

HALLIBURTON

iCem[®] Service

NOBLE ENERGY INC-EBUS

Ft. Lupton District, Colorado

Foose State A17-627 Surface

Job Date: Saturday, October 21, 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 A17-627 - 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 14 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 #:	05-123-52162
City, County:	Kersey, Weld
SO#:	908931242

Job Times		
	Date (mm/dd/yyyy)	Time (hh:mm)
Requested Time On Location:	10/21/2023	05:00
Called Out Time:	10/20/2023	23:00
Arrived On Location:	10/20/2023	23:00
Job Started:	10/21/2023	8:16
Job Completed:	10/21/2023	10:17
Departed Location:	10/21/2023	11:00

	Description	Units	Value
1	Surface temperature at the time of the job	degree F	45
2	Mud type (OBM, WBM, Synthetic, Water, Brine)	-	WBM
3	Mud density	ppg	8.4
4	Casing set depth (shoe)	ft	1911
5	TVD	ft	1921
6	Float collar depth	ft	1865
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	144
16	Job displaced by	Rig/HES	HES
17	Estimated returns % during job	%	100
18	Fluid returns to surface	Spacer/Cement, bbls	30/14
19	Final circulation pressure, rate prior to plug bump	psi @ bpm	570
20	Number of Centralizers	-	13
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

	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	9.51	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	23:00:00	Crew called out at 2300 on 10/20/2023 for a requested-on location time of 0500 on 10/21/2023.
2	Arrive At Loc	10/20/2023	23:00:00	Crew arrived on location at 2300 hrs. Meet with costumer TD 1921', 13.5 OH, TP 1911' 9.625' 36#, FC 1864', TVD 1921', P/C 80' 16', WBM WEIGHT 8.4 PPG.
3	Safety Meeting - Pre Rig-Up	10/21/2023	06:45:00	Discuss hazards around rig up area.
4	Rig-Up Completed	10/21/2023	07:15:00	Rig up completed.
5	Safety Meeting - Pre Job	10/21/2023	07:30:00	Pre job safety meeting discussed all hazards prior to job and reviewed job procedure.
6	Start Job	10/21/2023	08:16:15	Start recording data.
7	Test Lines	10/21/2023	08:18:37	Pressure tested HES lines to 3500 psi.
8	Pump Spacer 1	10/21/2023	08:22:58	Pumped 30 bbls of green dye spacer water.
9	Pump Lead Cement	10/21/2023	08:33:07	Pumped 164 bbls (518 sks) of SwiftCem Lead cement @13.5ppg/1.78ft3/9.51gal/sack. Mix gallons was 4926 gallons. Average rate was 7bpm with 330 psi on the line. TOLC=0', 14 bbls of cement to surface.
10	Check Weight	10/21/2023	08:37:08	Weight verified by mud scales.
11	Check Weight	10/21/2023	08:48:54	Weight verified by mud scales.
12	Pump Tail Cement	10/21/2023	08:57:39	Pumped 25 bbls (102 sks) of SwiftCem Tail cement @14.8ppg/1.4ft3/6.7gal/sack. Mix gallons was 683 gallons. Average rate was 5bpm with 285 psi. TOTC= 1634'.
13	Check Weight	10/21/2023	09:02:32	Weight verified by mud scales.

14	Shutdown	10/21/2023	09:06:27	Shutdown to drop top plug.
15	Drop Top Plug	10/21/2023	09:11:57	Top plug verified by DSR.
16	Pump Displacement	10/21/2023	09:12:02	Pumped 144 bbls of freshwater displacement.
17	Bump Plug	10/21/2023	09:41:58	FCP @2bpm was 570 psi bumped up to 1070 psi.
18	Other	10/21/2023	09:42:40	Pressure up for casing test.
19	Other	10/21/2023	09:45:42	2589 psi starting pressure.
20	Other	10/21/2023	10:10:45	2618 psi @25 min.
21	Other	10/21/2023	10:15:40	Final pressure was 2622 psi. 1.5 bbls back to pump truck floats are holding.
22	End Job	10/21/2023	10:17:30	Stop recording data. Washed cellar pump with 10 bbls of freshwater.
23	Safety Meeting - Pre Rig-Down	10/21/2023	10:30:00	Discuss blow down and any new hazards that could have come up during job.
24	Rig-Down Completed	10/21/2023	11:00:00	Rig down completed.

3.0 Attachments

3.1 Real Time iCem Job Chart

