HALLIBURTON

iCem® Service

DNU-NOBLE ENERGY INC-EBUS

Bishop A05-783 Production
Job Date: Friday, March 01, 2024

Sincerely,
Chris Yeung

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 **Bishop A05-783- 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 406 bbl. of treated freshwater displacement. Plug was landed at 2,670 psi and bumped to 2,900 psi. Pressure was held for 30 min casing test with 5.5bbls bled back to pump truck. With 77bbls of spacer returning to surface, the estimated TOC is 895'.

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 #:	**05-123-52067-00**
City, County:	Eaton, Weld
SO#:	**0909186640**

Job Times		
	Date (mm/dd/yyyy)	**Time (hh:mm)**
Requested Time On Location:	2/29/24	16:30
Called Out Time:	2/29/24	12:30
Arrived On Location:	2/29/24	18:30
Job Started:	2/29/24	21:40
Job Completed:	3/1/24	2:15
Departed Location:	3/1/24	3:30

	Description	**Units**	**Value**
1	Surface temperature at the time of the job	degree F	35
2	Mud type (OBM, WBM, Synthetic, Water, Brine)	-	OBM
3	Mud density	ppg	10.7
4	Casing set depth (shoe)	ft	17524.1
5	TVD	ft	6896
6	Float collar depth	ft	17504.9
7	Length of rate hole	ft	10.1
8	Previous casing shoe depth	ft	2056
9	Pre-job mud circulation time	hh:mm	2:00
10	Pre-job mud circulation rate	bpm	10.5

11	Pre-job mud circulation volume	bbls	1260
12	Mud circulation pressure at start of cement	psi	1450
13	Annual flow before the start of job	Y/N	N
14	Pipe movement during cement job	Y/N	Y
15	Calculated displacement	bbls	406
16	Job displaced by	Rig/HES	HES
17	Estimated returns % during job	%	100
18	Fluid returns to surface	Spacer/Cement, bbls	SPACER, 77 BBLS
19	Final circulation pressure, rate prior to plug bump	psi @ bpm	2670 PSI @ 2 BPM
20	Number of Centralizers	-	231
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	n
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		6.0 - 8.0	Chemicals in water can cause severe retardation
Temperature	70	F	60 - 80 F	Can can pre-mature setting of cement
Chlorides	0	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	12	120	2.31	14.15	291.6	4169
Cap Cement	13.2	36.6	1.59	7.98	140	1117
Lead Cement	13.2	225.6	1.68	7.92	754	5971
Tail Cement	13.2	416.8	1.98	9.51	1182	11240
Top Plug						
Displacement Fluid	8.33	406				

2.0 Real-Time Job Summary

2.1 Job Event Log

Seq. No.	Activity	Date	Time	Comments
1	Summit Crew Notified Date/Time	2/29/2024	12:30:00	Crew called out for CHEVRON Production
2	Pre-Convoy Safety Meeting	2/29/2024	15:30:00	Discussed route and possible hazards
3	Depart Location for Service Center or Other Site	2/29/2024	16:45:00	Depart yard w/ 1 pump, 2 660, 1 pickups and 4 personnel.
4	Arrive at Location from Service Center	2/29/2024	18:30:00	Requested on location @ 1830
5	Safety Meeting - Assessment of Location	2/29/2024	18:45:00	Discussed location and possible hazards. Water test: Temp - 70, Chlorides - 0, PH - 6, Sulfates - <200. 8 1/2 TD @ 17534'. Production casing set @ 17524.1'. 5.5" 17# P110 - ST - 19.25' .0232 bbl/ft. CSG/OH - .0408 bbl/ft. CSG/CSG - .0479 bbl/ft 9 5/8" 36# J55 set @ 2056'. Mud Weight - 10.7ppg
6	Safety Meeting - Pre Rig-Up	2/29/2024	18:55:00	Discussed rig up and possible hazards.
7	Rig-up Lines	2/29/2024	19:05:00	Rig up equipment
8	Casing on Bottom	2/29/2024	19:45:00	

9	Circulate Well	2/29/2024	19:55:00	Rig circulating well 10.5 bpm @ 1450 psi
10	Safety Meeting - Pre Job	2/29/2024	21:20:21	Discussed job and possible hazards with everyone on location.
11	Start Job	2/29/2024	21:57:58	
12	Pump Spacer 1	2/29/2024	22:00:45	Pumped 3 bbls of FW
13	Pressure Test	2/29/2024	22:01:48	Test lines to 6500 psi. Test IBOP to 1800 psi.
14	Drop Bottom Plug	2/29/2024	22:10:47	
15	Pump Spacer 1	2/29/2024	22:13:49	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	Check Weight	2/29/2024	22:19:23	
17	Drop Bottom Plug	2/29/2024	22:33:55	
18	Pump Lead Cement	2/29/2024	22:36:02	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 @ 895.25'
19	Pump Lead Cement	2/29/2024	22:43:03	Pumped 225.6 bbls of 13.2 ppg Isobond cmt. 754 sks, 1.65 cuft/sk, and 7.92 gal/sk. Verifed weight with pressurized mud scales. Estimated TOC @ 1721.97'
20	Check Weight	2/29/2024	22:49:15	
21	Pump Tail Cement	2/29/2024	23:15:05	Pumped 417 bbls of 13.2 ppg Elasticem. 1182 sks, 1.98 cuft/sk, and 9.51 gal/sk. Verified weight with pressurized mud scales. Estimated TOC @ 7190.76'

22	Check Weight	2/29/2024	23:22:23	
23	Check Weight	2/29/2024	23:41:07	
24	Shutdown	3/1/2024	00:27:38	
25	Drop Top Plug	3/1/2024	00:35:04	3rd party rupture plug
26	Pump Displacement	3/1/2024	00:37:14	Pumped 406 bbls of displacement. First 20 bbl w/ MMCR and 386 bblsw/ MX 820-6 & BELLACIDE
27	Bump Plug	3/1/2024	01:21:03	Bump plug from 2370 - 2900 psi
28	Check Floats	3/1/2024	01:27:17	Floats are good. Got 5.5 bbls back.
29	Release Casing Pressure	3/1/2024	01:35:09	Release pressure. Got 4 bbls back. Monitor for 30 minutes.
30	Bump Plug	3/1/2024	01:38:41	Bump plug to rupture. Plug ruptured @ 2470 psi. Pumped 5 bbls and shutdown.
31	Other	3/1/2024	01:39:55	
32	End Job	3/1/2024	02:13:11	Got 77 bbls of spacer back to surface.
33	Pre-Rig Down Safety Meeting	3/1/2024	02:30:45	
34	Rig-Down Equipment	3/1/2024	02:40:49	

35	Depart Location Safety Meeting	3/1/2024	03:15:48	
36	Depart Location	3/1/2024	03:39:50	Thank you for using Halliburton cement. Andrew Glover and crew.

3.0 Attachments

3.1 NOBLE ENERGY BISHOP A05-783-Custom Results.png