

|                        |          |                         |                          |                 |                           |
|------------------------|----------|-------------------------|--------------------------|-----------------|---------------------------|
| DATE IN <u>1-20-10</u> | SUSPENSE | ENGINEER <u>Wannell</u> | LOGGED IN <u>1-20-10</u> | TYPE <u>IPI</u> | APP NO. <u>1002056858</u> |
|------------------------|----------|-------------------------|--------------------------|-----------------|---------------------------|

ABOVE THIS LINE FOR DIVISION USE ONLY

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



*Melrose Energy*  
 IPI-360  
 Artesia Unit well #1

**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.

David Catanach  
 Print or Type Name

David Catanach  
 Signature

Agent-Melrose Energy Company  
 Title

1/20/2010  
 Date

drcatanach@netscape.com  
 E-Mail Address

January 20, 2010

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

Attention: Mr. William Jones

Re: Injection Pressure Increase  
Artesia Unit Waterflood Project  
Artesia Unit Wells No. 1, 29, 46 and 53  
Artesia Queen-Grayburg-San Andres Pool  
Eddy County, New Mexico

Dear Mr. Jones,

? - operating

Melrose Energy Company, as operator of the Artesia Unit Waterflood Project, hereby requests Division approval to increase the surface injection pressure on the following-described injection wells located within the Unit Area. In compliance with Division regulations, Melrose Energy Company has conducted step rate injection tests on these wells during September, 2009.

| <u>Well No.</u> | <u>API No.</u> | <u>Well Location</u> | <u>Order No.</u> | <u>Requested Pressure</u> |
|-----------------|----------------|----------------------|------------------|---------------------------|
| 1               | 30-015-01564   | Unit L, 26-17S-28E   | WFX-733          | 1082 psi                  |
| 29              | 30-015-01742   | Unit N, 35-17S-28E   | WFX-768          | 1378 psi                  |
| 46              | 30-015-02541   | Unit F, 3-18S-28E    | R-11720-A        | 1046 psi                  |
| 53              | 30-015-01788   | Unit J, 3-18S-28E    | R-11720-A        | 842 psi                   |

Attached are the step rate injection tests conducted by Cardinal Surveys Company.

If you should have any questions, please contact me at (505) 690-9453.

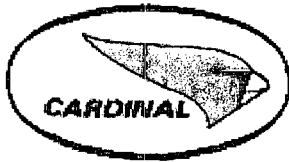
Sincerely,



David Catanach  
Agent for Melrose Energy Company  
20333 State Highway 249  
Suite 310  
Houston, Texas 77070

Xc: OCD-Artesia  
Via E-mail-Mr. Tony Beilman

## Step Rate Test



### Cardinal Surveys Company

September 15, 2009

Melrose Operating  
Artesia Unit # 1  
Field:  
Eddy County, New Mexico  
SC 58485B  
File # 19547

Fracture @ 340 BPD  
2068 BHPSIA,  
1082 Surf PSIA

Downhole PSI Tool Ser. No.  
Surface PSI Gauge Ser. No.  
Tool @ 2077'

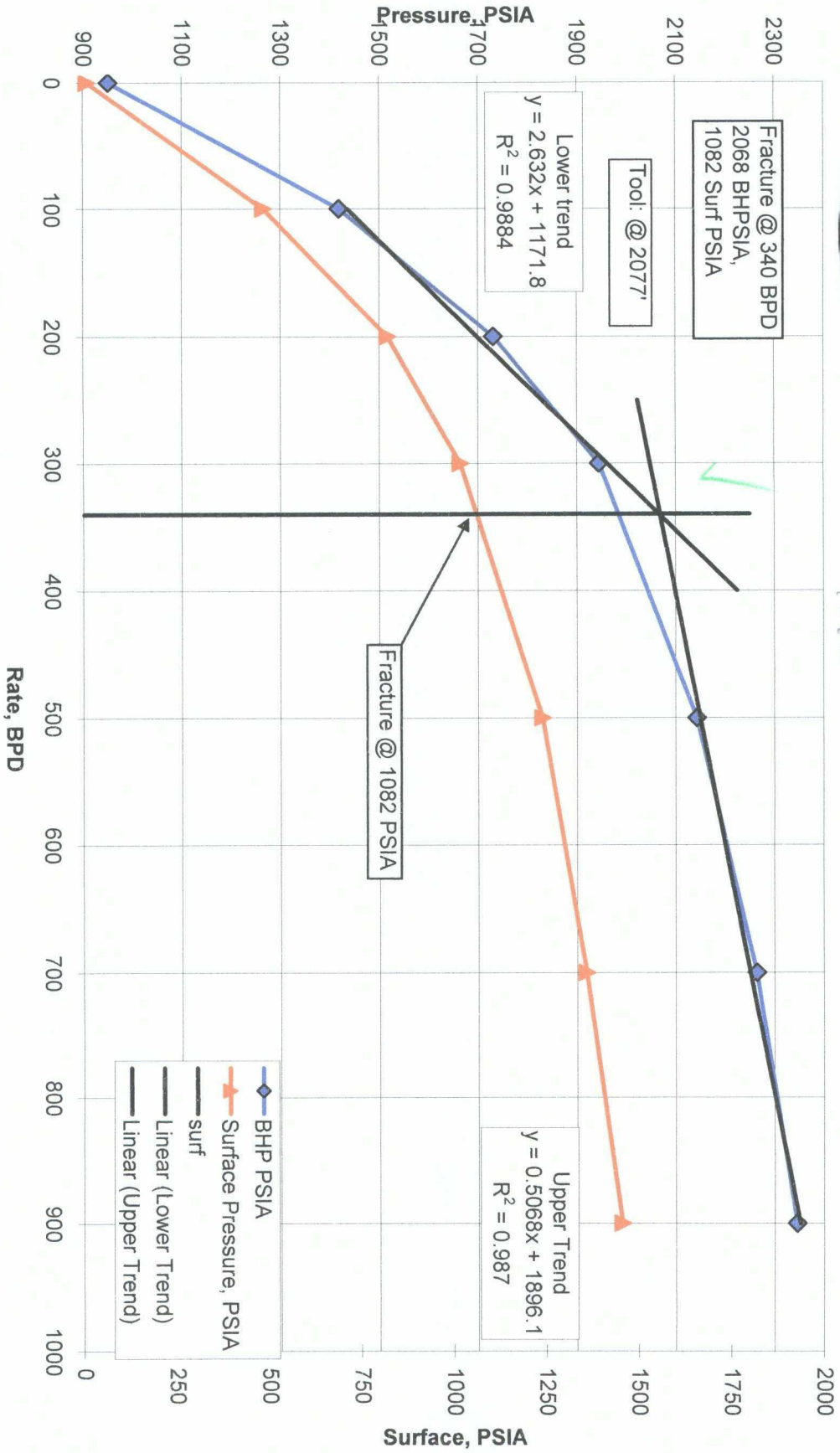
|   | Start<br>Time | End<br>Time | Rate<br>BPD | Comments    |
|---|---------------|-------------|-------------|-------------|
| 1 | 7:32 AM       | 9:00 AM     |             | 0 On Bottom |
| 2 | 9:00 AM       | 9:30 AM     | 100         |             |
| 3 | 9:30 AM       | 10:00 AM    | 200         |             |
| 4 | 10:00 AM      | 10:30 AM    | 300         |             |
| 5 | 10:30 AM      | 11:00 AM    | 500         |             |
| 6 | 11:00 AM      | 11:30 AM    | 700         |             |
| 7 | 11:30 AM      | 12:00 PM    | 900         |             |
| 8 | 12:00 PM      | 12:15 PM    |             | 0 Fall Off  |



30-015-01564

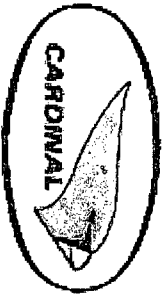
Melrose Operating Artesia Unit # 1  
Step Rate Test 09-15-2009

1082-50 = 1032 .50



# Step Rate Test

Melrose Operating  
Artesia Unit # 1  
Field:  
Eddy County, New Mexico



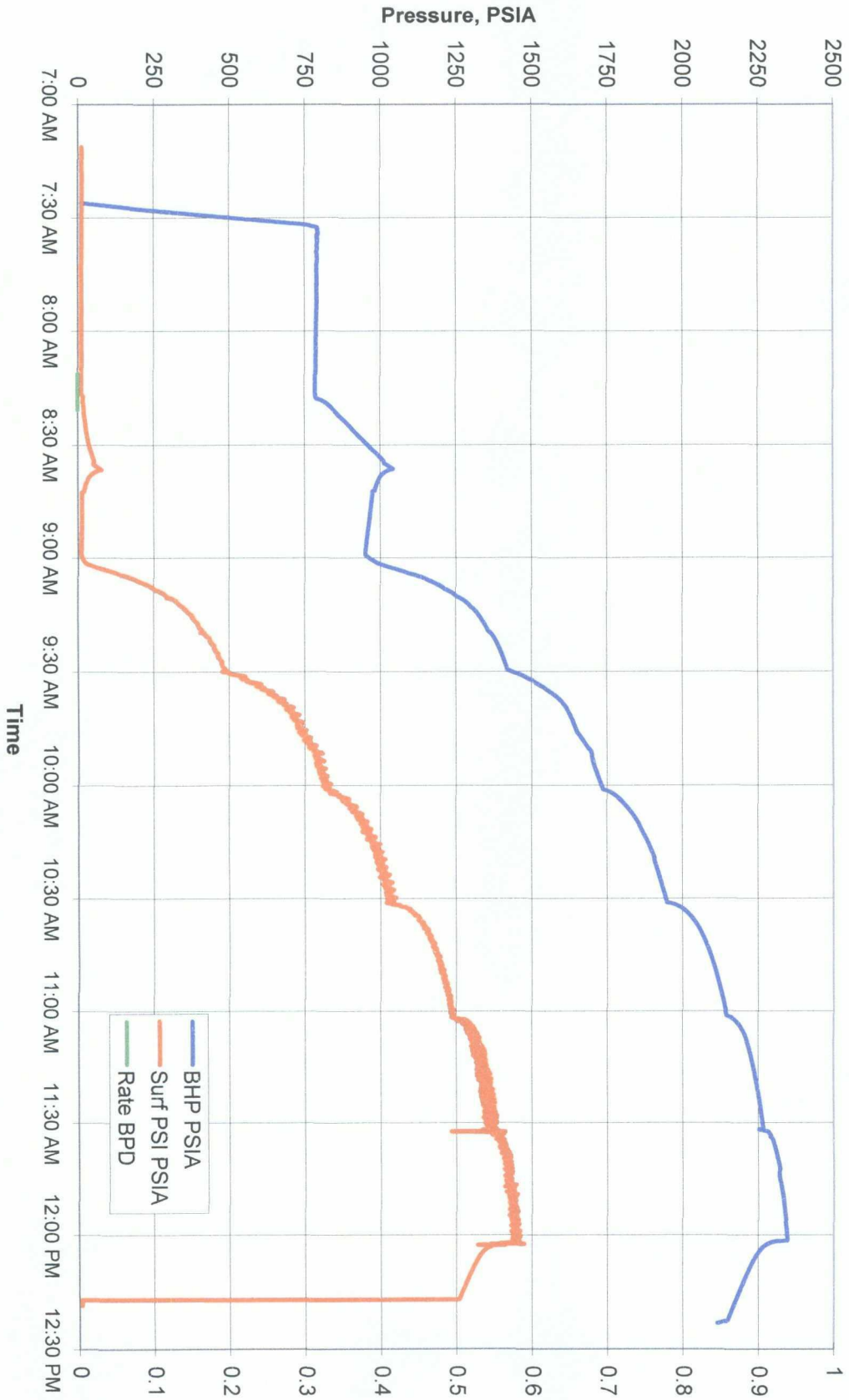
|   | S Time   | E Time   | D Time | Last Rate | Step B. H. Pressure | Surf   | Cum  | Delta | Avg. | Lower  | Upper  |
|---|----------|----------|--------|-----------|---------------------|--------|------|-------|------|--------|--------|
|   |          |          | Min    | BPD       | BPD                 | PSIA   | BBL  | BBL   | BPD  | Trend  | Trend  |
| 1 | 7:32 AM  | 9:00 AM  | 88     | 0         | 0                   | 951    | 1.6  | 1.60  | 0    |        |        |
| 2 | 9:00 AM  | 9:30 AM  | 30     | 100       | 100                 | 1418.5 | 3.7  | 2.10  | 101  | 1418.5 |        |
| 3 | 9:30 AM  | 10:00 AM | 30     | 200       | 100                 | 1731.1 | 8.1  | 4.40  | 211  | 1731.1 |        |
| 4 | 10:00 AM | 10:30 AM | 30     | 300       | 100                 | 1944.9 | 14.5 | 6.40  | 307  | 1944.9 |        |
| 5 | 10:30 AM | 11:00 AM | 30     | 500       | 200                 | 2142.8 | 25.2 | 10.70 | 206  |        | 2142.8 |
| 6 | 11:00 AM | 11:30 AM | 30     | 700       | 200                 | 2264.3 | 39.7 | 14.50 | 182  |        | 2264.3 |
| 7 | 11:30 AM | 12:00 PM | 30     | 900       | 200                 | 2345.5 | 59   | 19.30 | 926  |        | 2345.5 |
| 8 | 12:00 PM | 12:15 PM | 15     | 0         | -900                | 2184.2 | 59   | 0.00  | 0    |        |        |

int point: 340.81498 BPD  
2068.825 Psia

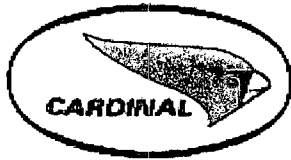
2.632 1171.8  
0.5068 1896.1



Melrose Operating Artesia Unit # 1  
Step Rate Test 09-15-2009



## Step Rate Test



### Cardinal Surveys Company

September 29, 2009

Melrose Operating  
Artesia Unit # 29  
Field:  
Eddy County, New Mexico  
SC 58486  
File # 19486

|                                                          |
|----------------------------------------------------------|
| Intercept @ 378 BPD &<br>2355 PSIA, 1378<br>Surface PSIA |
|----------------------------------------------------------|

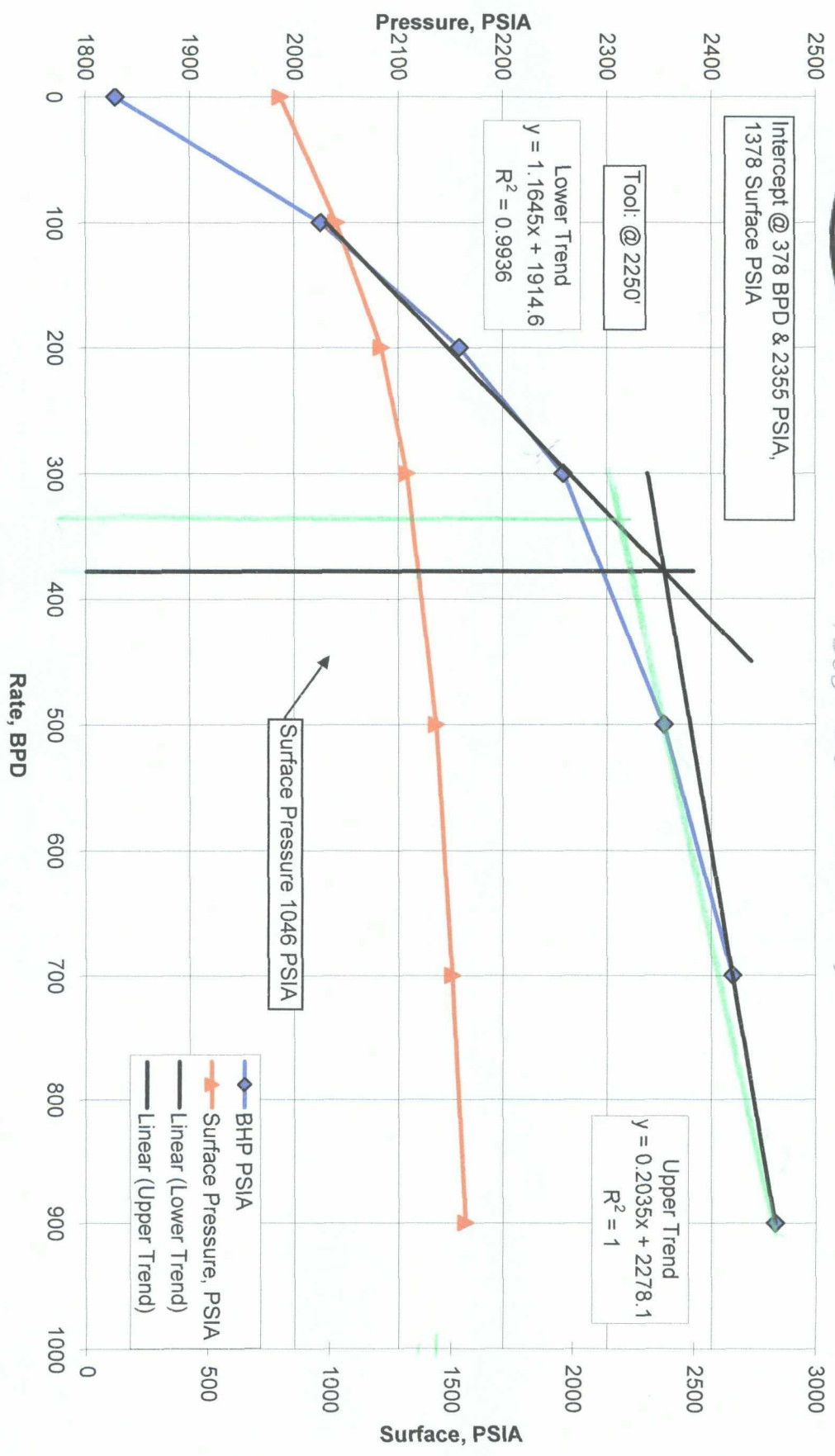
Downhole PSI Tool Ser. No.  
Surface PSI Gauge Ser. No.  
Tool @ 2100'

|   | Start<br>Time | End<br>Time | Rate<br>BPD | Comments    |
|---|---------------|-------------|-------------|-------------|
| 1 | 8:22 AM       | 9:00 AM     |             | 0 On Bottom |
| 2 | 9:00 AM       | 9:30 AM     | 100         |             |
| 3 | 9:30 AM       | 10:00 AM    | 200         |             |
| 4 | 10:00 AM      | 10:30 AM    | 300         |             |
| 5 | 10:30 AM      | 11:00 AM    | 500         |             |
| 6 | 11:00 AM      | 11:30 AM    | 700         |             |
| 7 | 11:30 AM      | 12:00 PM    | 900         |             |
| 8 | 12:00 PM      | 12:15 PM    |             | 0 Fall Off  |

30-015-01742

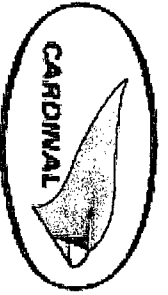
Melrose Operating Artesia Unit # 29  
Step Rate Test 09-03-2009

1350 - 50 = 1300 (5)



# Step Rate Test

Melrose Operating  
Artesia Unit # 29  
Field:  
Eddy County, New Mexico

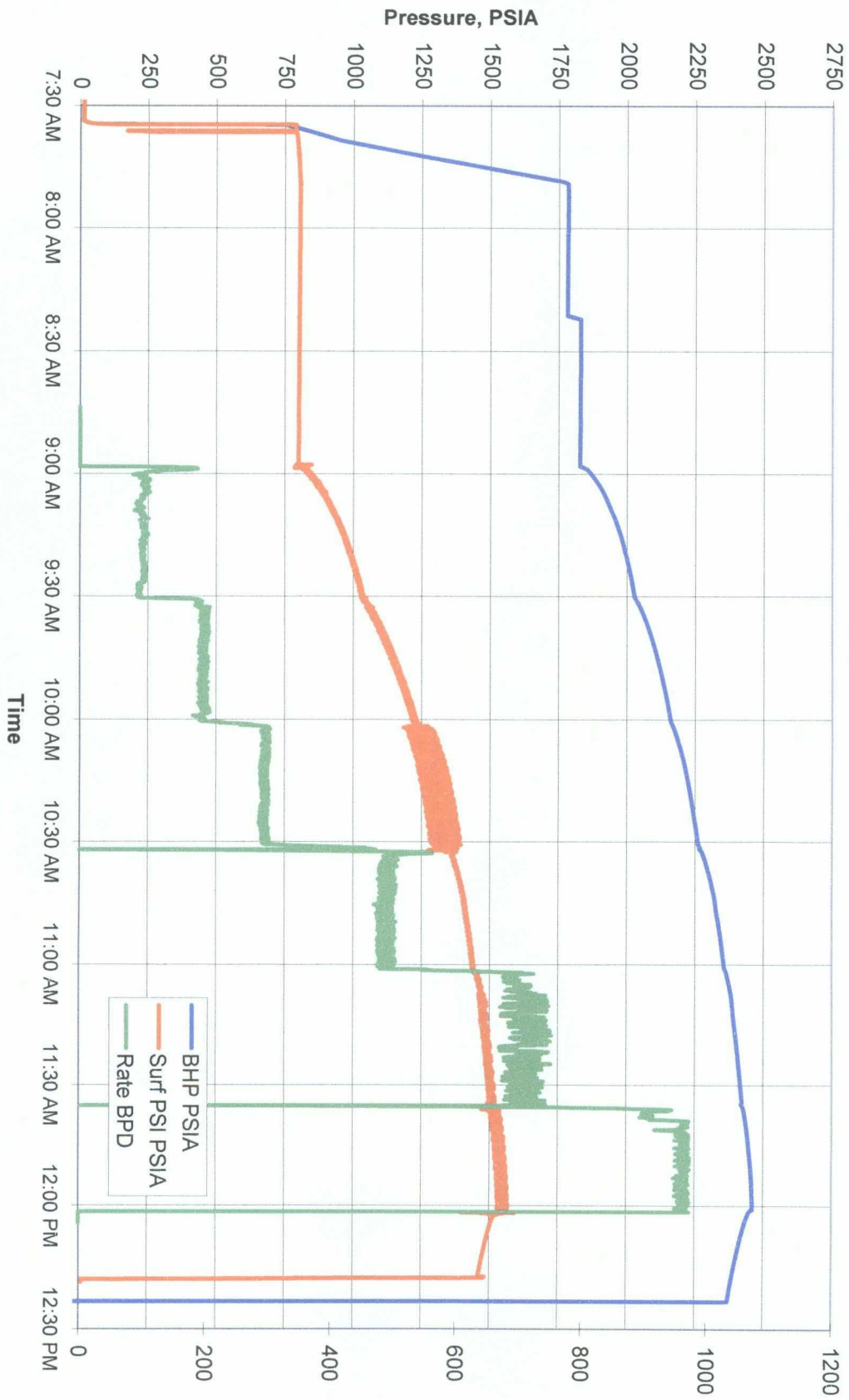


|   | S Time      | E Time   | D Time  |     | Last Rate<br>BPD | Step B. H. Pressure<br>BPD | Surf   |        | Cum  |      | Delta |       | Avg.<br>BPD | Lower<br>Trend | Upper<br>Trend |
|---|-------------|----------|---------|-----|------------------|----------------------------|--------|--------|------|------|-------|-------|-------------|----------------|----------------|
|   |             |          | Min     | Max |                  |                            | PSIA   | PSIA   | BBL  | BBL  | BBL   | BBL   |             |                |                |
| 1 | 8:22 AM     | 9:00 AM  | 38      |     | 0                | 0                          | 1828.7 | 800.6  | 0    | 0.00 | 2.30  | 0.00  | 0           |                |                |
| 2 | 9:00 AM     | 9:30 AM  | 30      |     | 100              | 100                        | 2025.6 | 1031.5 | 2.3  | 6.5  | 4.20  | 2.30  | 110         | 2025.6         |                |
| 3 | 9:30 AM     | 10:00 AM | 30      |     | 200              | 100                        | 2158.3 | 1216.5 | 6.5  | 12.7 | 6.20  | 4.20  | 202         | 2158.3         |                |
| 4 | 10:00 AM    | 10:30 AM | 30      |     | 300              | 100                        | 2258.5 | 1320.6 | 12.7 | 22.9 | 10.20 | 6.20  | 298         | 2258.5         |                |
| 5 | 10:30 AM    | 11:00 AM | 30      |     | 500              | 200                        | 2354.5 | 1441.2 | 22.9 | 38.9 | 16.00 | 10.20 | 192         |                |                |
| 6 | 11:00 AM    | 11:30 AM | 30      |     | 700              | 200                        | 2420.5 | 1506.7 | 38.9 | 56.9 | 18.00 | 16.00 | 278         |                | 2420.5         |
| 7 | 11:30 AM    | 12:00 PM | 30      |     | 900              | 200                        | 2461.2 | 1560.5 | 56.9 | 56.9 | 0.00  | 18.00 | 864         |                | 2461.2         |
| 8 | Melrose Opf | 12:15 PM | #VALUE! |     | 0                | -900                       | 2391.5 | 1460.3 | 56.9 | 0.00 |       |       | 0           |                |                |

int point: 378.25182 BPD  
2355.0742 Psia  
1.1645 1914.6  
0.2035 2278.1



Melrose Operating Artesia Unit # 29  
Step Rate Test 09-03-2009



## Step Rate Test



### Cardinal Surveys Company

September 14, 2009

Melrose Operating  
Artesia Unit # 46  
Field:  
Eddy County, New Mexico  
SC 58491  
File # 19545

|                                                               |
|---------------------------------------------------------------|
| Intercept @ 1100.7 BPD<br>& 2075.7 PSIA, 1046<br>Surface PSIA |
|---------------------------------------------------------------|

Downhole PSI Tool Ser. No.  
Surface PSI Gauge Ser. No.  
Tool @ 2250'

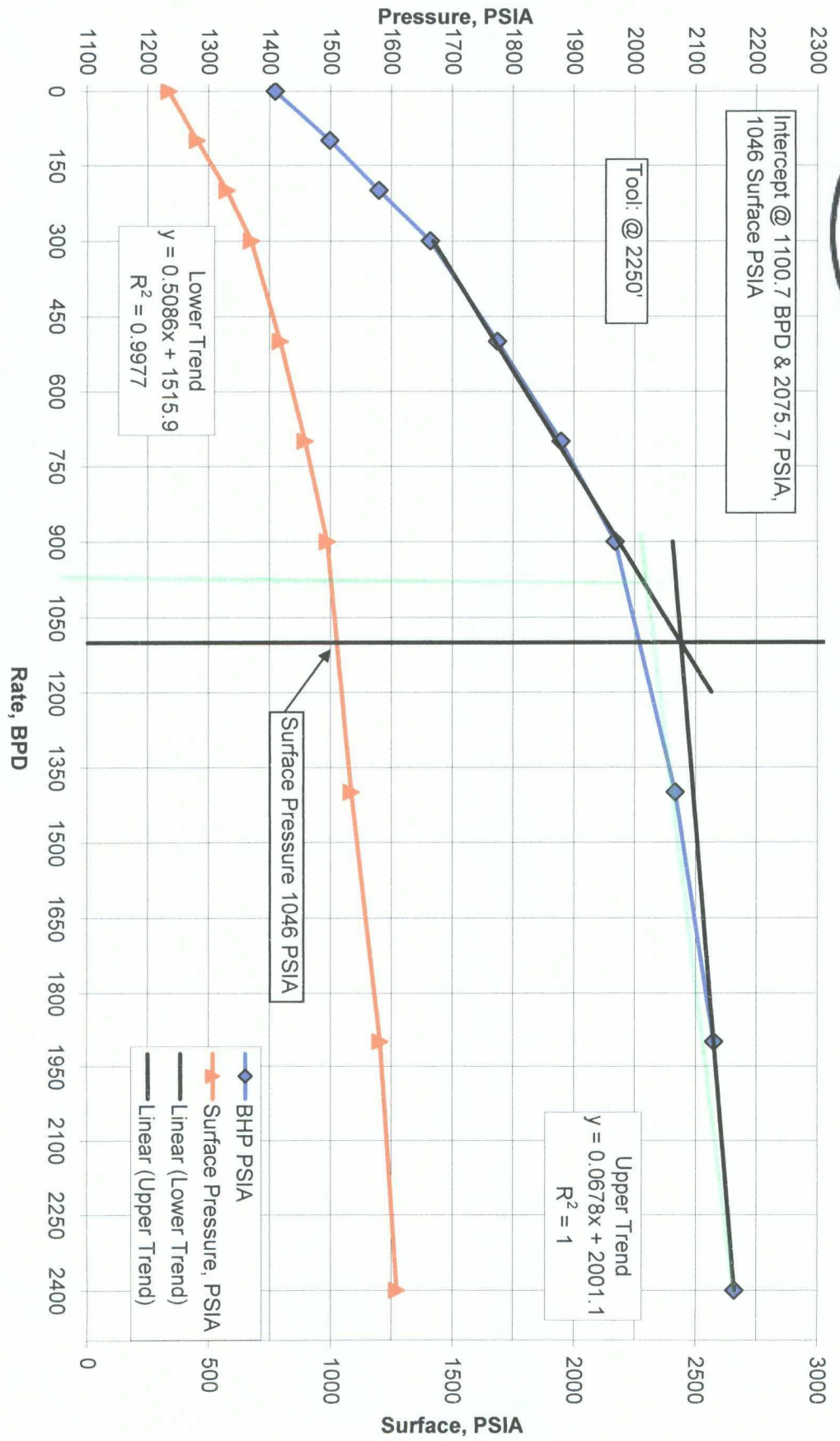
|    | Start<br>Time | End<br>Time | Rate<br>BPD | Comments    |
|----|---------------|-------------|-------------|-------------|
| 1  | 8:20 AM       | 8:45 AM     |             | 0 On Bottom |
| 2  | 8:45 AM       | 9:15 AM     | 100         |             |
| 3  | 9:15 AM       | 9:45 AM     | 200         |             |
| 4  | 9:45 AM       | 10:15 AM    | 300         |             |
| 5  | 10:15 AM      | 10:45 AM    | 500         |             |
| 6  | 10:45 AM      | 11:15 AM    | 700         |             |
| 7  | 11:15 AM      | 11:45 AM    | 900         |             |
| 8  | 11:45 AM      | 12:15 PM    | 1400        |             |
| 10 | 12:15 PM      | 12:45 PM    | 1900        |             |
| 12 | 12:45 PM      | 1:15 PM     | 2400        |             |
| 14 | 1:15 PM       | 1:30 PM     |             | 0 Fall Off  |

30-015-02541



Melrose Operating Artesia Unit # 46  
Step Rate Test 09-14-2009

1000 - 50 = 950 (,45°)



# Step Rate Test

Melrose Operating  
Artesia Unit # 46  
Field:  
Eddy County, New Mexico

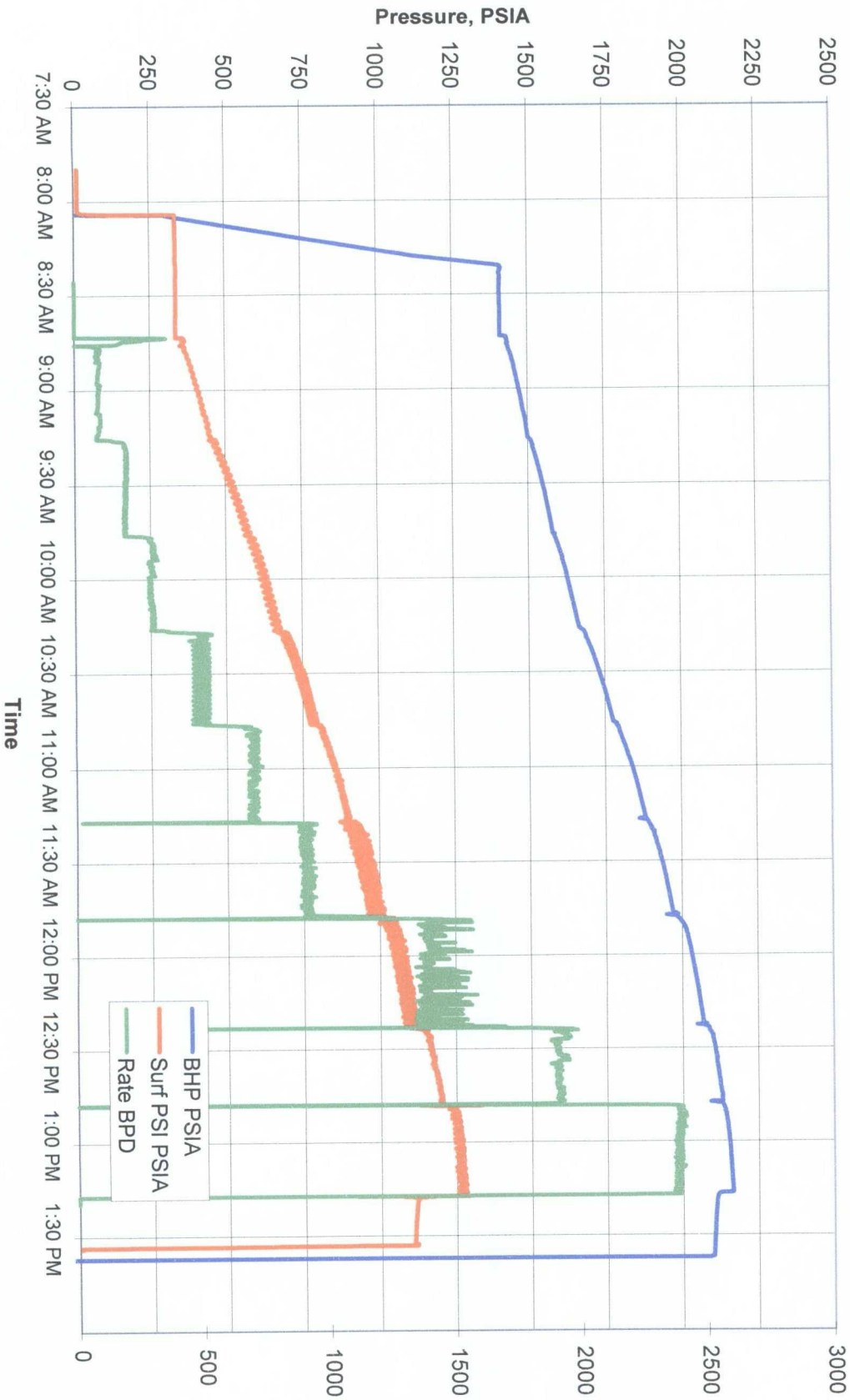


|    | S Time   | E Time   | D Time | Last Rate | Step B. H. Pressure | Surf   | Cum    | Delta | Avg.  | Lower | Upper  |
|----|----------|----------|--------|-----------|---------------------|--------|--------|-------|-------|-------|--------|
|    |          |          | Min    | BPD       | BPD                 | PSIA   | BBL    | BBL   | BPD   | Trend | Trend  |
| 1  | 8:20 AM  | 8:45 AM  | 25     | 0         | 0                   | 1409.1 | 337.3  | 0     | 0.00  |       |        |
| 2  | 8:45 AM  | 9:15 AM  | 30     | 100       | 100                 | 1498.5 | 453.2  | 2.3   | 2.30  | 110   |        |
| 3  | 9:15 AM  | 9:45 AM  | 30     | 200       | 100                 | 1579.2 | 575.7  | 6.6   | 4.30  | 206   |        |
| 4  | 9:45 AM  | 10:15 AM | 30     | 300       | 100                 | 1663.5 | 676    | 13    | 6.40  | 307   | 1663.5 |
| 5  | 10:15 AM | 10:45 AM | 30     | 500       | 200                 | 1774.4 | 793.6  | 23.5  | 10.50 | 197   | 1774.4 |
| 6  | 10:45 AM | 11:15 AM | 30     | 700       | 200                 | 1878.6 | 896    | 38.2  | 14.70 | 202   | 1878.6 |
| 7  | 11:15 AM | 11:45 AM | 30     | 900       | 200                 | 1967.8 | 987.3  | 57.6  | 19.40 | 931   | 1967.8 |
| 8  | 11:45 AM | 12:15 PM | 30     | 1400      | 500                 | 2066.8 | 1086   | 91.4  | 33.80 | 1622  |        |
| 10 | 12:15 PM | 12:45 PM | 30     | 1900      | 500                 | 2129.9 | 1204.4 | 125   | 33.60 | 1613  |        |
| 12 | 12:45 PM | 1:15 PM  | 30     | 2400      | -2400               | 2163.8 | 1272   | 175.1 | 50.10 | 2405  |        |
| 14 | 1:15 PM  | 1:30 PM  | 15     | 0         | 0                   | 2103   | 1109.7 | 175.1 | 0.00  | 0     | 2129.9 |
|    |          |          |        |           |                     |        |        |       |       |       | 2163.8 |

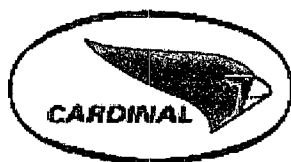
0.5086 1515.9  
0.0678 2001.1  
int point: 1100.726 BPD  
2075.7292 Psia



Melrose Operating Artesia Unit # 46  
Step Rate Test 09-14-2009



## Step Rate Test



### Cardinal Surveys Company

September 4, 2009

Melrose Operating  
Artesia Unit # 53  
Field:  
Eddy County, New Mexico  
SC 58487A  
File # 19536

|                                                             |
|-------------------------------------------------------------|
| Intercept @ 381.4 BPD<br>& 1895.8 PSIA, 842<br>Surface PSIA |
|-------------------------------------------------------------|

Downhole PSI Tool Ser. No.  
Surface PSI Gauge Ser. No.  
Tool @ 2250'

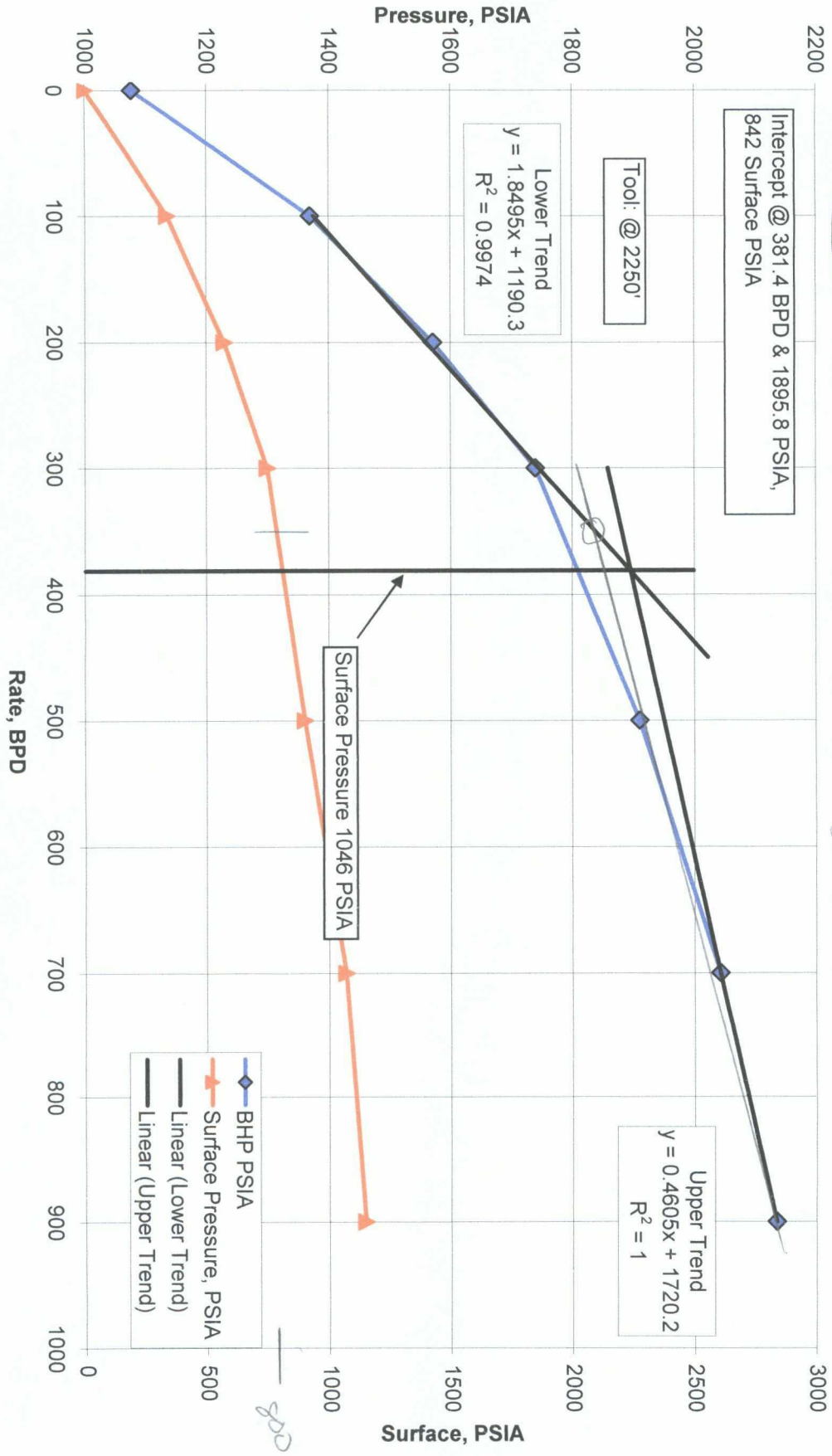
|   | Start<br>Time | End<br>Time | Rate<br>BPD | Comments    |
|---|---------------|-------------|-------------|-------------|
| 1 | 9:13 AM       | 9:45 AM     |             | 0 On Bottom |
| 2 | 9:45 AM       | 10:15 AM    | 100         |             |
| 3 | 10:15 AM      | 10:45 AM    | 200         |             |
| 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      | 1:00 PM     |             | 0 Fall Off  |



Melrose Operating Artesia Unit # 53  
Step Rate Test 09-04-2009

30-015-01788

800-50 = 750



# Step Rate Test

Melrose Operating  
Artesia Unit # 53  
Field:  
Eddy County, New Mexico



|   | S Time   | E Time   | D Time | Last Rate | Step | B. H. Pressure | Surf   | Cum  | Delta | Avg. | Lower  | Upper  |
|---|----------|----------|--------|-----------|------|----------------|--------|------|-------|------|--------|--------|
|   |          |          | Min    | BPD       | BPD  | PSIA           | PSIA   | BBL  | BBL   | BPD  | Trend  | Trend  |
| 1 | 9:13 AM  | 9:45 AM  | 32     | 0         | 0    | 1076.8         | 0      | 0    | 0.00  | 0    |        |        |
| 2 | 9:45 AM  | 10:15 AM | 30     | 100       | 100  | 1369.8         | 338    | 3.6  | 3.60  | 173  | 1369.8 |        |
| 3 | 10:15 AM | 10:45 AM | 30     | 200       | 100  | 1571.1         | 574.1  | 7.7  | 4.10  | 197  | 1571.1 |        |
| 4 | 10:45 AM | 11:15 AM | 30     | 300       | 100  | 1739.7         | 749.8  | 14.1 | 6.40  | 307  | 1739.7 |        |
| 5 | 11:15 AM | 11:45 AM | 30     | 500       | 200  | 1910.3         | 902.4  | 24.5 | 10.40 | 192  |        | 1910.3 |
| 6 | 11:45 AM | 12:15 PM | 30     | 700       | 200  | 2042.5         | 1069.9 | 39.9 | 15.40 | 240  |        | 2042.5 |
| 7 | 12:15 PM | 12:45 PM | 30     | 900       | 200  | 2134.6         | 1149.3 | 59.3 | 19.40 | 931  |        |        |
| 8 | 12:45 PM | 1:00 PM  | 15     | 0         | -900 | 1991.4         | 997.7  | 59.3 | 0.00  | 0    |        | 2134.6 |

1.8495 1190.3  
0.4605 1720.2

Int point: 381.49748 BPD  
1895.8796 Psia



Melrose Operating Artesia Unit # 53  
Step Rate Test 09-04-2009

