

Additional data for EC transaction #293637 that would not fit on the form

32. Additional remarks, continued

were so low at this rate that a pump truck could not inject this slowly. The maximum injection rate was increased to 5 BPM to accommodate the required 7 steps at a minimum rate within the range of a pump truck.

6. Injection fluid #/gal = 8.9 #/gal.

7. Anticipated formation breakdown pressure @ top perf: (assuming .75 frac gradient)

$2582 - (3443 * .052 * 8.9) = 989$ psi at surface.

8. Stop injection a minimum of 48 hours (we did 71 hours, weather delay) before the step rate test and record the pressure drop: Attached.

9. Calculate seven injection rates by multiplying the targeted maximum bbl/min injection by .05 for step 1, .10 for step 2, .2 for step 3, .4 for step 4, .6 for step 5, .8 for step 6 and 1.0 for step 7.

7. Our adjusted maximum injection rate was 5 BPM: Step 1 = .25 BPM (360 BPD), Step 2 = .5 BPM (720 BPD), Step 3 = 1 BPM (1440 BPD), Step 4 = 2 BPM (2880 BPD), Step 5 = 3 BPM (4320 BPD), Step 6 = 4 BPM (5760 BPD), Step 7 = 5 BPM (7,200 BPD).

10. The step rate fluid was produced water from the battery, the same water that would be used for water flood injection.

11. We employed Cardinal's instrument skid with a constant flow regulator & turbine flow meter, these rates were recorded along with pressures and are attached.

12. Cardinal also ran a real time down hole pressure gauge and surface pressure gauge. These pressures are included in 5 minute increments and are attached as well.

13. Paul Swartz with BLM was notified at 8:33 AM on 18 Feb 2015 of the anticipated pump date of 23 Feb 2015. Then Paul was notified again on the 23rd of a weather delay and that the job would pump on the 24th. Mr. Swartz was able to make the job and witnessed it for the BLM.

14. The test was concluded at step 6, 4 BPM (5760 BPD) when the surface treating pressure approached the working pressure of the valve (3,000 psi)

15. Formation frac pressure was not exceeded due to shutting down at max pressure.

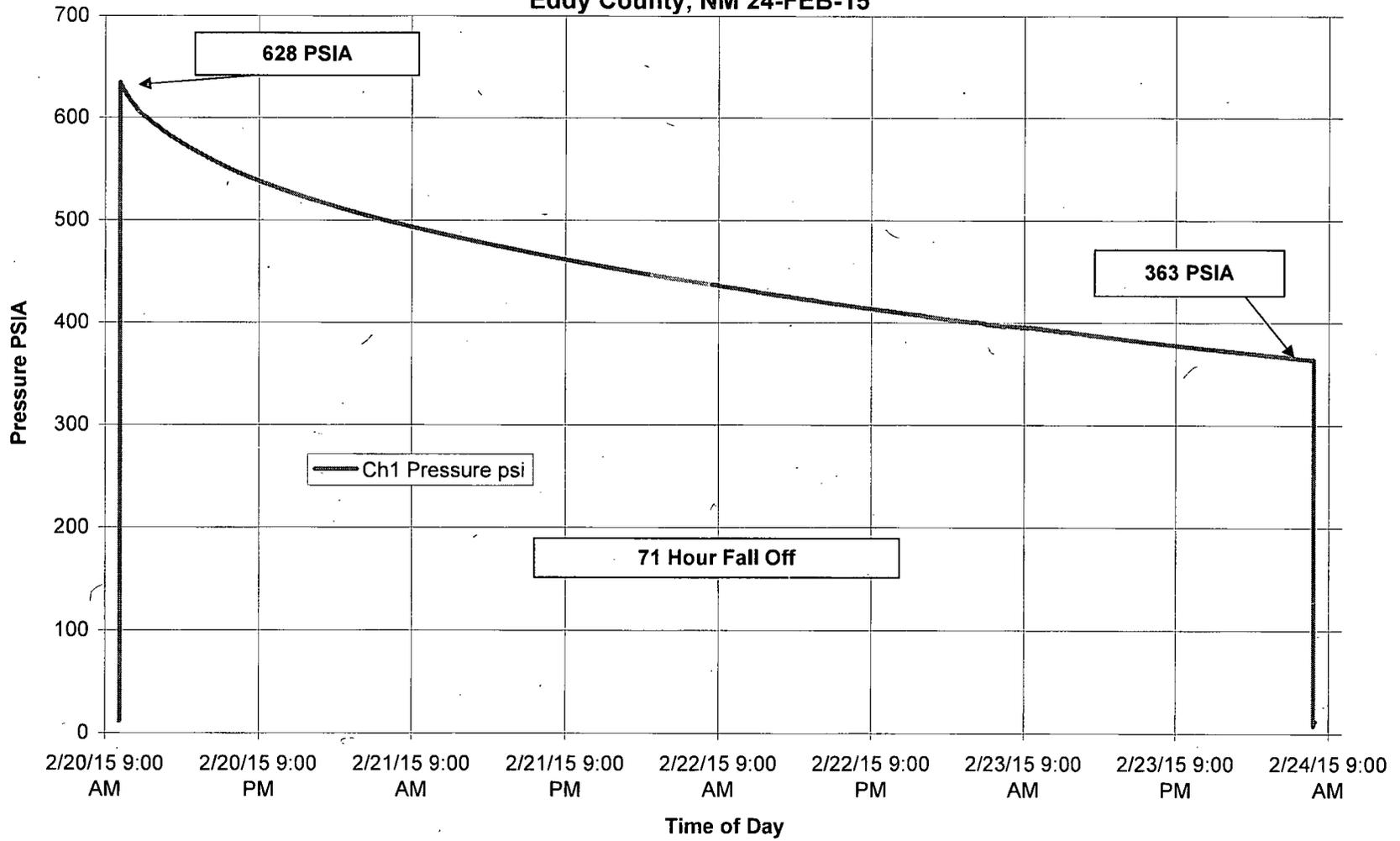
16. Record with each 5 minute interval the corresponding rate (BBL/min), down hole & surface pressure: Attached.

17. File a sundry subsequent report with the data collected, requesting your proposed wellhead injection pressure: Capstone Natural Resources has requested an increased injection pressure of 2500 psi and injection volume increase of 750 BPD from the New Mexico OCD.

Notified Richard Inge, OCD, 2/23/15.

This Sundry being submitted to the OCD 'For Record Only'

Capstone Natural Resources, LLC
Lee C Federal No. 4
Eddy County, NM 24-FEB-15



Step Rate Test



Cardinal Surveys Company

24-Feb-15

Capstone Natural Resources, LLC
Well: Lee C Federal No. 4
Field: Grayburg
County: Eddy County, New Mexico
API No. 30-015-05132
SC70521
File No. 22108

No Parting Pressure Indicated

Downhole PSI Tool Ser. No. CSC2604
Surface PSI Gauge Ser. No. CSC 2701
Tool @ 3,500'

	Start	End	Rate-BPD
1	8:38 AM	9:00 AM	0 3,500'
2	9:00 AM	9:30 AM	360
3	9:30 AM	10:00 AM	720
4	10:00 AM	10:30 AM	1440
5	10:30 AM	11:00 AM	2880
6	11:00 AM	11:30 AM	4320
7	11:30 AM	11:32 AM	5760
8	11:32 AM	11:45 AM	0 FALL OFF

9

10 **NOTE: TEST SHUT DOWN 2 MINUTES INTO STEP NO. 7**

11 **DUE TO SURFACE PRESSURE LIMIT**

12

13 **MAXIMUM SURFACE PRESSURE REACHED DURING THE TEST WAS 2,828 PSI**

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17

18

Step Rate Test
24-Feb-15

Capstone Natural Resources, LLC
Well: Lee C Federal No. 4
Field: Grayburg
Location: Eddy County, New Mexico
API No. 30-015-05132



	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	8:38 AM	9:00 AM	22	0	0	2058.8	356	0	0	0		
2	9:00 AM	9:30 AM	30	360	360	2626	949	4.1	4.1	197		
3	9:30 AM	10:00 AM	30	720	360	2782.1	1101	18.4	14.3	686		
4	10:00 AM	10:30 AM	30	1440	720	3029.1	1411	49.6	31.2	1498		
5	10:30 AM	11:00 AM	30	2880	1440	3369	1933	108.1	58.5	2808		
6	11:00 AM	11:30 AM	30	4320	1440	3614.9	2517	195.4	87.3	4190		
7	11:30 AM	11:32 AM	2	5760	1440	3651.2	2822	203.4	8	5760		
8	11:32 AM	11:45 AM	13	0	0	3394.7	1702	203.4	0	0		

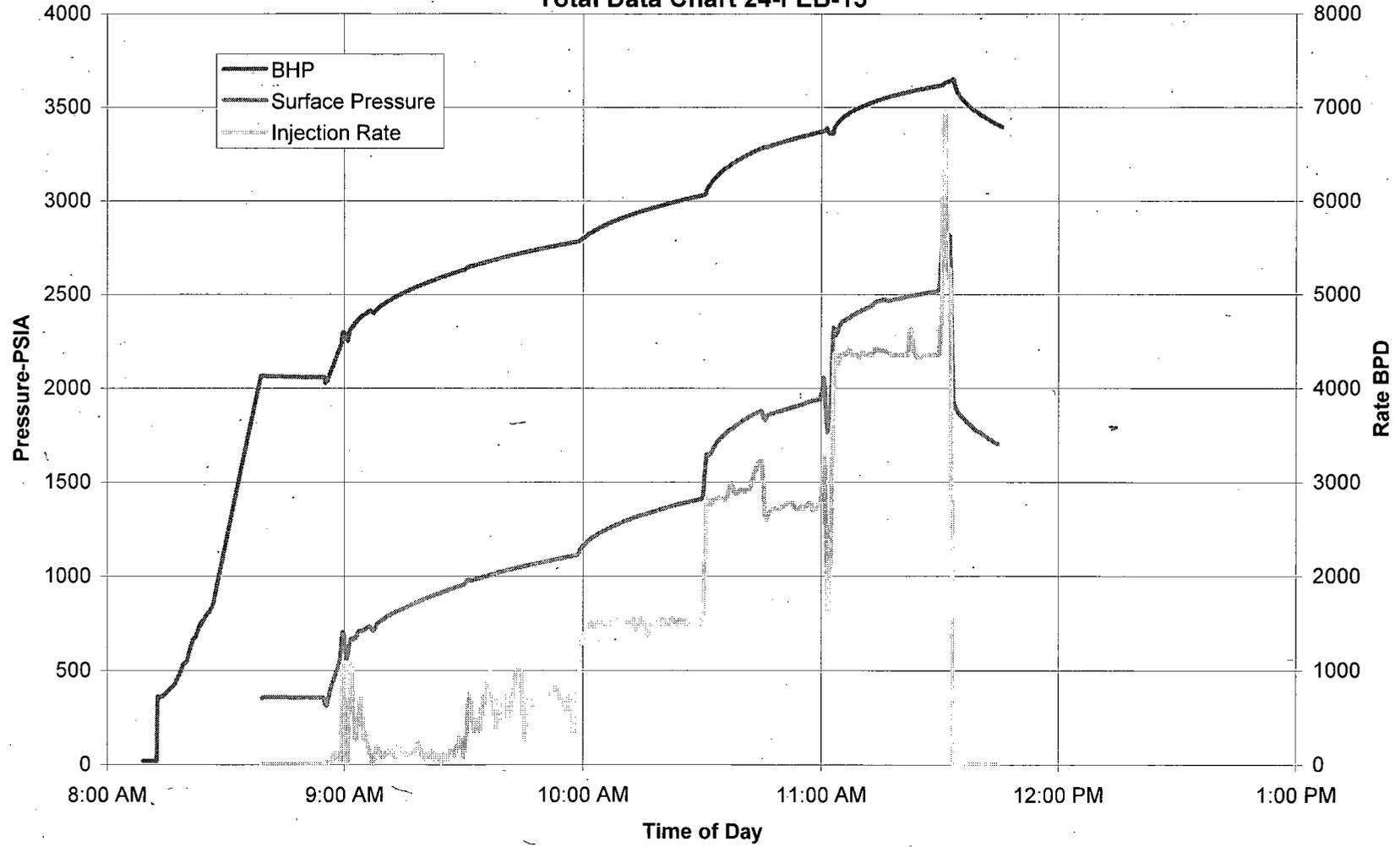
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10 NOTE: TEST SHUT DOWN 2 MINUTES INTO STEP NO. 7 DUE TO SURFACE PRESSURE LIMIT

11
 12
 13
 14
 15
 16

upper trend
 lower trend
 intersect #DIV/0! BPD
 BHP PSI #DIV/0! PSIA

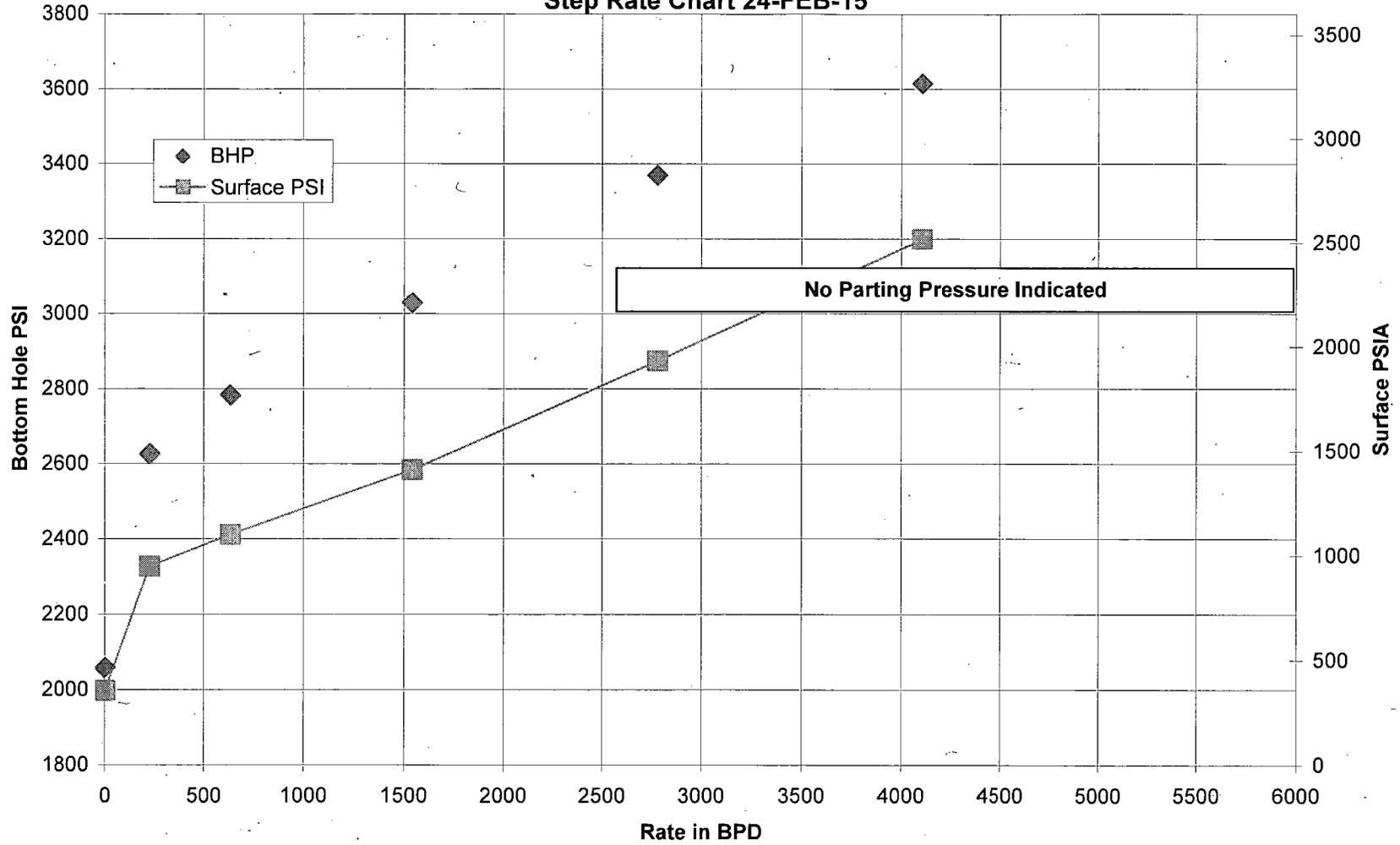


Capstone Natural Resources, LLC
Lee C Federal No. 4
Total Data Chart 24-FEB-15

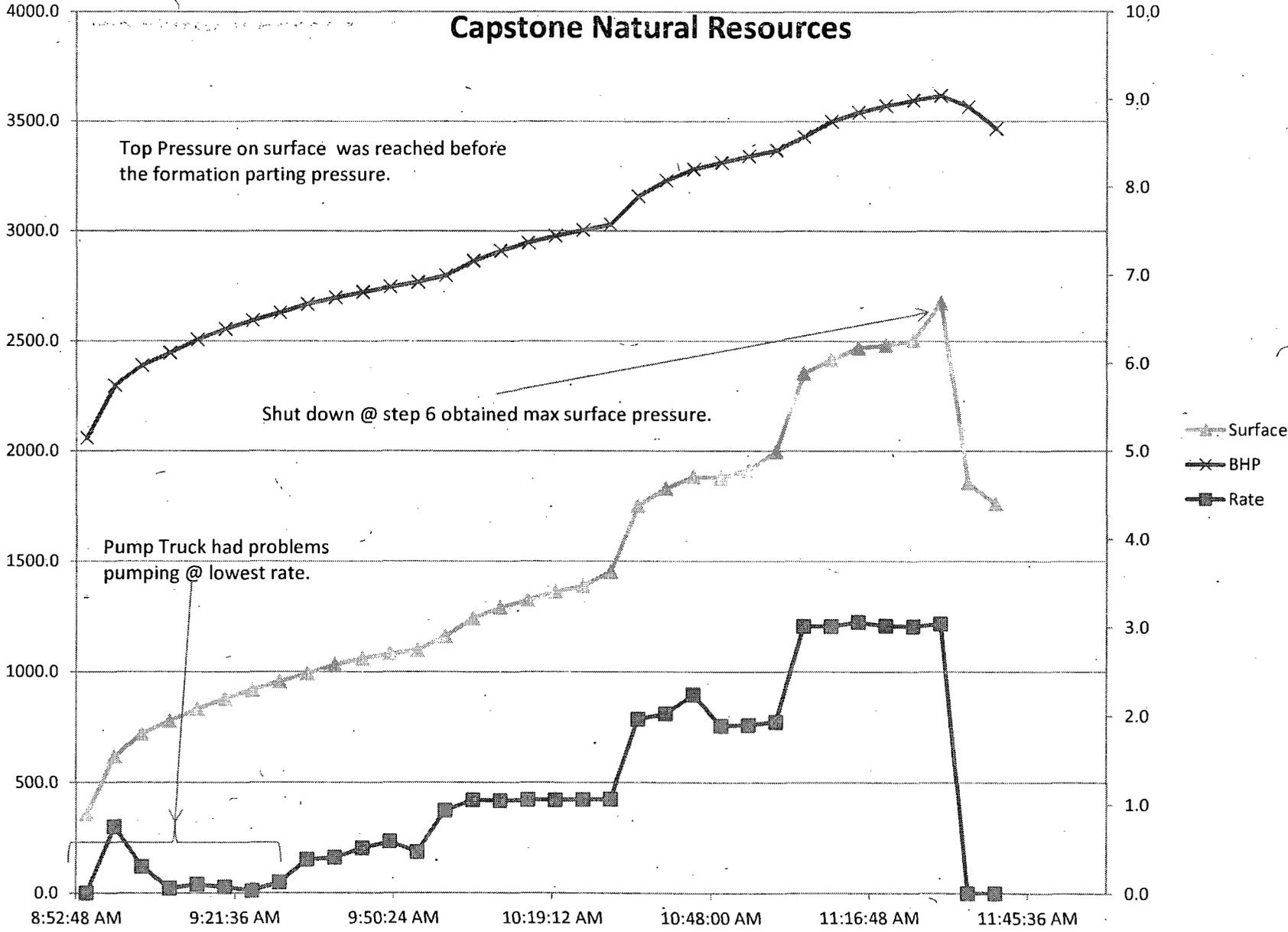




Capstone Natural Resources, LLC
Lee C Federal No. 4
Step Rate Chart 24-FEB-15



Capstone Natural Resources



Time	Rate bpm	Surface psi	BHP psi
8:54 AM	0.0	356.1	2058.8
8:59 AM	0.7	617.4	2297.6
9:04 AM	0.3	719.9	2388.2
9:09 AM	0.1	777.3	2445.6
9:14 AM	0.1	831.4	2506.8
9:19 AM	0.1	878.9	2553.6
9:24 AM	0.0	918.6	2593.7
9:29 AM	0.1	957.1	2629.0
9:34 AM	0.4	992.6	2667.5
9:39 AM	0.4	1032.5	2696.3
9:44 AM	0.5	1061.0	2722.3
9:49 AM	0.6	1082.3	2745.6
9:54 AM	0.5	1097.7	2767.0
9:59 AM	0.9	1160.9	2797.8
10:04 AM	1.1	1241.8	2863.6
10:09 AM	1.0	1290.4	2909.3
10:14 AM	1.1	1324.3	2945.7
10:19 AM	1.1	1361.4	2976.6
10:24 AM	1.1	1388.0	3004.1
10:29 AM	1.1	1452.4	3029.1
10:34 AM	2.0	1751.3	3156.9
10:39 AM	2.0	1829.3	3228.7
10:44 AM	2.2	1882.6	3280.6
10:49 AM	1.9	1878.9	3311.1
10:54 AM	1.9	1912.5	3341.0
10:59 AM	1.9	1997.7	3368.0
11:04 AM	3.0	2353.3	3429.7
11:09 AM	3.0	2414.3	3499.0
11:14 AM	3.1	2469.0	3540.8
11:19 AM	3.0	2480.2	3571.0
11:24 AM	3.0	2502.1	3595.3
11:29 AM	3.0	2673.0	3615.5
11:34 AM	0.0	1854.1	3564.9
11:39 AM	0.0	1759.7	3466.0
11:44 AM	0.0	0.0	3404.5