

HALLIBURTON

iCem[®] Service

NOBLE ENERGY INC-EBUS

GUTTERSEN CC32-775

Production Casing

Job Date: Thursday, May 26, 2022

Sincerely,

Brad Hinkle and Crew

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 Gutteresen CC32-775 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.

Job was pumped per design with an average cement density of 13.18 ppg at 7.20 bbl/min. Cement was displaced with 20 bbl. of treated water with retarder and 316 bbl. of treated freshwater displacement. Plug was landed at 2,315 psi and bumped to 2,995 psi. Pressure was bled off and 4.5 bbl. of fluid was returned to the truck. Approximately 47 bbl. of spacer was returned to surface indicating a top of cement around 1,524'.

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 #: 3932309		Quote #:		Sales Order #: 0907882648				
Customer: NOBLE ENERGY INC-EBUS					Customer Rep: Jim Turner					
Well Name: GUTTERSEN			Well #: CC32-775			API/UWI #: 05-123-49268-00				
Field: WATTENBERG		City (SAP): KERSEY		County/Parish: WELD			State: COLORADO			
Contractor: H & P DRLG				Rig/Platform Name/Num: H & P 517						
Job BOM: 7523										
Well Type: HORIZONTAL OIL										
Sales Person: HALAMERICA\HX41066					Srvc Supervisor: Bradley Hinkle					
Job										
Job depth MD		14524ft			Job Depth TVD		6690ft			
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	1945	0	1945
Casing		5.5	4.892	17			0	14525	0	6690
Open Hole Section			8.5				1945	14537	1945	6690
Tools and Accessories										
Type	Size in	Qty	Make	Depth ft		Type	Size in	Qty	Make	
Float Shoe	5.5	1	Citadel	14254		Bottom Plug	5.5	2	Citadel	
Float Collar	5.5	1	Citadel	14521		1.5K Top Plug	5.5	1	Citadel	
Landing Collar	5.5	1	Citadel	14505		3K Top Plug	5.5	1	Citadel	
						Centralizers	5.5	184	Summit	

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™	696	sack	13.2	1.67	8.03	8	5589	
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™	858	sack	13.2	2.04	9.79	8	8400	
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	Fresh Water with MMCR	20	bbl	8.33	0	0	10	830	
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	Treated Fresh Water	316	bbl	8.33	0	0	9	13242	
Cement Left In Pipe										
Amount		19 ft			Reason			Shoe Joint		
Mix Water:		pH 6		Mix Water Chloride:		0 ppm		Mix Water Temperature:		65 °F
Plug Bumped?		Yes		Bump Pressure:		2315 psi		Floats Held?		Yes
Cement Returns:		0 bbl.								
Comment: Approximately 47 bbl. spacer to surface. Estimated top of cap cement at 1524 feet. Estimated top of lead cement at 2435 feet. Estimated top of tail cement at 7489 feet.										

2.0 Real-Time Job Summary

2.1 Job Event Log

Seq. No.	Graph Label	Date	Time	Comments
1	Call Out	5/25/2022	15:30:00	Crew called for an on location of 2130. Crew was Bradley Hinkle, Geoffrey Miller, Jacob Chavez and Said Mohamed.
2	Depart Shop for Location	5/25/2022	18:30:00	Pre-journey safety meeting. Discuss evening traffic, fit for duty status and Gutteresen Ranch rules.
3	Arrive at Location from Service Center	5/25/2022	20:00:00	Sign-in and check-in with DSR. Perform a site assessment and pre-rig up safety meeting.
4	Job Numbers	5/25/2022	20:05:00	TD: 14537 TP: 14524 FC:14521 LC: 14505 - 5.5" 17# casing inside an 8.5" OH. TVD: 6690. 9.625" 36# surface casing set at 1945. Mud weight: 9.8 ppg.
5	Safety Meeting - Pre Job	5/26/2022	00:00:00	Pre-job safety meeting with all personnel on location. Discuss safety protocols and job procedure.
6	Start Job	5/26/2022	00:29:06	Fill lines with 4 bbl. fresh water.
7	Test Lines	5/26/2022	00:31:47	Pressure test lines to 5000 psi with a 500 psi electronic kick-out test. Release pressure and close in I-BOP to test rig line to 2000 psi.
8	Drop Bottom Plug	5/26/2022	00:45:25	Bottom plug loaded into casing. Witnessed by customer.
9	Pump Spacer	5/26/2022	00:45:44	Pump 120 bbl. Tuned Prime Spacer mixed at 11.5 ppg. Density verified by pressurized scales.
10	Check Weight	5/26/2022	00:59:15	Spacer weighed at 11.45 ppg.
11	Drop Bottom Plug	5/26/2022	01:11:53	Bottom plug loaded into casing. Witnessed by customer.
12	Pump Cap Cement	5/26/2022	01:12:41	Pump 40 bbl. (140 sacks, 1.6 yield, 7.63 gal/sk) ElastiCem with no S-CBL mixed at 13.2 ppg. Density verified by pressurized scales.

13	Pump Lead Cement	5/26/2022	01:23:14	Pump 207 bbl. (696 sacks, 1.67 yield, 8.03 gal/sk) ElastiCem with S-CBL mixed at 13.2 ppg. Density verified by pressurized scales.
14	Check Weight	5/26/2022	01:27:37	Cement weighed at 13.15 ppg.
15	Check Weight	5/26/2022	01:44:33	Cement weighed at 13.2 ppg.
16	Pump Tail Cement	5/26/2022	01:50:57	Pump 312 bbl. (858 sacks, 2.04 yield, 9.79 gal/sk) NeoCem mixed at 13.2 ppg. Density verified by pressurized scales.
17	Check Weight	5/26/2022	01:55:15	Cement weighed at 13.25 ppg.
18	Check Weight	5/26/2022	02:17:33	Cement weighed at 13.2 ppg.
19	Shutdown	5/26/2022	02:32:10	Shutdown and wash pumps and lines until clean. Added green dye and MMCR to water and pumped to load line prior to dropping first top plug. Green dye observed at wash-up tank when 4 bbls was pumped.
20	Drop Top Plug	5/26/2022	02:48:40	1500 psi top plug loaded into casing. Witnessed by customer.
21	Pump Displacement	5/26/2022	02:49:14	Pump 4 bbl. MMCR water in between plug. Program called for only three barrels during this stage however pump operator misunderstood process and was shutdown when it was realized too much was pumped.
22	Drop Top Plug	5/26/2022	02:53:27	3000 psi top plug loaded into casing. Witnessed by customer.
23	Pump Displacement	5/26/2022	02:54:00	Resume pumping additional 333 bbl. of displacement with the remaining 16 bbl. with MMCR added. Corrosion inhibitor and biocide was added throughout. Good returns during displacement with 47 bbl. spacer observed at surface. Estimated top of cap cement at 1524 feet. Estimated top of lead cement at 2435 feet. Estimated top of tail cement at 7489 feet.
24	Bump Plug	5/26/2022	03:46:16	Final circulating pressure at 2315 psi with bump plug pressure at 2776 psi. Held for five minutes and pressure climbed to 2995 psi prior to pressure release.
25	Check Floats	5/26/2022	03:53:24	Floats held. 5 bbl. back.
26	Rupture Plug	5/26/2022	04:03:32	1500 psi top plug ruptured at 3491 psi. Pump additional water at 1 bpm until second plug bumps.

27	Bump Plug	5/26/2022	04:07:18	Final circulating pressure at 2158 psi at 1 bpm with a bump at 2770 psi. Held for five minutes and pressure climbed to 2890 psi prior to pressure release. Estimated height of MMCR water in annulus at 98 feet.
28	Check Floats	5/26/2022	04:15:00	Floats held. 4.5 bbl. back.
29	Other	5/26/2022	04:16:45	Wait 30 minutes for thermal expansion check.
30	End Job	5/26/2022	04:40:40	
31	Pre-Rig Down Safety Meeting	5/26/2022	04:45:00	Pre-rig down safety meeting.
32	Depart Location for Service Center or Other Site	5/26/2022	06:00:00	Pre-journey safety meeting. Discuss fit for duty status and Guttersen Ranch rules.

3.0 Attachments

3.1 Job Chart

