



NEW MEXICO ENERGY, MINERALS  
& NATURAL RESOURCES DEPARTMENT

OIL CONSERVATION DIVISION  
2040 South Pacheco Street  
Santa Fe, New Mexico 87505  
(505) 827-7131

February 7, 1997

Burlington Resources Oil & Gas Company  
P.O. Box 51810  
Midland, Texas 79710-1810

Attn: Ms. Donna J. Williams

**RE: Injection Pressure Increase,  
East Corbin Delaware Unit Waterflood Project  
Lea County, New Mexico**

CF 10390

R-9585

EOR-24

PEOR0000242002

Dear Ms. Williams:

Reference is made to your request dated December 12, 1996 to increase the surface injection pressure on three wells. This request is based on step rate tests conducted on these wells on or between November 25 and 27, 1996. 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
East Corbin Delaware Unit No.4 WIW, Unit Letter P, Section 16	1650 PSIG
East Corbin Delaware Unit No.6 WIW, Unit Letter C, Section 21	1450 PSIG
East Corbin Delaware Unit No.9 WIW, Unit Letter H, Section 21	1805 PSIG
All wells located in Township 18 South, Range 33 East, Lea County, New Mexico.	

The Division Director may rescind this injection pressure increase if it becomes apparent that the injected water is not being confined to the injection zone or is endangering any fresh water aquifers.

Sincerely,

William J. LeMay  
Director

WJL/BES

cc: Oil Conservation Division - Hobbs  
Files: 2nd QTR97 PSI-X; Case File 10390; EOR-24

3rd

**BURLINGTON  
RESOURCES**

MID-CONTINENT DIVISION

PSI-X N/R

RECEIVED  
OIL CONSERVATION  
DIVISION  
NOV 17 1996

December 12, 1996

Mr. David Catanach  
Oil Conservation Division  
2040 S. Pacheco Street  
Santa Fe, New Mexico 87504

RE: Recent Application for Injection  
East Corbin Delaware Unit Well No. 11  
Section 16, T18S, R33E  
Lea County, New Mexico

Mr. Catanach:

Please find attached the green receipts showing proof of notification to offset operators, and/or surface owners. Also, please find attached, the affidavit of publication. However, the newspaper made a mistake in regards to the requested maximum injection rate. It was to say 3000 BPD however, a misprint of 300 BPD was done. I have requested a republication but have not received proof of second run as of this date. Also, recently we ran step-rate tests on the other three injection wells. Review of said tests indicate that we need to increase the maximum injection pressure from 1050 psi to 1825 psi. Copies of said tests are attached.

Should you have any questions, or need additional information, please do not hesitate to contact me at 915-688-6943.

Sincerely,



Donna Williams  
Regulatory Compliance

UNITED STATES  
DEPARTMENT OF THE INTERIOR  
BUREAU OF LAND MANAGEMENT

FORM APPROVED  
Budget Bureau No. 1004-0135  
Expires: March 31, 1993

**SUNDRY NOTICES AND REPORTS ON WELLS**

Do not use this form for proposals to drill or to deepen or reentry to a different reservoir.

Use "APPLICATION FOR PERMIT - " for such proposals

**SUBMIT IN TRIPLICATE**

1. Type of Well

☐ Oil Well ☐ Gas Well ☒ Other

2. Name of Operator

Burlington Resources Oil & Gas Company

3. Address and Telephone No.

P.O. Box 51810, Midland, TX 79710-1810 915-688-6943

4. Location of Well (Footage, Sec., T., R., M., or Survey Description)

1340' FNL & 990' FEL  
Sec. 21, T18S, R33E

5. Lease Designation and Serial No.

6. If Indian, Allottee or Tribe Name

7. If Unit or CA, Agreement Designation

NMNM91067X

8. Well Name and No.

East Corbin # 9 WIW  
Delaware Unit

9. API Well No.

30-025-32915

10. Field and Pool, or exploratory Area

West Corbin Delaware

11. County or Parish, State

Lea NM

12. CHECK APPROPRIATE BOX(s) TO INDICATE NATURE OF NOTICE, REPORT, OR OTHER DATA

TYPE OF SUBMISSION

- ☐ Notice of Intent  
☒ Subsequent Report  
☐ Final Abandonment Notice

TYPE OF ACTION

- ☐ Abandonment  
☐ Recompletion  
☐ Plugging Back  
☐ Casing Repair  
☐ Altering Casing  
☐ Other Step Rate Tests
- ☐ Change of Plans  
☐ New Construction  
☐ Non-Routine Fracturing  
☐ Water Shut-Off  
☐ Conversion to Injection  
☐ Dispose Water

(Note: Report results of multiple completion on Well Completion or Recompletion Report and Log form.)

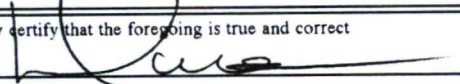
13. Describe Proposed or Completed Operations (Clearly state all pertinent details, and give pertinent dates, including estimated date of starting any proposed work. If well is directionally drilled, give subsurface locations and measured and true vertical depths for all markers and zones pertinent to this work.)\*

Please find attached copy of the step rate tests that was recently ran.

Request increase in maximum pressure from 1050 psi to 1855 psi.

14. I hereby certify that the foregoing is true and correct

Signed



Title Regulatory Compliance

Date 12/12/96

(This space for Federal or State office use)

Approved by

Title

Date

Conditions of approval, if any:

Title 18 U.S.C. Section 1001, makes it a crime for any person knowingly and willfully to make to any department or agency of the United States any false, fictitious or fraudulent statements or representations as to any matter within its jurisdiction.

\* See Instruction on Reverse Side



# WEST-TEST, INC.

A SUBSIDIARY OF JOHN WEST ENGINEERING COMPANY

Hobbs, New Mexico

## STEP RATE INJECTION TEST

CLIENT: BURLINGTON RESOURCES

DATE: NOVEMBER 27, 1996

WELL NAME: E.C.D.U. NO. 9  
LEA COUNTY, NEW MEXICO

WO#: 96-14-1536

PERFS = 5188-5262

PACKER DEPTH = 5157

BHP GAUGE DEPTH = 5225

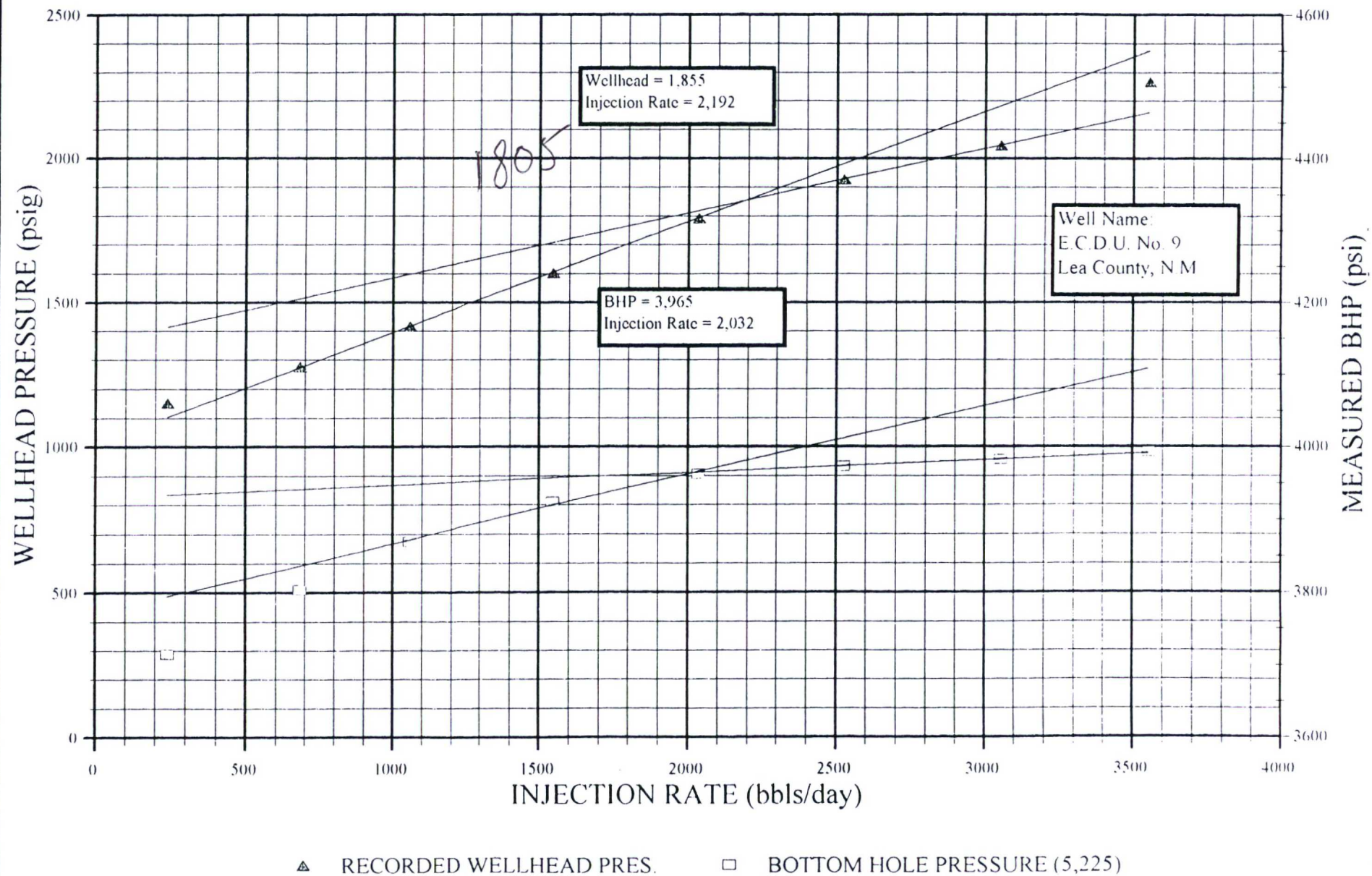
STEP NO. & REMARKS	TIME	(1) SURFACE TUBING PRESS. (psig)	(2) CUMMULATIVE VOL. INJECTED (bbls)	(3) INJECTION RATE (bbls/day)	(4) FRICTION HEAD LOSS (psi)	(5) CORRECTED TUBING PRESS. (psi) (1)-(4)	(6) INJECTION RATE (gpm) (3)/34.2857	(7) MEASURED BHP (psi)
1	10:10	1108.2				1108.2		3670.8
	10:15	1161.4	0.9	259.2	3.708	1157.7	7.56	3705.6
	10:20	1157.6	1.6	201.6	2.329	1155.3	5.88	3713.1
	10:25	1155.1	2.5	259.2	3.708	1151.4	7.56	3716.1
				240.0				
2	10:30	1288.2	4.9	691.2	22.761	1265.4	20.16	3802.4
	10:35	1289.4	7.2	662.4	21.038	1268.4	19.32	3800.7
	10:40	1280.5	9.6	691.2	22.761	1257.7	20.16	3805.2
3				681.6				
	10:45	1401.0	13.2	1036.8	48.191	1352.8	30.24	3864.2
	10:50	1420.0	16.9	1065.6	50.697	1369.3	31.08	3868.8
	10:55	1418.7	20.6	1065.6	50.697	1368.0	31.08	3870.3
				1056.0				
4	11:00	1599.9	26.0	1555.2	102.032	1497.9	45.36	3921.8
	11:05	1610.1	31.3	1526.4	98.564	1511.5	44.52	3924.9
	11:10	1605.0	36.7	1555.2	102.032	1503.0	45.36	3924.9
				1545.6				
5	11:15	1793.9	43.8	2044.8	169.292	1624.6	59.64	3964.3
	11:20	1788.8	50.9	2044.8	169.292	1619.5	59.64	3964.4
	11:25	1795.1	57.9	2016.0	164.907	1630.2	58.80	3963.0
				2035.2				
6	11:30	1940.9	66.7	2534.4	251.826	1689.1	73.92	3979.8
	11:35	1948.5	75.5	2534.4	251.826	1696.7	73.92	3979.9
	11:40	1929.5	84.2	2505.6	246.557	1682.9	73.08	3974.0
				2524.8				
7	11:45	2118.7	94.8	3052.8	355.323	1763.4	89.04	3987.7
	11:50	2089.5	105.4	3052.8	355.323	1734.2	89.04	3987.7
	11:55	2048.2	116.0	3052.8		2048.2		3983.2
				3052.8				

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)
8  FALLOFF	12:00	2270.1	128.2	3513.6	460.864	1809.2	102.48	3998.3
	12:05	2268.8	140.6	3571.2	474.939	1793.9	104.16	3996.8
	12:10	2268.8	153.0	3552.0	470.225	1798.6	103.60	3993.8
	12:11	1232.3				1232.3		3815.2
	12:12	1212.0				1212.0		3795.5
	12:13	1200.6				1200.6		3783.4
	12:14	1194.3				1194.3		3775.9
	12:15	1189.2				1189.2		3769.8
	12:20	1176.5				1176.5		3754.7
	12:25	1171.5				1171.5		3748.7



# STEP RATE INJECTION TEST

## BURLINGTON RESOURCES



UNITED STATES  
DEPARTMENT OF THE INTERIOR  
BUREAU OF LAND MANAGEMENT

FORM APPROVED  
Budget Bureau No. 1004-0135  
Expires: March 31, 1993

**SUNDRY NOTICES AND REPORTS ON WELLS**

Do not use this form for proposals to drill or to deepen or reentry to a different reservoir.

Use "APPLICATION FOR PERMIT - " for such proposals

**SUBMIT IN TRIPLICATE**

1. Type of Well

☐ Oil Well ☐ Gas Well ☒ Other

2. Name of Operator

Burlington Resources Oil & Gas Company

3. Address and Telephone No.

P.O. Box 51810, Midland, TX 79710-1810 915-688-6943

4. Location of Well (Footage, Sec., T., R., M., or Survey Description)

660' FSL & 460' FEL  
Sec. 16, T18S, R33E

5. Lease Designation and Serial No.

6. If Indian, Allottee or Tribe Name

7. If Unit or CA, Agreement Designation

NMNM91067X

8. Well Name and No.

East Corbin # 4 WIW  
Delaware Unit

9. API Well No.

30-025-31168

10. Field and Pool, or exploratory Area

West Corbin Delaware

11. County or Parish, State

Lea NM

12. CHECK APPROPRIATE BOX(s) TO INDICATE NATURE OF NOTICE, REPORT, OR OTHER DATA

TYPE OF SUBMISSION

- ☐ Notice of Intent  
☒ Subsequent Report  
☐ Final Abandonment Notice

TYPE OF ACTION

- ☐ Abandonment  
☐ Recompletion  
☐ Plugging Back  
☐ Casing Repair  
☐ Altering Casing  
☐ Other Step Rate Tests
- ☐ Change of Plans  
☐ New Construction  
☐ Non-Routine Fracturing  
☐ Water Shut-Off  
☐ Conversion to Injection  
☐ Dispose Water

(Note: Report results of multiple completion on Well Completion or Recompletion Report and Log form.)

13. Describe Proposed or Completed Operations (Clearly state all pertinent details, and give pertinent dates, including estimated date of starting any proposed work. If well is directionally drilled, give subsurface locations and measured and true vertical depths for all markers and zones pertinent to this work.)\*

Please find attached copy of the step rate tests that was recently ran.

Request increase in maximum pressure from 1050 psi to 1700 psi.

14. I hereby certify that the foregoing is true and correct

Signed

Title

Regulatory Compliance

Date

12/12/96

(This space for Federal or State office use)

Approved by

Title

Date

Conditions of approval, if any:



# WEST-TEST, INC.

A SUBSIDIARY OF JOHN WEST ENGINEERING COMPANY

Hobbs, New Mexico

## STEP RATE INJECTION TEST

CLIENT: BURLINGTON RESOURCES

DATE: NOVEMBER 25, 1996

WELL NAME: E.C.D.U. NO. 4  
LEA COUNTY, NEW MEXICO

WO#: 96-14-1534

PERFS = 5200-5260

PACKER DEPTH = 5176

BHP GAUGE DEPTH = 5230

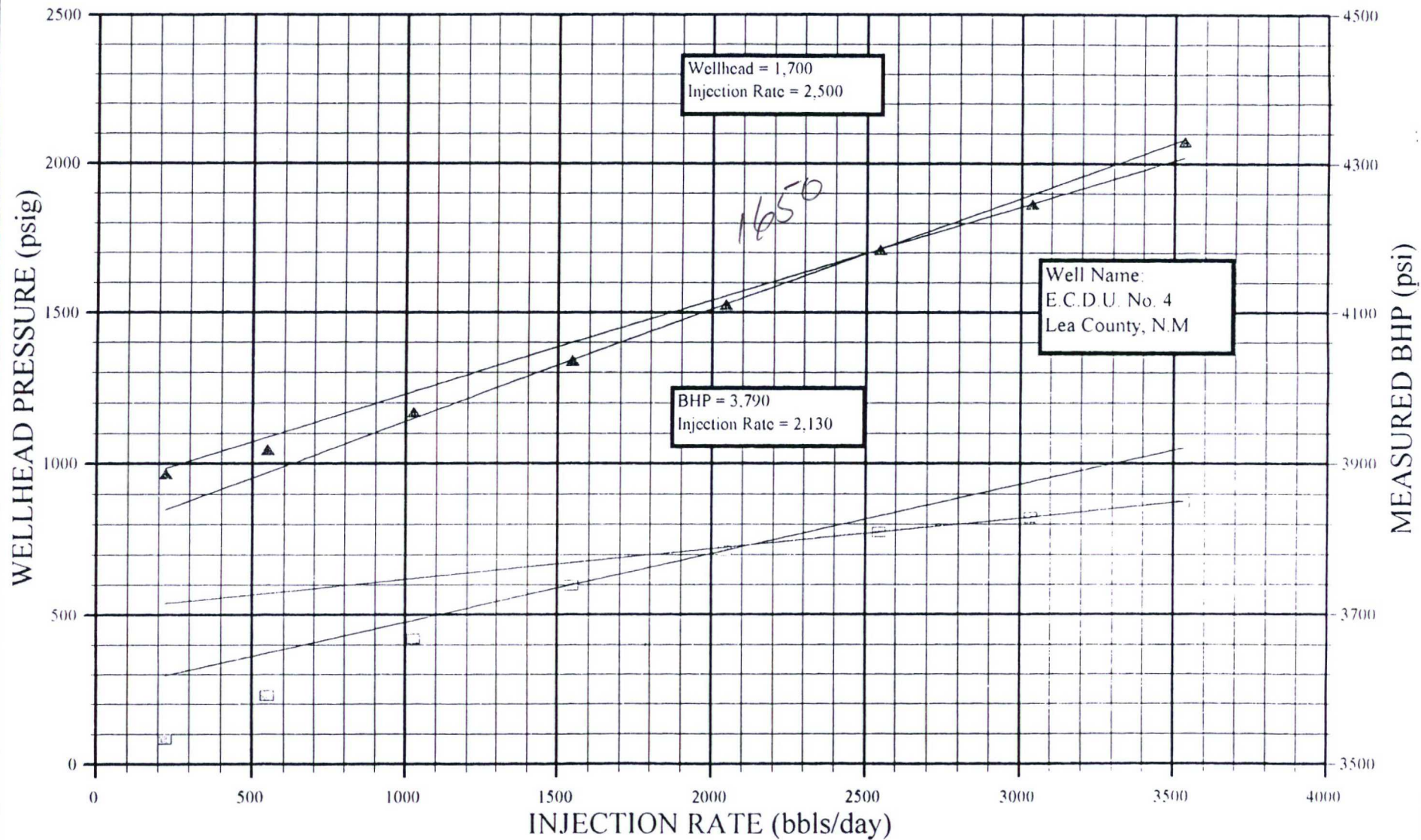
STEP NO. & REMARKS	TIME	(1) SURFACE TUBING PRESS. (psig)	(2) CUMMULATIVE VOL. INJECTED (bbls)	(3) INJECTION RATE (bbls/day)	(4) FRICTION HEAD LOSS (psi)	(5) CORRECTED TUBING PRESS. (psi) (1)-(4)	(6) INJECTION RATE (gpm) (3)/34.2857	(7) MEASURED BHP (psi)
1	10:15	917.6				917.6		3489.1
	10:20	930.2	0.6	172.8	1.753	928.4	5.04	3513.3
	10:25	954.4	1.5	259.2	3.712	950.7	7.56	3525.4
	10:30	968.3	2.3	230.4	2.985	965.3	6.72	3534.5
				220.8				
2	10:35	1012.7	4.2	547.2	14.788	997.9	15.96	3567.7
	10:40	1034.3	6.1	547.2	14.788	1019.5	15.96	3581.3
	10:45	1048.2	8.0	547.2	14.788	1033.4	15.96	3591.8
3				547.2				
	10:50	1147.1	11.5	1008.0	45.788	1101.3	29.40	3637.2
	10:55	1153.4	15.1	1036.8	48.237	1105.2	30.24	3655.3
	11:00	1173.6	18.7	1036.8	48.237	1125.4	30.24	3669.0
4				1027.2				
	11:05	1321.9	24.1	1555.2	102.129	1219.8	45.36	3712.9
	11:10	1329.4	29.5	1555.2	102.129	1227.3	45.36	3729.6
	11:15	1343.2	34.8	1526.4	98.658	1244.5	44.52	3740.2
5				1545.6				
	11:20	1535.8	41.9	2044.8	169.454	1366.3	59.64	3772.0
	11:25	1529.4	48.9	2016.0	165.065	1364.3	58.80	3779.7
	11:30	1529.3	56.1	2073.6	173.895	1355.4	60.48	3785.8
6				2044.8				
	11:35	1701.6	64.9	2534.4	252.067	1449.5	73.92	3801.0
	11:40	1702.8	73.7	2534.4	252.067	1450.7	73.92	3805.7
	11:45	1712.9	82.6	2563.2	257.391	1455.5	74.76	3810.3
7				2544.0				
	11:50	1889.1	93.2	3052.8	355.663	1533.4	89.04	3822.5
	11:55	1870.0	103.8	3052.8	355.663	1514.3	89.04	3827.1
	12:00	1866.2	114.2	2995.2	343.348	1522.9	87.36	3830.2
				3033.6				



STEP NO. & REMARKS	TIME	(1) SURFACE TUBING PRESS. (psig)	(2) CUMMULATIVE VOL. INJECTED (bbls)	(3) INJECTION RATE (bbls/day)	(4) FRICTION HEAD LOSS (psi)	(5) CORRECTED TUBING PRESS. (psi) (1) - (4)	(6) INJECTION RATE (gpm) (3)/34.2857	(7) MEASURED BHP (psi)
8  FALLOFF	12:05	2045.0	126.5	3542.4	468.325	1576.7	103.32	3840.8
	12:10	2046.2	138.7	3513.6	461.305	1584.9	102.48	3845.4
	12:15	2078.0	151.0	3542.4 3532.8	468.325	1609.7	103.32	3850.0
	12:16	1234.8				1234.8		3815.2
	12:17	1232.3				1232.3		3807.7
	12:18	1225.9				1225.9		3801.6
	12:19	1222.1				1222.1		3797.1
	12:20	1218.3				1218.3		3792.6
	12:25	1205.6				1205.6		3777.4
	12:30	1196.7				1196.7		3766.7

# STEP RATE INJECTION TEST

BURLINGTON RESOURCES



▲ RECORDED WELLHEAD PRES.      □ BOTTOM HOLE PRESSURE (5,230)



UNITED STATES  
DEPARTMENT OF THE INTERIOR  
BUREAU OF LAND MANAGEMENT

FORM APPROVED  
Budget Bureau No. 1004-0135  
Expires: March 31, 1993

**SUNDRY NOTICES AND REPORTS ON WELLS**

Do not use this form for proposals to drill or to deepen or reentry to a different reservoir.  
Use "APPLICATION FOR PERMIT - " for such proposals

**SUBMIT IN TRIPLICATE**

1. Type of Well

☐ Oil Well ☐ Gas Well ☒ Other

2. Name of Operator

Burlington Resources Oil & Gas Company

3. Address and Telephone No.

P.O. Box 51810, Midland, TX 79710-1810 915-688-6943

4. Location of Well (Footage, Sec., T., R., M., or Survey Description)

779' FNL & 1943' FWL  
Sec. 21, T18S, R33E

5. Lease Designation and Serial No.

6. If Indian, Allottee or Tribe Name

7. If Unit or CA, Agreement Designation

NMNM91067X

8. Well Name and No.

East Corbin # 6 WIW  
Delaware Unit

9. API Well No.

30-025-30736

10. Field and Pool, or exploratory Area

West Corbin Delaware

11. County or Parish, State

Lea NM

12. CHECK APPROPRIATE BOX(s) TO INDICATE NATURE OF NOTICE, REPORT, OR OTHER DATA

TYPE OF SUBMISSION

- ☐ Notice of Intent  
☒ Subsequent Report  
☐ Final Abandonment Notice

TYPE OF ACTION

- ☐ Abandonment  
☐ Recompletion  
☐ Plugging Back  
☐ Casing Repair  
☐ Altering Casing  
☐ Other Step Rate Tests  
☐ Change of Plans  
☐ New Construction  
☐ Non-Routine Fracturing  
☐ Water Shut-Off  
☐ Conversion to Injection  
☐ Dispose Water

(Note: Report results of multiple completion on Well Completion or Recompletion Report and Log form.)

13. Describe Proposed or Completed Operations (Clearly state all pertinent details, and give pertinent dates, including estimated date of starting any proposed work. If well is directionally drilled, give subsurface locations and measured and true vertical depths for all markers and zones pertinent to this work.)\*

Please find attached copy of the step rate tests that was recently ran.

Request increase in maximum pressure from 1050 psi to 1500 psi.

14. I hereby certify that the foregoing is true and correct

Signed

Title Regulatory Compliance

Date 12/12/96

(This space for Federal or State office use)

Approved by

Title

Date

Conditions of approval, if any:

# WEST-TEST, INC.

A SUBSIDIARY OF JOHN WEST ENGINEERING COMPANY  
Hobbs, New Mexico

## STEP RATE INJECTION TEST

CLIENT: BURLINGTON RESOURCES

DATE: NOVEMBER 26, 1996

WELL NAME: E.C.D.U. NO. 6  
LEA COUNTY, NEW MEXICO

WO#: 96-14-1535

PERFS = 5156-5246

PACKER DEPTH = 5125

BHP GAUGE DEPTH = 5200

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	1001.1				1001.1		3568.1
	11:10	1002.4	0.9	259.2	3.690	998.7	7.56	3575.7
	11:15	1022.6	1.8	259.2	3.690	1018.9	7.56	3574.1
	11:20	1026.4	2.7	259.2	3.690	1022.7	7.56	3572.4
2				259.2				
	11:25	1058.0	4.6	547.2	14.703	1043.3	15.96	3582.9
	11:30	1083.3	6.3	489.6	11.969	1071.3	14.28	3588.9
	11:35	1106.1	8.0	489.6	11.969	1094.1	14.28	3596.5
3				508.8				
	11:40	1117.5	10.6	748.8	26.268	1091.2	21.84	3604.1
	11:45	1115.0	13.0	694.1	22.827	1092.2	20.24	3610.1
	11:50	1117.6	15.6	745.9	26.081	1091.5	21.76	3614.7
4				729.6				
	11:55	1207.6	19.3	1065.6	50.454	1157.1	31.08	3626.8
	12:00	1227.9	23.0	1065.6	50.454	1177.4	31.08	3632.9
	12:05	1231.7	26.7	1065.6	50.454	1181.2	31.08	3637.5
5				1065.6				
	12:10	1338.1	32.1	1555.2	101.544	1236.6	45.36	3654.1
	12:15	1336.7	37.5	1555.2	101.544	1235.2	45.36	3661.8
	12:20	1354.4	43.0	1584.0	105.050	1249.4	46.20	3667.9
6				1564.8				
	12:25	1504.0	49.9	1987.2	159.807	1344.2	57.96	3681.6
	12:30	1507.7	56.8	1987.2	159.807	1347.9	57.96	3689.2
	12:35	1512.7	63.7	1987.2	159.807	1352.9	57.96	3692.3
7				1987.2				
	12:40	1718.0	72.5	2534.4	250.621	1467.4	73.92	3706.0
	12:45	1714.2	81.3	2534.4	250.621	1463.6	73.92	3710.6
	12:50	1721.7	90.1	2534.4	250.621	1471.1	73.92	3715.2

2534.4



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)
FALLOFF	SHUT DOWN	DOWN	OUT OF	WATER				
	12:51	1127.3				1127.3		3694.0
	12:52	1126.0				1126.0		3689.5
	12:53	1123.5				1123.5		3686.4
	12:54	1120.9				1120.9		3683.4
	12:55	1118.4				1118.4		3680.3
	1:00	1110.7				1110.7		3668.1

# STEP RATE INJECTION TEST

## BURLINGTON RESOURCES

