

HALLIBURTON

iCem[®] Service

NOBLE ENERGY INC-EBUS

Ft. Lupton District, Colorado

Foose State A17-618 Surface

Job Date: Friday, October 20, 2023

Sincerely,

Meghan Van Zyl

Legal Notice

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1.0 Cementing Job Summary

1.1 Executive Summary

Halliburton appreciates the opportunity to perform the cementing services on the **Foose State A17-618 – 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 25 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 #:	05-123-52163
City, County:	Kersey, Weld
SO#:	908931248

Job Times		
	Date (mm/dd/yyyy)	Time (hh:mm)
Requested Time On Location:	10/20/2023	14:30
Called Out Time:	10/20/2023	8:30
Arrived On Location:	10/20/2023	13:00
Job Started:	10/20/2023	17:05
Job Completed:	10/20/2023	19:22
Departed Location:	10/20/2023	20:00

	Description	Units	Value
1	Surface temperature at the time of the job	degree F	65
2	Mud type (OBM, WBM, Synthetic, Water, Brine)	-	WBM
3	Mud density	ppg	8.4
4	Casing set depth (shoe)	ft	1913
5	TVD	ft	1923
6	Float collar depth	ft	1867
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	8

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	144
16	Job displaced by	Rig/HES	HES
17	Estimated returns % during job	%	100
18	Fluid returns to surface	Spacer/Cement, bbls	30/25
19	Final circulation pressure, rate prior to plug bump	psi @ bpm	570
20	Number of Centralizers	-	
21	Number of bottom plugs	-	
22	Number of trucks used preparing/during job	-	3
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

	Recorded Value	Unit	Acceptable Limit	Potential Problems if Values Exceed the Limit
pH	7		6.0 - 8.0	Chemicals in water can cause severe retardation
Temperature	65	F	60 - 80 F	Can can pre-mature setting of cement
Chlorides	200	ppm	3000 ppm	Can shorten thickening time

1.4 Actual Pump Schedule

	Density (ppg)	Volume (bbls)	Yield (ft ³ /sk)	Water Requirement (gal/sk)	Bulk Sacks (sks)	Total Water (gals)
Spacer Fluid	8.33	30				
Lead Cement	13.5	164	1.78	9.51	518	4926
Tail Cement	14.8	25	1.4	6.7	102	683
Top Plug	1					
Displacement Fluid	8.33	144				

2.0 Real-Time Job Summary

2.1 Job Event Log

Seq No.	Activity	Date	Time	Comments
1	Call Out	10/20/2023	08:30:00	Crew called out at 0830 on 10/20/2023 for a requested-on location time of 1430 on 10/20/2023.
2	Arrive At Loc	10/20/2023	13:00:00	Crew arrived on location at 1300 hrs. Meet with costumer TD 1923', 13.5 OH, TP 1913 9.625' 36#, FC 1867', TVD 1923', P/C 80' 16', WBM WEIGHT 8.4 PPG.
3	Safety Meeting - Pre Rig-Up	10/20/2023	15:00:00	Discuss hazards around rig up area.
4	Rig-Up Completed	10/20/2023	16:30:00	Rig up completed.
5	Safety Meeting - Pre Job	10/20/2023	16:45:00	Pre job safety meeting discussed all hazards prior to job and reviewed job procedure.
6	Start Job	10/20/2023	17:05:34	Start recording data.
7	Test Lines	10/20/2023	17:08:12	Pressure tested HES lines to 3500 psi.
8	Pump Spacer 1	10/20/2023	17:15:20	Pumped 30 bbls of green dye Spacer water.
9	Pump Lead Cement	10/20/2023	17:27:06	Pumped 164 bbls (518 sks) of SwiftCem Lead cement @13.5ppg/1.78ft3/9.51gal.sack. Mix gallons was 4926 gallons. Average rate was 5.5 bpm with 100 psi. TOLC = 0', 25 bbls to surface.
10	Check Weight	10/20/2023	17:30:54	Weight verified by mud scales.
11	Check Weight	10/20/2023	17:35:53	Weight verified by mud scales.
12	Check Weight	10/20/2023	17:44:32	Weight verified by mud scales.
13	Pump Tail Cement	10/20/2023	17:55:54	Pumped 25 bbls (102 sks) of SwiftCem Tail cement @14.8ppg/1.4ft3/6.7gal/sack. Mix gallons was 683 gallons. Average rate was 7.5bpm with 470 psi. TOTC=1636'.

14	Check Weight	10/20/2023	17:58:56	Weight verified by mud scales.
15	Shutdown	10/20/2023	18:03:34	Shutdown to drop top plug.
16	Drop Top Plug	10/20/2023	18:10:27	Top plug verified by DSR.
17	Pump Displacement	10/20/2023	18:10:32	Pumped 144 bbls of freshwater displacement.
18	Standby - Other - see comments	10/20/2023	18:18:30	Shutdown due to cellar pump issues.
19	Bump Plug	10/20/2023	18:47:17	FCP @2bpm was 570 psi bumped up to 975 psi.
20	Other	10/20/2023	18:47:23	Pressuring up to 2600 for casing test.
21	Other	10/20/2023	18:49:25	2635 starting psi.
22	Other	10/20/2023	19:13:46	2659 psi after 25 minutes.
23	Other	10/20/2023	19:21:08	2661 psi after full 30 minutes. 1.5 bbls back to pump truck floats holding.
24	End Job	10/20/2023	19:22:56	Stop recording data. Washed caller pump with 10 bbls of freshwater.
25	Safety Meeting - Pre Rig-Down	10/20/2023	19:45:00	Discuss blow down and any new hazards that could have come up during job.
26	Rig-Down Completed	10/20/2023	20:00:00	Rig down completed.

3.0 Attachments

3.1 Real Time iCem Job Chart

