

HALLIBURTON

iCem[®] Service

NOBLE ENERGY INC-EBUS

Booth Federal DD06-755

Production Casing

Job Date: Monday, August 15, 2022

Sincerely,

Brandon Parker

Legal Notice

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Table of Contents

1.0 Cementing Job Summary 4
 1.1 Executive Summary 4
2.0 Real-Time Job Summary 7
 2.1 Job Event Log 7
3.0 Attachments..... 11
 3.1 Job Chart 11

1.0 Cementing Job Summary

1.1 Executive Summary

Halliburton appreciates the opportunity to perform the cementing services on the Booth Federal DD06-755 production casing. 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.

Approximately 75 bbl. of spacer were returned to surface.

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 Fort Lupton

The Road to Excellence Starts with Safety

Sold To #: 345242		Ship To #: 3932298		Quote #:		Sales Order #: 0908047306				
Customer: NOBLE ENERGY INC-EBUS					Customer Rep: Rickey Walley					
Well Name: BOOTH FEDERAL			Well #: DD06-755			API/UWI #: 05-123-49302-00				
Field: WATTENBERG		City (SAP): KERSEY		County/Parish: WELD			State: COLORADO			
Contractor: PATTERSON-UTI ENERGY				Rig/Platform Name/Num: PATTERSON 268						
Job BOM: 7523										
Well Type: HORIZONTAL OIL										
Sales Person: HALAMERICA\HX41066					Srvc Supervisor: Brandon Parker					
Job										
Job depth MD		17643ft			Job Depth TVD		6756ft			
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	1947	0	1947
Casing		5.5	4.892	17			0	17643	0	6756
Open Hole Section			8.5				1947	17655	1947	6756
Tools and Accessories										
Type	Size in	Qty	Make	Depth ft		Type	Size in	Qty	Make	
Float Shoe	5.5	1	Citadel	17643		Bottom Plug	5.5	4	Citadel	
Float Collar	5.5	1	Citadel	17636		Centralizers	5.5	222	Summit	
Ball Seat	5.5	1	Citadel	17624						

Fluid Data										
Stage #: 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	Spacer	Tuned Prime Spacer	120	bbl	11.5	3.88	24.45	6	4245	
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	Cap Cement	ElastiCem™	140	sack	13.2	1.6	7.63	6	1068	
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	Lead Cement	ElastiCem™	752	sack	13.2	1.67	8.03	8	6039	
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	Tail Cement	NeoCem™	1163	sack	13.2	2.04	9.79	9	11386	
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	Treated Fresh Water	409	bbl	8.33			10	17133	
Cement Left In Pipe										
Amount		0 bbl.			Reason			Shoe Joint		
Mix Water:		pH 6		Mix Water Chloride:		0 ppm		Mix Water Temperature:		71°F
Plug Bumped?		Yes		Plug Displaced by:		8.33 lb/gal Treated Water		Disp. Temperature:		71°F
Cement Returns:		0 bbl.		Bump Pressure:		2050 psi		Floats Held?		Yes
Comment: Rig took back 75bbbls of spacer, 3 rd plug ruptured at 3246, citadel floats held 5bbbls back to the pump.										

2.0 Real-Time Job Summary

2.1 Job Event Log

Seq. No.	Activity	Date	Time	Comments
1	Call Out	8/14/2022	19:30:00	hes crew called out to Chevron 5.5" production. On location time 01:30hrs. 1 elite pump trk 11368474, 2 pickups 12992452 and 12992315, 1 660 11663848 loaded with 140sks cap cmt and 120bbls of tuned prime spacer. 3 silos on location.
2	Pre-Convoy Safety Meeting	8/14/2022	22:30:00	meeting with all HES personnel to discuss route of travel and safety/hazards associated with traveling to location. also discussed cmt volumes on bulk trks, confirmed field bin packet volumes.
3	Depart from Service Center or Other Site	8/14/2022	22:45:00	crew convoyed to location
4	Arrive at Location from Service Center	8/15/2022	00:30:00	arrived location. met with Ricky Walley and went over job numbers, water sources and iron placement. Rig was around 16000ft in with casing when crew arrived.
5	Assessment Of Location Safety Meeting	8/15/2022	00:31:00	checked silos for required cmt volumes, checked air compressors for fuel, started all unit to make sure everything was good, checked water upright volumes and tested water in all three uprights. chlo 0, water temp 71 deg, ph 6. TD 17655, TP 17643.2, SP 1947, SJ 6.76, fc 17636.4 Ball Seat 17623.8, TVD 6756, KOP 6094, EOB 7489, 5.5" 17# Casing, 9.625 36# Surface Casing, MW 9.9OBM, OH 8.5", CNT used 222, (17560 to 1007ft) Citadel plugs (4 bottom), Citadel float equipment.
6	Safety Meeting - Pre Rig-Up	8/15/2022	02:00:00	meeting with HES personnel to discuss safety/hazards associated with rigging up hes equipment
7	Rig-Up Equipment	8/15/2022	02:10:00	hes rigged up bulk, water and iron, 100 percent job ready
8	Casing on Bottom	8/15/2022	02:30:00	rig landed casing. Mountain States Casing was casing crew on location
9	Standby	8/15/2022	03:45:00	HES went into standby mode while rig finished reaming and running casing.
10	Circulate Well	8/15/2022	04:30:00	rig began circulating well at 10bpm, 13000 strokes and average psi 900.

11	End Standby Not Due to HES	8/15/2022	05:55:00	
12	Pre-Job Safety Meeting	8/15/2022	06:15:00	meeting with all personnel on location to discuss safety/hazards associated with job. also covered job procedures, all personnel signed jsa
13	Stop Circulation	8/15/2022	06:30:00	ko rig mud pumps. blow down crt, change packer cup before starting cmt job
14	Rig-Up Floor	8/15/2022	06:45:00	rig up hoses on rig floor, hes cmt plug container was not used. pumped cmt job through CRT
15	Start Job	8/15/2022	07:10:00	start recording real time data
16	Drop Bottom Plug	8/15/2022	07:10:33	loaded bottom plug into the 5.5casing prior to filling lines with fw. 1000psi bottom plug was loaded by Dave Nielsen with Chevron and witnessed by HES supervisor
17	Fill Lines FW	8/15/2022	07:10:48	pumped 5bbls of fw at 3bpm and top psi was 400
18	Test Lines	8/15/2022	07:14:00	test eko on both pumps, 5th gear stall and tested lines to 7344, held psi for 2 minutes final psi 7321
19	Test IBOP	8/15/2022	07:23:27	closed manual valve, hes tested manual valve to 1880, psi held
20	Pump Tuned Prime	8/15/2022	07:27:18	pumped 120bbls of tuned prime 11.5ppg, 3.88 yield and 24.45 gal/sk. pumped at 6bpm and average psi was 500. calculated 75 bbls of spacer to surface. weight confirmed using pressurized mud scales.
21	Shutdown	8/15/2022	07:50:21	HES shutdown to drop second bottom plug. 1000psi
22	Drop Bottom Plug	8/15/2022	07:55:00	second bottom plug(1000psi) loaded by Mr. Dave Nielsen with Chevron and witnessed by HES supervisor
23	Pump Cap Cement	8/15/2022	07:55:45	pumped cap cmt, 140sks, 39.9bbls, 13.2ppg, 1.6 yield, 7.63gal/sk pumped at 6bpm and average psi was 470. weight confirmed using pressurized mud scales, weight confirmed by hes supervisor and operator. wet sample left on location. calculated top of cap cmt at 933.62ft. MW 1068, 70BC 9:25hrs
24	Pump Lead Cement	8/15/2022	08:02:49	pumped lead cmt, 752sks, 223.7bbls, 13.2ppg, 1.67 yield, 8.03 gal/sk pumped at 9bpm and average psi was 700. weight confirmed using pressurized mud scales. calculated top of lead cmt at 1766.62. MW 6039, 70BC 6:32hrs
25	Shutdown	8/15/2022	08:11:45	hes shutdown, tub height sensor stopped working. scales cmt before coming back online
26	Resume Pumping	8/15/2022	08:13:01	resume pumping lead cmt

27	Pump Tail Cement	8/15/2022	08:36:05	pumped tail cmt, 1163sks, 422.5bbbls 13.2ppg, 2.04 yield, 9.79 gal/sk pumped at 9bpm and average psi was 1100. weight confirmed using pressurized mud scales, weight confirmed by hes supervisor and operator. calculated top of tail cmt 7218.2ft. MW 11386, 70BC 4:27hrs
28	Shutdown	8/15/2022	09:28:40	done pumping cmt
29	Clean Lines	8/15/2022	09:34:37	sting out with crt, rig up wash up pup to clean lines and pumps to 4sided tank. pumped 20bbbls of fw
30	Shutdown	8/15/2022	09:39:25	zero totals, top of measuring tanks MMCR and driver tank with greendye/mmcr
31	Pump Green Dye	8/15/2022	09:41:00	pumped green dye/mmcr water until green dye was verified at wash up tank. total 4.3bbbls. verified by Mr. Dave and HES supervisor
32	Shutdown	8/15/2022	09:42:00	driller closed in hydraulics. top off measuring tank
33	Drop Top Plug	8/15/2022	09:46:52	top plug loaded by Mr. Dave and witnessed by HES supervisor. 1500psi Citadel Plug, 3rd plug
34	Pump Displacement	8/15/2022	09:47:06	pumped 3bbbls of greendye/mmcr water displacement. pumped at 1.5bpm and psi was 42
35	Shutdown	8/15/2022	09:49:11	close hyd, sting out and load 4th plug 3000psi
36	Drop Top Plug	8/15/2022	09:51:45	top plug loaded by Mr. Dave Nielsen with Chevron and witnessed by HES supervisor. 3000psi Non-Rupture Citadel Plug
37	Resume FW Displacement	8/15/2022	09:51:59	pumped the remaining 406.2bbbls of fw treated with 10gal of MMCR in the first 20bbbls of displacement, 5 gallons of D-Air and 10 gallons MC MX 820-6 and 20 gallons Bellacide 300W. FC set at 17636.4ft X .0232 (5.5" 17# casing factor) = 409.2bbbls
38	Other	8/15/2022	09:53:42	caught cmt 20bbbls away
39	Slow Rate	8/15/2022	10:33:38	slow rate at 384bbbls from 8bpm 2790psi to 2bpm 1990psi
40	Bump Plug	8/15/2022	10:41:31	bumped 1500psi plug at calculated volume 409.2bbbls. fcp 2050psi ko pump at 2570, psi climbed to 2750 and held. plug bump verified by MR. Dave with Chevron and HES supervisor
41	Check Floats	8/15/2022	10:46:44	Citadel floats held, 5bbbls back. confirmed by Mr. Dave and hes supervisor
42	Resume Pumping	8/15/2022	10:50:25	hes came back on line to rupture the1500psi plug. (3rd plug) pumped the 5bbbls back in at 1bpm, plug ruptured at 3246psi. total pumped to rupture 5.8bbbls

43	Rupture/Wet Shoe	8/15/2022	10:56:17	ruptured disc on third plug at 3246psi, pumped 3bbls after rupture. confirmed my Mr. Dave and HES supervisor
44	Bump Plug	8/15/2022	10:58:18	citadel 3000psi plug bumped right at the 3bbl wet shoe mark. fcp 2000, kicked out pumps at 2500psi climbed to 2650 and held solid. held psi for 5 minutes. confirmed by Mr. Dave and HES supervisor
45	Monitor Flow Back	8/15/2022	10:59:00	monitor flow back for 30 minutes. gain .25bbls
46	Check Floats	8/15/2022	11:03:20	citadel floats held 5bbls back to the pump truck
47	End Job	8/15/2022	11:30:53	job complete
48	Flush Stack	8/15/2022	11:35:00	pumped 15bbls of fw through stack at end of the job
49	Spacer Returns to Surface	8/15/2022	11:45:00	rig took back 75bbls of tuned prime spacer
50	Pre-Rig Down Safety Meeting	8/15/2022	11:46:00	meeting with all hes personnel to discuss safety/hazards associated with rigging down hes equipment
51	Rig-Down Equipment	8/15/2022	11:47:00	
52	Pre-Convoy Safety Meeting	8/15/2022	12:30:00	meeting with all hes personnel to discuss safety/hazards associated with traveling to call center
53	Depart Location for Service Center or Other Site	8/15/2022	12:45:00	
54	Other	8/15/2022	12:46:00	Thank You for Choosing Halliburton Cement. Parker and Crew. (970)397-4969

3.0 Attachments

3.1 Job Chart

