

HALLIBURTON

iCem[®] Service

NOBLE ENERGY INC-EBUS

Date: Friday, October 19, 2018

Wells Ranch BB09-626 Production

Job Date: Saturday, October 06, 2018

Sincerely,

Steve Markovich

Legal Notice

Disclaimer:

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1.0 Cementing Job Summary

1.1 Executive Summary

Halliburton appreciates the opportunity to perform the cementing services on the **Wells Ranch BB09-626** cement **Production** casing job. A pre-job safety meeting was held before the job where details of the job were discussed, potential safety hazards were reviewed, and environmental compliance procedures were outlined.

Halliburton maintains a continuous quality improvement process and appreciates any comments or suggestions that you may have. Halliburton again thanks you for the opportunity to perform service work on this well. We hope to be your solutions provider for future projects.

Respectfully,

Halliburton [Ft. Lupton]

The Road to Excellence Starts with Safety

Sold To #: 345242	Ship To #: 3805793	Quote #:	Sales Order #: 0905174576
Customer: NOBLE ENERGY INC-EBUS		Customer Rep: Dave England	
Well Name: WELLS RANCH		Well #: BB09-626	API/UWI #: 05-123-44953-00
Field: WATTENBERG	City (SAP): GILL	County/Parish: WELD	State: COLORADO
Legal Description: SW SW-11-5N-63W-962FSL-235FWL			
Contractor: H & P DRLG		Rig/Platform Name/Num: H & P 321	
Job BOM: 7523 7523			
Well Type: HORIZONTAL OIL			
Sales Person: HALAMERICA\HB70026		Srvc Supervisor: Steven Markovich	

Job

Formation Name	
Formation Depth (MD)	Top Bottom
Form Type	BHST 230 degF
Job depth MD	16968ft 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	0	9.625	8.921	36			0	1931	0	0
Casing	0	5.5	4.778	20			0	16968	0	0
Open Hole Section			8.5				2415	6734	0	0
Open Hole Section			8.5				6734	16983	0	0

Tools and Accessories

Type	Size in	Qty	Make	Depth ft	Type	Size in	Qty	Make
Guide Shoe	5.5			16968	Top Plug	5.5		HES
Float Shoe	5.5				Bottom Plug	5.5		HES
Float Collar	5.5				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	11.5 lb/gal Tuned Spacer III w/ Chems	Tuned Spacer III	120	bbl	11.5	3.78	23.5		

0.60 gal/bbl	MUSOL(R) A, 5 GAL PAIL (100064220)
34.70 gal/bbl	FRESH WATER
0.60 gal/bbl	DUAL SPACER SURFACTANT B, 5 GAL PAIL (100003665)
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	140	sack	13.2	1.68		6	8.04
8.04 Gal		FRESH WATER							
0.95 %		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
3	ElastiCem w/ SCBL	ELASTICEM (TM) SYSTEM	449	sack	13.2	1.68		6	8.06
0.50 %		SCR-100 (100003749)							
8.06 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	1152	sack	13.2	2.04		6	9.75
9.75 Gal		FRESH WATER							
0.08 %		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	Displacement	Displacement	373	bbl	8.33				

Cement Left In Pipe	Amount	47.4 ft	Reason	Shoe Joint
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Mix Water:	pH 6.5	Mix Water Chloride:	00 ppm	Mix Water Temperature:	50.5 °F °C
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Comment Spacer to surface at 355bbls away bringing 18bbls of spacer to surface. Bumped plug at 373bbls away, final lift pressure was 2041psi. Took pressure 500psi over and held for 5 mins. After 5 mins pressure was 2728psi. After 4.5bbls back floats held. Estimated Top of Tail Cement 3734' Estimated Top of Lead Cement 3442' Estimated Top of Cap Cement 2415'.

2.0 Real-Time Job Summary

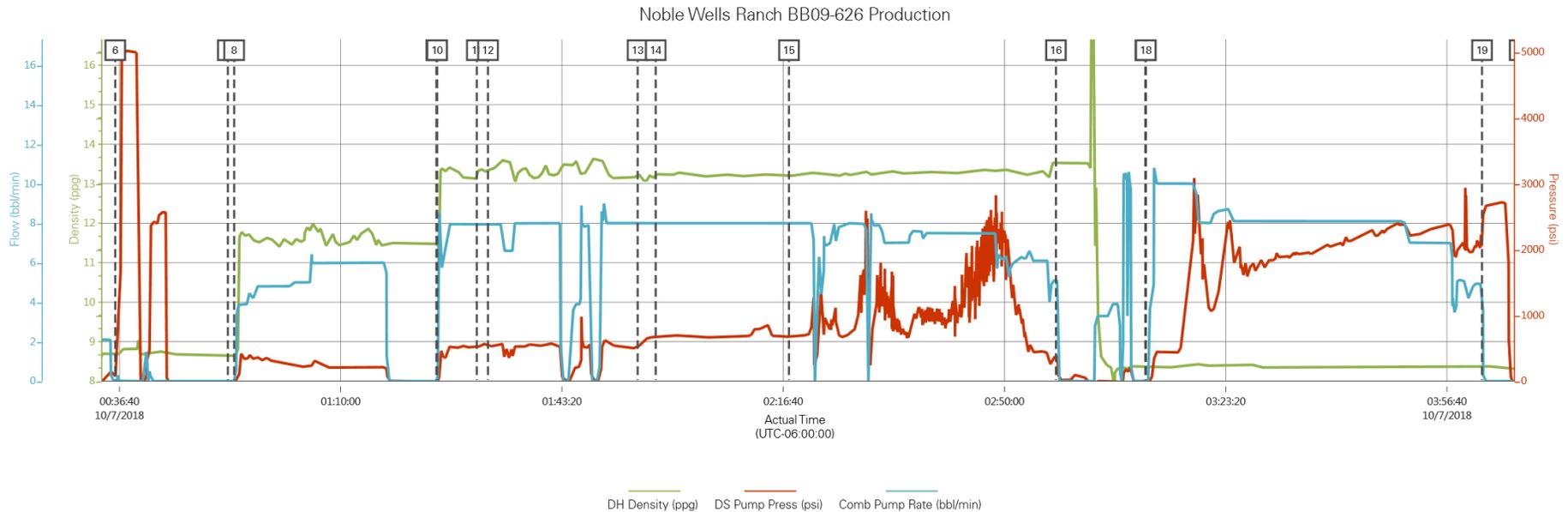
2.1 Job Event Log

Type	Seq. No.	Activity	Graph Label	Date	Time	Source	DH Density <i>(ppg)</i>	DS Pump Press <i>(psi)</i>	Comb Pump Rate <i>(bbl/min)</i>	Comments
Event	1	Call Out	Call Out	10/6/2018	08:00:00	USER				Job called out at 0800 with an on location time of 1430
Event	2	Crew Leave Yard	Crew Leave Yard	10/6/2018	12:40:00	USER				JSA with HES crew on directions and road hazards on the way to location
Event	3	Arrive At Loc	Arrive At Loc	10/6/2018	14:00:00	USER				Arrived on location, rig was still running casing approx 2500' Rig was washing down each joint.
Event	4	Assessment Of Location Safety Meeting	Assessment Of Location Safety Meeting	10/6/2018	14:15:00	USER				JSA and hazard hunt with HES crew
Event	5	Start Job	Start Job	10/7/2018	00:32:18	COM4				TD 16983' TP 16967.8' FC 16920.4' 5 1/2" Production Casing, 8 1/2" Open Hole, 9 5/8" 36# Surface Casing set at 1931', TVD 6570', Mud# 9.6 heavy.
Event	6	Test Lines	Test Lines	10/7/2018	00:36:02	COM4	8.82	5014.00		Set kick outs to 500psi and check low pressure kick outs, then bring pressure up to 4800psi and hold. Then test the rig IBOP to 2500psi and hold.
Event	7	Drop Bottom Plug	Drop Bottom Plug	10/7/2018	00:53:00	USER				Plug loaded into the casing and pushed down with the CRT in front of the company rep.
Event	8	Pump Spacer 1	Pump Spacer 1	10/7/2018	00:53:57	COM4	11.76	379.00	3.90	Pump 120bbs of 11.5ppg 3.78yield Tuned Spacer III. Added 75 gallons of Musol A and Dual Spacer B on the fly. Pumped at 5bbl/min 380psi.
Event	9	Drop Bottom Plug	Drop Bottom Plug	10/7/2018	01:24:25	COM4				Plug loaded into the casing and pushed down with the CRT in front of the company rep.
Event	10	Pump Lead Cement	Pump Lead Cement	10/7/2018	01:24:32	COM4	13.27	343.00	6.00	Pump 41.89bbls (140sks) of 13.2ppg 1.68yield Cap Cement. Pumped at 8bbl/min 600psi.
Event	11	Pump Lead Cement	Pump Lead Cement	10/7/2018	01:30:30	COM4	13.27	524.00	7.90	Pump 134bbls (449sks) of 13.2ppg 1.68yield Lead Cement. Pumped at 8bbl/min 620psi
Event	12	Check Weight	Check Weight	10/7/2018	01:32:11	COM4	13.37	547.00	8.00	Weight verified by pressurized scales.

Event	13	Pump Tail Cement	Pump Tail Cement	10/7/2018	01:54:44	COM4	13.23	521.00	8.00	Pump 418bbbls (1152sks) of 13.2ppg 2.04yield Tail Cement. Pumped at 8bbbl/min 580psi.
Event	14	Check Weight	Check Weight	10/7/2018	01:57:27	COM4	13.23	706.00	8.00	Weight verified by pressurized scales.
Event	15	Check Weight	Check Weight	10/7/2018	02:17:32	COM4	13.20	674.00	8.00	Weight verified by Pressurized scales.
Event	16	Shutdown	Shutdown	10/7/2018	02:57:45	USER				Shutdown and clean pumps and lines
Event	17	Drop Top Plug	Drop Top Plug	10/7/2018	03:11:13	COM4				
Event	18	Pump Displacement	Pump Displacement	10/7/2018	03:11:18	COM4	8.38	445.00	10.00	Pump 373bbbls of H2O. First 20bbbls with MMCR then 353bbbls with biocide. Pumped at 10bbbl/min slowed rate with pressure increase. Spacer to surface at 355bbbls away bringing 18bbbls to surface.
Event	19	Bump Plug	Bump Plug	10/7/2018	04:01:56	COM4	8.36	2041.00	4.90	Bumped plug at 373bbbls away. Final lift pressure was 2041psi. Took pressure 500psi over and held for 5 mins. After 5 mins pressure was 2728psi. Opened release line and after 4.5bbbls back floats held.
Event	20	End Job	End Job	10/7/2018	04:07:36	COM4	8.29	-43.00	0.00	Thank you Steve Markovich and crew.

3.0 Attachments

3.1 Noble Wells Ranch BB09-626 Production-Custom Results.png



Description	Actual Time (UTC-06:00:00)	DH Density (ppg)	DS Pump Press (psi)	Comb Pump Rate (bbl/min)
6 Test Lines	00:36:02	8.68	76.00	0.00
7 Drop Bottom Plug	00:53:00	8.65	-31.00	0.00
8 Pump Spacer 1	00:53:57	8.65	-31.00	0.00
9 Drop Bottom Plug	01:24:25	11.48	-9.00	0.00

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Created: 2018-10-06 15:15:02, (UTC-06:00), Version: 4.5.139

Edit

Customer: NOBLE ENERGY INC-EBUS
Representative: Dave England

Job Date: 10/6/2018
Sales Order #: 905174576

Well: Wells Ranch