HALLIBURTON

iCem® Service

NOBLE ENERGY INC-EBUS

Ft. Lupton District, C0

Foose State A17-685 Production

Job Date: Monday, November 27, 2023

Sincerely,

Meghan Van Zyl

Legal Notice

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Table of Contents

1.0 Cementing Job Summary

1.1 Executive Summary

Halliburton appreciates the opportunity to perform the cementing services on the **Foose State A17-685 - 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 13.18 ppg at 7.38 bbl/min. Cement was displaced with 20 bbl. of treated water with retarder and 399 bbl. of treated freshwater displacement. Plug was landed at 2650 psi and pressured up to 3000 psi. Approximately 73 bbl. of spacer was returned to surface indicating a top of cement around 972'.

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 #:	05-123-52156-00
City, County:	GREELY, WELD
SO#:	909001294

Job Times		
	Date (mm/dd/yyyy)	**Time (hh:mm)**
Requested Time On Location:	11/27/2023	0930
Called Out Time:	11/27/2023	0240
Arrived On Location:	11/27/2023	0808
Job Started:	11/27/2023	1256
Job Completed:	11/27/2023	1730
Departed Location:	11/27/2023	1930

	Description	**Units**	**Value**
1	Surface temperature at the time of the job	degree F	35
2	Mud type (OBM, WBM, Synthetic, Water, Brine)	-	OBM
3	Mud density	ppg	10.5
4	Casing set depth (shoe)	ft	18072.1
5	TVD	ft	6268
6	Float collar depth	ft	18065.1
7	Length of rate hole	ft	15.9
8	Previous casing shoe depth	ft	1959
9	Pre-job mud circulation time	hh:mm	2:00
10	Pre-job mud circulation rate	bpm	10

11	Pre-job mud circulation volume	bbls	1230
12	Mud circulation pressure at start of cement	psi	640
13	Annual flow before the start of job	Y/N	Y
14	Pipe movement during cement job	Y/N	Y
15	Calculated displacement	bbls	419
16	Job displaced by	Rig/HES	HES
17	Estimated returns % during job	%	100
18	Fluid returns to surface	Spacer/Cement, bbls	73/0
19	Final circulation pressure, rate prior to plug bump	psi @ bpm	2620
20	Number of Centralizers	-	219 F-17988’ T 949’
21	Number of bottom plugs	-	2
22	Number of trucks used preparing/during job	-	
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	71	F	60 - 80 F	Can can pre-mature setting of cement
Chlorides	LESS 200	ppm	3000 ppm	Can shorten thickening time

1.4 Actual Pump Schedule

	Density (ppg)	Volume (bbls)	Yield (ft3/sk)	Water Requirement (gal/sk)	Bulk Sacks (sks)	Total Water (gals)
Spacer Fluid	12	120	2.29	14.04		4131
Cap Cement	13.2	39.65	1.59	7.98	140	1118
Lead Cement	13.2	240.95	1.66	7.82	815	6374
Tail Cement	13.2	424.22	1.98	9.51	1203	11441
Top Plug	1					
Displacement Fluid	8.33	419				17598

2.0 Real-Time Job Summary

2.1 Job Event Log

Seq. No.	Activity	Date	Time	Comments
1	Call Out	11/27/2023	02:40:00	CREW CALLED OUT 11/27/2023 0240 HRS. REQUESTED ON LOCATION 11/27/2023 0930 HRS.
2	Pre-Convoy Safety Meeting	11/27/2023	06:30:00	DISCUSS ROUTE AND HAZARDS OF DRIVING
3	Crew Leave Yard	11/27/2023	06:45:00	CREW LEAVES YARD
4	Arrive At Loc	11/27/2023	08:08:00	ARRIVE AT LOCATION. MEET WITH CUSTOMER
5	Pre-Rig Up Safety Meeting	11/27/2023	08:20:00	DISCUSS RIG-UP AND ANY HAZARDS THAT MAY EXIST
6	Rig-Up Equipment	11/27/2023	08:30:00	RIG-UP EQUIPMENT
7	Pre-Job Safety Meeting	11/27/2023	12:00:00	DISCUSS JOB PROCEDURES AND HAZARDS OF JOB, PRESSURE AND HAZARDS OF HES EQUIPMENT
8	Start Job	11/27/2023	12:44:09	prime up pumps/mix spacer
9	Start Job	11/27/2023	12:56:41	BEGIN RECORDING DATA
10	Test Lines	11/27/2023	12:59:10	TEST HES LINES TO 6174 PSI., TEST RIG VALVE TO 1800 PSI
11	Drop Bottom Plug	11/27/2023	13:12:35	CITADEL 1000 PSI BOTTOM PLUG BY DAVE
12	Pump Spacer 1	11/27/2023	13:12:38	120 BBLS TUNED PRIME SPACER. 12 PPG. MIX D-AIR ON FLY. TOS=0'
13	Shutdown	11/27/2023	13:33:39	SHUTDOWN
14	Drop Bottom Plug	11/27/2023	13:36:46	CITADEL 1000 PSI BOTTOM PLUG BY DAVE
15	Pump Cap Cement	11/27/2023	13:39:09	140 SACKS ECONO CEM CAP CEMENT. 39.65 BBLS. 13.2 PPG. TOCC=972' PRE-JOB CALCULATIONS

16	Pump Lead Cement	11/27/2023	13:45:32	815 SACKS ELASTI CEM LEAD CEMENT. 240.95 BBLS. 13.2 PPG. TOLC=1800' PRE-JOB CALCULATIONS
17	Pump Tail Cement	11/27/2023	14:19:44	1203 SACKS NEO CEM TAIL CEMENT. 424.22 BBLS. 13.2 PPG. TOTC=7678' PRE-JOB CALCULATIONS
18	Shutdown	11/27/2023	15:21:21	SHUTDOWN
19	Clean Lines	11/27/2023	15:24:57	CLEAN PUMPS AND LINES. APPROX 17.5 BBLS
20	Shutdown	11/27/2023	15:30:54	SHUTDOWN
21	Drop Top Plug	11/27/2023	15:33:11	CITADEL 2250 PSI PLUG BY DAVE
22	Pump Displacement	11/27/2023	15:34:45	419 BBLS FRESH WATER DISPLACEMENT. 1ST 20 BBLS HAS 10 GALLONS MICRO MATRIX CEMENT RETARDER. REMAINING DIAPLACEMENT HAS 20 GALLONS BELLACIDE 300W AND 10 GALLONS MC MX 820-6.
23	Slow Rate	11/27/2023	16:28:51	SLOW RATE TO 2 BPM AT 395 BBLS
24	Bump Plug	11/27/2023	16:39:00	FCP 2620 PSI/1 BPM
25	Check Floats	11/27/2023	16:43:56	FLOATS HOLD/6.5 BBLS BACK, APPROX 70 BBLS CEMENT TO SURFACE
26	Pressure Up Well	11/27/2023	16:47:23	PRESSURE UP WELL. PUMP 6.5 BBLS/1 BPM MAX PRESSURE 2650 PSI. PUMP 4 BBLS/1 BPM. PRESSURE WAS 2440 PSI AFTER 4 BBLS
27	Check Floats	11/27/2023	16:57:39	FLOATS HOLD/4.5 BBLS BACK
28	Other	11/27/2023	17:00:25	START 30 MINUTE IN-FLOW TEST. / .5 BBLS BACK AFTER 30 MINUTE DURATION
29	End Job	11/27/2023	17:31:30	STOP RECORDING DATA. FLUSH RIG STACK. USED APPROX 1000 BBLS WATER, TOTAL JOB
30	Pre-Rig Down Safety Meeting	11/27/2023	17:50:00	DISCUSS HAZARDS OF RIG-DOWN AND ANY OTHER HAZARDS THAT MAY EXIST
31	Rig-Down Equipment	11/27/2023	17:55:00	RIG-DOWN EQUIPMENT
32	Rig-Down Completed	11/27/2023	18:50:00	RIG-DOWN COMPLETED
33	Crew Leave Location	11/27/2023	19:15:00	CREW DEPARTS LOCATION. THANK YOU FOR CHOOSING HALLIBURTON.

3.0 Attachments

3.1 Real Time iCem Job Chart