



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



November 20, 1992

BRUCE KING
GOVERNOR

ANITA LOCKWOOD
CABINET SECRETARY

Greenhill Petroleum Corporation
Attention: Michael J. Newport
11490 Westheimer Road, Suite 200
Houston, TX 77077-6841

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

WFX-631 PDEV0020600631
607 PDEV0020600607
605 PDEV0020600605

**RE: Injection Pressure Increase on Eight Wells, Lovington Paddock
Unit Waterflood Project, Lea County, New Mexico**

Dear Mr. Newport:

Reference is made to your request dated November 4, 1992, to increase the surface injection pressure on eight wells in the Lovington Paddock Unit Waterflood Project. This request is based on step rate tests conducted on these wells between August 4 and October 21, 1992. 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:

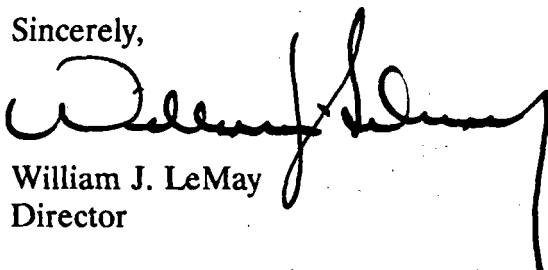
WELL AND LOCATION	MAXIMUM INJECTION SURFACE PRESSURE
LPU Well No. 26 2310' FSL - 2160' FEL Unit J, Section 31, Township 16 South, Range 37 East	2000 PSIG
LPU Well No. 35 810' FSL - 310' FEL Unit P, Section 31, Township 16 South, Range 37 East	2000 PSIG
LPU Well No. 43 660' FSL - 460' FEL Unit P, Section 35, Township 16 South, Range 36 East	2000 PSIG
LPU Well No. 54 1650' FNL - 660' FEL Unit H, Section 6, Township 17 South, Range 37 East	2000 PSIG

Injection Pressure Increase
Greenhill Petroleum Corporation
November 20, 1992
Page 2

WELL AND LOCATION	MAXIMUM INJECTION SURFACE PRESSURE
LPU Well No. 63 1980' FSL - 990' FWL Unit L, Section 1, Township 17 South, Range 36 East	2000 PSIG
LPU Well No. 65 2310' FSL - 2310' FEL Unit J, Section 1, Township 17 South, Range 36 East	2000 PSIG
LPU Well No. 67 2310' FSL - 660' FWL Unit L, Section 6, Township	2000 PSIG
LPU Well No. 69 2173' FSL - 2173' FEL Unit J, Section 6, Township 17 South, Range 37 East	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.

Sincerely,



William J. LeMay
Director

WJL/BES/amg

cc: Oil Conservation Division - Hobbs
File: WFX-631
WFX-607
WFX-605

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

8 WELLS
LOVINGTON PADDOCK UNIT
LEA County, New Mexico

Dear Sir:

Reference is made to your request dated NOVEMBER 4, 1992, to increase the surface injection pressure on 8 WELLS IN THE LOVINGTON PADDOCK UNIT. This request is based on step rate tests conducted on these wells BETWEEN AUGUST 4 AND, 1992. 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. OCTOBER 21

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

<u>Well & Location</u>	<u>Maximum Injection Surface Pressure</u>
<u>LPU No. 26</u> <u>2310' FSL & 2160' FEL</u> <u>"J" 31-165-37E</u>	<u>2000 PSIG</u>
<u>LPU No. 35</u> <u>810' FSL & 810' FEL</u> <u>"P" 31-165-37E</u>	<u>2000 PSIG</u>
<u>LPU No. 43</u> <u>660' FSL & 460' FEL</u> <u>"P" 35-165-36E</u>	<u>2000 PSIG</u>
<u>LPU No. 54</u> <u>1650' FNL & 660' EAST</u> <u>"H" 6-175-37E</u>	<u>2000 PSIG</u>

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.

cc: T. GALLEGOS D. CATANACH FILE- WFX- 631
- 607 OCD- HOBBS
- 605

**Maximum Injection
Surface Pressure**

2000 PSIG

"L" 1.175.36 €

2000 PSIG

" σ " 1.175.36 €

2000 PSIG

"L" 6:175:37E

2000 PSIG

"J" 6.175-37E



GREENHILL PETROLEUM CORPORATION

Incorporated in Delaware, U.S.A.

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

OIL CONSERVATION DIVISION
RECEIVED

'92 NOV 9 AM 9 25

November 4, 1992

Oil Conservation Division
Energy, Minerals and Natural Resources Department
State of New Mexico
P. O. Box 2088
Santa Fe, New Mexico 87501-2088

Attention: Mr. David Catanach

Re: Lovington Paddock Unit
Lea County, New Mexico

Dear Mr. Catanach:

Enclosed please find the Step Rate Test Graphs and Charts covering Well Numbers 26, 35, 43, 54, 63, 65, 67 and 69. Greenhill Petroleum Corporation hereby requests permission to increase the surface injection pressure to 2000 psig per well. 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:sjs
92.799

Enclosure

LOVINGTON PADDOCK UNIT

STEP RATE TEST RESULTS

WELL IDENTIFICATION	LPU #26	LPU #35	LPU #43	LPU #54	LPU #63	LPU #65
Surface parting pressure/Pslg	2050	180 NR	070 NR	2140 NR	2280 NR	400 NR
Bottom Hole Pressure/Pslg	520	4780	630	4900	830	510
Midperf depth/ft.	200	200	6200	250	200	6180
Fracture Gradlent Psl/ft.	NR	NR	NR	NR	NR	NR
Requested Injection Pressure/Pslg	2000	2000	2000	2000	2000	2000

NR = not reached

sjs
92.800

LOVINGTON PADDOCK UNIT

STEP RATE TEST RESULTS

WELL IDENTIFICATION	LPU #67	LPU #69
Surface parting pressure/Pslg	2160 NR	240 NR
Bottom Hole Pressure/Pslg	840	650
Midperf depth/ft.	210	200
Fracture Gradlent Psl/ft.	NR	NR
Requested Injection Pressure/Pslg	2000	2000

NR = not reached

sjs
92.801

JOHN WEST ENGINEERING COMPANY

Hobbs, New Mexico

STEP RATE INJECTION TEST

CLIENT: Greenhill Petroleum Corporation

DATE: October 14, 1982

WELL NAME: Lovington Paddock Unit Well NO. 29

WO#: 92-14-1560

Lea County, New Mexico

MID-PERF8. =

PACKER DEPTH = 6053

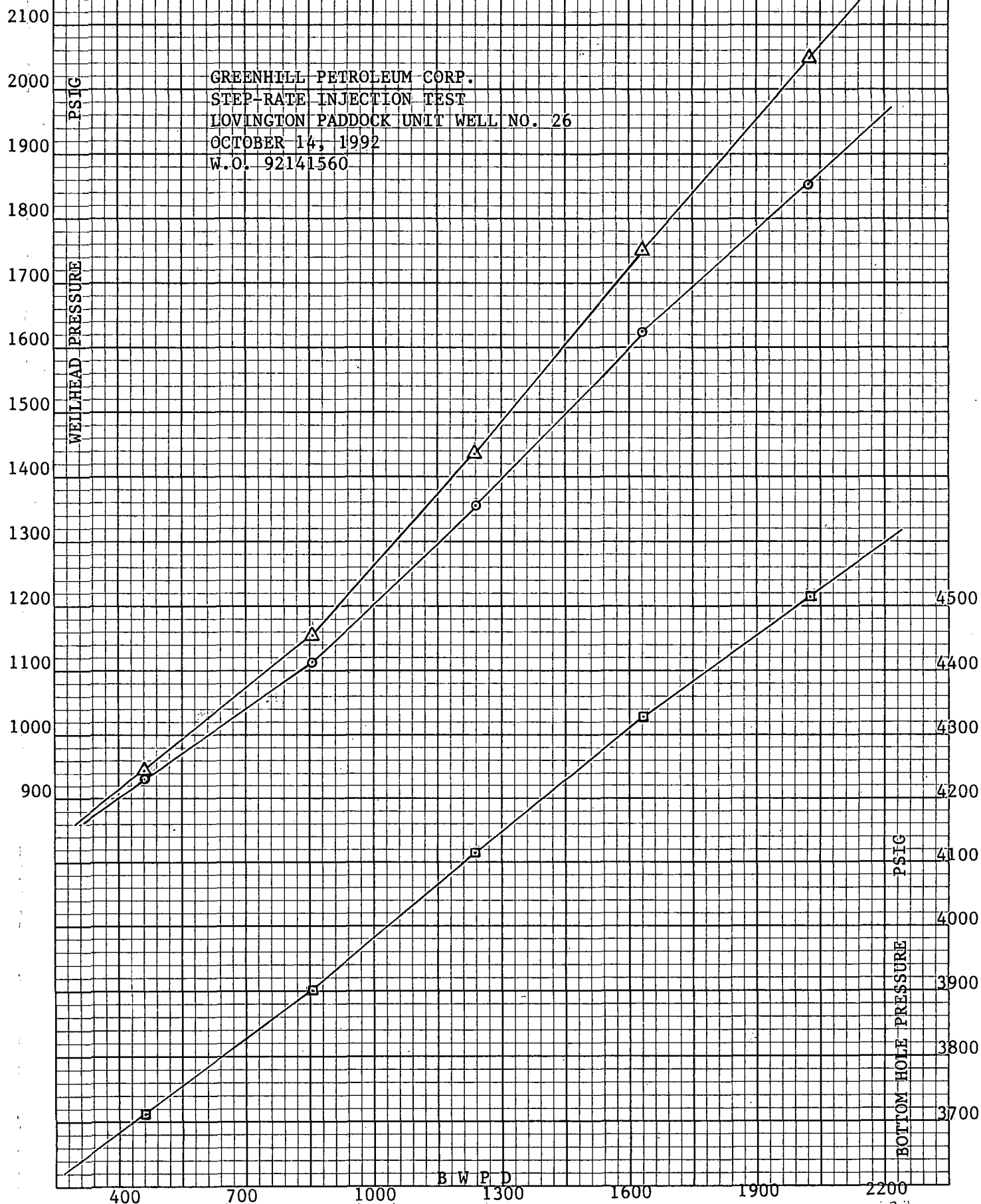
BHP GAUGE DEPTH = 8103

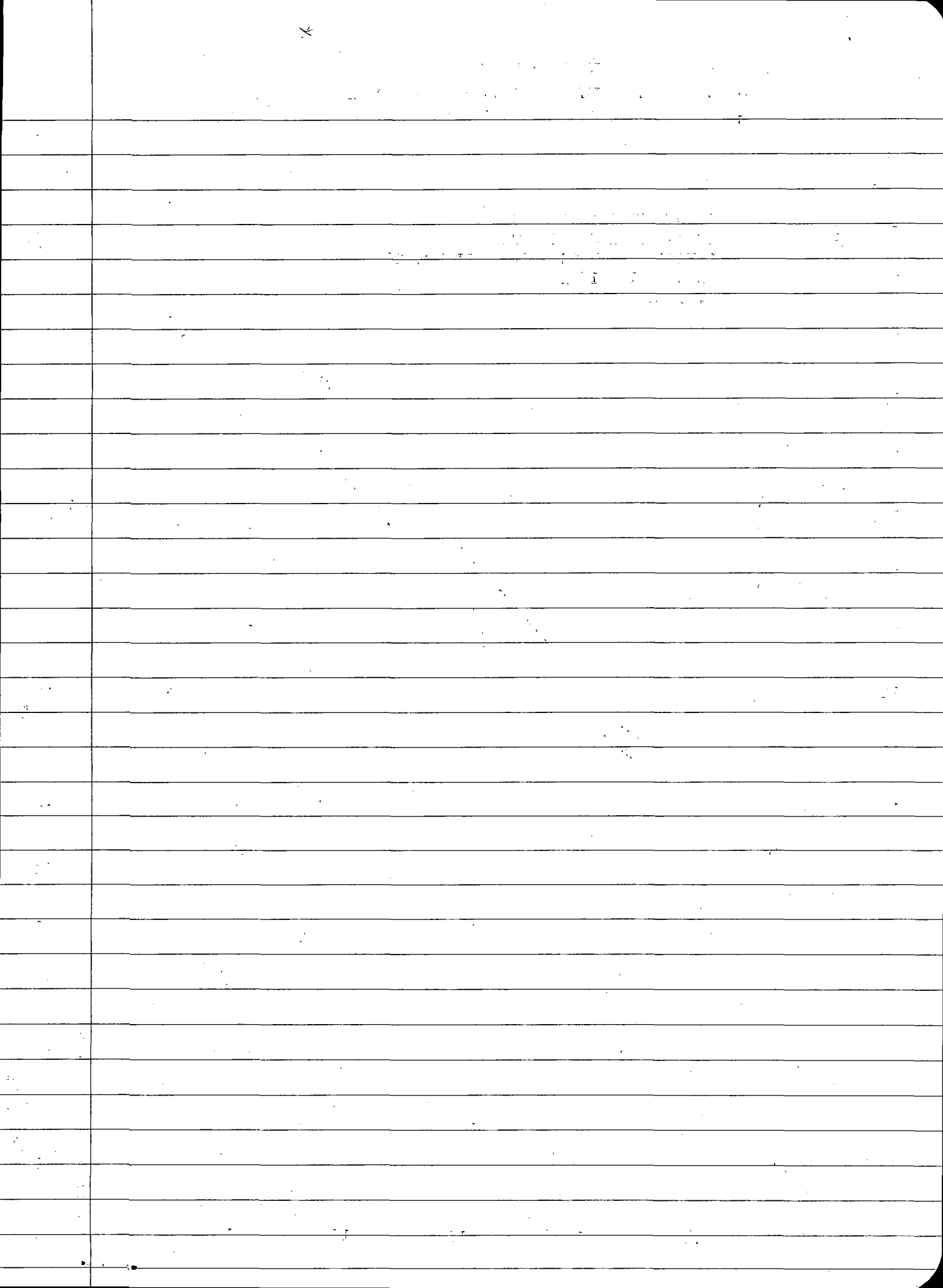
STEP NO. & REMARKS	TIME	(1) SURFACE TUBING PRESS (psig)	(2) CUMULATIVE VOL. INJECTED (bbls)	(3) INJECTION RATE (bbls/day)	(4) FRICTION HEAD LOSS (psi)	(5) CORRECTED TUBING PRESS (psig) (1) - (4)	(6) INJECTION RATE (gpm) (3)/24.2857	(7) MEASURED BHP (psig)
1	1:00	834.6				834.6		3612
	1:05	900.2	1.5	432.0	11.144	889.1	12.60	3670
	1:10	924.0	3.1	460.8	12.557	911.4	13.44	3693
	1:15	943.0	4.7	460.8	12.557	930.4	13.44	3712
				451.2				
2	1:20	1071.9	7.6	835.2	37.731	1034.2	24.36	3803
	1:25	1118.8	10.6	864.0	40.173	1078.6	25.20	3856
	1:30	1156.8	13.6	864.0	40.173	1116.6	25.20	3900
				854.4				
3	1:35	1316.3	17.9	1238.7	78.230	1238.1	36.13	4000
	1:40	1378.3	22.2	1238.7	78.230	1300.1	36.13	4064
	1:45	1436.6	26.5	1238.7	78.230	1358.4	36.13	4115
				1238.7				
4	1:50	1625.2	32.3	1670.4	136.021	1489.2	48.72	4213
	1:55	1698.7	37.9	1612.0	127.354	1571.3	47.02	4278
	2:00	1749.3	43.5	1612.0	127.354	1621.9	47.02	4328
				1631.9				
5	2:05	1940.4	50.6	2044.0	197.596	1742.8	59.62	4412
	2:10	2005.0	57.6	2016.0	192.617	1812.4	58.80	4470
	2:15	2046.8	64.6	2016.0	192.617	1854.2	58.80	4514
				2025.6				
Shut-down out of water								

STEP NO. & REMARKS	TIME	(1) SURFACE TUBING PRESS. (psig)	(2) CUMULATIVE VOL. INJECTED (bbls)	(3) INJECTION RATE (bbls/day)	(4) FRICTION HEAD LOSS (ps)	(5) CORRECTED TUBING PRESS. (ps) (1)-(4)	(6) INJECTION RATE (gpm) (3)/34.567	(7) MEASURED BHP (ps)
5 mins.	2:16	1725.3				1725.3		4466
	2:17	1674.6				1674.6		4431
	2:18	1649.3				1649.3		4400
	2:19	1624.0				1624.0		4375
	2:20	1599.9				1599.9		4350
	2:21	1577.1				1577.1		4326
	2:22	1555.6				1555.6		4305
	2:23	1535.4				1535.4		4283
	2:24	1516.4				1516.4		4264
	2:25	1498.7				1498.7		4246
	2:30	1418.9				1418.9		4163

- △ RECORDED WELLHEAD PRESSURE
- CORRECTED WELLHEAD PRESSURE BASED ON 2 3/8" TUBING
- BOTTOM HOLE PRESSURE @ 6103 FEET

GREENHILL PETROLEUM CORP.
 STEP-RATE INJECTION TEST
 LOVINGTON PADDOCK UNIT WELL NO. 26
 OCTOBER 14, 1992
 W.O. 92141560





JOHN WEST ENGINEERING COMPANY

Hobbs, New Mexico

STEP RATE INJECTION TEST

CLIENT: Greenhill Petroleum Corporation

DATE: October 14, 1982

WELL NAME: Lovington Paddock Unit Well NO. 28
Lea County, New Mexico

WO#: 82-14-1580

MID-PERF8. =

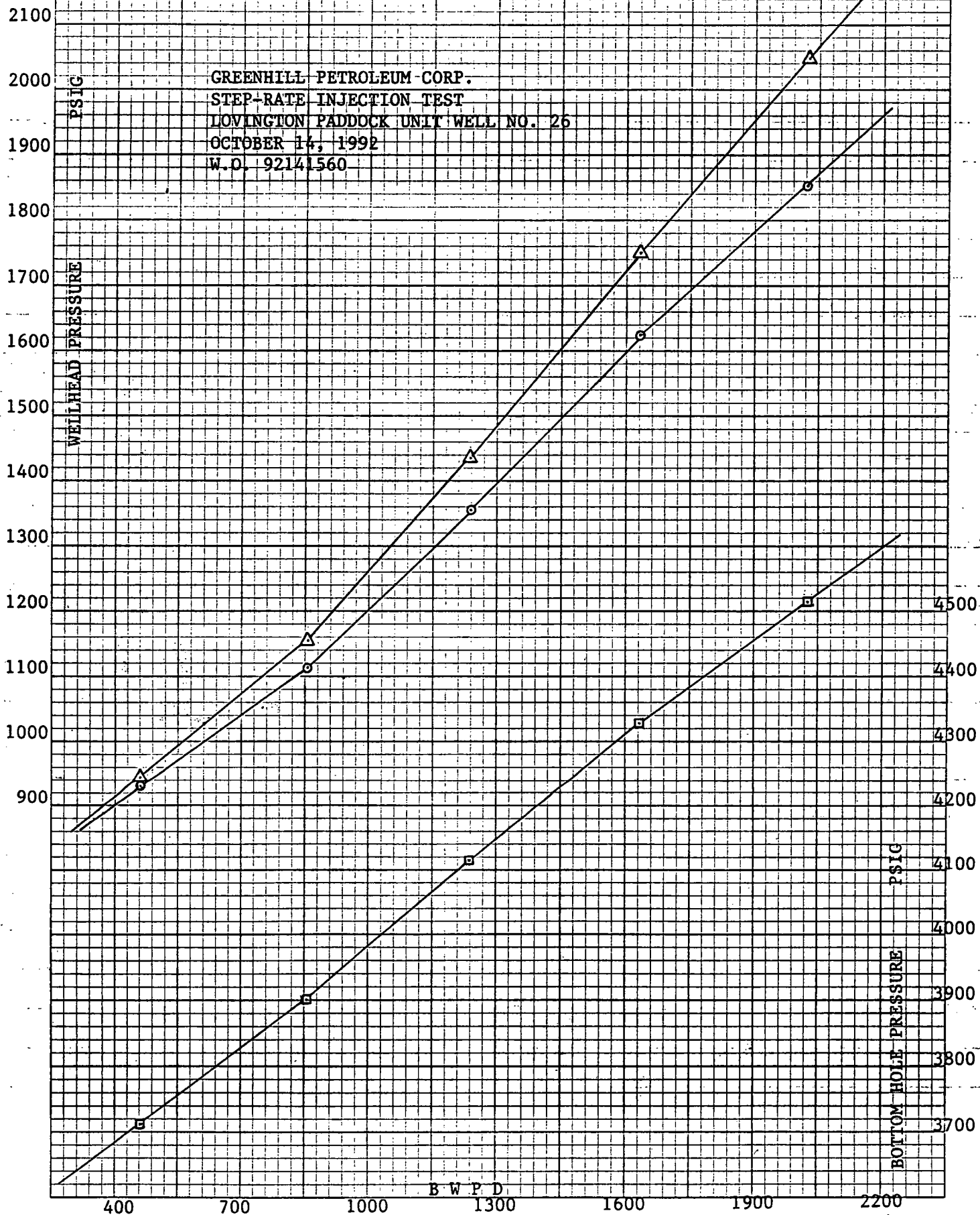
PACKER DEPTH = 6053

BHP GAUGE DEPTH = 6103

STEP NO. & REMARKS	TIME	(1) SURFACE TUBING PRESS. (psig)	(2) CUMULATIVE VOL. INJECTED (bbls)	(3) INJECTION RATE (bbls/day)	(4) FRICTION HEAD LOSS (p.s.f.)	(5) CORRECTED TUBING PRESS. (p.s.f.) (1)-(4)	(6) INJECTION RATE (gpm) (3)/24,000	(7) MEASURED BHP (p.s.f.)
1	1:00	834.6				834.6		3612
	1:05	900.2	1.5	432.0	11.144	889.1	12.60	3670
	1:10	924.0	3.1	460.8	12.557	911.4	13.44	3693
	1:15	943.0	4.7	460.8	12.557	930.4	13.44	3712
				451.2				
2	1:20	1071.9	7.6	835.2	37.731	1034.2	24.36	3803
	1:25	1118.8	10.6	864.0	40.173	1078.6	25.20	3856
	1:30	1156.8	13.6	864.0	40.173	1116.6	25.20	3900
3				854.4				
	1:35	1316.3	17.9	1238.7	78.230	1238.1	36.13	4000
	1:40	1378.3	22.2	1238.7	78.230	1300.1	36.13	4064
	1:45	1436.6	26.5	1238.7	78.230	1358.4	36.13	4115
4				1238.7				
	1:50	1625.2	32.3	1670.4	136.021	1489.2	48.72	4213
	1:55	1698.7	37.9	1612.0	127.354	1571.3	47.02	4278
	2:00	1749.3	43.5	1612.0	127.354	1621.9	47.02	4328
5				1631.9				
	2:05	1940.4	50.6	2044.0	197.596	1742.8	59.62	4412
	2:10	2005.0	57.6	2016.0	192.617	1812.4	58.80	4470
	2:15	2046.8	64.6	2016.0	192.617	1854.2	58.80	4514
Shut-down out of water				2025.6				

STEP NO. & REMAINS	TIME	(1) SURFACE TUBING PRESS (psig)	(2) CUMULATIVE VOL. INJECTED (bbls)	(3) INJECTION RATE (bbls/day)	(4) FRICTION HEAD LOSS (ps)	(5) CORRECTED TUBING PRESS. (ps) (1)-(4)	(6) INJECTION RATE (gpm) (2)/(14.7)	(7) MEASURED BHP (ps)
5 mins.	2:16	1725.3				1725.3		4466
	2:17	1674.6				1674.6		4431
	2:18	1649.3				1649.3		4400
	2:19	1624.0				1624.0		4375
	2:20	1599.9				1599.9		4350
	2:21	1577.1				1577.1		4326
	2:22	1555.6				1555.6		4305
	2:23	1535.4				1535.4		4283
	2:24	1516.4				1516.4		4264
	2:25	1498.7				1498.7		4246
	2:30	1418.9				1418.9		4163

- ▲ RECORDED WELLHEAD PRESSURE
 ○ CORRECTED WELLHEAD PRESSURE BASED ON 2 3/8" TUBING
 ■ BOTTOM HOLE PRESSURE @ 6103 FEET



JOHN WEST ENGINEERING COMPANY

Hobbs, New Mexico

STEP RATE INJECTION TEST

CLIENT: Greenhill Petroleum Corporation

DATE: October 18, 1992

WELL NAME: Lovington Paddock Unit No. 35

WO#: 92141560

Lea County, New Mexico

MID-PERFS. =

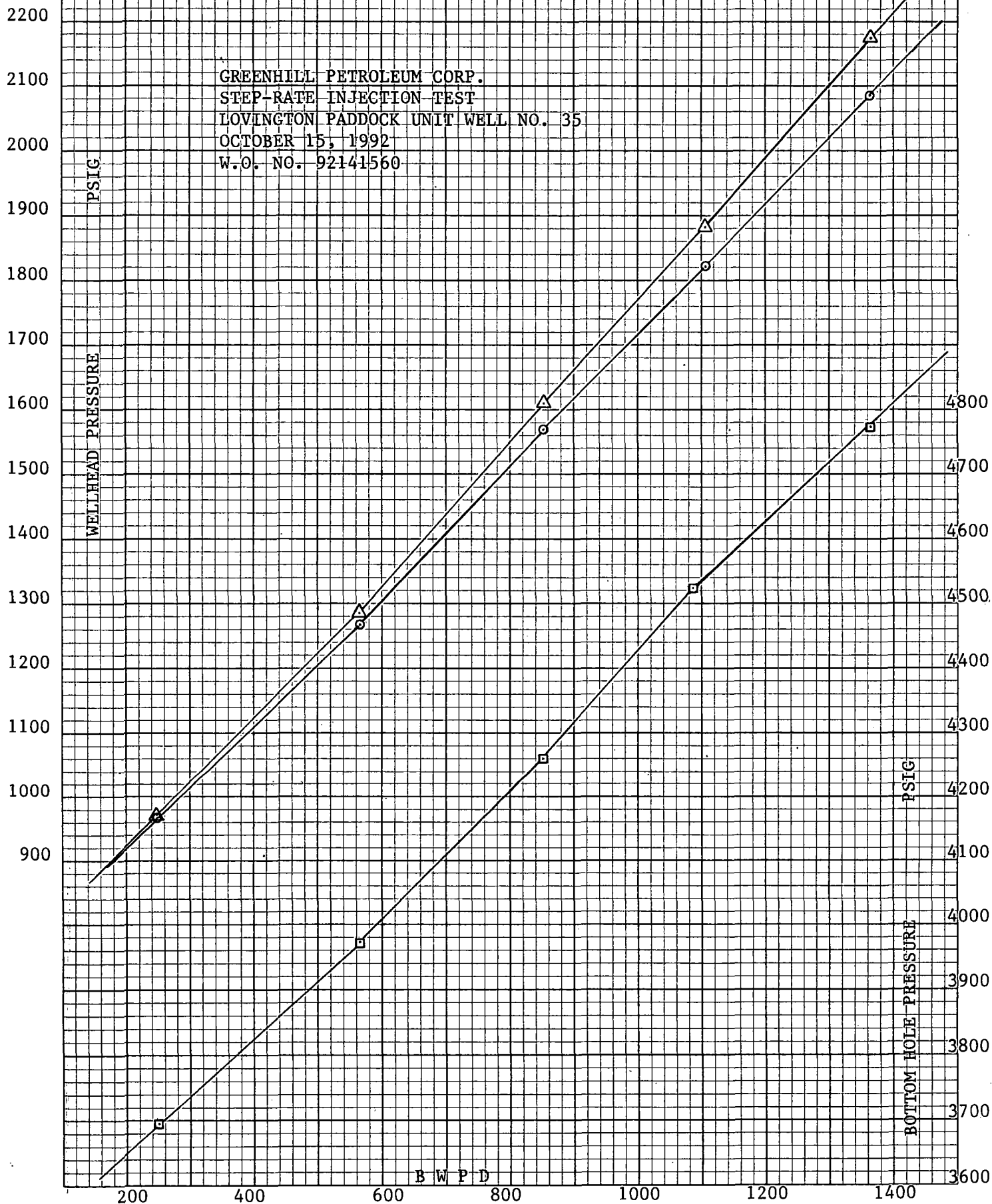
PACKER DEPTH = 8008

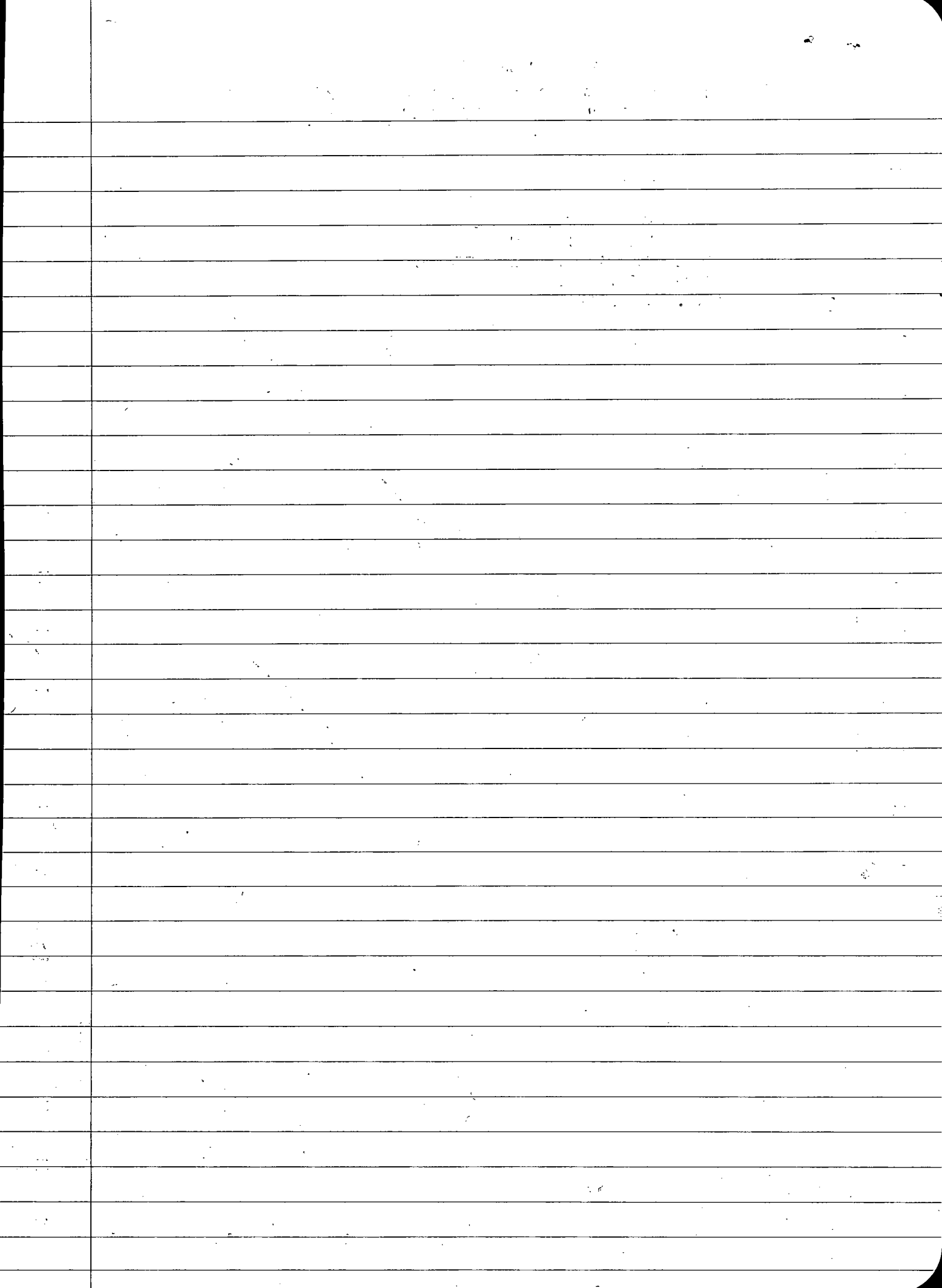
BHP GAUGE DEPTH = 8056

STEP NO. & REMARKS	TIME	(1) SURFACE TUBING PRESS. (psig)	(2) CUMULATIVE VOL. INJECTED (bbls)	(3) INJECTION RATE (bbls/day)	(4) FRICTION HEAD LOSS (ps)	(5) CORRECTED TUBING PRESS. (ps) (1)-(4)	(6) INJECTION RATE (gpm) (3)/34.2857	(7) MEASURED BHP (ps)
	8:50	751.9				751.9		3491
	8:55	868.2	0.9	259.2	4.298	863.9	7.56	3602
	9:00	917.5	1.7	230.7	3.485	914.0	6.73	3654
1	9:05	969.4	2.6	259.2	4.298	965.1	7.56	3696
				249.5				
	9:10	1126.3	4.6	576.0	18.828	1107.5	16.80	3831
	9:15	1211.2	6.5	547.2	17.124	1194.1	15.96	3907
2	9:20	1284.7	8.5	576.0	18.828	1265.9	16.80	3974
				566.4				
	9:25	1460.7	11.5	864.0	39.864	1420.8	25.20	4110
	9:30	1539.2	14.4	835.2	37.441	1501.8	24.36	4193
3	9:35	1608.9	17.4	864.0	39.864	1569.0	25.20	4260
				854.3				
	9:40	1743.2	21.2	1094.4	61.731	1681.5	31.92	4379
	9:45	1834.4	24.9	1065.6	58.760	1775.6	31.08	4458
4	9:50	1881.3	28.7	1094.4	61.731	1819.6	31.92	4522
				1084.7				
	9:55	2035.8	33.4	1353.6	91.472	1944.3	39.48	4635
	10:00	2110.6	38.2	1382.4	95.105	2015.5	40.32	4714
5	10:05	2175.2	42.9	1353.6	91.472	2083.7	39.48	4776
				1363.2				
Fall-Off	10:08	2010.6				2010.6		4771
	10:07	1958.7				1958.7		4664
	10:08	1923.3				1923.3		4627
	10:09	1891.6				1891.6		4593
	10:10	1863.8				1863.8		4565
5 mins.	10:15	1751.2				1751.2		4449
5 mins.	10:20	1671.4				1671.4		4367

- △ RECORDED WELLHEAD PRESSURE
- CORRECTED WELLHEAD PRESSURE BASED ON 2 3/8" TUBING
- BOTTOM HOLE PRESSURE @ 6056 FEET

GREENHILL PETROLEUM CORP.
 STEP-RATE INJECTION TEST
 LOVINGTON PADDOCK UNIT WELL NO. 35
 OCTOBER 15, 1992
 W.O. NO. 92141560





JOHN WEST ENGINEERING COMPANY

Hobbs, New Mexico

STEP RATE INJECTION TEST

CLIENT: Greenhill Petroleum Corporation

DATE: October 16, 1982

WELL NAME: Lovington Paddock Unit No. 35
Lea County, New Mexico

WO#: 92141560

MID-PERFS. -

PACKER DEPTH - 6006

BHP GAUGE DEPTH - 6056

STEP NO. & REMARKS	TIME	(1) SURFACE TUBING PRESS (psig)	(2) CUMULATIVE VOL. INJECTED (bbls)	(3) INJECTION RATE (bbls/day)	(4) FRICTION HEAD LOSS (ps)	(5) CORRECTED TUBING PRESS. (psig) (1) - (4)	(6) INJECTION RATE (gpm) (1)/(24.005)	(7) MEASURED BHP (ps)
1	8:50	751.9				751.9		3491
	8:55	868.2	0.9	259.2	4.298	863.9	7.56	3602
	9:00	917.5	1.7	230.7	3.465	914.0	6.73	3654
	9:05	969.4	2.6	259.2	4.298	965.1	7.56	3696
				249.5				
2	9:10	1126.3	4.6	576.0	18.828	1107.5	16.80	3831
	9:15	1211.2	6.5	547.2	17.124	1194.1	15.96	3907
	9:20	1284.7	8.5	576.0	18.828	1265.9	16.80	3974
3				566.4				
	9:25	1460.7	11.5	864.0	39.864	1420.8	25.20	4110
	9:30	1539.2	14.4	835.2	37.441	1501.8	24.36	4193
	9:35	1608.9	17.4	864.0	39.864	1569.0	25.20	4260
4				854.3				
	9:40	1743.2	21.2	1094.4	61.731	1681.5	31.92	4379
	9:45	1834.4	24.9	1065.6	58.760	1775.6	31.08	4458
	9:50	1881.3	28.7	1094.4	61.731	1819.6	31.92	4522
				1084.7				
5	9:55	2035.8	33.4	1353.6	91.472	1944.3	39.48	4635
	10:00	2110.6	38.2	1382.4	95.105	2015.5	40.32	4714
	10:05	2175.2	42.9	1353.6	91.472	2083.7	39.48	4776
Fall-Off				1363.2				
	10:06	2010.6				2010.6		4771
	10:07	1958.7				1958.7		4664
	10:08	1923.3				1923.3		4627
	10:09	1891.6				1891.6		4593
5 mins.	10:10	1863.8				1863.8		4565
	10:15	1751.2				1751.2		4449
	10:20	1671.4				1671.4		4367

- △ RECORDED WELLHEAD PRESSURE
- CORRECTED WELLHEAD PRESSURE BASED ON 2 3/8" TUBING
- BOTTOM HOLE PRESSURE @ 6056 FEET

GREENHILL PETROLEUM CORP.
 STEP-RATE INJECTION TEST
 LOVINGTON PADDOCK UNIT WELL NO. 35
 OCTOBER 15, 1992
 W.O. NO. 92141560

2200

2100

2000

1900

1800

1700

1600

1500

1400

1300

1200

1100

1000

900

PSIG

WELLHEAD PRESSURE

BOTTOM HOLE PRESSURE

4800

4700

4600

4500

4400

4300

4200

4100

4000

3900

3800

3700

3600

B W P D

200

400

600

800

1000

1200

1400

JOHN WEST ENGINEERING COMPANY

Hobbs, New Mexico

STEP RATE INJECTION TEST

CLIENT: Greenhill Petroleum Corporation

DATE: 10/20/82

WELL NAME: Lovington Paddock Unit Well No. 49
Lea County, New Mexico

WO#: 92141560

MID-PERFS. =

PACKER DEPTH = 6022

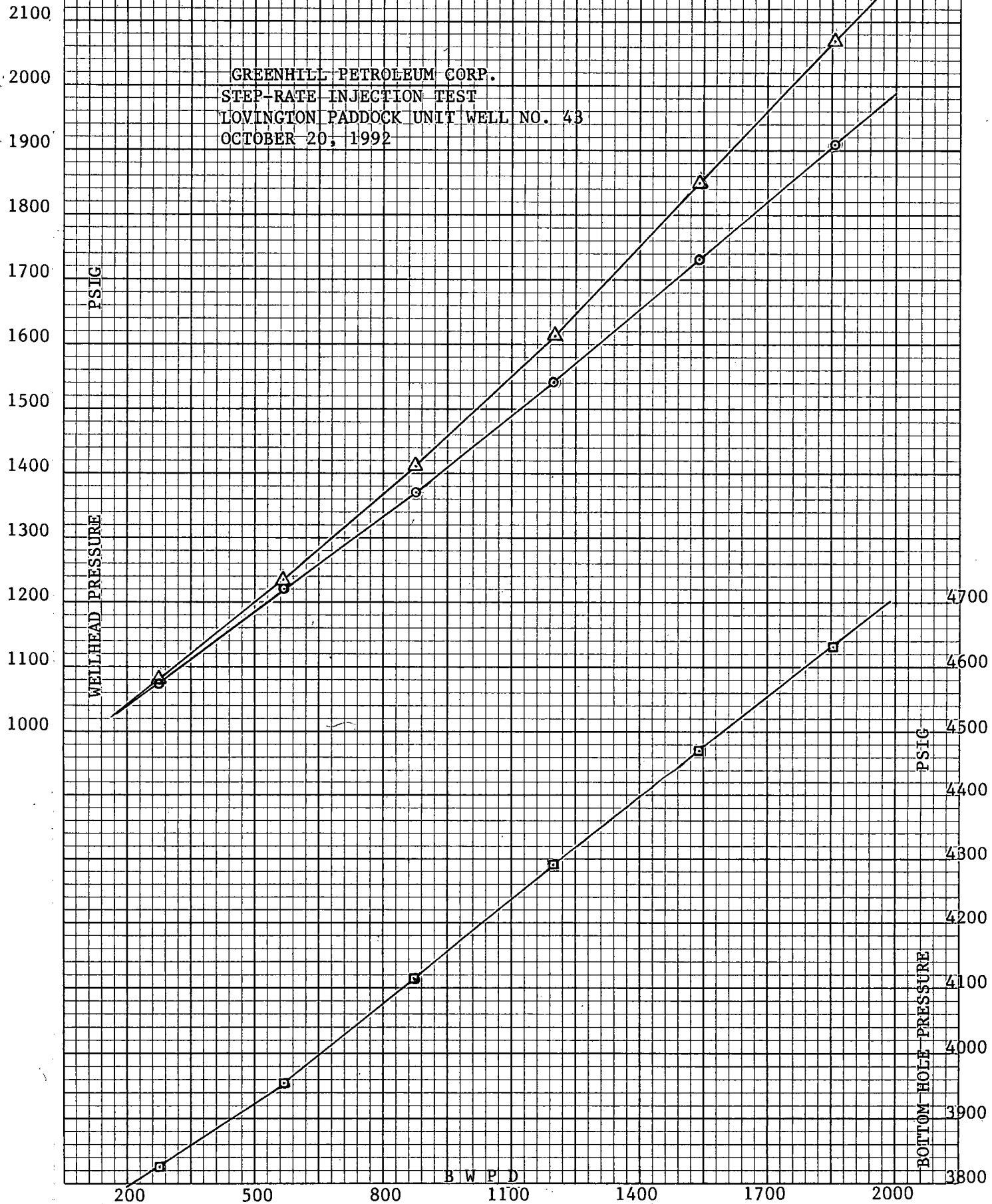
BHP GAUGE DEPTH = 6072

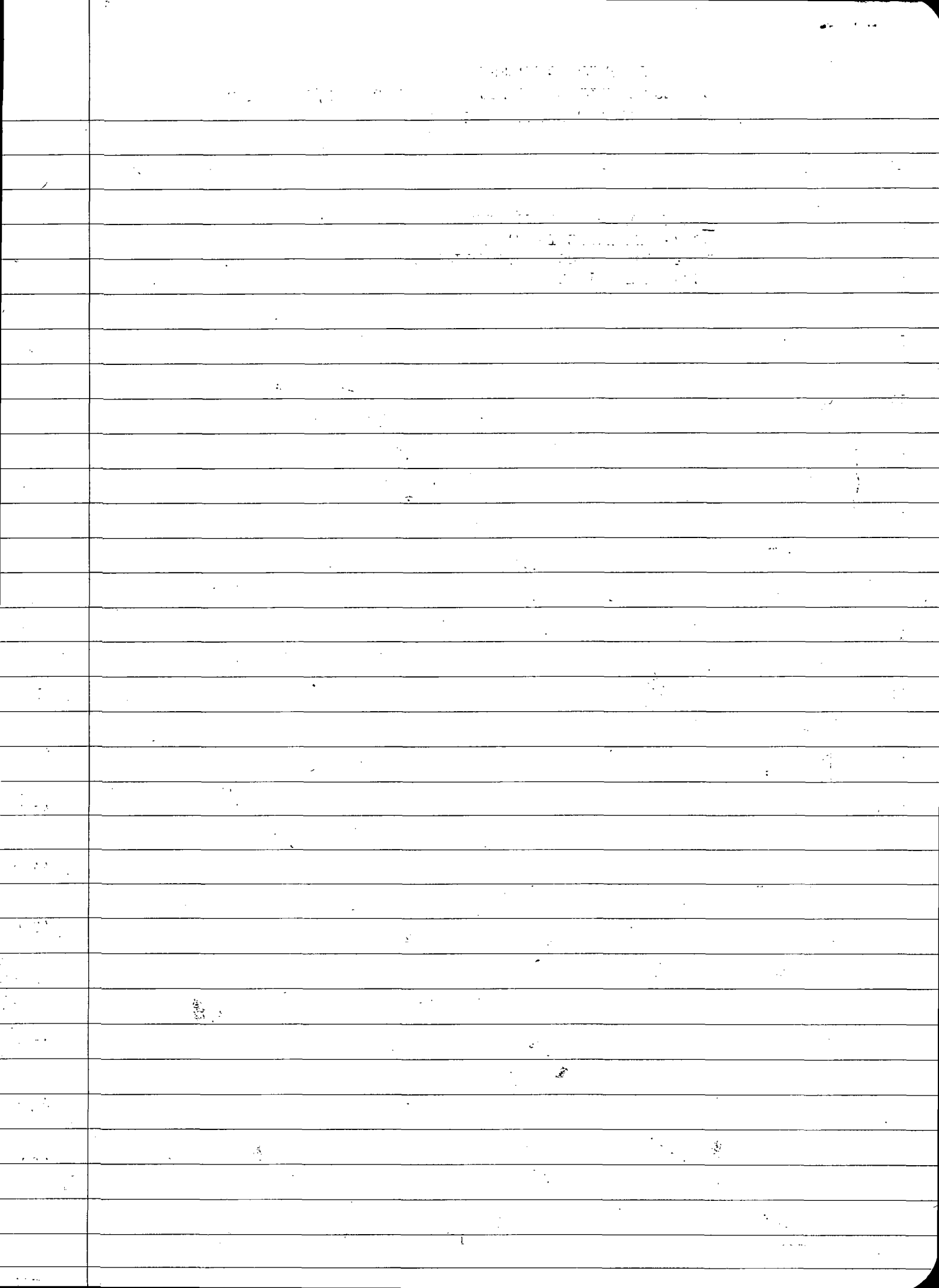
STEP NO. & REMARKS	TIME	(1) SURFACE TUBING PRESS (psig)	(2) CUMULATIVE VOL. INJECTED (bbls)	(3) INJECTION RATE (bbls/day)	(4) FRICTION HEAD LOSS (psf)	(5) CORRECTED TUBING PRESS (psf) (1)-(4)	(6) INJECTION RATE (gpm) (0.1585 bbls/day)	(7) MEASURED BHP (psf)
1	9:25	985.2				985.2		3715
	9:30	1052.2	1.0	288.0	5.237	1047.0	8.40	3774
	9:35	1078.9	1.9	259.2	4.309	1074.6	7.56	3803
	9:40	1080.2	2.9	288.0	5.237	1075.0	8.40	3824
				278.4				
2	9:45	1170.2	4.9	576.0	18.878	1151.3	16.80	3891
	9:50	1205.8	6.9	576.0	18.878	1186.9	16.80	3929
	9:55	1237.5	8.8	547.2	17.169	1220.3	15.96	3956
3				566.4				
	10:00	1333.0	11.9	892.8	42.469	1290.5	26.04	4029
	10:05	1379.3	14.9	864.0	39.969	1339.3	25.20	4075
	10:10	1412.1	17.9	864.0	39.969	1372.1	25.20	4113
4				873.6				
	10:15	1533.6	22.0	1180.8	71.237	1462.4	34.44	4197
	10:20	1572.9	26.2	1209.6	74.484	1498.4	35.28	4251
	10:25	1614.7	30.4	1209.6	74.484	1540.2	35.28	4292
				1199.9				
5	10:30	1760.3	35.7	1526.4	114.542	1645.8	44.52	4375
	10:35	1811.0	41.2	1584.0	122.666	1688.3	46.20	4429
	10:40	1850.2	46.5	1526.4	114.542	1735.7	44.52	4471
				1545.6				
6	10:45	1995.9	53.0	1872.0	167.087	1828.8	54.60	4545
	10:50	2035.2	59.4	1843.2	162.362	1872.8	53.76	4594
	10:55	2073.3	65.8	1843.2	162.362	1910.9	53.76	4633
				1852.8				

Page 2

- △ RECORDED WELLHEAD PRESSURE
○ CORRECTED WELLHEAD PRESSURE BASED ON 2 3/8" TUBING
□ BOTTOM HOLE PRESSURE @ 6072 FEET

GREENHILL PETROLEUM CORP.
STEP-RATE INJECTION TEST
LOVINGTON PADDOCK UNIT WELL NO. 43
OCTOBER 20, 1992





JOHN WEST ENGINEERING COMPANY

Hobbs, New Mexico

STEP RATE INJECTION TEST

CLIENT: Greenhill Petroleum Corporation

DATE: 10/20/92

WELL NAME: Lovington Paddock Unit Well No. 49
Lea County, New Mexico

WO#: 92141560

MID-PERFS. =

PACKER DEPTH = 8022

BHP GAUGE DEPTH = 8072

STEP NO. X REMAINS	TIME	(1) SURFACE TUBING PRESS (psig)	(2) CUMULATIVE VOL. INJECTED (bbls)	(3) INJECTION RATE (bbls/day)	(4) FRICTION HEAD LOSS (ps)	(5) CORRECTED TUBING PRESS (psig) (1) - (4)	(6) INJECTION RATE (gpm) (bbls/day) x 1.602	(7) MEASURED BHP (ps)
1	9:25	985.2				985.2		3715
	9:30	1052.2	1.0	288.0	5.237	1047.0	8.40	3774
	9:35	1078.9	1.9	259.2	4.309	1074.6	7.56	3803
	9:40	1080.2	2.9	288.0	5.237	1075.0	8.40	3824
				278.4				
2	9:45	1170.2	4.9	576.0	18.878	1151.3	16.80	3891
	9:50	1205.8	6.9	576.0	18.878	1186.9	16.80	3929
	9:55	1237.5	8.8	547.2	17.169	1220.3	15.96	3956
3				566.4				
	10:00	1333.0	11.9	892.8	42.469	1290.5	26.04	4029
	10:05	1379.3	14.9	864.0	39.969	1339.3	25.20	4075
	10:10	1412.1	17.9	864.0	39.969	1372.1	25.20	4113
4				873.6				
	10:15	1533.6	22.0	1180.8	71.237	1462.4	34.44	4197
	10:20	1572.9	26.2	1209.6	74.484	1498.4	35.28	4251
	10:25	1614.7	30.4	1209.6	74.484	1540.2	35.28	4292
5				1199.9				
	10:30	1760.3	35.7	1526.4	114.542	1645.8	44.52	4375
	10:35	1811.0	41.2	1584.0	122.666	1688.3	46.20	4429
	10:40	1850.2	46.5	1526.4	114.542	1735.7	44.52	4471
6				1545.6				
	10:45	1995.9	53.0	1872.0	167.087	1828.8	54.60	4545
	10:50	2035.2	59.4	1843.2	162.362	1872.8	53.76	4594
	10:55	2073.3	65.8	1843.2	162.362	1910.9	53.76	4633
				1852.8				

		(1)	(2)	(3)	(4)	(5)	(6)	(7)
STEP NO.		SURFACE TUBING PRESS	CUMULATIVE VOL. INJECTED	INJECTION RATE	FRICTION HEAD LOSS	CORRECTED TUBING PRESS	INJECTION RATE (gpm)	MEASURED BHP
REMARKS	TIME	(psig)	(bbls)	(bbls/day)	(psi)	(psi) (1)-(4)	(3)/34.7	(psi)
Fall-Off	10:56	1807.4				1807.4		4574
	10:57	1761.8				1761.8		4540
	10:58	1739.1				1739.1		4515
	10:59	1717.6				1717.6		4494
	11:00	1699.9				1699.9		4476
	11:05	1632.8				1632.8		4405
	11:10	1584.8				1584.8		4355

- △ RECORDED WELLHEAD PRESSURE
○ CORRECTED WELLHEAD PRESSURE BASED ON 2 3/8" TUBING
□ BOTTOM HOLE PRESSURE @ 6072 FEET

GREENHILL PETROLEUM CORP.
STEP-RATE INJECTION TEST
LOVINGTON PADDOCK UNIT WELL NO. 43
OCTOBER 20, 1992

2100

2000

1900

1800

1700

1600

1500

1400

1300

1200

1100

1000

PSIG

WELLHEAD PRESSURE

PSIG

BOTTOM HOLE PRESSURE

4700

4600

4500

4400

4300

4200

4100

4000

3900

3800

200

500

800

1100

1400

1700

2000

B W P D

JOHN WEST ENGINEERING COMPANY

Hobbs, New Mexico

STEP RATE INJECTION TEST

CLIENT: Greenhill Petroleum Corporation

DATE: 8/4/82

WELL NAME: Lovington Paddock Unit Well No. 54

WO#: 82141014

Lea County, New Mexico

MID-PERF8. = 6136 - 6370

PACKER DEPTH = 6077

BHP GAUGE DEPTH = 6284

STEP NO. #	TIME	(1) SURFACE TUBING PRESS. (psig)	(2) CUMULATIVE VOL. INJECTED (bbls)	(3) INJECTION RATE (bbls/day)	(4) FRICTION HEAD LOSS (ps)	(5) CORRECTED TUBING PRESS. (ps) (1)-(4)	(6) INJECTION RATE (gpm) (3)/34.2337	(7) MEASURED BHP (ps)
1	8:40	660.7				660.7		3544
	8:45	838.8	1.6	460.8	12.929	825.9	13.44	3711
	8:50	928.5	3.2	460.8	12.929	915.6	13.44	3802
	8:55	993.0	4.7	432.0	11.474	981.5	12.60	3866
				451.2				
2	9:00	1210.7	7.8	892.8	43.952	1166.7	26.04	4056
	9:05	1323.5	10.8	864.0	41.365	1282.1	25.20	4172
	9:10	1410.9	13.7	835.2	38.850	1372.0	24.36	4255
3				864.0				
	9:15	1608.4	17.9	1209.6	77.085	1531.3	35.28	4418
	9:20	1722.4	22.3	1267.2	84.013	1638.4	36.96	4528
	9:25	1799.2	26.6	1238.4	80.514	1718.7	36.12	4608
4				1238.4				
	9:30	1998.5	32.3	1641.6	135.621	1862.9	47.88	4747
	9:35	2075.9	38.0	1641.6	135.621	1940.3	47.88	4832
	9:40	2153.0	43.7	1641.6	135.621	2017.4	47.88	4896
Fall-Off				1641.6				
	9:41	1750.4				1750.4		4828
	9:42	1883.3				1883.3		4778
	9:43	1842.8				1842.8		4735
	9:44	1807.4				1807.4		4698
	9:45	1775.8				1775.8		4666
	9:50	1645.4				1645.4		4533
	9:55	1550.5				1550.5		4438

- △ RECORDED WELLHEAD PRESSURE
○ CORRECTED WELLHEAD PRESSURE BASED ON 2 3/8" TUBING
□ BOTTOM-HOLE PRESSURE @ 6284 FEET

WELLHEAD PRESSURE
PSIG

GREENHILL PETROLEUM CORPORATION
STEP-RATE INJECTION TEST
LOVINGTON PADDOCK UNIT WELL NO. 54
AUGUST 4, 1992

BOTTOM HOLE PRESSURE
PSIG

B W P D

400

600

800

1000

1200

1400

1600

5000

4800

4600

4400

4200

4000

3800

JOHN WEST ENGINEERING COMPANY

Hobbs, New Mexico

STEP RATE INJECTION TEST

CLIENT: Greenhill Petroleum Corporation

DATE: October 16, 1992

WELL NAME: Lovington Paddock Unit No. 69
Lea County, New Mexico

WO#: 82141580

MID-PERFS. =

PACKER DEPTH = 6010

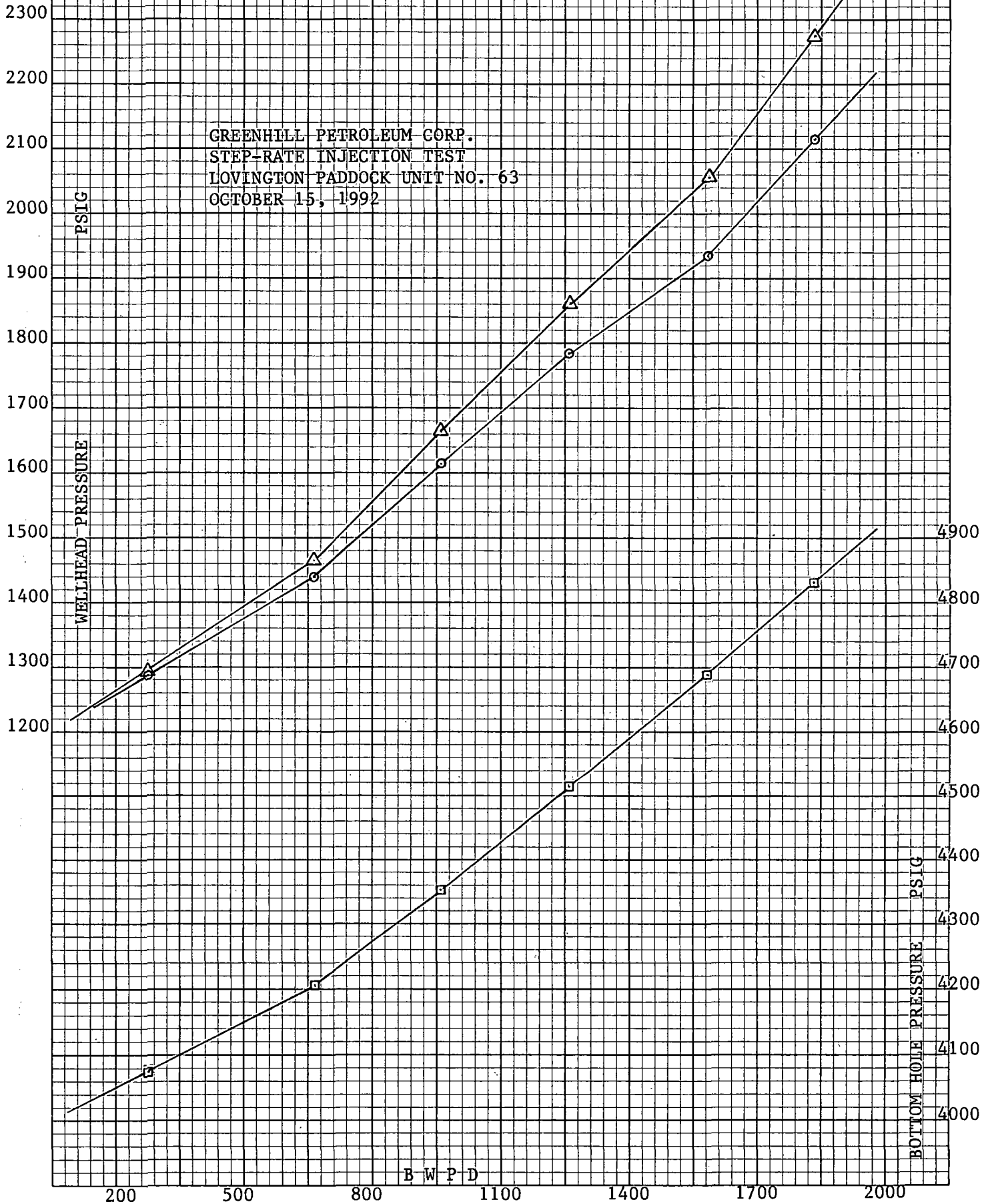
BHP GAUGE DEPTH = 6060

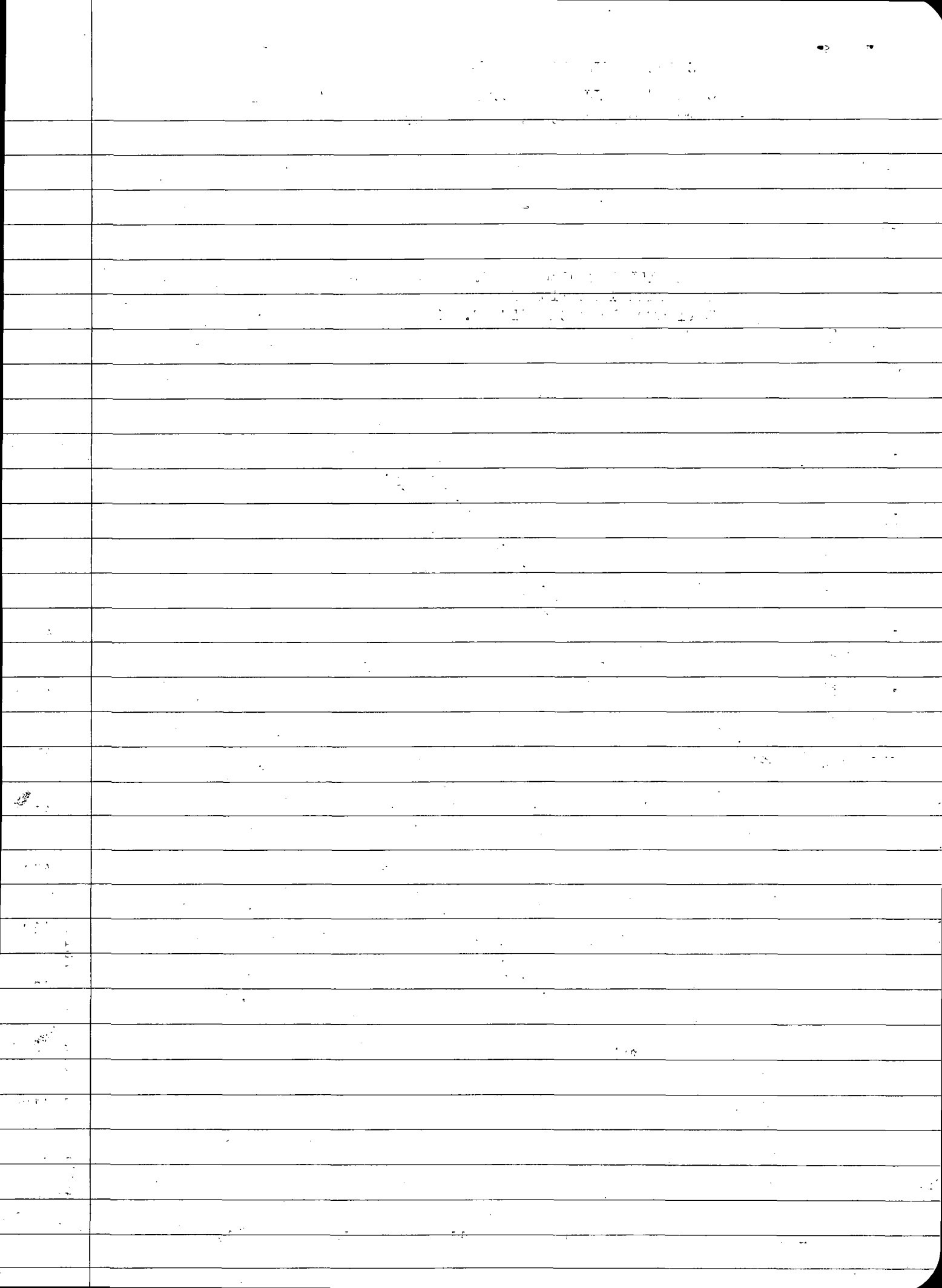
STEP NO. & REMARKS	TIME	(1) SURFACE TUBING PRESS (psig)	(2) CUMULATIVE VOL. INJECTED (bbls)	(3) INJECTION RATE (bbls/day)	(4) FRICTION HEAD LOSS (ps)	(5) CORRECTED TUBING PRESS (ps) (1) - (4)	(6) INJECTION RATE (gpm) (3)/24.2857	(7) MEASURED BHP (ps)
1	12:35	1208.6				1208.6		3992
	12:40	1260.6	1.0	288.0	5.226	1255.4	8.40	4035
	12:45	1274.5	2.0	288.0	5.226	1269.3	8.40	4057
	12:50	1293.5	2.9	259.2	4.301	1289.2	7.56	4074
				278.4				
2	12:55	1392.3	5.3	691.2	26.399	1365.9	20.16	4139
	1:00	1435.3	7.6	662.4	24.400	1410.9	19.32	4176
	1:05	1464.4	9.9	662.4	24.400	1440.0	19.32	4206
3				671.9				
	1:10	1574.5	13.3	979.2	50.284	1524.2	28.56	4274
	1:15	1622.6	16.6	950.4	47.582	1575.0	27.72	4319
	1:20	1664.4	19.9	950.4	47.582	1616.8	27.72	4354
4				959.9				
	1:25	1766.9	24.3	1267.7	81.077	1685.8	36.97	4426
	1:30	1815.0	28.7	1267.7	81.077	1733.9	36.97	4476
	1:35	1860.6	33.0	1238.4	77.644	1783.0	36.12	4516
				1257.6				
5	1:40	1977.0	38.6	1612.8	126.573	1850.4	47.04	4592
	1:45	2023.9	44.0	1555.7	118.408	1905.5	45.37	4464
	1:50	2058.1	49.5	1584.0	122.423	1935.7	46.20	4688
				1584.0				
6	1:55	2182.1	55.9	1843.2	162.042	2020.1	53.76	4753
	2:00	2235.3	62.2	1814.4	157.389	2077.9	52.92	4802
	2:05	2278.3	68.6	1843.2	162.042	2116.3	53.76	4832
				1833.6				

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) (5)/34.2857	(7) MEASURED BHP (psi)
Fall-Off	2:06	2056.8				2056.8		4801
	2:07	2006.2				2006.2		4773
	2:08	1984.7				1984.7		4748
	2:09	1965.7				1965.7		4728
	2:10	1949.2				1949.2		4710
5 mins.	2:15	1883.4				1883.4		4641
5 mins.	2:20	1835.3				1835.3		4592

- △ RECORDED WELLHEAD PRESSURE
- CORRECTED WELLHEAD PRESSURE BASED ON 2 3/8" TUBING
- BOTTOM HOLE PRESSURE @ 6060 FEET

GREENHILL PETROLEUM CORP.
STEP-RATE INJECTION TEST
LOVINGTON PADDOCK UNIT NO. 63
OCTOBER 15, 1992





JOHN WEST ENGINEERING COMPANY

Hobbs, New Mexico

STEP RATE INJECTION TEST

CLIENT: Greenhill Petroleum Corporation

DATE: October 15, 1982

WELL NAME: Lovington Paddock Unit No. 68

WO#: 82141580

Lea County, New Mexico

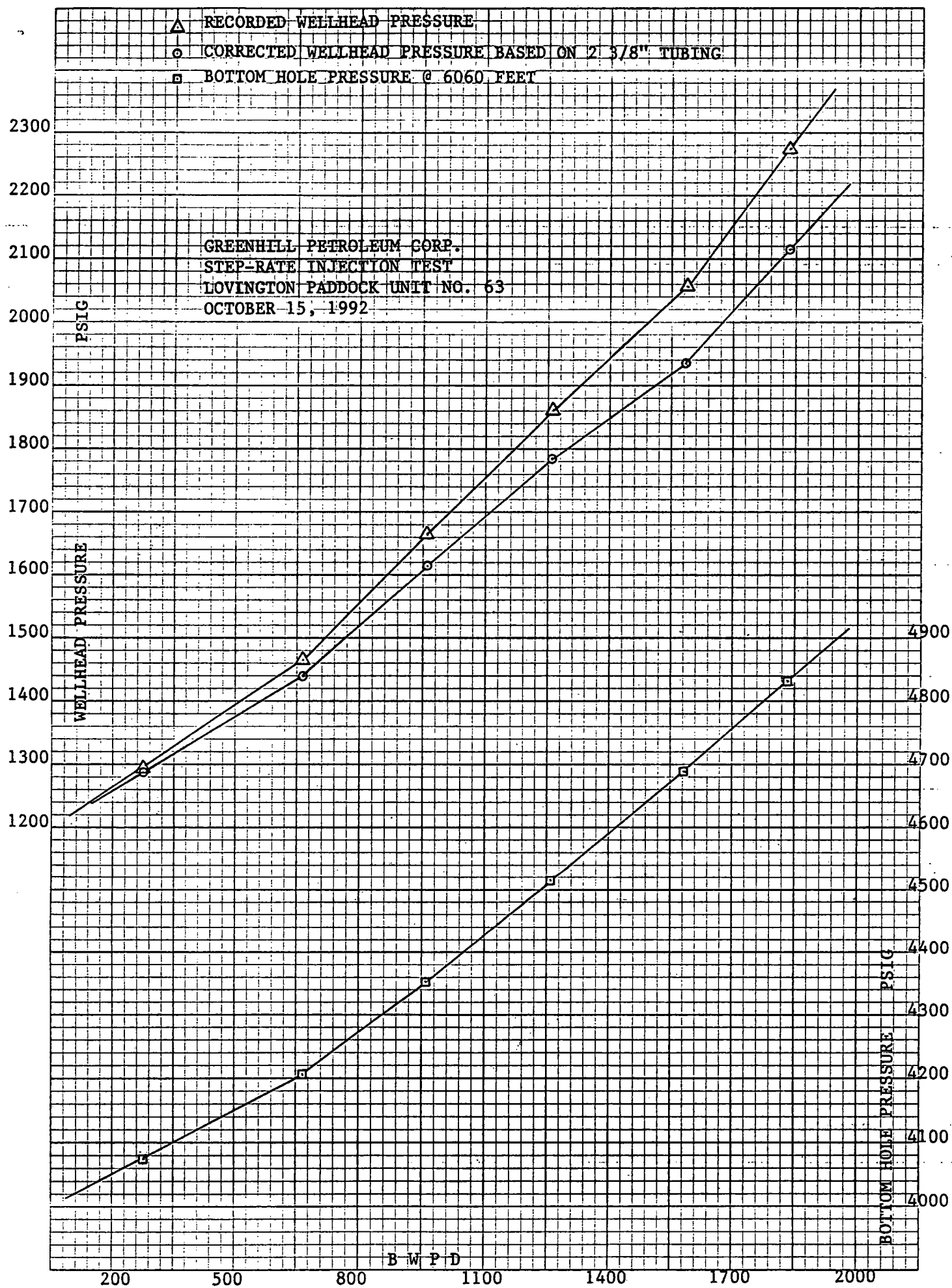
MID-PERFS. =

PACKER DEPTH = 6010

BHP GAUGE DEPTH = 6080

STEP NO. & REMAINS	TIME	(1) SURFACE TUBING PRESS. (psig)	(2) CUMULATIVE VOL. INJECTED (bbls)	(3) INJECTION RATE (bbls/day)	(4) FRICTION HEAD LOSS (psf)	(5) CORRECTED TUBING PRESS. (psig) (1) - (4)	(6) INJECTION RATE (gpm) (3)/24,000	(7) MEASURED DIP (psf)
1	12:35	1208.6				1208.6		3992
	12:40	1260.6	1.0	288.0	5.226	1255.4	8.40	4035
	12:45	1274.5	2.0	288.0	5.226	1269.3	8.40	4057
	12:50	1293.5	2.9	259.2	4.301	1289.2	7.56	4074
				278.4				
2	12:55	1392.3	5.3	691.2	26.399	1365.9	20.16	4139
	1:00	1435.3	7.6	662.4	24.400	1410.9	19.32	4176
	1:05	1464.4	9.9	662.4	24.400	1440.0	19.32	4206
				671.9				
3	1:10	1574.5	13.3	979.2	50.284	1524.2	28.56	4274
	1:15	1622.6	16.6	950.4	47.582	1575.0	27.72	4319
	1:20	1664.4	19.9	950.4	47.582	1616.8	27.72	4354
				959.9				
4	1:25	1766.9	24.3	1267.7	81.077	1685.8	36.97	4426
	1:30	1815.0	28.7	1267.7	81.077	1733.9	36.97	4476
	1:35	1860.6	33.0	1238.4	77.644	1783.0	36.12	4516
				1257.6				
5	1:40	1977.0	38.6	1612.8	126.573	1850.4	47.04	4592
	1:45	2023.9	44.0	1555.7	118.408	1905.5	45.37	4464
	1:50	2058.1	49.5	1584.0	122.423	1935.7	46.20	4688
				1584.0				
6	1:55	2182.1	55.9	1843.2	162.042	2020.1	53.76	4753
	2:00	2235.3	62.2	1814.4	157.389	2077.9	52.92	4802
	2:05	2278.3	68.6	1843.2	162.042	2116.3	53.76	4832
				1833.6				

STEP NO. & REMARKS	TIME	(1) SURFACE TUBING PRESS (psig)	(2) CUMULATIVE VOL. INJECTED (bbls)	(3) INJECTION RATE (bbls/day)	(4) FRICTION HEAD LOSS (ps)	(5) CORRECTED TUBING PRESS. (ps) (1)-(4)	(6) INJECTION RATE (gpm) (3)/24,000	(7) MEASURED BHP (ps)
Fall-Off	2:06	2056.8				2056.8		4801
	2:07	2006.2				2006.2		4773
	2:08	1984.7				1984.7		4748
	2:09	1965.7				1965.7		4728
	2:10	1949.2				1949.2		4710
5 mins.	2:15	1863.4				1863.4		4641
5 mins.	2:20	1835.3				1835.3		4592



JOHN WEST ENGINEERING COMPANY

Hobbs, New Mexico

STEP RATE INJECTION TEST

CLIENT: Greenhill Petroleum Corporation

DATE: October 20, 1982

WELL NAME: Lovington Paddock Unit No. 65
Lea County, New Mexico

WO#: 92141560

MID-PERFS. =

PACKER DEPTH = 6050

BHP GAUGE DEPTH = 6100

STEP NO. & REMARKS	TIME	(1) SURFACE TUBING PRESS (psig)	(2) CUMULATIVE VOL. INJECTED (bbls)	(3) INJECTION RATE (bbls/day)	(4) FRICTION HEAD LOSS (ps)	(5) CORRECTED TUBING PRESS. (ps) (1)-(4)	(6) INJECTION RATE (gpm) (3)/34.2857	(7) MEASURED BHP (ps)
1	1:05	616.2				616.2		3375
	1:10	703.3	1.3	374.4	8.548	694.8	10.92	3449
	1:15	738.6	2.6	374.4	8.548	730.1	10.92	3485
	1:20	766.4	3.9	374.4	8.548	757.9	10.92	3516
2				374.4				
	1:25	907.8	6.9	864.0	40.154	867.6	25.20	3604
	1:30	963.3	9.9	864.0	40.154	923.1	25.20	3661
	1:35	999.9	12.9	864.0	40.154	959.7	25.20	3704
3				864.0				
	1:40	1242.9	17.7	1382.4	95.796	1147.1	40.32	3818
	1:45	1312.5	22.1	1267.2	81.553	1230.9	36.96	3888
	1:50	1361.8	26.8	1353.6	92.137	1269.7	39.48	3944
4				1334.4				
	1:55	1644.0	33.2	1843.2	163.111	1480.9	53.76	4049
	2:00	1694.0	39.6	1843.2	163.111	1530.9	53.76	4118
	2:05	1740.1	46.0	1843.2	163.111	1577.0	53.76	4172
5				1843.2				
	2:10	2046.4	54.2	2361.6	257.992	1788.4	68.88	4269
	2:15	2095.7	62.4	2361.6	257.992	1837.7	68.88	4334
	2:20	2139.5	70.6	2361.6	257.992	1881.5	68.88	4385
6				2361.6				
	2:25	2310.8	79.7	2620.8	312.808	1998.0	76.44	4446
	2:30	2376.7	88.7	2592.0	306.478	2070.2	75.60	4490
	2:35	2405.8	97.9	2649.6	319.197	2086.6	77.28	4530
				2620.8				

Page 2

- △ RECORDED WELLHEAD PRESSURE
- CORRECTED WELLHEAD PRESSURE BASED ON 2 7/8" TUBING
- BOTTOM HOLE PRESSURE @ 6100 FEET

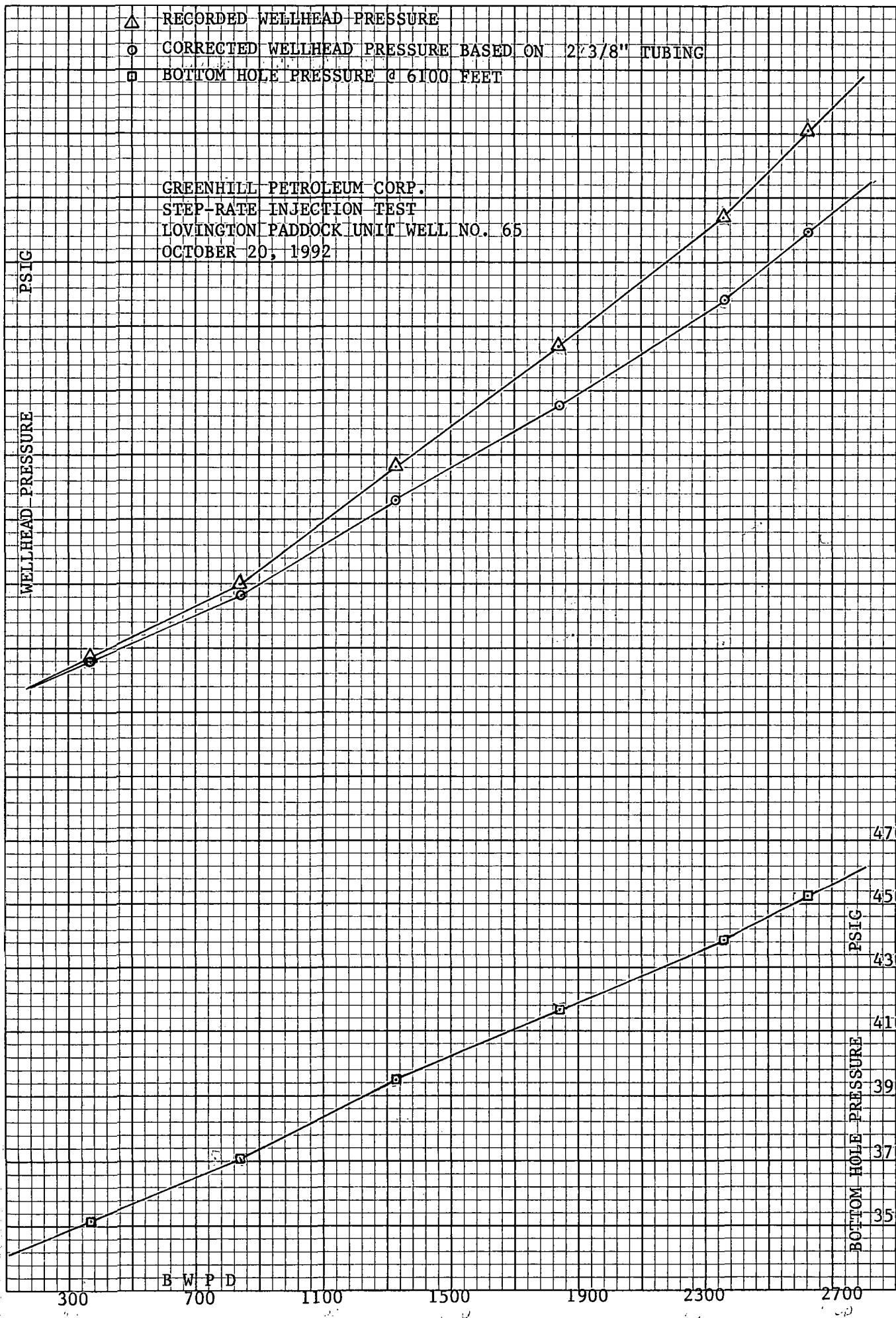
GREENHILL PETROLEUM CORP.
STEP-RATE INJECTION TEST
LOVINGTON PADDOCK UNIT WELL NO. 65
OCTOBER 20, 1992

WELLHEAD PRESSURE
PSIG

BOTTOM HOLE PRESSURE
PSIG

B W P D

300 700 1100 1500 1900 2300 2700



JOHN WEST ENGINEERING COMPANY

Hobbs, New Mexico

STEP RATE INJECTION TEST

CLIENT: Greenhill Petroleum Corporation

DATE: October 20, 1982

WELL NAME: Lovington Paddock Unit No. 65
Lea County, New Mexico

WO#: 92141580

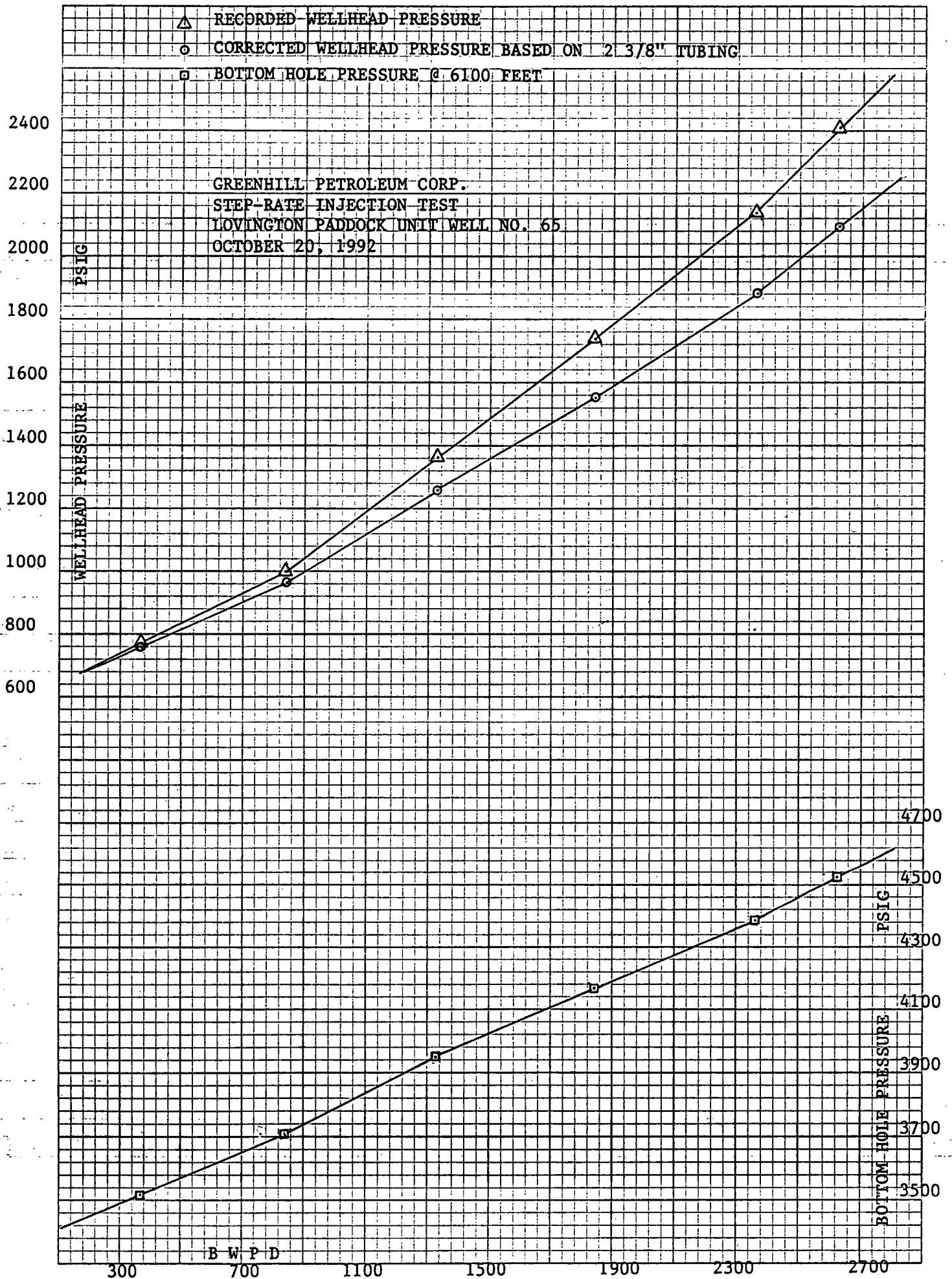
MID-PERFS. =

PACKER DEPTH = 6050

BHP GAUGE DEPTH = 6100

STEP NO. #	TIME	(1) SURFACE TUBING PRESS. (psig)	(2) CUMULATIVE VOL. INJECTED (bbls)	(3) INJECTION RATE (bbls/day)	(4) FRICTION HEAD LOSS (ps)	(5) CORRECTED TUBING PRESS. (ps) (1)-(4)	(6) INJECTION RATE (gpm) (0.1585) (3)	(7) MEASURED BHP (ps)
1	1:05	616.2				616.2		3375
	1:10	703.3	1.3	374.4	8.548	694.8	10.92	3449
	1:15	738.6	2.6	374.4	8.548	730.1	10.92	3485
	1:20	766.4	3.9	374.4	8.548	757.9	10.92	3516
2				374.4				
	1:25	907.8	6.9	864.0	40.154	867.6	25.20	3604
	1:30	963.3	9.9	864.0	40.154	923.1	25.20	3661
	1:35	999.9	12.9	864.0	40.154	959.7	25.20	3704
3				864.0				
	1:40	1242.9	17.7	1382.4	95.796	1147.1	40.32	3818
	1:45	1312.5	22.1	1267.2	81.553	1230.9	36.96	3888
	1:50	1361.8	26.8	1353.6	92.137	1269.7	39.48	3944
4				1334.4				
	1:55	1644.0	33.2	1843.2	163.111	1480.9	53.76	4049
	2:00	1694.0	39.6	1843.2	163.111	1530.9	53.76	4118
	2:05	1740.1	46.0	1843.2	163.111	1577.0	53.76	4172
5				1843.2				
	2:10	2046.4	54.2	2361.6	257.992	1788.4	68.88	4269
	2:15	2095.7	62.4	2361.6	257.992	1837.7	68.88	4334
	2:20	2139.5	70.6	2361.6	257.992	1881.5	68.88	4385
6				2361.6				
	2:25	2310.8	79.7	2620.8	312.808	1998.0	76.44	4446
	2:30	2376.7	88.7	2592.0	306.478	2070.2	75.60	4490
	2:35	2405.8	97.9	2649.6	319.197	2086.6	77.28	4530
				2620.8				

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JOHN WEST ENGINEERING COMPANY

Hobbs, New Mexico

STEP RATE INJECTION TEST

CLIENT: Greenhill Petroleum Corporation

DATE: 8/4/82

WELL NAME: Lovington Paddock Unit Well No. 87
Lea County, New Mexico

WO#: 82141014

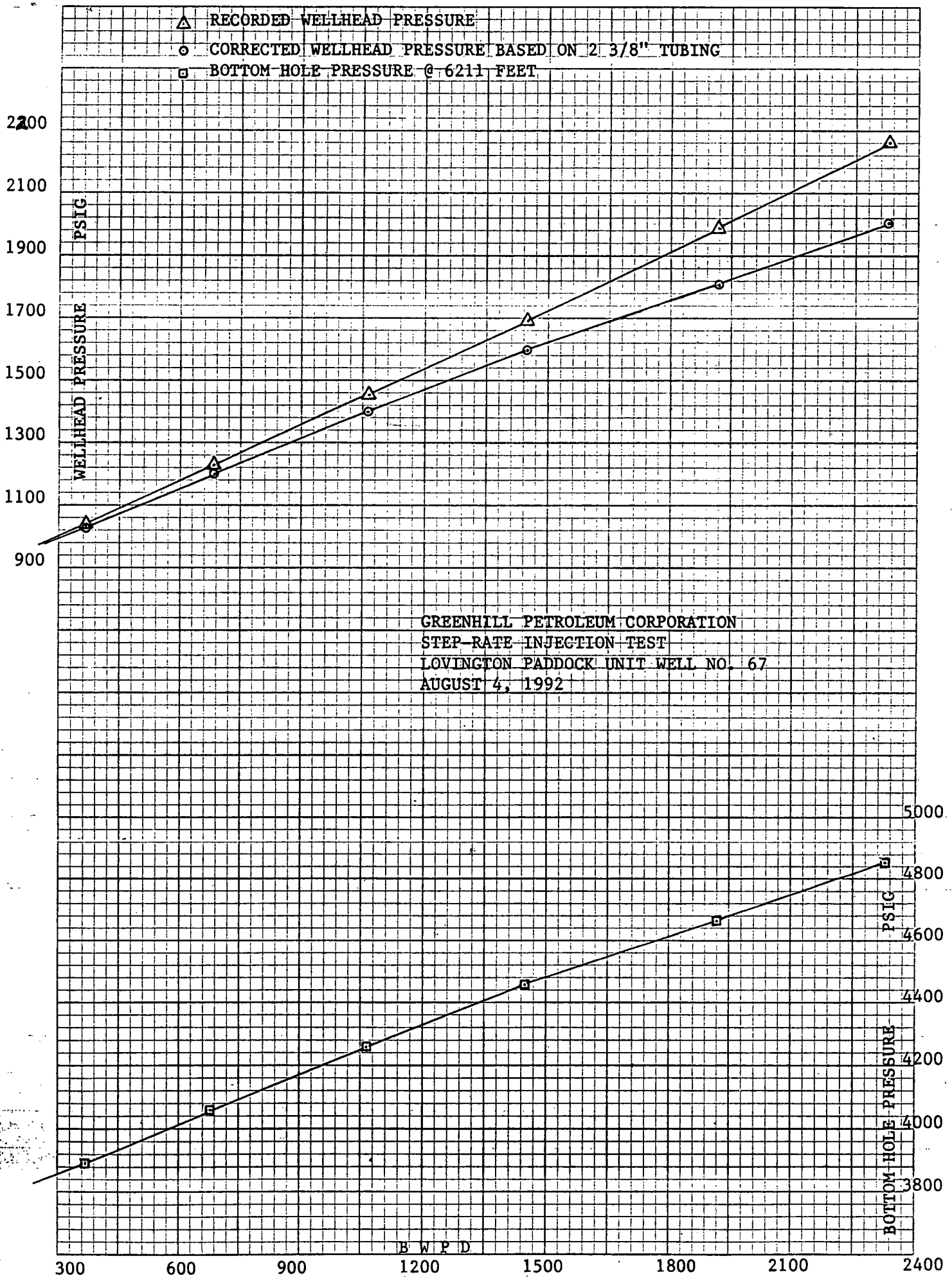
MID-PERFS. = 8136 - 8288

PACKER DEPTH = 6011

BHP GAUGE DEPTH = 8211

STEP NO. 1 REMARKS	TIME	(1) SURFACE TUBING PRESS. (psig)	(2) CUMULATIVE VOL. INJECTED (bbls)	(3) INJECTION RATE (bbls/day)	(4) FRICTION HEAD LOSS (psf)	(5) CORRECTED TUBING PRESS. (psig) (1)-(4)	(6) INJECTION RATE (gpm) (1)/24.2887	(7) MEASURED BHP (psf)
1	11:30	900.8				900.8		3749
	11:35	968.9	1.3	374.4	8.703	960.2	10.92	3823
	11:40	1010.5	2.5	345.6	7.505	1003.0	10.08	3859
	11:45	1037.1	3.8	374.4	8.703	1028.4	10.92	3886
				364.8				
2	11:50	1144.7	6.2	691.2	27.057	1117.6	20.16	3973
	11:55	1190.2	8.6	691.2	27.057	1163.1	20.16	4022
	12:00	1227.0	10.9	662.4	25.008	1202.0	19.32	4059
				681.6				
3	12:05	1351.0	14.6	1065.6	60.264	1290.7	31.08	4151
	12:10	1402.9	18.3	1065.6	60.264	1342.6	31.08	4208
	12:15	1457.3	22.0	1065.6	60.264	1397.0	31.08	4253
				1065.6				
4	12:20	1606.6	27.1	1468.8	109.116	1497.5	42.84	4348
	12:25	1650.9	32.2	1468.8	109.116	1541.8	42.84	4408
	12:30	1695.2	37.1	1411.2	101.332	1593.9	41.16	4455
				1449.6				
5	12:35	1882.5	43.8	1929.6	180.768	1701.7	56.28	4554
	12:40	1940.7	50.5	1929.6	180.768	1759.9	56.28	4615
	12:45	1982.4	57.1	1900.8	175.808	1806.6	55.44	4666
				1919.9				
6	12:50	2164.7	65.2	2332.8	256.791	1907.9	68.04	4748
	12:55	2212.8	73.3	2332.8	256.791	1956.0	68.04	4803
	1:00	2259.6	81.4	2332.8	256.791	2002.8	68.04	4848
				2332.8				

	(1)	(2)	(3)	(4)	(5)	(6)	(7)
STEP NO.	SURFACE	CUMULATIVE	INJECTION	FRICTION	CORRECTED	INJECTION	MEASURED
1	TUBING PRESS.	VOL. INJECTED	RATE	HEAD LOSS	TUBING PRESS.	RATE (gpm)	SHR
REMARKS	TIME	(psig)	(bbls)	(bbls/day)	(psig)	(psig) (5)-(4)	(bbls/34.5hr)
Fall-Off	1:01	1938.1				1938.1	4793
	1:02	1901.4				1901.4	4759
	1:03	1872.8				1872.8	4730
	1:04	1849.6				1849.6	4707
	1:05	1826.8				1826.8	4683
	1:10	1742.0				1742.0	4595
	1:15	1678.8				1678.8	4532



JOHN WEST ENGINEERING COMPANY

Hobbs, New Mexico

STEP RATE INJECTION TEST

CLIENT: Greenhill Petroleum Corporation

DATE: October 21, 1992

WELL NAME: Lovington Paddock Unit Well No. 69
Lea County, New Mexico

WO#: 92141560

MID-PERFS. =

PACKER DEPTH = 6091

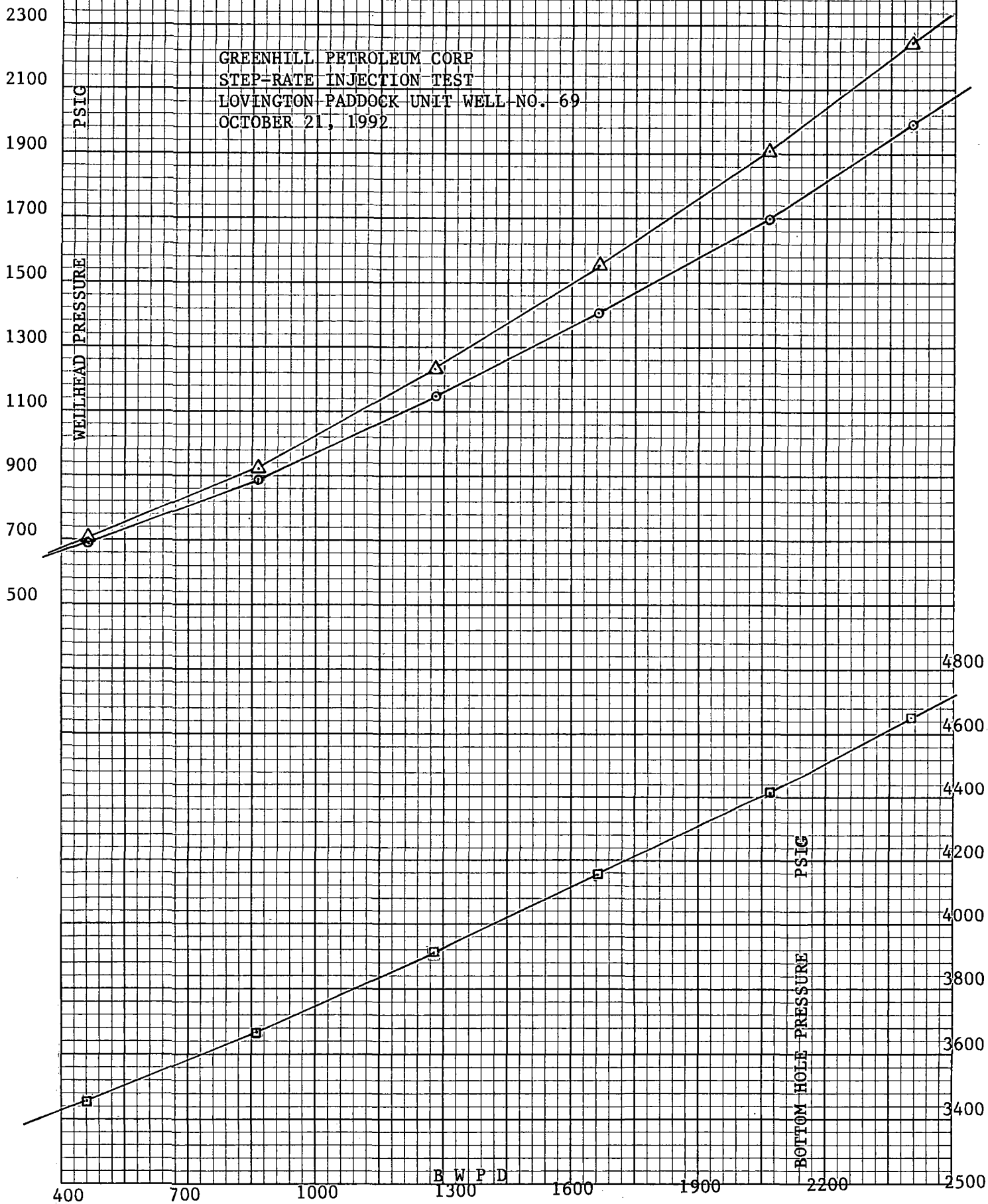
BHP GAUGE DEPTH = 6149

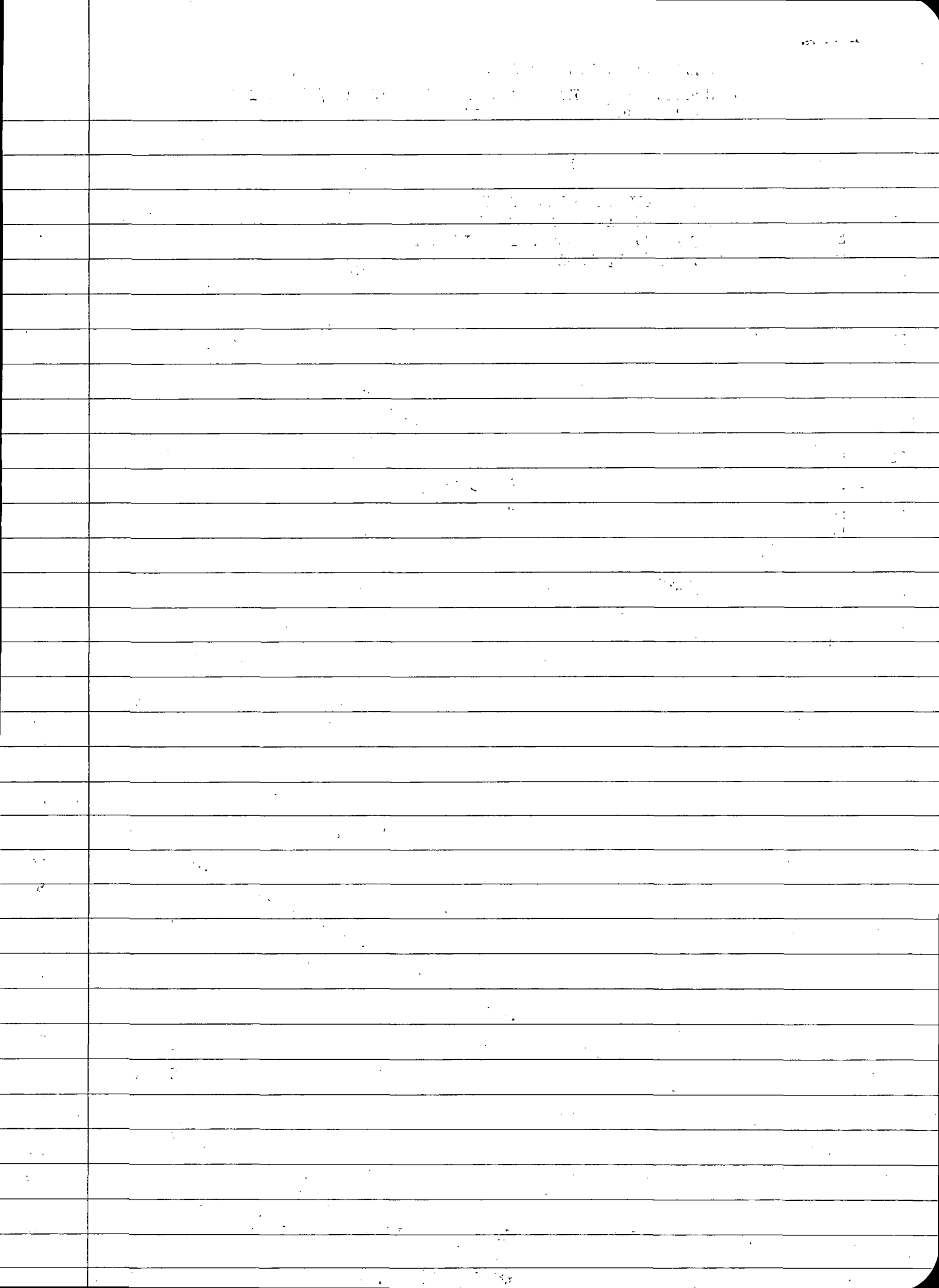
STEP NO. & REMARKS	TIME	(1) SURFACE TUBING PRESS. (psig)	(2) CUMULATIVE VOL. INJECTED (bbls)	(3) INJECTION RATE (bbls/day)	(4) FRICTION HEAD LOSS (psf)	(5) CORRECTED TUBING PRESS. (psf) (1)-(4)	(6) INJECTION RATE (gpm) (bbls/34.2387)	(7) MEASURED DHP (psf)
1	9:25	472.5				472.5		3254
	9:30	595.4	1.6	460.8	12.650	582.8	13.44	3364
	9:35	647.3	3.2	460.8	12.650	634.7	13.44	3418
	9:40	700.4	4.8	460.8	12.650	687.8	13.44	3457
				460.8				
2	9:45	836.9	7.9	892.8	43.001	793.9	26.04	3565
	9:50	888.7	10.9	864.0	40.470	848.2	25.20	3625
	9:55	925.4	13.8	835.2	38.009	887.4	24.36	3673
3				864.0				
	10:00	1115.2	18.3	1296.0	85.684	1029.5	37.80	3788
	10:05	1168.4	22.7	1267.2	82.194	1086.2	36.96	3856
	10:10	1226.7	27.1	1267.2	82.194	1144.5	36.96	3910
				1276.8				
4	10:15	1430.5	32.8	1641.6	132.685	1297.8	47.88	4027
	10:20	1495.1	38.7	1699.2	141.427	1353.7	49.56	4101
	10:25	1548.4	44.4	1641.5	132.670	1415.7	47.88	4158
				1660.8				
5	10:30	1787.8	51.7	2102.4	209.702	1578.1	61.32	4275
	10:35	1844.8	58.8	2044.8	199.197	1645.6	59.64	4350
	10:40	1904.4	66.0	2073.6	204.418	1700.0	60.48	4410
				2073.6				
6	10:45	2150.3	74.4	2419.2	271.876	1878.4	70.56	4522
	10:50	2202.4	82.7	2390.4	265.919	1936.5	69.72	4596
	10:55	2249.4	91.0	2390.4	265.919	1983.5	69.72	4651
				2399.9				

		(1)	(2)	(3)	(4)	(5)	(6)	(7)
STEP NO. & REMARKS	TIME	SURFACE TUBING PRESS. (psig)	CUMULATIVE VOL. INJECTED (bbls)	INJECTION RATE (bbls/day)	FRICTION HEAD LOSS (psd)	CORRECTED TUBING PRESS. (psd) (1)-(6)	INJECTION RATE (gpm) (8)/34.2857	MEASURED BHP (psd)
Fall-Off	10:56	1756.7				1756.7		4554
	10:57	1666.8				1666.8		4486
	10:58	1612.4				1612.4		4433
	10:59	1568.1				1568.1		4382
	11:00	1525.1				1525.1		4338
	11:05	1368.1				1368.1		4180
	11:10	1261.7				1261.7		4071

- △ RECORDED WELLHEAD PRESSURE
- CORRECTED WELLHEAD PRESSURE BASED ON 2 3/8" TUBING
- BOTTOM HOLE PRESSURE @ 6148 FEET

GREENHILL PETROLEUM CORP
STEP-RATE INJECTION TEST
LOVINGTON-PADDOCK UNIT WELL-NO. 69
OCTOBER 21, 1992





JOHN WEST ENGINEERING COMPANY

Hobbs, New Mexico

STEP RATE INJECTION TEST

CLIENT: Greenhill Petroleum Corporation

DATE: October 21, 1992

WELL NAME: Lovington Paddock Unit Well No. 88
Lea County, New Mexico

WO#: 82141560

MID-PERF8. =

PACKER DEPTH = 6091

BHP GAUGE DEPTH = 6148

STEP NO. & REMARKS	TIME	(1) SURFACE TUBING PRESS. (psig)	(2) CUMULATIVE VOL. INJECTED (bbls)	(3) INJECTION RATE (bbls/day)	(4) FRICTION HEAD LOSS (ps)	(5) CORRECTED TUBING PRESS. (ps) (1) - (4)	(6) INJECTION RATE (gpm) (8)/34.0857	(7) MEASURED BHP (ps)
1	9:25	472.5				472.5		3254
	9:30	595.4	1.6	460.8	12.650	582.8	13.44	3364
	9:35	647.3	3.2	460.8	12.650	634.7	13.44	3418
	9:40	700.4	4.8	460.8	12.650	687.8	13.44	3457
2				460.8				
	9:45	836.9	7.9	892.8	43.001	793.9	26.04	3565
	9:50	888.7	10.9	864.0	40.470	848.2	25.20	3625
	9:55	925.4	13.8	835.2	38.009	887.4	24.36	3673
3				864.0				
	10:00	1115.2	18.3	1296.0	85.684	1029.5	37.80	3788
	10:05	1168.4	22.7	1267.2	82.194	1086.2	36.96	3856
	10:10	1226.7	27.1	1267.2	82.194	1144.5	36.96	3910
4				1276.8				
	10:15	1430.5	32.8	1641.6	132.685	1297.8	47.88	4027
	10:20	1495.1	38.7	1699.2	141.427	1353.7	49.56	4101
	10:25	1548.4	44.4	1641.5	132.670	1415.7	47.88	4158
5				1660.8				
	10:30	1787.8	51.7	2102.4	209.702	1578.1	61.32	4275
	10:35	1844.8	58.8	2044.8	199.197	1645.6	59.64	4350
	10:40	1904.4	66.0	2073.6	204.418	1700.0	60.48	4410
6				2073.6				
	10:45	2150.3	74.4	2419.2	271.876	1878.4	70.56	4522
	10:50	2202.4	82.7	2390.4	265.919	1936.5	69.72	4596
	10:55	2249.4	91.0	2390.4	265.919	1983.5	69.72	4651
				2399.9				

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- △ RECORDED WELLHEAD PRESSURE
- CORRECTED WELLHEAD PRESSURE BASED ON 2 3/8" TUBING
- BOTTOM HOLE PRESSURE @ 6148 FEET

GREENHILL PETROLEUM CORP
 STEP-RATE INJECTION TEST
 LOVINGTON PADDOCK UNIT WELL NO. 69
 OCTOBER 21, 1992

2300
 2100
 1900
 1700
 1500
 1300
 1100
 900
 700
 500

WELLHEAD PRESSURE
 PSIG

BOTTOM HOLE PRESSURE
 PSIG

4800
 4600
 4400
 4200
 4000
 3800
 3600
 3400

B W P D

400 700 1000 1300 1600 1900 2200 2500

