

## HALLIBURTON

## Cementing Job Summary

*The Road to Excellence Starts with Safety*

Sold To #: 345242		Ship To #: 3722557		Quote #:		Sales Order #: 0904190202				
Customer: NOBLE ENERGY INC - EBUS				Customer Rep: Charles Colh						
Well Name: MINUTEMEN FEDERAL		Well #: LC21-615		API/UWI #: 05-123-42787-00						
Field: WILDCAT	City (SAP): KEOTA	County/Parish: WELD		State: COLORADO						
Legal Description: SW SW-22-9N-59W-825FSL-400FWL										
Contractor: Noble		Rig/Platform Name/Num: H&P 524								
Job BOM: 7523 7523										
Well Type: HORIZONTAL OIL										
Sales Person: HALAMERICA\HB70026		Srv Supervisor: Steven Markovich								
<b>Job</b>										
Formation Name										
Formation Depth (MD)		Top	Bottom							
Form Type		BHST		230 degF						
Job depth MD		11088ft		Job Depth TVD						
Water Depth				Wk Ht Above Floor						
Perforation Depth (MD)		From	To							
<b>Well Data</b>										
Description	New / Used	Size in	ID in	Weight lbm/ft	Thread	Grade	Top MD ft	Bottom MD ft	Top TVD ft	Bottom TVD ft
Casing		9.625	8.921	36			0	1941	0	1941
Casing	0	5.5	4.778	20		P-110	0	11183	0	6124
Open Hole Section			8.5				6350	11133	0	6124
<b>Fluid Data</b>										
Stage/Plug #: 1										
Fluid #	Stage Type	Fluid Name	Qty	Qty UoM	Mixing Density lbm/gal	Yield ft3/sack	Mix Fluid Gal	Rate bbl/min	Total Mix Fluid Gal	
1	11.5 lb/gal Tuned Spacer III	Tuned Spacer III	80	bbl	11.5	3.78		5		
34.60 gal/bbl		FRESH WATER								
0.60 gal/bbl		DUAL SPACER SURFACTANT B, 5 GAL PAIL (100003665)								
0.60 gal/bbl		MUSOL A, 330 GAL TOTE - (790828)								
147.42 lbm/bbl		BARITE, BULK (100003681)								
Fluid #	Stage Type	Fluid Name	Qty	Qty UoM	Mixing Density lbm/gal	Yield ft3/sack	Mix Fluid Gal	Rate bbl/min	Total Mix Fluid Gal	
2	ElastiCem	ELASTICEM (TM) SYSTEM	150	sack	13.2	1.57		6	7.54	
7.54 Gal		FRESH WATER								
0.25 %		SCR-100 (100003749)								

iCem® Service

(v. 4.4.18)

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Fluid #	Stage Type	Fluid Name	Qty	Qty UoM	Mixing Density lbm/gal	Yield ft3/sack	Mix Fluid Gal	Rate bbl/min	Total Mix Fluid Gal
3	ElastiCem w/ SCBL	ELASTICEM (TM) SYSTEM	457	sack	13.2	1.6		6	7.69
0.25 %		SCR-100 (100003749)							
7.70 Gal		FRESH WATER							
Fluid #	Stage Type	Fluid Name	Qty	Qty UoM	Mixing Density lbm/gal	Yield ft3/sack	Mix Fluid Gal	Rate bbl/min	Total Mix Fluid Gal
4	NeoCem NT1	NeoCem TM	567	sack	13.2	2.04		5	9.75
9.75 Gal		FRESH WATER							
0.04 %		SCR-100 (100003749)							
Fluid #	Stage Type	Fluid Name	Qty	Qty UoM	Mixing Density lbm/gal	Yield ft3/sack	Mix Fluid Gal	Rate bbl/min	Total Mix Fluid Gal
5	MMCR Displacement	MMCR Displacement	20	bbl	8.33				
0.50 gal/bbl		MICRO MATRIX CEMENT RETARDER, 5 GAL PAIL (100003781)							
Fluid #	Stage Type	Fluid Name	Qty	Qty UoM	Mixing Density lbm/gal	Yield ft3/sack	Mix Fluid Gal	Rate bbl/min	Total Mix Fluid Gal
6	Displacement	Displacement	224	bbl	8.33				
Comment Estimated top of Tail Cement 6063' Estimated top of Lead Cement 22871' Estimated top of Lead Cement 1857' Estimated top of Spacer 186'									

## 2.0 Real-Time Job Summary

## 2.1 Job Event Log

Type	Seq. No.	Activity	Graph Label	Date	Time	Source	DH Density (ppg)	DS Pump Press (psi)	Comb Pump Rate (bbl/min)	Comments
Event	1	Call Out	Call Out	7/30/2017	07:30:00	USER				Job called out at 07:30 with an on location time of 15:30. Arrived on location at 14:30, rig was running casing still approx 1500'
Event	2	Start Job	Start Job	7/30/2017	16:50:02	COM4				TD 11100' TP 11088' FC 11045.4' 5 1/2" 20# csg 8 1/2" OPH 1951' 9 5/8" 36# surfcsg. Estimated top of Tail Cement 6063' Estimated top of Lead 2 Cement 2871' Estimated top of Lead Cement 1857' Estimated top of Spacer 186'.
Event	3	Test Lines	Test Lines	7/30/2017	17:04:59	COM4	8.50	4703.00		Set kick outs to 500psi and perform kick out test. Kick outs worked. Brought pressure up to 4500psi and held for 3 mins
Event	4	Pump Spacer 1	Pump Spacer 1	7/30/2017	17:09:56	COM4	11.67	248.00	3.50	Pump 80bbbls of 11.5ppg 3.78yield Tuned Spacer. Added 45 gallons of both Musol A and Dual Spacer B on the fly. Pumped at 4bbl/min 190psi.
Event	5	Shutdown	Shutdown	7/30/2017	17:28:38	COM4				Shutdown. Rig pulled up CRT and loaded 2nd bottom plug.
Event	6	Pump Lead Cement	Pump Lead Cement	7/30/2017	17:32:51	COM4	13.23	144.00	8.00	Pump 41.94bbbls (150sks) of 13.2ppg 1.57yield Lead Cement. Pumped at 8bbl/min 450psi
Event	7	Check Weight	Check Weight	7/30/2017	17:33:27	COM4	13.15	160.00	2.90	Weight verified by pressurized scales.
Event	8	Pump Cement	Pump Cement	7/30/2017	17:38:42	COM4	13.23	567.00	8.00	Pump 130.22bbbls (457sks) of 13.2ppg 1.6yield Lead Cement 2. Pumped at 8bbl/min 565psi.
Event	9	Check Weight	Check Weight	7/30/2017	17:39:16	COM4	13.22	560.00	8.00	Weight verified by pressurized scales.
Event	10	Pump Tail Cement	Pump Tail Cement	7/30/2017	17:55:52	COM4	13.19	656.00	8.00	Pump 206bbbls (567sks) of 13.2ppg 2.04yield Tail Cement. Pumped at 8bbl/min 752psi.
Event	11	Check Weight	Check Weight	7/30/2017	17:56:56	COM4	13.17	695.00	8.00	Weight verified by pressurized scales.
Event	12	Shutdown	Shutdown	7/30/2017	18:23:07	COM4				Shutdown to blowdown, and clean pumps and lines.
Event	13	Drop Top Plug	Drop Top Plug	7/30/2017	18:36:00	COM4				Rig picked up CRT and loaded Top Plug into the casing.
Event	14	Pump Displacement	Pump Displacement	7/30/2017	18:36:56	COM4	7.87	398.00	10.00	Pump 244bbbls of Fresh H2O. First 20 with MMCR and then 204bbbls with Biocide added. Pumped at 10bbl/min and slowed

down with pressure increase.

Event	15	Bump Plug	Bump Plug	7/30/2017	19:06:52	COM4	8.36	1870.00	2.80	Bumped plug at 244bbls away. Final lifting pressure was 1870psi. Took 500psi over and held for 3 mins.
Event	16	Check Floats	Check Floats	7/30/2017	19:10:07	USER				After 3 mins pressure was at 2658psi. Released pressure after 3 1/2bbls of water back floats held.
Event	17	End Job	End Job	7/30/2017	19:12:08	COM4				Thank you Steve Markovich and Crew.