

HALLIBURTON

iCem[®] Service

CRESTONE PEAK RESOURCES

BLUE 3-65 33-32-31-36 4BH Production

Job Date: Sunday, August 27, 2023

Sincerely,
Rafael Giorgana

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 **BLUE 3-65 -33-32-31-36 4BH PRODUCTION CASING**. 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.

- **Quality of circulation – Prejob100 % , While pumping Cement100 % , While Pumping Displacement %**
- **Final Circulating Pressure and Pump Rate 8000 PSI CEMENT LEFT IN PIPE 187 BBL.**
- **Returns to Surface NO**
- **Any deviation from plan. YES. PRESSURED OUT DURING DISPLACEMENT. 187 BBLs EARLY.**
- **Abnormalities on job chart NO.**

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 #:	05-001-10556
City, County:	AURORA, ADAMS CO.
SO#:	908806188

Job Times		
	Date (mm/dd/yyyy)	Time (hh:mm)
Requested Time On Location:	08/27/23	0800
Called Out Time:	8/26/23	2100
Arrived On Location:	8/27/23	0700
Job Started:	08/27/23	1820
Job Completed:	08/28/23	0214
Departed Location:	08/27/23	0330

	Description	Units	Value
1	Surface temperature at the time of the job	degree F	70
2	Mud type (OBM, WBM, Synthetic, Water, Brine)	-	OBM
3	Mud density	ppg	9.2
4	Casing set depth (shoe)	ft	29046
5	TVD	ft	7917
6	Float collar depth	ft	29041
7	Length of rate hole	ft	5
8	Previous casing shoe depth	ft	3372
9	Pre-job mud circulation time	hh:mm	2

10	Pre-job mud circulation rate	bpm	10
11	Pre-job mud circulation volume	bbls	1200
12	Mud circulation pressure at start of cement	psi	1100
13	Annual flow before the start of job	Y/N	NO
14	Pipe movement during cement job	Y/N	NO
15	Calculated displacement	bbls	757
16	Job displaced by	Rig/HES	HES
17	Estimated returns % during job	%	100
18	Fluid returns to surface	Spacer/Cement, bbls	0
19	Final circulation pressure, rate prior to plug bump	psi @ bpm	8000
20	Number of Centralizers	-	
21	Number of bottom plugs	-	1
22	Number of trucks used preparing/during job	-	2
23	Add hours? If Yes, put #	Y/N and hours	Y
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	6.5		6.0 - 8.0	Chemicals in water can cause severe retardation
Temperature	69	F	60 - 80 F	Can can pre-mature setting of cement
Chlorides	<300	ppm	3000 ppm	Can shorten thickening time

1.4 Actual Pump Schedule

Stage 1

	Density (ppg)	Volume (bbls)	Yield (ft3/sk)	Water Requirement (gal/sk)	Bulk Sacks (sks)	Total Water (gals)
Spacer Fluid	11.5	120	2.56	16.21	262	4247
Cap Cement	13	147	1.65	8.07	500	4035
Lead Cement	13	120	1.58	7.43	425	3158
Tail Cement	13.2	907	1.56	7.52	3255	24478
Top Plug						
Displacement Fluid	8.33	757				31794

Stage 2

	Density (ppg)	Volume (bbls)	Yield (ft3/sk)	Water Requirement (gal/sk)	Bulk Sacks (sks)	Total Water (gals)
Spacer Fluid						
Cap Cement						
Lead Cement						
Tail Cement						
Top Plug						
Displacement Fluid						

2.0 Real-Time Job Summary

2.1 Job Event Log

Seq No.	Activity	Date	Time	Source	Comments
1	Call Out	8/26/20 23	21:00:0 0	USER	HES crew called for job.
2	Pre-Convoy Safety Meeting	8/27/20 23	03:00:0 0	USER	Journey management with crew to discuss route and hazards for travel to location.
3	Arrive At Loc	8/27/20 23	07:00:0 0	USER	HES crew arrive at location.
4	Safety Meeting - Pre Rig-Up	8/27/20 23	07:15:0 0	USER	JSA with crew discuss spotting equipment rigging up and potential hazards.
5	Rig-Up Completed	8/27/20 23	08:30:0 0	USER	HES equipment rigged up and function tested to verify job ready.
6	Pre-Job Safety Meeting	8/27/20 23	18:00:0 0	USER	JSA with crew, customer rep, and rig crew to discuss job procedure, calculations and potential hazards for job.
7	Start Job	8/27/20 23	18:21:4 7	NONE	Start production casing job.
8	Break Formation	8/27/20 23	18:24:2 1	NONE	Start pumping 5 bbl fresh water to fill HES lines to cement head.
9	Test Lines	8/27/20 23	18:26:1 8	NONE	Test lines to HES cement head. Low test to 500 psi for kickouts. High test to 5000 psi for job pressure. Good test, no leaks.

10	Pump Spacer 1	8/27/20 23	18:33:2 4	NONE	Start pumping 120 bbl Tuned Prime Spacer @ 11.5 ppg. 262 sk.
11	Drop Bottom Plug	8/27/20 23	18:38:0 0	NONE	Drop bottom plug at start of spacer.
12	Check Weight	8/27/20 23	18:39:2 1	NONE	Check Good weight @11.5 ppg.
13	Pump Cap Cement	8/27/20 23	18:54:0 3	NONE	Start pumping 147 bbl cap cement @ 13 ppg. 500 sk,1.65 yield, 8.07 gal/sk.
14	Check Weight	8/27/20 23	19:05:1 8	NONE	Check weight on mud scales. Good weight @ 13 ppg.
15	Pump Lead Cement	8/27/20 23	19:18:4 4	NONE	Start pumping 120 bbl lead cement @ 13 ppg. 425 sk, 1.58 yield, 7.43 gal/sk.
16	Check Weight	8/27/20 23	19:21:5 3	NONE	Check weight on mud scales. Good weight @ 13 ppg.
17	Pump Tail Cement	8/27/20 23	19:33:0 9	NONE	Start pumping 907 bbl tail cement @ 13.2 ppg. 3255 sk, 1.56 yield, 7.52 gal/sk.
18	Check Weight	8/27/20 23	19:41:2 0	NONE	Check weight tier 1 good weight 13.2 ppg.
19	Check Weight	8/27/20 23	20:03:5 7	NONE	Check weight tier 2 god weight.
20	Check Weight	8/27/20 23	20:32:3 6	NONE	Check weight tier 3 good weight 13.2 ppg.
21	Check Weight	8/27/20 23	21:00:0 5	NONE	Check weight tier 4 good weight 13.2 ppg.
22	Clean Lines	8/27/20 23	21:29:3 8	NONE	Wash pumps and lines to open top container. Load top plug and 2 foam balls.

23	Drop Top Plug	8/27/20 23	21:43:5 7	NONE	Drop Top plug and 2 foam balls.
24	Pump Displacement	8/27/20 23	21:43:5 9	NONE	Start pumping 757 bbl displacement. First 420 bbl MMCR mix water. Remainder fresh water.
25	Other	8/27/20 23	23:01:0 9	NONE	Shut down to change o-ring on cement head cap due to leaking. When started back in to displacement pressure continued to max pressure. Company rep increased pressure max to 8000 psi, maxed out at 8000 psi. 570 bbl displacement pumped.
26	Other	8/28/20 23	00:03:0 6	NONE	Bleed off casing pressure. Start pumping till pressure reached 8000 psi.
27	Other	8/28/20 23	00:19:5 1	NONE	Bleed off casing pressure, pump back in same volumn till pressured out again at 8000 psi.
28	Other	8/28/20 23	01:06:4 5	NONE	Bleed off casing pressure, Pump volumn back in reaching 8000 psi. 570 bbl pumped total displacement. leaving 187 bbl tail cement inside casing.
29	Other	8/28/20 23	01:58:2 1	NONE	Bleed off casing pressure, Rig down cement head. put CRT in casing and rig work pipe up and down, try to rotate. Turned back over to HES put cement head back on.
30	Other	8/28/20 23	02:13:5 8	NONE	Pump in to well pressuring out at 8000 psi. Bleed off casing pressure and rig down HES.
31	End Job	8/28/20 23	02:20:0 0	USER	End job. Pressured out with 570 bbl of displacement pumped, leaving 187 bbl cement inside casing. Mud and water samples taken to HES lab along with dry samples from the job. At time of pressure out liquid samples are not hard.
32	Safety Meeting - Pre Rig-Down	8/28/20 23	02:30:0 0	USER	JSA to discuss rigging down and potential hazards.
33	Rig-Down Completed	8/28/20 23	03:10:0 0	USER	All Hes equipment rigged down.

34	Pre-Convoy Safety Meeting	8/28/2023	03:15:00	USER	Journey management with crew to discuss hazards with leaving customer location and travel back to facility.
35	Crew Leave Location	8/28/2023	03:30:00	USER	HES crew leave customer location.

3.0 Attachments

3.1 Real Time Job Chart

