



STATE OF NEW MEXICO  
ENERGY, MINERALS AND NATURAL RESOURCES DEPARTMENT

OIL CONSERVATION DIVISION

2040 S. PACHECO  
SANTA FE, NEW MEXICO 87505  
(505) 827-7131

SWD- 472  
PDEV00209 00472

June 22, 1995

Texaco Exploration & Production, Inc.  
3300 North Butler Avenue  
Farmington, New Mexico 87401

Attn: Mr. Ted A. Tipton

**RE: Injection Pressure Increase H.J. Loe Federal 'B'  
Well No.2, San Juan County, New Mexico**

Dear Mr. Tipton:

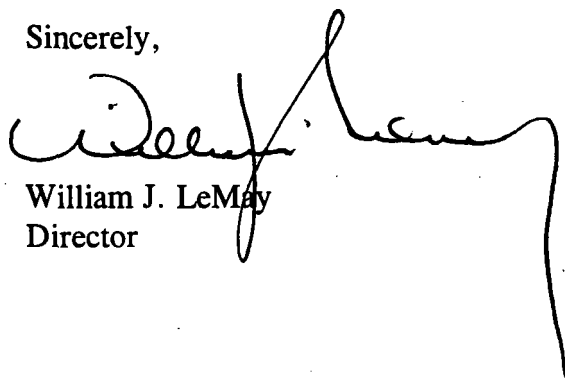
Reference is made to your request dated May 18, 1995 to increase the surface injection pressure on the above referenced well. This request is based on step rate tests conducted on May 8, 1995. The results of the test have been reviewed by my staff and we feel an increase in injection pressure on this well is justified at this time.

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

Well and Location	Maximum Surface Injection Pressure
H.J. Loe Federal 'B' Well No.2 Unit Letter G, Section 23, Township 29 North, Range 12 West	630 psig

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

*Injection Pressure Increase*  
*Texaco Exploration & Production, Inc.*  
*June 22, 1995*  
*Page 2*

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WJL/BES

cc: Oil Conservation Division - Hobbs  
Files: SWD-472; PSI-X 2<sup>nd</sup> QTR 95

4/2/95



Texaco Exploration and Production Inc

3300 N Butler  
Farmington NM 87401

OIL CONSERVATION DIVISION *N/R*  
RECEIVED  
'95 MAY 23 AM 8 52

May 18, 1995

STATE OF NEW MEXICO  
ENERGY, MINERALS AND NATURAL RESOURCES DEPARTMENT  
OIL CONSERVATION DIVISION  
2040 S. PACHECO  
SANTA FE, NEW MEXICO 87505

Attention: David Catanach

RE: **Application for NMOCD Rule 704-C: Step-Rate Tests, Notice to the Division,  
Requests for Injection Pressure Limit Increases; H.J. Loe Federal B No. 2  
1850' FNL & 2310' FEL, Unit G, Sec. 23-T29N-R12W, NMPM,  
San Juan County, New Mexico**

Dear Mr. Catanach:

Texaco Exploration and Production Inc. respectfully requests a minor modification to our water disposal permit for the subject well allowing surface injection pressure of up to 680 psi. This request is based on a recent step rate test verifying a "breakdown" or fracture pressure of 680 psi. This compares to a surface injection pressure of 500 psi determined from a step rate test performed October 19, 1992. This increase in fracture pressure corresponds to an increase in reservoir pressure. Reservoir pressure has increased due to water injection over the passed two years. Cumulative water injection to date is 100,632 barrels. The following summarizes the test data collected during the step rate test:

Date of Test	05/08/95
Fracture Gradient psi/ft	0.68
BH Frac Pressure (@ 3575'), psi	2440
Surface Frac Pressure, psi	680
Injection Rate, BPM (BPD)	0.56 (800)
Tubing Friction Pressure, psi	17
ISIP @ surface, psi	610

Attachment I is a plot of the injection rate versus bottomhole and wellhead pressures. The bottomhole pressure was obtained with a bottomhole gauge. Fracture pressure is indicated at 2440 psi (bottomhole) and 680 psi (wellhead) with a rate of 0.56 BPM (800 BWPD). Attachment II and III are the wellhead and bottomhole pressures used to create the data points in attachment I. Also attached is a wellbore schematic showing the well completion, Attachment IV.

If you have any questions concerning this matter please contact Mr. Robert Schaffitzel at (505) 325-4397, ext. 27. Your attention to this matter is greatly appreciated.

Sincerely,

A handwritten signature in black ink, appearing to read "Ted A. Tipton", with a long horizontal flourish extending to the right.

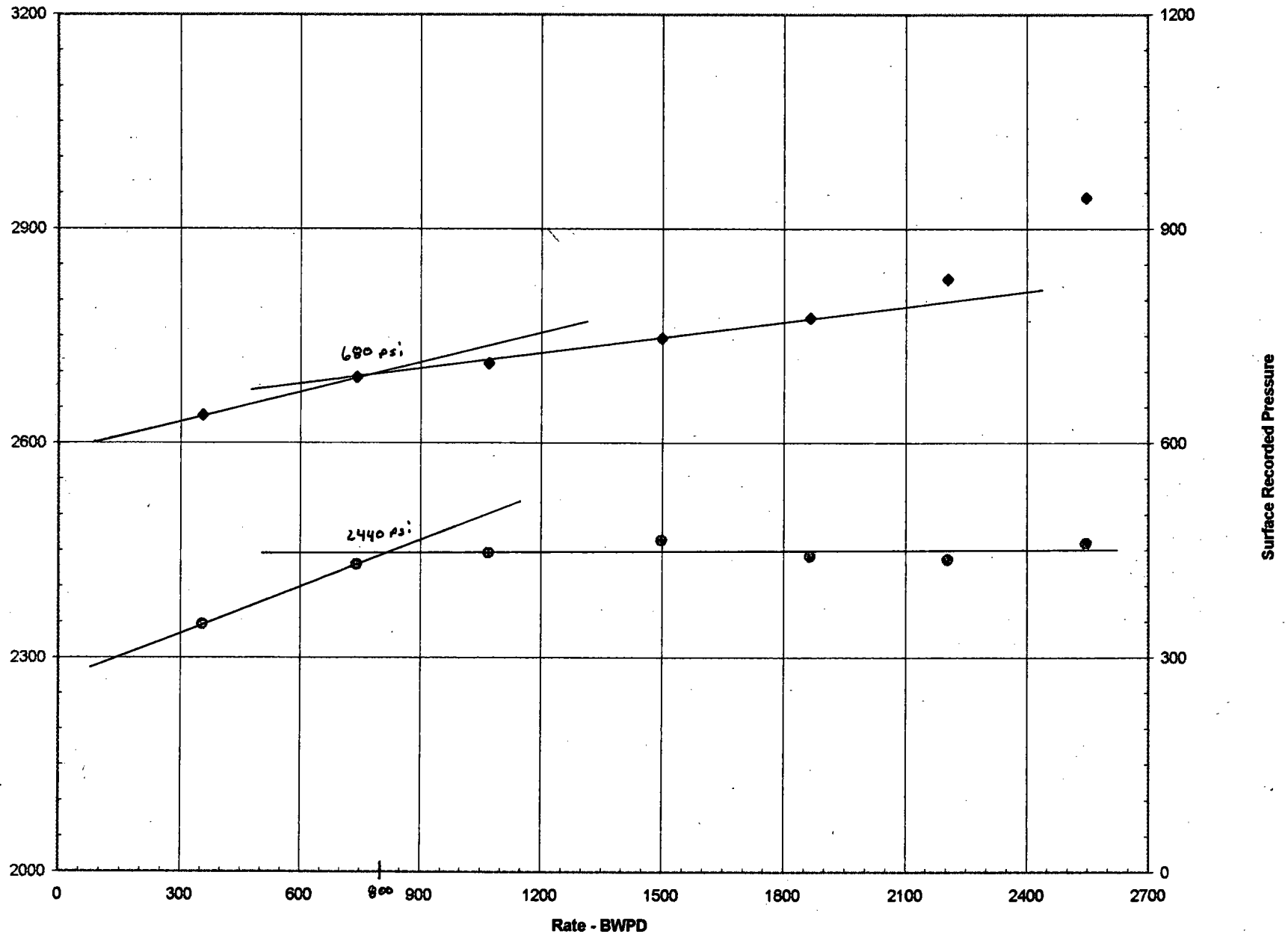
Ted A. Tipton  
Operating Unit Manager

RFS/s

Attachments  
NMOCD-Aztec  
file

Step Rate Test  
H.J. LOE Federal B #2

Attachment I



\*\*\*\*\*  
 \* B & R SERVICE. INC. \*  
 \* FARMINGTON. NM 87401 \*  
 \* (505) 325-2393 \*  
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COMPANY NAME...: TEXACO INC.  
 DATE .....: 05/08/95  
 WELL I.D. ....: H.J. LOE FEDERAL "B" #2  
 FIELD I.D. ....: MESA VERDE  
 RUN # .....: 1  
 ENGINEER .....:  
 ZERO REFERENCE: K.B.  
 START DATE ....: 05/08/95  
 START TIME ....: 09:45:00  
 WELL STATUS...: STEP-RATE TEST  
 GAUGE INFO:  
 I.D. ....: RPG-3 PRESSURE  
 SERIAL #.....: 51767  
 RANGE.....: 5100 PSIG @ 175F  
 COMMENTS .....: BHP RECORDED @ 3563" K.B.  
 FILE # .....: 1

NO.	TIME		PRESSURE	
	DEFL (IN)	HRS.	DEFL (IN)	PSIG
1	0.0000	0.000	0.7166	2184.10
2	0.0704	0.079	0.7168	2184.80
3	0.1483	0.167	0.7168	2184.80
4	0.2221	0.250	0.7168	2184.30
5	0.2971	0.335	0.7183	2184.36
6	0.3708	0.418	0.7585	2311.55
7	0.4439	0.501	0.7667	2336.47
8	0.5185	0.585	0.7703	2347.42
9	0.5914	0.667	0.7928	2415.81
10	0.6653	0.750	0.7943	2420.36
11	0.7390	0.833	0.7979	2431.31
12	0.8136	0.917	0.8175	2490.98
13	0.8885	1.002	0.8124	2475.38
14	0.9617	1.084	0.8133	2477.81
15	1.0351	1.167	0.8096	2466.87
16	1.1090	1.251	0.8074	2460.18
17	1.1829	1.334	0.8088	2464.44
18	1.2566	1.417	0.8072	2459.57
19	1.3309	1.501	0.8045	2451.37
20	1.4047	1.584	0.8016	2442.55
21	1.4789	1.668	0.8010	2440.73
22	1.5527	1.751	0.8003	2438.60
23	1.6265	1.834	0.7999	2437.39
24	1.7002	1.917	0.8026	2445.59
25	1.7740	2.000	0.8053	2453.80
26	1.8482	2.084	0.8075	2460.49
27	1.9221	2.167	0.7933	2417.33
28	1.9949	2.250	0.7904	2408.51

\*\*\*\*\* end data \*\*\*\*\*

Attachment II

## WELL TREATMENT REPORT

Schlumberger

Dowell

DOWELL SCHLUMBERGER INCORPORATED

DS-484-C PRINTED IN U.S.A.

DATE

05/08/95

WELL NAME AND NUMBER

H.J. Low Fed. B #2

LOCATION (LEGAL)

S 23 T 29 N R 12 W

DS LOCATION

Formington

TREATMENT NUMBER

5804

POOL/FIELD

FORMATION

Mesa Verde

BOTTOM HOLE

TEMPERATURE

AGE OF WELL

NEW ☐ REWORK ☒

OIL

☐

TYPE OF WELL

GAS ☐WATER ☐INJ. ☒

COUNTY/PARISH

San Juan

STATE

N. Mexico

ALLOWABLE PRESSURE

TBG: 2500

CSG:

PERFORATED INTERVALS

TOP TO BOTTOM NO. OF HOLES

TYPE OF SERVICE

☐ MATRIX TREATMENT☐ SAND CONTROL☐ FRACTURING☒ OTHER

PRIMARY TREATING FLUID

Step Rate + Acid

CASING SIZE

WT

DEPTH

5 1/2

5.50

4250

TUBING SIZE

WT

DEPTH

73/8

4.7

3184

PACKER TYPE

PACKER DEPTH

3184

TUBING VOLUME

ANNULAR VOL

14.5

OPEN HOLE

CASING VOL.

PERF. DIAMETER- IN.

PERFORATED INTERVAL

TOTAL- FT.

FOR CONVERSION PURPOSES 24 BBLs EQUALS 1000 GALLONS

ARRIVED ON LOCATION: 0800

LEFT LOCATION: 1400

DISPLACEMENT

14.5

C. TBG.

☐

TUBING

☒

JOB DONE DOWN

CASING

☐

ANNULUS

☐

BOTH

☐

TIME (0001 to 2400)	INJECTION RECORD							PRESSURE		NOTATIONS
	TYPE OF FLUID	RATE BPM	CO <sub>2</sub> - N <sub>2</sub> RATE	INCREMENT VOL BBLs	CUM VOL BBLs	PROP TYPE	PROP PPA	CSG.	TBG	
										Pre-Job Safety Meeting
										Pressure Test To 3000 psi
1002	H <sub>2</sub> O	.25		3.75					600	1st Rate 335.6
1017	H <sub>2</sub> O	.5		7.5	3.75				670	2nd Rate 770
1032	H <sub>2</sub> O	.75		11.25	11.25				690	3rd Rate 1080
1047	H <sub>2</sub> O	1.0		15.45	22.5				730	4th Rate 1400
1102	H <sub>2</sub> O	1.28		19.20	37.95				780	5th Rate 1845
1117	H <sub>2</sub> O	1.52		22.8	57.15				830	6th Rate 2188
1132	H <sub>2</sub> O	1.77		26.55	79.95				940	7th Rate 2548
										ISIP 600*
1211	15% MSR	.6		24	106.5				670	Start Acid Bull Head
1232	15% MSR	.6							600	12 bbl's Away
1301	H <sub>2</sub> O	.6		14.5	130.5				570	Start Displacement
1321	H <sub>2</sub> O	.25			145				550	Lower Rate Last 4 bbl's
										PSI Bomb During treatment Step Rate @ 3.560
										Perfs Cover w/ Fill
1338									610	Shut Down

BPM AVERAGE INJECTION RATES					TOTAL W/PROP	WATER/ACID 145 BBLs	OIL BBLs	VOLUME FLUID INJECTED		CARBON DIOXIDE TONS
FLUID	NITROGEN	CARBON DIOXIDE		NITROGEN				CCF		
TREATING PRESSURE SUMMARY										
MAXIMUM	FINAL	AVERAGE	IMMED. S.D.P.	15 MIN S.I.P.	TOTAL INJECTED	QUANTITY PROPPANT PLACED		TOTAL ORDERED/DESIGNED		
940	930	800	1610			LBS		LBS		
PRODUCTION PRIOR TO THIS TREATMENT										

PRODUCTION PRIOR TO THIS TREATMENT

Attachment III

JME

GALS % PAD

CUSTOMER REPRESENTATIVE

DS SERVICE SUPERVISOR

FRACTURE GRADIENT



5/12/85

## H. J. LOE FEDERAL B No. 2

### CURRENT COMPLETION

#### LOCATION:

Unit G, 1850' FNL & 2310' FEL  
Sec. 23, T29N, R12W  
San Juan County

SPUD DATE: 4/09/60

COMPL DATE: 5/24/60

#### FORMATION TOPS:

San Jose Surface  
Ojo Alamo 440  
Fruitland 511  
Kirtland 540  
Pictured Cliffs 1698  
Cliff House 3238

#### PICTURED CLIFFS PERFS (10/90):

SQZ'd w/ 50 SXS CMT  
1703'-15', 1722'-30'

2-3/8", 4.7# TBG  
w/ PKR set @ 3184'

#### MESA VERDE PERFS: INJECTION INTERVAL

3290'-3350', 4005'-4015',  
4090'-4120', 4190'-4210'  
4 JSPF, 480 Shots

PARTED CSG (1/75) - Plugged Back  
W/ 120 SXS @ 4505' (Parted CSG)

CIBP @ 6150'

DAKOTA PERFS (6/60):  
(Abandoned 1/77)  
6170'-79', 6244'-78', 6300'-10'

