

# HALLIBURTON

iCem<sup>®</sup> Service

**NOBLE ENERGY INC-EBUS**

Ft. Lupton District, CO

**Guttersen Federal State YY05-765 Production**

Job Date: Saturday, October 07, 2023

Sincerely,

**Meghan Van Zyl**

## Legal Notice

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## 1.0 Cementing Job Summary

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### 1.1 Executive Summary

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Halliburton appreciates the opportunity to perform the cementing services on the **Guttersen Federal State YY05-765 - Production**. 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 13.14 ppg at 6.50 bbl/min. Cement was displaced with 20 bbl. of treated water with retarder and 380 bbl. of treated freshwater displacement. Plug was landed at 2,550 psi and bumped to 3,080 psi. Pressure was bled off and 6 bbls. of fluid was returned to the truck. With 72 bbls of spacer returning to surface, the estimated TOC is 825'.

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 Rockies Cement Team**

## 1.2 Job Overview

Job Details	
API #:	05-123-48647-00
City, County:	Roggen, WELD

Job Times		
	Date (mm/dd/yyyy)	Time (hh:mm)
Requested Time On Location:	10/6/2023	18:00
Called Out Time:	10/6/2023	12:30
Arrived On Location:	10/6/2023	17:00
Job Started:	10/6/2023	22:15
Job Completed:	10/7/2023	2:48
Departed Location:	10/7/2023	4:00

	Description	Units	Value
1	Surface temperature at the time of the job	degree F	65
2	Mud type (OBM, WBM, Synthetic, Water, Brine)	-	OBM
3	Mud density	ppg	10.4
4	Casing set depth (shoe)	ft	17,287.1
5	TVD	ft	6,747.38
6	Float collar depth	ft	17,280
7	Length of rate hole	ft	14FT
8	Previous casing shoe depth	ft	1,924
9	Pre-job mud circulation time	hh:mm	2:30
10	Pre-job mud circulation rate	bpm	9BPM
11	Pre-job mud circulation volume	bbls	650

12	Mud circulation pressure at start of cement	psi	350Psi
13	Annual flow before the start of job	Y/N	Y
14	Pipe movement during cement job	Y/N	Y
15	Calculated displacement	bbls	400
16	Job displaced by	Rig/HES	HES
17	Estimated returns % during job	%	95
18	Fluid returns to surface	Spacer/Cement, bbls	72 Spacer
19	Final circulation pressure, rate prior to plug bump	psi @ bpm	2550
20	Number of Centralizers	-	212
21	Number of bottom plugs	-	2

### 1.3 Water Field Test

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	Recorded Value	Unit	Acceptable Limit	Potential Problems if Values Exceed the Limit
<b>pH</b>	7		6.0 - 8.0	Chemicals in water can cause severe retardation
<b>Temperature</b>	65	F	60 - 80 F	Can can pre-mature setting of cement
<b>Chlorides</b>	1500	ppm	3000 ppm	Can shorten thickening time

### 1.4 Actual Pump Schedule

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	Density (ppg)	Volume (bbls)	Yield (ft3/sk)	Water Requirement (gal/sk)	Bulk Sacks (sks)	Total Water (gals)
<b>Spacer Fluid</b>	12	120	2.31	14.2		
<b>Cap Cement</b>	13.2	39.6	1.59	7.98	140	1117
<b>Lead Cement</b>	13.2	211.7	1.66	7.82	717	5716
<b>Tail Cement</b>	13.2	420	2.04	9.84	1156	11266
<b>Top Plug</b>	1					
<b>Displacement Fluid</b>	8.33	400				

2.0 Real-Time Job Summary

2.1 Job Event Log

Seq No.	Activity	Date	Time	Comments
1	Call Out	10/6/2023	12:30:00	Call out
2	Pre-Convoy Safety Meeting	10/6/2023	16:00:00	Pre-Convoy Safety Meeting
3	Crew Leave Yard	10/6/2023	16:05:00	Crew Leave Yard
4	Arrive at Location from Service Center	10/6/2023	17:00:00	Arrive at Location from Service Center
5	Pre-Rig Up Safety Meeting	10/6/2023	17:15:00	Pre-Rig Up Safety Meeting, Be aware of your surroundings, Use two spotters one in front and one in back of vehicle, Utilize hearing protection, Have good communication and make sure Line of Fire is clear before swinging hammer Identify points where hand/finger can get crushed
6	Rig-Up Equipment	10/6/2023	17:30:00	Rig Up equipment as far as possible, Rig running casing
7	Safety Meeting - Pre Job	10/6/2023	21:00:00	Safety Meeting-Pre job, Eyes on task Use impact gloves Have good communication to identify pinch points between steel hoses, iron and drill pipe and while making up the hammer unions. Identify points where hand/finger can get crushed
8	Start Job	10/6/2023	22:18:32	Begin Recording.
9	Test Lines	10/6/2023	22:21:17	Tested HES lines to 6500PSI. Tested Rigs IBOP valve to 1800PSI.
10	Drop Bottom Plug	10/6/2023	22:28:33	Dropped 1st Bottom Plug with Jeremy.
11	Pump Spacer 1	10/6/2023	22:30:45	Pumped 120Bbls of 12PPG Tuned Prime Spacer. Pumped at a rate of 6BPM with a pressure of 380Psi. Pre Job Calculated 72.6Bbls of spacer to surface.

12	Drop Bottom Plug	10/6/2023	22:56:30	Dropped 2nd bottom plug with Jeremy.
13	Pump Cap Cement	10/6/2023	23:00:05	Pumped 140S / 39.6Bbls of 13.2Ppg Econocem Cap Cement. Pumped at a rate of 5Bpm with a pressure of 450Psi. Pre job calculated TOC cement was at 825.876Ft.
14	Pump Lead Cement	10/6/2023	23:07:43	Pumped 717S / 211.9Bbls of 13.2Ppg Elasticem Lead Cement. Pumped at a rate of 8Bpm with a pressure of 540Psi. Pre job calculated TOL cement was at 1797.444Ft.
15	Pump Tail Cement	10/6/2023	23:37:45	Pumped 1156Scks / 420Bbls of 13.2Ppg Neocem Tail cement. Pumped at a rate of 7Bpm with a pressure 1300Psi. Pre job calculated TOT cement was at 6827.52Ft.
16	Shutdown	10/7/2023	00:48:28	Shutdown to wash pumps and lines.
17	Clean Lines	10/7/2023	00:50:43	Washed pumps and lines with 20Bbls of fresh water.
18	Drop Top Plug	10/7/2023	00:59:15	Dropped top plug with Jeremy.
19	Pump Displacement	10/7/2023	00:59:19	Pumped 400Bbls of fresh water displacement. Added MC MX Corrosion inhibitor and Bellacide throughout.
20	Bump Plug	10/7/2023	01:56:39	Bump plug. Floats held. FCP 2550Psi. Bump Pressure 3080Psi. 6Bbls back to tank.
21	Pressure Up Well	10/7/2023	02:03:23	Pressured up well. Pressure leveled at 2600Psi. Pumped a 8Bbl Wet Shoe.
22	Other	10/7/2023	02:20:47	At this time we started our 30 minute in flow test.
23	End Job	10/7/2023	02:48:15	.5 BBLs back after in flow test. END OF JOB.
24	Pre-Rig Down Safety Meeting	10/7/2023	04:00:00	Pre-Rig Down Safety Meeting
25	Rig-Down Equipment	10/7/2023	04:01:00	Rig-Down Equipment
26	Depart Location Safety Meeting	10/7/2023	04:02:00	Depart Location Safety Meeting, Verify all equipment has been thoroughly pre-tripped. All safety and quality issues should be resolved before proceeding.
27	Crew Leave Location	10/7/2023	04:03:00	Crew leave location

3.0 Attachments

3.1 Real Time iCem Job Chart

