DATE IN 3/21/13	SUSPENSE	ENGINEER DWJ	LOGGED IN	TYPE IPI 281-A	APP NO DWJ 1308252223

ABOVE THIS LINE FOR DIVISION USE ONLY

NEW MEXICO OIL CONSERVATION DIVISION
- Engineering Bureau -
1220 South St. Francis Drive, Santa Fe, NM 87505

ADMINISTRATIVE APPLICATION CHECKLIST

THIS CHECKLIST IS MANDATORY FOR ALL ADMINISTRATIVE APPLICATIONS FOR EXCEPTIONS TO DIVISION RULES AND REGULATIONS WHICH REQUIRE PROCESSING AT THE DIVISION LEVEL IN SANTA FE

Application Acronyms:

[NSL-Non-Standard Location] [NSP-Non-Standard Proration Unit] [SD-Simultaneous Dedication]
[DHC-Downhole Commingling] [CTB-Lease Commingling] [PLC-Pool/Lease Commingling]
[PC-Pool Commingling] [OLS - Off-Lease Storage] [OLM-Off-Lease Measurement]
[WFX-Waterflood Expansion] [PMX-Pressure Maintenance Expansion]
[SWD-Salt Water Disposal] [IPI-Injection Pressure Increase]
[EOR-Qualified Enhanced Oil Recovery Certification] [PPR-Positive Production Response]

[1] **TYPE OF APPLICATION** - Check Those Which Apply for [A] 30-015-26764 Chevron East Loving SWD #1

[A] Location - Spacing Unit - Simultaneous Dedication
☐ NSL ☐ NSP ☐ SD

Check One Only for [B] or [C]

[B] Commingling - Storage - Measurement
☐ DHC ☐ CTB ☐ PLC ☐ PC ☐ OLS ☐ OLM

[C] Injection - Disposal - Pressure Increase - Enhanced Oil Recovery
☐ WFX ☐ PMX ☐ SWD ☑ IPI ☐ EOR ☐ PPR

[D] Other: Specify _____

[2] **NOTIFICATION REQUIRED TO:** - Check Those Which Apply, or Does Not Apply

[A] ☐ Working, Royalty or Overriding Royalty Interest Owners

[B] ☐ Offset Operators, Leaseholders or Surface Owner

[C] ☐ Application is One Which Requires Published Legal Notice

[D] ☐ Notification and/or Concurrent Approval by BLM or SLO
U.S. Bureau of Land Management - Commissioner of Public Lands, State Land Office

[E] ☐ For all of the above, Proof of Notification or Publication is Attached, and/or,

[F] ☐ Waivers are Attached

[3] **SUBMIT ACCURATE AND COMPLETE INFORMATION REQUIRED TO PROCESS THE TYPE OF APPLICATION INDICATED ABOVE.**

[4] **CERTIFICATION:** I hereby certify that the information submitted with this application for administrative approval is **accurate** and **complete** to the best of my knowledge. I also understand that **no action** will be taken on this application until the required information and notifications are submitted to the Division.

Note: Statement must be completed by an individual with managerial and/or supervisory capacity.

Alyssa Davanzo	Alyssa Davanzo	Petroleum Engineer	3/21/13
Print or Type Name	Signature	Title	Date

Alyssa.Davanzo@chevron.com
e-mail Address

Jones, William V., EMNRD

From: Davanzo, Alyssa K. <Alyssa.Davanzo@chevron.com>
Sent: Thursday, March 21, 2013 10:40 AM
To: Jones, William V., EMNRD
Subject: East Loving SWD-Step Rate Test
Attachments: IPI Order-East Loving.pdf

Hi Will,

Here is the administrative checklist and application to increase the maximum injection pressure on the East Loving SWD #1 based on the results from the current step rate test. Please let me know if you need anything else!

Thanks!

Alyssa Davanzo
Production Engineer

Chevron
Eunice/Carslbad, NM Team
15 Smith Rd., Midland, TX 79705
Alyssa.Davanzo@Chevron.com
Telephone 432.687.7659

Administrative Order IPI
March 21, 2013

New Mexico Oil Conversations Division
Attn: William Jones
1200 South St. Francis Drive,
Santa Fe, NM 87505

RE: Injection Pressure Increase Request
Disposal Permit: SWD Order No. R-9509, Case No. 10307, Pool: Delaware
Current allowable surface pressure: 1,150 psi
East Loving SWD No. 1
API: 30-015-26764
UNIT A, SEC 15-23S-28E, 1157 FNL & 491 FEL
Eddy County, NM

CHEVRON U.S.A. INC (4323)

To 1400psi

Dear William Jones,

According to the step rate test performed on the East Loving SWD No. 1 on March 8th, 2013, Chevron Corporation requests to increase the maximum allowable injection pressure based on your analysis of the test.

281 4/11/07 4000'-4450'

Pkr @ 4060'

The East Loving SWD #1 was permitted to dispose of produced water in the perforated Delaware zone, 4,216'-4,537'. According to the IPI Order approved by the NMOCD on April 26th, 2007, the maximum ~~allowable~~ surface pressure is currently ~~1,105~~ 1150 psi. The information is this package includes: the current wellbore diagram, the graphical analysis collected by Cardinal Surveys and the step rate test procedure.

(1400)

Deeper Than Permitted

*Note: The 2-7/8" OD tubing used to perform the step rate test is the same size as the injection tubing.

Please contact me at (432) 387-7659 if you have further questions.

Thank you for your time,

Case 10307
R-9509 5/22/91 (800psi)
approx 4000'-4450' Cherry C.
2 7/8 @ 3950'

underlying Brushy C. Producers
6,000' - 6,200'

Alyssa Davanzo
Petroleum Engineer
Chevron Corp.
MCBU

STEP RATE TEST PROCEDURE:

1. Ensure that the well has been shut in for 2 days prior to the test. For verification call Production Engineer, Alyssa Davanzo, at (720) 244-4417 or (432) 687-7659.

2. MIRU Cardinal Surveys E-Line & Flow control trailer. RU pump truck and transport.

3. NU lubricator and test to 4500 psi.

4. RIH BH pressure gauge using slickline operations to ~4377', the midpoint of the perforations.

5. Begin conducting step rate test. Maintain a stable rate of 100 BWIPD for 10 minutes and wait for the pressure to stabilize before continuing the test.

6. Pump each 10 minute interval at the following injection rates: 250 BPD, 500 BPD, 1000 BPD, 1250 BPD, 1500 BPD, 2000 BPD, 2500 BPD and 3000 BPD. Injection rates may vary based on collected data from the previous step and the estimated frac pressure.

7. Record stabilized pressure and injection rate for each step and chart results.

8. POOH with BH pressure gauge.

9. ND lubricator.

10. RDMO Cardinal Surveys and pump truck.

Step Rate Test

Cardinal Surveys Company

8-Mar-13

Chevron U.S.A. Inc
Well: East Loving No.1 SWD
Field;
County: Eddy, N.M.

SC60171
File No. 21,171

Well Did Not Fracture, Pump Truck Reached 2500 BPD Limit

Downhole PSI Tool Ser. No. CSC2601
Surface PSI Gauge Ser. No. CSC 2701
Tool @ 4,350'

	Start	End	Rate	
1	7:20 AM	8:30 AM	0	4,350'
2	8:30 AM	9:00 AM	100	
3	9:00 AM	9:30 AM	200	
4	9:30 AM	10:00 AM	300	
5	10:00 AM	10:30 AM	500	
6	10:30 AM	11:00 AM	700	
7	11:00 AM	11:30 AM	900	
8	11:30 AM	12:00 PM	1400	
9	12:00 PM	12:15 PM	1900	
10				
11				
12				
13				
14				
15				
16				
17				
18				

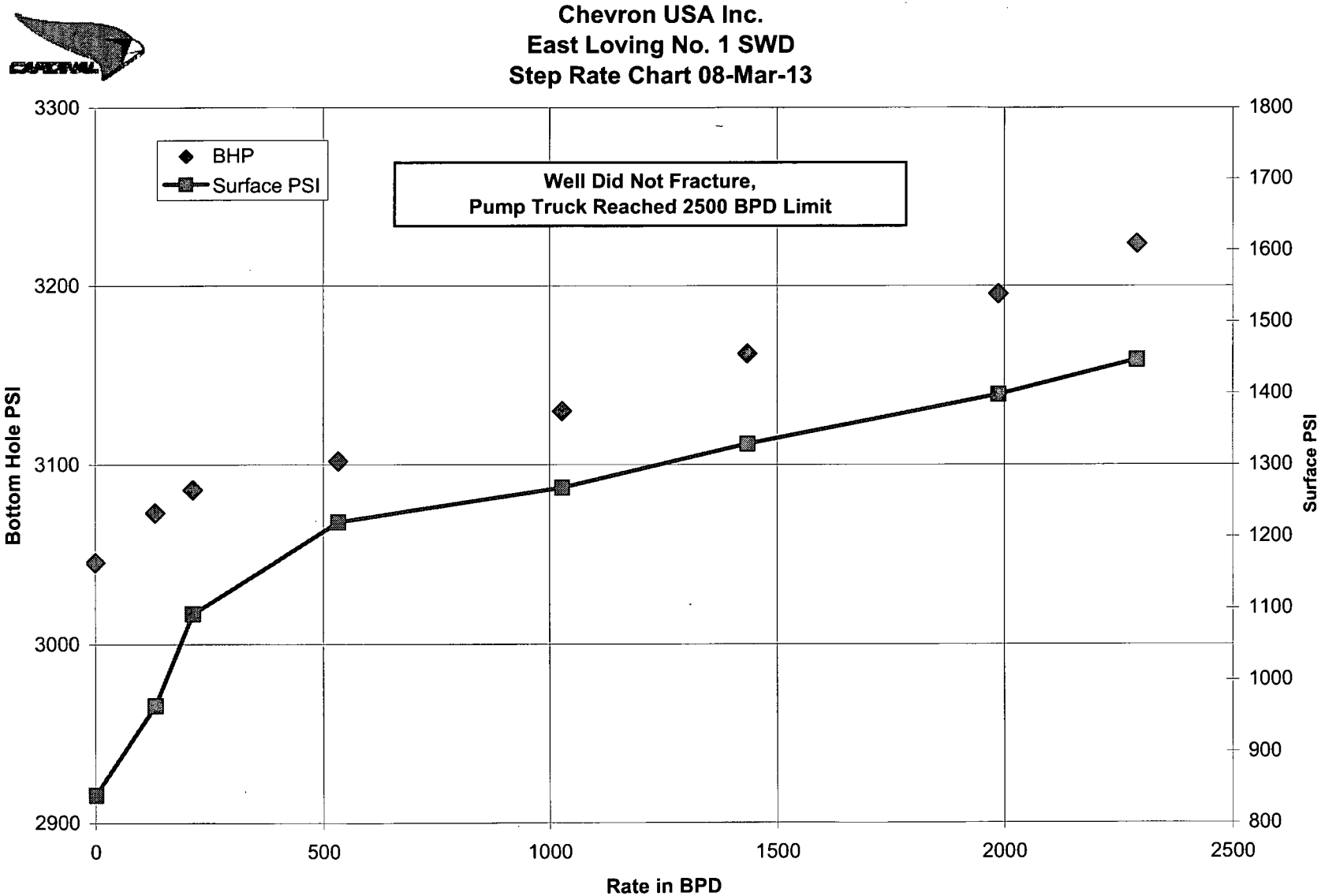
Step Rate Test
8-Mar-13

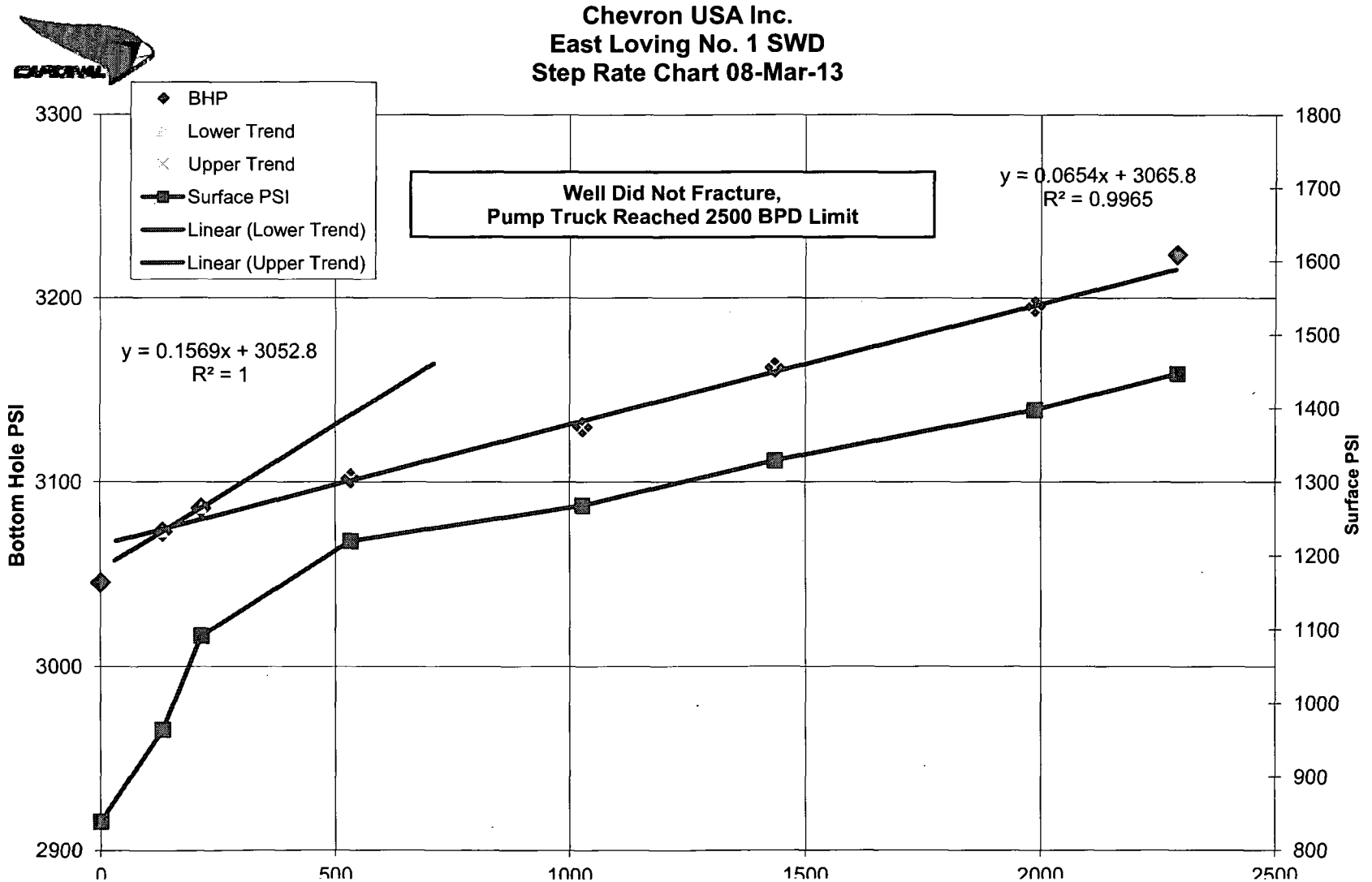
Chevron USA Inc.
Well: East Loving No.1 SWD
Field:
Location: Eddy, N.M.

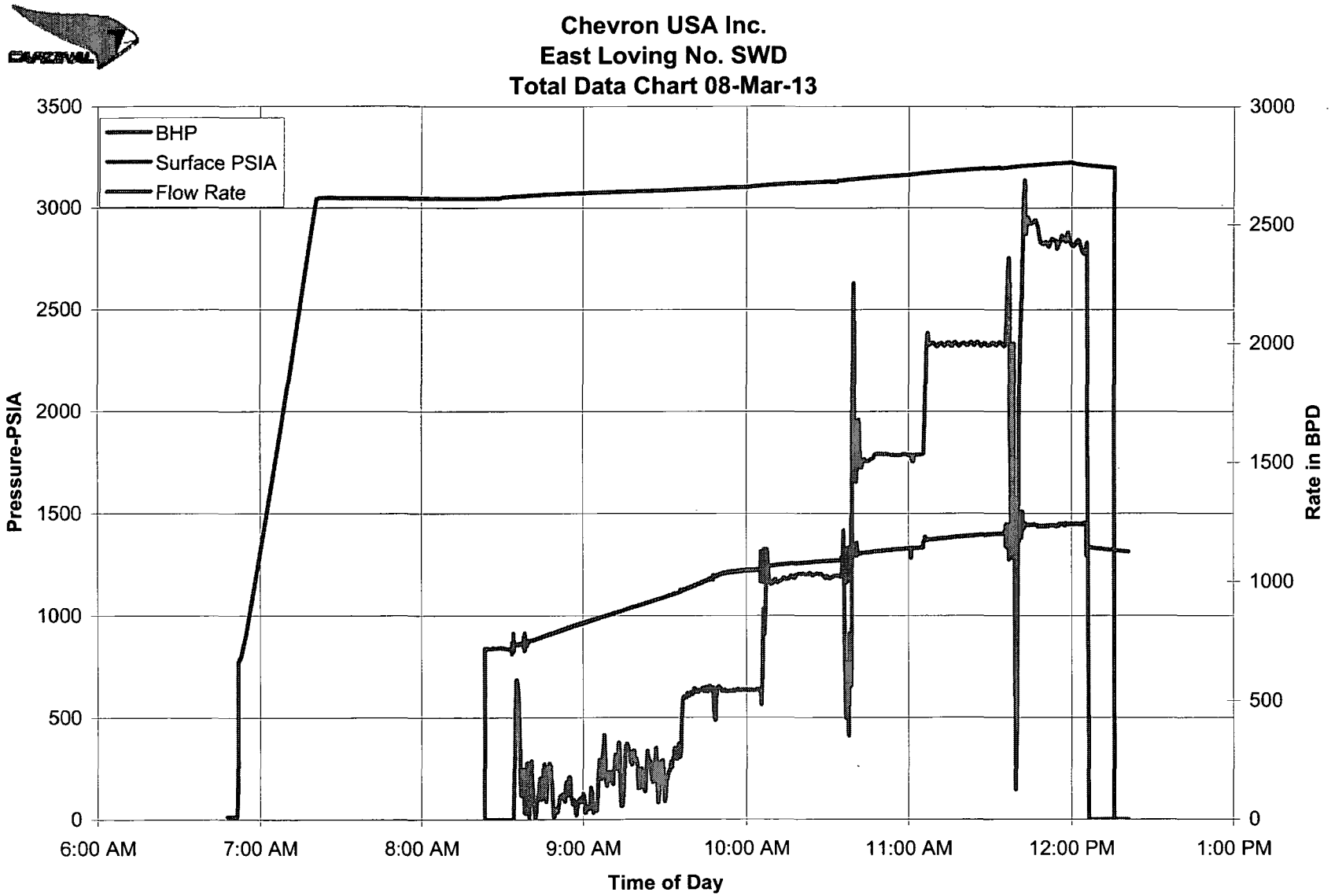
	S Time	E Time	D Time Min	Last Rate BPD	Step BPD	BHP PSIA	Surf PSIA	Cum BBL	Delta BBL	Avg. BPD	Lower Trend	Upper Trend
1	7:20 AM	8:30 AM	70	0	0	3045.5	839.1	0	0	0		
2	8:30 AM	9:00 AM	30	100	100	3073.1	964	2.7	2.7	130		
3	9:00 AM	9:30 AM	30	250	150	3085.9	1092	7.1	4.4	211		
4	9:30 AM	10:00 AM	30	500	250	3101.9	1220	18.2	11.1	533		
5	10:00 AM	10:30 AM	30	1000	500	3129.9	1268	39.6	21.4	1027		
6	10:30 AM	11:00 AM	30	1500	500	3162.1	1329	69.5	29.9	1435		
7	11:00 AM	11:30 AM	30	2000	500	3195.5	1398	110.9	41.4	1987		
8	11:30 AM	12:00 PM	30	2500	500	3223.6	1447	158.6	47.7	2290		
9	12:00 PM	12:15 PM	15	0	0	3198.4	1313.8	110.4	47.7	0		
10												
11												
12												
13												
14												
15												
16												

$\approx 50 = 1400$ psi / 4216 = 0,33 GRADIENT

intersect	#DIV/0!	BPD
BHP PSI	#DIV/0!	PSIA


Chevron USA Inc.
East Loving No. 1 SWD
Step Rate Chart 08-Mar-13
BHP
Surface PSI
Well Did Not Fracture,
Pump Truck Reached 2500 BPD Limit
Bottom Hole PSI
Surface PSI
Rate in BPD
3300
3200
3100
3000
2900
1800
1700
1600
1500
1400
1300
1200
1100
1000
900
800
0
500
1000
1500
2000
2500


Chevron USA Inc.
East Loving No. 1 SWD
Step Rate Chart 08-Mar-13
BHP
Lower Trend
Upper Trend
Surface PSI
Linear (Lower Trend)
Linear (Upper Trend)
Well Did Not Fracture,
Pump Truck Reached 2500 BPD Limit
y = 0.0654x + 3065.8
R² = 0.9965
y = 0.1569x + 3052.8
R² = 1
Bottom Hole PSI
Surface PSI
3300
3200
3100
3000
2900
1800
1700
1600
1500
1400
1300
1200
1100
1000
900
800
0
500
1000
1500
2000
2500


Chevron USA Inc.
East Loving No. SWD
Total Data Chart 08-Mar-13
BHP
Surface PSIA
Flow Rate
Pressure-PSIA
Rate in BPD
Time of Day
3500
3000
2500
2000
1500
1000
500
0
6:00 AM
7:00 AM
8:00 AM
9:00 AM
10:00 AM
11:00 AM
12:00 PM
1:00 PM

Current Wellbore Schematic

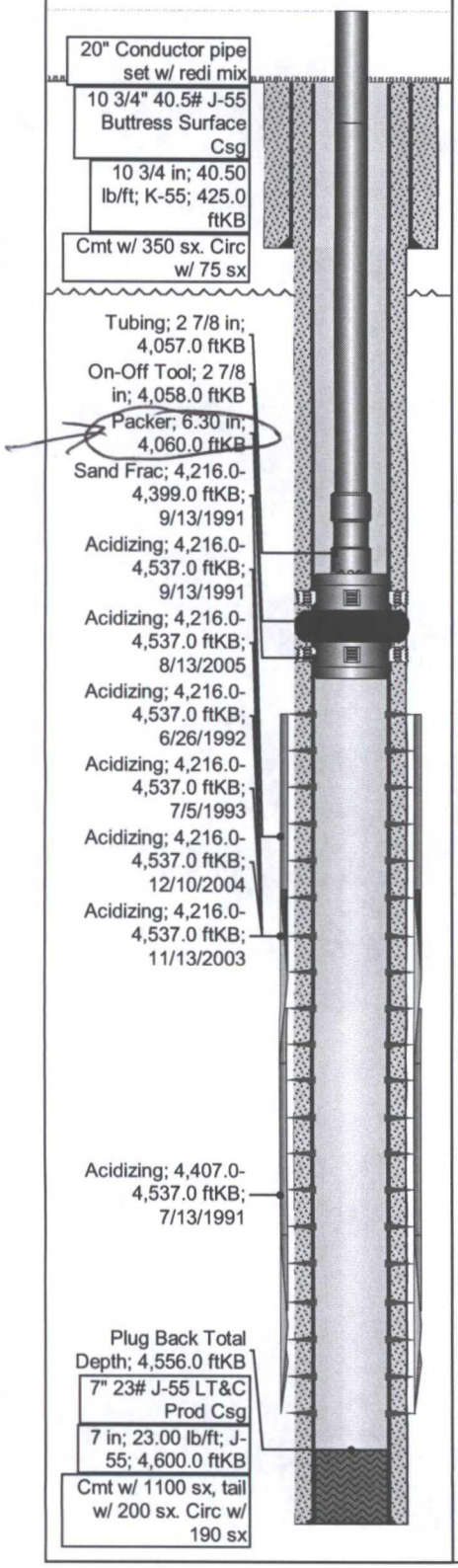
WELL (PN): EAST LOVING SWD 1(CVX) (891227)
FIELD OFFICE: BRG - BRG PETROLEUM
FIELD: East Loving
STATE / COUNTY: NEW MEXICO / EDDY
LOCATION: SEC 15-23S-28E, 1157 FNL & 491 FEL
ROUTE: HOB-NM-ROUTE 22- DAVID CHAVARIA
ELEVATION: GL: 3,001.0 KB: 3,014.0 KB Height: 13.0
DEPTHS: TD: 4,600.0

Chesapeake ENERGY

API #: 3001526764
Serial #:
SPUD DATE: 6/24/1991
RIG RELEASE: 6/24/1991
FIRST SALES:

Original Hole, 10/19/2012 2:04:53 PM

Vertical schematic (actual) | Zones



Surface Casing; Set @ 425.0 ftKB ; Original Hole

Set Tension (kips)	Mud Weight	Cut Pull Date	Depth Cut Pull (ftKB)

Item Des	OD (in)	ID (in)	Drift (in)	Wt (lb/ft)	Grade	Top Thread	Top (ftKB)	Btm (ftKB)	Len (ft)
Casing Joints	10 3/4	10.050	9.894	40.50	K-55	Buttress	13.0	424.0	411.00
Float Shoe	10 3/4					Buttress	424.0	425.0	1.00

Production Casing; Set @ 4,600.0 ftKB ; Original Hole

Set Tension (kips)	Mud Weight	Cut Pull Date	Depth Cut Pull (ftKB)

Item Des	OD (in)	ID (in)	Drift (in)	Wt (lb/ft)	Grade	Top Thread	Top (ftKB)	Btm (ftKB)	Len (ft)
Casing Joints	7	6.366	6.241	23.00	J-55	LT&C	13.0	4,599.0	4,586.00
Float Shoe	7					LT&C	4,599.0	4,600.0	1.00

Description: Surface Casing Cement

13.0-425.0

Top of Cement (ftKB): 13.0 **Top Measurement Method:**

Fluid	Pump Start Date	Amount (sacks)	Class	Dens (lb/gal)	Vol Pumped (bbl)	Yield (ft³/sack)
	6/25/1991	350	C			

Description: Production Casing Cement

13.0-4,600.0

Top of Cement (ftKB): 13.0 **Top Measurement Method:**

Fluid	Pump Start Date	Amount (sacks)	Class	Dens (lb/gal)	Vol Pumped (bbl)	Yield (ft³/sack)
Lead	7/1/1991	1,100	C			
Tail	7/1/1991	200	C			

Tubing String: Tubing - Production

Set Depth (ftKB)	Wellbore	Run Date	Pull Date	Cut Pull Date	Depth Cut Pull (ft...
4,064.0	Original Hole	10/17/2011			

Item Des	OD (in)	ID (in)	Drift (in)	Wt (lb/ft)	Grade	Top (ftKB)	Btm (ftKB)	Len (ft)	Jts
Tubing	2 7/8	2.250	2.347		J-55	7.1	19.1	12.00	2
Tubing	2 7/8					19.1	4,055.8	4,036.72	129
On-Off Tool	3 1/2	2.250				4,055.8	4,057.8	2.00	1
Packer	7					4,057.8	4,064.0	6.20	1

Perforations

Date	Zone	Top (ftKB)	Btm (ftKB)	Shot Dens (shots/ft)	Current Status
9/13/1991		4,216.0	4,230.0	1.0	
9/13/1991		4,280.0	4,298.0	1.0	
9/13/1991		4,327.0	4,352.0	1.0	
9/13/1991		4,377.0	4,399.0	1.0	
7/12/1991		4,407.0	4,415.0	2.0	
7/12/1991		4,428.0	4,454.0	2.0	
7/12/1991		4,462.0	4,470.0	2.0	
7/12/1991		4,482.0	4,496.0	2.0	
7/12/1991		4,503.0	4,512.0	2.0	
7/12/1991		4,517.0	4,537.0	2.0	

Stimulations & Treatments

<Zone/Formation?>, <Stage Number?>, Acidizing, 8/13/2005

Min Top Dep...	Max Btm De...	Total Clean...	Avg Treat Pr...	Q Treat Avg...	Post ISIP (psi)	Comment
4,216.0	4,537.0	95.24	1,600.0		825.0	

Report Printed: 10/19/2012

Current Wellbore Schematic

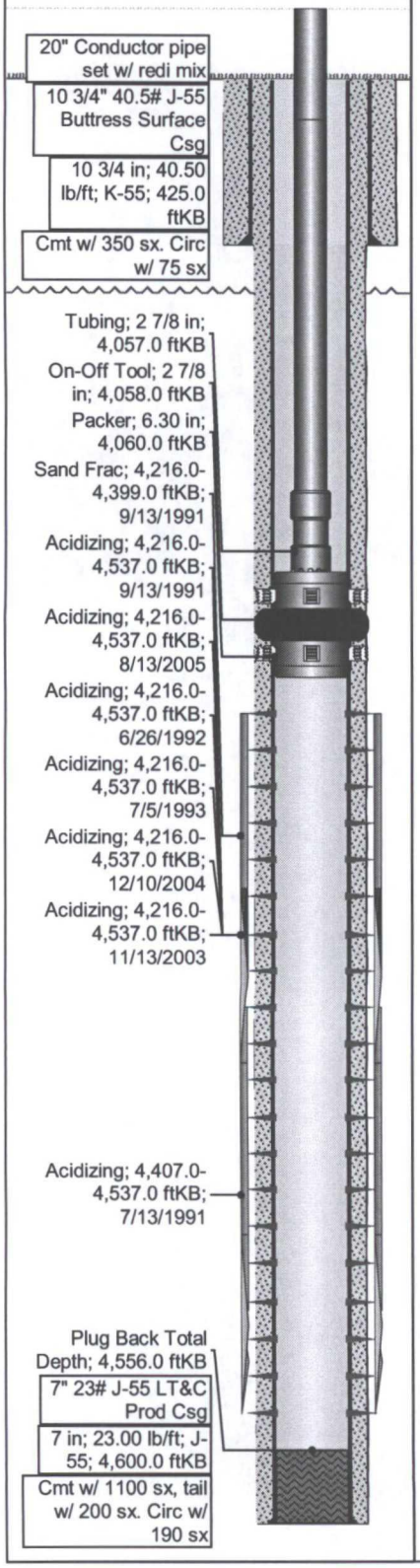
WELL (PN): EAST LOVING SWD 1(CVX) (891227)
FIELD OFFICE: BRG - BRG PETROLEUM
FIELD: East Loving
STATE / COUNTY: NEW MEXICO / EDDY
LOCATION: SEC 15-23S-28E, 1157 FNL & 491 FEL
ROUTE: HOB-NM-ROUTE 22- DAVID CHAVARIA
ELEVATION: GL: 3,001.0 KB: 3,014.0 KB Height: 13.0
DEPTHS: TD: 4,600.0

Chesapeake ENERGY

API #: 3001526764
Serial #:
SPUD DATE: 6/24/1991
RIG RELEASE: 6/24/1991
FIRST SALES:

Original Hole, 10/19/2012 2:04:54 PM

Vertical schematic (actual) | Zones



Stimulations & Treatments

<Zone/Formation?>, <Stage Number?>, Acidizing, 12/10/2004

Min Top Dep...	Max Btm De...	Total Clean...	Avg Treat Pr...	Q Treat Avg...	Post ISIP (psi)	Comment
4,216.0	4,537.0	47.62			1,350.0	

<Zone/Formation?>, <Stage Number?>, Acidizing, 11/13/2003

Min Top Dep...	Max Btm De...	Total Clean...	Avg Treat Pr...	Q Treat Avg...	Post ISIP (psi)	Comment
4,216.0	4,537.0	47.62			1,100.0	

<Zone/Formation?>, <Stage Number?>, Acidizing, 7/5/1993

Min Top Dep...	Max Btm De...	Total Clean...	Avg Treat Pr...	Q Treat Avg...	Post ISIP (psi)	Comment
4,216.0	4,537.0	23.81				

<Zone/Formation?>, <Stage Number?>, Acidizing, 6/26/1992

Min Top Dep...	Max Btm De...	Total Clean...	Avg Treat Pr...	Q Treat Avg...	Post ISIP (psi)	Comment
4,216.0	4,537.0	71.43				

<Zone/Formation?>, <Stage Number?>, Acidizing, 9/13/1991

Min Top Dep...	Max Btm De...	Total Clean...	Avg Treat Pr...	Q Treat Avg...	Post ISIP (psi)	Comment
4,216.0	4,537.0	95.24				

<Zone/Formation?>, <Stage Number?>, Sand Frac, 9/13/1991

Min Top Dep...	Max Btm De...	Total Clean...	Avg Treat Pr...	Q Treat Avg...	Post ISIP (psi)	Comment
4,216.0	4,399.0	1678.57			1,220.0	

Sand Size	Type	Amount	Conc (lb/gal)
20/40	Brown Sand	88,000.0	
12/20	Brown Sand	20,000.0	

<Zone/Formation?>, <Stage Number?>, Acidizing, 7/13/1991

Min Top Dep...	Max Btm De...	Total Clean...	Avg Treat Pr...	Q Treat Avg...	Post ISIP (psi)	Comment
4,407.0	4,537.0	119.05			900.0	

Report Printed: 10/19/2012

Jones, William V., EMNRD

From: Jones, William V., EMNRD
Sent: Thursday, March 21, 2013 3:19 PM
To: 'Davanzo, Alyssa K.'
Cc: Goetze, Phillip, EMNRD
Subject: RE: East Loving SWD-Step Rate Test

Alyssa,
Thank you for this clarification... looks good.
You did a great job on this.

Have a wonderful day!

Will

William V. Jones, P.E.
505-476-3448W 505-476-3462F
Engineering Bureau, Oil Conservation Division
1220 South St. Francis Dr.
Santa Fe, NM 87505

From: Davanzo, Alyssa K. [mailto:Alyssa.Davanzo@chevron.com]
Sent: Thursday, March 21, 2013 3:08 PM
To: Jones, William V., EMNRD
Subject: RE: East Loving SWD-Step Rate Test

Hi Will,

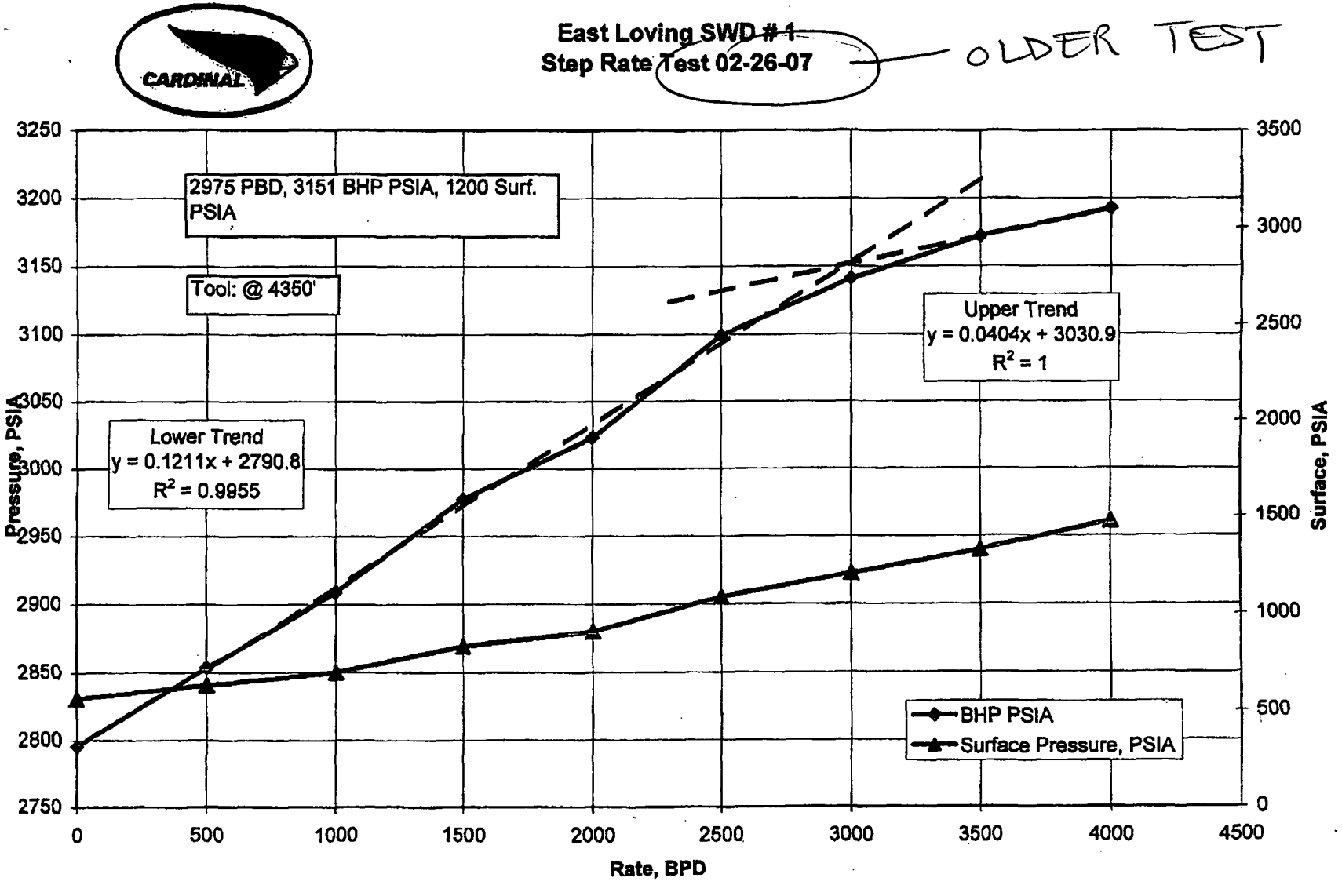
I spoke with Darrell Norris with Cardinal, and he does not think that we reached fracture point according to his analysis. He sent me the attached graph with a BHP trend line that shows a better depiction of the step rate test results. There is also a possibility that we used freshwater instead of brine, which could have also caused the deviation in the data points. Darrell also mentioned that the first two points usually look out of character from the rest of the chart values. Darrell said that he would be willing to speak with you on the phone if you wanted confirmation. I hope this helps!

Thanks!

Alyssa Davanzo
Production Engineer

Chevron
Eunice/Carslbad, NM Team
15 Smith Rd., Midland, TX 79705
Alyssa.Davanzo@Chevron.com
Telephone 432.687.7659

From: Jones, William V., EMNRD [mailto:William.V.Jones@state.nm.us]
Sent: Thursday, March 21, 2013 12:23 PM


East Loving SWD # 1
Step Rate Test 02-26-07
OLDER TEST
2975 PBD, 3151 BHP PSIA, 1200 Surf. PSIA
Tool: @ 4350'
Upper Trend
y = 0.0404x + 3030.9
R² = 1
Lower Trend
y = 0.1211x + 2790.8
R² = 0.9955
BHP PSIA
Surface Pressure, PSIA
Pressure, PSIA
Surface, PSIA
Rate, BPD
3250
3200
3150
3100
3050
3000
2950
2900
2850
2800
2750
3500
3000
2500
2000
1500
1000
500
0
0
500
1000
1500
2000
2500
3000
3500
4000
4500