

# HALLIBURTON

iCem<sup>®</sup> Service

## **NOBLE ENERGY INC-EBUS**

**For: Nick Kopp**

Date: Thursday, February 22, 2024

**Bishop A06-722 Production**

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 A06-722- 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 6.92 bbl/min. Cement was displaced with 20 bbls of treated water with retarder and 405.3 bbl. of treated freshwater displacement. Plug was landed at 2,600 psi and bumped to 3,100 psi. Pressure was held for 30 min casing test. With 100 bbls of spacer returning to surface, the estimated TOC is 888'.

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 #:	05-123-52065-00
City, County:	EATON, WELD
SO#:	0909172336

Job Times		
	Date (mm/dd/yyyy)	Time (hh:mm)
Requested Time On Location:	2/22/2024	13:00
Called Out Time:	2/22/2024	07:00
Arrived On Location:	2/22/2024	12:30
Job Started:	2/22/2024	15:44
Job Completed:	2/22/2024	2100
Departed Location:	2/22/2024	2200

	Description	Units	Value
1	Surface temperature at the time of the job	degree F	50
2	Mud type (OBM, WBM, Synthetic, Water, Brine)	-	OBM
3	Mud density	ppg	10.3
4	Casing set depth (shoe)	ft	17490
5	TVD	ft	6914
6	Float collar depth	ft	17470.7
7	Length of rate hole	ft	9.1
8	Previous casing shoe depth	ft	2062
9	Pre-job mud circulation time	hh:mm	02:00
10	Pre-job mud circulation rate	bpm	50

11	Pre-job mud circulation volume	bbls	10
12	Mud circulation pressure at start of cement	psi	1200
13	Annual flow before the start of job	Y/N	1315
14	Pipe movement during cement job	Y/N	N
15	Calculated displacement	bbls	Y
16	Job displaced by	Rig/HES	405.3
17	Estimated returns % during job	%	HES
18	Fluid returns to surface	Spacer/Cement, bbls	100
19	Final circulation pressure, rate prior to plug bump	psi @ bpm	77
20	Number of Centralizers	-	2600 @2
21	Number of bottom plugs	-	
22	Number of trucks used preparing/during job	-	2
23	Add hours? If Yes, put #	Y/N and hours	3
24	NPT? If Yes, put #	Y/N and hours	NO

### 1.3 Water Field Test

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	Recorded Value	Unit	Acceptable Limit	Potential Problems if Values Exceed the Limit
<b>pH</b>			6.0 - 8.0	Chemicals in water can cause severe retardation
<b>Temperature</b>		F	60 - 80 F	Can can pre-mature setting of cement
<b>Chlorides</b>		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	2.31	14.15	292	4116
<b>Cap Cement</b>	13.2	39.6	1.59	7.98	140	1117
<b>Lead Cement</b>	13.2	225.6	1.68	7.92	754	5964
<b>Tail Cement</b>	13.2	416	1.98	9.51	1179	11214
<b>Top Plug</b>						
<b>Displacement Fluid</b>	8.34	405.3				

## 2.0 Real-Time Job Summary

### 2.1 Job Event Log

Seq. No.	Activity	Date	Time	Comments
1	Summit Crew Notified Date/Time	2/22/2024	07:00:34	Crew called out for CHEVRON Production
2	Pre-Convoy Safety Meeting	2/22/2024	11:45:35	Discussed route and possible hazards
3	Depart Location for Service Center or Other Site	2/22/2024	11:50:36	Depart yard w/ 1 pump, 2 660, 1 pickups and 4 personnel.
4	Arrive at Location from Service Center	2/22/2024	12:30:36	Requested on location @ 1300
5	Safety Meeting - Assessment of Location	2/22/2024	12:45:37	Discussed location and possible hazards. Water test: Temp - 60, Chlorides - 0, PH - 6, Sulfates - <200. 8 1/2 TD @ 17499'. Production casing set @ 17490'. 5.5" 17# P110 - ST - 19.2' .0232 bbl/ft. CSG/OH - .0408 bbl/ft. CSG/CSG - .0479 bbl/ft 9 5/8" 36# HCL80 set @ 2062'. Mud Weight - 10.3ppg
6	Safety Meeting - Pre Rig-Up	2/22/2024	12:55:44	Discussed rig up and possible hazards.
7	Rig-up Lines	2/22/2024	13:05:45	Rig up equipment
8	Casing on Bottom	2/22/2024	13:15:47	
9	Circulate Well	2/22/2024	13:45:48	Rig circulating well 10 bpm @ 1254 psi
10	Safety Meeting - Pre Job	2/22/2024	15:10:00	Discussed job and possible hazards with everyone on location.

11	Start Job	2/22/2024	15:44:55	
12	Pump Spacer 1	2/22/2024	15:52:25	Pumped 3 bbls of FW
13	Pressure Test	2/22/2024	15:54:26	Test lines to 6500 psi
14	Drop Bottom Plug	2/22/2024	16:22:27	
15	Pump Spacer 1	2/22/2024	16:25:28	Pumped 120 bbls of 12 ppg of Tuned Spacer. 2.31 cuft/sk and 14.14 gal/sk. Verified weight with pressurized mud scales.
16	Drop Bottom Plug	2/22/2024	16:54:29	
17	Pump Lead Cement	2/22/2024	16:55:33	Pumped 39.6 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 @ 888.72'
18	Pump Lead Cement	2/22/2024	17:04:14	Pumped 225.6 bbls 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 @ 1715.44'
19	Check Weight	2/22/2024	17:10:27	
20	Pump Tail Cement	2/22/2024	17:35:58	Pumped 416 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 @ 7181.07'
21	Check Weight	2/22/2024	17:49:41	
22	Check Weight	2/22/2024	18:08:06	
23	Shutdown	2/22/2024	18:39:00	
24	Drop Top Plug	2/22/2024	18:53:00	3rd party rupture plug
25	Pump Displacement	2/22/2024	18:53:10	Pumped 405.3 bbls of displacement. First 20 bbl w/ MMCR and 385.3 bblsw/ MX 820-6 & BELLACIDE
26	Bump Plug	2/22/2024	19:50:00	Bump plug from 2600- 3100 psi
27	Check Floats	2/22/2024	19:56:00	Floats are good. Got 5.5 bbls back.
28	Bump Plug	2/22/2024	20:05:30	Bump plug to rupture.

29	Other	2/22/2024	20:12:26	saw plug rupture @2630. Pumped 5 bbls and shutdown.
30	Release Casing Pressure	2/22/2024	20:12:38	Release pressure and monitor for 30 minutes.
31	End Job	2/22/2024	20:46:42	
32	Pre-Rig Down Safety Meeting	2/22/2024	20:50:00	
33	Rig-Down Equipment	2/22/2024	20:55:00	
34	Depart Location Safety Meeting	2/22/2024	21:40:00	
35	Depart Location	2/22/2024	21:50:00	Thank you for using Halliburton cement. Andrew Glover and crew.

3.0 Attachments

3.1 CHEVRON - BISHOP A06-722-Custom Results.png

