



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 6, 1994

WFX-653
PDEV0020600653

Phillips Petroleum Company
4001 Penbrook
Odessa, TX 79762

Attention: Keith Maberry

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

Dear Mr. Maberry:

Reference is made to your request dated July 29, 1994 to increase the surface injection pressure on three wells in the East Vacuum Grayburg San Andres Unit. This request is based on step rate tests conducted on these wells between July 19 and 23, 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.

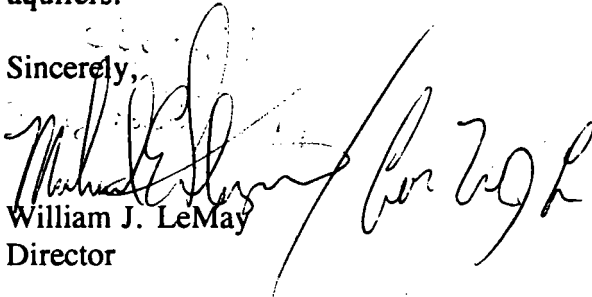
You are therefore authorized to increase the surface injection pressure on the following wells:

Well and Location	Maximum Injection Surface Pressure
EVGSAU Well No. 0524-129 Unit B, Section 5, Township 18 South, Range 37 East	1930 PSIG
EVGSAU Well No. 3315-001 Unit I, Section 32, Township 17 South, Range 35 East	1690 PSIG
EVGSAU Well No. 3333-002 Unit F, Section 33, Township 17 South, Range 35 East	1730 PSIG
All wells located in Lea County, New Mexico.	

*Injection Pressure Increase
Phillips Petroleum Company
September 6, 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/amg

cc: Oil Conservation Division - Hobbs
File: WFX-653
PSI-X 3rd Qtr., 1994
D. Catanach
R. Brown *1st*

NO WAITING PERIOD

COMPANY: PHILLIPS PETROLEUM COMPANY
ADDRESS: 4001 Penbrook
CITY, STATE, ZIP: Odessa, Texas 79762
ATTENTION: Mr. Keith Maberry

Re: Injection Pressure Increase
East Vacuum Grayburg San Andres

Unit

Lea County, New Mexico

Dear Sir:

Reference is made to your request dated July 29, 1994, to increase the surface injection pressure on 3 wells in your East Vacuum Grayburg San Andres Unit. This request is based on step rate tests conducted on these wells between July 19 and 23, 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>
EVGSAU Well No.0524-129 Unit B, Section 5, T18S, R37E	1930 psig
EVGSAU Well No.3315-001 Unit I, Section 32, T17S, R35E	1690 psig
EVGSAU Well No.3333-002 Unit F, Section 33, T17S, R35E	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 - WFX-653, PSI-X 3rd Qtr 1994



PHILLIPS PETROLEUM COMPANY

ODESSA, TEXAS 79762
4001 PENBROOK

EXPLORATION AND PRODUCTION GROUP
Permian Basin Region

July 29, 1994

OIL CONSERVATION DIVISION
RECEIVED

'94 AUG 1 AM 8 50

**Request for Increased Injection Pressure
East Vacuum Grayburg San Andres Unit
Waterflood Project - Lea County, N M
NMOCD Division Order No. WFX-653**

Mr. David R. Catanach
New Mexico Oil Conservation Division
P. O. Box 2088
Santa Fe, New Mexico 87504

Mr. Catanach,

Phillips Petroleum Company requests administrative approval to increase the maximum surface injection pressure to 1500 psig on East Vacuum Grayburg San Andres Unit Well Nos. 0524-129, 3315-001, and 3333-002, Lea County, New Mexico. Attached are recent injection step-rate tests submitted as proof that the requested injection pressure is below the formation parting pressure. The measured parting pressures are 1980 psig for well 0524-129, 1740 psig for well 3315-001, and ~~1740~~ ¹⁷⁸⁰ psig for well 3333-002.

The subject wells were approved under NMOCD Division Order No. WFX-653 on December 28, 1993. A copy of the Exhibit "A" of this Order is attached for your reference.

If you have any questions or require further information, please call me at (915) 368-1232

Sincerely,

Keith H. Maberry
Senior EOR Operations Engineer

CC: Mr. Jerry Sexton
NMOCD District 1
P. O. Box 1980
Hobbs, New Mexico 88240
Central Files

EXHIBIT "A"
DIVISION ORDER NO. WFX-653

PHILLIPS PETROLEUM COMPANY
EAST VACUUM GRAYBURG SAN ANDRES UNIT WATERFLOOD PROJECT
LEA COUNTY, NEW MEXICO

APPROVED INJECTION WELLS

Well No.	Location	Unit	S-T-R	Injection Perforations	Packer Depth	Tubing Size	Injection Pressure
3203-001	1330' FSL - 1310' FEL	I	32-17S-35E	4363' - 4628'	4280'	2 7/8"	873 psig
3315-001	1980' FSL - 660' FEL	I	32-17S-35E	4270' - 4640' (OH)	4250'	2 7/8"	854 psig
3202-033	990' FNL - 2306' FEL	E	37-17S-35E	4396' - 4674'	4316'	2 7/8"	879 psig
0524-129	1650' FNL - 990' FWL	B	5-18S-37E	4385' - 4762'	4300'	2 7/8"	877 psig
3333-002	1980' FNL - 1980' FWL	F	33-17S-35E	4350' - 4650'	4270'	2 7/8"	870 psig

1690

1930

1730

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

STEP RATE INJECTION TEST

CLIENT: PHILLIPS PETROLEUM COMPANY

DATE: JULY 23, 1994

WELL NAME: E.V.G.S.A.U. NO. 0524-129
LEA COUNTY, NEW MEXICO

WO#: 94-14-1256

MID-PERFS. = 4762-4385

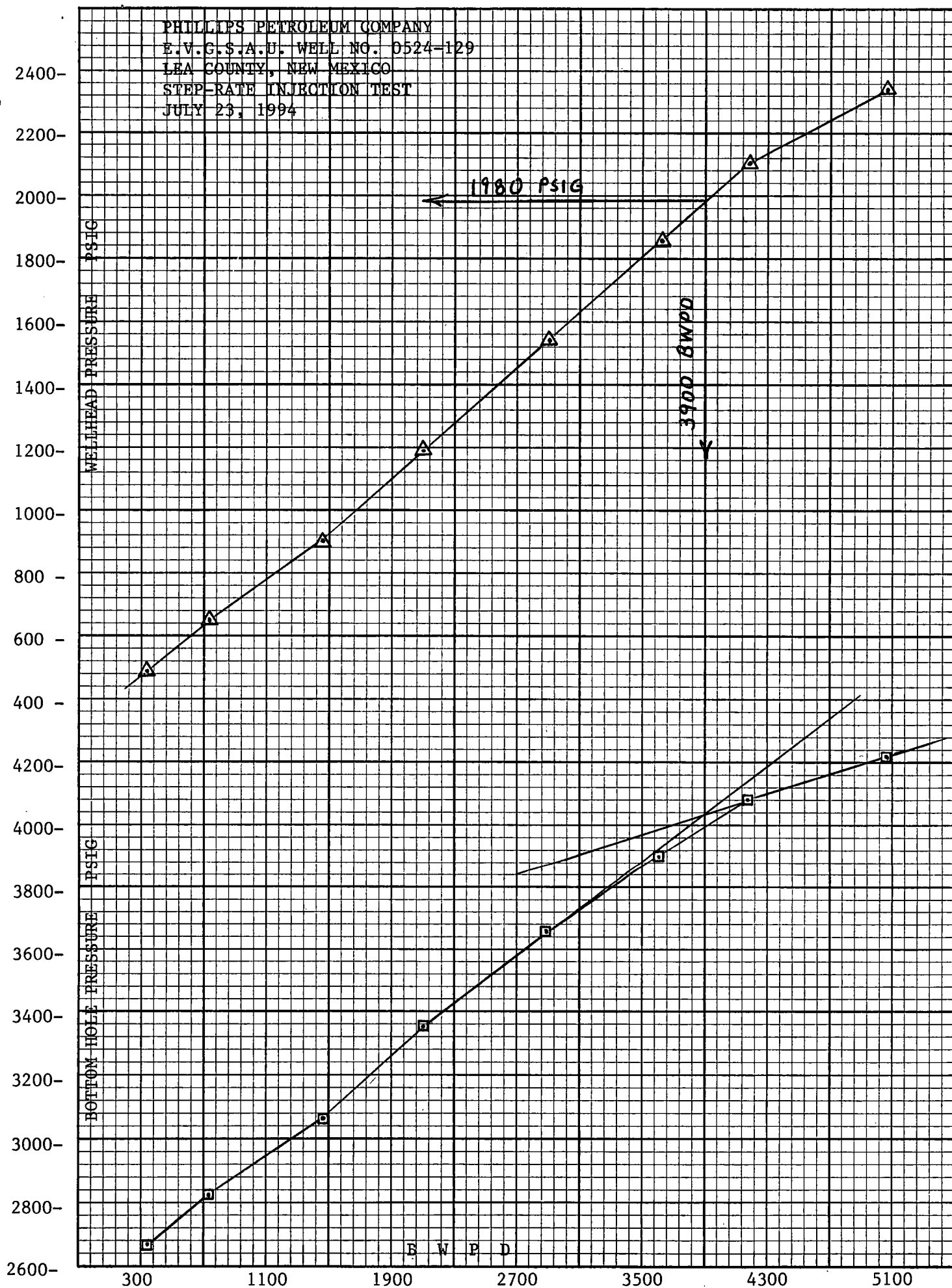
PACKER DEPTH = 4339

BHP GAUGE DEPTH = 4573

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	8:10	394.5				394.5		2574.8
	8:15	457.1	1.3	374.4	2.401	454.7	10.92	2624.3
	8:20	467.0	2.6	374.4	2.401	464.6	10.92	2649.1
	8:25	484.3	3.8	345.6	2.070	482.2	10.08	2672.8
2				364.8				
	8:30	571.1	6.4	748.8	8.655	562.4	21.84	2737.8
	8:35	613.8	9.1	777.6	9.281	604.5	22.68	2783.0
	8:40	645.1	11.6	720.0	8.050	637.1	21.00	2819.2
3				748.8				
	8:45	777.4	16.5	1411.2	27.954	749.4	41.16	2927.0
	8:50	842.9	21.4	1411.2	27.954	814.9	41.16	3000.2
	8:55	905.4	26.5	1468.8	30.102	875.3	42.84	3067.1
4				1430.4				
	9:00	1056.1	33.8	2102.4	58.443	997.7	61.32	3190.6
	9:05	1141.4	41.3	2160.0	61.439	1080.0	63.00	3281.8
	9:10	1191.2	48.6	2102.4	58.443	1132.8	61.32	3356.2
5				2121.6				
	9:15	1390.3	58.6	2880.0		1390.3		3488.3
	9:20	1474.2	68.6	2880.0	104.612	1369.6	84.00	3581.0
	9:25	1539.6	78.6	2880.0	104.612	1435.0	84.00	3656.8
6				2880.0				
	9:30	1741.6	91.0	3571.2	155.745	1585.9	104.16	3766.0
	9:35	1799.8	103.4	3571.2	155.745	1644.1	104.16	3843.4
	9:40	1853.8	115.9	3600.0	158.076	1695.7	105.00	3901.2
7				3580.8				
	9:45	2006.0	130.6	4233.6	213.364	1792.6	123.48	3984.5
	9:50	2070.0	145.2	4204.8	210.686	1859.3	122.64	4040.0
	9:55	2101.2	159.7	4176.0	208.024	1893.2	121.80	4082.7
				4204.8				

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)/34.2837	(7) MEASURED BHP (psi)
8 FALLOFF	10:00	2284.6	177.2	5040.0	294.580	1990.0	147.00	4141.4
	10:05	2311.6	194.7	5040.0	294.580	2017.0	147.00	4179.8
	10:10	2345.7	212.3	5068.8 5049.6	297.702	2048.0	147.84	4207.4
	10:11	1933.3				1933.3		4166.5
	10:12	1899.2				1899.2		4144.6
	10:13	1882.1				1882.1		4127.0
	10:14	1866.4				1866.4		4111.3
	10:15	1853.6				1853.6		4097.1
	10:20	1798.1				1798.1		4039.7
	10:25	1755.4				1755.4		3993.2

PHILLIPS PETROLEUM COMPANY
E.V.G.S.A.U. WELL NO. 0524-129
LEA COUNTY, NEW MEXICO
STEP-RATE INJECTION TEST
JULY 23, 1994



WEST-TEST, INC.

A SUBSIDIARY OF JOHN WEST ENGINEERING COMPANY
Hobbs, New Mexico

STEP RATE INJECTION TEST

CLIENT: PHILLIPS PETROLEUM COMPANY

DATE: JULY 19, 1994

WELL NAME: E.V.G.S.A.U. NO. 3315-001
LEA COUNTY, NEW MEXICO

WO#: 94-14-1257

MID-PERFS. = 4315

PACKER DEPTH = 4234

BHP GAUGE DEPTH = 4468

STEP NO. & REMARKS	TIME	(1) SURFACE TUBING PRESS. (psig)	(2) CUMULATIVE 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)/24.2857	(7) MEASURED BHP (psi)
	11:05	40.0				40.0		2152.7
	11:10	315.0	5.0	1440.0	28.352	286.6	42.00	2367.9
	11:15	360.0	10.5	1584.0	33.819	326.2	46.20	2404.3
1	11:20	380.0	15.9	1555.2	32.691	347.3	45.36	2429.6
				1526.4				
	11:25	545.0	23.8	2275.2	66.085	478.9	66.36	2545.0
	11:30	570.0	31.7	2275.2	66.085	503.9	66.36	2581.5
2	11:35	590.0	39.8	2332.8	69.214	520.8	68.04	2605.8
				2294.4				
	11:40	745.0	50.5	3081.6	115.839	629.2	89.88	2704.7
	11:45	770.0	60.0	2736.0	92.957	677.0	79.80	2732.1
3	11:50	790.0	70.0	2880.0	102.210	687.8	84.00	2753.8
				2899.2				
	11:55	960.0	82.7	3657.6	159.049	801.0	106.68	
	12:00	990.0	95.5	3686.4	161.374	828.6	107.52	2886.6
4	12:05	1005.0	108.1	3628.8	156.740	848.3	105.84	2905.8
				3657.6				
	12:10	1195.0	123.1	4320.0	216.403	978.6	126.00	3011.1
	12:15	1225.0	138.1	4320.0	216.403	1008.6	126.00	3039.3
5	12:20	1250.0	153.2	4348.8	219.080	1030.9	126.84	3059.5
				4329.6				
	12:25	1450.0	171.2	5184.0	303.214	1146.8	151.20	3162.8
	12:30	1480.0	188.0	4838.4	266.881	1213.1	141.12	3192.2
6	12:35	1500.0	205.5	5040.0	287.816	1212.2	147.00	3215.4
				5020.0				
	12:40	1715.0	225.4	5731.2	365.068	1349.9	167.16	3313.8
	12:45	1735.0	245.3	5731.2	365.068	1369.9	167.16	3341.3
7	12:50	1760.0	265.2	5731.2	365.068	1394.9	167.16	3362.6
				5731.2				

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)
8	12:55	1985.0	287.7	6480.0	458.177	1526.8	189.00	3457.9
	1:00	2015.0	310.4	6537.6	465.740	1549.3	190.68	3486.5
	1:05	2020.0	333.2	6566.4	469.542	1550.5	191.52	3508.5
				6528.0			190.40	
	1:10	2215.0	357.9	7113.6	544.483	1670.5	207.48	3578.8
9	1:15							
	1:20							
FALLOFF	1:11	SHUT DOWN	LEAK IN	FLANGE	& 3000#	PSI GAUGE		
	1:12	940.0				940.0		3078.5
	1:13	860.0				860.0		2969.7
	1:14	780.0				780.0		2899.2
	1:15	740.0				740.0		2847.2
	1:20	710.0				710.0		2697.3
	1:25	530.0				530.0		2611.7

PHILLIPS PETROLEUM COMPANY
E.V.G.S.A.U. WELL NO. 3315-001
LEA COUNTY, NEW MEXICO
STEP-RATE INJECTION TEST
JULY 19, 1994

WELLHEAD PRESSURE PSIG

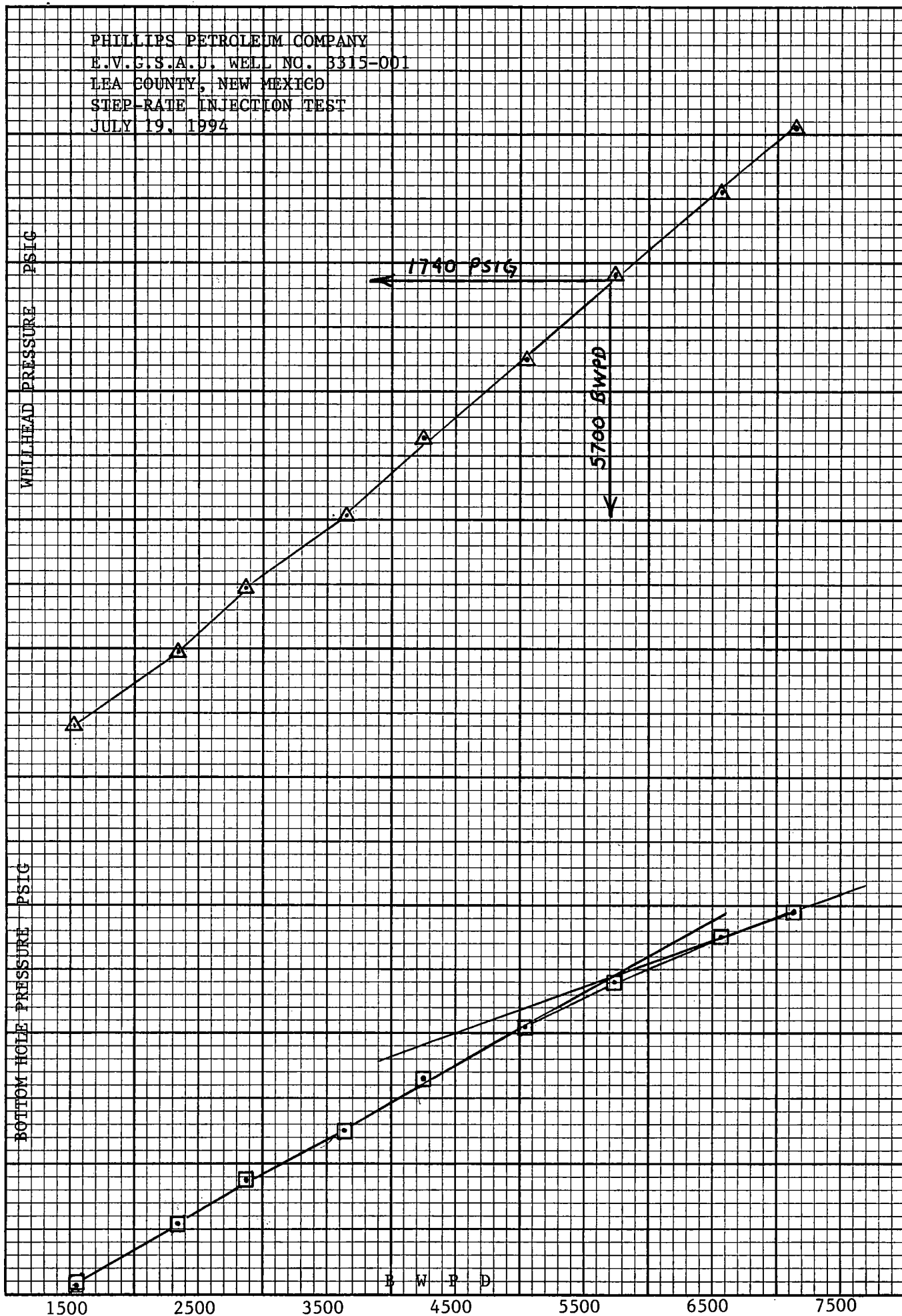
BOTTOM HOLE PRESSURE PSIG

1740 PSIG

5700 BWPD

B W P D

1500 2500 3500 4500 5500 6500 7500



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

STEP RATE INJECTION TEST

CLIENT: PHILLIPS PETROLEUM COMPANY

DATE: JULY 21, 1994

WELL NAME: E.V.G.S.A.U. 3333-002
LEA COUNTY, NEW MEXICO

WO#: 94-14-1258

MID-PERFS. = 4418-4580

PACKER DEPTH = 4204

BHP GAUGE DEPTH = 4490

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	1:00	178.8				178.8		2317.1
	1:05	618.2	5.2	1497.2	81.726	536.5	43.67	2627.9
	1:10	672.3	10.4	1497.2	81.726	590.6	43.67	2690.4
	1:15	707.8	15.6	1497.6	81.766	626.0	43.68	2733.0
				1497.6				
2	1:20	1051.8	23.8	2361.6	189.899	861.9	68.88	2924.9
	1:25	1101.5	31.6	2246.4	173.118	928.4	65.52	2974.5
	1:30	1124.2	39.5	2275.2	177.246	947.0	66.36	3008.3
3				2294.4				
	1:35	1445.6	49.7	2937.6	284.366	1161.2	85.68	3153.4
	1:40	1484.0	60.0	2966.4	289.545	1194.5	86.52	3195.6
	1:45	1512.5	70.3	2966.4	289.545	1223.0	86.52	3228.1
4				2956.8				
	1:50	1861.1	83.0	3657.6	426.584	1434.5	106.68	3363.6
	1:55	1889.5	95.7	3657.6	426.584	1462.9	106.68	3401.1
	2:00	1925.1	108.2	3600.0	414.239	1510.9	105.00	3430.2
				3638.4				
5	2:05	2317.4	123.2	4320.0	580.412	1737.0	126.00	3556.0
	2:10	2343.0	138.3	4348.8	587.590	1755.4	126.84	3596.1
	2:15	2358.6	153.4	4348.8	587.590	1771.0	126.84	3623.2
				4339.2				
6	2:20	2750.7	170.9	5040.0	771.947	1978.8	147.00	3737.4
	2:25	2879.2	188.5	5068.8	780.128	2099.1	147.84	3780.3
	2:30	2883.5	205.9	5011.2	763.807	2119.7	146.16	3811.9
				5040.0				

Page 2

PHILLIPS PETROLEUM COMPANY
E.V.G.S.A.U. WELL NO. 3333-002
LEA COUNTY, NEW MEXICO
STEP-RATE INJECTION TEST
JULY 21, 1994

