



STATE OF NEW MEXICO
ENERGY, MINERALS AND NATURAL RESOURCES DEPARTMENT
OIL CONSERVATION DIVISION



BRUCE KING
GOVERNOR

ANITA LOCKWOOD
CABINET SECRETARY

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

November 2, 1994

PMX-173

PDEV0020700173

Texaco Exploration and Production, Inc.
P.O. Box 730
Hobbs, New Mexico 88241-0730

Attn: Mr. Terry L. Frazier

**RE: *Injection Pressure Increase Vacuum Grayburg San Andres Unit
Waterflood Project Lea County, New Mexico***

Dear Mr. Frazier:

Reference is made to your request dated September 19, 1994 to increase the surface injection pressure on two wells. This request is based on step rate tests conducted on these wells between September 6 and 7, 1994. The results of the tests have been reviewed by my staff and we feel an increase in injection pressure on these wells is justified at this time.

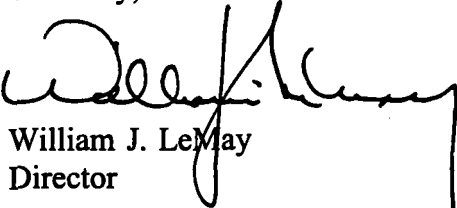
You are therefore authorized to increase the surface injection pressure on the following wells:

Well and Location	Maximum Injection Surface Pressure
Vacuum Grayburg San Andres Unit No.146 Unit B,	1475 PSIG
Vacuum Grayburg San Andres Unit No.147 Unit H, .	1380 PSIG
Both wells located in Section 2, Township 17 South, Range 34 East, Lea County, New Mexico.	

Injection Pressure Increase
Texaco Exploration and Production, Inc.
November 2, 1994
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

WJL/BES

cc: Oil Conservation Division Hobbs
File: 4th Quarter PSI-X; PMX-173

md



Texaco E & P

PO Box 730
Hobbs NM 88241-0730
505 393 7191

OIL CONSERVATION DIVISION
RECEIVED

'94 SEP 20 AM 8 50

September 19, 1994

Mr. David R. Catanach
New Mexico Energy, Minerals, and Natural Resources Department
Oil Conservation Division
State Land Office Building
310 Old Santa Fe Trail
P.O. Box 2088
Sante Fe, New Mexico 87504

SUBJECT: REQUEST FOR INCREASED SURFACE INJECTION PRESSURE ON
SELECTED WELLS IN THE VACUUM GRAYBURG SAN ANDRES UNIT
LEA COUNTY, NEW MEXICO

Mr. David Catanach:

Texaco Exploration and Production, Inc. requests that the surface injection pressure limit be increased for the two wells on the attached list. The requested increases are based on step rate tests which are attached for you review.

The increases in surface injection pressure are necessary to maintain adequate injection rates, thus insuring the optimum performance of the waterflood.

If you have any questions or require additional information, please contact Ms. Kathy Hinkle at (505) 397-0427.

Terry L. Frazier
Hobbs Area Manager

KJH

cc: Mr. Jerry Sexton
Oil Conservation Division
P.O. Box 1980
Hobbs, NM 88240

Vacuum Grayburg San Andres Unit
 Texaco Exploration and Production, Inc.
 Lea County, New Mexico

<u>Well</u>	<u>Present Allow. Inj. Press. (PSIG)</u>	<u>Observed Surface Parting Press. (PSIG)</u>	<u>Requested Allow. Inj. Press. (PSIG)</u>
VGSAU No. 146 B 2 18 34	872	1475	1425
VGSAU No. 147 H 2 18 34	861	1380	1330

74
 97
 PMX 111
 120
 167
 173
 48
 44

185 34E

R-4442 - CASE 4852
 7010

WEST-TEST, INC.
A SUBSIDIARY OF JOHN WEST ENGINEERING COMPANY
Hobbs, New Mexico

STEP RATE INJECTION TEST

CLIENT: TEXACO EXPLORATION AND PRODUCTION

DATE: SEPTEMBER 7, 1994

WELL NAME: VACUUM GRAYBURG SAN ANDRES UNIT NO. 147
LEA COUNTY, NEW MEXICO

WO#: 94-14-1557

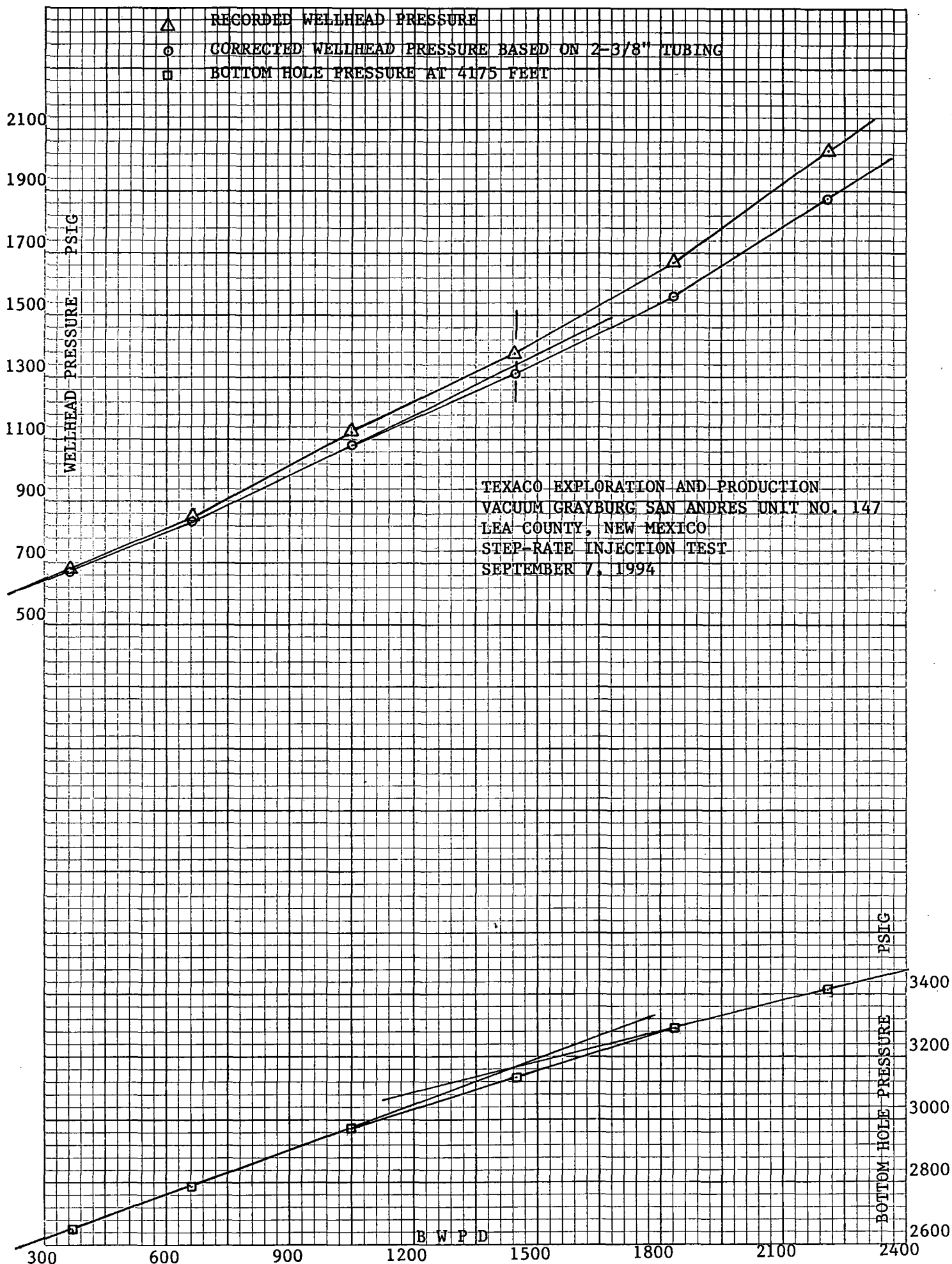
PERFS = 4308-4720

PACKER DEPTH = 4244

BHP GAUGE DEPTH = 4175

STEP NO. & REMARKS	TIME	(1) SURFACE TUBING PRESS. (psig)	(2) CUMMULATIVE VOL. INJECTED (bbls)	(3) INJECTION RATE (bbls/day)	(4) FRICTION HEAD LOSS (psi)	(5) CORRECTED TUBING PRESS. (psi) (1)-(4)	(6) INJECTION RATE (gpm) (3)/34.2857	(7) MEASURED BHP (psi)
1	11:40	485.5				485.5		2477.7
	11:45	613.5	1.2	345.6	5.045	608.5	10.08	2584.2
	11:50	626.3	2.5	374.4	5.850	620.4	10.92	2604.9
	11:55	656.2	3.8	374.4	5.850	650.3	10.92	2626.4
	12:00	670.3	5.2	403.2	6.710	663.6	11.76	2638.1
	12:05	674.6	6.5	374.4	5.850	668.7	10.92	2643.8
	12:10	680.3	7.7	345.6	5.045	675.3	10.08	2647.8
				369.6				
	12:15	798.3	10.1	691.2	18.187	780.1	20.16	2727.0
	12:20	824.0	12.3	633.6	15.483	808.5	18.48	2745.7
2	12:25	829.6	14.6	662.4	16.810	812.8	19.32	2762.4
	12:30	838.1	16.9	662.4	16.810	821.3	19.32	2775.8
	12:35	846.7	19.2	662.4	16.810	829.9	19.32	2785.6
	12:40	849.7	21.5	662.4	16.810	832.9	19.32	2795.3
				662.4				
	12:45	1016.0	25.1	1036.8	38.507	977.5	30.24	2892.0
	12:50	1040.0	28.8	1065.6	40.509	999.5	31.08	2920.2
	12:55	1072.6	32.5	1065.6	40.509	1032.1	31.08	2936.8
	1:00	1093.9	36.1	1036.8	38.507	1055.4	30.24	2952.5
	1:05	1096.8	39.8	1065.6	40.509	1056.3	31.08	2961.2
3	1:10	1125.3	43.4	1036.8	38.507	1086.8	30.24	2974.4
				1051.2				
	1:15	1330.3	48.4	1440.0	70.709	1259.6	42.00	3064.3
	1:20	1344.5	53.5	1468.8	73.347	1271.2	42.84	3091.1
	1:25	1355.9	58.5	1440.0	70.709	1285.2	42.00	3107.7
	1:30	1360.1	63.5	1440.0	70.709	1289.4	42.00	3122.1
	1:35	1368.6	68.6	1468.8	73.347	1295.3	42.84	3134.5
	1:40	1378.6	73.6	1440.0	70.709	1307.9	42.00	3143.5
				1449.6				

STEP NO. & REMARKS	TIME	(1) SURFACE TUBING PRESS. (psig)	(2) CUMMULATIVE VOL. INJECTED (bbls)	(3) INJECTION RATE (bbls/day)	(4) FRICTION HEAD LOSS (psi)	(5) CORRECTED TUBING PRESS. (psi) (1) - (4)	(6) INJECTION RATE (gpm) (3)/34.2857	(7) MEASURED BHP (psi)
5	1:45	1602.0	80.0	1843.2	111.638	1490.4	53.76	3217.3
	1:50	1621.9	86.3	1814.4	108.432	1513.5	52.92	3236.1
	1:55	1644.7	92.7	1843.2	111.638	1533.1	53.76	3253.1
	2:00	1657.6	99.1	1843.2	111.638	1546.0	53.76	3265.6
	2:05	1669.1	105.5	1843.2	111.638	1557.5	53.76	3275.1
	2:10	1670.6	111.8	1814.4	108.432	1562.2	52.92	3285.1
				1833.6				
	2:15	1958.0	119.5	2217.6	157.176	1800.8	64.68	3345.3
	2:20	1970.8	127.2	2217.6	157.176	1813.6	64.68	3358.6
	2:25	2010.6	134.9	2217.6	157.176	1853.4	64.68	3375.7
6	2:30	2014.9	142.6	2217.6	157.176	1857.7	64.68	3386.8
	2:35	2016.3	150.3	2217.6	157.176	1859.1	64.68	3399.8
	2:40	2032.0	158.0	2217.6	157.176	1874.8	64.68	3409.9
				2217.6				
	FALLOFF							
	2:41	1239.6				1239.6		3263.0
	2:42	1185.5				1185.5		3210.5
	2:43	1151.3				1151.3		3173.2
	2:44	1124.2				1124.2		3143.3
	2:45	1102.8				1102.8		3119.6
	2:50	1028.6				1028.6		3041.9
	2:55	985.8				985.8		2993.9



WEST-TEST, INC.
A SUBSIDIARY OF JOHN WEST ENGINEERING COMPANY
Hobbs, New Mexico

STEP RATE INJECTION TEST

CLIENT: TEXACO EXPLORATION AND PRODUCTION

DATE: SEPTEMBER 6, 1994

WELL NAME: VACUUM GRAYBURG SAN ANDRES UNIT NO. 146
LEA COUNTY, NEW MEXICO

WO#: 94-14-1556

PERFS = 4383-4772

PACKER DEPTH = 4280

BHP GAUGE DEPTH = 4200

STEP NO. & REMARKS	TIME	(1) SURFACE TUBING PRESS. (psig)	(2) CUMMULATIVE VOL. INJECTED (bbls)	(3) INJECTION RATE (bbls/day)	(4) FRICTION HEAD LOSS (psi)	(5) CORRECTED TUBING PRESS. (psi) (1)-(4)	(6) INJECTION RATE (gpm) (3)/94.2857	(7) MEASURED BHP (psi)
1	9:50	203.8				203.8		2193.6
	9:55	380.0	1.3	374.4	5.885	374.1	10.92	2371.2
	10:00	402.7	2.6	374.4	5.885	396.8	10.92	2396.3
	10:05	439.7	3.7	316.8	4.321	435.4	9.24	2412.3
	10:10	427.0	5.0	374.4	5.885	421.1	10.92	2425.9
	10:15	461.1	6.1	316.8	4.321	456.8	9.24	2435.3
	10:20	444.1	7.3	345.6	5.075	439.0	10.08	2449.1
				350.4				
	10:25	637.4	9.6	662.4	16.911	620.5	19.32	2593.7
	10:30	665.8	11.9	662.4	16.911	648.9	19.32	2633.1
2	10:35	675.9	14.2	662.4	16.911	659.0	19.32	2657.0
	10:40	694.4	16.4	633.6	15.576	678.8	18.48	2681.9
	10:45	707.3	18.6	633.6	15.576	691.7	18.48	2694.1
	10:50	723.1	20.8	633.6	15.576	707.5	18.48	2712.4
				648.0				
	10:55	994.7	24.5	1065.6	40.751	953.9	31.08	2926.1
	11:00	1077.3	28.1	1036.8	38.737	1038.6	30.24	2978.2
	11:05	1087.3	31.8	1065.6	40.751	1046.5	31.08	3016.7
	11:10	1104.3	35.4	1036.8	38.737	1065.6	30.24	3049.9
	11:15	1152.6	39.1	1065.6	40.751	1111.8	31.08	3082.6
3	11:20	1175.4	42.9	1094.4	42.812	1132.6	31.92	3113.0
				1060.8				
	11:25	1397.3	48.0	1468.8	73.786	1323.5	42.84	3244.7
	11:30	1423.0	52.8	1382.4	65.958	1357.0	40.32	3286.6
	11:35	1444.2	57.9	1468.8	73.786	1370.4	42.84	3311.6
	11:40	1465.5	63.1	1497.6	76.485	1389.0	43.68	3334.8
	11:45	1482.4	68.2	1468.8	73.786	1408.6	42.84	3352.8
	11:50	1499.4	73.4	1497.6	76.485	1422.9	43.68	3369.3
				1464.0				

STEP NO. & REMARKS	TIME	(1) SURFACE TUBING PRESS. (psig)	(2) CUMMULATIVE VOL. INJECTED (bbls)	(3) INJECTION RATE (bbls day)	(4) FRICTION HEAD LOSS (psi)	(5) CORRECTED TUBING PRESS. (psi) (1) - (4)	(6) INJECTION RATE (gpm) (3)/34.2857	(7) MEASURED BHP (psi)
5	11:55	1675.8	79.8	1843.2	112.306	1563.5	53.76	3450.9
	12:00	1712.8	86.1	1814.4	109.081	1603.7	52.92	3477.9
	12:05	1725.7	92.5	1843.2	112.306	1613.4	53.76	3495.0
	12:10	1782.7	98.8	1814.4	109.081	1673.6	52.92	3514.0
	12:15	1794.1	105.3	1872.0	115.574	1678.5	54.60	3533.3
	12:20	1811.2	111.7	1843.2	112.306	1698.9	53.76	3546.9
				1838.4				
	12:25	1989.1	119.5	2246.4	161.937	1827.2	65.52	3607.2
	12:30	2007.5	127.2	2217.6	158.117	1849.4	64.68	3628.0
	12:35	2010.3	134.9	2217.6	158.117	1852.2	64.68	3642.8
6	12:40	2041.6	142.7	2246.4	161.937	1879.7	65.52	3657.1
	12:45	2040.1	150.5	2246.4	161.937	1878.2	65.52	3669.6
	12:50	2045.8	158.3	2246.4	161.937	1883.9	65.52	3678.6
				2236.8				
FALLOFF	12:51	1473.7				1473.7		3534.5
	12:52	1415.4				1415.4		3469.3
	12:53	1367.0				1367.0		3419.6
	12:54	1325.8				1325.8		3377.3
	12:55	1290.2				1290.2		3338.4
	1:00	1159.3				1159.3		3202.0
	1:05	1072.5				1072.5		3109.2

