STATE OF NEW MEXICO

ENERGY, MINERALS AND NATURAL RESOURCES DEPARTMENT

OIL CONSERVATION DIVISION

DRUG FREE

BRUCE KING
GOVERNOR

ANITA LOCKWOOD
CABINET SECRETARY

June 17, 1993

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

PMX-171
pDEV0020700171

Harvey E. Yates Company
P.O. Box 1933
Roswell, NM 88202-1933

Attention: Tim Gum

RE: ***Injection Pressure Increase Young Deep Unit Well no. 16; Unit E, Section 9, Township 18 South, Range 34 East, NMPM, Lea County, New Mexico***

Dear Mr. Gum:

Reference is made to your request dated June 10, 1993 to increase the surface injection pressure on the above referenced well. This request is based on a step rate tests conducted on this well on June 3, 1993. The results of the test have been reviewed by my staff and we feel an increase in injection pressure on this well is justified at this time.

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

Well and Location	Maximum Injection Surface Pressure
Young Deep Unit Well No. 16 1980' FNL - 660' FWL Unit E, Section 9, Township 18 South, Range 34 East	2220 PSIG
This well is 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: PMX-171

NO WAITING PERIOD

COMPANY: **Harvey E. Yates Company**

ADDRESS: **P.O. Box 1933**

CITY, STATE, ZIP: **Roswell, New Mexico 88202-1933**

ATTENTION: **Mr. Tim Gum**

Re: Injection Pressure Increase
Young Deep Unit Well No.16
Unit E, Section 9-T18S-R34E
Lea County, New Mexico

Dear Sir:

Reference is made to your request dated **June 10**, 1993, to increase the surface injection pressure on **the above referenced well.** This request is based on a step rate test conducted on the well on **June3**, 1993. The results of the test have been reviewed by my staff and we feel an increase in injection pressure on the well is justified at this time.

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

Well & Location	Maximum Injection Surface Pressure
Young Deep Unit Well No.16 **1980' FNL & 660' FWL** **Unit E, Section 9, T18S, R34E** **Lea County, New Mexico**	**2220 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.

WJL/BES

xc: OCD - **Hobbs** FILE- **PMX-171** ___

N/R

HEYCO

PETROLEUM PRODUCERS

HARVEY E. YATES COMPANY

P.O. BOX 1933 ONE SOUTHWEST CENTRE 505/623-6601
FAX 505/622-4221
ROSWELL, NEW MEXICO 88202-1933

OIL CONSERVATION DIVISION
RECEIVED
93 JUN 15 AM 8 58

June 10, 1993

David Catanach
Oil Conservation Division
P.O. Box 2088
Santa Fe, New Mexico 87501

Re: Request to Increase the Surface Injection Pressure
Young Deep Unit #16

Dear Mr. Catanach,

Harvey E. Yates Company (HEYCO) was authorized to convert the Young Deep Unit #16; 1980' FNL & 660' FWL, Unit E, Section 9, T18S, R34E, N.M.P.M., Lea County, New Mexico, by Administrative Order No. PMX-171, dated January 7, 1993. The limiting surface injection pressure was set at 1641 psi.

HEYCO respectfully request the limiting pressure be increased to 2220 psi surface. This is based on a step rate test dated June 3, 1993. At the limiting pressure of 1641 psi in the injection rate was less than 200 BPD. This rate was after the well had been re-acidized with 10,000 gals of 20% NEFE, with no indication that the injectivity had improved.

The approved injection interval consist of four perforated intervals in the Bone Springs carbonate. These intervals have been stimulated with a total of 38,000 gallons of acid.

The Young Deep Unit #16 is located on the western edge of the unit. This area has not had any injection since production began. Therefore, maximum injection is needed to get response as soon as possible and insure that maximum recovery is achieved.

HEYCO respectfully request that the pressure increase be granted so that maximum injection can be obtained and insure maximum recovery.

Please find attached field data and plots of the step rate test. If you have any questions, please call Tim W. Gum at 505/623-6601.

Sincerely,

Tim W. Gum

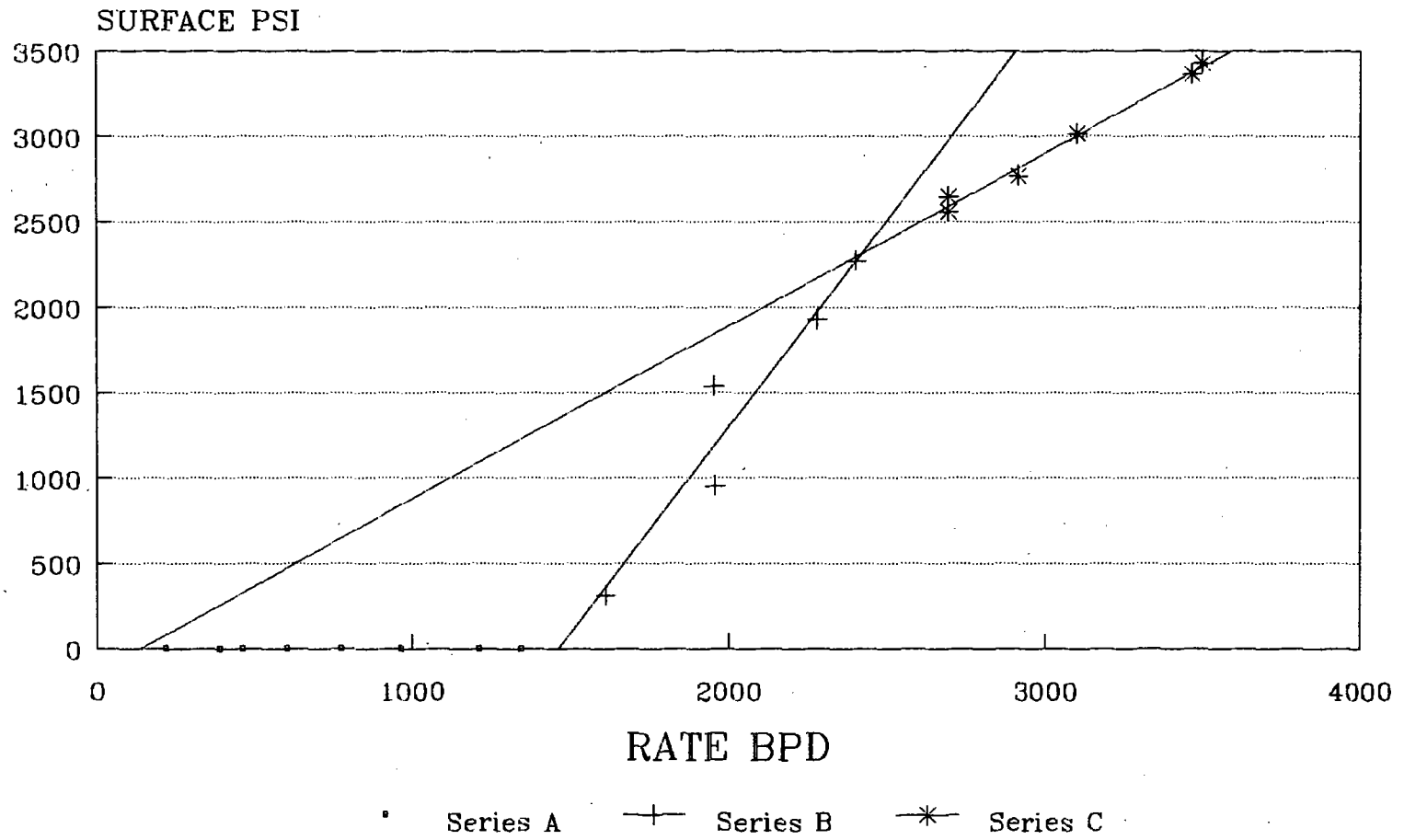
Tim Gum

enclosures

cc: Jerry Sexton
District Director/OCD Hobbs

HEYCO

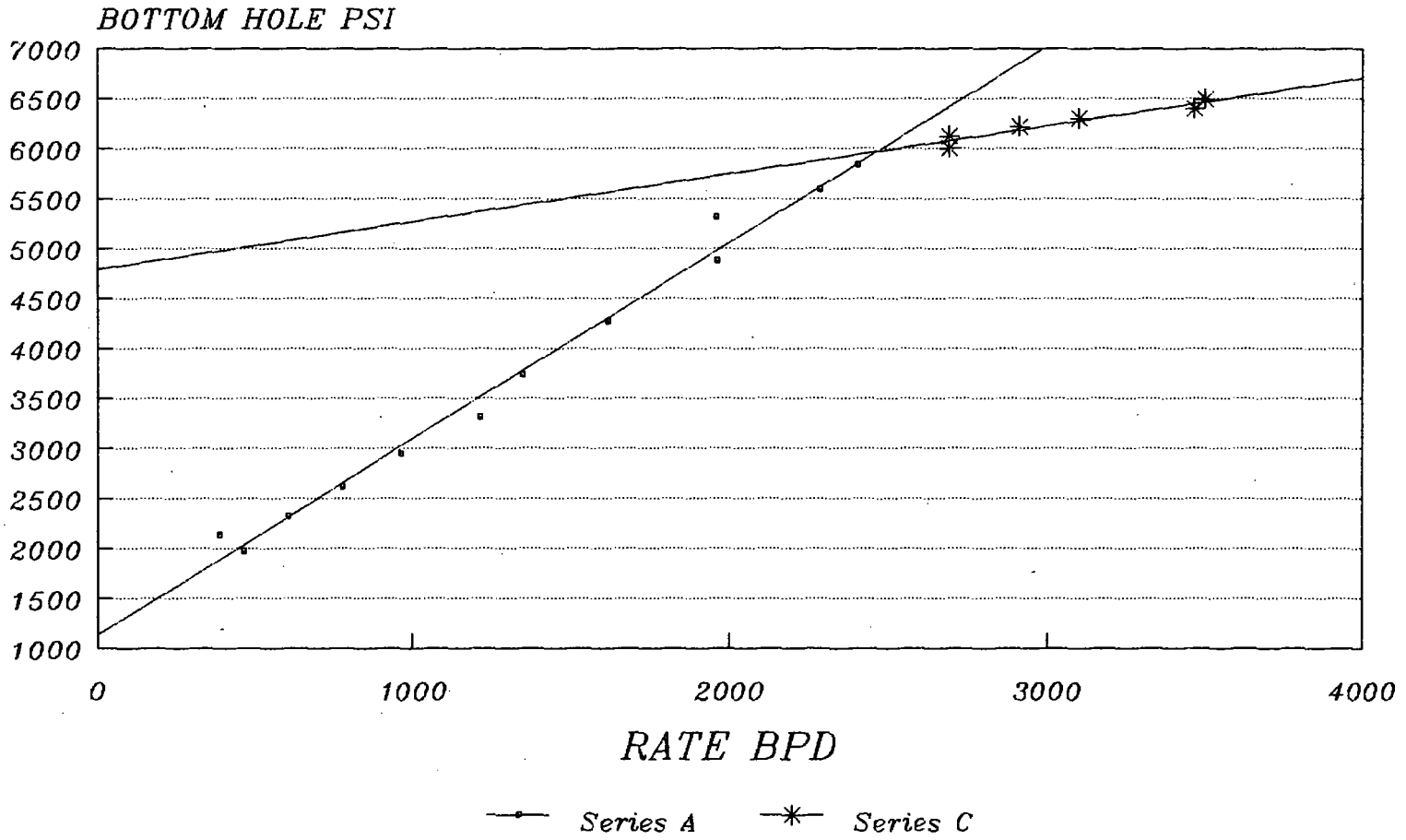
YOUNG DEEP UNIT #16



HOLMES WIRELINE SERVICE

HEYCO

YOUNG DEEP UNIT # 16



HOLMES WIRELINE SERVICE

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

March 16, 1993

Greenhill Petroleum Corporation
11490 Westheimer Road, Suite 200
Houston, TX 77077-6841

Attention: Michael J. Newport

RE: Injection Pressure Increase, Five Wells in the Lovington San Andres Unit Waterflood Project. Lea County, New Mexico

Dear Mr. Newport:

Reference is made to your request dated March 3, 1993 to increase the surface injection pressure on five wells in the Lovington San Andres Waterflood Project. This request is based on step rate tests conducted on these wells between February 2 and 5, 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
LSAU No. 8 2310' FNL - 1980' FWL Unit F, Section 31, Township 16 South, Range 37 East	1750 PSIG
LSAU No. 12 1980' FSL - 1980' FWL Unit K, Section 36, Township 16 South, Range 36 East	1925 PSIG
LSAU No. 31 660' FNL - 1980' FWL Unit C, Section 1, Township 17 South, Range 36 East	2150 PSIG

Well and Location	Maximum Injection Surface Pressure
LSAU No. 33 660' FNL - 660' FEL Unit A, Section 1, Township 17 South, Range 36 East	2193 PSIG
LSAU No. 40 1980' FNL - 660' FEL Unit H, Section 1, Township 17 South, Range 36 East	1750 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
David Catanach
File: WFX-615
WFX-632
Case No. 10154

NO WAITING PERIOD

COMPANY: GREENHILL PETROLEUM CORPORATION
ADDRESS: 11490 WESTHEIMER ROAD, SUITE 200
CITY, STATE, ZIP: HOUSTON, TEXAS 77077-6841
ATTENTION: MICHAEL J. NEWPORT

Re: Injection Pressure Increase
LOVINGTON SAN ANDRES UNIT
5 WELLS
LEA County, New Mexico

Dear Sir:

Reference is made to your request dated MARCH 3, 1993, to increase the surface injection pressure on 5 WELL IN THE LOVINGTON SAN ANDRES UNIT. This request is based on step rate tests conducted on these wells BETWEEN FEB 2ND AND 5TH, 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 & Location	Maximum Injection Surface Pressure
WFX 632 LSAU No. 8 2310'FNL & 1980'FWL "F" 31-16S-37E	1750 PSIG
LSAU No. 12 1980'FSL & 1980'FWL "K" 36-16S-36E	1925 PSIG
LSAU No. 31 660'FNL & 1980'FWL "C" 1-17S-36E	2150 PSIG
WFX 615 LSAU No. 33 660'FNL & 660'FEL "A" 1-17S-36E	2193 PSIG

ONE MORE ON BACK

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.

xc: T. ~~GALLEGOS~~ D. CATANACH FILE- WFX-615 WFX-632 CASE FILE 10154 OCD- HOBBS

LSAU No. 40
1980' FNL + 660' FEL
"H" 1-17S-36E

1750 PSIG

GREENHILL PETROLEUM CORPORATION
11490 WESTHEIMER ROAD, SUITE 200
HOUSTON, TEXAS 77077-6841
TELEPHONE (713) 589-8484
FAX. (713) 589-7892

Incorporated in Delaware, U.S.A.

March 3, 1993

Oil Conservation Division
State of New Mexico
Energy, Minerals and Natural Resources Department
P. O. Box 2088
Santa Fe, New Mexico 87504-2088

Attention: Mr. David Catanach

Re: Step Rate Test Graphs and Charts
Lovington San Andres Unit
Well Numbers 8, 12, 31, 33, and 40
Lea County, New Mexico

Dear Mr. Catanach:

Enclosed please find the Step Rate Test Graphs and Charts covering Lovington San Andres Unit Well Numbers 8, 12, 31, 33, and 40. Greenhill Petroleum Corporation hereby requests permission to increase the surface injection pressure for the above referenced wells. This request is based upon Step Rate Tests conducted on these wells.

Please contact me in the event I can provide you with additional information.

Very truly yours,

Michael J. Newport
Land Manager-Permian Basin

MJN:KLD
93.132

Enclosure

GREENHILL PETROLEUM CORPORATION

STEP RATE TEST RESULTS
GREENHILL PETROLEUM CORPORATION
LOVINGTON SAN ANDRES UNIT
LEA COUNTY, NEW MEXICO

	Surface Parting Pressure, psig	Requested Injection Pressure, psig
LSAU 8	1830	~~1830~~ 1750
LSAU 12	1975	1975 1925
LSAU 31	2150	2150
LSAU 33	2193	2193
LSAU 40	1800	~~1800~~ 1750

DBP:KLD
93.133

JOHN WEST ENGINEERING COMPANY

Hobbs, New Mexico

STEP RATE INJECTION TEST

CLIENT: Greenhill Petroleum Corporation **DATE:** FEBRUARY 2, 1993

WELL NAME: LOVINGTON SAN ANDRES UNIT NO. 6 **WO#:** 93-14-0185

Lea County, New Mexico

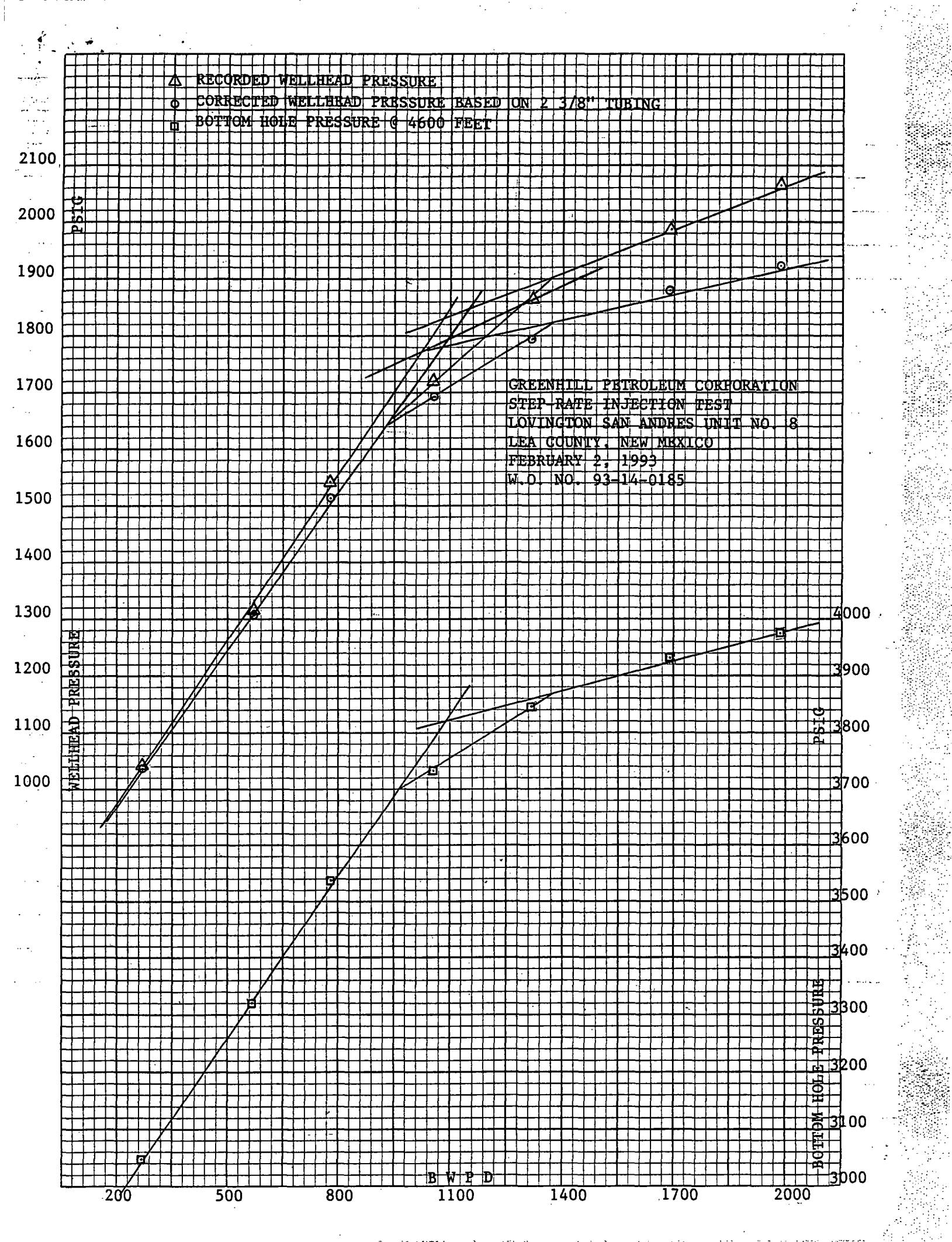
MID-PERFS. =

PACKER DEPTH = 4552

BHP GAUGE DEPTH = 4600

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)
	10:25	794.4				794.4		2803
	10:30	948.6	1.0	288.0	3.967	944.6	8.40	2951
	10:35	996.6	1.9	259.2	3.265	993.3	7.56	3007
1	10:40	1040.9	2.8	259.2	3.265	1037.6	7.56	3047
				268.8				
	10:45	1200.5	4.9	604.8	15.653	1184.8	17.64	3200
	10:50	1265.1	6.8	547.2	13.007	1252.1	15.96	3267
2	10:55	1318.3	8.7	547.2	13.007	1305.3	15.96	3320
				566.4				
	11:00	1442.0	11.5	806.4	26.651	1415.3	23.52	3438
	11:05	1495.6	14.1	748.8	23.237	1472.4	21.84	3496
3	11:10	1541.2	16.8	777.6	24.917	1516.3	22.68	3539
				777.6				
	11:15	1669.2	20.5	1065.6	44.633	1624.6	31.08	3648
	11:20	1714.8	24.1	1036.9	42.434	1672.4	30.24	3698
4	11:25	1740.1	27.8	1065.6	44.633	1695.5	31.08	3734
				1056.0				
	11:30	1827.5	32.4	1324.8	66.770	1760.7	38.64	3790
	11:35	1850.3	36.9	1296.0	64.109	1786.2	37.80	3821
5	11:40	1863.0	41.5	1324.8	66.770	1796.2	38.64	3845
				1315.1				
	11:45	1954.2	47.3	1670.4	102.523	1851.7	48.72	3895
	11:50	1973.3	53.2	1699.2	105.817	1867.5	49.56	3917
6	11:55	1986.0	59.1	1699.2	105.817	1880.2	49.56	3933
				1689.6				
	12:00	2050.6	66.0	1987.2	141.368	1909.2	57.96	3958
	12:05	2057.0	72.9	1987.2	141.368	1915.6	57.96	3970
7	12:10	2062.1	79.8	1987.2	141.368	1920.7	57.96	3977
				1987.2				

STEP NO. & DESIGNATION	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)/34.3967	(7) MEASURED BHP (psi)
FALLOFF	12:11	1892.4				1892.4		3937
	12:12	1887.4				1887.4		3920
	12:13	1876.0				1876.0		3908
	12:14	1863.3				1863.3		3895
	12:15	1853.2				1853.2		3884
	12:20	1807.7				1807.7		3837
	12:25	1768.4				1768.4		3795


RECORDED WELLHEAD PRESSURE
CORRECTED WELLHEAD PRESSURE BASED ON 2 3/8" TUBING
BOTTOM HOLE PRESSURE @ 4600 FEET
GREENHILL PETROLEUM CORPORATION
STEP-RATE INJECTION TEST
LOVINGTON SAN ANDRES UNIT NO. 8
LEA COUNTY, NEW MEXICO
FEBRUARY 2, 1993
W.O. NO. 93-14-0185
PSIG
WELLHEAD PRESSURE
BOTTOM HOLE PRESSURE
B W P D
2100
2000
1900
1800
1700
1600
1500
1400
1300
1200
1100
1000
4000
3900
3800
3700
3600
3500
3400
3300
3200
3100
3000
200
500
800
1100
1400
1700
2000

JOHN WEST ENGINEERING COMPANY

Hobbs, New Mexico

STEP RATE INJECTION TEST

CLIENT: Greenhill Petroleum Corporation **DATE:** FEBRUARY 9, 1993

WELL NAME: LOVINGTON SAN ANDRES UNIT WELL NO. 12 **WO#:** 93-14-0185

Lea County, New Mexico

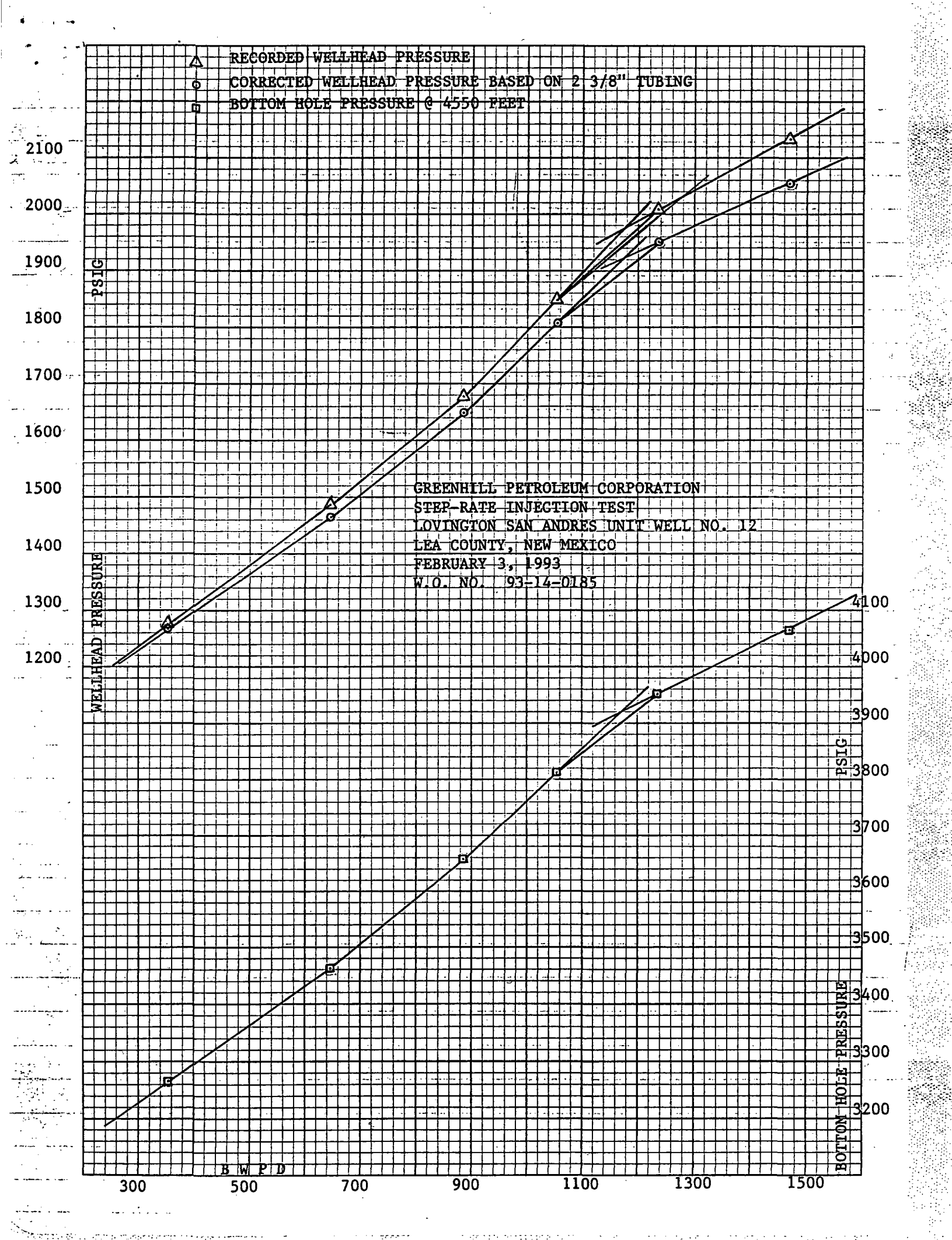
MID-PERFS. =

PACKER DEPTH = 4605

BHP GAUGE DEPTH = 4650

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)
	1:10	1129.7				1129.7		3108
	1:15	1214.6	1.3	374.4	6.376	1208.2	10.92	3204
	1:20	1251.4	2.5	345.6	5.498	1245.9	10.08	3236
1	1:25	1274.2	3.7	345.6	5.498	1268.7	10.08	3264
				355.2				
	1:30	1388.1	6.0	662.4	18.320	1369.8	19.32	3374
	1:35	1446.4	8.2	633.6	16.874	1429.5	18.48	3424
2	1:40	1483.1	10.4	633.6	16.874	1466.2	18.48	3461
				643.2				
	1:45	1602.1	13.5	892.8	31.824	1570.3	26.04	3568
	1:50	1646.4	16.6	892.8	31.824	1614.6	26.04	3618
3	1:55	1679.3	19.6	864.0	29.951	1649.3	25.20	3659
				883.2				
	2:00	1771.7	23.3	1065.6	44.147	1727.6	31.08	3733
	2:05	1814.8	27.0	1065.6	44.147	1770.7	31.08	3778
4	2:10	1847.7	30.6	1036.8	41.965	1805.7	30.24	3816
				1056.0				
	2:15	1945.2	34.9	1238.4	58.297	1886.9	36.12	3886
	2:20	1974.2	39.2	1238.4	58.297	1915.9	36.12	3926
5	2:25	2013.5	43.5	1238.4	58.297	1955.2	36.12	3955
				1238.4				
	2:30	2084.5	48.6	1468.8	79.935	2004.6	42.84	4012
	2:35	2114.9	53.7	1468.8	79.935	2035.0	42.84	4041
6	2:40	2135.2	58.8	1468.8	79.935	2055.3	42.84	4063
				1468.8				

STEP NO. & REMARKS	TIME	(1) SURFACE TUBING PRESS. (psig)	(2) CUMULATIVE VOL. INJECTED (bbls)	(B) INJECTION RATE (bbls/day)	(A) FRICTION HEAD LOSS (psi)	(E) CORRECTED TUBING PRESS. (psi) (1)-(A)	(C) INJECTION RATE (gpm) (2)/24.0/60	(F) MEASURED BHP (psi)
FALLOFF	2:41	2007.2				2007.2		4007
	2:42	1969.2				1969.2		3979
	2:43	1947.7				1947.7		3955
	2:44	1926.2				1926.2		3933
	2:45	1905.9				1905.9		3913
	2:50	1819.8				1819.8		3823
	2:55	1747.6				1747.6		3750


RECORDED WELLHEAD PRESSURE
CORRECTED WELLHEAD PRESSURE BASED ON 2 3/8" TUBING
BOTTOM HOLE PRESSURE @ 4550 FEET
GREENHILL PETROLEUM CORPORATION
STEP-RATE INJECTION TEST
LOVINGTON SAN ANDRES UNIT WELL NO. 12
LEA COUNTY, NEW MEXICO
FEBRUARY 3, 1993
W.O. NO. 93-14-0185
PSIG
WELLHEAD PRESSURE
BOTTOM HOLE PRESSURE
PSIG
B W P D
2100
2000
1900
1800
1700
1600
1500
1400
1300
1200
4100
4000
3900
3800
3700
3600
3500
3400
3300
3200
300
500
700
900
1100
1300
1500

JOHN WEST ENGINEERING COMPANY

Hobbs, New Mexico

STEP RATE INJECTION TEST

CLIENT: Greenhill Petroleum Corporation **DATE:** FEBRUARY 4, 1998

WELL NAME: LOVINGTON SAN ANDRES UNIT WELL NO. 91 **WO#:** 98-14-0185

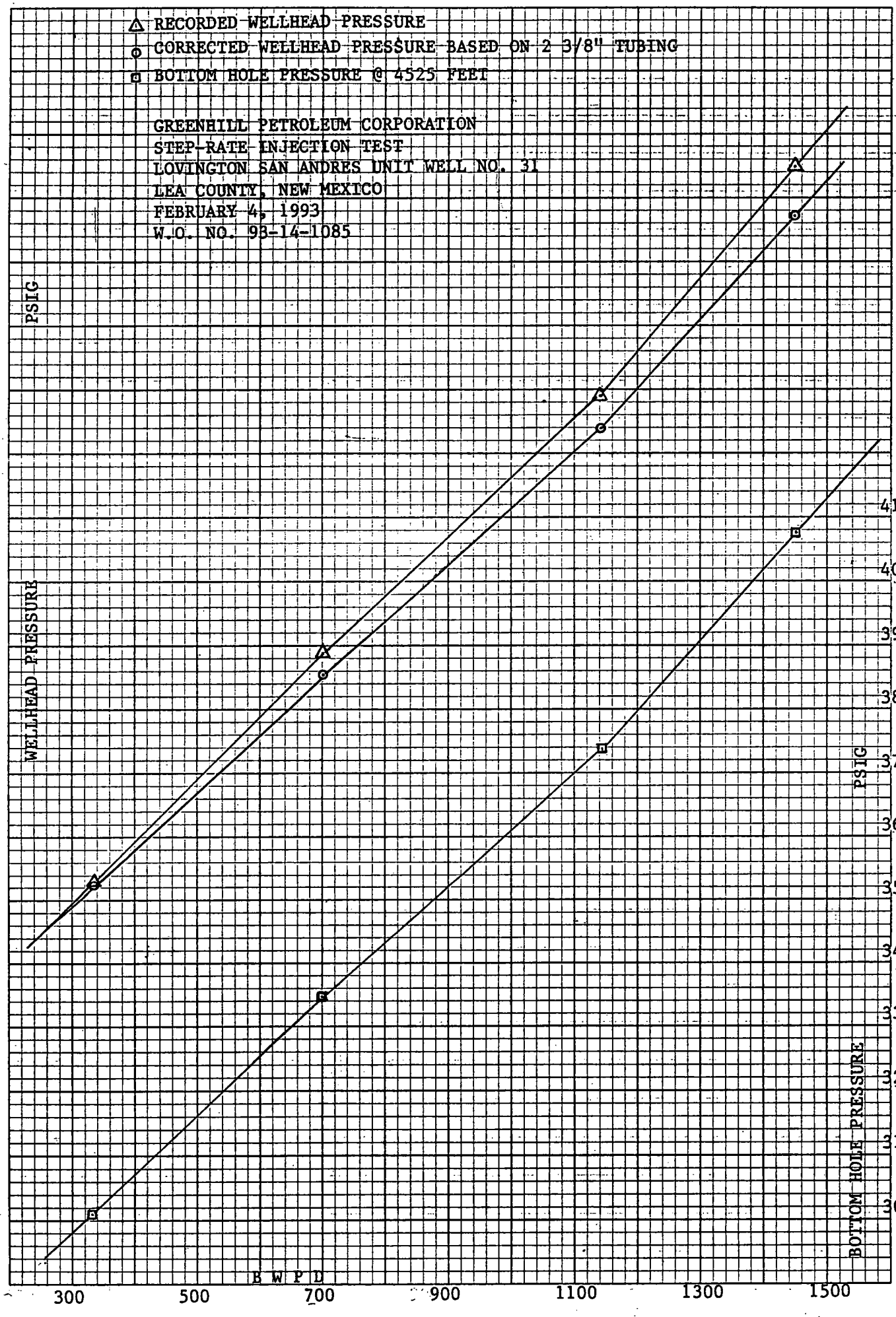
Lea County, New Mexico

MID-PERFS. =

PACKER DEPTH = 4510

BHP GAUGE DEPTH = 4525

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)
	9:10	776.9				776.9		2739
	9:15	913.5	1.2	345.6	5.468	908.0	10.08	2873
	9:20	989.4	2.3	316.8	4.655	984.7	9.24	2954
1	9:25	1028.6	3.5	345.6	5.468	1023.1	10.08	3012
				336.0				
	9:30	1218.5	5.9	691.2	19.712	1198.8	20.16	3176
	9:35	1298.2	8.4	720.0	21.258	1276.9	21.00	3273
2	9:40	1376.8	10.8	691.2	19.712	1357.1	20.16	3345
				700.8				
	9:45	1589.5	14.8	1152.0	50.717	1538.8	33.60	3530
	9:50	1707.3	18.7	1123.2	48.396	1658.9	32.76	3649
3	9:55	1790.8	22.7	1152.0	50.717	1740.1	33.60	3738
				1142.4				
	10:00	1989.6	27.8	1468.8	79.496	1910.1	42.84	3900
	10:05	2078.3	32.8	1440.0	76.636	2001.7	42.00	3995
4	10:10	2150.5	37.8	1440.0	76.636	2073.9	42.00	4077
				1449.6				
FALLOFF	10:11	1963.1				1963.1		3969
	10:12	1910.0				1910.0		3905
	10:13	1858.1				1858.1		3852
	10:14	1815.0				1815.0		3809
	10:15	1744.6				1744.6		3768
	10:20	1631.5				1631.5		3622
	10:25	1531.6				1531.6		3520


△ RECORDED WELLHEAD PRESSURE
○ CORRECTED WELLHEAD PRESSURE BASED ON 2 3/8" TUBING
□ BOTTOM HOLE PRESSURE @ 4525 FEET
GREENHILL PETROLEUM CORPORATION
STEP-RATE INJECTION TEST
LOVINGTON SAN ANDRES UNIT WELL NO. 31
LEA COUNTY, NEW MEXICO
FEBRUARY 4, 1993
W.O. NO. 93-14-1085
PSIG
WELLHEAD PRESSURE
2200
2100
2000
1900
1800
1700
1600
1500
1400
1300
1200
1100
1000
PSIG
BOTTOM HOLE PRESSURE
4100
4000
3900
3800
3700
3600
3500
3400
3300
3200
3100
3000
B W P D
300
500
700
900
1100
1300
1500

JOHN WEST ENGINEERING COMPANY

Hobbs, New Mexico

STEP RATE INJECTION TEST

CLIENT: Greenhill Petroleum Corporation **DATE:** FEBRUARY 5, 1998

WELL NAME: LOVINGTON SAN ANDRES UNIT WELL NO. 33 **WO#:** 93-14-1085

Lea County, New Mexico

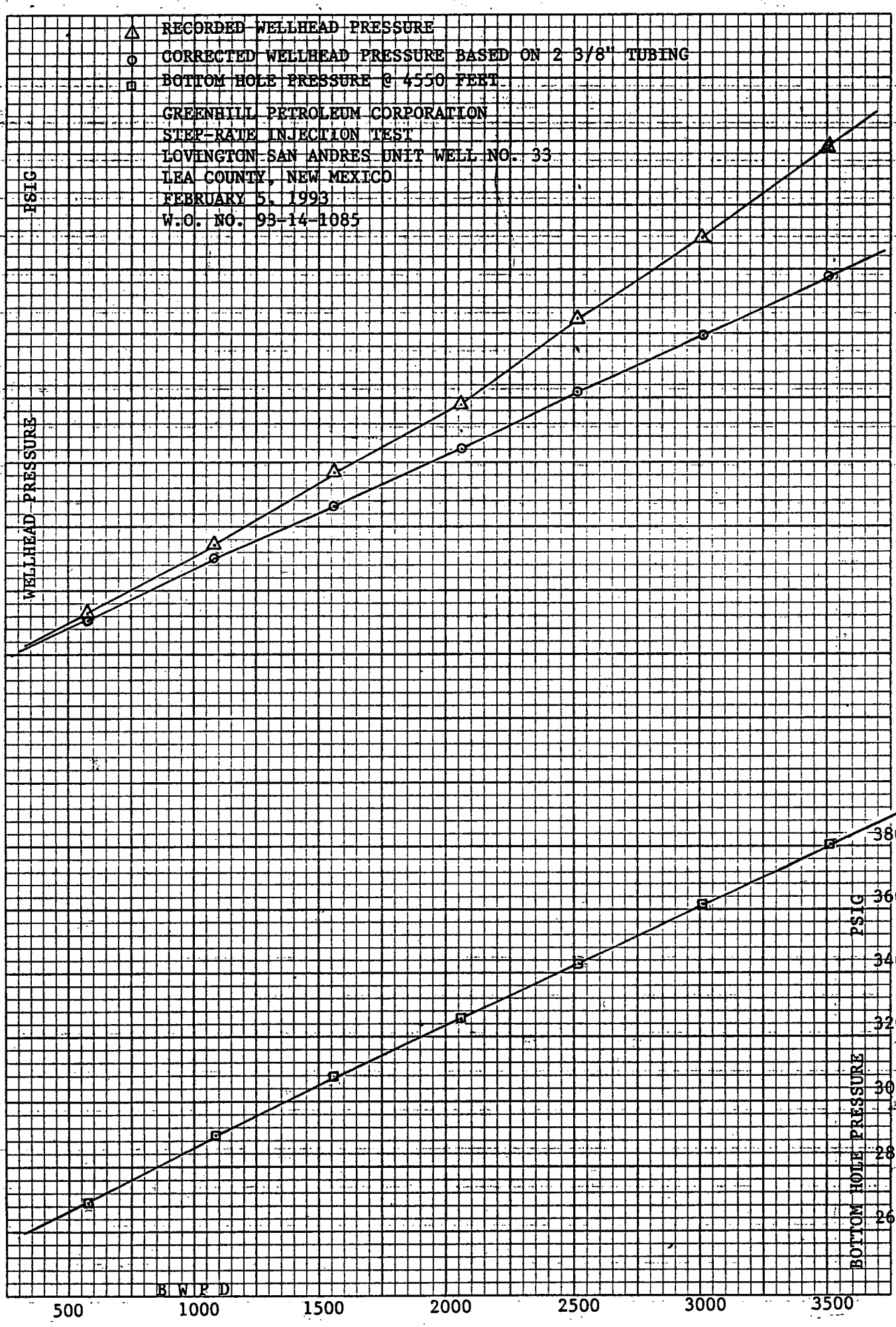
MID-PERFS. =

PACKER DEPTH = 4425

BHP GAUGE DEPTH = 4550

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)/34.2857	(7) MEASURED BHP (psi)
	9:15	530.7				530.7		2513
	9:20	669.9	2.0	576.0	14.146	655.8	16.80	2645
	9:25	699.1	4.0	576.0	14.146	685.0	16.80	2679
1	9:30	721.9	6.0	576.0	14.146	707.8	16.80	2690
				576.0				
	9:35	881.2	9.8	1094.4	46.380	834.8	31.92	2832
	9:40	919.2	13.5	1064.6	44.071	875.1	31.05	2873
2	9:45	947.1	17.3	1094.4	46.380	900.7	31.92	2898
				1084.8				
	9:50	1100.2	22.7	1555.2	88.851	1011.3	45.36	3011
	9:55	1135.8	28.1	1555.2	88.851	1046.9	45.36	3050
3	10:00	1162.4	33.5	1555.2	88.851	1073.5	45.36	3076
				1555.2				
	10:05	1334.6	40.6	2044.8	147.421	1187.2	59.64	3188
	10:10	1367.6	47.7	2044.8	147.421	1220.2	59.64	3229
4	10:15	1391.7	54.9	2073.6	151.286	1240.4	60.48	3256
				2054.4				
	10:20	1572.6	63.7	2534.4	219.293	1353.3	73.92	3368
	10:25	1613.1	72.3	2476.8	210.162	1402.9	72.24	3405
5	10:30	1642.1	81.1	2534.4	219.293	1422.8	73.92	3437
				2515.2				
	10:35	1840.7	91.5	2995.2	298.706	1542.0	87.36	3546
	10:40	1878.6	102.0	3024.0	304.041	1574.6	88.20	3587
6	10:45	1902.7	112.5	3024.0	304.041	1598.7	88.20	3619
				3014.4				
	10:50	2115.5	124.5	3456.0	389.240	1726.3	100.80	3723
	10:55	2156.2	136.7	3513.6	401.327	1754.9	102.48	3764
7	11:00	2193.1	149.0	3542.4	407.434	1785.7	103.32	3802
				3504.0				

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)/34.285	(7) MEASURED BHP (psi)
FALLOFF	11:01	1548.6				1548.6		3541
	11:02	1411.9				1411.9		3416
	11:03	1324.6				1324.6		3327
	11:04	1262.6				1262.6		3265
	11:05	1210.8				1210.8		3211
	11:10	1051.4				1051.4		3050
	11:15	960.4				960.4		2959


RECORDED WELLHEAD PRESSURE
CORRECTED WELLHEAD PRESSURE BASED ON 2 3/8" TUBING
BOTTOM HOLE PRESSURE @ 4550 FEET
GREENHILL PETROLEUM CORPORATION
STEP-RATE INJECTION TEST
LOVINGTON SAN ANDRES UNIT WELL NO. 33
LEA COUNTY, NEW MEXICO
FEBRUARY 5, 1993
W.O. NO. 93-14-1085
PSIG
WELLHEAD PRESSURE
2200
2000
1800
1600
1400
1200
1000
800
600
3800
3600
3400
3200
3000
2800
2600
PSIG
BOTTOM HOLE PRESSURE
B W P D
500
1000
1500
2000
2500
3000
3500

JOHN WEST ENGINEERING COMPANY

Hobbs, New Mexico

STEP RATE INJECTION TEST

CLIENT: Greenhill Petroleum Corporation **DATE:** FEBRUARY 4, 1998

WELL NAME: LOVINGTON SAN ANDRES UNIT WELL NO. 40 **WO#:** 98-14-0185

Lea County, New Mexico

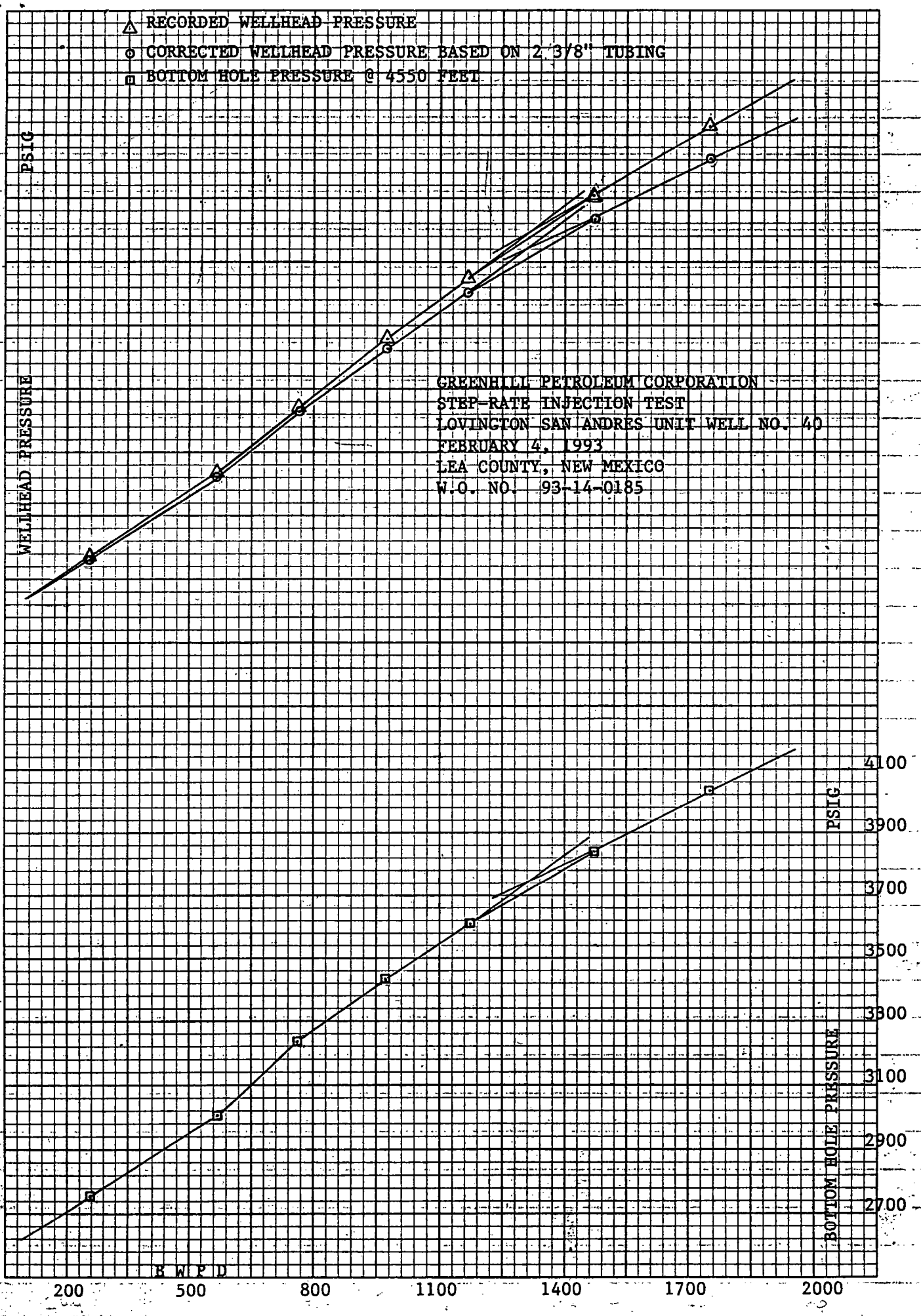
MID-PERFS. =

PACKER DEPTH = 4607

BHP GAUGE DEPTH = 4650

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 (psig)
	11:45	582.2				582.2		2551
	11:50	691.0	0.9	259.2	3.229	687.8	7.56	2667
	11:55	746.7	1.8	259.2	3.229	743.5	7.56	2724
1	12:00	774.5	2.7	259.2	3.229	771.3	7.56	2756
				259.2				
	12:05	917.4	4.7	576.0	14.146	903.3	16.80	2900
	12:10	993.3	6.7	576.0	14.146	979.2	16.80	2971
2	12:15	1033.8	8.6	547.2	12.865	1020.9	15.96	3013
				566.4				
	12:20	1150.2	11.3	777.6	24.647	1125.6	22.68	3121
	12:25	1214.8	13.9	748.8	22.984	1191.8	21.84	3184
3	12:30	1252.8	16.6	777.6	24.647	1228.2	22.68	3227
				767.9				
	12:35	1373.0	20.0	979.2	37.754	1335.2	28.56	3332
	12:40	1430.0	23.4	979.2	37.754	1392.2	28.56	3386
4	12:45	1459.1	26.7	950.4	35.726	1423.4	27.72	3425
				969.6				
	12:50	1585.6	30.7	1152.0	50.997	1534.6	33.60	3524
	12:55	1628.7	34.8	1180.8	53.380	1575.3	34.44	3575
5	1:00	1653.9	38.9	1180.8	53.380	1600.5	34.44	3609
				1171.2				
	1:05	1809.6	43.9	1440.0	77.060	1732.5	42.00	3727
	1:10	1865.2	49.1	1497.6	82.859	1782.3	43.68	3790
6	1:15	1903.2	54.2	1468.8	79.935	1823.3	42.84	3832
				1468.8				
	1:20	2047.5	60.3	1756.8	111.325	1936.2	51.24	3944
	1:25	2095.6	66.4	1756.8	111.325	1984.3	51.24	3995
7	1:30	2131.0	72.5	1756.8	111.325	2019.7	51.24	4033
				1756.8				

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)/34.2857	(7) MEASURED BHP (psi)
FALLOFF	1:31	1661.2				1661.2		3656
	1:32	1756.2				1756.2		3758
	1:33	1680.2				1680.2		3681
	1:34	1616.9				1616.9		3617
	1:35	1563.7				1563.7		3564
	1:40	1381.4				1381.4		3379
	1:45	1268.7				1268.7		3263


RECORDED WELLHEAD PRESSURE
CORRECTED WELLHEAD PRESSURE BASED ON 2 3/8" TUBING
BOTTOM HOLE PRESSURE @ 4550 FEET
WELLHEAD PRESSURE PSIG
2100
1900
1700
1500
1300
1100
900
700
GREENHILL PETROLEUM CORPORATION
STEP-RATE INJECTION TEST
LOVINGTON SAN ANDRES UNIT WELL NO. 40
FEBRUARY 4, 1993
LEA COUNTY, NEW MEXICO
W.O. NO. 93-14-0185
BOTTOM HOLE PRESSURE PSIG
4100
3900
3700
3500
3300
3100
2900
2700
BWPD
200
500
800
1100
1400
1700
2000

STATE OF NEW MEXICO

ENERGY AND MINERALS DEPARTMENT

OIL CONSERVATION DIVISION

HOBBS DISTRICT OFFICE

June 14, 1993

BRUCE KING
GOVERNOR

POST OFFICE BOX 1980
HOBBS, NEW MEXICO 88240
(505) 393-6161

OIL CONSERVATION DIVISON
P.O. BOX 2088
SANTA FE, NEW MEXICO 87504-2088

RE: APPLICATION FOR PRESSURE LIMIT INCREASE FOR DISPOSAL & INJECTION WELLS

Gentlemen:

I have examined the step rate test for the:

Harvey E. Yates Company	Young Deep Unit #16-E		9-18-34
Operator	Lease & Well No.	Unit	S-T-R

and my recommendations are as follows:

OK

Very truly yours

Jerry Sexton
Supervisor, District I

/bp