HALLIBURTON

Noble Energy

1625 Broadway
Denver, CO 80202

Lazy D ZN 3-15H

Niobrara Horizontal
05-123-31810
NWNW Sec 3 T11N R66W
1/17/2011 - 1/20/2011
Ticket #: 7905485

Treater: **Ubaldo Ramirez**
IFS: **John Fedak/Ryan Fadeley**
Engineer: **Adebambo Alli/Greg Hodapp**
Customer: **Mike Zoll**

DeltaEcho

Pre Job Inventory

Total Water on Location			0.0 bbls	gal
Total Water after Prime Up	0 Gal Prime Up		0.0 bbls	gal
Bottoms			2361.9 bbls	99,200 gal
Water Required for Design			117666.7 bbls	4,942,000 gal
Excess			**120028.6** bbls	**5,041,200** gal

Total Sand	Ottawa 20/40	947,000	#
	Ottawa 40/70	164,200	#
	SB Excel 20/40	80,000	#
Proppant Hauled From		Brighton	

Pressure Test

Lines Tested To	**9062**	psi
Max Pressure	8000	psi
Kick-Outs	8000	psi

Volume Calculations

Total Vertical Depth	8975	ft
Wellbore Volume	16905	gal
	402.5	bbls

Event Log

Day 1 - January 17, 2011

Interval 1 - WB Volume 402.5 bbl

1.3	Opened wellhead @ 850AM Begin FR water pad
2.0	pumping at 22bpm due to tail port limitation
2.8	Formation Break @ 4111 psi & 5.1 bpm
34.9	Begin Crosslinked Gel
38.6	Begin 0.50 ppg 40/70 sand @ 5624 psi & 22.5 bpm
44.1	Begin 2nd Crosslinked Gel pad
55.9	0.50 ppg sand on formation @ 5886 psi & 22.7 bpm
64.9	Begin 0.50 ppg sand @ 5917 psi & 22.5 bpm
82.5	0.50 ppg sand on formation @ 5744 psi & 22.7 bpm
116.9	Begin 0.50 ppg 20/40 sand @ 5837 psi & 22.7 bpm
145.1	Begin 1.00 ppg sand @ 5782 psi & 22.4 bpm
163.3	1.00 ppg sand on formation @ 5649 psi & 22.4 bpm
184.1	Begin 2.00 ppg sand @ 5633 psi & 22.3 bpm
201.8	2.00 ppg sand on formation @ 5499 psi & 22.4 bpm
216.9	Begin 3.00 ppg sand @ 5527 psi & 22.3 bpm
234.6	3.00 ppg sand on formation @ 5371 psi & 22.4 bpm
259.1	Begin 4.00 ppg sand @ 5383 psi & 22.4 bpm
276.8	4.00 ppg sand on formation @ 5280 psi & 22.4 bpm
281.2	Begin 4.00 SB Excel @ 5319 psi & 22.4 bpm
287.0	Begin Spacer
293.7	Laucnhed Ball @ 5789 psi & 22.5 bpm, JSV = 6337 bbl

Interval 2 - WB Volume 398.7 bbl

309.5	Ball Hit @ JSV = 6695 psi, 50 bbl early
309.6	Formation Break @ 6802 psi & 22.0 bpm
320.6	Begin Crosslinked Gel
324.4	Begin 0.50 ppg 40/70 sand @ 6550 psi & 21.5 bpm
329.5	Begin 2nd Crosslinked Gel pad
339.9	0.50 ppg sand on formation @ 7412 psi & 26.4 bpm
341.9	Dropped down to 22 bpm due to increasing Treating pressure
374.9	Begin 0.20 ppg sand scour
399.1	Begin 0.50 ppg 40/70 sand @ 6115 psi & 21.4 bpm
418.2	0.50 ppg sand on formation @ 5931 psi & 21.6 bpm
453.0	Begin 0.50 ppg 20/40 sand @ 5524 psi & 21.6 bpm
471.6	0.50 ppg sand on formation @ 5416 psi & 21.6 bpm
482.5	Begin 1.00 ppg sand @ 5393 psi & 21.4 bpm
502.3	1.00 ppg sand on formation @ 5247 psi & 21.3 bpm
524.1	Begin 2.00 pgp sand @ 5232 psi & 21.3 bpm
543.1	2.00 ppg sand on formation @ 5090 psi & 21.3 bpm

Pressure Analysis

ISIP		psi	ISDP	psi
IFG		psi/ft	FFG	psi/ft
5 min	NA	psi	5 min	psi
Leakoff	NA	psi	Leakoff	0 psi

Friction Analysis

Pressure at Start	*NA* psi
Rate at Start	*NA* bpm
Perfs Open	*NA*
NWB	*NA* psi
Perf	*NA* psi
WB	*NA* psi
Total	***NA*** psi

554.4	Last sand for this interval per customer request
559.2	Begin Flush @ 5077 psi & 21.4 bpm
563.0	Begin Tub Bypass
567.1	Launched Ball @ 5326 psi & 21.3 bpm @12212 JSV

Interval 3 - WB Volume 394.9 bbl

Couldn't Break into Interval, Shtutdown @ 830PM to flowback for 12hrs

Day 2 - January 18, 2011

Interval 3 - WB Volume 394.9 bbl

2.5	Opened Wellhead @ 1000AM, Begin FR water pad
54.19	Swapped to linear Gel to see this helps breakdwon formation
96.92	Launched Ball @ 6821 psi & 6.1 bpm, JSV = 13125 bbl

Interval 4 - WB Volume 391.0 bbl

136.0	Formation Break 7185 psi & 6.1 bpm
136.0	Ball hit @ JSV = 13366 bbl (150 bbl early)
142.1	Customer decided to cut the stage sizes in half after the 40/70 sand
158.2	Begin Crosslinked Gel
161.3	Begin 0.50 ppg 40/70 sand @ 7017 psi & 29.9 bpm
165.2	Begin 2nd Crosslinked Gel Pad
173.3	0.50 ppg sand on formatin @ 7724 psi & 35.0 bpm
179.0	Resume 0.50 ppg sand @ 7429 psi & 31.6 bpm
191.6	0.50 ppg sand on formatio n@ 7381 psi & 32.5 bpm
214.8	Begin 0.50 ppg 20/40 sand @ 7548 psi & 32.7 bpm
224.6	Begin 1.00 ppg sand @ 7141 psi & 32.4 bpm
226.7	0.50 ppg sand on formation @ 7018 psi & 32.3 bpm
236.9	1.00 ppg sand on formation @ 6688 psi & 32.4 bpm
237.9	Begin 2.00 ppg sand @ 6706 psi & 32.4 bpm
249.2	Begin 3.00 ppg sand @ 6335 psi & 32.4 bpm
250.2	2.00 ppg sand on formation @ 6354 psi & 32.4 bpm
261.4	3.00 ppg sand on formation @ 6192 psi & 32.5 bpm
263.6	Begin 4.00 ppg sand @ 6166 psi & 32.5 bpm
271.1	Begin 4.00 ppg SB Excel
275.4	Begin Spacer
280.0	Launched Ball @ 6312 psi & 33.1 bpm, JSV = 17627 bbl

Interval 5 - WB Volume 387.2 bbl

292.7	Sleeve Shift @ 5495 psi
292.7	Ball HIt @ JSV = 17984 bbl, 40bbl early
293.5	Formation Break @ 7456 psi & 12.4 bpm
303.8	Cut the stage size in half after the 40/70 sand per customer request
305.1	Begin Crosslinked Gel
308.5	Begin 0.50 ppg 40/70 sand @ 5812 psi & 29.8 bpm
312.3	Begin 2nd Crosslinked Gel pad
325.4	Resume 0.50 ppg sand @ 6894 psi 7 37.3 bpm
335.9	0.50 ppg sand on formation @ 6891 psi & 37.4 bpm
356.4	Begin 0.50 ppg 20/40 sand @ 6514 psi & 37.5 bpm
364.6	Begin 1.00 ppg sand @ 6423 psi & 37.2 bpm
375.4	1.00 ppg sand on formation @ 6222 psi & 37.1 bpm
376.7	Begin 2.00 ppg sand @ 6227 psi & 37.2 bpm
386.4	Begin 3.00 ppg sand @ 5931 psi & 37.2 bpm
387.4	2.00 ppg sand on formation @ 5986 psi & 37.2 bpm
396.6	3.00 ppg sand on formation @ 5817 psi & 37.3 bpm
398.6	Begin 4.00 ppg sand @ 5923 psi & 37.2 bpm
405.7	Begin 4.00 ppg SB Excel @ 5652 psi & 37.2 bpm
409.2	4.00 ppg sand on formation @ 5690 psi & 37.5 bpm
409.5	Begin Spacer
413.4	Launched Ball @ 6227 psi & 37.6 bpm, JSV = 22132 bbl

Interval 6 - WB Volume 383.3 bbl

428.8	Ball Hit @ JSV = 22484 bbl, 31 bbl early
428.9	Sleeve Shift @ 5766 psi
432	Formation Break @ 7342 psi & 11.9 bpm
443.2	Begin Crosslinked Gel
448.0	Begin 0.50 ppg 40/70 sand @ 7200 psi & 22.1 bpm
453.7	Begin 2nd Crosslinked Gel pad
463.2	0.50 ppg 0/70 sand on formation @ 6825 psi & 35.4 bpm
468.4	Begin 0.50 ppg sand @ 6629 psi & 41.3 bpm
477.3	0.50 ppg sand on formation @ 6777 psi & 44.3 bpm
477.5	0.50 ppg sand on formation @ 6755 psi @ 44.3 bpm
495.1	Begin 0.50 ppg 20/40 sand @ 6205 psi & 44.7Bpm
502.1	Begin 1.00 ppg sand @ 6108 psi & 44.1 bpm
510.9	1.00 ppg sand on formation @ 5987 psi & 43.6 bpm

511.9	Begin 2.00 ppg sand @ 6028 psi & 44.2 bpm
520.0	Begin 3.00 ppg sand @ 5800 psi & 44.3 bpm
520.7	2.00 ppg sand on formation @ 5857 psi & 44.2 bpm
528.8	3.00 ppg sand on formation @ 5760 psi & 44.3 bpm
530.3	Begin 4.00 ppg sand @ 5697 psi & 44.3 bpm
536.1	Begin 4.00 ppg SB Excel sand @ 5613 psi & 43.4 bpm
539.4	4.00 ppg sand on formation @ 5644 psi & 44.3 bpm
539.6	Begin Ball Drop @ 5689 psi & 44.3 bpm
540.0	Ball Dropped @ 5700 psi @ 44.3 bpm, JSV = 25607 bll

Day 3 - January 19, 2011

Interval 7 - WB Volume 379.4 bbl

2.0	Opened Wellhead @ 652 AM, Begin loading interval 7 after 9 hr flowback
37.4	Begin Crosslinked Gel pad
40.6	Begin 0.50 ppg 40/70 sand @ 6915 psi & 25.4 bpm
45.59	Begin 2nd Crosslinked Gel pad
53.46	0.50 ppg sand on formation @ 7226 psi & 40.9 bpm
58.59	Resume 0.50 ppg sand @ 6942 psi & 40.9 bpm
67.44	0.50 ppg sand on formation @ 7150 psi & 44.8 bpm
83.4	Begin 0.50 ppg 20/40 sand @ 6982 psi & 50.0 bpm
89.9	Begin 1.00 ppg sand @ 6797 psi & 49.7 bpm
97.5	1.00 ppg sand on formation @ 6591 psi & 49.8 bpm
98.5	Begin 2.00 ppg sand @ 6609 psi & 49.8 bpm
105.9	2.00 ppg sand on formation @ 6278 psi & 49.8 bpm
106.1	Begin 3.00 ppg sand @ 6290 psi & 49.7 bpm
113.4	3.00 ppg sand on formation @ 6162 psi & 49.9 bpm
115.5	Begin 4.00 ppg sand @ 6312 psi & 49.8 bpm
123.0	4.00 ppg sand on formation @ 6284 psi & 49.8 bpm
123.5	Begin 4.00 ppg SB Excel @ 6348 psi & 49.8 bpm
126.3	Begin Spacer
129.1	Pressured out right when we were about to launch the ball
140.0	Flowed well back

Interval 8 - WB Volume = 376.3 bbls

177.5	Reopned wellhead @ 1057AM, Begin FR water
183.0	Shutting down and flowing back for a while longer
183.7	Reopened Wellhead @ 215PM after 2 hrs of flowback.
232.6	Shut in well to flow back.
233.0	Resumed FracPro @ 9:00 PM
237.5	Wellhead opened, resume Fr Water Pad
253.6	Formation Break @ 5435 psi & 7.6 bpm
274.0	Begin SilverStim Pad @ 7322 psi & 43.0 bpm
274.7	Had to drop rate, Hydro was partially frozen going to SilverStim
276.2	Come off line to unfreeze Hydro
287.9	Resume SilverStim Pad
293	Begin 0.50 ppg 40/70 sand @ 7288 psi & 41.5 bpm
296.0	Begin SilverStim Pad @ 7637 psi & 43.7 bpm
301.6	0.50 ppg sand on formation @ 7652 psi & 43.9 bpm
302.4	Dropping rate due to pressure climb
317.2	Drop Ball @ 7123 psi & 32.0 bpm, JSV = 33727 bbl

Interval 9 - WB Volume = 372.5 bbls

327.8	Ball Hit @ 34060 JSV, 39 bbls early
344.8	Reduced rate due to pressure climb
376.6	Shut down to flow back
384.5	Reopen Wellhead after 4:00 hour flowback
394.4	Ball Rehit
405.9	Begin SilverStim Pad @ 6771 psi & 19.5 bpm
408.0	Going to run 0.25 ppg sand rather than 0.50 ppg per customer request
410.1	Begin 0.25 ppg 40/70 sand @ 7117 psi & 19.3 bpm
411.7	Begin SilverStim Pad @ 7131 psi & 19.3 bpm
435.7	Begin 0.50 ppg 40/70 sand @ 7191 psi & 15.3 bpm
442.3	Cut screws per customer request due to increasing pressure
495.4	Take off all HHP, Shut In Well
	Waiting on Acid

Day 4 - January 20, 2011

Interval 9 - WB Volume = 372.5 bbls

532.2	Opened Wellhead @ 1:15 PM
532.6	Begin pumping 2000 gal of Acid
538.5	Pressuring out and shutdown and gettin coiled tubing

		Average	Pressure	6318	psi
			Rate	28.1	bpm
			Viscosity	23.4	cP
			Temperature	62.0	°F
			pH	9.96	
		Maximum	Pressure	7973	psi
			Rate	50.1	bpm
Fluid Totals	SilverStim	26936.2	bbls	1,131,321	Gal
	FR Water w/ 7% KCl	4505.6	bbls	189,234	Gal
	Linear Gel	2698.4	bbls	113,331	Gal
	SLF	20721.0	bbls	870,281	Gal
	Load to Recover	34485.4	bbls	1,448,388	Gal
	Ticket	**$1,164,340.23**			

HALLIBURTON

Lazy D ZN 3-15H **Niobrara Horizontal**

1/17/2011 - 1/20/2011

	Average					Maximum		SilverStim		FR Water w/ 7% KCl		Linear Gel		SLF		Total Fluid		Sand Weights			
Stage	Pressure	Rate	Visc	Temp	pH	Pressure	Rate	gal	bbl	gal	bbl	gal	bbl	gal	bbl	gal	bbl	40/70	20/40	SB Excel	Total
1	5602	22.4	23.4	69.9	10.06	5940	22.8	223115	5312.3	28551	679.8	0	0.0	199058	4739.5	251666	5992.0	26500	281000	16000	323500
2	5226	21.7	23.9	73.3	10.04	7924	26.5	212888	5068.8	21986	523.5	0	0.0	143244	3410.6	241282	5744.8	26500	104000	0	130500
3	6919	5.8	19.4	60.8	8.19	7815	8.4	0	0.0	27633	657.9	10417	248.0	0	0.0	38050	906.0	0	0	0	0
4	7036	32.7	22.8	63.9	10.22	7799	35.1	152947	3641.6	6454	153.7	22000	523.8	129351	3079.8	181401	4319.1	26500	140500	16000	183000
5	6405	37.3	23.9	60.7	10.26	7160	39.5	152963	3642.0	28323	674.4	0	0.0	129319	3079.0	181286	4316.3	26500	140500	16000	183000
6	6349	35.4	23.7	59.6	10.23	7440	44.9	152738	3636.6	22007	524.0	0	0.0	128958	3070.4	181852	4329.8	26500	140500	16000	183000
7	6761	46.8	27.1	56.6	10.30	7434	50.1	158998	3785.7	22888	545.0	45781	1090.0	135269	3220.7	227667	5420.6	26500	140500	16000	183000
8	6249	22.3	23.4	51.4	10.36	7973	44.0	31203	742.9	21953	522.7	18109	431.2	5082	121.0	71265	1696.8	5200	0	0	5200
9								46469	1106.4	9439	224.7	17024	405.3		0.0	73919	1760.0	0	0	0	0
10									0.0		0.0	0	0.0		0.0		0.0				0
11									0.0		0.0	0	0.0		0.0		0.0				0
12									0.0		0.0	0	0.0		0.0		0.0				0
13									0.0		0.0	0	0.0		0.0		0.0				0
14									0.0		0.0	0	0.0		0.0		0.0				0
15									0.0		0.0	0	0.0		0.0		0.0				0
16									0.0		0.0	0	0.0		0.0		0.0				0
17									0.0		0.0	0	0.0		0.0		0.0				0
18									0.0		0.0	0	0.0		0.0		0.0				0
19									0.0		0.0	0	0.0		0.0		0.0				0
20									0.0		0.0	0	0.0		0.0		0.0				0
21									0.0		0.0	0	0.0		0.0		0.0				0

	Average					Maximum		SilverStim		FR		Linear Gel		SLF		Total Fluid		Sand Weights			
	Pressure	Rate	Visc	Temp	pH	Pressure	Rate	gal	bbl	gal	bbl	gal	bbl	gal	bbl	gal	bbl	40/70	20/40	SB Excel	Total
Total	**6318**	**28.1**	**23.4**	**62.0**	**9.96**	**7973**	**50.1**	**1131321**	**26936**	**189234**	**4506**	**113331**	**2698**	**870281**	**20721**	**1448388**	**34485**	**164200**	**947000**	**80000**	**1191200**