

# HALLIBURTON

iCem<sup>®</sup> Service

## **NOBLE ENERGY INC-EBUS**

**Bishop A06-712 Production**

Job Date: Monday, February 26, 2024

Sincerely,  
**Chris Yeung**

## Legal Notice

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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 A06-712 - 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 13.22 ppg at 8.04 bbl/min. Cement was displaced with 20 bbl. of treated water with retarder and 405.5 bbl. of treated freshwater displacement. Plug was landed at 2,400 psi and bumped to 2,900 psi. Pressure was held for 30 min casing test with 0.5bbls bled back to pump truck. With 77 bbls of spacer returning to surface, the estimated TOC is 875'.

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 #:	05-123-52066-00
City, County:	EATON WELD
SO#:	0909180633

Job Times		
	Date (mm/dd/yyyy)	Time (hh:mm)
Requested Time On Location:	2/26/2024	03:00
Called Out Time:	2/25/2024	21:00
Arrived On Location:	2/26/2024	01:30
Job Started:	2/26/2024	05:50
Job Completed:	2/26/2024	10:00
Departed Location:	2/26/2024	11:30

	Description	Units	Value
1	Surface temperature at the time of the job	degree F	55
2	Mud type (OBM, WBM, Synthetic, Water, Brine)	-	OBM
3	Mud density	ppg	10.6
4	Casing set depth (shoe)	ft	17497
5	TVD	ft	6963
6	Float collar depth	ft	17477.5
7	Length of rate hole	ft	8.3
8	Previous casing shoe depth	ft	2028
9	Pre-job mud circulation time	hh:mm	02:00

10	Pre-job mud circulation rate	bpm	12
11	Pre-job mud circulation volume	bbls	1440
12	Mud circulation pressure at start of cement	psi	1580
13	Annual flow before the start of job	Y/N	N
14	Pipe movement during cement job	Y/N	Y
15	Calculated displacement	bbls	405.5
16	Job displaced by	Rig/HES	HES
17	Estimated returns % during job	%	100
18	Fluid returns to surface	Spacer/Cement, bbls	78
19	Final circulation pressure, rate prior to plug bump	psi @ bpm	2400 @ 2
20	Number of Centralizers	-	
21	Number of bottom plugs	-	2
22	Number of trucks used preparing/during job	-	3
23	Add hours? If Yes, put #	Y/N and hours	NO
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
<b>pH</b>	6		6.0 - 8.0	Chemicals in water can cause severe retardation
<b>Temperature</b>	65	F	60 - 80 F	Can can pre-mature setting of cement
<b>Chlorides</b>	0	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)
<b>Spacer Fluid</b>	12	120	2.31	14.15	291.6	4169.58
<b>Cap Cement</b>	13.2	36.6	1.59	7.98	140	1117.2
<b>Lead Cement</b>	13.2	225.6	1.68	7.92	754	5971.68
<b>Tail Cement</b>	13.2	415.8	1.98	9.51	1179	11212.3
<b>Top Plug</b>						
<b>Displacement Fluid</b>	8.33	405.5				

2.0 Real-Time Job Summary

2.1 Job Event Log

Seq No.	Activity	Date	Time	Comments
1	Summit Crew Notified Date/Time	2/25/2024	21:00:00	Crew called out for CHEVRON Production
2	Pre-Convoy Safety Meeting	2/26/2024	00:30:00	Discussed route and possible hazards
3	Depart Location for Service Center or Other Site	2/26/2024	01:00:00	Depart yard w/ 1 pump, 2 660, 1 pickups and 4 personnel.
4	Arrive at Location from Service Center	2/26/2024	01:30:00	Requested on location @ 01:30
5	Safety Meeting - Assessment of Location	2/26/2024	01:45:00	Discussed location and possible hazards. Water test: Temp - 50, Chlorides - 0, PH - 6, Sulfates - <200. 8 1/2 TD @ 19877'. Production casing set @ 17497'. 5.5" 17# P110 - ST - 19.10' .0232 bbl/ft. CSG/OH - .0408 bbl/ft. CSG/CSG - .0479 bbl/ft 9 5/8" 36# HCL80 set @ 2028'. Mud Weight - 10.6ppg
6	Safety Meeting - Pre Rig-Up	2/26/2024	01:55:00	Discussed rig up and possible hazards.
7	Rig-up Lines	2/26/2024	02:05:00	Rig up equipment
8	Casing on Bottom	2/26/2024	03:30:00	
9	Circulate Well	2/26/2024	04:00:00	Rig circulating well 12 bpm @ 1580 psi

10	Safety Meeting - Pre Job	2/26/2024	05:30:00	Discussed job and possible hazards with everyone on location.
11	Start Job	2/26/2024	05:50:46	
12	Pump Spacer 1	2/26/2024	05:55:00	Pumped 5 bbls of FW
13	Pressure Test	2/26/2024	06:06:00	Test lines to 6500 psi
14	Drop Bottom Plug	2/26/2024	06:07:00	
15	Pump Spacer 1	2/26/2024	06:09:00	Pumped 120 bbls of 12 ppg of Tuned Spacer. 2.31 cuft/sk and 14.15 gal/sk. Verified weight with pressurized mud scales.
16	Check Weight	2/26/2024	06:17:18	
17	Drop Bottom Plug	2/26/2024	06:40:14	
18	Pump Lead Cement	2/26/2024	06:40:40	Pumped 39.64 bbls of 13.2 ppg Elasticem. 140 sks, 1.59 cuft/sk, and 7.98 gal/sk. Verified weight with pressurized mud scales. Estimated TOC @ 875.6'
19	Check Weight	2/26/2024	06:44:50	
20	Pump Lead Cement	2/26/2024	06:47:01	Pumped 225.6bbls of 13.2 ppg Isobond cmt. 754 sks, 1.68 cuft/sk, and 7.92 gal/sk. Verified weight with pressurized mud scales. Estimated TOC @ 1702.32'
21	Check Weight	2/26/2024	06:52:44	
22	Pump Tail Cement	2/26/2024	07:17:00	Pumped 415.8 bbls of 13.2 ppg Elasticem. 1179 sks, 1.98 cuft/sk, and 9.51 gal/sk. Verified weight with pressurized mud scales. Estimated TOC @ 7187.87'
23	Check Weight	2/26/2024	07:25:44	
24	Check Weight	2/26/2024	07:44:53	
25	Check Weight	2/26/2024	08:00:58	
26	Check Weight	2/26/2024	08:07:50	

27	Shutdown	2/26/2024	08:21:39	
28	Drop Top Plug	2/26/2024	08:31:22	3rd party rupture plug
29	Pump Displacement	2/26/2024	08:31:32	Pumped 405.5 bbls of displacement. First 20 bbl w/ MMCR and 385.5 bblsw/ MX 820-6 & BELLACIDE
30	Bump Plug	2/26/2024	09:27:00	Bump plug from 2400- 2900 psi
31	Check Floats	2/26/2024	09:29:00	Floats are good. Got 5.5 bbls back.
32	Bump Plug	2/26/2024	09:41:00	Bump plug to rupture.
33	Other	2/26/2024	09:46:09	Never saw plug rupture. Pumped 5 bbls and shutdown.
34	Release Casing Pressure	2/26/2024	10:16:00	Release pressure and monitor for 30 minutes.
35	End Job	2/26/2024	10:20:50	Got 78 bbls of spacer to surface.
36	Pre-Rig Down Safety Meeting	2/26/2024	10:30:00	
37	Rig-Down Equipment	2/26/2024	10:40:00	
38	Depart Location Safety Meeting	2/26/2024	11:00:00	
39	Depart Location	2/26/2024	11:20:00	Thank you for using Halliburton cement. Andrew Glover and crew.

3.0 Attachments

3.1 Noble Patterson 268 Bishop A06-712 Production - SO 909180633-Custom Results.png

