



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



BRUCE KING
GOVERNOR

ANITA LOCKWOOD
CABINET SECRETARY

March 16, 1993

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

S & J Operating Company
811 Sixth Street, Suite 300
Wichita Falls, TX 76307-2249

WFX-619

PDEV0020600619

Attention: Bruce L. Robertson

**RE: Injection Pressure Increase on Three Wells in the North Denton
Wolfcamp Unit Waterflood Project, Lea County, New Mexico**

Dear Mr. Robertson:

Reference is made to your request dated March 5, 1993 to increase the surface injection pressure on three wells in the North Denton Wolfcamp Waterflood Project. This request is based on step rate tests conducted on these wells between February 23 and 25, 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.

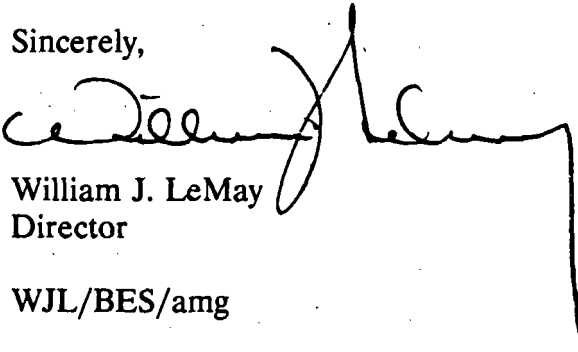
You are therefore authorized to increase the surface injection pressure on the following wells:

Well and Location	Maximum Injection Surface Pressure
NDWU No. 5-12 1980' FNL - 810' FWL Unit E, Section 35, Township 14 South, Range 37 East	3000 PSIG
NDWU No. 7-3 660' FSL - 660' FWL Unit M, Section 36, Township 14 South, Range 37 East	3000 PSIG
NDWU No. 8-1 660' FSL - 2310' FEL Unit O, Section 36, Township 14 South, Range 37 East	3000 PSIG
All wells located in Lea County, New Mexico.	

Injection Pressure Increase
S & J Operating Company
March 16, 1993
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,

A handwritten signature in black ink, appearing to read 'William J. LeMay', with a long horizontal stroke extending to the right.

William J. LeMay
Director

WJL/BES/amg

cc: Oil Conservation Division - Hobbs
David Catanach
File: WFX-619

NO WAITING PERIOD

COMPANY: S & J OPERATING COMPANY
ADDRESS: 811 SIXTH STREET, SUITE 300
CITY, STATE, ZIP: WICHITA FALLS, TEXAS 76307-2249
ATTENTION: BRUCE C. ROBERTSON

Re: Injection Pressure Increase

3 WELLS

NORTH DENTON WOLF CAMP UNIT

LEA County, New Mexico

Dear Sir:

Reference is made to your request dated MARCH 5, 1993, to increase the surface injection pressure on 3 WELLS IN THE NORTH DENTON WOLF CAMP UNIT. This request is based on step rate tests conducted on these wells BETWEEN FEB 23RD & 25TH, 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:

<u>Well & Location</u>	<u>Maximum Injection Surface Pressure</u>
<u>NDWU No. 5-12</u> <u>1980' FNL & 810' FNL</u> <u>"E" 35-145-37E</u>	<u>3000 PSIG</u>
<u>NDWU No. 7-3</u> <u>660' FSL & 660' FNL</u> <u>"M" 36-145-37E</u>	<u>3000 PSIG</u>
<u>NDWU No. 8-1</u> <u>660' FSL & 2310' FEL</u> <u>"O" 36-145-37E</u>	<u>3000 PSIG</u>
<u> </u>	<u> </u>
<u> </u>	<u> </u>
<u> </u>	<u> </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-619

OCD- H0885

811 Sixth Street, Suite 300

Post Office Box 2249
OIL CONSERVATION DIVISION
RECEIVED

WICHITA FALLS, TEXAS
76307-2249

'93 MAR 9 AM 8 49

March 5, 1993

Oil Conservation Division
P. O. Box 2088
Santa Fe, New Mexico 87504

Attn: Mr. David Catanach

Re: S & J Operating Company
North Denton Wolfcamp Unit
T14S-R37E
Lea County, New Mexico

Dear Mr. Catanach:

Please find enclosed step rate tests on the North Denton Wolfcamp Unit wells No. 5-12, 7-3 and 8-1. S & J Operating Company requests that the maximum authorized injection pressure for each of these wells be raised to 3,000 psig. Currently, these three wells have maximum authorized pressures of 1,854, 1,837 and 1,854 psig, respectively. These pressures were based on .2 psig per foot under Administrative Order No. WFX-619 dated January 31, 1992. The other injection wells in the Unit are unrestricted based on Order No. R-3001 dated November 29, 1965 by application of Mobil Oil Company for the North Denton Wolfcamp Unit.

If you need any additional information, please do not hesitate to contact us.

Yours very truly,

S & J OPERATING COMPANY


Bruce L. Robertson

BLR/dk

cc: Oil Conservation Division
P. O. Box 1980
Hobbs, New Mexico 88241-1980
Attn: Evelyn Downs

JOHN WEST ENGINEERING COMPANY

Hobbs, New Mexico

STEP RATE INJECTION TEST

CLIENT: S & J OPERATING COMPANY

DATE: FEBRUARY 23, 1988

WELL NAME: NORTH DENTON WOLFCAMP FIELD TRACT 8 WELL 1

WO#: 88-14-0278

Lea County, New Mexico

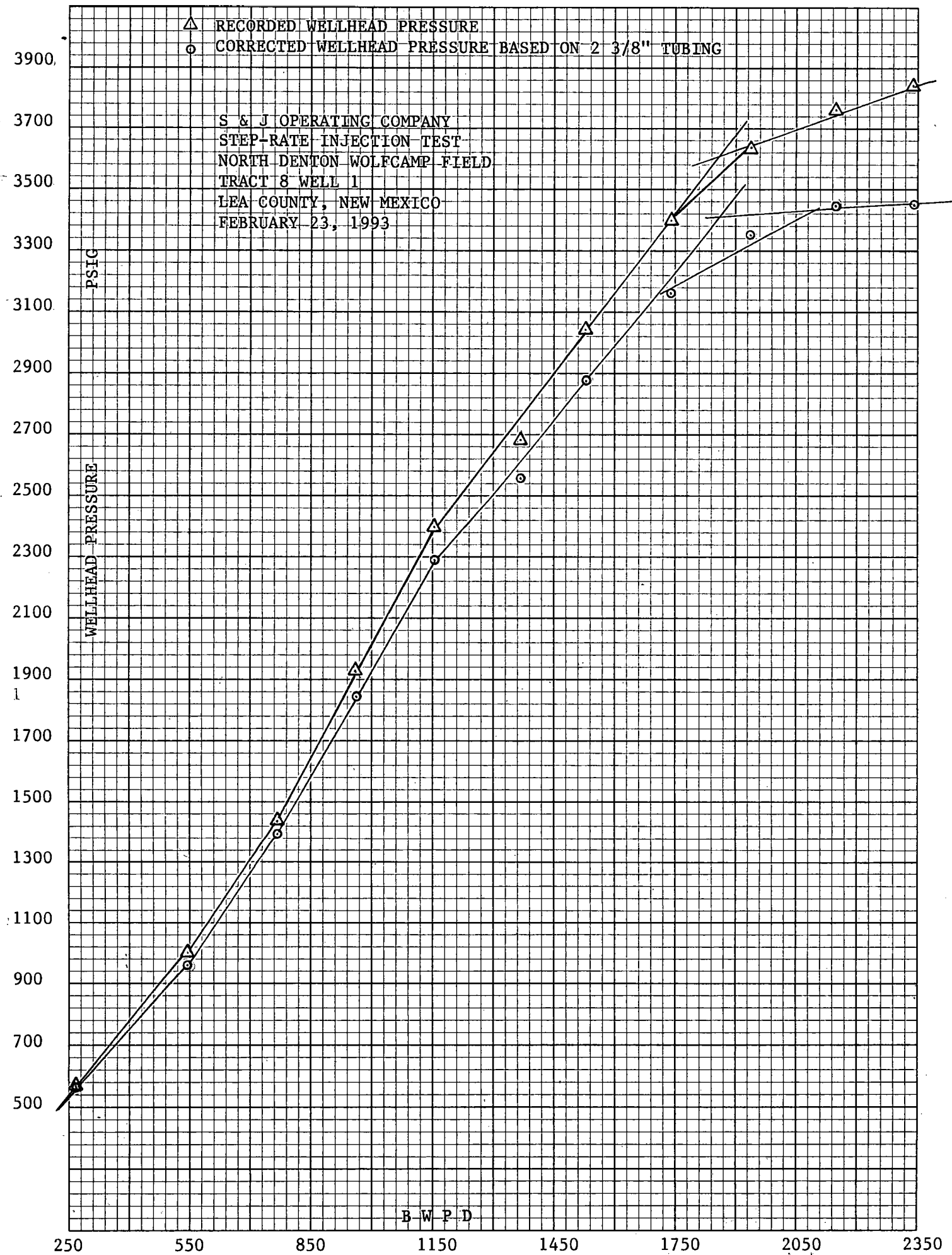
MID-PERF8. = 8947

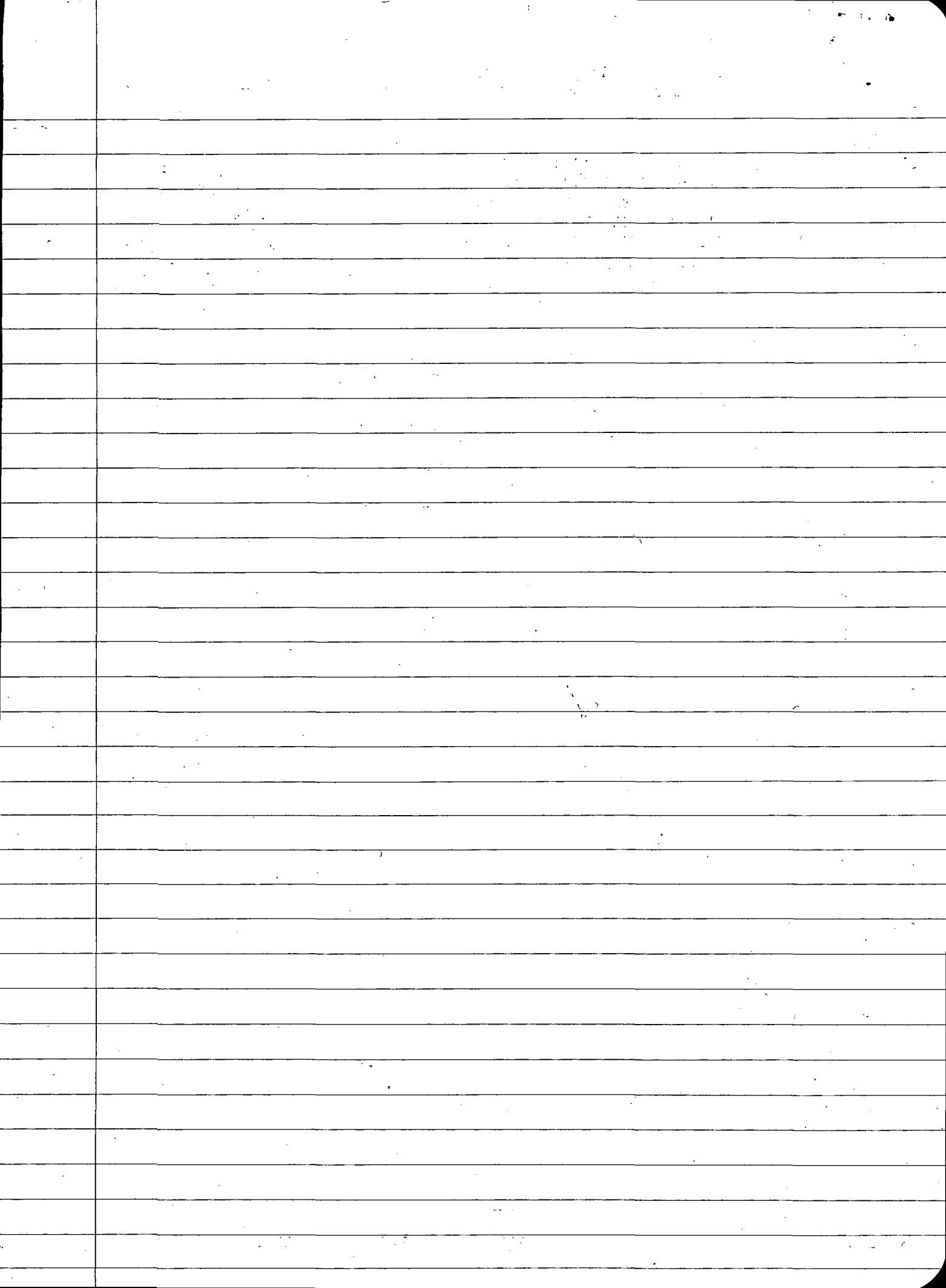
PACKER DEPTH =

BHP GAUGE DEPTH =

STEP NO. A		(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) (1)/(24.0057)	(7) MEASURED BHP (psf)
	9:55	323.3				323.3		
	10:00	481.4	1.0	288.0	8.061	473.3	8.40	
	10:05	548.6	1.9	259.2	6.633	542.0	7.56	
1	10:10	603.2	2.8	259.2	6.633	596.6	7.56	
				268.8				
	10:15	796.6	4.7	547.2	26.429	770.2	15.96	
	10:20	907.9	6.6	547.2	26.429	881.5	15.96	
2	10:25	987.6	8.5	547.2	26.429	961.2	15.96	
				547.2				
	10:30	1190.1	11.1	748.8	47.217	1142.9	21.84	
	10:35	1316.7	13.8	777.6	50.631	1266.1	22.68	
3	10:40	1428.1	16.4	748.8	47.217	1380.9	21.84	
				758.8				
	10:45	1651.0	19.7	950.4	73.391	1577.6	27.72	
	10:50	1808.8	23.1	979.2	77.558	1729.2	28.56	
4	10:55	1923.3	26.4	950.4	73.391	1849.9	27.72	
				959.9				
	11:00	2154.0	30.4	1152.0	104.762	2049.2	33.60	
	11:05	2292.2	34.4	1152.0	104.762	2187.4	33.60	
5	11:10	2403.9	38.4	1152.0	104.762	2299.1	33.60	
				1152.0				
	11:15	2633.6	43.1	1353.6	141.180	2492.4	39.48	
	11:20	2623.5	47.9	1382.4	146.788	2476.7	40.32	
6	11:25	2685.8	52.6	1353.6	141.180	2544.6	39.48	
				1363.2				
	11:30	2819.2	58.0	1555.2	182.525	2636.7	45.36	
	11:35	2956.5	63.3	1526.4	176.321	2780.2	44.52	
7	11:40	3039.2	68.6	1526.4	176.321	2862.9	44.52	
				1535.9				

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	11:45	3241.7	74.7	1756.8	228.693	3013.0	51.24	
	11:50	3316.8	80.7	1728.0	221.806	3095.0	50.40	
	11:55	3388.1	86.8	1756.8	228.693	3159.4	51.24	
9	12:00	3539.6	93.5	1929.6	272.039	3267.6	56.28	
	12:05	3599.5	100.2	1929.6	272.039	3327.5	56.28	
	12:10	3627.5	107.0	1958.4	279.598	3347.9	57.12	
10	12:15	3726.8	114.4	1939.2				
	12:20	3747.1	122.0	2131.2	326.943	3399.9	62.16	
	12:25	3768.8	129.4	2188.8	343.478	3403.6	63.84	
11	12:30	3930.4	137.3	2131.2	326.943	3441.9	62.16	
	12:35	3875.7	145.5	2150.4				
	12:40	3850.3	153.8	2275.2	368.980	3561.4	66.36	
FALLOFF	12:41			2361.6	395.320	3480.4	68.88	
	12:42			2390.4	404.285	3446.0	69.72	
	12:43			2342.4				
	12:44	3385.7				3385.7		
	12:45	3367.9				3367.9		
	12:46	3339.8				3339.8		
	12:47	3318.2				3318.2		
	12:48	3300.4				3300.4		
	12:49	3282.6				3282.6		
	12:50	3264.7				3264.7		
	12:51	3250.7				3250.7		
	12:52	3235.5				3235.5		
	12:53	3220.2				3220.2		
	12:54	3206.2				3206.2		
	12:55	3192.2				3192.2		
		3179.4				3179.4		
		3165.4				3165.4		
		3152.7				3152.7		





JOHN WEST ENGINEERING COMPANY

Hobbs, New Mexico

STEP RATE INJECTION TEST

CLIENT: S & J OPERATING COMPANY

DATE: FEBRUARY 25, 1988

WELL NAME: NORTH DENTON WOLFCAMP FIELD TRACT 5 WELL NO. 12

WO#: 88-14-0278

Lea County, New Mexico

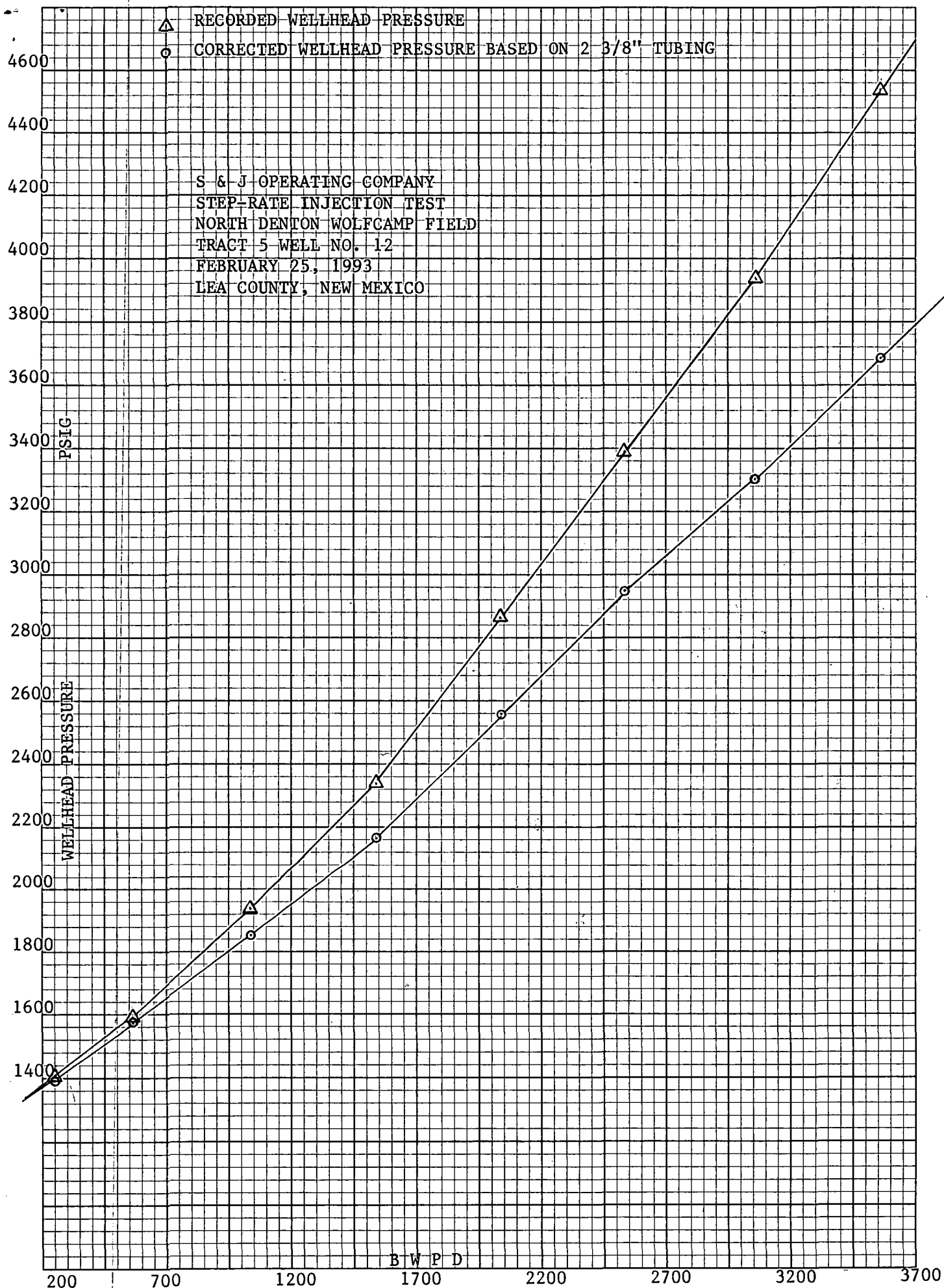
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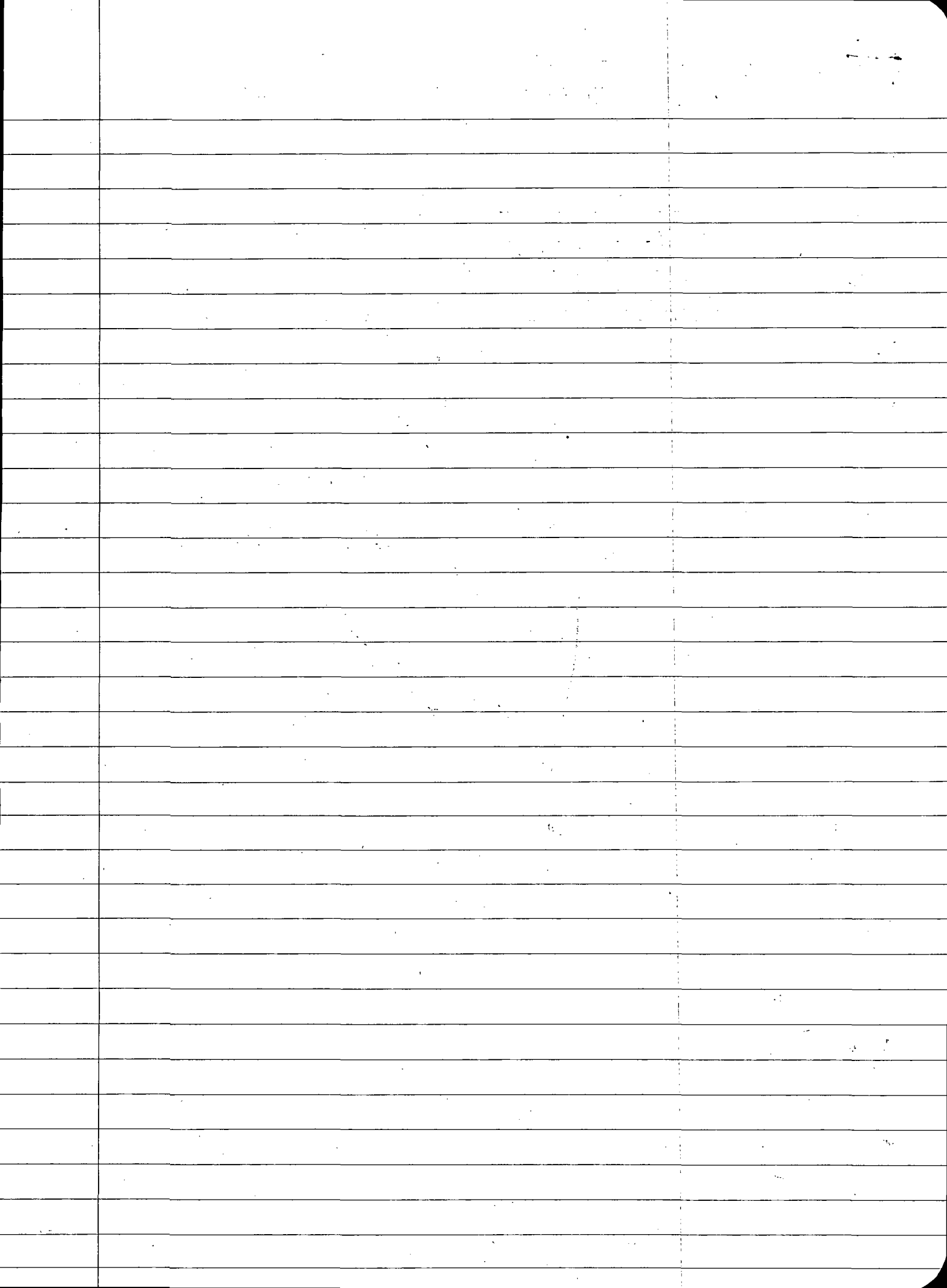
PACKER DEPTH =

BHP GAUGE DEPTH = 8830

STEP NO. & REMAINS	TIME	(1) SURFACE TUBING PRESS. (psig)	(2) CUMULATIVE VOL. INJECTED (bbbls)	(3) INJECTION RATE (bbbls/day)	(4) FRICTION HEAD LOSS (psf)	(5) CORRECTED TUBING PRESS. (psig) (1)-(4)	(6) INJECTION RATE (gpm) (3)/24 HRS	(7) MEASURED BHP (psf)
1	11:15	1288.4				1288.4		
	11:20	1350.5	0.9	259.2	6.621	1343.9	7.56	
	11:25	1379.6	1.7	230.4	5.325	1374.3	6.72	
	11:30	1404.9	2.6	259.2	6.621	1398.3	7.56	
2				249.6				
	11:35	1503.6	4.6	576.0	29.007	1474.6	16.80	
	11:40	1551.7	6.5	547.2	26.381	1525.3	15.96	
	11:45	1594.8	8.4	547.2	26.381	1568.4	15.96	
3				556.8				
	11:50	1788.5	12.1	1065.6	90.527	1698.0	31.08	
	11:55	1865.7	15.7	1036.8	86.052	1779.6	30.24	
	12:00	1936.5	19.3	1036.8	86.052	1850.4	30.24	
4				1046.4				
	12:05	2186.1	24.7	1555.2	182.193	2003.9	45.36	
	12:10	2280.0	30.1	1555.2	182.193	2097.8	45.36	
	12:15	2335.7	35.4	1526.4	176.000	2159.7	44.52	
5				1545.6				
	12:20	2633.8	42.5	2044.8	302.295	2331.5	59.64	
	12:25	2755.8	49.6	2044.8	302.295	2453.5	59.64	
	12:30	2862.6	56.7	2044.8	302.295	2560.3	59.64	
6				2044.8				
	12:35	3188.2	65.5	2534.4	449.672	2738.5	73.92	
	12:40	3293.9	74.4	2563.2	459.171	2834.7	74.76	
	12:45	3394.4	83.1	2505.6	440.264	2954.1	73.08	
7				2534.4				
	12:50	3734.3	93.8	3081.6	645.599	3088.7	89.88	
	12:55	3848.9	104.3	3024.0	623.452	3225.4	88.20	
	1:00	3943.1	114.9	3052.8	634.481	3308.6	89.04	
				3052.8				

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) (5)/24.2857	(7) MEASURED BHP (ps)
8 OUT OF WATER END TEST	1:05	4319.6	127.0	3484.8	810.505	3509.1	101.64	
	1:10	4460.1	139.5	3600.0	860.768	3599.3	105.00	
	1:15	4541.8	152.0	3600.0	860.768	3681.0	105.00	
				3561.6				
FALLOFF	1:16	3475.9				3475.9		
	1:17	3436.5				3436.5		
	1:18	3411.0				3411.0		
	1:19	3395.7				3395.7		
	1:20	3379.2				3379.2		
	1:21	3365.2				3365.2		
	1:22	3352.4				3352.4		
	1:23	3341.0				3341.0		
	1:24	3329.5				3329.5		
	1:25	3319.3				3319.3		
	1:26	3309.1				3309.1		
	1:27	3299.0				3299.0		
	1:28	3290.1				3290.1		
	1:29	3281.0				3281.0		
	1:30	3273.5				3273.5		





JOHN WEST ENGINEERING COMPANY

Hobbs, New Mexico

STEP RATE INJECTION TEST

CLIENT: S & J OPERATING COMPANY

DATE: FEBRUARY 24, 1989

WELL NAME: NORTH DENTON WOLFCAMP FIELD TRACT 7 WELL 3

WO#: 99-14-0278

Lea County, New Mexico

MID-PERFS. = 9185 - 9274

PACKER DEPTH = 9116

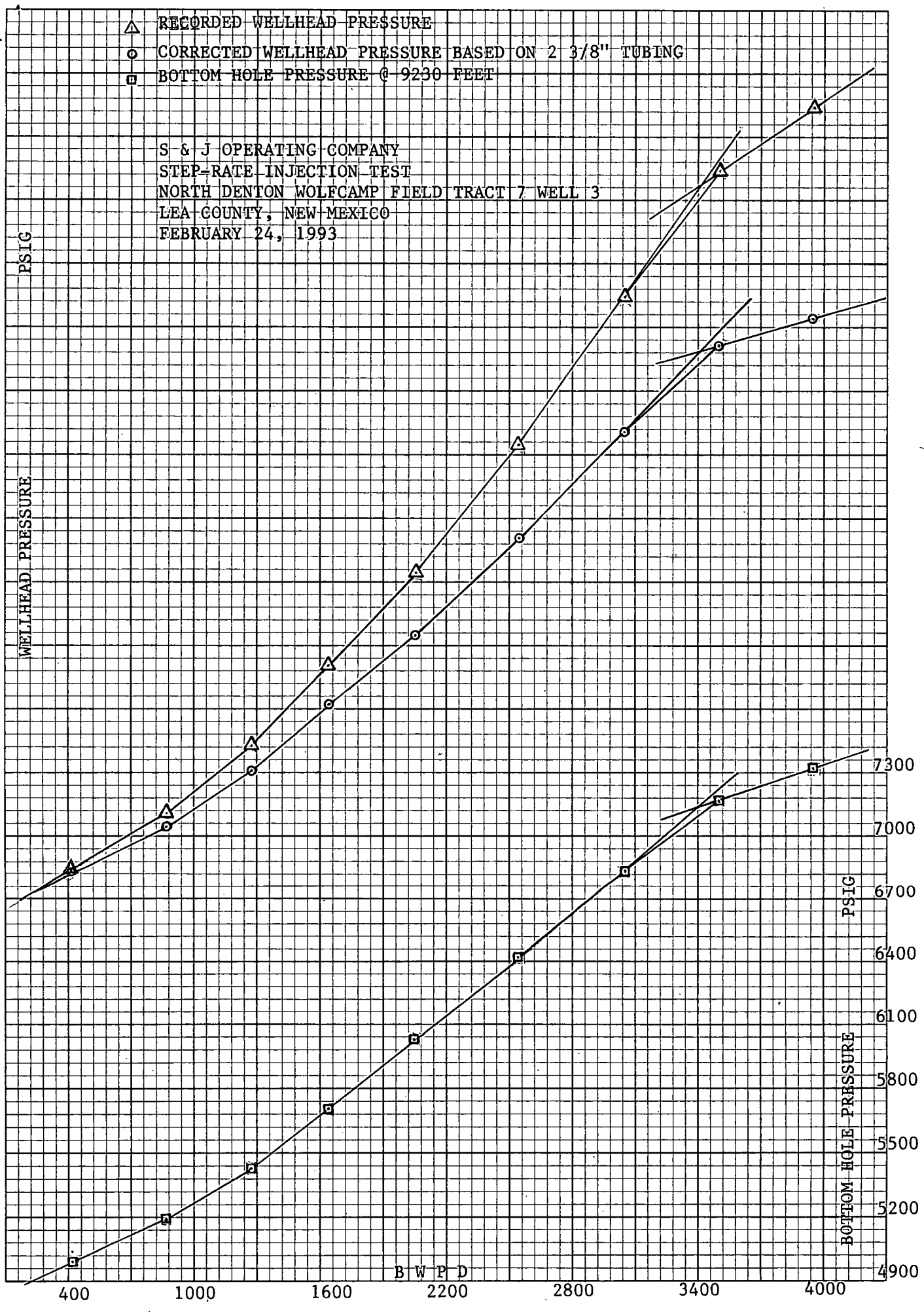
BHP GAUGE DEPTH = 9230

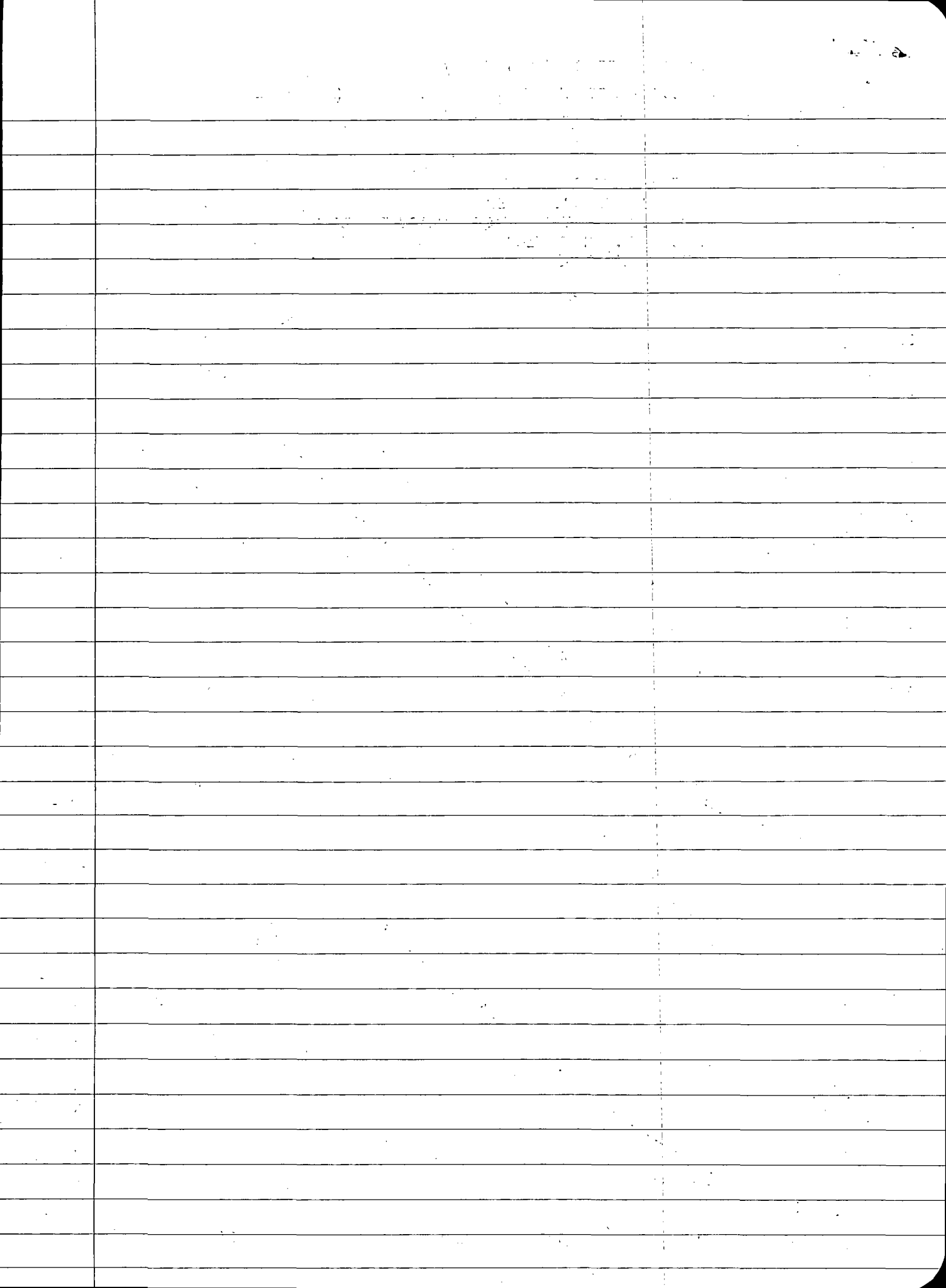
STEP NO. & REMARKS	TIME	(1) SURFACE TUBING PRESS. (psig)	(2) CUMULATIVE VOL. INJECTED (bbls)	(3) INJECTION RATE (bbls/day)	(4) FRICTION HEAD LOSS (ps)	(5) CORRECTED TUBING PRESS. (ps) (1) - (4)	(6) INJECTION RATE (gpm) (1)/34.2857	(7) MEASURED BHP (ps)
1	9:10	618.1				618.1		4865
	9:15	691.5	1.4	403.2	14.834	676.7	11.76	4923
	9:20	730.7	2.9	432.0	16.854	713.8	12.60	4961
	9:25	744.6	4.4	432.0	16.854	727.7	12.60	4992
				422.4				
2	9:30	892.5	7.5	892.8	64.557	827.9	26.04	5077
	9:35	967.1	10.6	892.8	64.557	902.5	26.04	5139
	9:40	1016.4	13.7	892.8	64.557	951.8	26.04	5194
				892.8				
3	9:45	1189.8	18.2	1296.0	128.637	1061.2	37.80	5289
	9:50	1260.7	22.6	1267.2	123.399	1137.3	36.96	5365
	9:55	1326.5	27.0	1267.2	123.399	1203.1	36.96	5433
				1276.8				
4	10:00	1543.0	32.7	1641.6	199.201	1343.8	47.88	5542
	10:05	1621.5	38.5	1670.4	205.714	1415.8	48.72	5630
	10:10	1712.6	44.1	1612.8	192.784	1519.8	47.04	5711
				1641.6				
5	10:15	1970.8	51.2	2044.8	299.055	1671.7	59.64	5836
	10:20	2064.5	58.3	2044.8	299.055	1765.4	59.64	5940
	10:25	2157.0	65.4	2044.8	299.055	1857.9	59.64	6035
				2044.8				
6	10:30	2530.7	74.3	2563.2	454.249	2076.5	74.76	6186
	10:35	2635.1	83.2	2563.2	454.249	2180.9	74.76	6306
	10:40	2753.4	92.0	2534.4	444.852	2308.5	73.92	6418
				2553.6				
7	10:45	3187.3	102.6	3052.8	627.680	2559.6	89.04	6581
	10:50	3322.4	113.2	3052.8	627.680	2694.7	89.04	6715
	10:55	3446.0	123.8	3052.8	627.680	2818.3	89.04	6836
				3052.8				

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) (3)/24.0557	(7) MEASURED BHP (psf)
8	11:00	3572.1	136.1	3542.4	826.508	2745.6	103.32	6979
	11:05	3921.1	148.1	3456.0	789.602	3131.5	100.80	7082
	11:10	4038.4	160.4	3542.4	826.508	3211.9	103.32	7171
				3513.6				
9	11:15	4282.3	174.1	3945.6	1008.918	3273.4	115.08	7255
	11:20	4323.2	187.8	3945.6	1008.918	3314.3	115.08	7301
	11:25	4350.0	201.5	3945.6	1008.918	3341.1	115.08	7314
				3945.6				
10 SHUT DOWN ENGINE HOT	11:30	4459.8	215.4	4003.2	1036.335	3423.5	116.76	7319
	11:35	4448.3	229.3	4003.2	1036.335	3412.0	116.76	7316
	11:40							
FALLOFF	11:36	2935.5				2935.5		7218
	11:37	2850.1				2850.1		7156
	11:38	2808.2				2808.2		7103
	11:39	2767.5				2767.5		7060
	11:40	2731.9				2731.9		7020
	11:41	2697.6				2697.6		6983
	11:42	2667.1				2667.1		6951
	11:43	2635.3				2635.3		6917
	11:44	2607.4				2607.4		6886
	11:45	2580.7				2580.7		6857
	11:46	2556.5				2556.5		6832
	11:47	2534.9				2534.9		6808
	11:48	2513.3				2513.3		6784
	11:49	2493.0				2493.0		6766
	11:50	2475.3				2475.3		6747

- △ RECORDED WELLHEAD PRESSURE
- CORRECTED WELLHEAD PRESSURE BASED ON 2 3/8" TUBING
- BOTTOM HOLE PRESSURE @ 9230 FEET

S & J OPERATING COMPANY
 STEP-RATE INJECTION TEST
 NORTH DENTON WOLFCAMP FIELD TRACT 7 WELL 3
 LEA COUNTY, NEW MEXICO
 FEBRUARY 24, 1993







STATE OF NEW MEXICO
ENERGY AND MINERALS DEPARTMENT
OIL CONSERVATION DIVISION
HOBBS DISTRICT OFFICE

March 9, 1993

BRUCE KING
GOVERNOR

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

OIL CONSERVATION DIVISION
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:

S & J Operating Company	North Denton Wolfcamp Unit	Tr 7 #3-M	36-17-37
Operator	Lease & Well No.	Unit	S-T-R

and my recommendations are as follows:

OK

Very truly yours

Jerry Sexton
Supervisor, District I

/bp



STATE OF NEW MEXICO
ENERGY AND MINERALS DEPARTMENT
OIL CONSERVATION DIVISION
HOBBS DISTRICT OFFICE

March 9, 1993

BRUCE KING
GOVERNOR

OIL CONSERVATION DIVISION
RECEIVED
POST OFFICE BOX 1980
HOBBS, NEW MEXICO 88240
(505) 393-6161

'93 MAR 12 AM 9 18

OIL CONSERVATION DIVISION
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:

S & J Operating Company	North Denton Wolfcamp Unit	Tr 8 #1-0	36-17-37
Operator	Lease & Well No.	Unit	S-T-R

and my recommendations are as follows:

Probably OK - (not sure what break at 2300 wms)

Very truly yours

Jerry Sexton
Supervisor, District I

/bp



STATE OF NEW MEXICO
ENERGY AND MINERALS DEPARTMENT
OIL CONSERVATION DIVISION
HOBBS DISTRICT OFFICE
March 9, 1993

OIL CONSERVATION DIVISION
RECEIVED
'93 MAR 12 AM 9 18

BRUCE KING
GOVERNOR

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

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

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

Gentlemen:

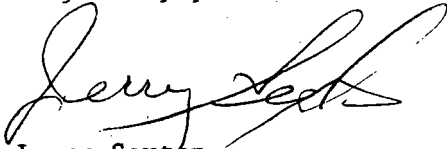
I have examined the step rate test for the:

S & J Operating Company	North Denton Wolfcamp Unit	Tr 5 #12-E	35-14-37
Operator	Lease & Well No.	Unit	S-T-R

and my recommendations are as follows:

OK

Very truly yours


Jerry Sexton
Supervisor, District I

/bp