

## HALLIBURTON

## Cementing Job Summary

*The Road to Excellence Starts with Safety*

Sold To #: 345242		Ship To #: 3723092		Quote #:		Sales Order #: 0904182908					
Customer: NOBLE ENERGY INC - EBUS				Customer Rep: Dave Neilson							
Well Name: FREEDOM FEDERAL			Well #: LC21-640			API/UWI #: 05-123-42804-00					
Field: WILDCAT		City (SAP): KEOTA		County/Parish: WELD		State: COLORADO					
Legal Description: NW SW-22-9N-59W-1663FSL-400FWL											
Contractor: Noble				Rig/Platform Name/Num: H&P 524							
Job BOM: 7523 7523											
Well Type: HORIZONTAL OIL											
Sales Person: HALAMERICA\HB70026				Srcv Supervisor: Aaron Smith							
<b>Job</b>											
Formation Name											
Formation Depth (MD)		Top			Bottom						
Form Type					BHST		230 degF				
Job depth MD		11210ft			Job Depth TVD		6101				
Water Depth					Wk Ht Above Floor		4				
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	1931	0	1931	
Casing	0	5.5	4.778	20		P-110	0	11200	0	6101	
Open Hole Section			8.5				6174	11210	0	0	
<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	
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
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			465	sack	13.2	1.6		6	7.69

Revised on 7/29/2017 10:00:25 AM

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Fluid #	Stage Type	Fluid Name	Qty	Qty UoM	Mixing Density lbm/gal	Yield ft3/sack	Mix Fluid Gal	Rate bbl/mi n	Total Mix Fluid Gal	
4	NeoCem NT1	NeoCem TM	567	sack	13.2	2.04		5	9.75	
Fluid #	Stage Type	Fluid Name	Qty	Qty UoM	Mixing Density lbm/gal	Yield ft3/sack	Mix Fluid Gal	Rate bbl/mi n	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/mi n	Total Mix Fluid Gal	
6	Displacement	Displacement	227.7	bbl	8.33					
<b>Cement Left in Pipe</b>		<b>Amount</b>					<b>Reason</b>	Shoe Joint		
<b>Comment</b> No HES pumped slurry back to surface, Estimated TOTC 6147',TOLC 1909'										

## 2.0 Real-Time Job Summary

### 2.1 Job Event Log

Type	Seq. No.	Activity	Graph Label	Date	Time	Source	Comb Pump Rate <i>(bbl/min)</i>	DH Density <i>(ppg)</i>	DS Pump Press <i>(psi)</i>	Comments
Event	1	Call Out	Call Out	7/23/2017	22:00:00	USER				CREW OF AARON SMITH, BRYAN KRAFT, LUIS RAMIREZ, AND STEVE CARDOS, CALLED OUT FOR ON LOCATION AT 0530
Event	2	Depart Yard Safety Meeting	Depart Yard Safety Meeting	7/24/2017	02:00:00	USER				JOURNEY MANAGEMENT MEETING HELD PRIOR TO DEPARTURE, TO DISCUSS THE ROUTE AND HAZARDS OF ROUTE.
Event	3	Depart from Service Center or Other Site	Depart from Service Center or Other Site	7/24/2017	02:15:00	USER				DEPART YARD WITH ALL EQUIPMENT AND MATERIALS. PICK-UP 12422574, PUMP 1164701/11645460, BULK TRUCK 12350112/11633848, EXTRA
Event	4	Arrive at Location from Other Job or Site	Arrive at Location from Other Job or Site	7/24/2017	04:00:00	USER				WITH ALL EQUIPMENT AND MATERIALS, MET WITH CUSTOMER REP TO DISCUSS NUMBERS AND JOB PROCEDURES.
Event	5	Assessment Of Location Safety Meeting	Assessment Of Location Safety Meeting	7/24/2017	04:05:00	USER				HAZARD HUNT AND WATER TEST PERFORMED, WATER TESTED GOOD TO MIX CEMENT, PH 7.5 CL 38 PPM, TEMP 72. VERIFIED 2 BOTTOM AND 1 TOP PLUGS.
Event	6	Comment	Comment	7/24/2017	04:08:00	USER				TD 11210' 8 1/2" OH, TP 11200.3 5 1/2" 20#/FT. FC 11159, TVD 6101, SC 1931' 9 5/8" 36#/FT,
Event	7	Pre-Rig Up Safety Meeting	Pre-Rig Up Safety Meeting	7/24/2017	04:15:00	USER				ISA TO DISCUSS THE HAZARDS OF RIG-UP WITH HES CREW.
Event	8	Rig-Up Equipment	Rig-Up Equipment	7/24/2017	04:30:00	USER				SPOT IN ALL EQUIPMENT, RIG-UP ALL SURFACE LINES AND EQUIPMENT.
Event	9	Casing on Bottom	Casing on Bottom	7/24/2017	06:20:00	USER				
Event	10	Circulate Well	Circulate Well	7/24/2017	06:25:00	USER				MW 9.4, PV 11, YP 11, 10 BPM, 624 PSI, 400 UNITS OF GAS, 1 BOTTOMS UP.
Event	11	Rig-Up Completed	Rig-Up Completed	7/24/2017	06:30:00	USER				WITH NO INCIDENTS OR INJURIES.
Event	12	Pre-Job Safety Meeting	Pre-Job Safety Meeting	7/24/2017	07:15:00	USER				WITH ALL ESSENTIAL PERSONNEL, TO DISCUSS THE JOB PROCEDURE, AND HAZARDS OF PUMPING THE JOB.
Event	13	Start Job	Start Job	7/24/2017	07:35:29	COM5				START RECORDING REAL TIME DATA.

Event	14	Test Lines	Test Lines	7/24/2017	07:36:59	USER		8.44	4837.00	@ 4500 PSI. PRESSURE TEST WAS GOOD.
Event	15	Drop Bottom Plug	Drop Bottom Plug	7/24/2017	07:43:11	USER				PRE-LOADED BOTTOM PLUG IN CASING, VERIFIED BY CUSTOMER REP.
Event	16	Pump Spacer 1	Pump Spacer 1	7/24/2017	07:44:23	USER	3.98	11.58	305.99	80 BBLS TUNED SPACER, @ 11.5 PPG, 3.78 FT3/SK, 23.5 GAL/SK, VERIFIED WITH PRESSURIZED SCALES. 4 BPM, 230 PSI
Event	17	Drop Bottom Plug	Drop Bottom Plug	7/24/2017	08:02:51	USER	0.00	11.60		LOADED BOTTOM PLUG IN CASING, VERIFIED BY CUSTOMER REP.
Event	18	Pump Lead Cement	Pump Lead Cement	7/24/2017	08:06:20	USER	3.97	13.31	326.62	150 SKS ( 41.94 BBLS) ELASTICEM @ 13.2 PPG, 1.57 FT3/SK, 7.54 GAL/SK, VERIFIED WITH PRESSURIZED SCALES. 8 BPM 600 PSI
Event	19	Pump Lead Cement	Pump Lead Cement	7/24/2017	08:12:51	USER	7.99	13.25	639.56	465 SKS (132.31 BBLS) ELASTICEM @ 13.2 PPG, 1.6 FT3/SK, 7.69 GAL/SK, VERIFIED WITH PRESSURIZED SCALES, 8 BPM 700 PSI.
Event	20	Pump Tail Cement	Pump Tail Cement	7/24/2017	08:27:27	USER	7.98	13.10	715.58	567 SKS (206.01 BBLS) NEOCEM @ 13.2 PPG, VERIFIED WITH PRESSURIZED SCALES. 8 BPM 850 PSI
Event	21	Shutdown	Shutdown	7/24/2017	08:55:33	USER				SHUTDOWN TO STING OUT OF CASING, AND BLOW LINES DOWN.
Event	22	Clean Lines	Clean Lines	7/24/2017	09:06:12	USER				WASH PUMPS AND LINES TO WASH UP TANK.
Event	23	Drop Top Plug	Drop Top Plug	7/24/2017	09:08:03	USER				LOADED HWE TOP PLUG IN CASING, VERIFIED BY CUSTOMER REP.
Event	24	Pump Displacement	Pump Displacement	7/24/2017	09:09:13	USER	7.97	8.28	326.04	247.43 BBLS FRESH WATER WITH 10 GALLONS MMCR IN THE FIRST 20 BBLS, AND 20 GALLONS ALDICIDE THROUGHOUT.
Event	25	Bump Plug	Bump Plug	7/24/2017	09:45:23	USER	2.64	8.34	1498.25	@ 500 PSI OVER FINAL CIRCULATING PRESSURE 1600 PSI, FINAL BUMP PRESSURE 2100 PSI
Event	26	Comment	Comment	7/24/2017	09:46:00	USER				TOTC 6174', TOLC 1909'
Event	27	Check Floats	Check Floats	7/24/2017	09:50:12	USER				FLOATS GOOD, 3 BBLS BACK.
Event	28	End Job	End Job	7/24/2017	09:54:07	COM5				STOP RECORDING REAL TIME DATA.
Event	29	Pre-Rig Down Safety Meeting	Pre-Rig Down Safety Meeting	7/24/2017	09:55:51	USER				ISA TO DISCUSS THE HAZARDS OF RIG DOWN WITH HES CREW.
Event	30	Rig-Down Equipment	Rig-Down Equipment	7/24/2017	09:59:36	USER				RIG DOWN ALL SURFACE LINES AND EQUIPMENT.
Event	31	Rig-Down Completed	Rig-Down Completed	7/24/2017	10:45:00	USER				WITH NO INCIDENTS OR INJURIES.

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Event	902	Depart Location Safety Meeting	Depart Location Safety Meeting	7/24/2017	10:50:00	USER	JOURNEY MANAGEMENT MEETING HELD PRIOR TO DEPARTURE
Event	903	Depart Location for Service Center or Other Site	Depart Location for Service Center or Other Site	7/24/2017	11:00:00	USER	THANK YOU FOR CHOOSING HALLIBURTON CEMENTING, AARON SMITH AND CREW.

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