



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



BRUCE KING
GOVERNOR

November 10, 1993

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

ANITA LOCKWOOD
CABINET SECRETARY

Texaco Exploration and Production, Inc.
P.O. Box 730
Hobbs, NM 88241

Attention: T. L. Fraizer

CF 4852,7591

PMX-111
PDEV0020700111
PDEV0020700120

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

Dear Mr. Fraizer:

Reference is made to your request dated October 14, 1993 to increase the surface injection pressure on three wells in your Vacuum Grayburg San Andres Unit. This request is based on step rate tests conducted on these wells between October 4 and October 6, 1993. 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
VGSAU Well No. 30 Unit K, Section 2, Township 18 South, Range 34 East	1325 psig
VGSAU Well No. 34 Unit K, Section 2, Township 18 South, Range 34 East	1395 psig
VGSAU Well No. 50 Unit G, Section 1, Township 18 South, Range 34 East	1730 psig
All wells located in Lea County, New Mexico.	

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/amg

cc: Oil Conservation Division - Hobbs
File: Case Nos.: 4852, 7591
PMX-111, PMX-120

NO WAITING PERIOD

COMPANY: **TEXACO EXPLORATION AND PRODUCTION, INC.**
ADDRESS: **P.O. Box 730**
CITY, STATE, ZIP: **Hobbs, New Mexico 88241**
ATTENTION: **Mr. T.L. Frazier**

Re: **Injection Pressure Increase**
Vacuum Grayburg San Andres Unit
Lea County, New Mexico

Dear Sir:

Reference is made to your request dated **October 14, 1993**, to increase the surface injection pressure on **3 wells in your Vacuum Grayburg San Andres Unit**. This request is based on step rate tests conducted on these wells between **October 4, and October 6, 1993**. 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:

<u>Well & Location</u>	<u>Maximum Injection Surface Pressure</u>
VGSAU Well No.30 Unit K, Section 2, T18S, R34E	1325 psig
VGSAU Well No.34 Unit J, Section 1, T18S, R34E	1395 psig
VGSAU Well No.50 Unit G, Section 1, T18S, R34E	1730 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.

William J. LeMay
Director

WJL/BES
xc: **OCD - Hobbs**
FILE - Case Nos.4852; 7591; PMX-111, PMX-120



Texaco E & P

OIL CONSERVATION DIVISION
RECEIVED

93 OCT 14 AM 8 37

October 12, 1993

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
Santa 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 request that the surface injection pressure limit be increased for the five wells on the attached list. The requested increases are based on step rate tests which are attached for your review.

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

Should you have any questions or require additional information, please contact Todd Lackey at (505) 393-7191.

Yours very truly,

T. L. Frazier/RSP

T. L. Frazier
Hobbs Area Manager

WTL

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 (PISG)</u>	<u>Requested Allow Inj Press (PSIG)</u>
VGSAU Well #30	1260	1375	1325 ✓
VGSAU Well #34	1140	1445	1395 →
VGSAU Well #50	1050	1780	1730 ✓

JOHN WEST ENGINEERING COMPANY

Hobbs, New Mexico

STEP RATE INJECTION TEST

CLIENT: TEXACO EXPLORATION & PRODUCTION

OCTOBER 4, 1983

WELL NAME: VGSAU NO. 30

WO#: 83-14-1677

Lea County, New Mexico

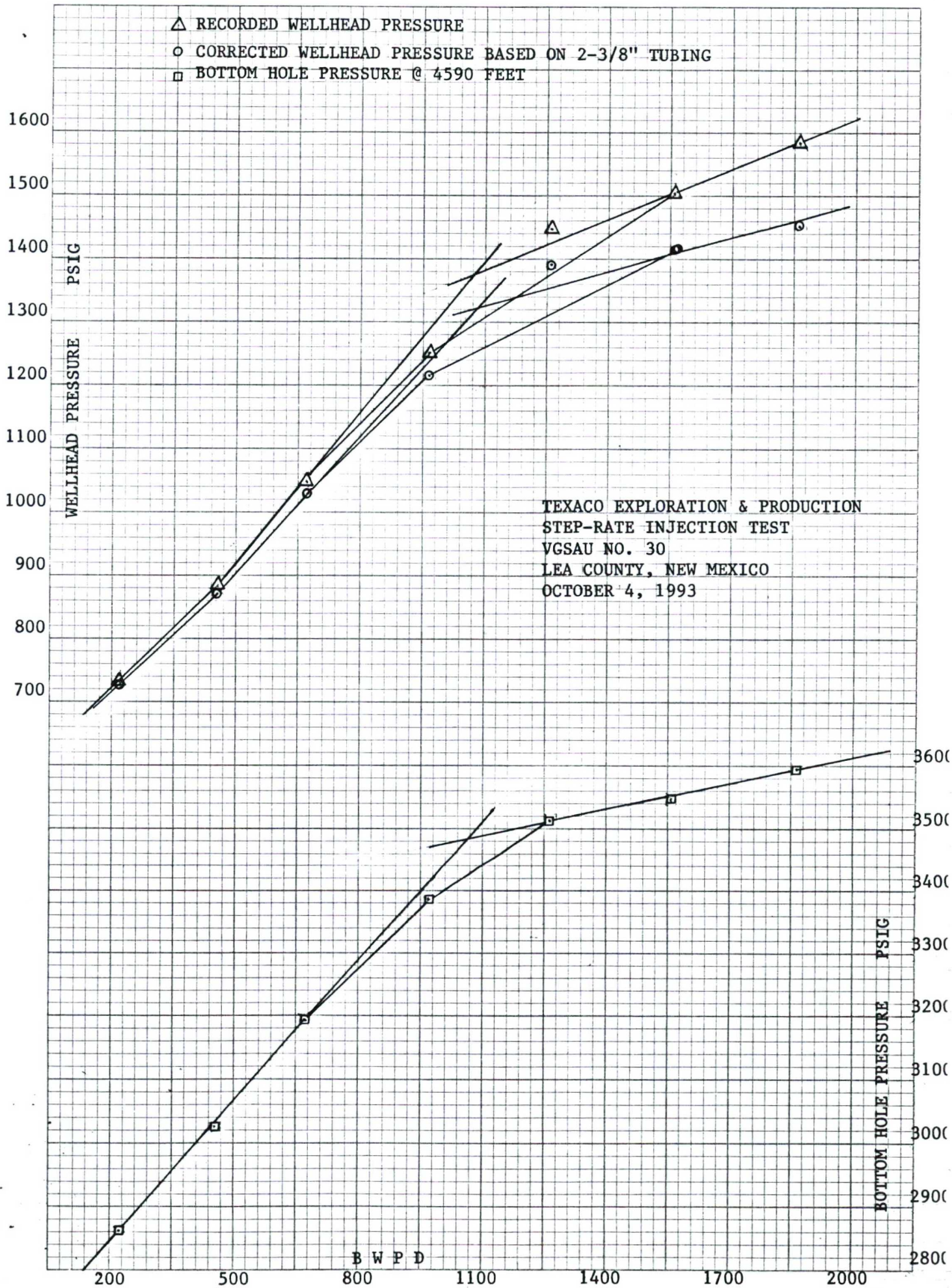
MID-PERFS. 4443-4740

PACKER DEPT 4335

BHP GAUGE C 4590

STEP NO. & REMARKS	TIME	(1) SURFACE TUBING PRESS. (psig)	(2) CUMMULATIVE VOL. INJECTED (bbis)	(3) INJECTION RATE (bbis/day)	(4) FRICTION HEAD LOSS (psi)	(5) CORRECTED TUBING PRESS. (psi) (1)-(4)	(6) INJECTION RATE (gpm) (8)/34.2957	(7) MEASURED BHP (psi)
1	9:40	582.8				582.8		2704
	9:45	654.0	0.8	230.4	2.620	651.4	6.72	2783
	9:50	682.6	1.7	259.2	3.257	679.3	7.56	2810
	9:55	697.9	2.4	201.6	2.046	695.9	5.88	2817
	10:00	709.2	3.2	230.4	2.620	706.6	6.72	2842
	10:05	719.3	4.0	230.4	2.620	716.7	6.72	2853
	10:10	730.7	4.7	201.6	2.046	728.7	5.88	2861
				225.6				
	10:15	786.3	6.3	460.8	9.444	776.9	13.44	2925
	10:20	824.2	7.9	460.8	9.444	814.8	13.44	2956
2	10:25	835.6	9.5	460.8	9.444	826.2	13.44	2978
	10:30	855.8	11.1	460.8	9.444	846.4	13.44	2995
	10:35	865.9	12.7	460.8	9.444	856.5	13.44	3010
	10:40	881.1	14.2	432.0	8.381	872.7	12.60	3025
				456.0				
	10:45	964.5	16.6	691.2	19.995	944.5	20.16	3090
	10:50	972.1	19.0	691.2	19.995	952.1	20.16	3120
	10:55	1006.2	21.3	662.4	18.481	987.7	19.32	3144
	11:00	1035.2	23.6	662.4	18.481	1016.7	19.32	3163
	11:05	1018.8	25.9	662.4	18.481	1000.3	19.32	3178
3	11:10	1048.0	28.2	662.4	18.481	1029.5	19.32	3192
				671.99				
	11:15	1156.8	31.6	979.2	38.086	1118.7	28.56	3270
	11:20	1175.8	35.0	979.2	38.086	1137.7	28.56	3304
	11:25	1215.1	38.3	950.4	36.040	1179.1	27.72	3330
	11:30	1235.4	41.7	979.2	38.086	1197.3	28.56	3352
	11:35	1251.8	45.1	979.2	38.086	1213.7	28.56	3370
	11:40	1253.1	48.5	979.2	38.086	1215.0	28.56	3385
				974.4				

STEP NO. & REMARKS	TIME	(1) SURFACE TUBING PRESS. (psig)	(2) CUMMULATIVE VOL. INJECTED (bbis)	INJECTION RATE (bbis/day)	(4) FRICTION HEAD LOSS (psi)	(5) CORRECTED TUBING PRESS. (psi) (1)-(4)	(6) INJECTION RATE (gpm) (8)/34.2857	(7) MEASURED BHP (psi)
5	11:45	1336.6	53.0	1296.0	63.970	1272.6	37.80	3445
	11:50	1363.2	57.3	1238.4	58.810	1304.4	36.12	3465
	11:55	1377.2	61.7	1267.2	61.365	1315.8	36.96	3480
	12:00	1418.9	66.0	1238.4	58.810	1360.1	36.12	3495
	12:05	1443.0	70.4	1267.2	61.365	1381.6	36.96	3506
	12:10	1454.4	74.8	1267.2	61.365	1393.0	36.96	3513
				1262.4				
	12:15	1517.7	80.3	1584.0	92.727	1425.0	46.20	3540
	12:20	1516.5	85.7	1555.2	89.632	1426.9	45.36	3544
	12:25	1481.0	91.1	1555.2	89.632	1391.4	45.36	3546
6	12:30	1489.9	96.5	1555.2	89.632	1400.3	45.36	3543
	12:35	1497.5	101.8	1526.4	86.585	1410.9	44.52	3542
	12:40	1505.1	107.2	1555.2	89.632	1415.5	45.36	3544
				1555.2				
	12:45	1558.3	113.7	1872.0	126.306	1432.0	54.60	3566
	12:50	1564.6	120.2	1872.0	126.306	1438.3	54.60	3571
	12:55	1574.7	126.7	1872.0	126.306	1448.4	54.60	3577
	1:00	1581.0	133.2	1872.0	126.306	1454.7	54.60	3584
	1:05	1588.7	139.6	1843.2	122.734	1466.0	53.76	3589
	1:10	1583.6	146.1	1872.0	126.306	1457.3	54.60	3596
FALLOFF				1867.2				
	1:11	1411.5				1411.5		3543
	1:12	1381.1				1381.1		3519
	1:13	1360.9				1360.9		3497
	1:14	1341.9				1341.9		3480
	1:15	1324.2				1324.2		3464
	1:20	1262.2				1262.2		3397
	1:25	1211.6				1211.6		3347



JOHN WEST ENGINEERING COMPANY

Hobbs, New Mexico

STEP RATE INJECTION TEST

CLIENT: TEXACO EXPLORATION & PRODUCTION

DATE: OCTOBER 8, 1993

VGSAU NO. 34

WO#: 93-14-1678

Lea County, New Mexico

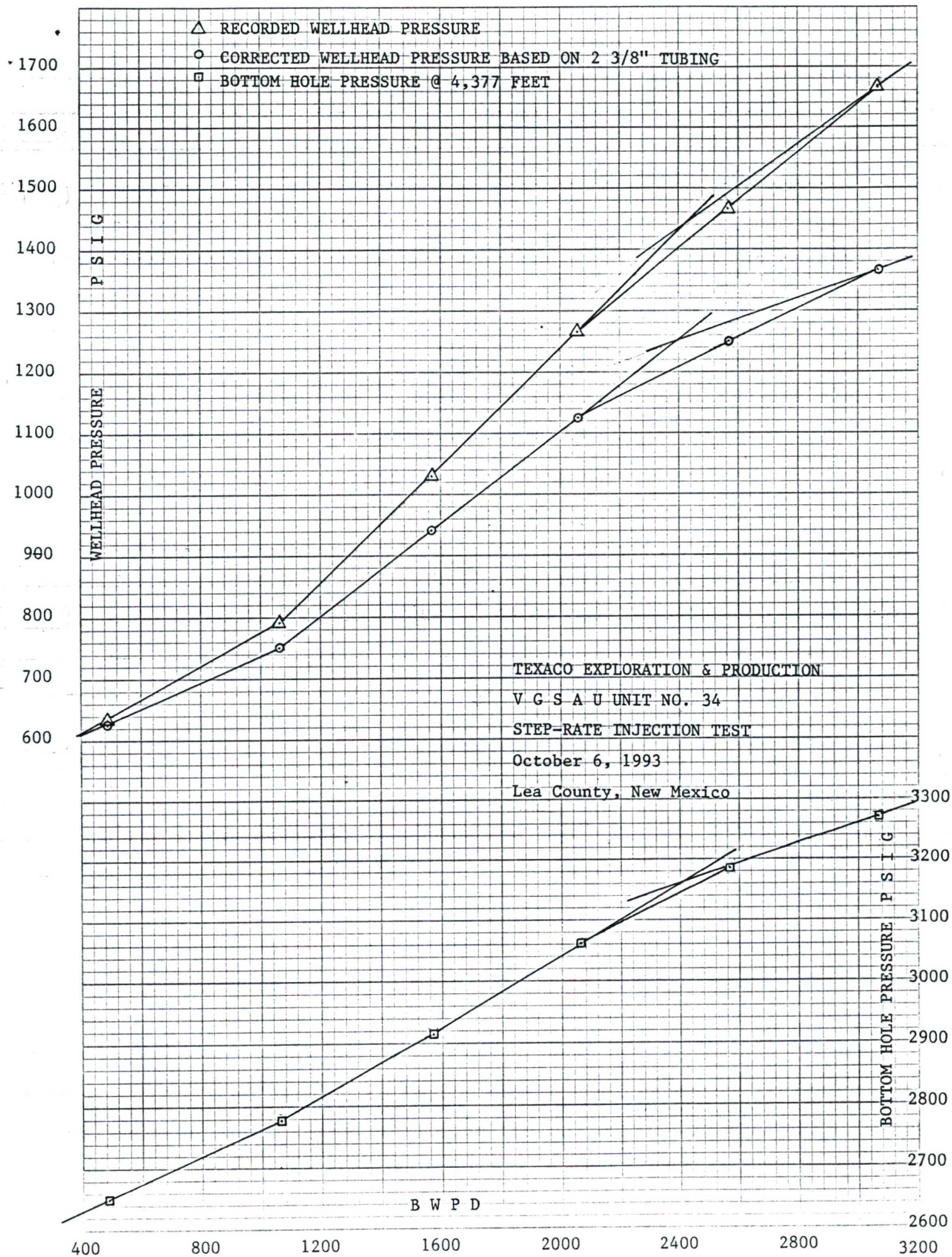
MID-PERFS. 4242-4792

PACKER DEPT

BHP GAUGE D 4377

		(1)	(2)	(3)	(4)	(5)	(6)	(7)
STEP NO.		SURFACE	CUMMULATIVE	INJECTION	FRICTION	CORRECTED	INJECTION	MEASURED
Σ	TIME	TUBING PRESS.	VOL. INJECTED	RATE	HEAD LOSS	TUBING PRESS.	RATE (gpm)	BHP
		(psig)	(bbls)	(bbls/day)	(psi)	(psi) (1)-(4)	(3)/34.2857	(psi)
1	9:30	519.7				519.7		2562
	9:35	584.3	1.5	432.0	7.992	576.3	12.60	2608
	9:40	599.6	3.2	489.6	10.075	589.5	14.28	2622
	9:45	613.5	4.9	489.6	10.075	603.4	14.28	2632
	9:50	621.1	6.6	489.6	10.075	611.0	14.28	2639
	9:55	628.7	8.3	489.6	10.075	618.6	14.28	2646
	10:00	635.1	10.1	518.4	11.198	623.9	15.12	2651
				484.8				
	10:05	719.8	13.8	1065.6	42.469	677.3	31.08	2711
	10:10	752.7	17.5	1065.6	42.469	710.2	31.08	2731
2	10:15	756.5	21.2	1065.6	42.469	714.0	31.08	2746
	10:20	769.2	24.9	1065.6	42.469	726.7	31.08	2757
	10:25	780.6	28.6	1065.6	42.469	738.1	31.08	2769
	10:30	793.3	32.3	1065.6	42.469	750.8	31.08	2779
				1065.6				
	10:35	912.0	37.7	1555.2	85.472	826.5	45.36	2836
	10:40	962.4	43.1	1555.2	85.472	876.9	45.36	2858
	10:45	964.8	48.5	1555.2	85.472	879.3	45.36	2875
	10:50	993.9	54.0	1584.0	88.424	905.5	46.20	2891
	10:55	1007.8	59.5	1584.0	88.424	919.4	46.20	2903
3	11:00	1029.4	65.0	1584.0	88.424	941.0	46.20	2914
				1569.6				
	11:05	1153.6	72.1	2044.8	141.816	1011.8	59.64	2971
	11:10	1185.3	79.2	2044.8	141.816	1043.5	59.64	3000
	11:15	1218.1	86.4	2073.6	145.533	1072.6	60.48	3022
	11:20	1238.3	93.6	2073.6	145.533	1092.8	60.48	3038
	11:25	1258.5	100.7	2044.8	141.816	1116.7	59.64	3050
	11:30	1267.3	107.9	2073.6	145.533	1121.8	60.48	3061
				2059.2				

STEP NO. & REMARKS	TIME	(1) SURFACE TUBING PRESS. (psig)	(2) CUMMULATIVE VOL. INJECTED (bbis)	(3) INJECTION RATE (bbis/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	11:35	1402.7	116.7	2534.4	210.955	1191.7	73.92	3115
	11:40	1415.3	125.7	2597.0	220.696	1194.6	75.75	3133
	11:45	1436.8	134.5	2534.4	210.955	1225.8	73.92	3150
	11:50	1439.3	143.4	2563.2	215.412	1223.9	74.76	3164
	11:55	1469.6	152.4	2592.0	219.911	1249.7	75.60	3174
	12:00	1467.1	161.3	2563.2	215.412	1251.7	74.76	3183
				2563.2				
	12:05	1603.8	172.0	3081.6	302.871	1300.9	89.88	3226
	12:10	1620.3	182.8	3110.4	308.128	1312.2	90.72	3238
	12:15	1641.9	193.3	3024.0	292.481	1349.4	88.20	3247
	12:20	1639.3	204.0	3081.6	302.871	1336.4	89.88	3254
	12:25	1660.8	214.6	3052.8	297.655	1363.1	89.04	3260
	12:30	1668.4	225.3	3081.6	302.871	1365.5	89.88	3268
				3072.0				
FALLOFF	12:31	1206.4				1206.4		3172
	12:32	1186.2				1186.2		3151
	12:33	1176.1				1176.1		3135
	12:34	1155.9				1155.9		3123
	12:35	1154.6				1154.6		3113
	12:40	1116.8				1116.8		3076
	12:45	1092.8				1092.8		3049



JOHN WEST ENGINEERING COMPANY

Hobbs, New Mexico

STEP RATE INJECTION TEST

CLIENT: TEXACO EXPLORATION & PRODUCTION

DATE: OCTOBER 5, 1993

WELL NAME: VGSAU NO. 50

WO#: 83-14-1678

Lea County, New Mexico

MID-PERFS. = 4370-4743

PACKER DEPTH = 4220

BHP GAUGE DEPTH = 4470

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)/34.2957	(7) MEASURED BHP (psi)
1	9:25	14.1				14.1		2086
	9:30	136.7	1.4	403.2	7.184	129.5	11.76	2192
	9:35	169.7	2.7	374.4	6.264	163.4	10.92	2228
	9:40	195.1	4.0	374.4	6.264	188.8	10.92	2254
	9:45	224.2	5.4	403.2	7.184	217.0	11.76	2278
	9:50	248.3	6.8	403.2	7.184	241.1	11.76	2304
	9:55	271.1	8.1	374.4	6.264	264.8	10.92	2323
				388.8				
	10:00	451.7	11.2	892.8	31.264	420.4	26.04	2460
	10:05	508.6	14.3	892.8	31.264	477.3	26.04	2516
2	10:10	549.0	17.2	835.2	27.635	521.4	24.36	2559
	10:15	584.5	20.3	892.8	31.264	553.2	26.04	2595
	10:20	619.9	23.2	835.2	27.635	592.3	24.36	2629
	10:25	646.5	26.2	864.0	29.424	617.1	25.20	2659
				868.8				
	10:30	840.8	30.6	1267.2	59.761	781.0	36.96	2784
	10:35	895.1	35.0	1267.2	59.761	835.3	36.96	2840
	10:40	946.9	39.4	1267.2	59.761	887.1	36.96	2889
	10:45	984.7	43.8	1267.2	59.761	924.9	36.96	2932
	10:50	1010.0	48.2	1267.2	59.761	950.2	36.96	2969
3	10:55	1044.1	52.6	1267.2	59.761	984.3	36.96	3002
				1267.2				
	11:00	1239.1	58.3	1641.6	96.471	1142.6	47.88	3110
	11:05	1299.9	64.0	1641.6	96.471	1203.4	47.88	3164
	11:10	1339.1	69.8	1670.4	99.625	1239.5	48.72	3207
	11:15	1370.0	75.7	1699.2	102.826	1267.2	49.56	3240
	11:20	1402.5	81.4	1641.6	96.471	1306.0	47.88	3270
	11:25	1427.8	87.2	1670.4	99.625	1328.2	48.72	3295
				1660.8				

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) (8)/34.887	(7) MEASURED BHP (psi)
5	11:30	1615.1	94.3	2044.8	144.829	1470.3	59.64	3392
	11:35	1663.3	101.4	2044.8	144.829	1518.5	59.64	3425
	11:40	1686.1	108.5	2044.8	144.829	1541.3	59.64	3448
	11:45	1701.2	115.6	2044.8	144.829	1556.4	59.64	3467
	11:50	1725.3	122.6	2016.0	141.078	1584.2	58.80	3485
	11:55	1736.7	129.8	2073.6	148.626	1588.1	60.48	3503
				2044.8				
	12:00	1972.1	138.2	2419.2	197.672	1774.4	70.56	3577
	12:05	1996.2	146.8	2476.7	206.448	1789.8	72.24	3600
	12:10	2011.4	155.3	2448.0	202.048	1809.4	71.40	3617
6	12:15	2025.3	163.8	2448.0	202.048	1823.3	71.40	3631
	12:20	2036.7	172.4	2476.8	206.467	1830.2	72.24	3642
	12:25	2027.8	181.0	2476.8	206.467	1821.3	72.24	3653
				2457.6				
	12:30	2262.0	190.9	2851.2	267.888	1994.1	83.16	3705
	12:35	2265.8	200.8	2851.2	267.888	1997.9	83.16	3719
	12:40	2298.8	210.7	2851.2	267.888	2030.9	83.16	3724
	12:45	2310.2	220.5	2822.4	262.904	2047.3	82.32	3727
	12:50	2320.3	230.4	2851.2	267.888	2052.4	83.16	3733
	12:55	2303.8	240.3	2851.2	267.888	2035.9	83.16	3737
7				2846.4				
	12:56	1466.0				1466.0		3556
	12:57	1377.5				1377.5		3481
	12:58	1333.2				1333.2		3430
	12:59	1291.4				1291.4		3391
	1:00	1262.3				1262.3		3358
	1:05	1163.6				1163.6		3253
	1:10	1104.2				1104.2		3191
FIVE MIN								
FIVE MIN								

