

State of New Mexico
ENERGY, MINERALS and NATURAL RESOURCES DEPARTMENT
Santa Fe, New Mexico 87505



May 22, 1995

CF-6008
R-5530

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

PMX-86
PDEV0020700086

Attn: Mr. Robert McNaughton

**RE: Injection Pressure Increase Central Vacuum Unit
Waterflood Project, Lea County, New Mexico**

Dear Mr. McNaughton:

Reference is made to your request dated April 21, 1995 to increase the surface injection pressure on 8 wells in the above referenced waterflood project. This request is based on step rate tests conducted between March 27 and April 18, 1995. 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:

<i>Well and Location</i>	<i>Maximum Surface Injection Pressure</i>
Central Vacuum Unit Well No.25, Unit Letter L, Section 25,Twp. 17S, Rge.34E	2500 PSIG
Central Vacuum Unit Well No.40, Unit Letter P, Section 25, Twp.17S, Rge.34E	2500 PSIG
Central Vacuum Unit Well No.83, Unit Letter J, Section 36, Twp.17S, Rge. 34E	2500 PSIG
Central Vacuum Unit Well No.106, Unit Letter E, Section 6, Twp.18S, Rge.35E	2280 PSIG

VILLAGRA BUILDING - 408 Galisteo

Forestry and Resources Conservation Division
P.O. Box 1948 87504-1948
827-5830

Park and Recreation Division
P.O. Box 1147 87504-1147
827-7465

2040 South Pacheco

Office of the Secretary
827-5950

Administrative Services
827-5925

Energy Conservation & Management
827-5900

Mining and Minerals
827-5970

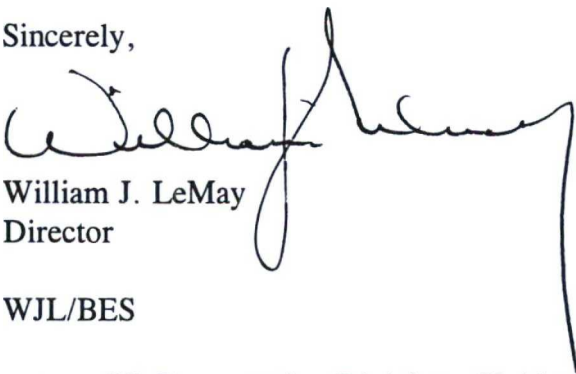
Oil Conservation
827-7131

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

<i>Well and Location</i>	<i>Maximum Surface Injection Pressure</i>
Central Vacuum Unit Well No.139, Unit Letter M, Section 33	2340 PSIG
Central Vacuum Unit Well No.143, Unit Letter A, Section 6, Twp.18S, Rge.35E	2320 PSIG
Central Vacuum Unit Well No.146, Unit Letter G, Section 31, Twp.17S, Rge.35E	2250 PSIG
Central Vacuum Unit Well No.147, Unit Letter A, Section 31, Twp.17S, Rge.35E	1930 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

cc: / Oil Conservation Division - Hobbs
Files: Case File No.6008; PMX-86; PSI-X 2nd QTR 95



N/R

OIL CONSERVATION DIVISION

REC-100

April 21, 1995

PM 8 52

New Mexico Oil Conservation Division
P.O. Box 2088
Santa Fe, New Mexico 88240

Attention: David R. Catanach

Re: Request for Increase in Surface Injection Pressure Limits
Texaco Exploration and Production Inc.
Central Vacuum Unit
T-17/18-S, R-34/35-E, Lea County, New Mexico

Dear Mr. Catanach

Texaco Exploration and Production Inc. requests that the surface injection pressure limit be increased for the subject well. Step rate tests were recently run and the results are attached. A summary is given below:

Well No.	Observed Surface Parting Pressure	Requested Injection Pressure Limit
25	3110 psi L. 25-17-34	2500 psi
40	2570 psi	2500 psi
83	2590 psi	2500 psi
106	2330 psi	2280 psi
139	2390 psi	2340 psi
86 143	2370 psi A. 6-18-35	2320 psi
86 146	2300 psi G. 31-17-35	2250 psi
86 147	1980 psi A. 31-17-35	1930 psi

If additional information is needed, please contact Robert McNaughton at 505-397-0428.

Yours very truly,

Robert McNaughton
Production Engineer

RTM/

attachments

cc: Mr. Jerry Sexton
Hobbs NMOCD

R.5530

86
FMA 121
178

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

STEP RATE INJECTION TEST

CLIENT: TEXACO EXPLORATION AND PRODUCTION

DATE: APRIL 11, 1995

WELL NAME: CENTRAL VACUUM UNIT NO. 25
LEA COUNTY, NEW MEXICO

WO#: 95-14-0340

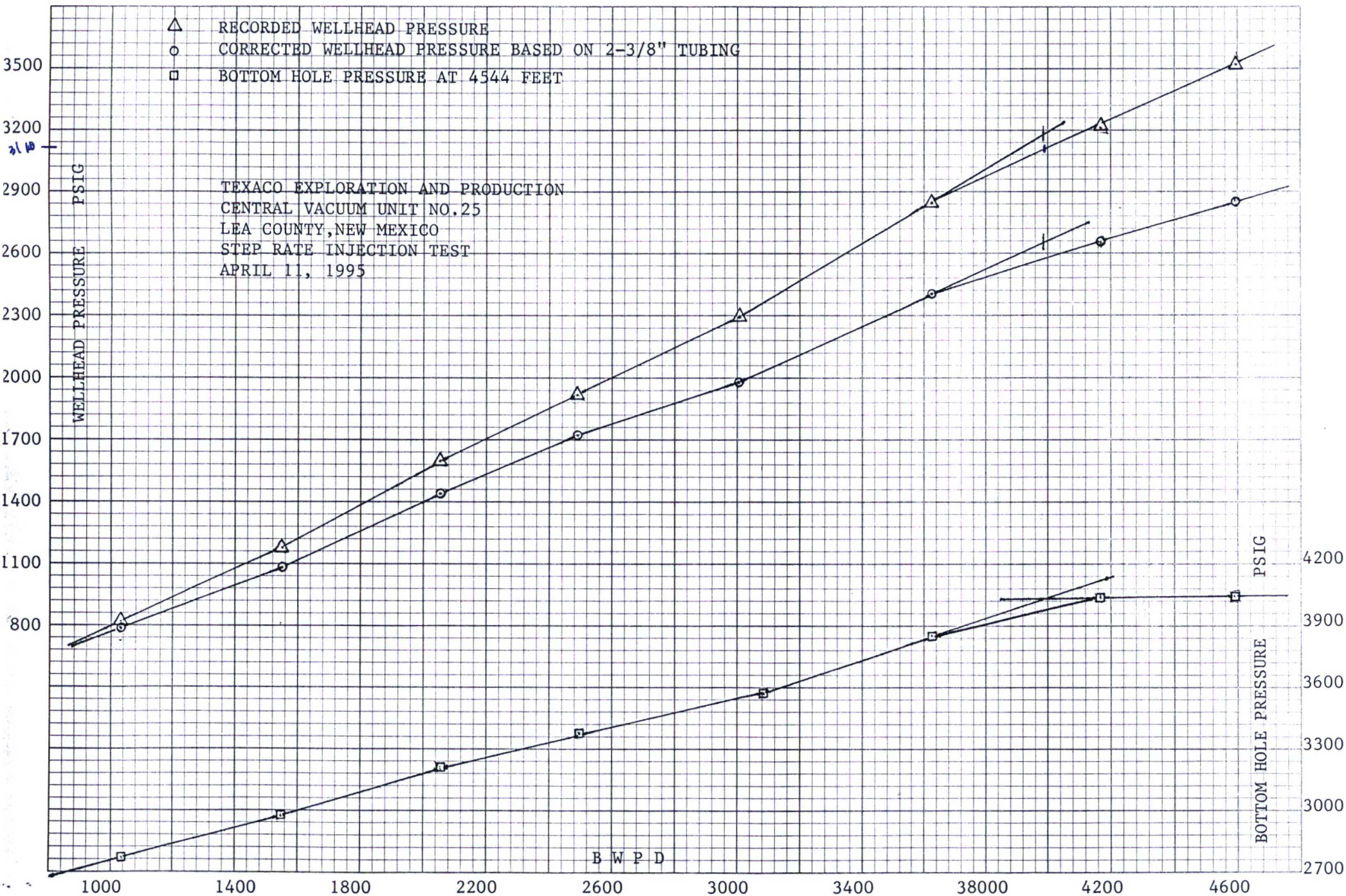
PERFS = 4379-4709

PACKER DEPTH = 4387

BHP GAUGE DEPTH = 4544

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	9:35	410.0				410.0		2458.0
	9:40	700.0	3.5	1008.0	39.782	660.2	29.40	2666.0
	9:45	776.0	7.1	1036.8	41.910	734.1	30.24	2722.0
	9:50	824.0	10.8	1065.6	44.089	779.9	31.08	2761.0
				1036.8				
2	9:55	1089.0	16.2	1555.2	88.734	1000.3	45.36	2901.0
	10:00	1143.0	21.6	1555.2	88.734	1054.3	45.36	2942.0
	10:05	1173.0	27.0	1555.2	88.734	1084.3	45.36	2974.0
				1555.2				
3	10:10	1503.0	34.1	2044.8	147.227	1355.8	59.64	3140.0
	10:15	1555.0	41.2	2044.8	147.227	1407.8	59.64	3174.0
	10:20	1591.0	48.4	2073.6	151.086	1439.9	60.48	3207.0
				2054.4				
4	10:25	1863.0	57.1	2505.6	214.422	1648.6	73.08	3324.0
	10:30	1903.0	65.8	2505.6	214.422	1688.6	73.08	3347.0
	10:35	1923.0	74.4	2476.8	209.885	1713.1	72.24	3368.0
				2495.0				
5	10:40	2365.0	85.2	3110.4	319.885	2045.1	90.72	3601.0
	10:45	2345.0	95.9	3081.6	314.427	2030.6	89.88	3565.0
	10:50	2299.0	106.5	3052.8	309.012	1990.0	89.04	3572.0
				3081.6				
6	10:55	2703.0	119.0	3600.0	419.221	2283.8	105.00	3731.0
	11:00	2777.0	131.6	3628.8	425.446	2351.6	105.84	3795.0
	11:05	2841.0	144.3	3657.6	431.714	2409.3	106.68	3853.0
				3628.8				
7	11:10	3201.0	158.6	4118.4	537.689	2663.3	120.12	3970.0
	11:15	3198.0	173.2	4204.8	558.743	2639.3	122.64	4024.0
	11:20	3211.0	187.7	4176.0	551.684	2659.3	121.80	4040.0
				4166.4				

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)
8 FALLOFF	11:25	3524.0	203.6	4579.2	654.250	2869.7	133.56	4124.0
	11:30	3433.0	219.6	4608.0	661.883	2771.1	134.40	4009.0
	11:35	3514.0	235.6	4608.0	661.883	2852.1	134.40	4030.0
				4598.4				
	11:36	1518.0				1518.0		3588.0
	11:37	1381.0				1381.0		3455.0
	11:38	1280.0				1280.0		3359.0
	11:39	1188.0				1188.0		3240.0
	11:40	1100.0				1100.0		3190.0
	11:45	1030.0				1030.0		3093.0
	11:50	946.0				946.0		3005.0



WEST-TEST, INC.

A SUBSIDIARY OF JOHN WEST ENGINEERING COMPANY

Hobbs, New Mexico

STEP RATE INJECTION TEST

CLIENT: TEXACO EXPLORATION AND PRODUCTION

DATE: MARCH 27, 1995

WELL NAME: CENTRAL VACUUM UNIT NO. 40
LEA COUNTY, NEW MEXICO

WO#: 95-14-0342

PERFS = 4400-4701

PACKER DEPTH = 4340

BHP GAUGE DEPTH = 4320

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	3:05	966.0				966.0		2552.0
	3:10	815.0	5.3	1526.4	81.492	733.5	44.52	2496.0
	3:15	749.0	10.5	1497.6	78.670	670.3	43.68	2446.0
	3:20	722.0	15.8	1526.4	81.492	640.5	44.52	2429.0
				1516.8				
2	3:25	1119.0	23.3	2160.0	154.906	964.1	63.00	2583.0
	3:30	1143.0	30.8	2160.0	154.906	988.1	63.00	2604.0
	3:35	1155.0	38.4	2188.8	158.749	996.3	63.84	2615.0
3				2169.6				
	3:40	1751.0	48.1	2793.6	249.306	1501.7	81.48	2846.0
	3:45	1860.0	58.0	2851.2	258.899	1601.1	83.16	2898.0
	3:50	1841.0	68.2	2937.6	273.599	1567.4	85.68	2923.0
				2860.8				
4	3:55	2519.0	80.6	3571.2	392.676	2126.3	104.16	3168.0
	4:00	2539.0	92.9	3542.4	386.838	2152.2	103.32	3218.0
	4:05	2586.0	105.4	3600.0	398.555	2187.4	105.00	3242.0
5				3571.2				
	4:10	3283.0	120.5	4348.8	565.343	2717.7	126.84	3400.0
	4:15	3610.0	135.1	4204.8	531.199	3078.8	122.64	3395.0
	4:20	3503.0	150.4	4406.4	579.274	2923.7	128.52	3409.0
				4320.0				
FALLOFF	4:21	718.0				718.0		2655.0
	4:22	590.0				590.0		2523.0
	4:23	521.0				521.0		2452.0
	4:24	472.0				472.0		2405.0
	4:25	432.0				432.0		2364.0
	4:30	316.0				316.0		2244.0
	4:35	247.0				247.0		2173.0

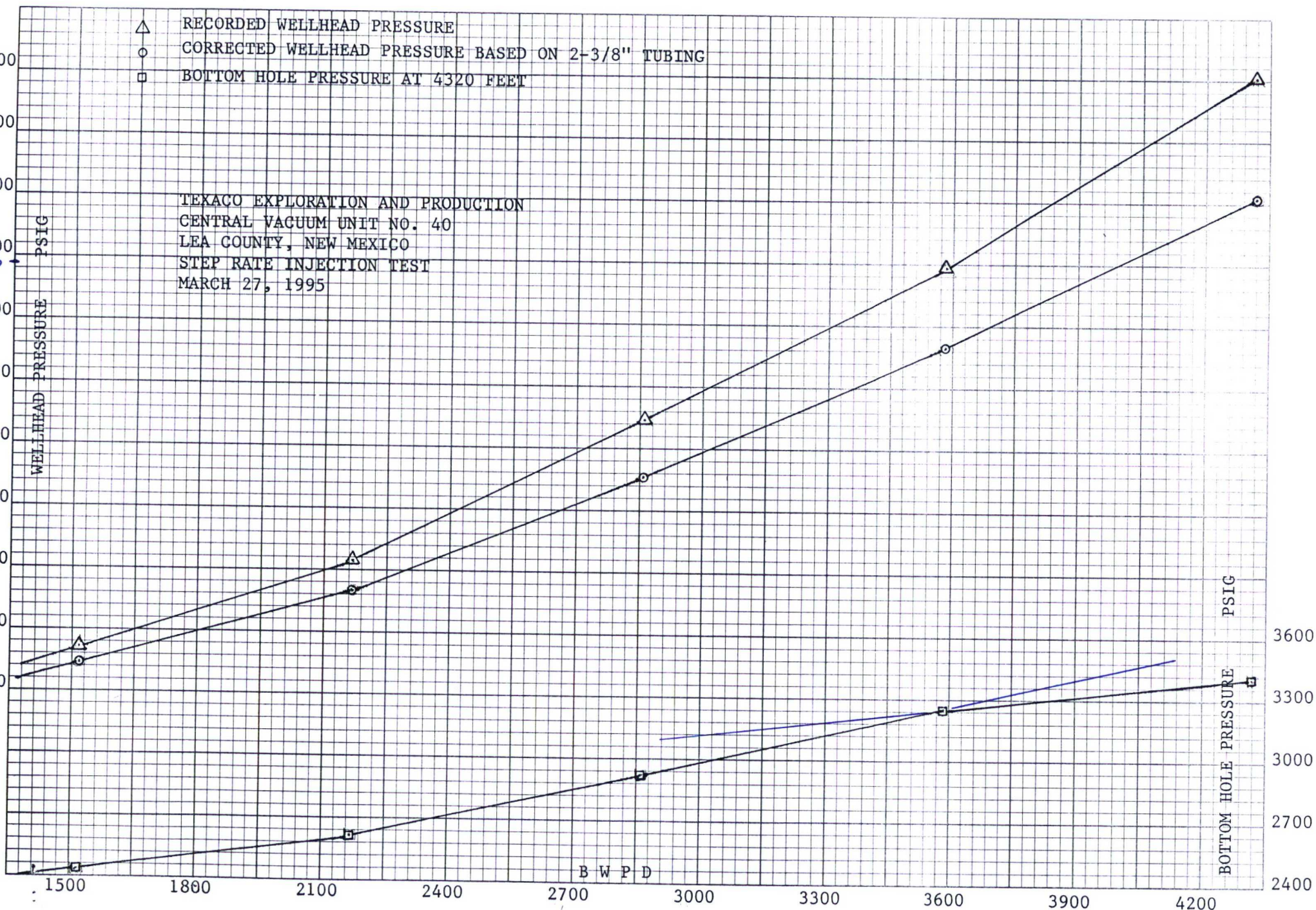
- △ RECORDED WELLHEAD PRESSURE
○ CORRECTED WELLHEAD PRESSURE BASED ON 2-3/8" TUBING
□ BOTTOM HOLE PRESSURE AT 4320 FEET

TEXACO EXPLORATION AND PRODUCTION
CENTRAL VACUUM UNIT NO. 40
LEA COUNTY, NEW MEXICO
STEP RATE INJECTION TEST
MARCH 27, 1995

WELLHEAD PRESSURE PSIG

BOTTOM HOLE PRESSURE PSIG

B W P D



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

STEP RATE INJECTION TEST

CLIENT: TEXACO EXPLORATION AND PRODUCTION

DATE: APRIL 5, 1995

WELL NAME: CENTRAL VACUUM UNIT NO. 83
LEA COUNTY, NEW MEXICO

WO#: 95-14-0345

PERFS = 4338-4667

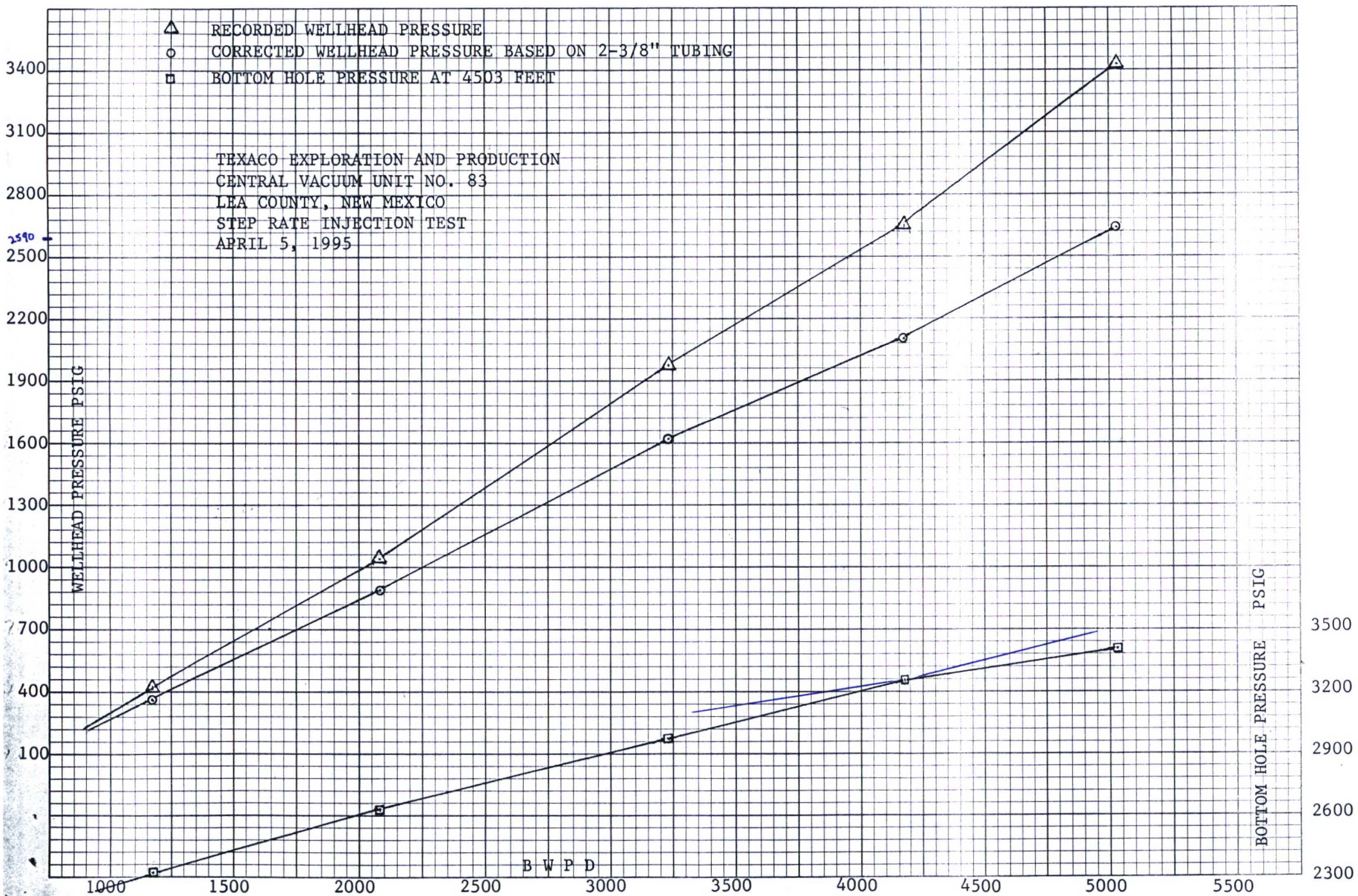
PACKER DEPTH = 4294

BHP GAUGE DEPTH = 4503

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	11:45	10.0				10.0		2037.0
	11:50	310.3	3.9	1123.2	48.161	262.1	32.76	2220.0
	11:55	365.6	8.2	1238.4	57.695	307.9	36.12	2268.0
	12:00	410.2	12.2	1152.0 1171.2	50.470	359.7	33.60	2320.0
2	12:05	895.1	19.2	2016.0	142.120	753.0	58.80	2497.0
	12:10	985.4	26.6	2131.2	157.508	827.9	62.16	2570.0
	12:15	1040.0	33.9	2102.4 2083.2	153.593	886.4	61.32	2634.0
3	12:20	1806.3	44.9	3168.0	327.944	1478.4	92.40	2826.0
	12:25	1957.5	56.2	3254.4	344.682	1612.8	94.92	2912.0
	12:30	1972.4	67.6	3283.2 3235.2	350.346	1622.1	95.76	2966.0
4	12:35	2671.3	81.5	4003.2	505.592	2165.7	116.76	3119.0
	12:40	2625.3	96.6	4348.8	589.292	2036.0	126.84	3201.0
	12:45	2645.2	111.1	4176.0 4176.0	546.706	2098.5	121.80	3253.0
5	12:50	3466.2	128.4	4982.4	757.894	2708.3	145.32	3378.0
	12:55	3439.5	145.9	5040.0	774.182	2665.3	147.00	3390.0
	1:00	3426.5	163.6	5097.6 5040.0	790.630	2635.9	148.68	3412.0
FALLOFF	1:02	1090.0				1090.0		2976.0
	1:05	870.0				870.0		2799.0
	1:10	710.0				710.0		2710.0
	1:15	600.0				600.0		2616.0

- △ RECORDED WELLHEAD PRESSURE
- CORRECTED WELLHEAD PRESSURE BASED ON 2-3/8" TUBING
- BOTTOM HOLE PRESSURE AT 4503 FEET

TEXACO EXPLORATION AND PRODUCTION
CENTRAL VACUUM UNIT NO. 83
LEA COUNTY, NEW MEXICO
STEP RATE INJECTION TEST
APRIL 5, 1995



WEST-TEST, INC.

A SUBSIDIARY OF JOHN WEST ENGINEERING COMPANY

Hobbs, New Mexico

STEP RATE INJECTION TEST

CLIENT: TEXACO EXPLORATION AND PRODUCTION

DATE: APRIL 13, 1995

WELL NAME: CENTRAL VACUUM UNIT NO. 106
LEA COUNTY, NEW MEXICO

WO#: 95-14-0347

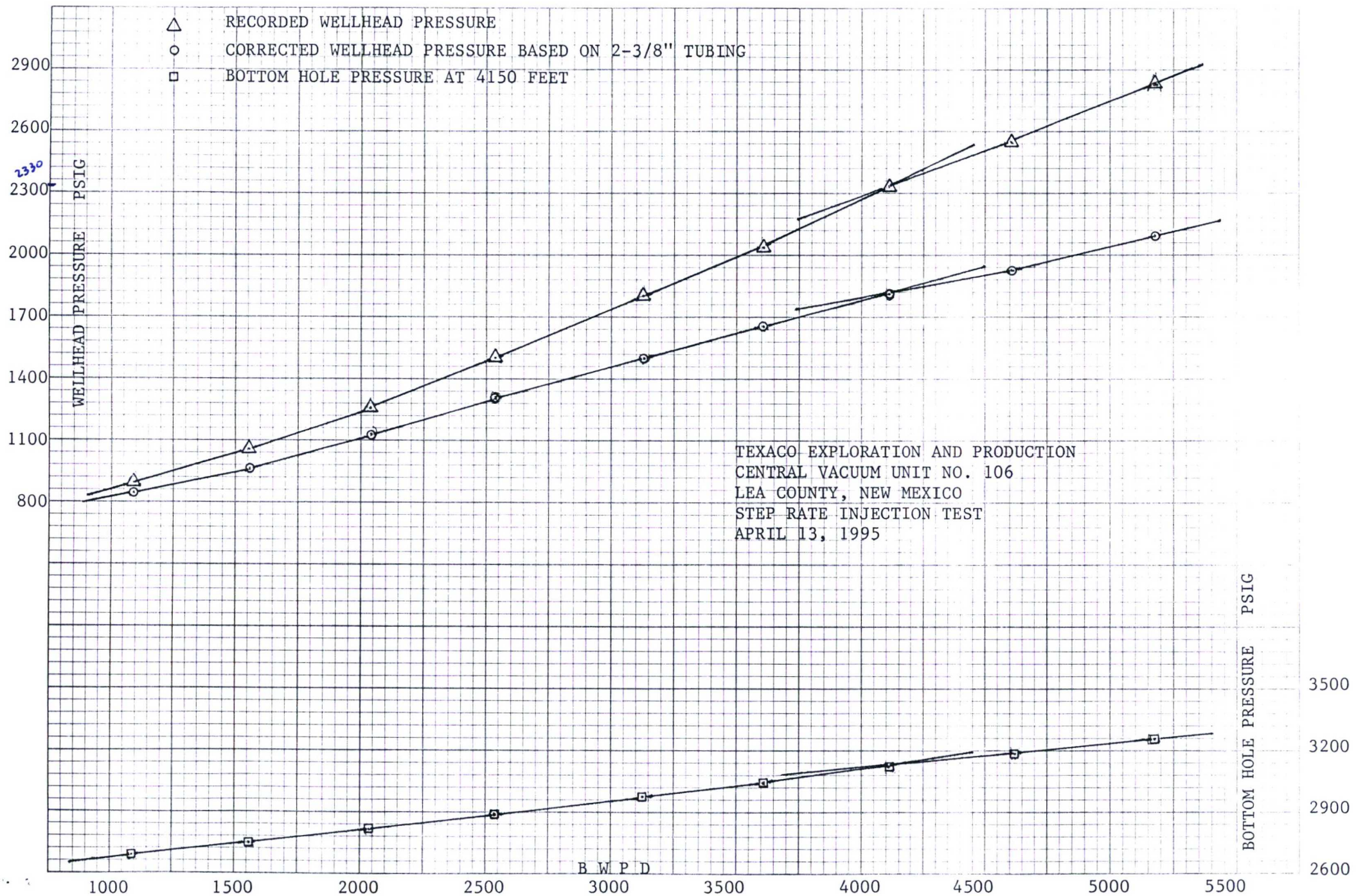
PERFS = 4238-4720

TUBING = 4183

BHP GAUGE DEPTH = 4150

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	9:45	722.0				722.0		2612.0
	9:50	865.0	3.8	1094.4	42.303	822.7	31.92	2667.0
	9:55	879.0	7.6	1094.4	42.303	836.7	31.92	2677.0
	10:00	897.0	11.4	1094.4	42.303	854.7	31.92	2688.0
				1094.4				
2	10:05	1026.0	16.8	1555.2	81.040	945.0	45.36	2727.0
	10:10	1042.0	22.2	1555.2	81.040	961.0	45.36	2737.0
	10:15	1054.0	27.6	1555.2	81.040	973.0	45.36	2748.0
3				1555.2				
	10:20	1242.0	34.7	2044.8	134.461	1107.5	59.64	2793.0
	10:25	1252.0	41.8	2044.8	134.461	1117.5	59.64	2805.0
	10:30	1272.0	48.9	2044.8	134.461	1137.5	59.64	2817.0
				2044.8				
4	10:35	1478.0	57.8	2563.2	204.240	1273.8	74.76	2860.0
	10:40	1497.0	66.6	2534.4	200.015	1297.0	73.92	2875.0
	10:45	1510.0	75.4	2534.4	200.015	1310.0	73.92	2888.0
				2544.0				
5	10:50	1786.0	86.3	3139.2	297.172	1488.8	91.56	2944.0
	10:55	1802.0	97.1	3110.4	292.148	1509.9	90.72	2958.0
	11:00	1811.0	108.0	3139.2	297.172	1513.8	91.56	2972.0
				3129.6				
6	11:05	2035.0	120.5	3600.0	382.871	1652.1	105.00	3018.0
	11:10	2046.0	133.1	3628.8	388.557	1657.4	105.84	3035.0
	11:15	2042.0	145.7	3628.8	388.557	1653.4	105.84	3046.0
				3619.2				
7	11:20	2253.0	159.7	4032.0	472.178	1780.8	117.60	3093.0
	11:25	2300.0	173.9	4089.6	484.733	1815.3	119.28	3109.0
	11:30	2336.0	188.6	4233.6	516.781	1819.2	123.48	3125.0
				4118.4				

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)
8	11:35	2567.0	204.7	4636.8	611.501	1955.5	135.24	3175.0
	11:40	2544.0	220.8	4636.8	611.501	1932.5	135.24	3182.0
	11:45	2543.0	236.7	4617.6	606.825	1936.2	134.68	3189.0
9	11:50	2890.0	254.5	4617.6				
	11:55	2895.0	272.5	5126.4	736.285	2153.7	149.52	3249.0
	12:00	2865.0	290.6	5184.0	751.663	2143.3	151.20	3260.0
FALLOFF	12:00			5212.8	759.407	2105.6	152.04	3260.0
				5174.4				
	12:01	1110.0				1110.0		3013.0
	12:02	1097.0				1097.0		3000.0
	12:03	1091.0				1091.0		2993.0
	12:04	1083.0				1083.0		2985.0
	12:05	1075.0				1075.0		2977.0
	12:10	1054.0				1054.0		2956.0
	12:15	1035.0				1035.0		2937.0



WEST-TEST, INC.

A SUBSIDIARY OF JOHN WEST ENGINEERING COMPANY

Hobbs, New Mexico

STEP RATE INJECTION TEST

CLIENT: TEXACO EXPLORATION AND PRODUCTION

DATE: APRIL 14, 1995

WELL NAME: CENTRAL VACUUM UNIT NO. 139
LEA COUNTY, NEW MEXICO

WO#: 95-14-0348

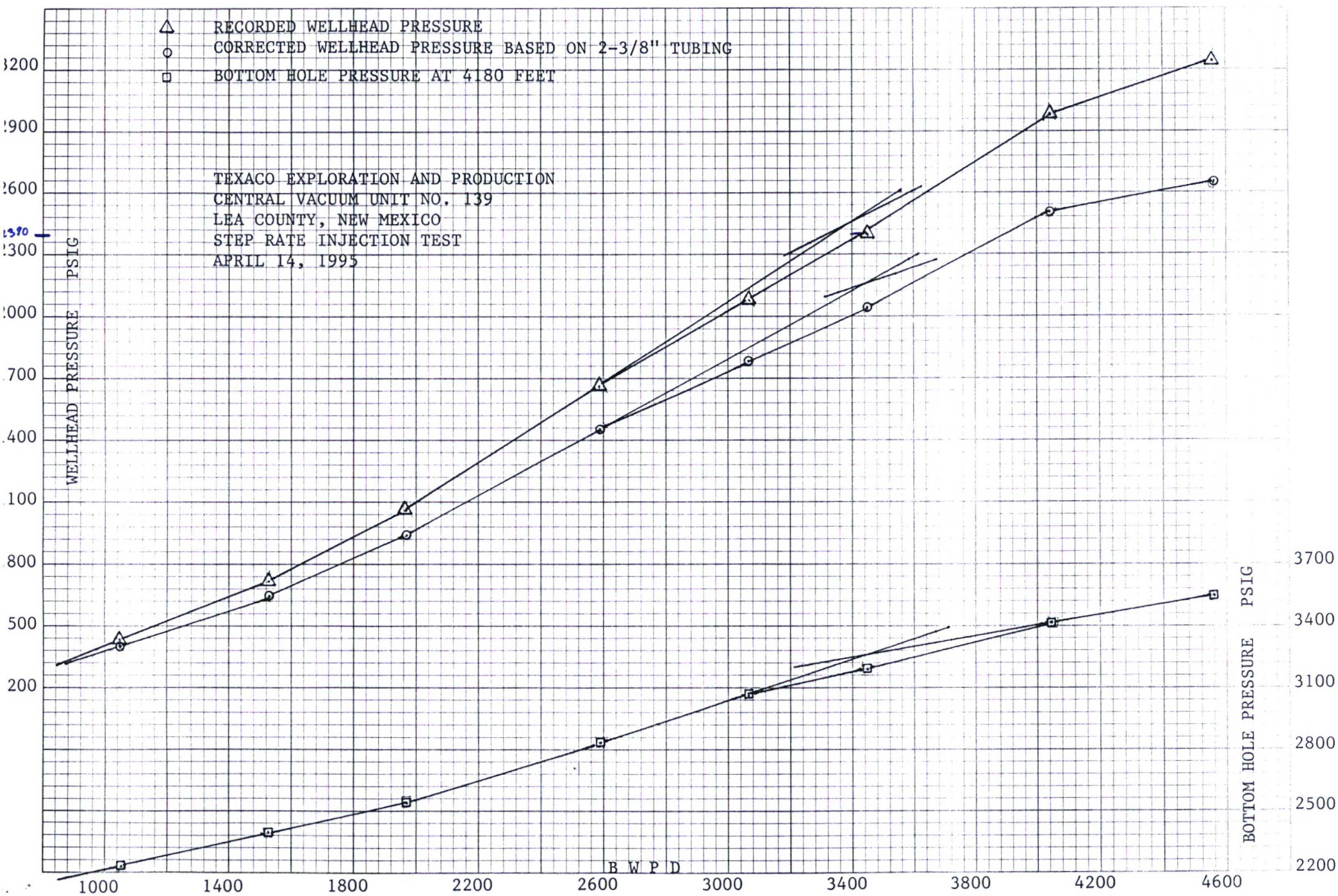
PERFS = 4263-4730

TUBING = 4222

BHP GAUGE DEPTH = 4180

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	9:15	178.0				178.0		2061.0
	9:20	375.0	3.6	1036.8	38.553	336.4	30.24	2178.0
	9:25	407.0	7.3	1065.6	40.557	366.4	31.08	2209.0
	9:30	436.0	10.9	1036.8	38.553	397.4	30.24	2228.0
2				1046.4				
	9:35	638.0	16.2	1526.4	78.851	559.1	44.52	2324.0
	9:40	709.0	21.4	1497.6	76.121	632.9	43.68	2365.0
	9:45	724.0	26.8	1555.2	81.625	642.4	45.36	2386.0
3				1526.4				
	9:50	975.0	33.6	1958.4	125.037	850.0	57.12	2487.0
	9:55	1016.0	40.5	1987.2	128.460	887.5	57.96	2519.0
	10:00	1065.0	47.3	1958.4	125.037	940.0	57.12	2550.0
4				1968.0				
	10:05	1627.0	82.6	2620.8	214.350	1412.6	76.44	2812.0
	10:10	1648.0	91.6	2592.0	210.013	1438.0	75.60	2822.0
	10:15	1664.0	100.5	2563.2	205.716	1458.3	74.76	2841.0
5				2592.0				
	10:20	1984.0	111.4	3139.2	299.320	1684.7	91.56	2958.0
	10:25	2038.0	121.9	3024.0	279.317	1758.7	88.20	3017.0
	10:30	2068.0	132.5	3052.8	284.258	1783.7	89.04	3064.0
6				3072.0				
	10:35	2383.0	144.4	3427.2	352.094	2030.9	99.96	3136.0
	10:40	2390.0	156.5	3484.8	363.120	2026.9	101.64	3166.0
	10:45	2404.0	168.5	3456.0	357.588	2046.4	100.80	3185.0
7				3456.0				
	10:50	2883.0	182.2	3945.6	456.910	2426.1	115.08	3337.0
	10:55	3021.0	196.4	4089.6	488.237	2532.8	119.28	3398.0
	11:00	2990.0	210.6	4089.6	488.237	2501.8	119.28	3411.0
				4041.6				

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)
8 FALLOFF	11:05	3239.0	226.4	4550.4	594.857	2644.1	132.72	3506.0
	11:10	3253.0	242.2	4550.4	594.857	2658.1	132.72	3529.0
	11:15	3244.0	258.1	4579.2	601.841	2642.2	133.56	3545.0
				4560.0				
	11:16	1134.0				1134.0		2981.0
	11:17	1058.0				1058.0		2902.0
	11:18	1013.0				1013.0		2857.0
	11:19	977.0				977.0		2820.0
	11:20	953.0				953.0		2793.0
	11:25	839.0				839.0		2679.0
	11:30	764.0				764.0		2603.0



WEST-TEST, INC.

A SUBSIDIARY OF JOHN WEST ENGINEERING COMPANY

Hobbs, New Mexico

STEP RATE INJECTION TEST

CLIENT: TEXACO EXPLORATION AND PRODUCTION

DATE: APRIL 10, 1995

WELL NAME: CENTRAL VACUUM UNIT NO. 143
LEA COUNTY, NEW MEXICO

WO#: 95-14-0349

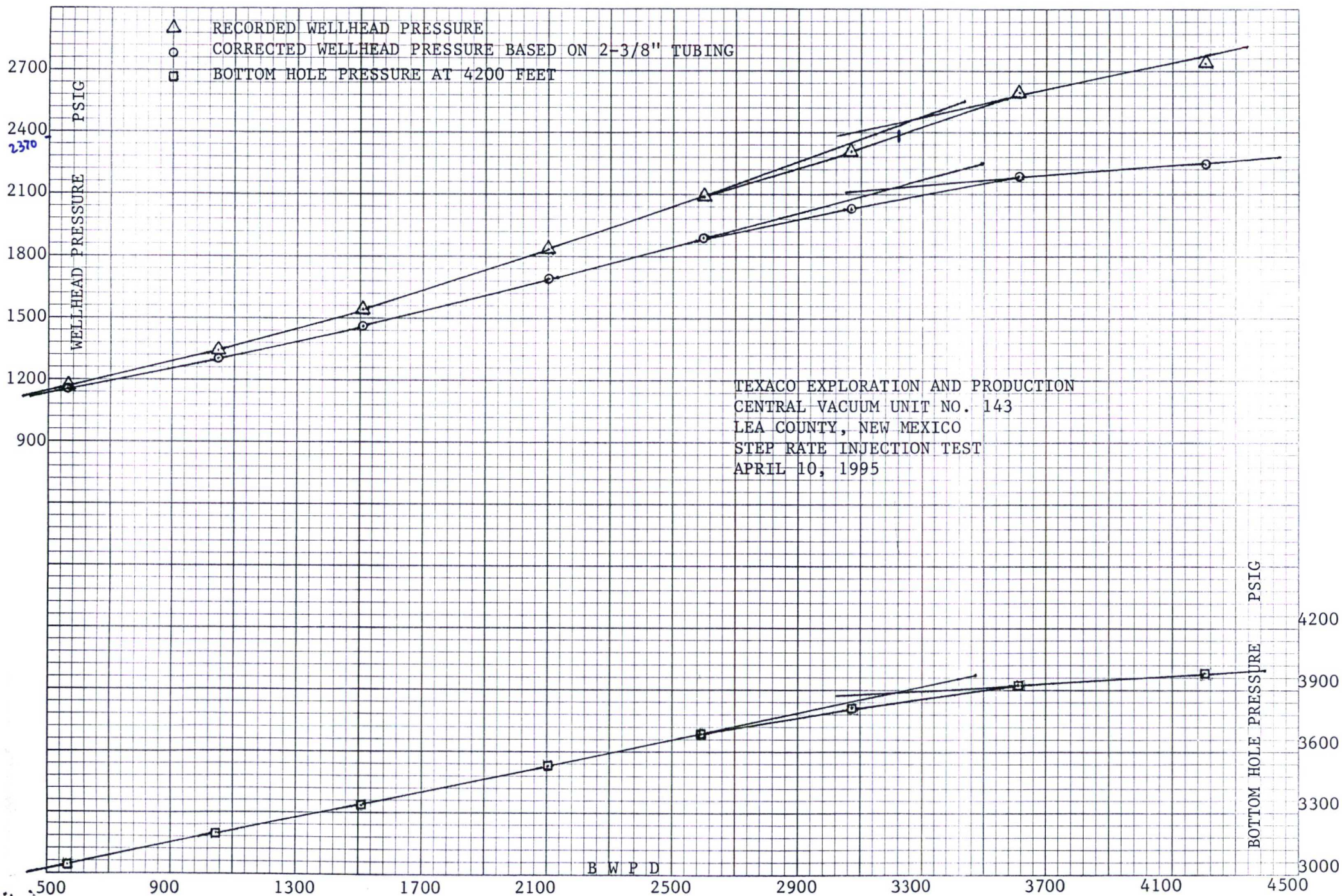
PERFS = 4354-4703

PACKER DEPTH = 4219

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)/34.2857	(7) MEASURED BHP (psi)
1	11:15	1020.0				1020.0		2935.0
	11:20	1100.0	1.9	547.2	11.876	1088.1	15.96	3005.0
	11:25	1131.0	3.9	576.0	13.058	1117.9	16.80	3035.0
	11:30	1159.0	5.9	576.0	13.058	1145.9	16.80	3052.0
				566.4				
2	11:35	1285.0	9.6	1065.6	40.751	1244.2	31.08	3143.0
	11:40	1317.0	13.3	1065.6	40.751	1276.2	31.08	3175.0
	11:45	1344.0	16.9	1036.8	38.737	1305.3	30.24	3201.0
3				1056.0				
	11:50	1498.0	22.2	1526.4	79.228	1418.8	44.52	3285.0
	11:55	1521.0	27.5	1526.4	79.228	1441.8	44.52	3322.0
	12:00	1550.0	32.7	1497.6	76.485	1473.5	43.68	3349.0
				1516.8				
4	12:05	1737.0	39.6	1987.2	129.075	1607.9	57.96	3444.0
	12:10	1805.0	47.0	2131.2	146.909	1658.1	62.16	3501.0
	12:15	1840.0	54.6	2188.8	154.339	1685.7	63.84	3537.0
				2102.4				
5	12:20	1971.0	63.8	2649.6	219.775	1751.2	77.28	3625.0
	12:25	2072.0	72.6	2534.4	202.425	1869.6	73.92	3665.0
	12:30	2098.0	81.6	2592.0	211.018	1887.0	75.60	3690.0
				2592.0				
6	12:35	2289.0	92.4	3110.4	295.668	1993.3	90.72	3770.0
	12:40	2294.0	103.2	3110.4	295.668	1998.3	90.72	3788.0
	12:45	2314.0	113.6	2995.2	275.729	2038.3	87.36	3807.0
				3072.0				
7	12:50	2625.0	126.0	3571.2	381.769	2243.2	104.16	3898.0
	12:55	2549.0	138.6	3628.8	393.238	2155.8	105.84	3907.0
	1:00	2587.0	151.3	3657.6	399.031	2188.0	106.68	3924.0
				3619.2				

STEP NO. & REMARKS	TIME	(1)	(2)	(3)	(4)	(5)	(6)	(7)
		SURFACE TUBING PRESS. (psig)	CUMMULATIVE VOL. INJECTED (bbls)	INJECTION RATE (bbls/day)	FRICTION HEAD LOSS (psi)	CORRECTED TUBING PRESS. (psi) (1)-(4)	INJECTION RATE (gpm) (3)/34.2857	MEASURED BHP (psi)
8 FALLOFF	1:05	2735.0	166.2	4291.2	536.247	2198.8	125.16	3960.0
	1:10	2752.0	180.6	4147.2	503.432	2248.6	120.96	3963.0
	1:15	2743.0	195.1	4176.0	509.919	2233.1	121.80	3984.0
				4205.0				
	1:16	1838.0				1838.0		3774.0
	1:17	1806.0				1806.0		3730.0
	1:18	1774.0				1774.0		3698.0
	1:19	1747.0				1747.0		3671.0
	1:20	1724.0				1724.0		3649.0
	1:25	1643.0				1643.0		3567.0
	1:30	1587.0				1587.0		3510.0



WEST-TEST, INC.

A SUBSIDIARY OF JOHN WEST ENGINEERING COMPANY

Hobbs, New Mexico

STEP RATE INJECTION TEST

CLIENT: TEXACO EXPLORATION AND PRODUCTION

DATE: APRIL 17, 1995

WELL NAME: CENTRAL VACUUM UNIT NO. 146
LEA COUNTY, NEW MEXICO

WO#: 95-14-0350

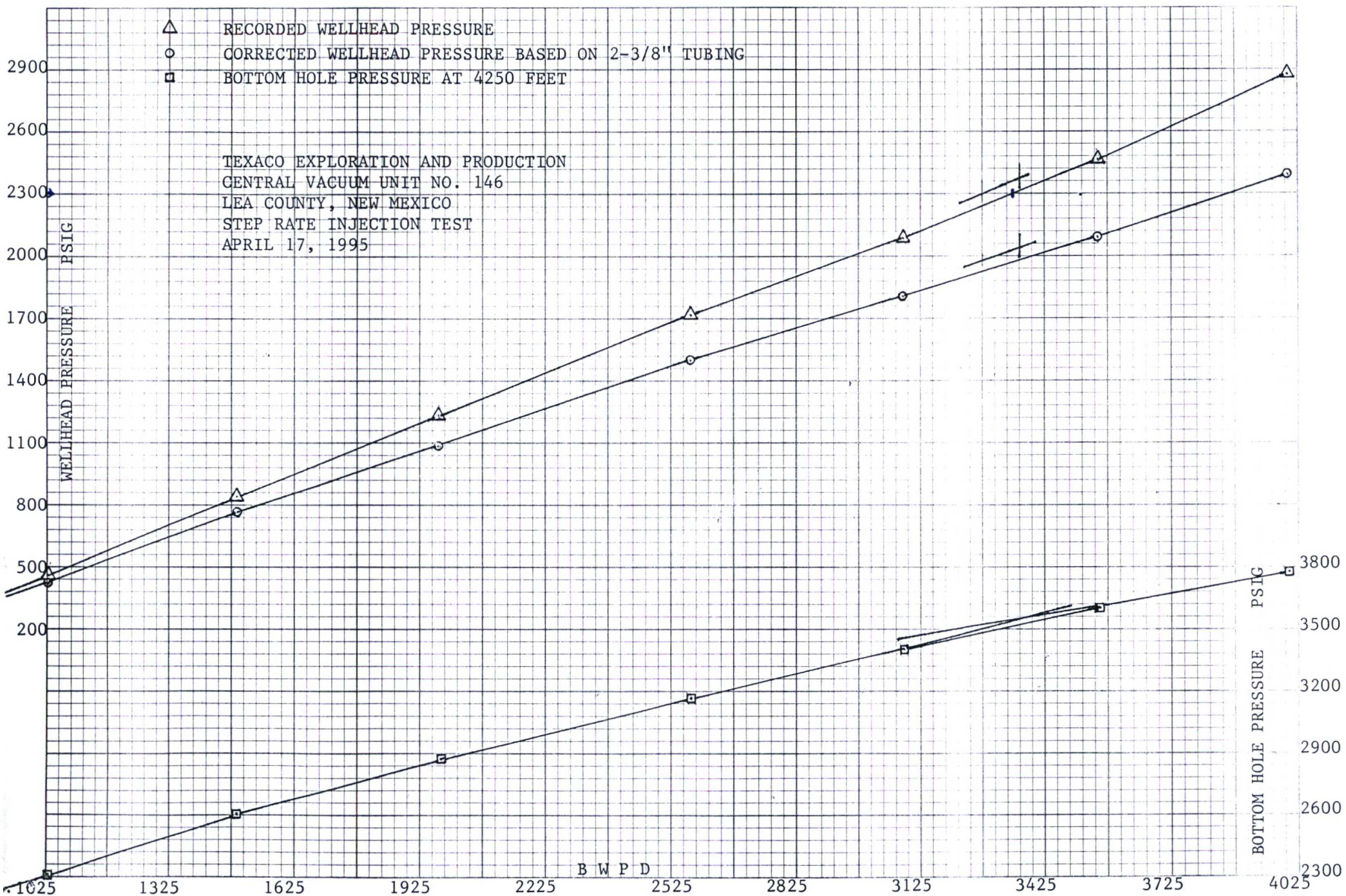
PERFS = 4346-4683

PACKER DEPTH = 4250

BHP GAUGE DEPTH = 4250

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)
	9:15	3.0				3.0		1936
	9:20	306.0	3.5	1008.0	37.208	268.8	29.40	2154
	9:25	403.0	7.1	1036.8	39.199	363.8	30.24	2244
1	9:30	458.0	10.7	1036.8	39.199	418.8	30.24	2301
				1027.2				
	9:35	694.0	15.9	1497.6	77.396	616.6	43.68	2456
	9:40	767.0	20.9	1440.0	71.979	695.0	42.00	2532
2	9:45	848.0	26.2	1526.4	80.172	767.8	44.52	2601
				1488.0				
	9:50	1090.0	33.1	1987.2	130.611	959.4	57.96	2744
	9:55	1168.0	39.9	1958.4	127.131	1040.9	57.12	2819
3	10:00	1223.0	46.8	1987.2	130.611	1092.4	57.96	2877
				1977.6				
	10:05	1574.0	55.7	2563.2	209.161	1364.8	74.76	3040
	10:10	1624.0	64.7	2592.0	213.530	1410.5	75.60	3107
4	10:15	1710.0	73.6	2563.2	209.161	1500.8	74.76	3165
				2572.8				
	10:20	2013.0	84.4	3110.4	299.188	1713.8	90.72	3306
	10:25	2063.0	95.1	3081.6	294.083	1768.9	89.88	3357
5	10:30	2094.0	105.7	3052.8	289.019	1805.0	89.04	3398
				3081.6				
	10:35	2409.0	118.2	3600.0	392.097	2016.9	105.00	3515
	10:40	2433.0	130.6	3571.2	386.314	2046.7	104.16	3561
6	10:45	2472.0	142.8	3513.6	374.866	2097.1	102.48	3610
				3561.6				
	10:50	2570.0	156.7	4003.2	477.186	2092.8	116.76	3692
	10:55	2786.0	170.4	3945.6	464.561	2321.4	115.08	3727
7	11:00	2876.0	184.5	4060.8	489.965	2386.0	118.44	3779
				4003.2				

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)
FALLOFF	11:01	1501.0				1501.0		3456
	11:02	1385.0				1385.0		3331
	11:03	1301.0				1301.0		3246
	11:04	1233.0				1233.0		3178
	11:05	1175.0				1175.0		3120
	11:10	964.0				964.0		2907
	11:15	820.0				820.0		2763



WEST-TEST, INC.

A SUBSIDIARY OF JOHN WEST ENGINEERING COMPANY
Hobbs, New Mexico

STEP RATE INJECTION TEST

CLIENT: TEXACO EXPLORATION AND PRODUCTION

DATE: APRIL 18, 1995

WELL NAME: CENTRAL VACUUM UNIT NO. 147
LEA COUNTY, NEW MEXICO

WO#: 95-14-0351

PERFS = 4379-4714

PACKER DEPTH = 4214

BHP GAUGE DEPTH = 4547

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)
	9:45	1.0				1.0		
	9:50	326.0	3.7	1065.6	44.118	281.9	31.08	
	9:55	423.0	7.4	1065.6	44.118	378.9	31.08	
1	10:00	486.0	11.0	1036.8	41.938	444.1	30.24	
				1056.0				
	10:05	796.0	16.4	1555.2	88.792	707.2	45.36	
	10:10	876.0	21.8	1555.2	88.792	787.2	45.36	
2	10:15	934.0	27.2	1555.2	88.792	845.2	45.36	
				1555.2				
	10:20	1249.0	34.2	2016.0	143.508	1105.5	58.80	
	10:25	1321.0	41.2	2016.0	143.508	1177.5	58.80	
3	10:30	1361.0	48.1	1987.2	139.739	1221.3	57.96	
				2006.4				
	10:35	1718.0	56.9	2534.4	219.149	1498.9	73.92	
	10:40	1777.0	65.6	2505.6	214.564	1562.4	73.08	
4	10:45	1806.0	74.3	2505.6	214.564	1591.4	73.08	
				2515.2				
	10:50	2111.0	84.8	3024.0	303.841	1807.2	88.20	
	10:55	2135.0	95.4	3052.8	309.216	1825.8	89.04	
5	11:00	2134.0	105.9	3024.0	303.841	1830.2	88.20	
				3033.6				
	11:05	2383.0	118.0	3484.8	395.002	1988.0	101.64	
	11:10	2391.0	130.3	3542.4	407.165	1983.8	103.32	
6	11:15	2355.0	142.5	3513.6	401.062	1953.9	102.48	
				3513.6				
	11:20	2594.0	156.3	3974.4	503.758	2090.2	115.92	
	11:25	2656.0	170.4	4060.8	524.205	2131.8	118.44	
7	11:30	2612.0	184.6	4089.6	531.104	2080.9	119.28	
				4041.6				

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)
8 FALLOFF	11:35	2936.0	200.3	4521.6	639.529	2296.5	131.88	
	11:40	2955.0	216.2	4579.2	654.682	2300.3	133.56	
	11:45	3012.0	232.2	4608.0	662.320	2349.7	134.40	
				4569.6				
	11:46	1445.0				1445.0		
	11:47	1296.0				1296.0		
	11:48	1182.0				1182.0		
	11:49	1084.0				1084.0		
	11:50	936.0				936.0		
	11:55	726.0				726.0		
	12:00	557.0				557.0		

