

# HALLIBURTON

iCem<sup>®</sup> Service

**NOBLE ENERGY INC-EBUS**

Ft. Lupton District, Colorado

**Foose State A17-637 Surface**

Job Date: Sunday, October 22, 2023

Sincerely,

**Meghan Van Zyl**

## Legal Notice

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### Disclaimer:

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## Table of Contents

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Cementing Job Summary .....	4
Executive Summary .....	4
Job Overview .....	5
Water Field Test .....	7
Actual Pump Schedule .....	7
Real-Time Job Summary .....	8
Job Event Log .....	8
Attachments .....	10
Real Time iCem Job Chart .....	10

## 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 **Foose State A17-637 – Surface**. 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 34 bbls of cement were returned to surface. Final pumping pressure was 570psi, followed by a 30-min casing test where floats held bringing 1.5bbl back to the truck.

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 #:	05-123-52161
City, County:	Kersey, Weld
SO#:	908931770

Job Times		
	Date (mm/dd/yyyy)	Time (hh:mm)
Requested Time On Location:	10/21/2023	22:00
Called Out Time:	10/21/2023	16:00
Arrived On Location:	10/21/2023	16:00
Job Started:	10/22/2023	3:00
Job Completed:	10/22/2023	5:04
Departed Location:	10/22/2023	6:00

	Description	Units	Value
1	Surface temperature at the time of the job	degree F	52
2	Mud type (OBM, WBM, Synthetic, Water, Brine)	-	WBM
3	Mud density	ppg	8.4
4	Casing set depth (shoe)	ft	1905
5	TVD	ft	1916
6	Float collar depth	ft	1858
7	Length of rate hole	ft	11
8	Previous casing shoe depth	ft	80
9	Pre-job mud circulation time	hh:mm	00:30
10	Pre-job mud circulation rate	bpm	10

11	Pre-job mud circulation volume	bbls	200
12	Mud circulation pressure at start of cement	psi	50
13	Annual flow before the start of job	Y/N	Y
14	Pipe movement during cement job	Y/N	N
15	Calculated displacement	bbls	143
16	Job displaced by	Rig/HES	HES
17	Estimated returns % during job	%	100
18	Fluid returns to surface	Spacer/Cement, bbls	30/34
19	Final circulation pressure, rate prior to plug bump	psi @ bpm	570
20	Number of Centralizers	-	
21	Number of bottom plugs	-	0
22	Number of trucks used preparing/during job	-	5
23	Add hours? If Yes, put #	Y/N and hours	N
24	NPT? If Yes, put #	Y/N and hours	N

### 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>	200	ppm	3000 ppm	Can shorten thickening time

### 1.4 Actual Pump Schedule

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	Density (ppg)	Volume (bbls)	Yield (ft <sup>3</sup> /sk)	Water Requirement (gal/sk)	Bulk Sacks (sks)	Total Water (gals)
<b>Spacer Fluid</b>	8.33	30				
<b>Lead Cement</b>	13.5	177	1.78	9.51	561	5335
<b>Tail Cement</b>	14.8	27	1.4	6.7	110	737
<b>Top Plug</b>	1					
<b>Displacement Fluid</b>	8.33	143				

## 2.0 Real-Time Job Summary

### 2.1 Job Event Log

Seq No.	Activity	Date	Time	Comments
1	Arrive At Loc	10/21/2023	16:00:00	Crew arrived on location at 1600 hrs. Meet with costumer TD 1916', 13.5 OH, TP 1905 9.625' 36#, FC 1858', TVD 1916', P/C 80' 16', WBM WEIGHT 8.4 PPG.
2	Call Out	10/21/2023	16:00:00	Crew called out at 1600 on 10/21/2023 for a requested-on location time of 2200 on 10/21/2023.
3	Safety Meeting - Pre Rig-Up	10/22/2023	01:00:00	Discuss hazards around rig up area.
4	Rig-Up Completed	10/22/2023	02:00:00	Rig up completed.
5	Safety Meeting - Pre Job	10/22/2023	02:45:00	Pre job safety meeting discussed all hazards prior to job and reviewed job procedure.
6	Start Job	10/22/2023	03:00:25	Start recording data.
7	Test Lines	10/22/2023	03:02:18	Pressure tested HES lines to 3500 psi.
8	Pump Spacer 1	10/22/2023	03:05:42	Pumped 30 bbls of green dye Spacer.
9	Pump Lead Cement	10/22/2023	03:20:32	Pumped 177 bbls (561 sks) of SwiftCem Lead cement @13.5ppg/1.78ft3/9.51gal/sack. Mix gallons was 5335 gallons. Average rate was 8 bpm with 300 psi on the line. TOLC= 0', 34 bbls to surface.
10	Check Weight	10/22/2023	03:24:38	Weight verified by mud scales.
11	Pump Tail Cement	10/22/2023	03:45:05	Pumped 27 bbls (110 sks) of SwiftCem Tail cement @14.8ppg/1.4ft3/6.7gal/sack. Mix gallons was 737 gallons. Average rate was 5 bpm with 110 psi on the line. TOTC=1606'.
12	Check Weight	10/22/2023	03:47:02	Weight verified by mud scales.
13	Shutdown	10/22/2023	03:52:19	Shutdown to drop top plug.

14	Drop Top Plug	10/22/2023	03:57:12	Top plug verified by DSR.
15	Pump Displacement	10/22/2023	03:57:16	Pumped 143 bbls of freshwater displacement.
16	Bump Plug	10/22/2023	04:26:53	FCP@2bpm was 570 psi bumped up to 1070 psi.
17	Other	10/22/2023	04:30:00	Pressure up for casing test.
18	Other	10/22/2023	04:32:52	2550 psi for starting pressure.
19	Other	10/22/2023	04:58:03	2569 psi 25 minutes into test.
20	Other	10/22/2023	05:03:34	2571 psi at 30 minutes. 1.5 bbls back to pump truck floats holding.
21	End Job	10/22/2023	05:04:58	Stop recording data. Washed cellar pump with 10 bbls freshwater.
22	Safety Meeting - Pre Rig-Down	10/22/2023	05:15:00	Discuss blow down and any new hazards that could have come up during job.
23	Rig-Down Completed	10/22/2023	06:00:00	Rig down completed.

3.0 Attachments

3.1 Real Time iCem Job Chart

