

DATE IN 2.24.12	SUSPENSE	ENGINEER TW.	LOGGED IN 2.24.12	TYPE IPT	APP NO. 1205539442
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ABOVE THIS LINE FOR DIVISION USE ONLY

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



SM ENERGY Co.
 RECEIVED OGD
 154903
 2012 FEB 23 P 12:26

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]
 [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.

Ann Ritchie
 Print or Type Name

Ann Ritchie
 Signature

Regulatory Agent
 Title

2-9-12
 Date

ann.wtor@gmail.com
 E-Mail Address

R-11254
Fed
1230-50=1180
WFX 814
for well #25
5030-5310/1006PSE
R 2224
25

Warnell, Terry G, EMNRD

From: Warnell, Terry G, EMNRD
Sent: Sunday, April 01, 2012 2:14 PM
To: ann.wtor@gmail.com
Cc: Warnell, Terry G, EMNRD
Subject: ESDU IPI Application

Hi Ann,

I'm working on your Feb 24, 2012 IPI Application for SM Energy
I'm going to need well diagrams showing perfs and packer depths
on ESDU Wells No. 18, 22, 24 & 25
If we are able to approve a Unit wide surface pressure it will be 1,114 psi
That's based on the lowest SRT 1164-50psi
Will that work for your client or they might want to run SRT on the other 5 wells
and apply for surface pressures for each well equal to the step rate test results minus 50 psi

Terry Warnell
Engineering, Oil Conservation Division
1220 South St. Francis Drive, Santa Fe, NM 87505
Tel 505.476.3466 ~ Fax 505.476.3462

Wed. 4/11 →

*Waiting
for Ann
to Reply!
Replied - 4, 19, 12 ✓*

January 24, 2012

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

Attention: Ms. Jami Bailey, CPG
Division Director

Re: Application for Increased Injection Pressure
SM Energy Company
East Shugart Delaware Unit Waterflood Project
East Shugart-Delaware Pool
Eddy and Lea Counties, New Mexico

17
19
20
21
23

Dear Ms. Bailey,

SM Energy Company, as current operator of the East Shugart Delaware Unit Waterflood Project, located in portions of Sections 13 & 24, Township 18 South, Range 31 East, NMPM, Eddy County, and portions of Sections 18 & 19, Township 18 South, Range 32 East, NMPM, Lea County, hereby requests administrative approval to increase the surface injection pressure on a unit-wide basis for all injection wells within the unit area.

Waterflood operations within the East Shugart Delaware Unit ("ESDU") were initially approved by Division Order No. R-11254 dated October 14, 1999. Waterflood operations have been ongoing since that time. There are currently nine active injection wells within the ESDU, the ESDU Wells No. 17, 18, 19, 20, 21, 22, 23, 24 and 25. The ESDU Wells No. 17, 18, 19, 20, 21, 22, 23 & 24 were approved for injection by Order No. R-11254, and pursuant to that order, these wells are currently authorized to inject into the Delaware formation from approximately 5,015'-5,420' at a maximum surface injection pressure of 1,003 psi. The ESDU Well No. 25 was approved for injection by Division Order No. WFX-814 and is currently authorized to inject into the Delaware formation at a maximum surface injection pressure of 1,006 psi.

Not 25

During November-December, 2011, SM Energy Company conducted four step rate injection tests on the ESDU Wells No. 18, 22, 24 and 25. As the attached map shows, these four injection wells are located at the corners of the waterflood project area, and were chosen so as to obtain a representative sample of all injection wells within the unit area. The step rate tests generally indicate fracture pressures ranging from 1,164-1,424 psi. as shown in the table below:

Well Name & Number	Step Rate Injection Test Results
East Shugart Delaware Unit No. 18	1,230 psi -50 1180
East Shugart Delaware Unit No. 22	1,424 psi -50 1374
East Shugart Delaware Unit No. 24	1,164 psi -50 1114
East Shugart Delaware Unit No. 25	1,350 psi -50 1300

1164-50 [1114] ✓

*SM Energy Company
Request for Surface Injection Pressure Increase
East Shugart Delaware Unit WF Project
Eddy & Lea Counties, New Mexico*

Based on the results of the step rate tests, SM Energy Company hereby requests authority to increase the surface injection pressure on a unit-wide basis within the ESDU to 1,150 psi. The proposed pressure increase represents a very conservative pressure gradient of approximately 0.23 psi/ft. Approval of the proposed pressure increase will allow SM Energy Company to effectively and efficiently conduct secondary recovery operations within the ESDU, thereby increasing the recovery of hydrocarbons from the East Shugart-Delaware Pool. Also, SM Energy Company believes that the proposed surface injection pressure will not fracture the injection formation or confining strata, and will therefore protect fresh water resources within the unit area.

56413

Attached is a list of the nine active injection wells within the ESDU obtained from OCD's online website. Also attached are the step rate test injection tests conducted on the ESDU Wells No. 18, 22, 24 and 25.

Also attached is a map of the ESDU showing the location of the injection wells within the unit area.

Since the injection wells within the ESDU are located both in Eddy and Lea Counties, a copy of this application is being provided to both the Hobbs and Artesia OCD District Offices.

If you should have any questions, please contact me at (432) 684-6381.

Sincerely,



Ms. Ann Ritchie
Agent for SM Energy Company
P.O. Box 953
Midland, Texas 79702

Xc: OCD-Hobbs
 OCD-Artesia

Wells

Criteria: OperatorSearchClause=BeginsWith, WellSearchClause=Contains, prod_prop_name=East Shugart Delaware,
WellNumberSearchClause=BeginsWith, PoolSearchClause=BeginsWith, Well_Type=I, CancelledAPDs=Exclude, PluggedWells=Exclude

Records Returned: 9

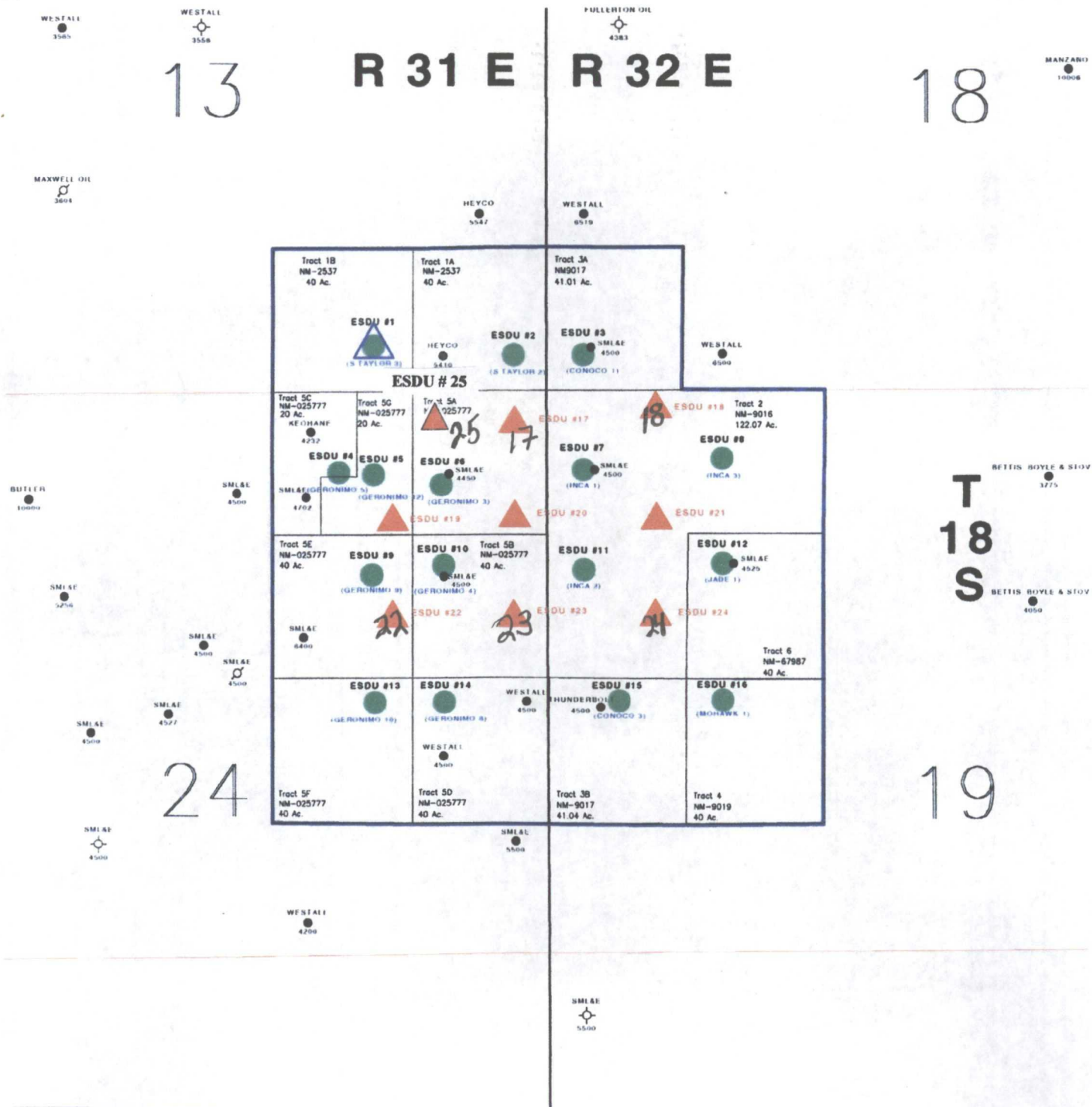
Printed On: Sunday, January 22 2012

API	Well	Type	Lease	Status	Location (ULSTR)	OCD Unit Letter	Last Production	Spud Date	Plugged On	Current Operator
30-015-33841	EAST SHUGART DELAWARE UNIT #017	Injection	Federal	Active	A-24-18S-31E	A	11/2011	2/21/2005		[154903] SM ENERGY COMPANY
30-025-37368	EAST SHUGART DELAWARE UNIT #018	Injection	Federal	Active	1-19-18S-32E	D	11/2011	7/21/2005	5/11-380	[154903] SM ENERGY COMPANY
30-015-33842	EAST SHUGART DELAWARE UNIT #019	Injection	Federal	Active	G-24-18S-31E	G	11/2011	6/30/2005		[154903] SM ENERGY COMPANY
30-015-31350	EAST SHUGART DELAWARE UNIT #020	Injection	Federal	Active	A-24-18S-31E	A	11/2011	10/30/2000		[154903] SM ENERGY COMPANY
30-025-37036	EAST SHUGART DELAWARE UNIT #021	Injection	Federal	Active	2-19-18S-32E	E	11/2011	3/8/2005		[154903] SM ENERGY COMPANY
30-015-34292	EAST SHUGART DELAWARE UNIT #022	Injection	Federal	Active	G-24-18S-31E	G	11/2011	10/7/2005	5046-5170	[154903] SM ENERGY COMPANY
30-015-33843	EAST SHUGART DELAWARE UNIT #023	Injection	Federal	Active	H-24-18S-31E	H	11/2011	2/3/2005		[154903] SM ENERGY COMPANY
30-025-37418	EAST SHUGART DELAWARE UNIT #024	Injection	Federal	Active	2-19-18S-32E	E	11/2011	9/18/2005	(?)	[154903] SM ENERGY COMPANY
30-015-34212	EAST SHUGART DELAWARE UNIT #025	Injection	Federal	Active	A-24-18S-31E	A	11/2011	8/8/2005	5176 = 5356	[154903] SM ENERGY COMPANY

ME-TEX
listed as operator.
Need C-146

All BLM

WFX 5030-5310'
814



LEGEND

-  Delaware Producer
-  Delaware Injector
-  Non-Delaware Producer

EAST SHUGART DELAWARE UNIT

7/7/1999

Scale 1:15500

Step Rate Test



Cardinal Surveys Company

April 12, 2012

SM Energy
East Shugart # 23
Field:
Eddy County, New Mexico
SC 60031
File # 20738

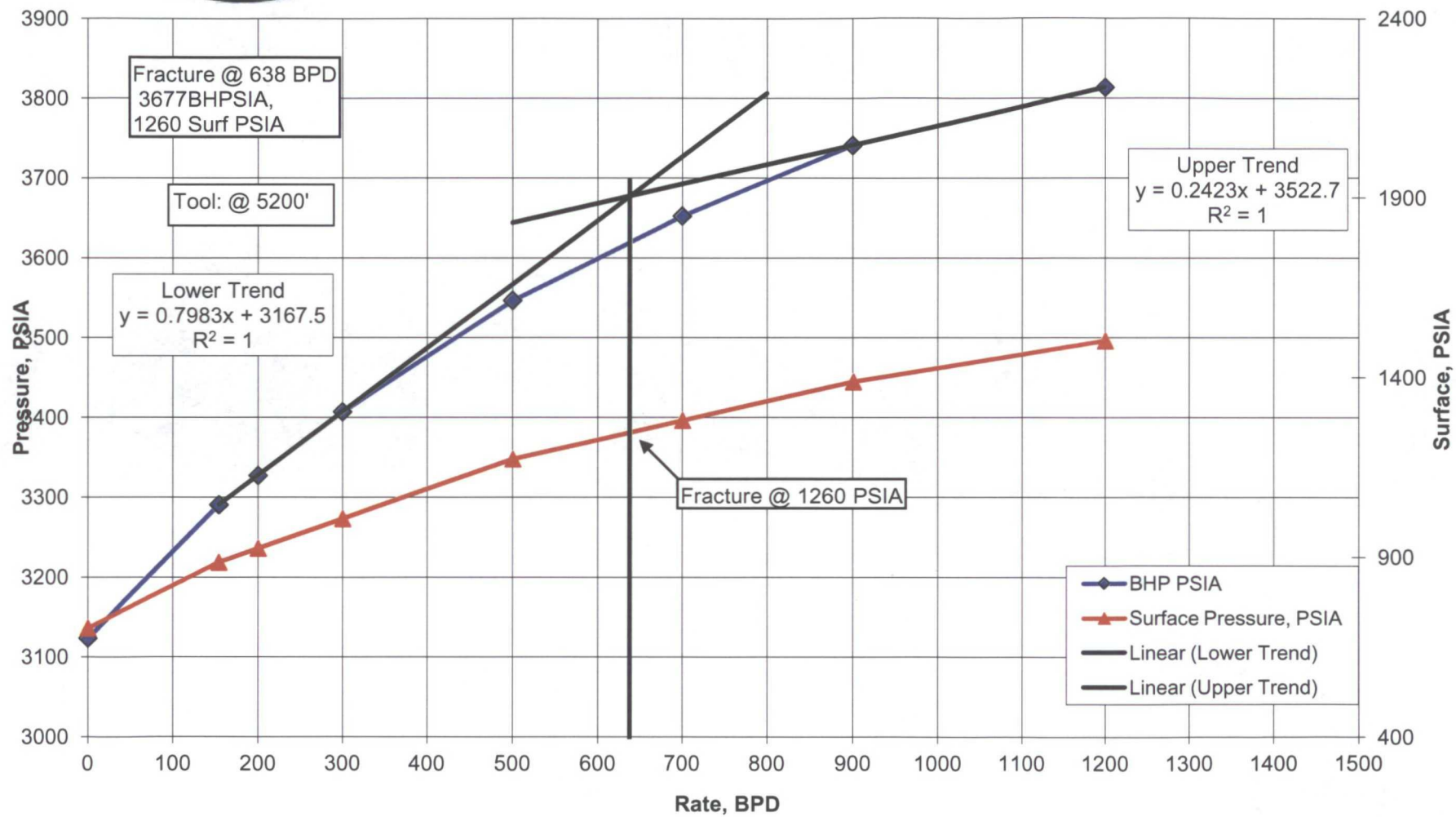
Fracture @ 638 BPD
3677BHPSIA,
1260 Surf PSIA

Downhole PSI Tool Ser. No.
Surface PSI Gauge Ser. No.
Tool @ 5200'

	Start Time	End Time	Rate BPD	Comments
1	10:09 AM	10:30 AM		0 On Bottom
2	10:30 AM	11:00 AM	154	
3	11:00 AM	11:30 AM	200	
4	11:30 AM	12:00 PM	300	
5	12:00 PM	12:30 PM	500	
6	12:30 PM	1:00 PM	700	
7	1:00 PM	1:30 PM	900	
8	1:30 PM	2:00 PM	1200	
9	2:00 PM	2:15 PM		0 Fall Off

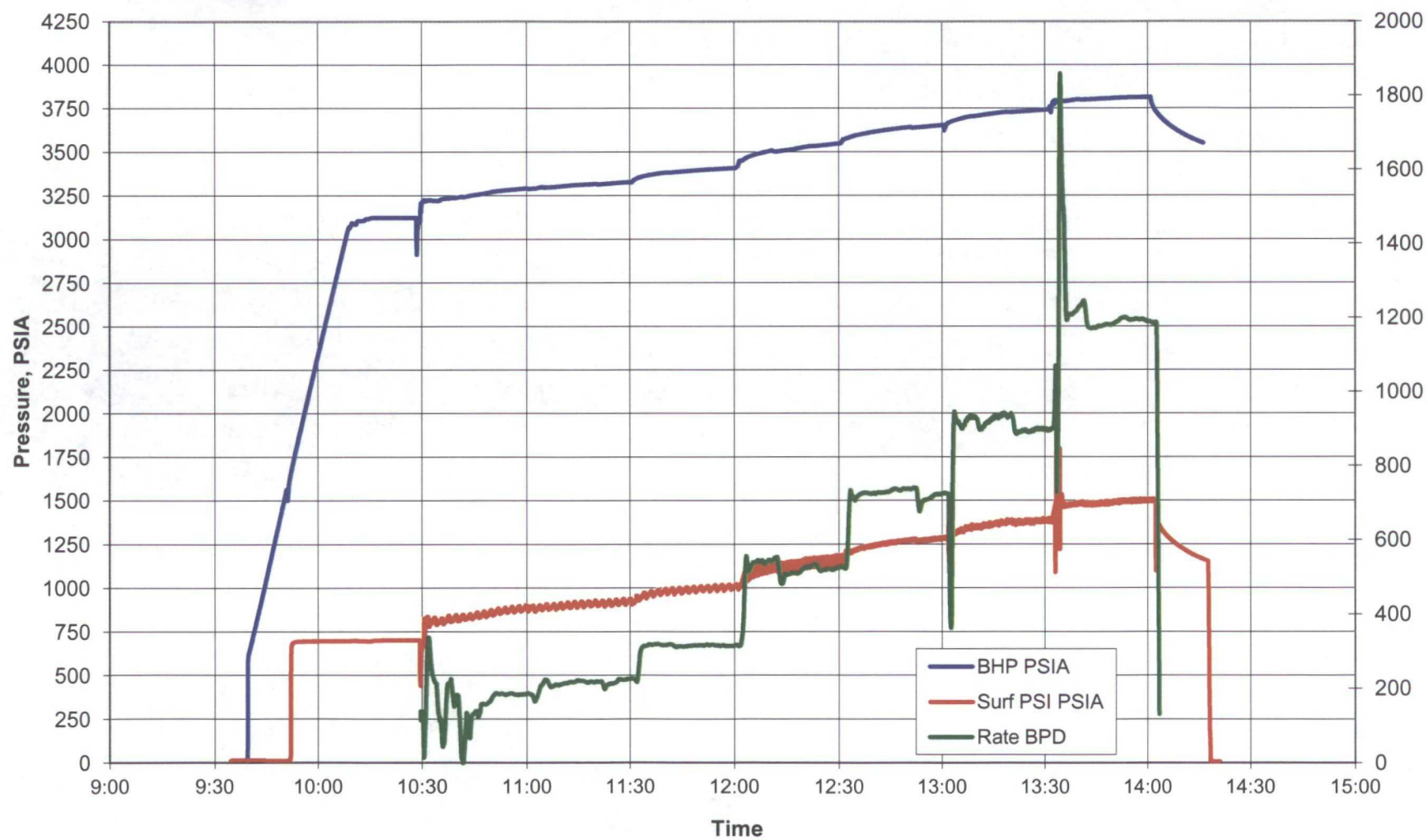


S. M. Energy East Shugart # 23
Step Rate Test 04-12-2012





S. M. Energy East Shugart # 23
Step Rate Test 04-12-2012



Step Rate Test



Cardinal Surveys Company

April 13, 2012

SM Energy
East Shugart # 17
Field:
Eddy County, New Mexico
SC 60032
File # 20739

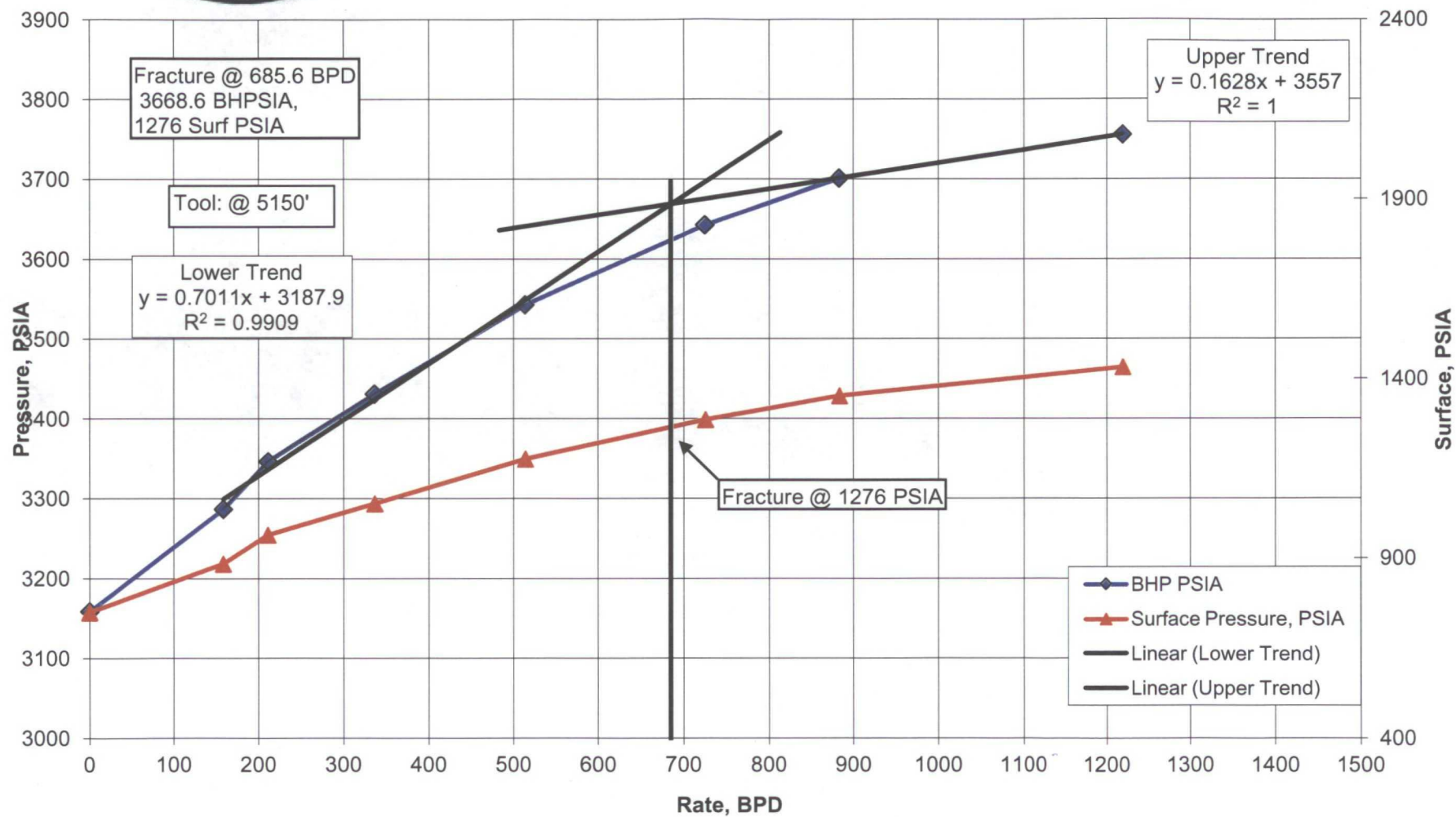
Fracture @ 685.6 BPD
3668.6 BHPSIA,
1276 Surf PSIA

Downhole PSI Tool Ser. No.
Surface PSI Gauge Ser. No.
Tool @ 5150'

	Start Time	End Time	Rate BPD	Comments
1	9:39 AM	9:45 AM		0 On Bottom
2	9:45 AM	10:15 AM	100	
3	10:15 AM	10:45 AM	200	
4	10:45 AM	11:15 AM	300	
5	11:15 AM	11:45 AM	500	
6	11:45 AM	12:15 PM	700	
7	12:15 PM	12:45 PM	900	
8	12:45 PM	1:15 PM	1200	
9	1:15 PM	1:30 PM		0 Fall Off

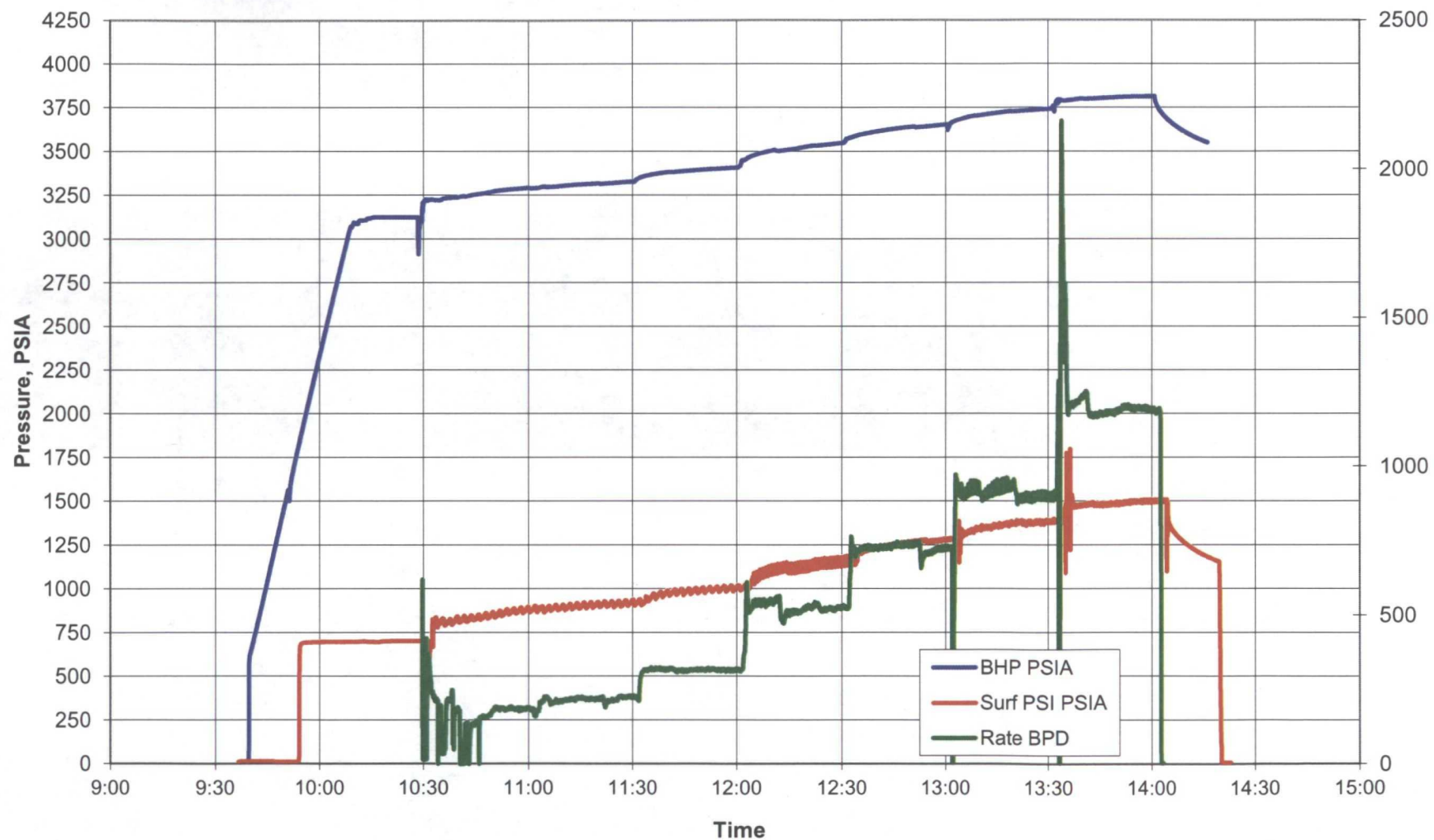


S. M. Energy East Shugart # 17
Step Rate Test 04-13-2012





S. M. Energy East Shugart # 17
Step Rate Test 04-13-2012



Step Rate Test



Cardinal Surveys Company

December 16, 2011

SM Energy

ESDU # 18

Field:

Eddy County, New Mexico

SC 59791

File # 20632

Fracture @ 326.4 BPD
3361.5 BHPSIA,
1230 Surf PSIA

Downhole PSI Tool Ser. No.

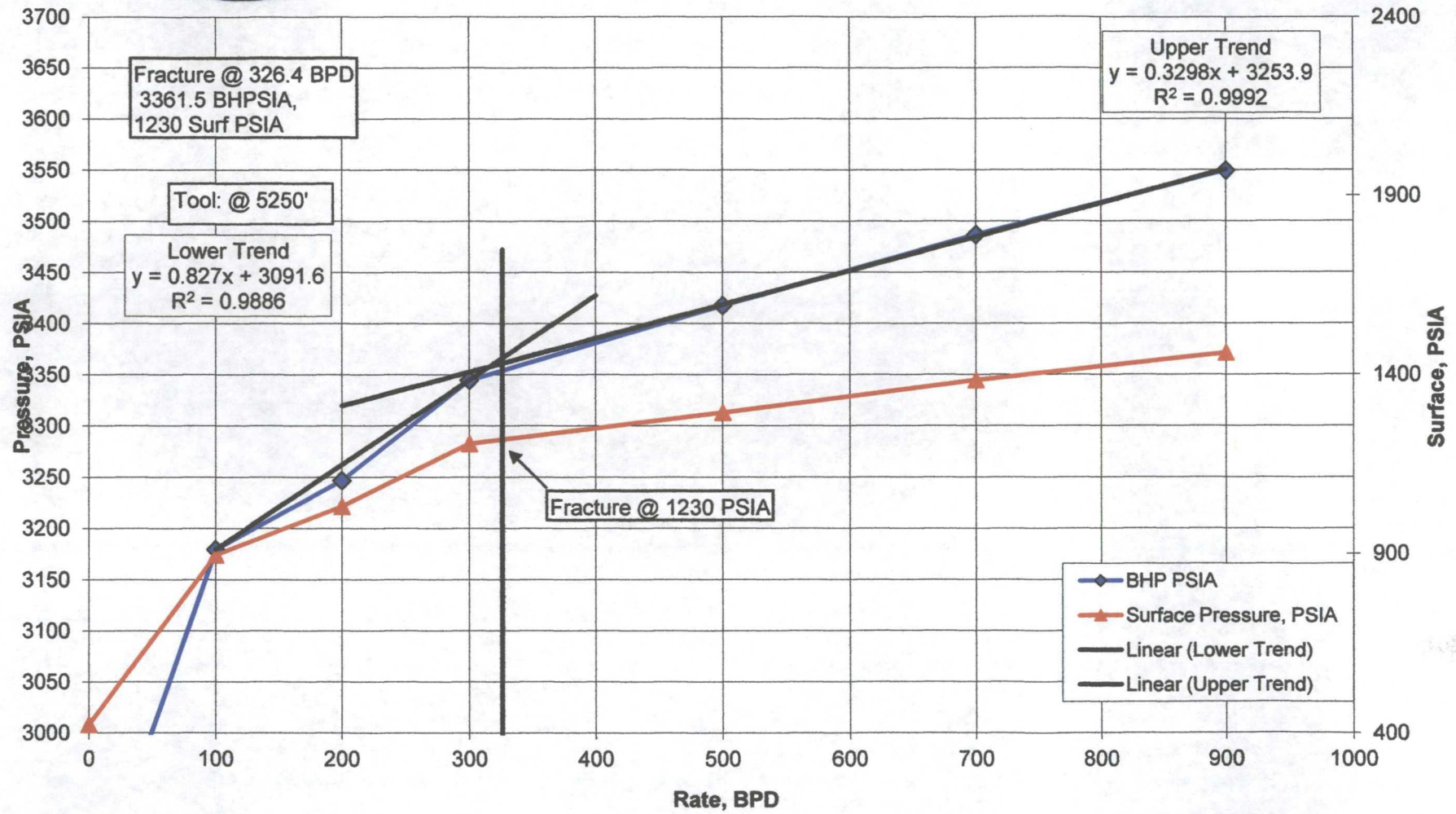
Surface PSI Gauge Ser. No.

Tool @ 5200'

Start Time	End Time	Rate BPD	Comments
1	9:47 AM 10:30 AM	0	On Bottom
2	10:30 AM 11:00 AM	100	
3	11:00 AM 11:30 AM	200	
4	11:30 AM 12:00 PM	300	
5	12:00 PM 12:30 PM	500	
6	12:30 PM 1:00 PM	700	
7	1:00 PM 1:30 PM	900	
8	1:30 PM 1:45 PM	0	Fall Off



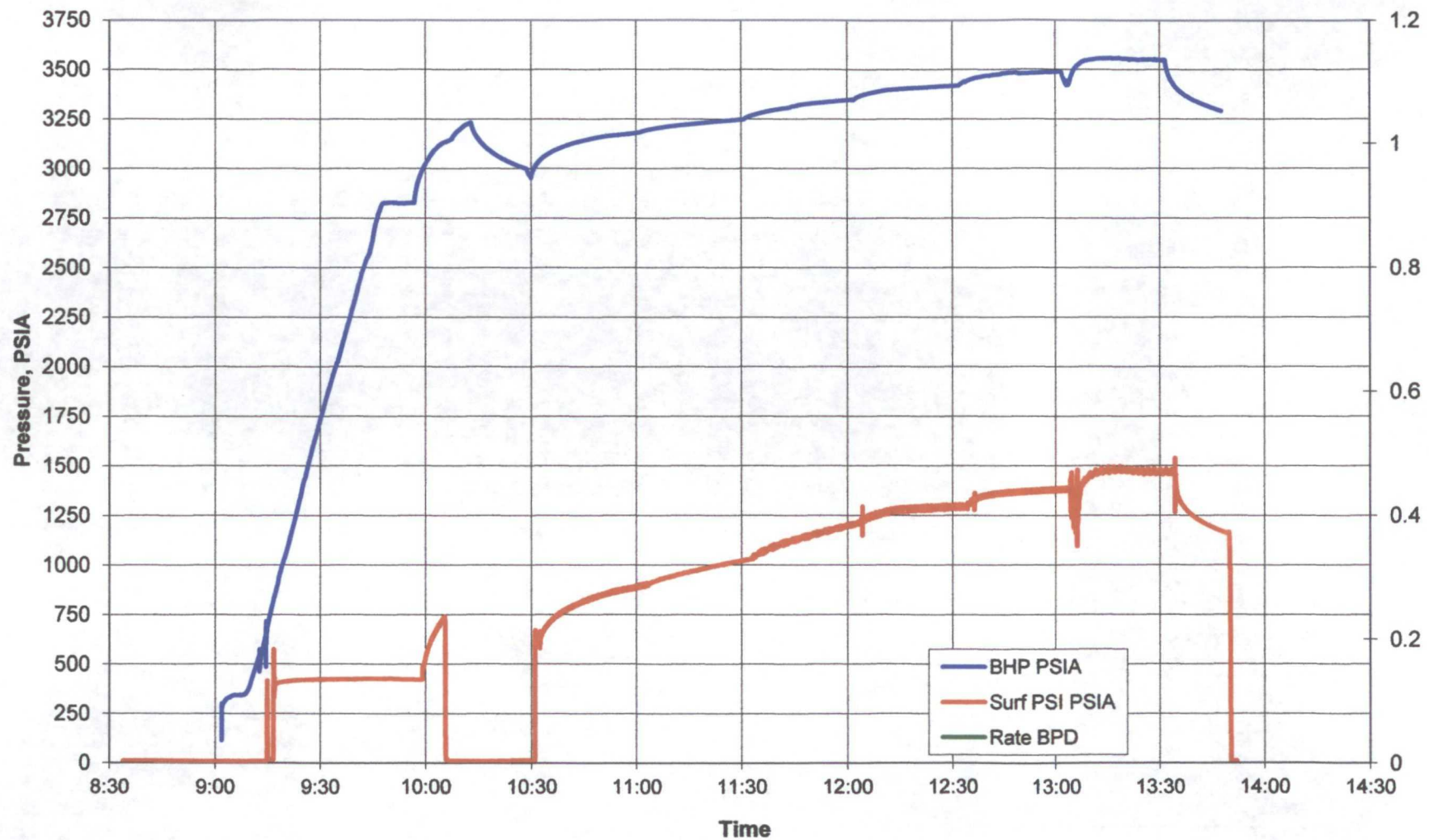
S. M. Energy E.S.D.U. # 18
Step Rate Test 12-16-2011



1180



S. M. Energy E.S.D.U. # 18
Step Rate Test 12-16-2011



Step Rate Test



Cardinal Surveys Company

December 20, 2011

SM Energy
E.S.D.U. # 22
Field:
Eddy County, New Mexico
SC 59793
File # 20643

Fracture @ 509.7 BPD
3574 BHPSIA,
1424 Surf PSIA

Step Rate Test indicates well was at the start of fracture when maximum pressure set by customer was reached. Test was not carried any farther at request of SM Energy.

Downhole PSI Tool Ser. No.
Surface PSI Gauge Ser. No.
Tool @ 5200'

	Start Time	End Time	Rate BPD	Comments
1	8:05 AM	8:15 AM		0 On Bottom
2	8:15 AM	8:45 AM	100	
3	8:45 AM	9:15 AM	200	
4	9:15 AM	9:45 AM	300	
5	9:45 AM	10:15 AM	500	
6	10:15 AM	10:45 AM	700	
7	10:45 AM	11:00 AM		0 Fall OFF

Step Rate Test

SM Energy
E.S/D.U. # 22

Field:

Eddy County, New Mexico



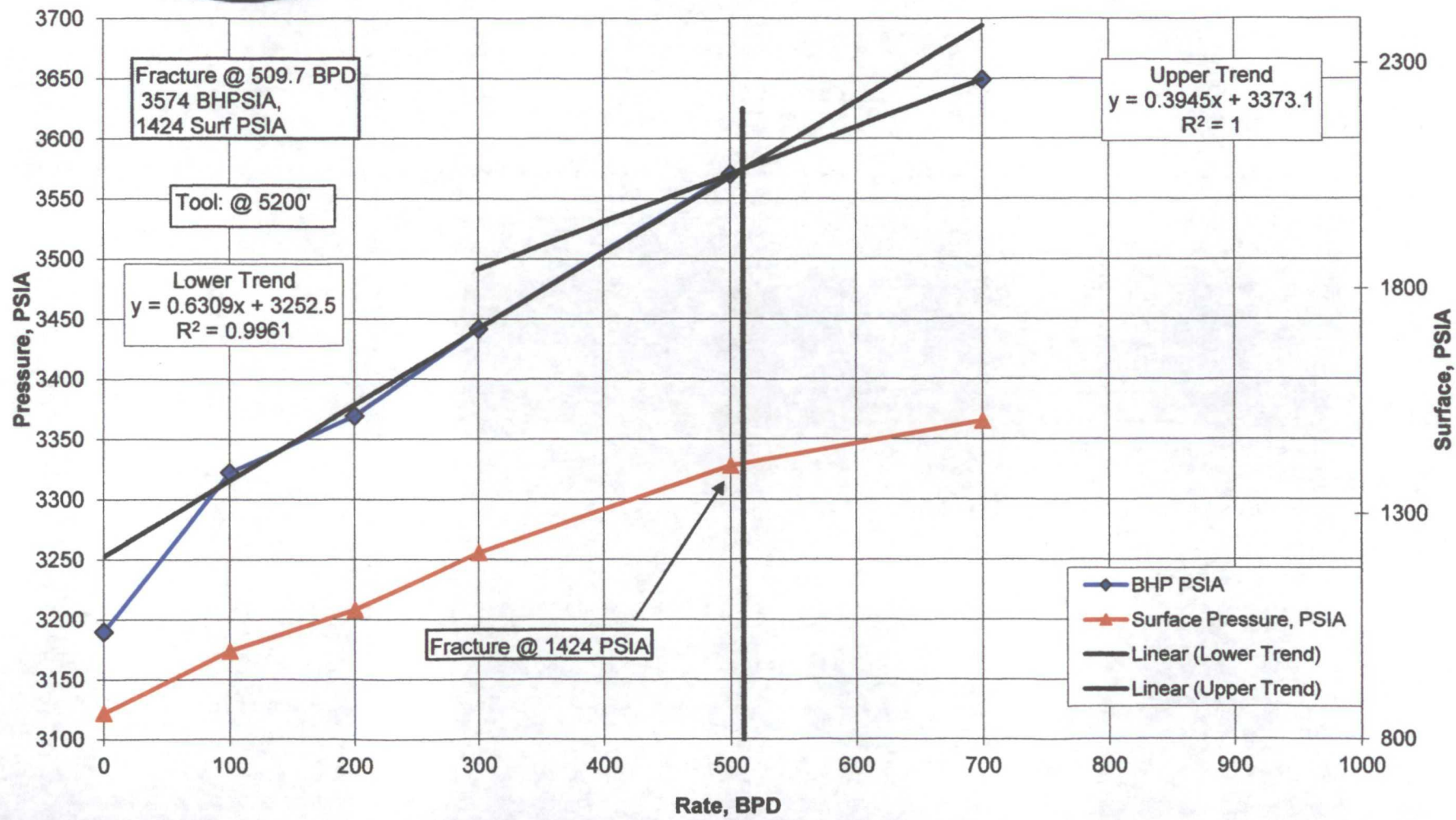
	S Time	E Time	D Time Min	Last Rate BPD	Step BPD	B. H. Pressure PSIA	Surf PSIA	Cum BBL	Delta BBL	Avg. BPD	Lower Trend	Upper Trend
1	8:05 AM	8:15 AM	10	0	0	3190.1	858.8	0	0.00	0		
2	8:15 AM	8:45 AM	30	100	100	3322.5	997	2.8	2.80	134	3322.5	
3	8:45 AM	9:15 AM	30	200	100	3369.6	1088.2	7	4.20	202	3369.6	
4	9:15 AM	9:45 AM	30	300	100	3441.8	1215.4	13.3	6.30	302	3441.8	
5	9:45 AM	10:15 AM	30	500	200	3570.3	1408.4	24.1	10.80	216	3570.3	3570.3
6	10:15 AM	10:45 AM	30	700	200	3649.2	1507.7	39	14.90	197		3649.2
7	10:45 AM	11:00 AM	15	0	-700	3474.5	1294.1	39	0.00	0		

0.6309 3252.5
0.3945 3373

int point: 509.72927 BPD
3574.0882 Psia



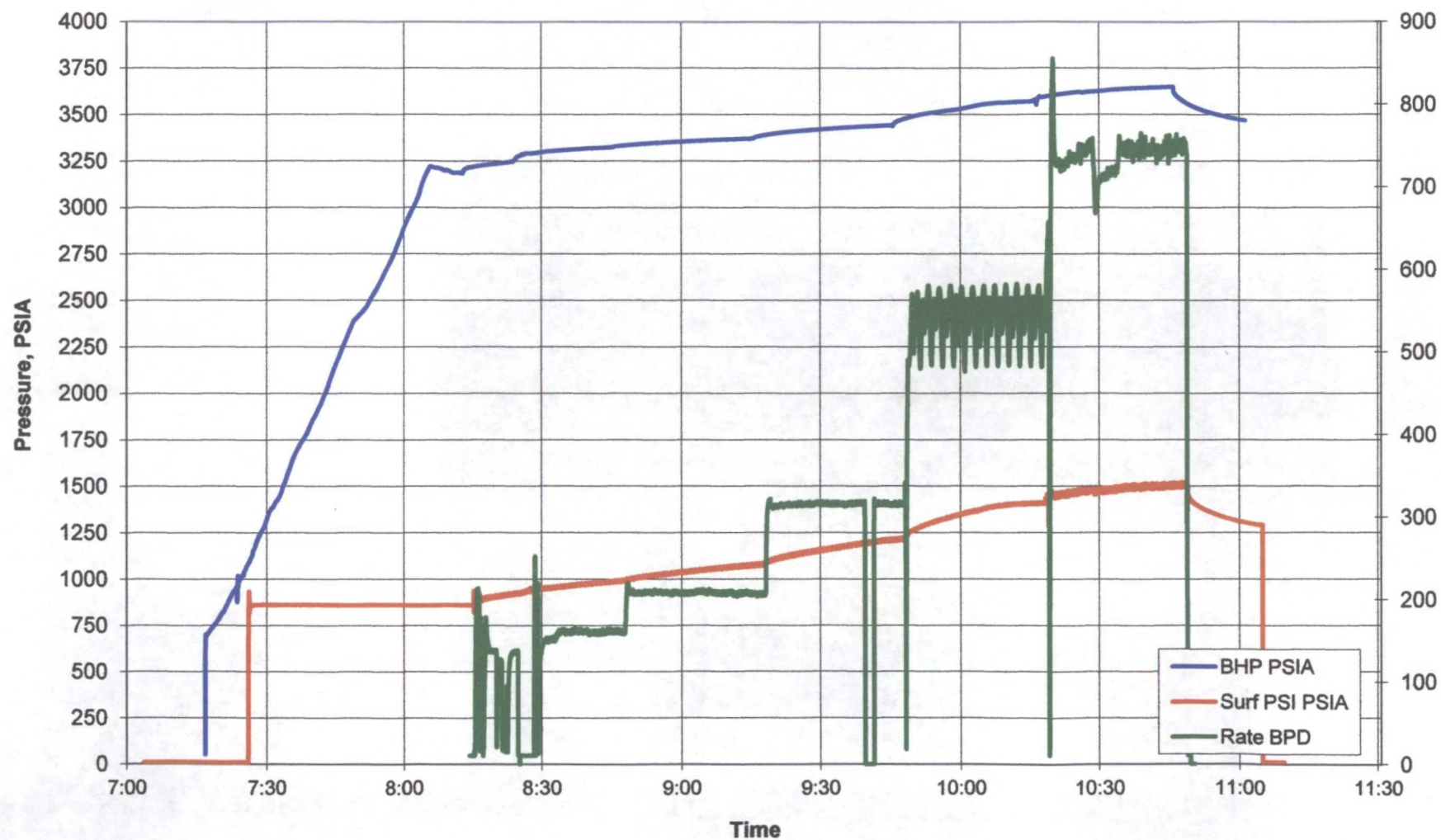
S. M. Energy E.S.D.U. # 22
Step Rate Test 12-20-2011



1374 ✓



S. M. Energy E.S.D.U. # 22
Step Rate Test 12-20-2011



Step Rate Test



Cardinal Surveys Company

December 19, 2011

SM Energy
E.S.D.U. # 24
Field:
Eddy County, New Mexico
SC 59792
File # 20642

Fracture @ 365.6 BPD
3367.2 BHPSIA,
1164 Surf PSIA

Downhole PSI Tool Ser. No.
Surface PSI Gauge Ser. No.
Tool @ 5200'

	Start Time	End Time	Rate BPD	Comments
1	8:13 AM	8:30 AM		0 On Bottom
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	11:45 AM		0 Fall Off

Step Rate Test

SM Energy
E.S.D.U. # 24
Field:
Eddy County, New Mexico



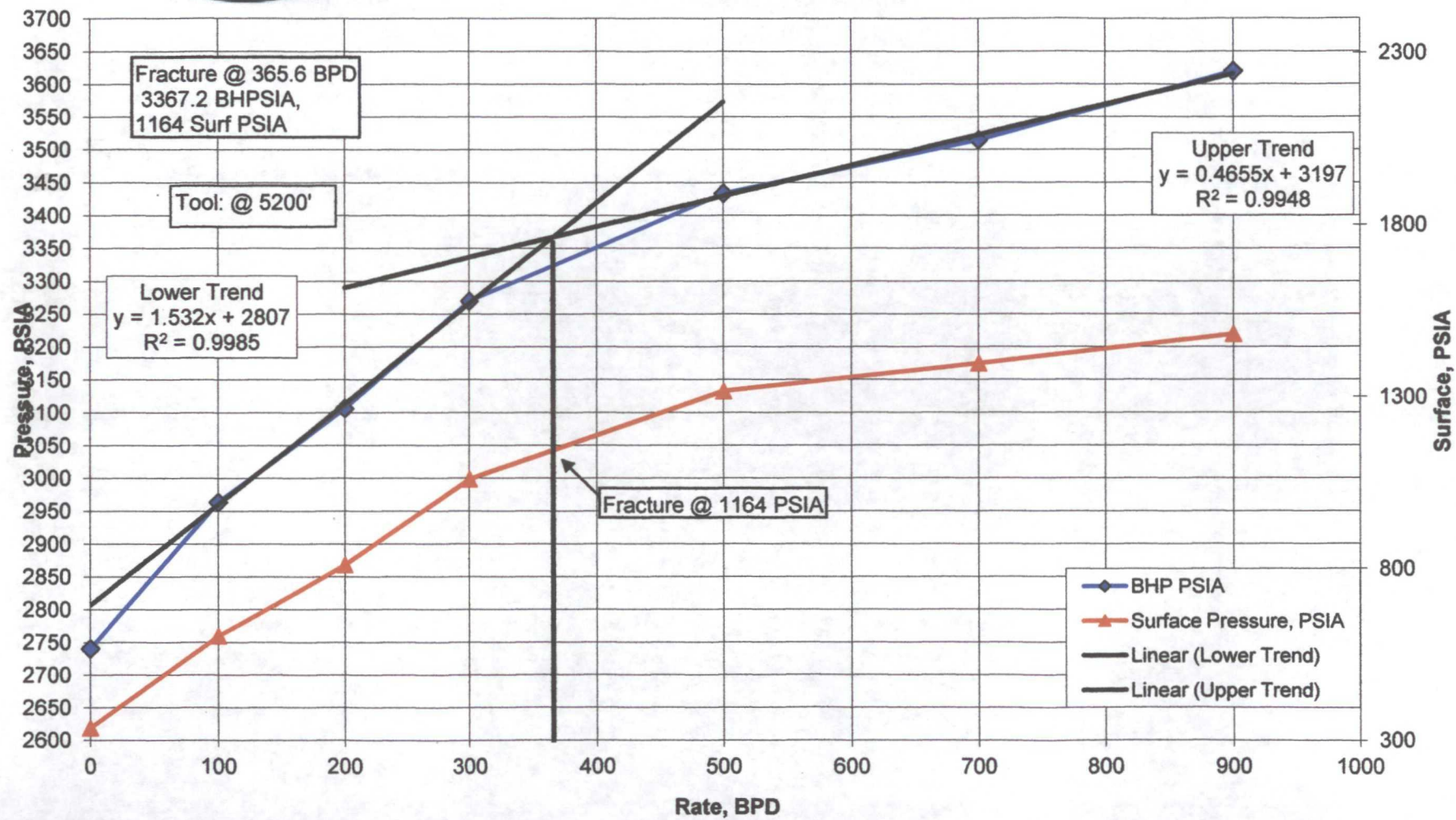
	S Time	E Time	D Time Min	Last Rate BPD	Step BPD	B. H. Pressure PSIA	Surf PSIA	Cum BBL	Delta BBL	Avg. BPD	Lower Trend	Upper Trend
1	8:13 AM	8:30 AM	17	0	0	2740.7	335.9	0	0.00	0		
2	8:30 AM	9:00 AM	30	100	100	2963.6	604.7	2.5	2.50	120	2963.6	
3	9:00 AM	9:30 AM	30	200	100	3106.5	812.6	6.5	4.00	192	3106.5	
4	9:30 AM	10:00 AM	30	300	100	3270	1061.1	13	6.50	312	3270	
5	10:00 AM	10:30 AM	30	500	200	3433.7	1317.2	23.4	10.40	187		3433.7
6	10:30 AM	11:00 AM	30	700	200	3515.1	1397.3	38	14.60	202		3515.1
7	11:00 AM	11:30 AM	30	900	200	3619.9	1483	56.8	18.80	902		3619.9
8	11:30 AM	11:45 AM	15	0	-900	3236.4	1050.7	56.8	0.00	0		

1.532 2807
0.4655 3197

int point: 365.68214 BPD
3367.225 Psia



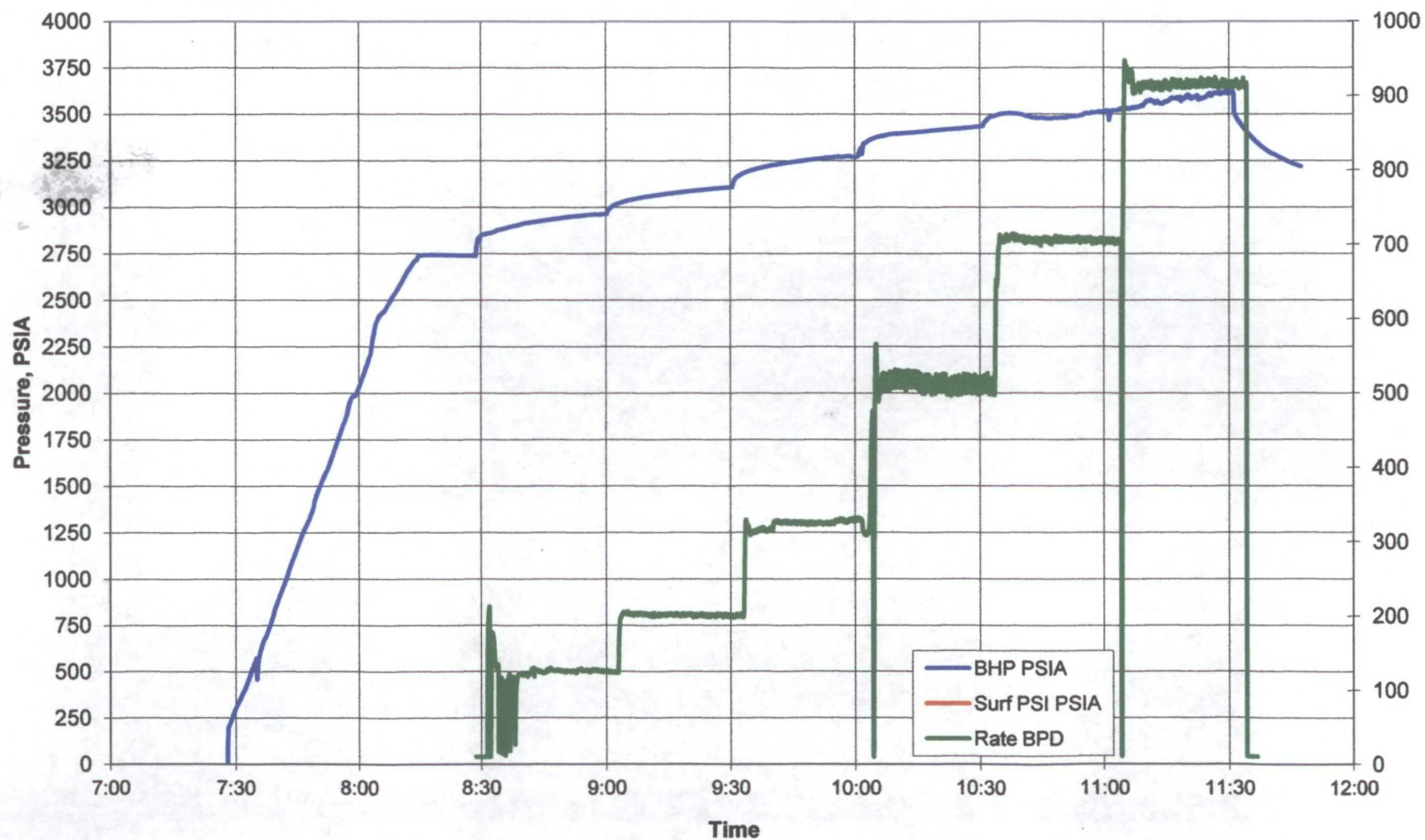
S. M. Energy E.S.D.U. # 24
Step Rate Test 12-19-2011



11/4



S. M. Energy E.S.D.U. # 24
Step Rate Test 12-19-2011



Step Rate Test



Cardinal Surveys Company

November 30, 2011

SM Energy
East Shugart # 25
Field:
Eddy County, New Mexico
SC 59783
File # 20610

Fracture @ 679 BPD
3513.2 BHPSIA,
1350 Surf PSIA

Downhole PSI Tool Ser. No.
Surface PSI Gauge Ser. No.
Tool @ 5200'

	Start Time	End Time	Rate BPD	Comments
1	8:55 AM	9:15 AM		0 On Bottom
2	9:15 AM	9:45 AM	100	
3	9:45 AM	10:15 AM	200	
4	10:15 AM	10:45 AM	300	
5	10:45 AM	11:15 AM	500	
6	11:15 AM	11:45 AM	700	
7	11:45 AM	12:15 PM	900	
8	12:15 PM	12:45 PM	1400	
9	12:45 PM	1:00 PM		0 Fall Off

Step Rate Test

SM Energy
East Shugart # 25
Field:
Eddy County, New Mexico



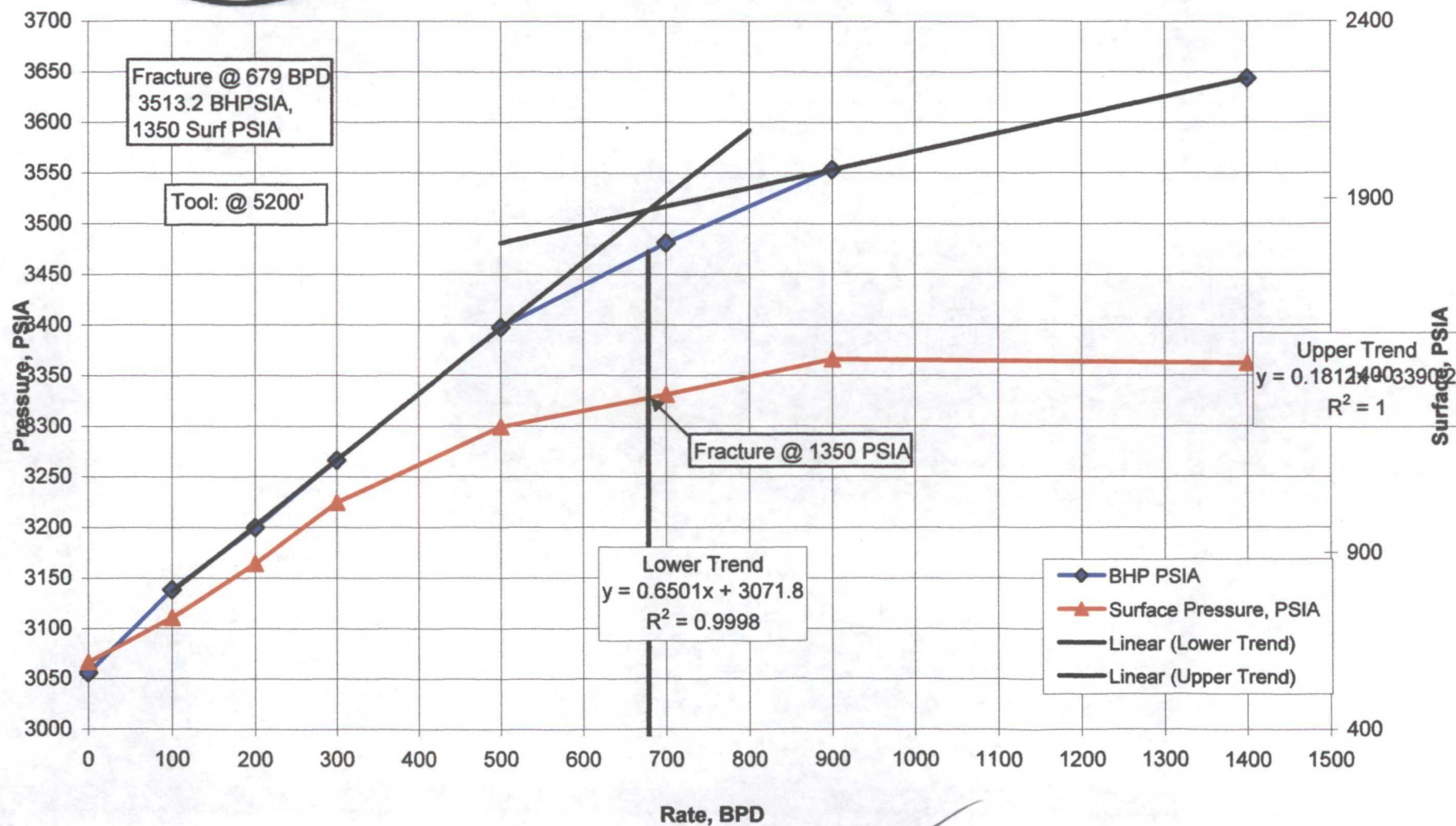
	S Time	E Time	D Time Min	Last Rate BPD	Step BPD	B. H. Pressure PSIA	Surf PSIA	Cum BBL	Delta BBL	Avg. BPD	Lower Trend	Upper Trend
1	8:55 AM	9:15 AM	20	0	0	3055.8	589.3	0	0.00	0		
2	9:15 AM	9:45 AM	30	100	100	3138.6	715.8	2.8	2.80	134	3138.6	
3	9:45 AM	10:15 AM	30	200	100	3199.8	869.7	7.1	4.30	206	3199.8	
4	10:15 AM	10:45 AM	30	300	100	3266.4	1041.7	13.6	6.50	312	3266.4	
5	10:45 AM	11:15 AM	30	500	200	3397.6	1254.5	24.3	10.70	202	3397.6	
6	11:15 AM	11:45 AM	30	700	200	3480.9	1346.4	38.6	14.30	173		
7	11:45 AM	12:15 PM	30	900	200	3553.3	1446.8	57.8	19.20	922		3553.3
8	12:15 PM	12:45 PM	30	1400	500	3643.9	1435.5	87.2	29.40	1411		3643.9
9	12:45 PM	1:00 PM	15	0	-1400	3482.4	1113.2	87.2	0.00	0		

0.6501 3071.8
0.1812 3390.2

int point: 679.03604 BPD -
3513.2413 Psia



S. M. Energy East Sugart # 25
Step Rate Test 11-30-2011



1300 ✓



S. M. Energy East Sugart # 25
Step Rate Test 11-30-2011

