

HALLIBURTON

Cementing Job Summary

The Road to Excellence Starts with Safety

Sold To #: 345242	Ship To #: 3688572	Quote #:	Sales Order #: 0903118559
Customer: NOBLE ENERGY INC - EBUS		Customer Rep: Derek Dupree	
Well Name: WELLS RANCH	Well #: AF05-645	API/UWI #: 05-123-42132-00	
Field: WATTENBERG	City (SAP): KERSEY	County/Parish: WELD	State: COLORADO
Legal Description: NW SW-5-5N-62W-2052FSL-576FWL			
Contractor: H & P DRLG		Rig/Platform Name/Num: H & P 321	
Job BOM: 7523			
Well Type: HORIZONTAL OIL			
Sales Person: HALAMERICA\HB61755		Srvc Supervisor: Vaughn Oteri	
Job			

Formation Name			
Formation Depth (MD)	Top		Bottom
Form Type			BHST 230 degF
Job depth MD	16194ft		Job Depth TVD
Water Depth			Wk Ht Above Floor
Perforation Depth (MD)	From		To

Well Data										
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	1872	0	1872
Casing		5.5	4.778	20			0	16194	0	6502
Open Hole Section			8.5				1872	16194	1872	6502

Tools and Accessories									
Type	Size in	Qty	Make	Depth ft		Type	Size in	Qty	Make
Guide Shoe	5.5					Top Plug	5.5	1	HES
Float Shoe	5.5			16161		Bottom Plug	5.5	2	HES
Float Collar	5.5			16118		SSR plug set	5.5		HES
Insert Float	5.5					Plug Container	5.5		HES
Stage Tool	5.5					Centralizers	5.5		HES

Fluid Data										
Stage/Plug #: 1										
Fluid #	Stage Type	Fluid Name	Qty	Qty UoM	Mixing Density lbm/gal	Yield ft ³ /sack	Mix Fluid Gal	Rate bbl/min	Total Mix Fluid Gal	
1	12.0 lb/gal Tuned Spacer III	Tuned Spacer III	40	bbl	12	3.2	19.8			
Fluid #	Stage Type	Fluid Name	Qty	Qty UoM	Mixing Density lbm/gal	Yield ft ³ /sack	Mix Fluid Gal	Rate bbl/min	Total Mix Fluid Gal	

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2	12.0 lb/gal Tuned Spacer III	Tuned Spacer III	40	bbbl	12	3.2	20.2			
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	
3	ExpandaCem w/o SCBL	EXPANDACEM (TM) SYSTEM	150	sack	13.2	1.57		5	7.53	
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	ExpandaCem	EXPANDACEM (TM) SYSTEM	576	sack	13.2	1.57		5	7.54	
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	ExpandaCem	EXPANDACEM (TM) SYSTEM	1446	sack	13.5	1.68		5	7.99	
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	356	bbbl	8.33					
Cement Left In Pipe		Amount	46 ft		Reason			Shoe Joint		
Comment 50bbl of spacer back to surface										

2.0 Real-Time Job Summary

2.1 Job Event Log

Type	Seq. No.	Activity	Graph Label	Date	Time	Source	PS Pump Press (psi)	DH Density (ppg)	PS Pump Rate (bbl/min)	Comments
Event	1	Call Out	Call Out	2/19/2016	20:30:00	USER				Call out from ARC hub
Event	2	Arrive At Location	Arrive at Location	2/20/2016	01:00:00	USER				Requested on location @0300 Arrived @0100 met with company rep to discuss job process and concerns advised they had about 1500 feet left to run
Event	3	Other	Well info	2/20/2016	03:35:01	USER				TD 16168 TP16161 FC 16118 SURF 1872 MUD 10.9
Event	4	Other	Water info	2/20/2016	03:35:04	USER				ph 7 cl 0 temp 61F
Event	5	Start Job	Start Job	2/20/2016	05:51:44	COM4				Held pre-job safety meeting with all hands on location to discuss job process and hazards
Event	6	Test Lines	Test Lines	2/20/2016	05:57:05	COM4	138.00	8.94	0.00	Pressure test pumps and lines found no leaks and pressure held well
Event	7	Pump Spacer 1	Pump Spacer 1	2/20/2016	06:00:30	COM4	41.00	8.79	0.00	Pumped 40 bbls of 12.5ppg Tuned Spacer III with surfactants at 4.5bpm and 500psi
Event	8	Pump Spacer 2	Pump Spacer 2	2/20/2016	06:10:17	COM4	537.00	11.94	4.50	Pumped 40 bbls of 12.5ppg Tuned Spacer III without surfactants at 4.5bpm and 475psi
Event	9	Check Weight	Check weight	2/20/2016	06:13:04	COM4	496.00	11.95	4.50	Confirm weight on scales
Event	10	Drop Bottom Plug	Drop Bottom Plug	2/20/2016	06:21:58	COM4	48.00	11.78	0.00	Release plug witnessed by company rep
Event	11	Pump Lead Cement	Pump Lead Cement	2/20/2016	06:22:40	COM4	47.00	11.76	0.00	Pumped 203bbls (726 sks) of 13.2ppg ExpandaCem (1.57 yield 7.54 gal/sack) at 8bpm and 700psi
Event	12	Check Weight	Check weight	2/20/2016	06:46:06	COM4	577.00	12.95	8.00	Confirm weight on scales
Event	13	Pump Tail Cement	Pump Tail Cement	2/20/2016	06:53:57	COM4	142.00	13.33	2.70	Pump 433bbls (1446 sks) of 13.5ppg ExpandaCem (1.68 yield 7.99 gal/sack) at 8bpm and 700 psi
Event	14	Check Weight	Check weight	2/20/2016	06:54:25	COM4	583.00	12.90	8.00	Confirm weight on scales
Event	15	Shutdown	Shutdown	2/20/2016	07:53:48	COM4	64.00	13.34	0.00	
Event	16	Drop Top Plug	Drop Top Plug	2/20/2016	07:55:35	COM4				Release plug witnessed by company rep

Event	17	Clean Lines	Clean Lines	2/20/2016	08:01:36	COM4	26.00	9.00	3.00	Washed pumps and lines
Event	18	Pump Displacement	Pump Displacement	2/20/2016	08:05:02	COM4	1.00	8.04	0.00	Pumped 256bbl of fresh water to displace cement
Event	19	Bump Plug	Bump Plug	2/20/2016	09:22:24	COM4				Bump plug 500psi over final pump pressure. Pressure was bleeding off quickly. Met with company rep and recommended to break rig off and place HES cement head and pressure up to confirm and isolate no down hole issues. Pressure held well for 15 min
Event	20	Check Floats	Check Floats	2/20/2016	09:32:30	USER	2213.00	7.62	0.00	Released pressure back to pump truck to check floats. Floats held well -- 3.5bbl back
Event	21	End Job	End Job	2/20/2016	10:30:02	COM4				50bbl of Tuned spacer back to surface