

# HALLIBURTON

iCem<sup>®</sup> Service

**NOBLE ENERGY INC-EBUS**

Ft. Lupton District, COLORADO

**Bishop A18-715 Production**

Job Date: Thursday, January 18, 2024

Sincerely,

**Meghan Van Zyl**

## Legal Notice

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### Disclaimer:

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## 1.0 Cementing Job Summary

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### 1.1 Executive Summary

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Halliburton appreciates the opportunity to perform the cementing services on the **Bishop A18-715 - 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 13.15 ppg at 7.20 bbl/min. Cement was displaced with 20 bbl. of treated water with retarder and 387 bbl. of treated freshwater displacement. Plug was landed at 2,530 psi and pressured up to 3,050 psi. Casing test was held for 30 min. Approximately 73 bbl. of spacer was returned to surface indicating a top of cement around 973'.

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 #:	05-123-52074-00
City, County:	Eaton, Weld
SO#:	909095680

Job Times		
	Date (mm/dd/yyyy)	Time (hh:mm)
Requested Time On Location:	01/17/2024	17:30
Called Out Time:	01/17/2024	11:30
Arrived On Location:	01/17/2024	17:30
Job Started:	01/17/2024	23:23
Job Completed:	01/18/2024	04:01
Departed Location:	01/18/2024	05:50

	Description	Units	Value
1	Surface temperature at the time of the job	degree F	22
2	Mud type (OBM, WBM, Synthetic, Water, Brine)	-	OBM
3	Mud density	ppg	10.7
4	Casing set depth (shoe)	ft	17575
5	TVD	ft	6900
6	Float collar depth	ft	17568
7	Length of rate hole	ft	15
8	Previous casing shoe depth	ft	2066
9	Pre-job mud circulation time	hh:mm	01:30
10	Pre-job mud circulation rate	bpm	10

11	Pre-job mud circulation volume	bbls	900
12	Mud circulation pressure at start of cement	psi	900
13	Annual flow before the start of job	Y/N	Y
14	Pipe movement during cement job	Y/N	Y
15	Calculated displacement	bbls	407.6
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	2530 @ 2
20	Number of Centralizers	-	227
21	Number of bottom plugs	-	2
22	Number of trucks used preparing/during job	-	4
23	Add hours? If Yes, put #	Y/N and hours	Y / 3
24	NPT? If Yes, put #	Y/N and hours	N

### 1.3 Water Field Test

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	Recorded Value	Unit	Acceptable Limit	Potential Problems if Values Exceed the Limit
<b>pH</b>	7		6.0 - 8.0	Chemicals in water can cause severe retardation
<b>Temperature</b>	78	F	60 - 80 F	Can can pre-mature setting of cement
<b>Chlorides</b>	<160	ppm	3000 ppm	Can shorten thickening time

### 1.4 Actual Pump Schedule

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	Density (ppg)	Volume (bbls)	Yield (ft3/sk)	Water Requirement (gal/sk)	Bulk Sacks (sks)	Total Water (gals)
<b>Spacer Fluid</b>	12	120	2.29	14.04		4131
<b>Cap Cement</b>	13.2	39.6	1.59	7.98	140	1117
<b>Lead Cement</b>	13.2	225.3	1.66	7.82	762	5959
<b>Tail Cement</b>	13.2	420.3	1.98	9.51	1192	11336
<b>Top Plug</b>	1					
<b>Displacement Fluid</b>	8.33	407				17094

## 2.0 Real-Time Job Summary

### 2.1 Job Event Log

Seq No.	Activity	Date	Time	Comments
1	Call Out	1/17/2024	11:30:00	CHEVRON BISHOP A18-715 5.5" PRODUCTION CASING JOB - On location 1/17/24 @ 17:30 PM
2	Safety Meeting - Service Center or other Site	1/17/2024	15:50:00	Review Journey Management And Route With Crew Members
3	Depart from Service Center or Other Site	1/17/2024	16:00:00	Depart From Yard
4	Arrive At Loc	1/17/2024	17:30:00	Talk To Company Man (DAVE N) : TD = 17590', TP = 17575', ST = 7', OH = 8.5", CSG = 5.5" 17#, Previous Casing 9 5/8" Set @ 2066', WF = OBM @ 10.7#, Test Water = pH - 7, Chlorides - < 160 ppm, 78 F.
5	Safety Meeting - Assessment of Location	1/17/2024	17:50:00	Spot Equipment
6	Pre-Rig Up Safety Meeting	1/17/2024	18:00:00	Review JSA With Crew Members
7	Rig-Up Equipment	1/17/2024	18:10:00	Rigged Up All Iron And Hoses Needed For CMT Job With No Issues Or Incidents.
8	Rig-Up Completed	1/17/2024	19:00:00	Rigged Up All Iron And Hoses Needed For CMT Job With No Issues Or Incidents.
9	Rig-Up Completed	1/17/2024	21:35:00	Rig Up Rig Floor To Circulate With Rig Pumps. Rig Circulated From 21:45 PM To 23:15 pM At 420 GPM (10 BPM) With 1300 psi, Good Returns.
10	Safety Meeting - Pre Job	1/17/2024	23:00:00	Review Job Procedure And JSA With Rig Hands, Co. Man, And HES Members
11	Start Job	1/17/2024	23:23:42	Start Recording Data
12	Test Lines	1/17/2024	23:25:59	Pressure Test Lines to 6763 PSI

13	Drop Bottom Plug	1/17/2024	23:44:42	Drop Bottom Plug / Verified by Company Representative
14	Pump Spacer 1	1/17/2024	23:44:50	Pump 120 bbls of Tuned Prime Spacer @ 12 PPG ( 2.29 ft3, 14.04 gal/sk ). Total gallons 4,131. Pump Rate 6 BPM with 900 PSI. TOS=0'
15	Check Weight	1/17/2024	23:49:27	Weight Verified by Mud Scales
16	Check Weight	1/17/2024	23:55:45	Weight Verified by Mud Scales
17	Shutdown	1/18/2024	00:11:32	Shutdown Pumping Spacer
18	Drop Bottom Plug	1/18/2024	00:11:44	Drop Bottom Plug / Verified by Company Representative
19	Pump Cap Cement	1/18/2024	00:11:50	Pump 39.6 bbls of EconoCem @ 13.2 PPG ( 140 sk, 1.59 ft3, 7.98 gal/sk ). Total gallons 1117. Pump Rate 6 BPM with 900 PSI. TOCC=973'
20	Check Weight	1/18/2024	00:22:06	Weight Verified by Mud Scales
21	Pump Lead Cement	1/18/2024	00:24:37	Pump 225.3 bbls of ElastiCem @ 13.2 PPG ( 762 sk, 1.66 ft3, 7.82 gal/sk ). Total gallons 5,959. Pump Rate @ 8 BPM with 850 PSI. TOLC=1,801'
22	Pump Tail Cement	1/18/2024	00:55:03	Pump 420.3 bbls of NeoCem @ 13.2 PPG (1,192 sk, 1.98 ft3, 9.51 gal/sk ). Total gallons 11,336. Pump Rate 8 BPM with 1,100 PSI. TOTC=7,277'
23	Check Weight	1/18/2024	01:01:00	Weight Verified by Mud Scales
24	Shutdown	1/18/2024	01:53:14	Shutdown Pumping Cement
25	Clean Lines	1/18/2024	02:02:08	Clean Pump and Lines
26	Drop Top Plug	1/18/2024	02:14:15	Drop Top Plug / Verified by Company Representative
27	Pump Displacement	1/18/2024	02:14:17	Pump 407 bbls of Fresh Water Displacement. First 20 bbls with MMCR. The Rest of Displacement with other Chemicals. 73 bbls of Spacer to Surface.
28	Bump Plug	1/18/2024	03:09:34	Bump Plug / FCP is 2530 PSI and took up to 3050 PSI.
29	Other	1/18/2024	03:15:48	Bleed Casing back / 5.5 bbls Back
30	Other	1/18/2024	03:17:47	Pump 5.5 bbls Back into Well. Didn't see Plug Burst. Pump Additional 5 bbls.

31	Bleed Casing	1/18/2024	03:28:00	Bled Pressure Back To Zero And Got 4 bbls Back
32	Check Floats	1/18/2024	03:29:00	Floats Held Good.
33	Other	1/18/2024	03:30:00	Start 30 Minute In Flow Test
34	End Job	1/18/2024	04:01:00	Stop Recording Data
35	Pre-Rig Down Safety Meeting	1/18/2024	04:20:00	Review JSA With HES Crew Members
36	Rig-Down Equipment	1/18/2024	04:30:00	Rig Down Rig Floor, Iron, And Hoses Used On Job
37	Rig-Down Completed	1/18/2024	05:30:00	All Equipment Rigged Down With No Issues Or Incidents
38	Safety Meeting - Departing Location	1/18/2024	05:40:00	Review Journey Management And Route With Crew Members
39	Depart Location for Service Center or Other Site	1/18/2024	05:50:00	Depart location

3.0 Attachments

3.1 Real Time iCem Job Chart

