

# HALLIBURTON

iCem<sup>®</sup> Service

## **NOBLE ENERGY INC-EBUS**

**Bishop A05-755 Production**

Job Date: Thursday, March 14, 2024

Sincerely,  
**Chris Yeung**

## Legal Notice

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Table of Contents

---

1.0 Cementing Job Summary ..... 4

    1.1 Executive Summary ..... 4

    1.2 Job Overview ..... 5

    1.3 Water Field Test ..... 7

    1.4 Actual Pump Schedule ..... 7

2.0 Real-Time Job Summary ..... 8

    2.1 Job Event Log ..... 8

3.0 Attachments ..... 11

    3.1 Noble Patterson 268 Bishop A05-755 Production - SO#90921249-Custom Results.png ..... 11

## 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 A05-755 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 6.61 bbl/min. Cement was displaced with 20 bbl. of treated water with retarder and 414 bbl. of treated freshwater displacement. Plug was landed at 2,600 psi and bumped to 3,000 psi, floats held with 5.5bbls bled back to the truck. Pressure was held for 30 min casing test. With 66bbls of spacer returning to surface, the estimated TOC is 903'.

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

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Job Details	
API #:	5-123-52070-00
City, County:	EATON, WELD
SO#:	0909212490

Job Times		
	Date (mm/dd/yyyy)	Time (hh:mm)
Requested Time On Location:	03/14/2024	10:00
Called Out Time:	03/14/2024	04:00
Arrived On Location:	03/14/2024	08:30
Job Started:	03/14/2024	13:18
Job Completed:	03/14/2024	19:50
Departed Location:	03/14/2024	22:30

	Description	Units	Value
1	Surface temperature at the time of the job	degree F	32
2	Mud type (OBM, WBM, Synthetic, Water, Brine)	-	OBM
3	Mud density	ppg	11.7
4	Casing set depth (shoe)	ft	17,859
5	TVD	ft	6,893
6	Float collar depth	ft	17,859.2
7	Length of rate hole	ft	7'
8	Previous casing shoe depth	ft	2106'
9	Pre-job mud circulation time	hh:mm	2:00

10	Pre-job mud circulation rate	bpm	10BPM
11	Pre-job mud circulation volume	bbls	1200BBL
12	Mud circulation pressure at start of cement	psi	1550PSI
13	Annual flow before the start of job	Y/N	N
14	Pipe movement during cement job	Y/N	Y
15	Calculated displacement	bbls	414
16	Job displaced by	Rig/HES	HES
17	Estimated returns % during job	%	100
18	Fluid returns to surface	Spacer/Cement, bbls	66
19	Final circulation pressure, rate prior to plug bump	psi @ bpm	2600
20	Number of Centralizers	-	230
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	Y 2
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>	7		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>	12.4	120	2.13	12.85	316	4074
<b>Cap Cement</b>	13.2	39.6	1.59	7.89	140	1117
<b>Lead Cement</b>	13.2	243	1.68	7.92	812	6426
<b>Tail Cement</b>	13.2	413	1.98	9.51	1172	11130
<b>Top Plug</b>						
<b>Displacement Fluid</b>	8.33	414				

2.0 Real-Time Job Summary

2.1 Job Event Log

Seq No.	Activity	Date	Time	Comments
1	Summit Crew Notified Date/Time	3/14/2024	04:00:57	Crew called out for CHEVRON Production
2	Pre-Convoy Safety Meeting	3/14/2024	07:00:59	Discussed route and possible hazards
3	Depart Location for Service Center or Other Site	3/14/2024	07:15:00	Depart yard w/ 1 pump, 2 660, 1 pickups and 4 personnel.
4	Arrive at Location from Service Center	3/14/2024	08:30:01	Requested on location @ 1000
5	Safety Meeting - Assessment of Location	3/14/2024	08:40:02	Discussed location and possible hazards. Water test: Temp - 65, Chlorides - 0, PH - 6, Sulfates - <200. 8 1/2 TD @ 17859'. Production casing set @ 17859.2'. 5.5" 17# P110 - ST - 19.22' .0232 bbl/ft. CSG/OH - .0408 bbl/ft. CSG/CSG - .0479 bbl/ft 9 5/8" 36# J55 set @ 2106'. Mud Weight - 11.7 ppg
6	Safety Meeting - Pre Rig-Up	3/14/2024	08:50:08	Discussed rig up and possible hazards.
7	Rig-up Lines	3/14/2024	09:00:11	Rig up equipment
8	Casing on Bottom	3/14/2024	11:30:51	
9	Circulate Well	3/14/2024	12:00:53	Rig circulating well 10 bpm @ 1254 psi

10	Safety Meeting - Pre Job	3/14/2024	13:00:55	Discussed job and possible hazards with everyone on location.
11	Start Job	3/14/2024	14:23:06	
12	Pump Spacer 1	3/14/2024	14:24:56	Pumped 3 bbls of FW
13	Pressure Test	3/14/2024	14:26:57	Test lines to 6500 psi
14	Drop Bottom Plug	3/14/2024	14:39:03	
15	Pump Spacer 1	3/14/2024	14:40:05	Pumped 120 bbls of 12.4 ppg of Tuned Spacer. 2.13 cuft/sk and 12.85 gal/sk. Verified weight with pressurized mud scales.
16	Check Weight	3/14/2024	14:47:54	
17	Check Weight	3/14/2024	14:53:13	
18	Drop Bottom Plug	3/14/2024	15:09:38	
19	Pump Lead Cement	3/14/2024	15:10:39	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 @ 903.5'
20	Pump Lead Cement	3/14/2024	15:18:24	Pumped 243 bbls of 13.2 ppg Isobond cmt. 812 sks, 1.68 cuft/sk, and 7.92 gal/sk. Verified weight with pressurized mud scales. Estimated TOC @ 1730.22'
21	Check Weight	3/14/2024	15:37:56	
22	Pump Tail Cement	3/14/2024	15:54:00	Pumped 413 bbls of 13.2 ppg Elasticem. 1172 sks, 1.98 cuft/sk, and 9.51 gal/sk. Verified weight with pressurized mud scales. Estimated TOC @ 7623.9'
23	Shutdown	3/14/2024	17:03:58	
24	Drop Top Plug	3/14/2024	17:29:49	3rd party rupture plug
25	Pump Displacement	3/14/2024	17:30:28	Pumped 414 bbls of displacement. First 20 bbl w/ MMCR and 394 bblsw/ MX 820-6 & BELLACIDE
26	Bump Plug	3/14/2024	19:01:09	Bump plug from 2600 - 3000 psi

27	Check Floats	3/14/2024	19:08:17	Floats are good. Got 5.5 bbls back.
28	Bump Plug	3/14/2024	19:10:52	Bump plug to rupture.
29	Other	3/14/2024	19:13:53	Plug rupture at 3185 psi. Pumped 5 bbls and shutdown.
30	Release Casing Pressure	3/14/2024	19:17:10	Release pressure and monitor for 30 minutes.
31	End Job	3/14/2024	19:49:13	Got 66 bbls of spacer back to surface.
32	Pre-Rig Down Safety Meeting	3/14/2024	19:55:37	
33	Rig-Down Equipment	3/14/2024	20:00:44	
34	Depart Location Safety Meeting	3/14/2024	20:30:46	
35	Depart Location	3/14/2024	20:45:47	Thank you for using Halliburton cement. Andrew Glover and crew.

3.0 Attachments

3.1 Noble Patterson 268 Bishop A05-755 Production - SO#90921249-Custom Results.png

