



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



BRUCE KING
GOVERNOR

ANITA LOCKWOOD
CABINET SECRETARY

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

September 7, 1994

CF 6008
R-5530
PMX-121
PDEV0020700121

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

Attention: Robert T. McNaughton

**RE: Correction to Injection Pressure Increase, Central
Vacuum Unit, Lea County, New Mexico**

Dear Mr. McNaughton:

Reference is made to your request dated July 25, 1994 to increase the surface injection pressure on five wells in your Central Vacuum Unit. This request is based on step rate tests conducted on these between July 8 and 14, 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
CVU Well No. 115 Unit J, Section 6, Township 18 South, Range 35 East	1295 PSIG
CVU Well No. 144 Unit B, Section 8, Township 16 South, Range 35 East	1875 PSIG
CVU Well No. 148 Unit P, Section 30, Township 17 South, Range 35 East	1500 PSIG
CVU Well No. 155 Unit I, Section 25, Township 17 South, Range 34 East	1375 PSIG

Correction to Injection Pressure Increase
Texaco Exploration and Production, Inc.
September 7, 1994
Page 2

Well and Location	Maximum Injection Surface Pressure
CVU Well No. 158 Unit D, Section 36, Township 17 South, Range 34 East	2000 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 File No. 6008

PMX-121

PSI-X 3rd Quarter 1994

D. Catanach

1st



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



BRUCE KING
GOVERNOR

ANITA LOCKWOOD
CABINET SECRETARY

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

August 26, 1994

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

Attention: Robert T. McNaughton

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

Dear Mr. McNaughton:

Reference is made to your request dated July 25, 1994 to increase the surface injection pressure on five wells in your Central Vacuum Unit. This request is based on step rate tests conducted on these between July 8 and 14, 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:

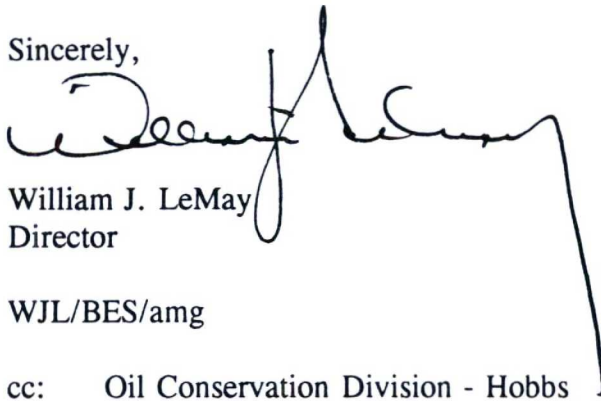
Well and Location	Maximum Injection Surface Pressure
CVU Well No. 15 Unit J, Section 6, Township 18 South, Range 35 East	1295 PSIG
CVU Well No. 144 Unit B, Section 8, Township 16 South, Range 35 East	1875 PSIG
CVU Well No. 148 Unit P, Section 30, Township 17 South, Range 35 East	1500 PSIG
CVU Well No. 155 Unit I, Section 25, Township 17 South, Range 34 East	1375 PSIG

*Injection Pressure Increase
Texaco Exploration and Production, Inc.
August 26, 1994
Page 2*

Well and Location	Maximum Injection Surface Pressure
CVU Well No. 158 Unit D, Section 36, Township 17 South, Range 34 East	2000 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 File No. 6008
PMX-121
PSI-X 3rd Quarter 1994
D. Catanach

NO WAITING PERIOD

COMPANY: **TEXACO E & P, INC.**
ADDRESS: **P.O. Box 730**
CITY, STATE, ZIP: **Hobbs, New Mexico 88241**
ATTENTION: **Mr. Robert T. McNaughton**

Re: Injection Pressure Increase
Central Vacuum Unit
Lea County, New Mexico

Dear Sir:

Reference is made to your request dated **July 25, 1994**, to increase the surface injection pressure on **5 wells in your Central Vacuum Unit**. This request is based on step rate tests conducted on these wells between **July 8 and 14, 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:

<u>Well & Location</u>	<u>Maximum Injection Surface Pressure</u>
CVU Well No.115 Unit J, Section 6, T18S, R35E	1295 psig
CVU Well No.144 Unit B, Section 8, T16S, R35E	1875 psig
CVU Well No.148 Unit P, Section 30, T17S, R35E	1500 psig
CVU Well No.155 Unit I, Section 25, T17S, R34E	1375 psig
CVU Well No.158 Unit D, Section 36, T17S, R34E	2000 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 File No.6008; PMX-121; PSI-X 3rd Qtr 1994



Texaco E & P

PO Box 730
Hobbs NM 88241-0730
505-393-7100

OIL CONSERVATION DIVISION
RECEIVED

94 JUL 28 AM 8 50

July 25, 1994

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, Well No.s 115, 144, 148, 155 & 158
Vacuum Grayburg San Andres
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 limits be increased for the five referenced wells. The increases are based on the results of the attached step rate tests. Raising the pressure limits is necessary to maintain nominal injection rates and balance the patterns. If additional information is needed, please contact Robert McNaughton at 505-397-0428.

Yours very truly,

Robert T. McNaughton
Production Engineer

RTM/

cc: Mr. Jerry Sexton
Hobbs NMOCD

file
chrono

attachments

Central Vacuum Unit

Texaco Exploration and Production

Lea County, New Mexico

R-5496

CVU Well #	Pressure Limit	Current Injection Rate and Pressure	Observed Surface Parting Pressure	Requested Injection Pressure Limit
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115	920 psi	67 bw @ 850 psi	1345 psi	1295 psi J. 6.18.35
144	950 psi	310 bw @ 940 psi	1925 psi	1875 psi B. 8.16.35
148	894 psi	173 bw @ 894 psi	1550 psi	1500 psi P. 30.17.35
PMX 105 121 155	881 psi	238 bw @ 811 psi	1425 psi	1375 psi L. 25.17.39
" 158	881 psi	760 bw @ 773 psi	2120 psi	2000 psi D. 36.17.34

OK -

R-5530

WEST-TEST, INC.

A SUBSIDIARY OF JOHN WEST ENGINEERING COMPANY

Hobbs, New Mexico

STEP RATE INJECTION TEST

CLIENT: TEXACO EXPLORATION AND PRODUCTION

DATE: JULY 8, 1994

WELL NAME: CENTRAL VACUUM UNIT NO. 115
LEA COUNTY, NEW MEXICO

WO#: 94-14-1107

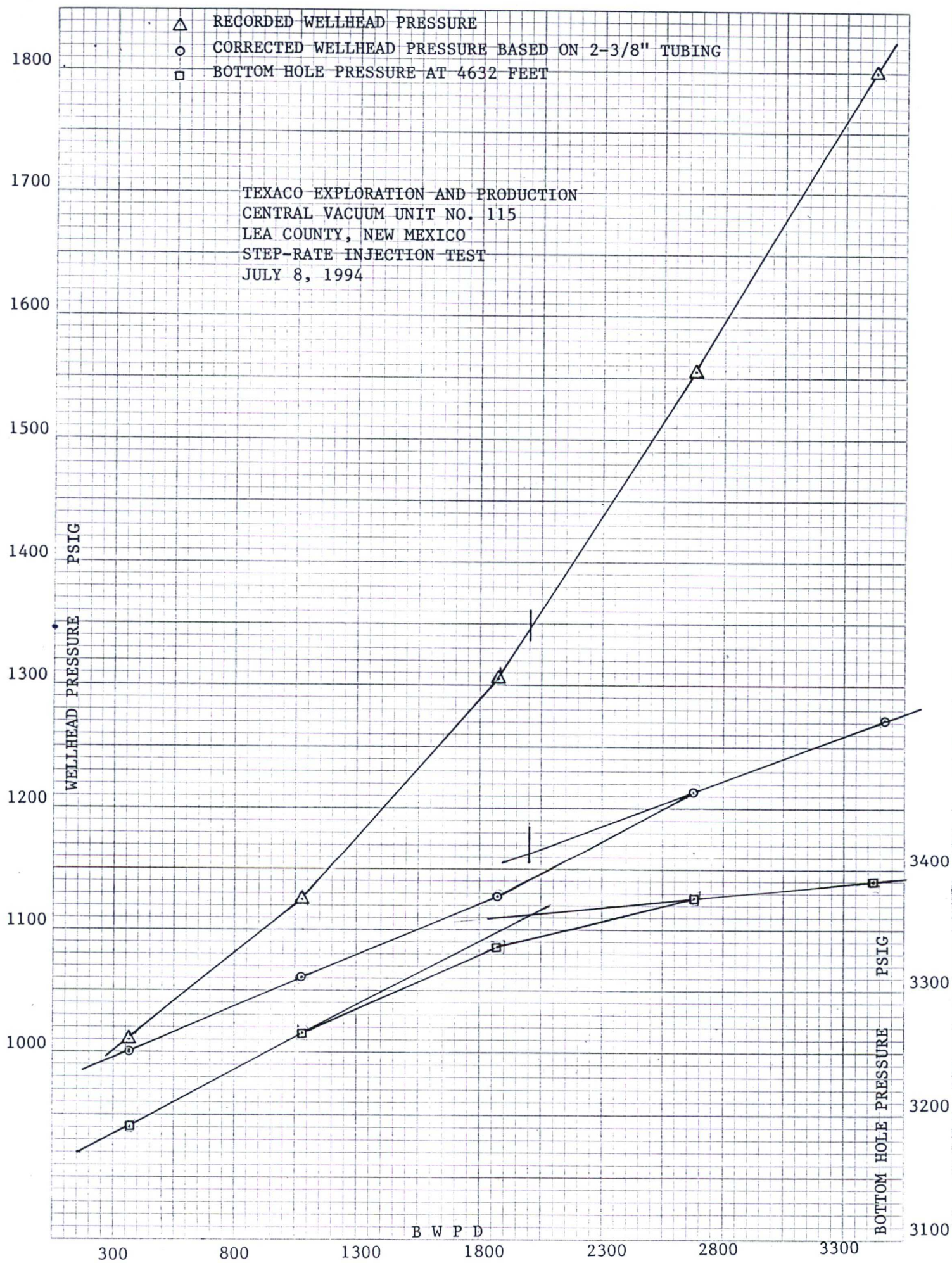
MID-PERFS. = 4560-4705

PACKER DEPTH = 4428

BHP GAUGE DEPTH = 4632

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)/34.2657	(7) MEASURED BHP (psi)
1	9:40	970.0				970.0		3166.900
	9:45	990.0	1.3	374.4	8.777	981.2	10.92	3173.900
	9:50	995.0	2.6	374.4	8.777	986.2	10.92	3177.000
	9:55	1000.0	3.8	345.6	7.569	992.4	10.08	3180.000
	10:00	1000.0	5.1	374.4	8.777	991.2	10.92	3183.600
	10:05	1010.0	6.3	345.6	7.569	1002.4	10.08	3186.900
	10:10	1010.0	7.6	374.4	8.777	1001.2	10.92	3190.000
				364.8				
	10:15	1090.0	11.3	1065.6	60.778	1029.2	31.08	3205.700
	10:20	1100.0	15.1	1094.4	63.852	1036.1	31.92	3216.600
2	10:25	1110.0	18.8	1065.6	60.778	1049.2	31.08	3230.700
	10:30	1115.0	22.6	1094.4	63.852	1051.1	31.92	3243.700
	10:35	1126.0	26.3	1065.6	60.778	1065.2	31.08	3255.600
	10:40	1125.0	30.1	1094.4	63.852	1061.1	31.92	3266.300
				1080.0				
	10:45	1275.0	36.5	1843.2	167.497	1107.5	53.76	3286.100
	10:50	1285.0	43.1	1900.8	177.309	1107.7	55.44	3301.500
	10:55	1290.0	49.6	1872.0	172.371	1117.6	54.60	3314.200
	11:00	1295.0	56.1	1872.0	172.371	1122.6	54.60	3322.900
	11:05	1305.0	62.6	1872.0	172.371	1132.6	54.60	3328.800
3	11:10	1305.0	69.2	1900.8	177.309	1127.7	55.44	3335.400
				1876.8				
	11:15	1510.0	78.5	2678.4	334.401	1175.6	78.12	3348.900
	11:20	1520.0	87.8	2678.4	334.401	1185.6	78.12	3357.200
	11:25	1525.0	97.2	2707.2	341.083	1183.9	78.96	3362.900
	11:30	1540.0	106.8	2764.8	354.630	1185.4	80.64	3367.700
	11:35	1550.0	115.9	2620.8	321.219	1228.8	76.44	3373.000
	11:40	1555.0	125.300	2707.2	341.083	1213.9	78.96	3377.300
				2692.8				

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) (3)/34.2857	(7) MEASURED BHP (psi)
5 FALLOFF	11:45	1790.0	137.1	3398.4	519.464	1270.5	99.12	3389.600
	11:50	1795.0	149.1	3456.0	535.870	1259.1	100.80	3395.800
	11:55	1800.0	161.0	3427.2	527.638	1272.4	99.96	3399.800
	OUT OF WATER		SHUT	DOWN				
	12:00							3392.000
	12:01	1195.0				1195.0		3389.600
	12:02	1200.0				1200.0		3386.000
	12:03	1195.0				1195.0		3383.400
	12:04	1190.0				1190.0		3382.100
	12:05	1190.0				1190.0		3375.100
	12:10	1180.0				1180.0		3369.300
	12:15	1180.0				1180.0		



WEST-TEST, INC.

A SUBSIDIARY OF JOHN WEST ENGINEERING COMPANY

Hobbs, New Mexico

STEP RATE INJECTION TEST

CLIENT: TEXACO EXPLORATION AND PRODUCTION

DATE: JULY 12, 1994

WELL NAME: CENTRAL VACUUM UNIT NO. 144
LEA COUNTY, NEW MEXICO

WO#: 94-14-1108

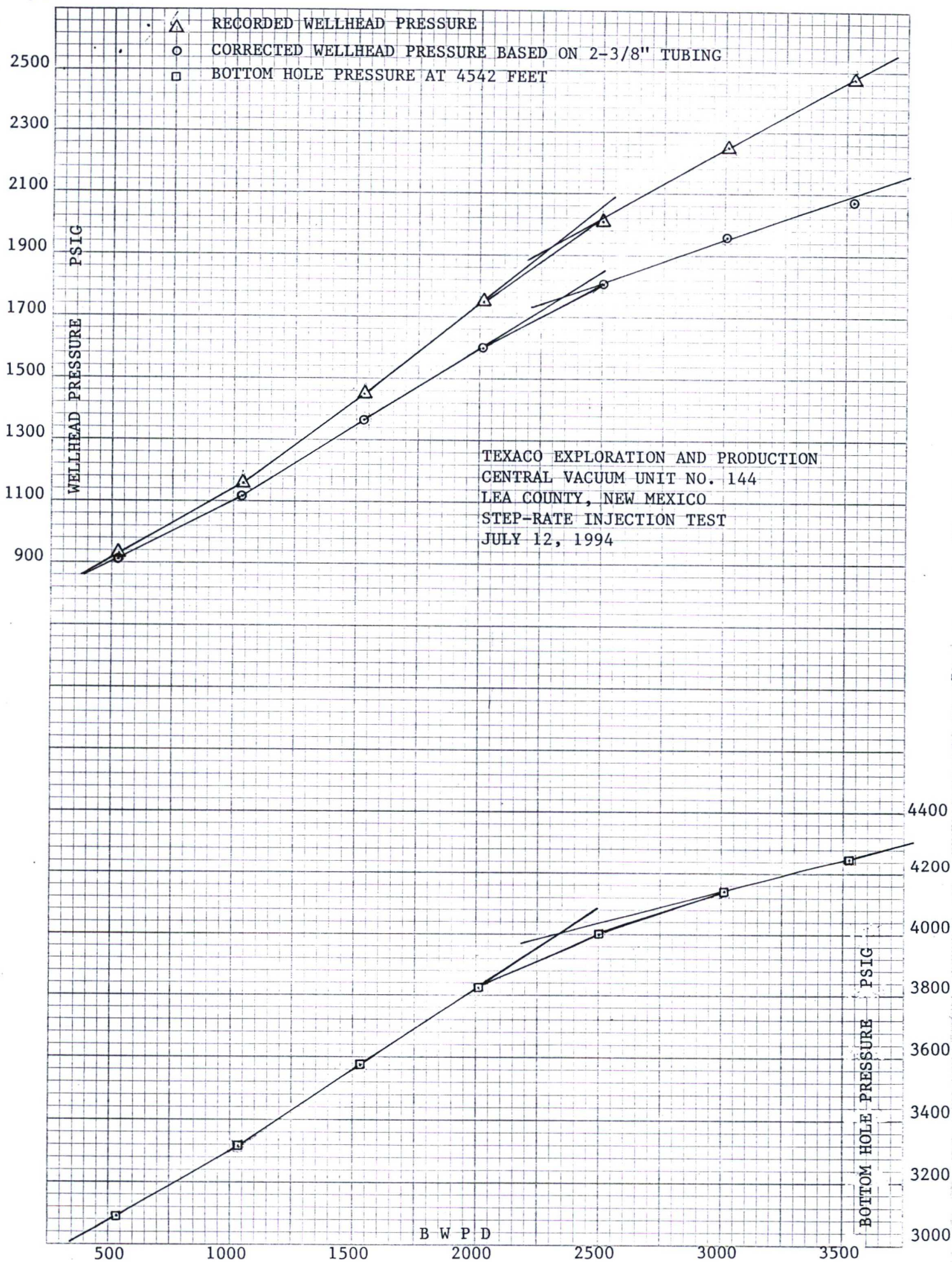
MID-PERFS. = 4367-4717

PACKER DEPTH =

BHP GAUGE DEPTH = 4542

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	8:55	770.0				770.0		2946.7
	9:00	835.0	1.9	547.2	12.843	822.2	15.96	2985.3
	9:05	860.0	3.8	547.2	12.843	847.2	15.96	3011.7
	9:10	885.0	5.6	518.4	11.620	873.4	15.12	3035.1
	9:15	905.0	7.6	576.0	14.121	890.9	16.80	3055.2
	9:20	920.0	9.5	547.2	12.843	907.2	15.96	3073.8
	9:25	930.0	11.3	518.4	11.620	918.4	15.12	3090.1
				542.4				
	9:30	1015.0	15.0	1065.6	44.070	970.9	31.08	3153.6
	9:35	1060.0	18.6	1036.8	41.892	1018.1	30.24	3190.7
2	9:40	1090.0	22.3	1065.6	44.070	1045.9	31.08	3226.1
	9:45	1115.0	25.8	1008.0	39.764	1075.2	29.40	3256.8
	9:50	1140.0	29.4	1036.8	41.892	1098.1	30.24	3287.7
	9:55	1160.0	33.1	1065.6	44.070	1115.9	31.08	3316.0
				1046.4				
	10:00	1285.0	38.3	1497.2	82.672	1202.3	43.67	3391.8
	10:05	1315.0	43.6	1526.4	85.680	1229.3	44.52	3427.8
	10:10	1360.0	49.0	1555.2	88.694	1271.3	45.36	3470.6
	10:15	1390.0	54.4	1555.2	88.694	1301.3	45.36	3504.7
	10:20	1410.0	59.8	1555.2	88.694	1321.3	45.36	3540.3
3	10:25	1455.0	65.1	1526.4	85.680	1369.3	44.52	3570.0
				1536.0				
	10:30	1565.0	72.0	1987.2	139.585	1425.4	57.96	3636.1
	10:35	1615.0	79.1	2044.8	147.162	1467.8	59.64	3681.5
	10:40	1645.0	86.1	2016.0	143.351	1501.6	58.80	3721.4
	10:45	1695.0	93.1	2016.0	143.351	1551.6	58.80	3753.8
	10:50	1720.0	100.1	2016.0	143.351	1576.6	58.80	3784.4
	10:55	1745.0	107.1	2016.0	143.351	1601.6	58.80	3822.3
				2016.0				
				2016.0				

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	11:00	1880.0	116.0	2563.2	223.532	1656.5	74.76	3871.2
	11:05	1920.0	124.6	2476.8	209.793	1710.2	72.24	3907.4
	11:10	1950.0	133.2	2476.8	209.793	1740.2	72.24	3936.8
	11:15	1975.0	141.9	2505.6	214.328	1760.7	73.08	3961.5
	11:20	1990.0	150.5	2476.8	209.793	1780.2	72.24	3982.2
	11:25	2015.0	159.2	2505.6	214.328	1800.7	73.08	4000.1
				2500.8				
	11:30	2165.0	169.7	3024.0	303.507	1861.5	88.20	4048.6
	11:35	2195.0	180.2	3024.0	303.507	1891.5	88.20	4073.7
	11:40	2205.0	190.7	3024.0	303.507	1901.5	88.20	4093.9
6	11:45	2225.0	201.2	3024.0	303.507	1921.5	88.20	4111.6
	11:50	2245.0	211.6	2995.2	298.181	1946.8	87.36	4126.4
	11:55	2255.0	220.0	2995.2	298.181	1956.8	87.36	4151.8
				3014.4				
	12:00	2400.0	234.2	3513.6	400.621	1999.4	102.48	4177.0
	12:05	2415.0	246.5	3542.4	406.717	2008.3	103.32	4196.6
	12:10	2435.0	258.9	3571.2	412.856	2022.1	104.16	4209.6
	12:15	2440.0	270.9	3456.0	388.556	2051.4	100.80	4222.2
	12:20	2475.0	283.2	3542.4	406.717	2068.3	103.32	4230.0
	12:25	2475.0	295.5	3542.4	406.717	2068.3	103.32	4241.7
FALLOFF				3528.0				
	12:26	1980.0				1980.0		4166.6
	12:27	1960.0				1960.0		4131.4
	12:28	1940.0				1940.0		4105.5
	12:29	1920.0				1920.0		4082.9
	12:30	1910.0				1910.0		4065.0
	12:35	1840.0				1840.0		3995.6
	12:40	1790.0				1790.0		3946.2



WEST - TEST, INC.

A SUBSIDIARY OF JOHN WEST ENGINEERING COMPANY

Hobbs, New Mexico

STEP RATE INJECTION TEST

CLIENT: TEXACO EXPLORATION AND PRODUCTION

DATE: JULY 13, 1994

WELL NAME: CENTRAL VACUUM UNIT NO. 148
LEA COUNTY, NEW MEXICO

WO#: 94-14-1109

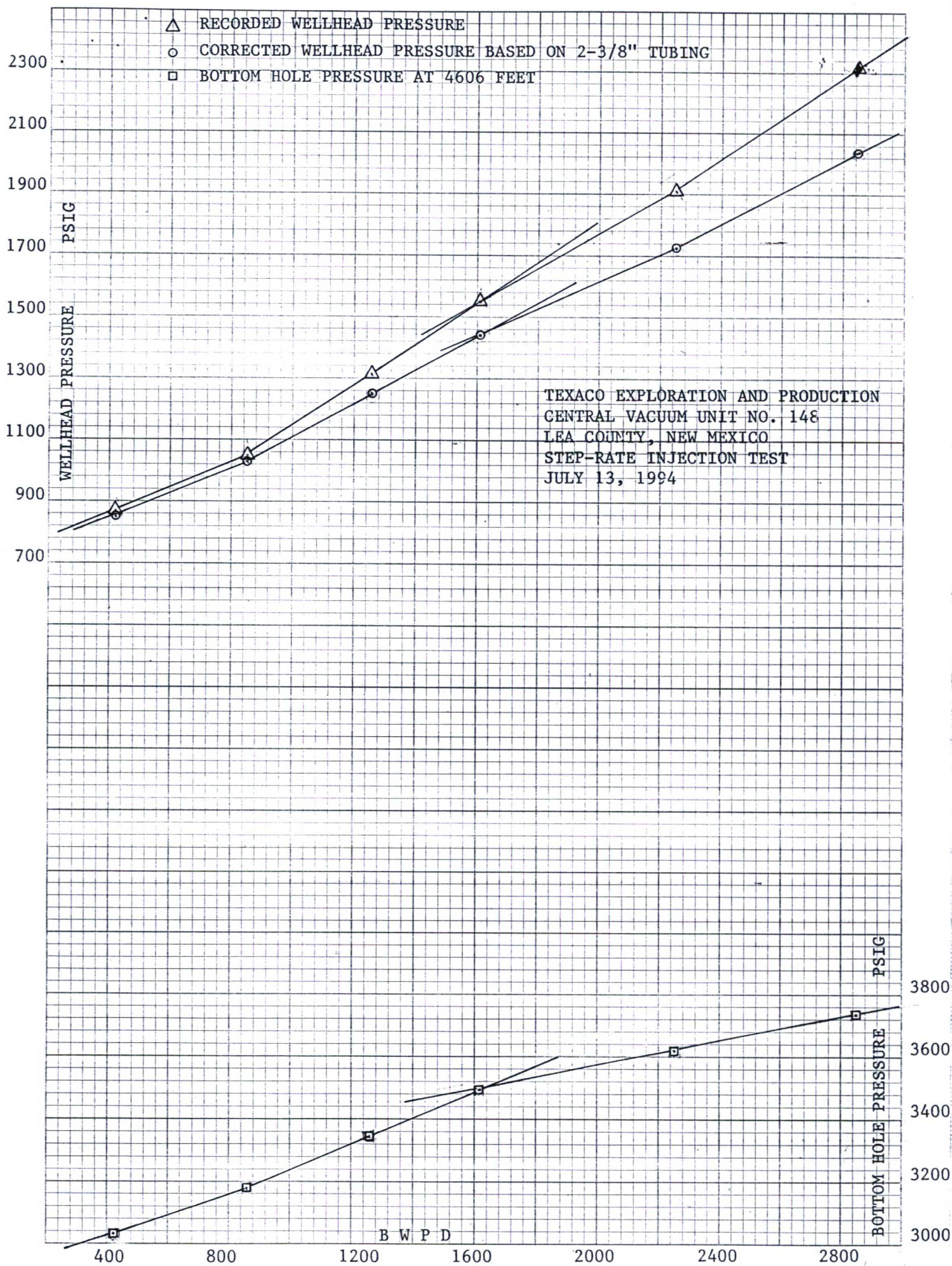
MID-PERFS. = 4470-4739

PACKER DEPTH =

BHP GAUGE DEPTH = 4606

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	11:05	840.0				840.0		3033.3
	11:10	880.0	1.5	432.0	8.410	871.6	12.60	3052.7
	11:15	865.0	2.8	374.4	6.454	858.5	10.92	3046.6
	11:20	875.0	4.2	403.2	7.403	867.6	11.76	3041.2
	11:25	875.0	5.9	489.6	10.602	864.4	14.28	3040.2
	11:30	870.0	7.2	374.4	6.454	863.5	10.92	3036.9
	11:35	865.0	8.8	460.8	9.477	855.5	13.44	3035.1
				422.4				
	11:40	975.0	11.8	864.0	30.319	944.7	25.20	3090.5
	11:45	995.0	14.8	864.0	30.319	964.7	25.20	3115.8
2	11:50	1010.0	17.7	835.2	28.476	981.5	24.36	3132.8
	11:55	1030.0	20.7	864.0	30.319	999.7	25.20	3149.4
	12:00	1045.0	23.6	835.2	28.476	1016.5	24.36	3162.8
	12:05	1055.0	26.7	897.8	32.550	1022.4	26.19	3175.6
				859.2				
	12:10	1205.0	31.1	1267.2	61.579	1143.4	36.96	3238.8
	12:15	1235.0	35.5	1267.2	61.579	1173.4	36.96	3270.0
	12:20	1255.0	39.9	1267.2	61.579	1193.4	36.96	3294.6
	12:25	1275.0	44.3	1267.2	61.579	1213.4	36.96	3313.2
	12:30	1295.0	48.7	1267.2	61.579	1233.4	36.96	3330.8
3	12:35	1305.0	53.0	1238.4	59.015	1246.0	36.12	3346.6
				1262.4				
	12:40	1465.0	58.8	1670.4	102.657	1362.3	48.72	3396.2
	12:45	1490.0	64.3	1584.0	93.050	1397.0	46.20	3426.4
	12:50	1505.0	69.9	1612.8	96.204	1408.8	47.04	3445.9
	12:55	1525.0	75.5	1612.8	96.204	1428.8	47.04	3464.5
	1:00	1535.0	81.1	1612.8	96.204	1438.8	47.04	3476.3
	1:05	1545.0	86.7	1612.8	96.204	1448.8	47.04	3486.8
				1617.6				

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	1:10	1805.0	94.5	2246.4	177.591	1627.4	65.52	3543.3
	1:15	1850.0	102.2	2217.6	173.401	1676.6	64.68	3567.3
	1:20	1865.0	110.1	2275.2	181.826	1683.2	66.36	3584.9
	1:25	1885.0	117.9	2246.4	177.591	1707.4	65.52	3598.4
	1:30	1900.0	125.8	2275.2	181.826	1718.2	66.36	3610.7
	1:35	1905.0	133.6	2246.4	177.591	1727.4	65.52	3620.5
				2251.2				
	1:40	2200.0	143.5	2851.2	276.039	1924.0	83.16	3666.6
	1:45	2225.0	153.3	2822.4	270.903	1954.1	82.32	3683.7
	1:50	2270.0	163.2	2851.2	276.039	1994.0	83.16	3699.5
6	1:55	2320.0	173.1	2851.2	276.039	2044.0	83.16	3713.2
	2:00	2290.0	183.0	2851.2	276.039	2014.0	83.16	3722.9
	2:05	2310.0	192.9	2851.2	276.039	2034.0	83.16	3734.4
				2846.4				
	FALLOFF	2:06	1515.0			1515.0		3688.6
		2:07	1495.0			1495.0		3668.5
		2:08	1480.0			1480.0		3651.8
		2:09	1470.0			1470.0		3636.6
		2:10	1460.0			1460.0		3622.9
		2:15	1400.0			1400.0		3566.3
		2:20	1350.0			1350.0		3519.1



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

STEP RATE INJECTION TEST

CLIENT: TEXACO EXPLORATION AND PRODUCTION

DATE: JULY 11, 1994

WELL NAME: CENTRAL VACUUM UNIT NO. 155
LEA COUNTY, NEW MEXICO

WO#: 94-14-1110

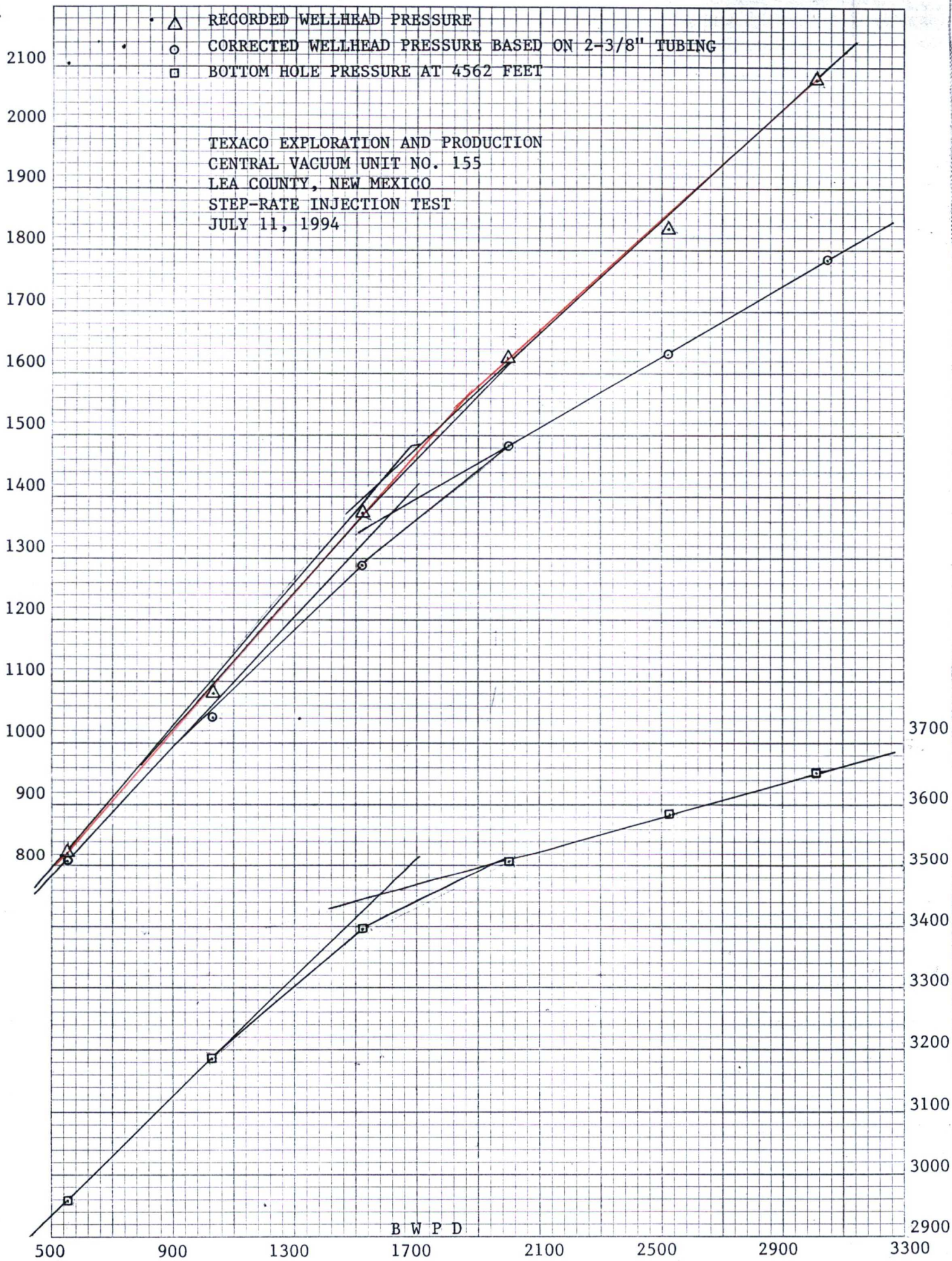
MID-PERFS. = 4403-4721

PACKER DEPTH = 4351

BHP GAUGE DEPTH = 4562

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	9:00	600.0				600.0		2764.4
	9:05	715.0	1.9	547.2	12.899	702.1	15.96	2846.4
	9:10	750.0	4.0	604.8	15.523	734.5	17.64	2880.9
	9:15	770.0	5.8	518.4	11.672	758.3	15.12	2906.3
	9:20	785.0	7.7	547.2	12.899	772.1	15.96	2929.5
	9:25	805.0	9.6	547.2	12.899	792.1	15.96	2943.0
	9:30	820.0	11.5	547.2	12.899	807.1	15.96	2959.3
				552.0				
	9:35	960.0	15.2	1065.6	44.264	915.7	31.08	3040.2
	9:40	995.0	18.7	1008.0	39.939	955.1	29.40	3080.5
2	9:45	1025.0	22.3	1036.8	42.076	982.9	30.24	3112.7
	9:50	1040.0	25.9	1036.8	42.076	997.9	30.24	3140.6
	9:55	1075.0	29.4	1008.0	39.939	1035.1	29.40	3164.5
	10:00	1080.0	32.9	1008.0	39.939	1040.1	29.40	3185.6
				1027.2				
	10:05	1255.0	38.3	1555.2	89.085	1165.9	45.36	3264.9
	10:10	1290.0	43.6	1526.4	86.057	1203.9	44.52	3303.8
	10:15	1315.0	48.9	1526.4	86.057	1228.9	44.52	3334.5
	10:20	1340.0	54.2	1526.4	86.057	1253.9	44.52	3359.1
	10:25	1360.0	59.4	1497.6	83.077	1276.9	43.68	3377.8
3	10:30	1375.0	64.7	1526.4	86.057	1288.9	44.52	3394.7
				1526.4				
	10:35	1550.0	71.7	2016.0	143.982	1406.0	58.80	3445.3
	10:40	1570.0	78.7	2016.0	143.982	1426.0	58.80	3464.5
	10:45	1585.0	85.6	1987.2	140.200	1444.8	57.96	3476.0
	10:50	1595.0	92.8	2073.6	151.685	1443.3	60.48	3487.8
	10:55	1620.0	99.6	1958.4	136.464	1483.5	57.12	3497.2
	11:00	1625.0	106.5	1987.2	140.200	1484.8	57.96	3505.7
				2006.4				

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)
5	11:05	1835.0	115.2	2505.6	215.272	1619.7	73.08	3543.4
	11:10	1835.0	124.0	2534.4	219.872	1615.1	73.92	3556.1
	11:15	1835.0	132.8	2534.0	219.807	1615.2	73.91	3565.2
	11:20	1835.0	142.4	2764.8	258.272	1576.7	80.64	3570.2
	11:25	1835.0	150.7	2390.4	197.320	1637.7	69.72	3577.1
	11:30	1835.0	159.1	2419.2	201.740	1633.3	70.56	3583.0
				2524.8				
	11:35	2065.0	169.6	3024.0	304.843	1760.2	88.20	3610.6
	11:40	2080.0	180.1	3024.0	304.843	1775.2	88.20	3621.7
	11:45	2080.0	190.6	3024.0	304.843	1775.2	88.20	3630.3
6	11:50	2080.0	201.1	3024.0	304.843	1775.2	88.20	3636.7
	11:55	2080.0	211.6	3024.0	304.843	1775.2	88.20	3644.4
	12:00	2080.0	222.0	2995.2	299.494	1780.5	87.36	3652.9
				3019.2				
FALLOFF	12:01	1310.0				1310.0		3600.9
	12:02	1310.0				1310.0		3578.0
	12:03	1290.0				1290.0		3562.6
	12:04	1280.0				1280.0		3547.3
	12:05	1270.0				1270.0		3535.1
	12:10	1220.0				1220.0		3485.8
	12:15	1180.0				1180.0		3445.5



WEST-TEST, INC.

A SUBSIDIARY OF JOHN WEST ENGINEERING COMPANY

Hobbs, New Mexico

STEP RATE INJECTION TEST

CLIENT: TEXACO EXPLORATION AND PRODUCTION

DATE: JULY 14, 1994

WELL NAME: CENTRAL VACUUM UNIT NO. 158
LEA COUNTY, NEW MEXICO

WO#: 94-14-1111

MID-PERFS. = 4405-4726

PACKER DEPTH =

BHP GAUGE DEPTH = 4100

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	9:25	40.0				40.0		1973.7
	9:30	310.0	2.5	720.0	19.262	290.7	21.00	2214.1
	9:35	350.0	5.2	777.6	22.209	327.8	22.68	2276.8
	9:40	400.0	7.8	748.8	20.711	379.3	21.84	2311.9
	9:45	420.0	10.4	748.8	20.711	399.3	21.84	2334.4
	9:50	440.0	12.9	720.0	19.262	420.7	21.00	2348.9
	9:55	465.0	15.5	748.8	20.711	444.3	21.84	2370.7
				744.0				
	10:00	875.0	20.7	1497.6	74.664	800.3	43.68	2660.0
	10:05	930.0	25.5	1382.4	64.387	865.6	40.32	2727.4
2	10:10	980.0	30.7	1497.6	74.664	905.3	43.68	2777.2
	10:15	1015.0	35.6	1382.4	64.387	950.6	40.32	2812.2
	10:20	1035.0	40.6	1440.0	69.438	965.6	42.00	2834.7
	10:25	1060.0	45.5	1411.2	66.891	993.1	41.16	2856.7
				1440.0				
	10:30	1505.0	53.0	2160.0	147.017	1358.0	63.00	3158.4
	10:35	1585.0	60.5	2160.0	147.017	1438.0	63.00	3209.7
	10:40	1640.0	68.0	2160.0	147.017	1493.0	63.00	3262.8
	10:45	1670.0	75.3	2102.4	139.847	1530.2	61.32	3298.6
	10:50	1710.0	82.8	2160.0	147.017	1563.0	63.00	3333.1
3	10:55	1725.0	90.2	2131.2	143.411	1581.6	62.16	3352.6
				2145.6				
	11:00	2175.0	99.9	2793.6	236.610	1938.4	81.48	3586.4
	11:05	2210.0	109.9	2880.0	250.325	1959.7	84.00	3623.2
	11:10	2220.0	119.9	2880.0	250.325	1969.7	84.00	3634.8
	11:15	2225.0	129.7	2822.4	241.142	1983.9	82.32	3655.3
	11:20	2240.0	139.6	2851.2	245.714	1994.3	83.16	3672.7
	11:25	2260.0	149.5	2851.2	245.714	2014.3	83.16	3681.6
				2846.4				
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)
5 FALLOFF	11:30	2605.0	161.7	3513.6	361.635	2243.4	102.48	3801.5
	11:35	2585.0	174.0	3542.4	367.138	2217.9	103.32	3820.6
	11:40	2580.0	185.8	3398.4	340.006	2240.0	99.12	3820.0
	11:45	2570.0	198.0	3513.6	361.635	2208.4	102.48	3822.4
	11:50	2545.0	210.2	3513.6	361.635	2183.4	102.48	3812.4
	11:55	2540.0	222.6	3571.2	372.679	2167.3	104.16	3797.8
				3508.8				
	11:56	1530.0				1530.0		3481.4
	11:57	1410.0				1410.0		3353.9
	11:58	1310.0				1310.0		3243.1
	11:59	1210.0				1210.0		3149.2
	12:00	1130.0				1130.0		3072.2
	12:05	900.0				900.0		2834.0
	12:10	760.0				760.0		

