9/9/03 IPI LR PLRO3257335290

DRC

ChevronTexaco

September 5, 2003

New Mexico Oil Conservation Division
1220 So. St. Francis Drive
Santa Fe, New Mexico 87505

RECEIVED

SEP 0 9 2003

OIL CONSERVATION DIVISION

Attn: Mr. David Catanach

RE: Injection Pressure Increase
North Vacuum Abo West Unit Well #3H
Unit Letter L, Section 15, Township 17-S, Range 34-E
Lea County, New Mexico

Dear Mr. Catanach,

ChevronTexaco is requesting permission to increase the surface injection pressure on North Vacuum Abo West Unit Well #3H (API No. 30-025-24495) from 3050 psig to 3800 psig. The surface location of this well is 1980' from the South line and 660' from the West line of Sectin 15, Unit Letter L, Township 17-S, Range 34-E, Lea County, New Mexico. The well location is shown on the surface map attached.

In April 2002, the New Mexico OCD granted approval to increase the surface injection pressure to 3050 psig based on a step rate test conducted March 7, 2002. The step rate test and the NMOCD approval are attached. After further analysis, ChevronTexaco concludes that the frac pressure on this well is greater than 3050 psig.

The step rate plot (surface pressure versus injection rate) submitted in 2002 uses a representative point for each "step." Steps 4, 5, 6, and 7 should have been omitted because the injection rate was not held constant. The next attachment, entitled "Corrected Step Rate Test," excludes these steps, and the parting pressure can clearly be seen at a surface tubing pressure of 3850 psig. In addition, there is an attachment entitled "Step Rate Test, Raw Data," which uses every point from the step rate test. This also shows the break to be around 3850 psig. As a result, ChevronTexaco is requesting permission to increase the surface injection pressure limit to 3800 psig.

It should also be noted that the majority of the wells in the field have surface pressure limits above 4000 psig. On June 6, 1997, the NMOCD granted approval to increase injection pressure on 13 wells. This approval letter is also attached. Please notice the injection pressure limit on Well #2 is 4075 psig. This well is directly at the toe of horizontal well #3H, and the two wells are completed in the same zone. The frac pressures should be very similar.

ChevronTexaco has difficulty obtaining good step rate data on the horizontal injection wells in this field. After being shut-in they will take large volumes of water for a short

time, and the pump trucks can not handle the high pressures at high rates. We hope the current data will suffice, but we are willing to try another test if you feel it is necessary.

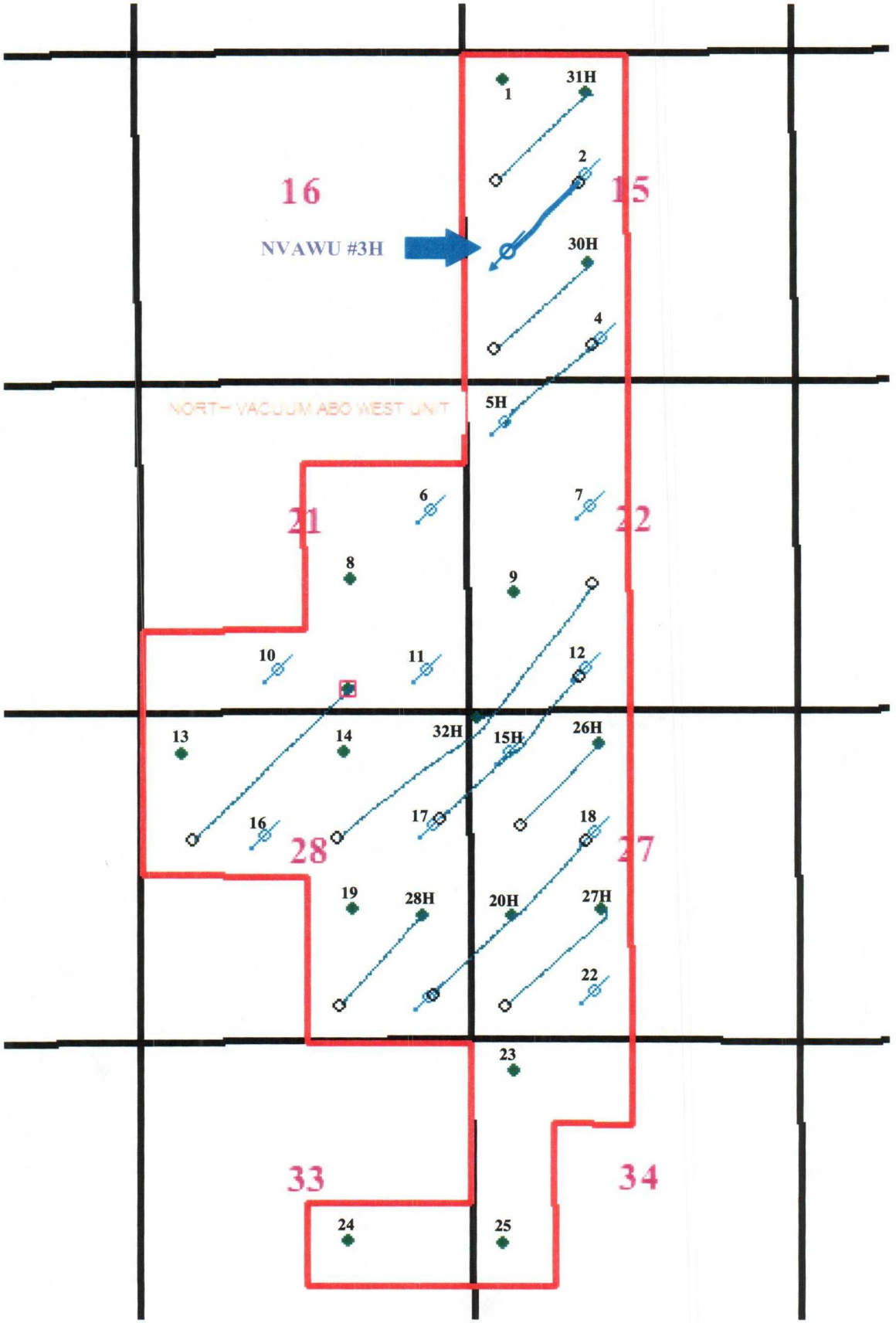
If you would like to discuss the step rate plots or I can provide you with any other information, please contact me.

Sincerely,

Garrett Luig
Petroleum Engineer
ChevronTexaco

15 Smith Road
Midland, TX 79705
Tel. (432) 687-7298
Fax. (432) 687-7871

North Vacuum Abo West Unit



PACIFIC PROCESS SYSTEMS, INC.

Electronic Data Services

Step Rate Injection Test Report

for

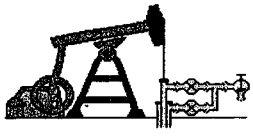
Chevron / Texaco

NVAWU #3

0

Sec.15 - T17S - R34E

03-07-02



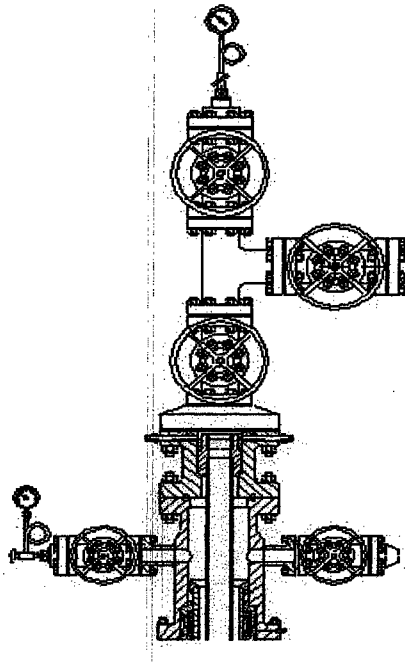


TABLE OF CONTENTS

COMPANY : Chevron / Texaco
WELL: NVAWU #3
COMPANY REP: Britton McQuien
PERFORATIONS: N/A

SERVICE DATES : 03-07-02
TEST TYPE : Step Rate
PPS TECHNICIANS : Joe Brown

DATE	TIME	REMARKS
3/7/02	9:28	Open up well with 21# at surface. Start pumping at 1770 Bbls/day.
03/07/02	10:15	Start test.
03/07/02	10:20	
03/07/02	10:25	
03/07/02	10:30	Rate #1
03/07/02	10:35	
03/07/02	10:40	
03/07/02	10:45	Rate #2
03/07/02	10:50	
03/07/02	10:55	
03/07/02	11:00	Rate #3
03/07/02	11:05	
03/07/02	11:10	
03/07/02	11:15	Rate #4
03/07/02	11:20	
03/07/02	11:25	
03/07/02	11:30	Rate #5
03/07/02	11:35	
03/07/02	11:40	
03/07/02	11:45	Rate #6
03/07/02	11:50	
03/07/02	11:55	
03/07/02	12:00	Rate #6
03/07/02	12:05	
03/07/02	12:10	
03/07/02	12:15	Rate #7
03/07/02	12:20	
03/07/02	12:25	
03/07/02	12:30	Rate #8
03/07/02	12:35	
03/07/02	12:40	
03/07/02	12:45	Rate #9
03/07/02	12:50	
03/07/02	12:55	
03/07/02	13:00	Start Fall off. Reached Truck pump limit.
03/07/02	13:01	

Phone: (505) 392-8813
Fax: (505) 392-6612

3406 Lovington Hwy.
Hobbs, NM 88240

COMPANY : Chevron / Texaco
WELL: NVAWU #3
COMPANY REP: Britton McQuien
PERFORATIONS: N/A

SERVICE DATES : 03-07-02
TEST TYPE : Step Rate
PPS TECHNICIANS : Joe Brown

DATE	TIME	REMARKS
3/7/02	9:28	Open up well with 24# at surface. Start pumping at 1770 Bbls/day.
03/07/02	10:15	Start test.
03/07/02	13:02	
03/07/02	13:03	
03/07/02	13:04	
03/07/02	13:05	
03/07/02	13:06	
03/07/02	13:07	
03/07/02	13:08	
03/07/02	13:09	
03/07/02	13:10	
03/07/02	13:15	End Test.

COMPANY : **Chevron / Texaco**
WELL: **NVAWU #3**
COMPANY REP: **Britton McQuien**
PERFORATIONS: **N/A**

SERVICE DATES : **03-07-02**
TEST TYPE : **Step Rate**
PPS TECHNICIANS : **Joe Brown**

STEP NO.	TIME	SURFACE TUBING PRESS. (psig)	CUMULATIVE VOL INJECTED (bbls)	INJECTION RATE (bbls/day)	INJECTION RATE (gpm)	MEASURED BHP (psig)
	10:15	47.6				
	10:20	101.9	4.4	1271.1	37.07	
	10:25	156.6	8.8	1268.5	37.00	
1	10:30	332.8	13.9	1470.6	42.89	
	10:35	439.7	19.5	1606.8	46.86	
	10:40	521.8	25.1	1607.3	46.88	
2	10:45	575.5	30.7	1607.2	46.88	
	10:50	875.0	37.8	2047.5	59.72	
	10:55	998.0	44.9	2048.8	59.76	
3	11:00	1048.2	52.1	2066.0	60.26	
	11:05	1364.3	60.5	2421.0	70.61	
	11:10	1469.6	69.0	2445.7	71.33	
4	11:15	1538.0	77.4	2439.4	71.15	
	11:20	1874.6	86.2	2517.5	73.43	
	11:25	1702.4	95.2	2610.4	76.14	
5	11:30	1876.7	104.6	2703.2	78.84	
	11:35	1844.4	114.3	2796.1	81.55	
	11:40	1934.5	124.2	2853.1	83.22	
6	11:45	2126.9	134.2	2877.0	83.91	
	11:50	2425.3	144.7	3003.2	87.59	
	11:55	2477.0	155.7	3168.5	92.41	
7	12:00	2563.7	166.6	3158.3	92.12	
	12:05	2916.5	178.9	3529.0	102.93	
	12:10	2972.3	191.3	3591.9	104.76	
8	12:15	3046.4	203.9	3622.2	105.65	
	12:20	3416.8	218.3	4128.3	120.41	
	12:25	3453.7	232.5	4112.7	119.95	
9	12:30	3539.1	246.8	4119.2	120.14	
	12:35	3888.4	262.3	4445.9	129.67	
	12:40	3871.7	277.8	4457.6	130.01	
10	12:45	3931.1	293.7	4585.3	133.74	
	12:50	4009.9	310.5	4846.9	141.37	
	12:55	4043.5	327.6	4922.9	143.59	

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Hobbs, NM 88240

COMPANY : Chevron / Texaco
WELL: NVAWU #3
COMPANY REP: Britton McQuien
PERFORATIONS: N/A

SERVICE DATES : 03-07-02
TEST TYPE : Step Rate
PPS TECHNICIANS : Joe Brown

STEP NO.	TIME	SURFACE TUBING PRESS. (psi)	CUMULATIVE VOL INJECTED (bbls)	INJECTION RATE (bbl/day)	INJECTION RATE (gpm)	MEASURED BHP (psi)
Falloff	13:00	4060.5	344.4	4827.3	140.80	
	13:01	2552.0				
	13:02	2529.5				
	13:03	2470.3				
	13:04	2429.4				
	13:05	2392.1				
	13:06	2358.5				
	13:07	2327.6				
	13:08	2298.8				
	13:09	2271.3				
	13:10	2247.4				
	13:15	2141.6				

Phone: (505) 392-8813
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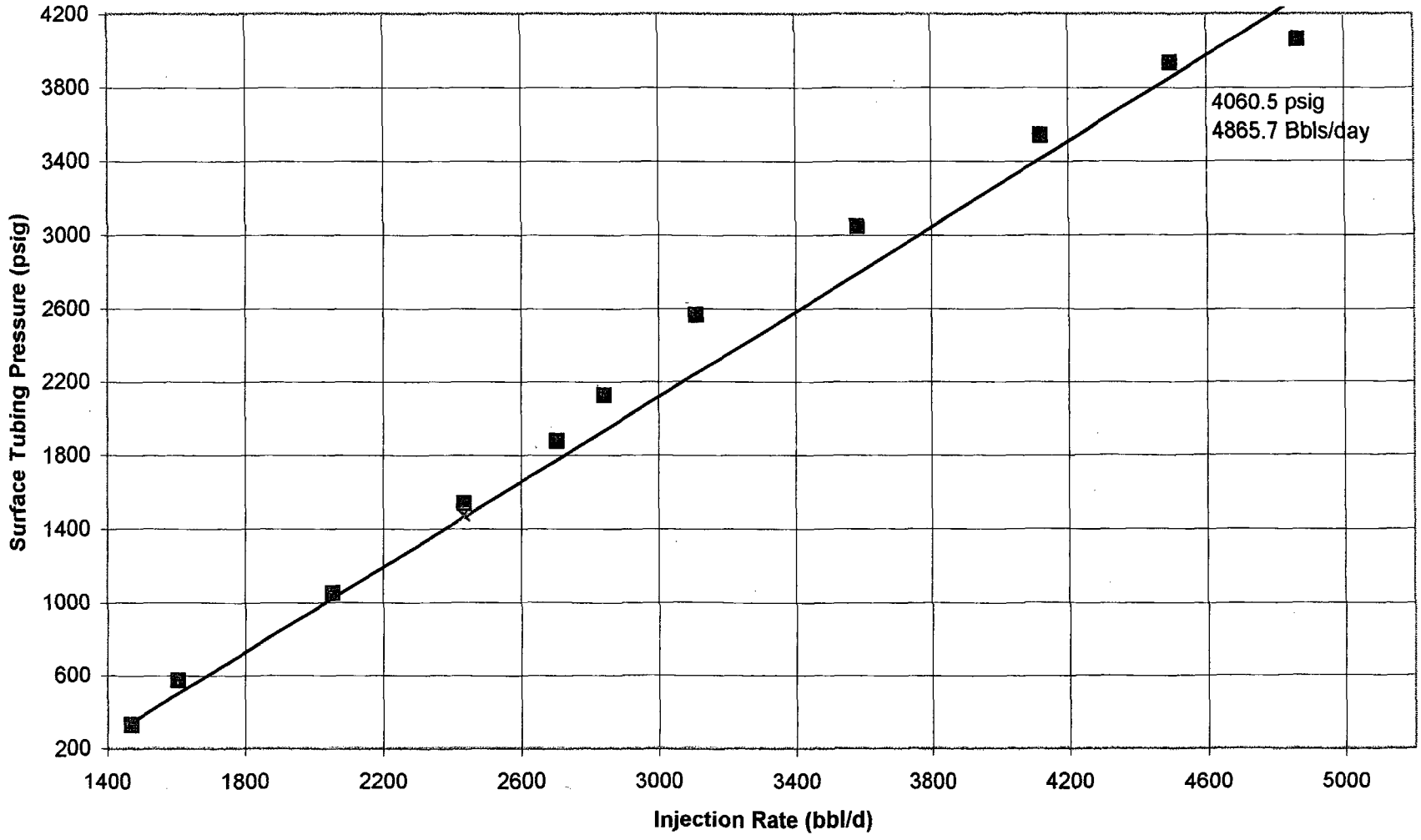
3406 Lovington Hwy.
Hobbs, NM 88240

Pacific Process Systems, Inc.

Step Rate Injection Test



Phone: (505) 392-8813
Fax: (505) 392-6612

3406 Lovington Hwy.
Hobbs, NM 88240

NEW MEXICO ENERGY, MINERALS and NATURAL RESOURCES DEPARTMENT

GARY E. JOHNSON
Governor
Betty Rivera
Cabinet Secretary

April 17, 2002

Lori Wrotenbery
Director
Oil Conservation Division

ChevronTexaco
15 Smith Road
Midland, Texas 79705

Attn: Mr. Britton McQuien

Re: Injection Pressure Increase
North Vacuum Abo West Unit No. 3
North Vacuum Abo West Unit No. 5
Lea County, New Mexico

Dear Mr. McQuien:

Reference is made to your request dated April 1, 2002, to increase the surface injection pressure on the above referenced North Vacuum Abo West (NVAW) wells. These horizontal injection wells are both located in Township 17 South, Range 34 East, NMPM, Lea County, New Mexico. This request is based on a step rate tests conducted on the wells on March 7, 2002. After reviewing test results, we feel an increase in injection pressure is justified at this time.

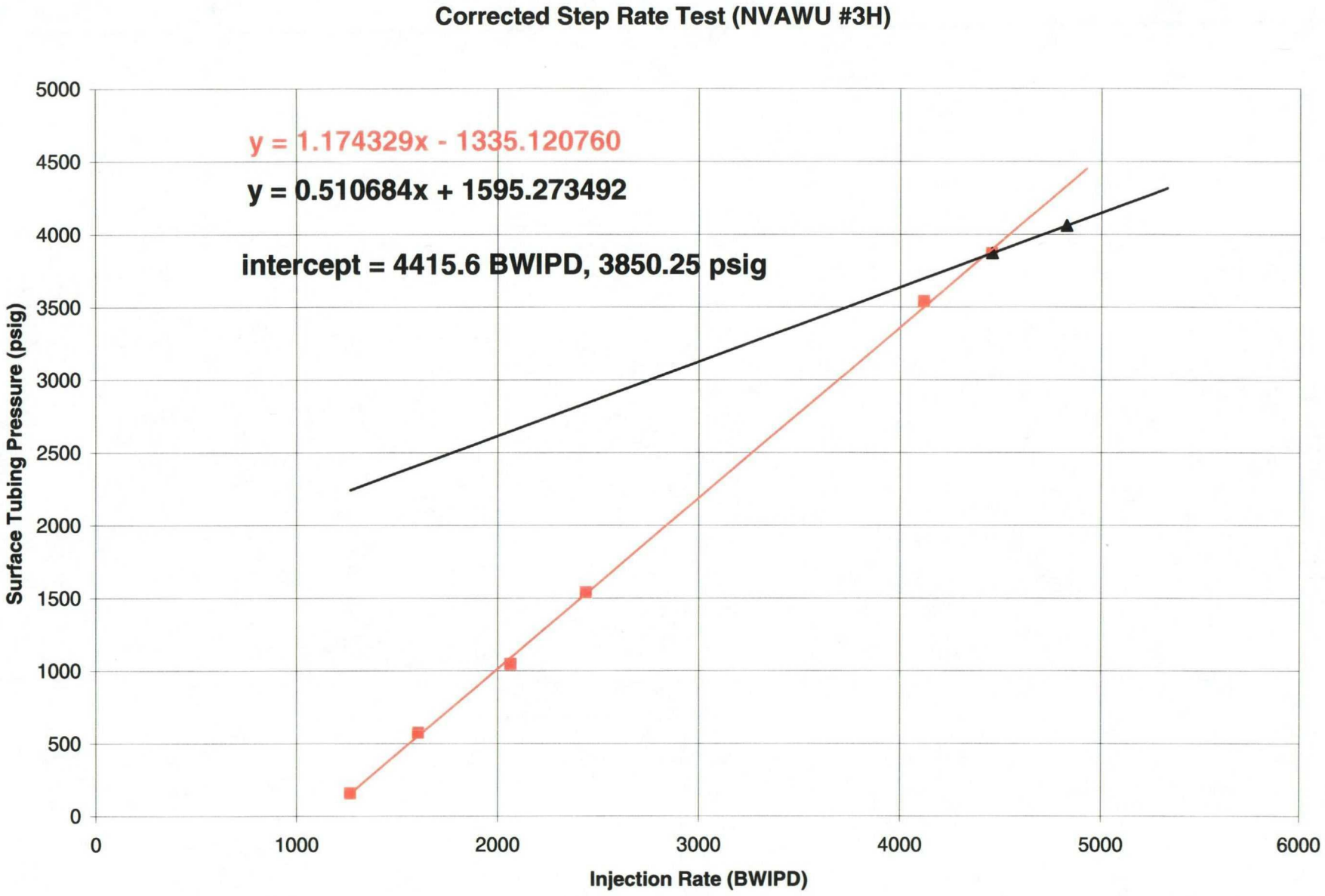
These wells are equipped with 2 3/8" coated tubing and injection packer. With size and type of tubing remaining the same, you are authorized to increase the surface injection pressure to the following:

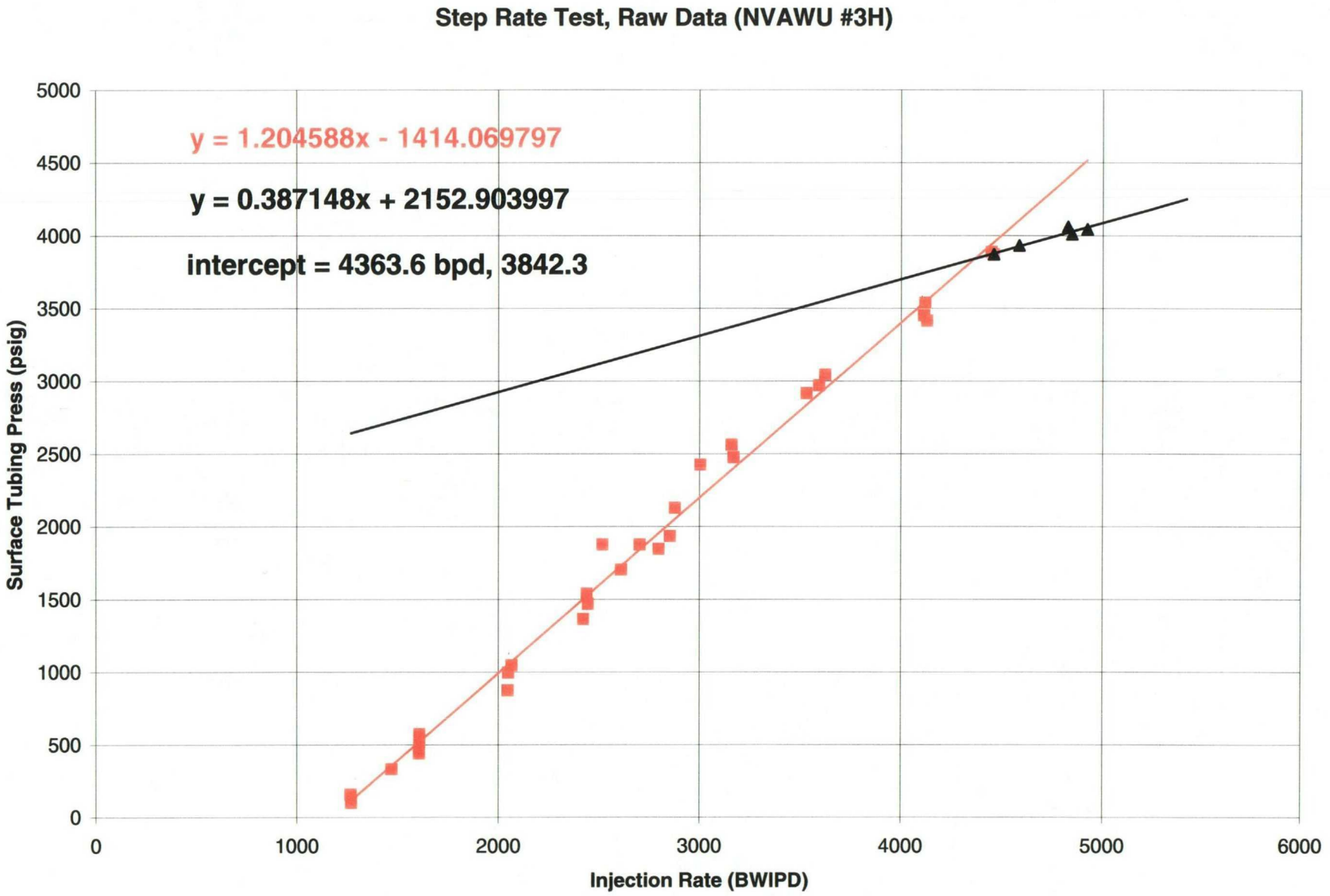
Well and Location	Maximum Surface Injection Pressure
NVAW No. 3 (API: 30-025-24495 Surface in Unit L, Section 15)	3050 PSIG Water
NVAW No. 5 (API: 30-025-24112 Surface in Unit D, Section 22)	3400 PSIG Water

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,
Lori Wrotenbery (WVJJ)
Lori Wrotenbery
Director

cc: Oil Conservation Division - Hobbs
Files: Case No. 7400; PMX 213; IPI 2002


Corrected Step Rate Test (NVAWU #3H)
y = 1.174329x - 1335.120760
y = 0.510684x + 1595.273492
intercept = 4415.6 BWIPD, 3850.25 psig
Surface Tubing Pressure (psig)
Injection Rate (BWIPD)
0
500
1000
1500
2000
2500
3000
3500
4000
4500
5000
0
1000
2000
3000
4000
5000
6000


Step Rate Test, Raw Data (NVAWU #3H)
y = 1.204588x - 1414.069797
y = 0.387148x + 2152.903997
intercept = 4363.6 bpd, 3842.3
Surface Tubing Press (psig)
Injection Rate (BWIPD)
0
500
1000
1500
2000
2500
3000
3500
4000
4500
5000
0
1000
2000
3000
4000
5000
6000

COMPANY: Chevron / Texaco
WELL: NVAWU #3
COMPANY REP: Britton McQuien
PERFORATIONS: N/A

SERVICES DATE: 03/07/02
TEST TYPE: Step Rate
PPS TECHNICIANS: Joe Brown

STEP NO.	TIME	SURFACE TUBING PRESS. (psig)	CUMULATIVE VOL INJECTED (bbls)	INJECTION RATE (bbls/day)	INJECTION RATE (gpm) (3)/34.2857	MEASURED BHP (psi)
	10:15	47.6				
	10:20	101.9	4.4	1271.1	37.07	
	10:25	156.6	8.8	1268.5	37.00	
	10:30	332.8	13.9	1470.6	42.89	
1	10:35	439.7	19.5	1606.8	46.87	
	10:40	521.8	25.1	1607.3	46.88	
	10:45	575.5	30.7	1607.2	46.88	
	10:50	875.0	37.8	2047.5	59.72	
2	10:55	998.0	44.9	2048.8	59.76	
	11:00	1048.2	52.1	2066.0	60.26	
	11:05	1364.3	60.5	2421.0	70.61	
3	11:10	1469.6	69.0	2445.7	71.33	
	11:15	1538.0	77.4	2439.4	71.15	
	11:20	1874.6	86.2	2517.5	73.43	
	11:25	1702.4	95.2	2610.4	76.14	
	11:30	1876.7	104.6	2703.2	78.84	
	11:35	1844.4	114.3	2796.1	81.55	
	11:40	1934.5	124.2	2853.1	83.22	
omit data	11:45	2126.9	134.2	2877.0	83.91	
	11:50	2425.3	144.7	3003.2	87.59	
	11:55	2477.0	155.7	3168.5	92.41	
	12:00	2563.7	166.6	3158.3	92.12	
	12:05	2916.5	178.9	3529.0	102.93	
	12:10	2972.3	191.3	3591.9	104.76	
	12:15	3046.4	203.9	3622.2	105.65	
	12:20	3416.8	218.3	4128.3	120.41	
8	12:25	3453.7	232.5	4112.7	119.95	
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10	12:50	4009.9	310.5	4846.9	141.37	
	12:55	4043.5	327.6	4922.9	143.58	
	13:00	4060.5	344.4	4827.3	140.80	

NEW MEXICO ENERGY, MINERALS
& NATURAL RESOURCES DEPARTMENT

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

June 6, 1997

Texaco Exploration & Production, Inc.
P.O. Box 730
Hobbs, New Mexico 88241-0730

Attn: Mr. Robert McNaughton

RE: Injection Pressure Increase,
North Vacuum Abo West Waterflood Unit,
Lea County, New Mexico

Dear Mr. McNaughton:

Reference is made to your request dated March 31, 1997 to increase the surface injection pressure on 13 wells in the above referenced project. This request is based on step rate tests conducted on these wells between March 4 and 26, 1997. The results of the tests have been reviewed by my staff and we feel an increase in injection pressure all of the wells is justified at this time.

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

Well and Location	*Maximum Surface Injection Pressure*
North Vacuum Abo West Unit Well No.2 Unit Letter F, Section 15, Township 15 South, Range 34 East	4075 PSIG
North Vacuum Abo West Unit Well No.4 Unit Letter N, Section 15, Township 15 South, Range 34 East	4300 PSIG
North Vacuum Abo West Unit Well No.6 Unit Letter H, Section 21, Township 15 South, Range 34 East	4300 PSIG
North Vacuum Abo West Unit Well No.7 Unit Letter F, Section 22, Township 15 South, Range 34 East	4250 PSIG
North Vacuum Abo West Unit Well No.10 Unit Letter N, Section 21, Township 15 South, Range 34 East	4500 PSIG
North Vacuum Abo West Unit Well No.11 Unit Letter P, Section 21, Township 15 South, Range 34 East	4385 PSIG

Well and Location	Maximum Surface Injection Pressure
North Vacuum Abo West Unit Well No.12 Unit Letter N, Section 22, Township 15 South, Range 34 East	4275 PSIG
North Vacuum Abo West Unit Well No.16 Unit Letter F, Section 28, Township 15 South, Range 34 East	4165 PSIG
North Vacuum Abo West Unit Well No.17 Unit Letter H, Section 28, Township 15 South, Range 34 East	4135 PSIG
North Vacuum Abo West Unit Well No.18 Unit Letter F, Section 27, Township 15 South, Range 34 East	4285 PSIG
North Vacuum Abo West Unit Well No.21 Unit Letter P, Section 28, Township 15 South, Range 34 East	4100 PSIG
North Vacuum Abo West Unit Well No.22 Unit Letter N, Section 27, Township 15 South, Range 34 East	4110 PSIG
North Vacuum Abo West Unit Well No.25 Unit Letter L, Section 34, Township 18 South, Range 34 East	3870 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

cc: Oil Conservation Division - Hobbs
Files: 3rd Q97 PSI-X; Case File No.7400