

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 - 173
North Vacuum Abo West Unit No. 3
North Vacuum Abo West Unit No. 5
Lea County, New Mexico

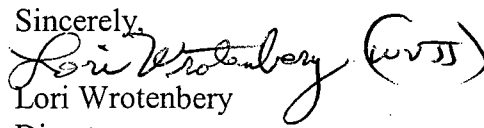
Dear Mr. McQuien:

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
Director

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

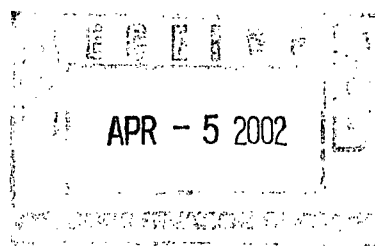
Texaco Exploration and
Production Inc.
Enhanced Recovery
15 Smith Road
Midland, TX 79705
Tel 915-687-7218
Fax 915-687-7187

Britton McQuien
Petroleum Engineer

April 3, 2002

ChevronTexaco

New Mexico Energy, Minerals, and Natural Resources Department
Oil Conservation Division
Attn: David Catanach
1220 South St. Francis Drive
Santa Fe, New Mexico 87505



Subject: Request increase in surface injection for wells North Vacuum Abo West Unit #3 and #5

Dear Mr. Catanach:

Please accept this corrected application for increased surface injection pressures in place of the application filed on March 25, 2002. The correct API Number for North Vacuum Abo West Unit #5 should be 3002524112.

Well Number	API Number	Location	Requested Max Surface Water Injection Pressure	Requested Max Surface CO ₂ Injection Pressure
3	3002524495	Unit L, Section 15, T-17S, R-34E	3050 PSIG	N/A
5	3002524112	Unit D, Section 2, T-17S, R-34E	3400 PSIG	N/A

I apologize for any confusion this may have caused. If you have any questions or comments about this request, please contact Britton M. McQuien @ (915) 687-7218.

Very Truly Yours,

Britton M. McQuien
Petroleum Engineer

cc: Chris Williams

Jones, William V

From: Mcquien, Britton M [mcquibm@chevrontexaco.com]
Sent: Wednesday, April 17, 2002 9:47 AM
To: 'wvjones@state.nm.us'
Subject: NVAWU Step rate info

NVAWU #3: 2-3/8" Rice duoline tubing w/ pkr set @ 8651'

NVAWU #5: 2-3/8" Rice duoline tubing w/ pkr set @ 8652'

I'm not sure what the exact shut-in pressures for these wells were, but they were not taking any water at the previously approved injection pressure of ~1730 psi. If you need any more information, let me know.

Thanks

Britton McQuien
ChevronTexaco/Permian EOR Team
(915) 687-7218

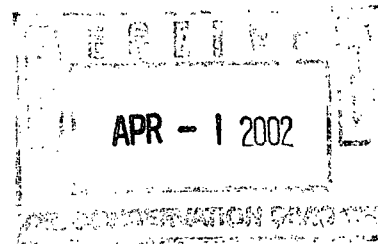
pKRV0209238867

1P1-173 NA

Texaco Exploration and
Production Inc.
Enhanced Recovery
15 Smith Road
Midland, TX 79705
Tel 915-687-7218
Fax 915-687-7187

Britton McQuien
Petroleum Engineer

ChevronTexaco



March 28, 2002

New Mexico Energy, Minerals, and Natural Resources Department
Oil Conservation Division
Attn: David Catanach
1220 South St. Francis Drive
Santa Fe, New Mexico 87505

Subject: Request increase in surface injection for wells North Vacuum Abo West Unit #3 and #5

Dear Mr. Catanach:

Texaco Exploration and Production Inc. respectfully requests increases in injection pressure for the following North Vacuum Abo West Unit wells:

Well Number	API Number	Location	Requested Max Surface Water Injection Pressure	Requested Max Surface CO ₂ Injection Pressure
3	3002524495	Unit L, Section 15, T-17S, R-34E	3050 PSIG	N/A
5	3002535562 30-025-24112	Unit D, Section 22, T-17S, R-34E	3400 PSIG	N/A

Enclosed, please find step rate tests for the wells listed above. In addition, a plot of bottom-hole pressure versus rate has also been included using the Hazen Williams Formula to account for frictional pressure loss. This calculation was performed because the surface pressures did not plot linearly versus rate, indicating that frictional pressure was significantly impacting the surface pressures.

Case No: 7400
1P1 2000
PMX 213

March 28, 2002

Page 2

ChevronTexaco

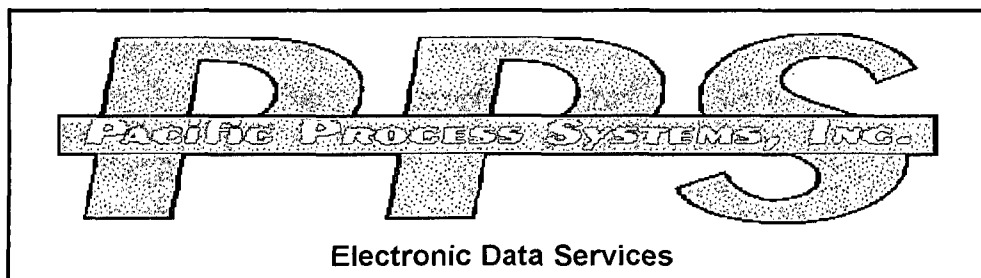
If you have any questions or comments about this request, please contact Britton M. McQuien @ (915) 687-7218.

Very Truly Yours,

A handwritten signature in cursive script that reads "Britton M. McQuien".

Britton M. McQuien
Texaco Exploration and Production, Inc.
15 Smith Road
Midland, Texas 79705

cc: Chris Williams



Step Rate Injection Test Report

for

Chevron / Texaco

NVAWU #3

0

Sec. 15 - T17S - R34E

03-07-02

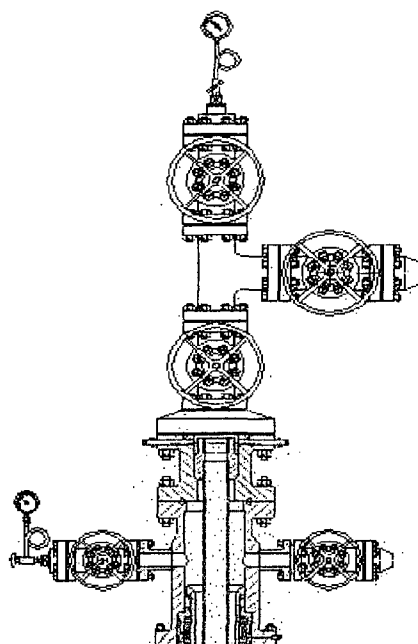
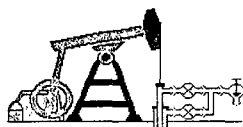


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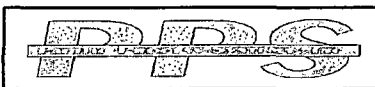
SECTION I	CONTENTS
SECTION II	SEQUENCE OF EVENTS
SECTION III	DATA REPORT
SECTION IV	CHART



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	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	



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

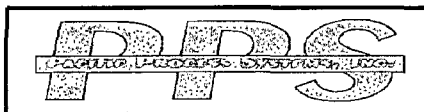
DATE	TIME	REMARKS
3/7/02	9:28	Open up well with 24# at surface. Start pumping at 1770 BBls/day.
03/07/02	10:15	Start test.
03/07/02	13:02	
03/07/02	13:03	
03/07/02	13:04	
03/07/02	13:05	
03/07/02	13:06	
03/07/02	13:07	
03/07/02	13:08	
03/07/02	13:09	
03/07/02	13:10	
03/07/02	13:15	End Test.



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 (bbbls)	INJECTION RATE (bbbls/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	
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	



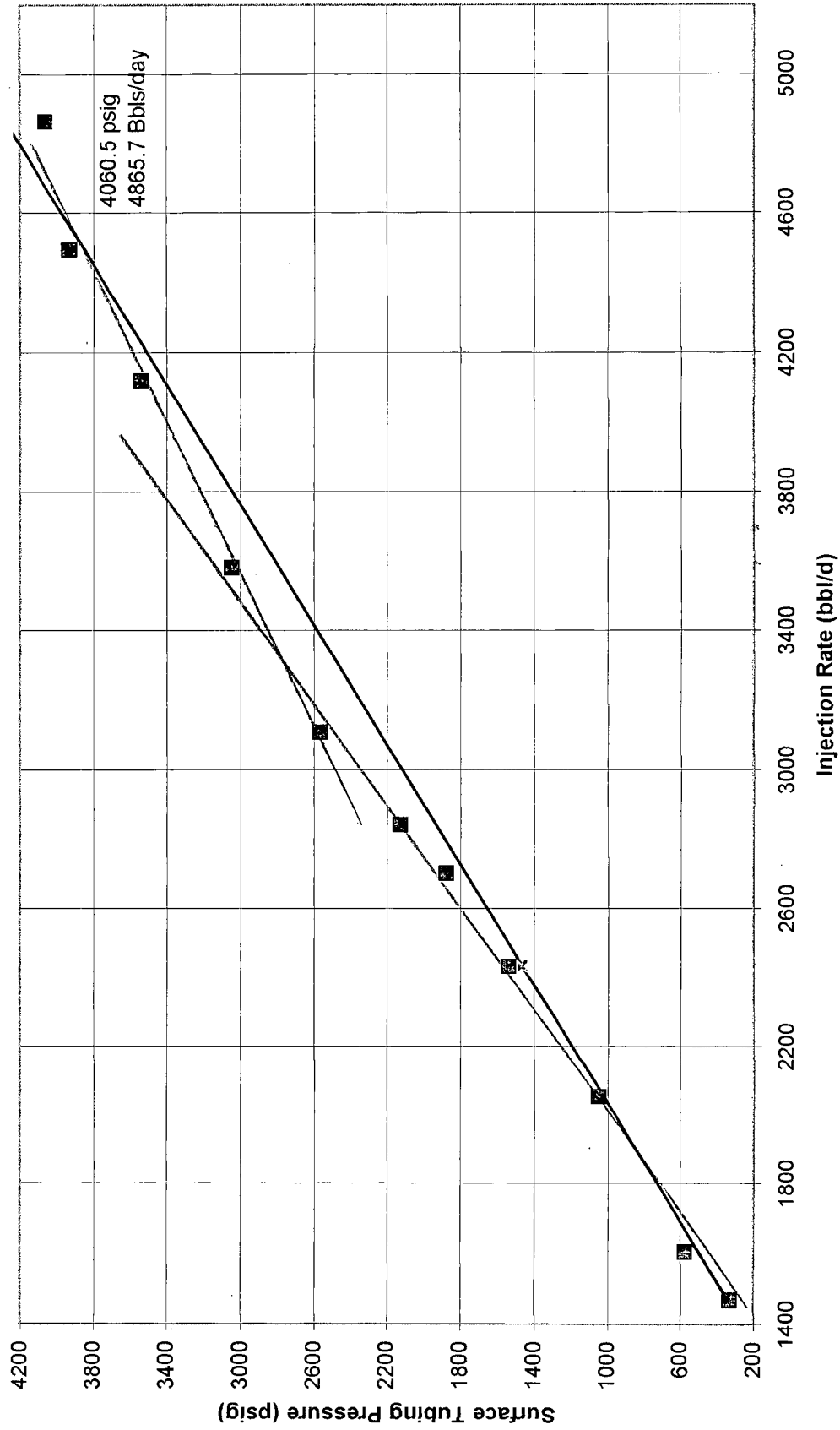
COMPANY : Chevron / Texaco
 WELL: NVAWU #3
 COMPANY REP: Britton McQuien
 PERFORATIONS: N/A

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

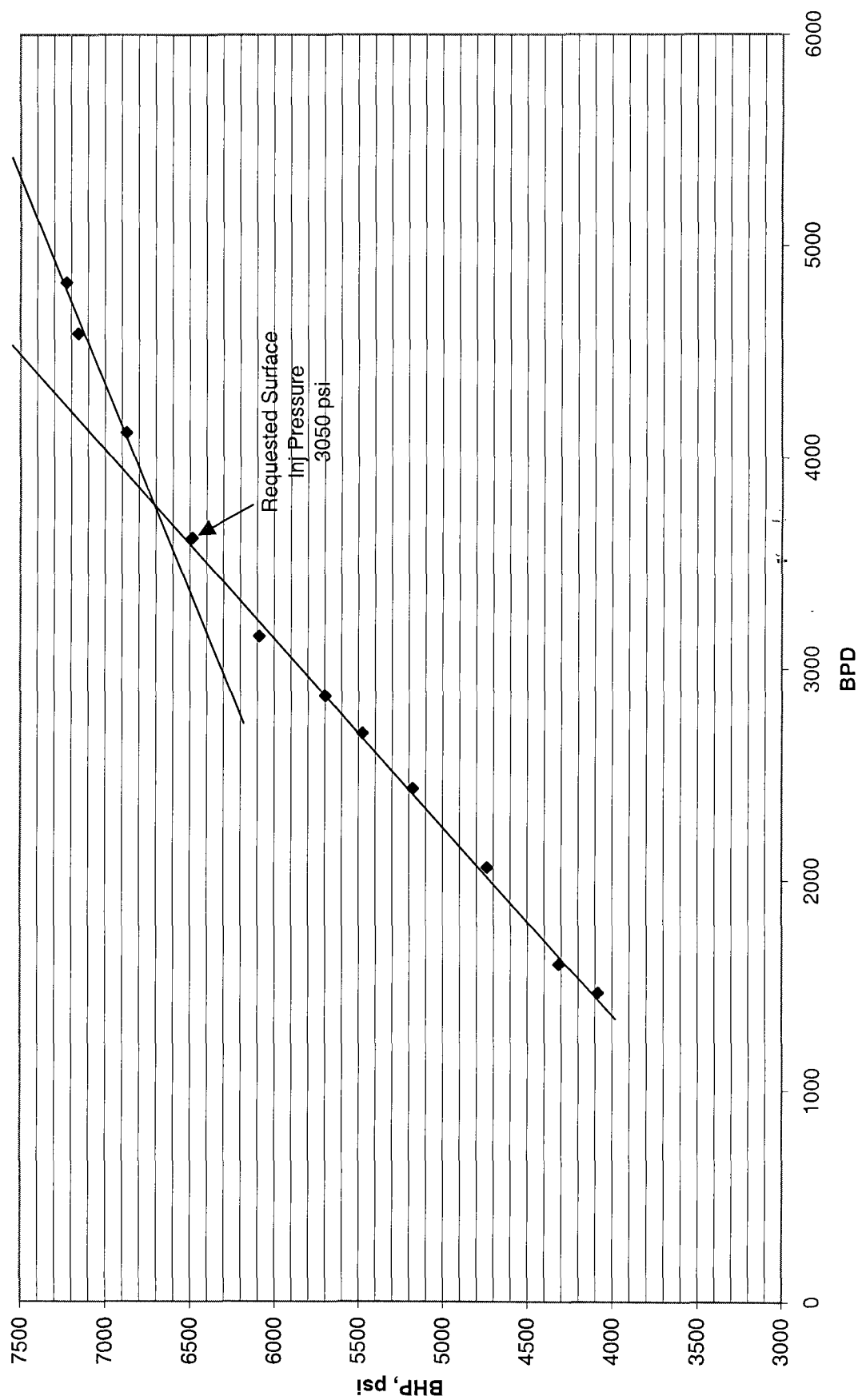
STEP NO.	TIME	SURFACE TUBING PRESS. (psig)	CUMULATIVE VOL INJECTED (bbls)	INJECTION RATE (bbls/day)	INJECTION RATE (gpm) (31/34:2857)	MEASURED BHP (psi)
Falloff	13:00	4060.5	344.4	4827.3	140.80	
	13:01	2552.0				
	13:02	2529.5				
	13:03	2470.3				
	13:04	2429.4				
	13:05	2392.1				
	13:06	2358.5				
	13:07	2327.6				
	13:08	2298.8				
	13:09	2271.3				
	13:10	2247.4				
	13:15	2141.6				

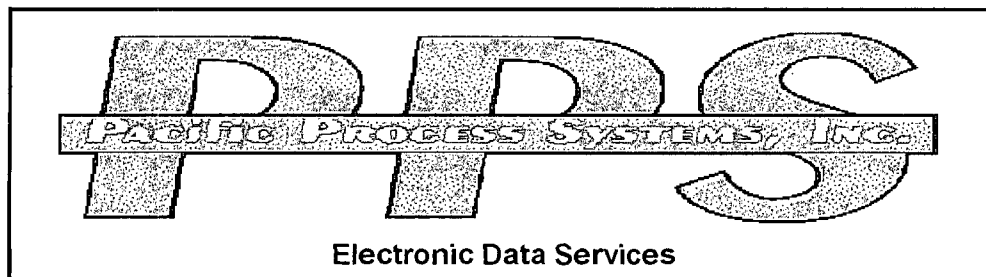
Pacific Process Systems, Inc.

Step Rate Injection Test



NVAWU #3





Step Rate Injection Test Report

for

Chevron / Texaco

NVAWU #5

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Sec.22 - T17S - R34E

03-06-02

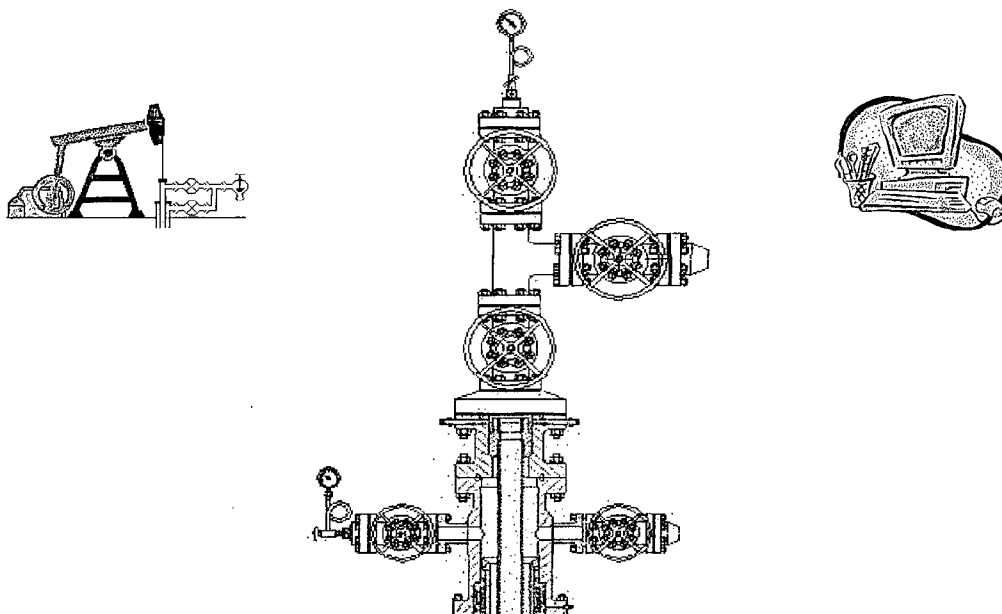
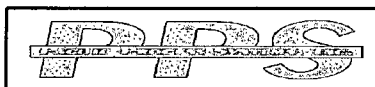


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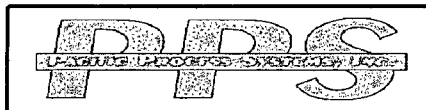
SECTION I	CONTENTS
SECTION II	SEQUENCE OF EVENTS
SECTION III	DATA REPORT
SECTION IV	CHART



COMPANY : Chevron / Texaco
WELL: NVAWU #5
COMPANY REP: Britton McQuien
PERFORATIONS: N/A

SERVICE DATES : 03-06-02
TEST TYPE : Step Rate
PPS TECHNICIANS : Joe Brown

DATE	TIME	REMARKS
3/6/02	10:13	Open up well with 1175# surface pressure. Start pumping at 750 Bbls/day.
03/06/02	10:30	
03/06/02	10:35	
03/06/02	10:40	
03/06/02	10:45	Start test. Rate #1.
03/06/02	10:50	
03/06/02	10:55	
03/06/02	11:00	Rate #2.
03/06/02	11:05	
03/06/02	11:10	
03/06/02	11:15	Rate #3.
03/06/02	11:20	
03/06/02	11:25	
03/06/02	11:30	Rate #4.
03/06/02	11:35	
03/06/02	11:40	
03/06/02	11:45	Rate #5.
03/06/02	11:50	
03/06/02	11:55	
03/06/02	12:00	Rate #6.
03/06/02	12:05	
03/06/02	12:10	
03/06/02	12:15	Rate #7.
03/06/02	12:20	
03/06/02	12:25	
03/06/02	12:30	Start Fall off.
03/06/02	12:31	



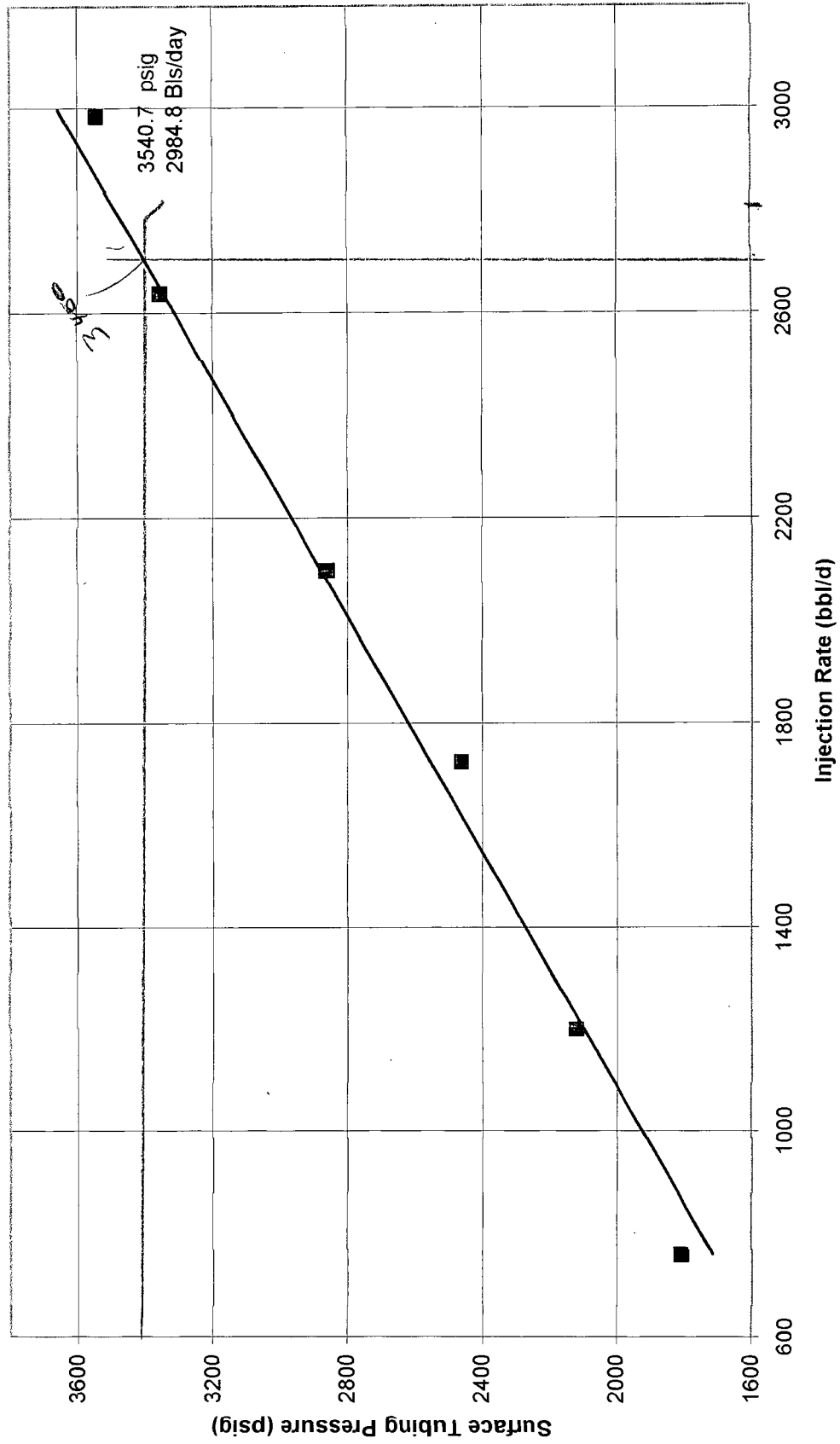
COMPANY : Chevron / Texaco
 WELL: NVAWU #5
 COMPANY REP: Britton McQuien
 PERFORATIONS: N/A

SERVICE DATES : 03-06-02
 TEST TYPE : Step Rate
 PPS TECHNICIANS : Joe Brown

STEP NO.	TIME	SURFACE TUBING PRESS.	CUMULATIVE VOL INJECTED	INJECTION RATE	INJECTION RATE (gpm)	MEASURED BHP
		(psig)	(bbls)	(bbls/day)	(3/34/2857)	(psi)
	10:30	1435.9				
	10:35	1531.8	2.6	754.1	22.00	
	10:40	1613.5	5.2	753.2	21.97	
1	10:45	1662.6	7.9	761.2	22.20	
	10:50	1713.3	10.5	762.0	22.23	
	10:55	1761.9	13.2	761.9	22.22	
2	11:00	1807.6	15.8	753.7	21.98	
	11:05	1929.8	19.8	1149.4	33.52	
	11:10	2021.1	24.1	1232.7	35.95	
3	11:15	2120.7	28.3	1223.7	35.69	
	11:20	2321.8	34.1	1667.8	48.64	
	11:25	2403.6	40.2	1751.4	51.08	
4	11:30	2461.7	46.3	1755.8	51.21	
	11:35	2693.8	53.5	2091.4	61.00	
	11:40	2732.4	60.8	2104.1	61.37	
5	11:45	2860.0	68.1	2099.0	61.22	
	11:50	3062.3	77.0	2557.7	74.60	
	11:55	3157.5	86.2	2643.9	77.11	
6	12:00	3356.2	95.6	2717.3	79.25	
	12:05	3392.1	106.0	2991.3	87.25	
	12:10	3498.2	116.4	2990.9	87.23	
7	12:15	3540.7	126.7	2972.3	86.69	
	12:20	3667.3	137.1	2989.5	87.19	
	12:25	3751.4	147.4	2974.8	86.77	
Falloff	12:30	3768.5	157.9	3025.5	88.24	
	12:31	3027.8				

Pacific Process Systems, Inc.

Step Rate Injection Test



NVAWU #5

