 0.21
b= 670.13
y= 0.21x+670.13

Intercent of Two Curves

Curve 1: y= 0.36x+409.77
Curve 2: y= 0.21x+670.13

Solution: x= 1,736
y= 1,035



Step Rate Injection Test

Well Name ETZ State 24

Date 3-15-89

CO. Name Devon Energy Co.

Remarks	Time	Tbg. Press.	Rate B P D	Total	B H P	Tbg. Press.	Rate G P M	HEAD LOSS
		BOMB SET	@ 2550'					
	9:50	420		0	1666.70			
	9:55	424	69.12	24	1672.70			
	10:00	433.8	43.20	39	1675.60			
1	10:05	436.3	48.96	56	1678.60	436.2	1.57	0.10
	10:10	447.9	103.68	.92	1683.70			
	10:15	427.3	80.64	1.20	1687.20			
2	10:20	425.8	83.52	1.49	1690.0	425.5	2.60	0.25
	10:25	433.1	172.80	2.09	1700.20			
	10:30	485.2	161.28	2.65	1708.30			
3	10:35	473.40		3.21	1714.80	472.6	4.82	0.79
	10:40	494.9	305.28	4.27	1727.40			
	10:45	496.0	296.64	5.30	1737.0			
4	10:50	503.60	296.64	6.33	1746.0	501.2	8.74	2.36
	10:55	549	406.08	7.74	1763.80			
	11:00	559.70	408.96	9.16	1773.00			
5	11:05	571.10	403.20	10.56	1789.90	566.9	11.84	4.15
	11:10	605.40	696.96	12.98	1822.70			
	11:15	627.10	702.72	15.42	1847.40			
6	11:20	636.20	702.72	17.86	1870.00	624.81	20.44	11.40
Change meters & pumps								
	11:35	6		0				
	11:40	706.60	1036.80	3.60	1912.10			
	11:45	696.70	950.40	6.9	1941.00			
7	11:50	752.00	921.60	10.1	1966.60	731.2	28.28	20.78
	11:55	812.40	1324.80	14.7	2006.90			
	12:00	824.10	1267.20	19.1	2035.50			
8	12:05	896.60	1296.00	23.5	2061.70	861.5	37.52	35.05

Step Rate Injection Test

Well Name ETZ State 24

Date 3-15-89

CO. Name Devon Energy Co

Page 2

[illegible]

DEVON
ENERGY
CORPORATION

1500 Mid-America Tower
20 North Broadway
Oklahoma City, Oklahoma 73102-8260

405/235-3611
TWX 910-831-3277

April 4, 1989

APR 10 1989

New Mexico Oil Conservation Division
P.O. Box 2088
Santa Fe, New Mexico 87504

Attn: Mr. David Catanach, U.I.C. Director

Re: Etz State (et al) Waterflood
Grayburg Jackson Field
Eddy County, New Mexico

Gentlemen:

This letter is to confirm that Steve Blair, Carter Muire and I will be coming to Santa Fe on April 11, 1989, to meet with you concerning Devon's proposed Etz State Waterflood. Per our phone conversation, we plan on meeting with you at 1:00 P.M. New Mexico time. Steve is a reservoir engineer, Carter is a landman and I am an operations engineer.

If there are any problems concerning this meeting, please call me immediately. We have made all of our plane and hotel reservations for this trip and will need time to alter them, if conditions warrant. Thank you for your help in arranging the meeting.

Sincerely,


J. M. Duckworth
District Engineer

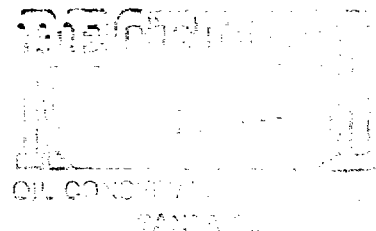
Jason Kellahin
W. Thomas Kellahin
Karen Aubrey

KELLAHIN and KELLAHIN
Attorneys at Law
El Patio - 117 North Guadalupe
Post Office Box 2265
Santa Fe, New Mexico 87504-2265

Telephone 982-4285
Area Code 505

April 17, 1985

Mr. Richard L. Stamets
Oil Conservation Division
P. O. Box 2088
Santa Fe, New Mexico 87501



Re: Texas American Oil Corporation
OCD Case 8481

Dear Mr. Stamets:

On February 13, 1985, I presented the referenced case for Texas American Oil Corporation, which was an application for approval of a waterflood project.

The applicant has requested that I inquire of you when they could expect to receive a decision in this case.

Very truly yours,

A large, stylized handwritten signature of W. Thomas Kellahin in dark ink.

W. Thomas Kellahin

WTK:ca

cc: James B. Draper
Texas American Oil Corporation
300 West Wall, Suite 400
Midland, Texas 79701

Gr. 1/10/85



STATE OF NEW MEXICO
ENERGY AND MINERALS DEPARTMENT
OIL CONSERVATION DIVISION

TONEY ANAYA
GOVERNOR

May 20, 1985

POST OFFICE BOX 2088
STATE LAND OFFICE BUILDING
SANTA FE, NEW MEXICO 87501
(505) 827-5800

Mr. Thomas Kellahin
Kellahin & Kellahin
Attorneys at Law
Post Office Box 2265
Santa Fe, New Mexico

Re: CASE NO. 3481
ORDER NO. R-7926

Applicant:

Texas American Oil Corporation

Dear Sir:

Enclosed herewith are two copies of the above-referenced Division order recently entered in the subject case.

Sincerely,

Sincerely,
B. L. Smith

R. L. STAMETS
Director

RLS / fd

Copy of order also sent to:

Hobbs OCD _____ **x** _____
 Artesia OCD _____ **x** _____
 Aztec OCD _____

Other _____

Jason Kellahin
W. Thomas Kellahin
Karen Aubrey

KELLAHIN and KELLAHIN
Attorneys at Law
El Patio - 117 North Guadalupe
Post Office Box 2265
Santa Fe, New Mexico 87504-2265

Telephone 982-4285
Area Code 505

November 26, 1985

RECEIVED
NOV 29 1985
OIL CONSERVATION DIVISION

Mr. Richard L. Stamets
Oil Conservation Division
P. O. Box 2088
Santa Fe, New Mexico 87504

"Hand Delivered"

Re: Texas American Oil Corporation
Etz State Cooperative Waterflood
Eddy County, New Mexico
NMOCD Case 8481 - Order R-7926

Dear Mr. Stamets:

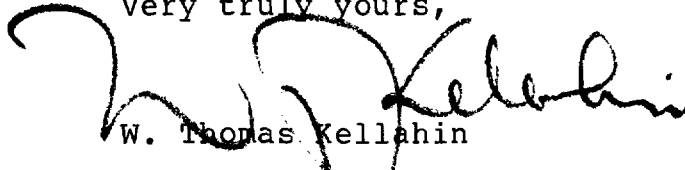
On September 23, 1985, on behalf of Texas American Oil Corporation I submitted to you a request for increase in the surface limitation injection pressure for the referenced project of 1050 psi.

Thereafter I met with Gilbert Quintana and provided him with additional data concerning the plotting of the pressure. I understood that approval would be forthcoming.

We have not yet received an approval to increase the pressure and would appreciate you reviewing this matter and advising us if there is anything else required to obtain the increased injection pressure.

I have enclosed a copy of my September 23, 1985, letter to you for your reference.

Very truly yours,


W. Thomas Kellahin

WTK:ca
Enc.

cc: Mr. James B. Draper
Texas American Oil Corporation
300 West Wall, Suite 400
Midland, Texas 79701

Jason Kellahin
W. Thomas Kellahin
Karen Aubrey

KELLAHIN and KELLAHIN
Attorneys at Law
El Patio - 117 North Guadalupe
Post Office Box 2265
Santa Fe, New Mexico 87504-2265

Telephone 982-4285
Area Code 505

September 23, 1985

RECEIVED
OIL CONSERVATION DIVISION

Mr. Richard L. Stamets
Oil Conservation Division
P. O. Box 2088
Santa Fe, New Mexico 87504

"Hand Delivered"

Re: Texas American Oil Corporation
Etz State Cooperative Waterflood
Eddy County, New Mexico
NMOCD Case 8481, Order R-7926

Dear Mr. Stamets:

Our firm represented Texas American Oil Corporation before the New Mexico Oil Conservation Division at the hearing held on February 13, 1985, from which the referenced order was issued. I have enclosed a copy of the order.

Texas American Oil Corporation hereby requests that the Division Director approve an increase in the surface limitation injection pressure for this project to 1050 psi.

In support of this request, please find enclosed a copy of the step rate test performed September 6, 1985, on Etz C-17, one of the injection wells covered in the referenced order. You can see from that test that the fracture pressure of the confining strata is 1080 psi.

A review of the transcript and exhibits from the February hearing will demonstrate that the Etz C-17 is typical of the four injection wells and that a separate step rate test for each injection well is not necessary.

KELLAHIN and KELLAHIN

Mr. Richard L. Stamets
September 23, 1985
Page 2

We would appreciate your approval of this request as soon as possible. Please let me know if you need anything further.

Very truly yours,

Original signed by
W. THOMAS KELLAHIN
W. Thomas Kellahin

WTK:ca
Enc.

cc: Mr. James B. Draper
Texas American Oil Corporation
300 West Wall, Suite 400
Midland, Texas 79701

Jason Kellahin
W. Thomas Kellahin
Karen Aubrey

KELLAHIN and KELLAHIN
Attorneys at Law
El Patio - 117 North Guadalupe
Post Office Box 2265
Santa Fe, New Mexico 87504-2265

Telephone 982-4285
Area Code 505

December 3, 1985

Mr. Richard L. Stamets
Oil Conservation Division
P. O. Box 2088
Santa Fe, New Mexico 87504

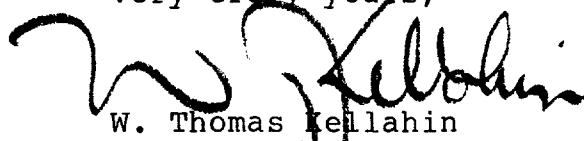
"Hand Delivered"

Re: Texas American Oil Corporation
Etz State Cooperative Waterflood
Eddy County, New Mexico
NMOCD Case 8481 - Order R-7926

Dear Mr. Stamets:

In accordance with our telephone conversation of December 3, 1985, please find enclosed a copy of order R-7926 and a copy of the Texas American Oil Corporation step rate test that was submitted to Mr. Quintana. Should you desire more information please feel free to call Texas American's engineer, Mr. James Draper, (915) 683-4811.

Very truly yours,


W. Thomas Kellahin

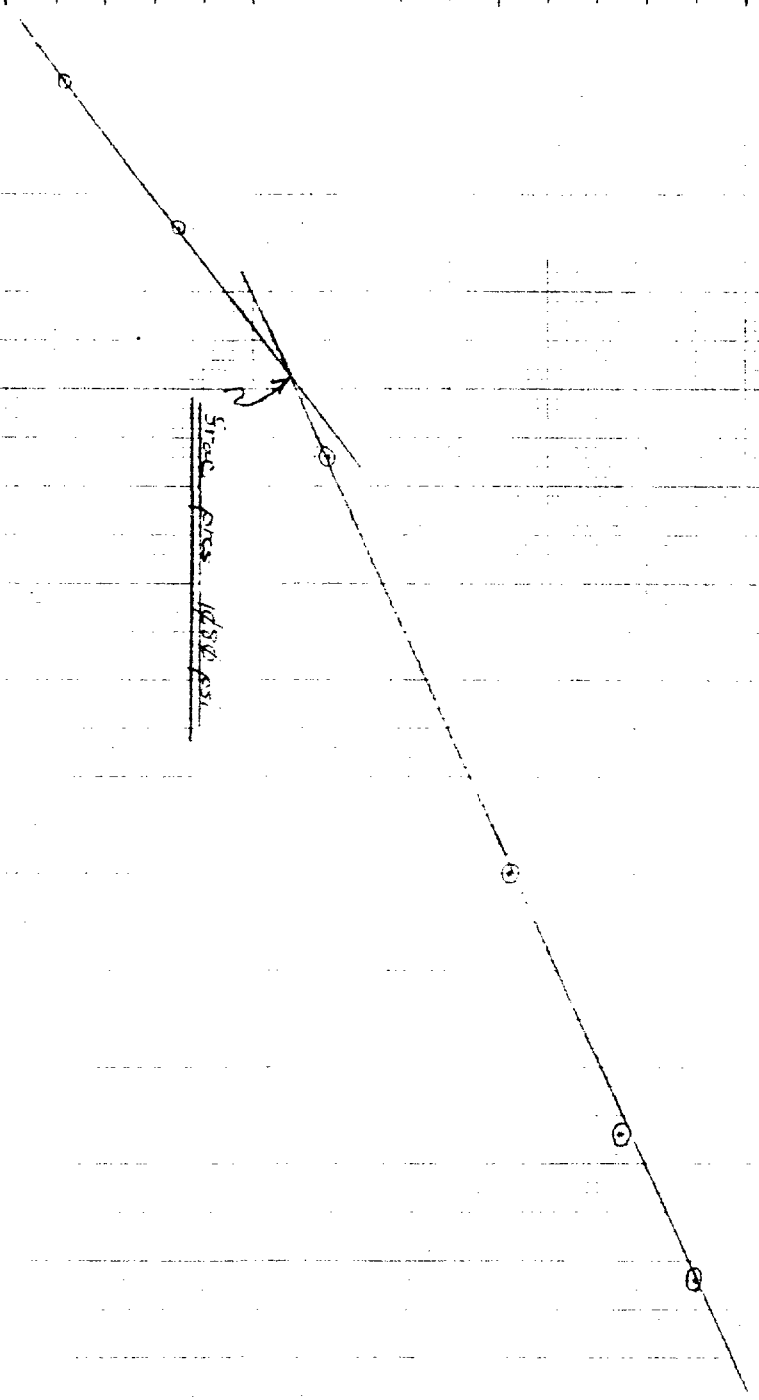
WTK:ca
Enc.

cc: Mr. James B. Draper
Texas American Oil Corporation
300 West Wall, Suite 400
Midland, Texas 79701

Step-rate Test

ETL St. C-11 (Early Co. Low Density)

Test date Sep 2, 1955



Rate (ft³/min)

Head (psi)

0.43	624
1.19	850
2.35	1140
4.54	1574
5.85	1950
6.64	1960

Rate (ft³/min)

Head (psi)



TONEY ANAYA
GOVERNOR

STATE OF NEW MEXICO
ENERGY AND MINERALS DEPARTMENT
OIL CONSERVATION DIVISION

*Case File
8481*

50 YEARS



1935 - 1985

POST OFFICE BOX 2088
STATE LAND OFFICE BUILDING
SANTA FE, NEW MEXICO 87501
(505) 827-5800

December 6, 1985

Kellahin and Kellahin
P. O. Box 2265
Santa Fe, NM 87501

Attention: Tom Kellahin

RE: Texas American Oil Corporation
Surface Injection Pressure Increase
Etz State Cooperative Waterflood

Dear Sir:

Reference is made to your request on behalf of Texas American Oil Corporation to increase the surface injection pressure on four injection wells on the Etz State Coop Waterflood Project authorized by Division Order R-7926. This request is based on a step rate test conducted on your Etz "C" State No. 17 well. It is our understanding that you feel the characteristics of the injection formation are very similar among these four injection wells, and that the test that you submitted should be representative of all four wells. It is the opinion of the Division, however, that at least one more step rate test should be conducted on any of the remaining three wells in order to substantiate the results obtained in your first test.

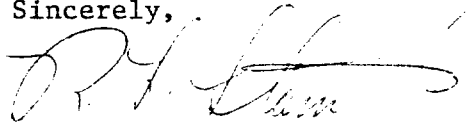
You are hereby authorized to increase your surface injection pressure to a maximum of 1030 psig on the following well:

Texas American
Etz "C" State No. 17
Unit E, Section 16, T17S, R30E
Eddy Co., New Mexico

Consideration will be given to your request to increase the injection pressure on the remaining three wells when you have submitted

to the Division the results of the required additional step rate test.

Sincerely,

A handwritten signature in dark ink, appearing to read 'R. L. Stamets', with a long horizontal flourish extending to the right.

R. L. Stamets
Division Director

cc: Artesia OCD
Case File 8481

RLS/DC/bok