

HALLIBURTON

iCem[®] Service

NOBLE ENERGY INC-EBUS

Ft. Lupton District, CO

Bishop A08-665 Production

Job Date: Tuesday, January 30, 2024

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 **Bishop A08-665 - 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 13.16 ppg at 7.05 bbl/min. Cement was displaced with 20 bbl. of treated water with retarder and 384 bbl. of treated freshwater displacement. Plug was landed at 2,450 psi and pressured up to 3,050 psi. Casing test was held for 30 min. Approximately 68 bbl. of spacer was returned to surface indicating a top of cement around 798'.

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 #:	05-123-52077-00
City, County:	Eaton. WELD
SO#:	909125964

Job Times		
	Date (mm/dd/yyyy)	Time (hh:mm)
Requested Time On Location:	1/29/2024	17:30
Called Out Time:	1/29/2024	12:00
Arrived On Location:	1/29/2024	17:30
Job Started:	1/29/2024	20:30
Job Completed:	1/30/2024	01:23
Departed Location:	1/30/2024	03:00

	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	10.6
4	Casing set depth (shoe)	ft	17,447
5	TVD	ft	6,869
6	Float collar depth	ft	17,440
7	Length of rate hole	ft	17FT
8	Previous casing shoe depth	ft	2,025
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	750
12	Mud circulation pressure at start of cement	psi	1000
13	Annual flow before the start of job	Y/N	Y
14	Pipe movement during cement job	Y/N	Y
15	Calculated displacement	bbls	404
16	Job displaced by	Rig/HES	HES
17	Estimated returns % during job	%	95
18	Fluid returns to surface	Spacer/Cement, bbls	68 Spacer
19	Final circulation pressure, rate prior to plug bump	psi @ bpm	2450
20	Number of Centralizers	-	
21	Number of bottom plugs	-	2
22	Number of trucks used preparing/during job	-	10
23	Add hours? If Yes, put #	Y/N and hours	NO
24	NPT? If Yes, put #	Y/N and hours	NO

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	70	F	60 - 80 F	Can can pre-mature setting of cement
Chlorides	1000	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		4130
Cap Cement	13.2	39.64	1.59	7.98	140	1117
Lead Cement	13.2	225.60	1.68	7.92	754	5971
Tail Cement	13.2	413.99	1.98	9.51	1174	11164
Top Plug	1					
Displacement Fluid	8.33	404				

2.0 Real-Time Job Summary

2.1 Job Event Log

Seq No.	Activity	Date	Time	Comments
1	Call Out	1/29/2024	12:00:00	Call out
2	Pre-Convoy Safety Meeting	1/29/2024	15:55:00	Pre-Convoy Safety Meeting
3	Crew Leave Yard	1/29/2024	16:00:00	Crew Leave Yard
4	Arrive at Location from Service Center	1/29/2024	17:30:00	Arrive at Location from Service Center
5	Pre-Rig Up Safety Meeting	1/29/2024	17:35:00	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	1/29/2024	17:40:00	Rig Up equipment as far as possible, Rig running casing
7	Safety Meeting - Pre Job	1/29/2024	19:30:00	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	1/29/2024	20:30:22	Begin Recording.
9	Test Lines	1/29/2024	20:46:41	Tested HES lines to 6500PSI. Tested rig's IBOP valve to 1800PSI.
10	Drop Bottom Plug	1/29/2024	21:03:20	Dropped bottom plug with Ricky and Driller.

11	Pump Spacer 1	1/29/2024	21:06:10	Pumped 120BBLs of 12PPG Tuned Prime Spacer. Pumped at a rate of 6BPM with a pressure of 900PSI. Pre job calculated 73BBLs of spacer to surface.
12	Shutdown	1/29/2024	21:30:29	Shutdown to drop 2nd bottom plug.
13	Drop Bottom Plug	1/29/2024	21:32:35	Dropped 2nd bottom plug with Ricky and Driller.
14	Pump Cap Cement	1/29/2024	21:34:54	Pumped 140S / 39.64BBLs of 13.2PPG Econocem Cap cement. Pumped at a rate of 4BPM with a pressure of 500PSI. Pre job calculated TOC cement was at 798.987FT.
15	Pump Lead Cement	1/29/2024	21:44:48	Pumped 754S / 225.602BBLs of 13.2PPG Elasticem Lead Cement. Pumped at a rate of 8BPM with a pressure of 1500PSI. Pre job calculated TOL cement was at 1,770.555FT.
16	Pump Tail Cement	1/29/2024	22:19:00	Pumped 1174S / 413.997BBLs of 13.2PPG Neocem Tail cement. Pumped at a rate of 8BPM with a pressure of 1750PSI. Pre job calculated TOT cement was at 7,300.015FT
17	Shutdown	1/29/2024	23:19:05	Shutdown to wash pumps and lines.
18	Clean Lines	1/29/2024	23:21:42	Cleaned pumps and lines with 15 bbls of fresh water.
19	Shutdown	1/29/2024	23:29:36	Shut down to load plug and ready for displacement.
20	Drop Top Plug	1/29/2024	23:32:45	Dropped top plug with Ricky and driller.
21	Pump Displacement	1/29/2024	23:32:47	Pumped 406 BBLs of fresh water displacement. First 20BBLs with MMCR. Remaining displacement had MCMX and Bellacide. Slowed down to 2BPM 25BBLs from calculated displacement. FCP 2450PSI. BMP Pressure 3050PSI.
22	Bump Plug	1/30/2024	00:33:33	Bump plug. Check floats, 5.5BBLs back
23	Pressure Up Well	1/30/2024	00:41:12	Pumped 5BBLs to pressure up well. Pressure leveled at 2400PSI. Continued to pump a 4BBL wet shoe. Released pressure and got 4.5BBLs back.
24	Other	1/30/2024	00:53:38	30 minute inflow test. .5Bbls back after 30 minutes.
25	End Job	1/30/2024	01:23:29	Job complete. 68BBLs of spacer to surface.
26	Pre-Rig Down Safety Meeting	1/30/2024	01:24:00	Pre-Rig Down Safety Meeting

27	Rig-Down Equipment	1/30/2024	01:30:00	Rig-Down Equipment
28	Depart Location Safety Meeting	1/30/2024	01:40:00	Depart Location Safety Meeting, Verify all equipment has been thoroughly pre-tripped. All safety and quality issues should be resolved before proceeding.
29	Crew Leave Location	1/30/2024	01:45:00	Crew leave location

3.0 Attachments

3.1 Real Time iCem Job Chart

