

HALLIBURTON

iCem[®] Service

NOBLE ENERGY INC-EBUS

Bishop A05-773 Production

Job Date: Wednesday, March 06, 2024

Sincerely,
Chris Yeung

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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 A05-773 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 13.23 ppg at 6.14 bbl/min. Cement was displaced with 20 bbl. of treated water with retarder and 410 bbl. of treated freshwater displacement. Plug was landed at 2,600 psi and bumped to 3,200 psi. Pressure was held for 30 min casing test with 6.0bbls bled back to pump truck. With 72 bbls of spacer returning to surface, the estimated TOC is 892'.

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 #:	5-123-52068-00
City, County:	EATON,WELD
SO#:	909197144

Job Times		
	Date (mm/dd/yyyy)	Time (hh:mm)
Requested Time On Location:	3/6/24	9:30
Called Out Time:	3/6/24	3:30
Arrived On Location:	3/6/24	7:45
Job Started:	3/6/24	13:45
Job Completed:	3/6/24	19:15
Departed Location:	3/6/24	20:45

	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	11.8
4	Casing set depth (shoe)	ft	17676.2
5	TVD	ft	6959
6	Float collar depth	ft	17657
7	Length of rate hole	ft	10.2
8	Previous casing shoe depth	ft	2066
9	Pre-job mud circulation time	hh:mm	2:00

10	Pre-job mud circulation rate	bpm	10
11	Pre-job mud circulation volume	bbls	1200
12	Mud circulation pressure at start of cement	psi	1490
13	Annual flow before the start of job	Y/N	N
14	Pipe movement during cement job	Y/N	Y
15	Calculated displacement	bbls	410
16	Job displaced by	Rig/HES	HES
17	Estimated returns % during job	%	100
18	Fluid returns to surface	Spacer/Cement, bbls	SPACER,72 BBLS
19	Final circulation pressure, rate prior to plug bump	psi @ bpm	2600 PSI @ 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	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
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	12.2	115	2.218	13.47	291	3919
Cap Cement	13.2	39.6	1.59	7.98	140	1117
Lead Cement	13.2	225.6	1.68	7.92	754	5964
Tail Cement	13.2	423	1.98	9.51	1200	11424
Top Plug						
Displacement Fluid	8.4	410				

Stage 2

	Density (ppg)	Volume (bbls)	Yield (ft3/sk)	Water Requirement (gal/sk)	Bulk Sacks (sks)	Total Water (gals)
Spacer Fluid						
Cap Cement						
Lead Cement						
Tail Cement						
Top Plug						
Displacement Fluid						

List of materials returned to yard:

2.0 Real-Time Job Summary

2.1 Job Event Log

Seq No.	Activity	Date	Time	Comments
1	Summit Crew Notified Date/Time	3/6/2024	03:30:11	Crew called out for CHEVRON Production
2	Pre-Convoy Safety Meeting	3/6/2024	06:00:11	Discussed route and possible hazards
3	Depart Location for Service Center or Other Site	3/6/2024	06:15:12	Depart yard w/ 1 pump, 2 660, 1 pickup and 5 personnel.
4	Arrive at Location from Service Center	3/6/2024	07:45:14	Requested on location @ 0930
5	Safety Meeting - Assessment of Location	3/6/2024	08:00:14	Discussed location and possible hazards. Water test: Temp - 70, Chlorides - 0, PH - 6, Sulfates - <200. 8 1/2 TD @ 17687'. Production casing set @ 17676.2'. 5.5" 17# P110 - ST - 19.20' .0232 bbl/ft. CSG/OH - .0408 bbl/ft. CSG/CSG - .0479 bbl/ft 9 5/8" 36# J55 set @ 2066'. Mud Weight - 11.8 ppg
6	Safety Meeting - Pre Rig-Up	3/6/2024	08:15:18	Discussed rig up and possible hazards.
7	Rig-up Lines	3/6/2024	08:30:19	Rig up equipment
8	Casing on Bottom	3/6/2024	11:00:24	
9	Circulate Well	3/6/2024	11:30:26	Rig circulating well 10 bpm @ 1490 psi

10	Safety Meeting - Pre Job	3/6/2024	13:30:23	Discussed job and possible hazards with everyone on location.
11	Start Job	3/6/2024	14:11:01	
12	Pump Spacer 1	3/6/2024	14:12:24	Pumped 3 bbls of FW
13	Pressure Test	3/6/2024	14:13:25	Test lines to 6500 psi
14	Drop Bottom Plug	3/6/2024	14:29:30	
15	Pump Spacer 1	3/6/2024	14:31:31	Pumped 115 bbls of 12.2 ppg of Tuned Spacer. 2.218 cuft/sk and 13.47 gal/sk. Verified weight with pressurized mud scales.
16	Check Weight	3/6/2024	14:36:09	
17	Drop Bottom Plug	3/6/2024	14:57:41	
18	Pump Lead Cement	3/6/2024	15:02:30	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 @ 892.72'
19	Check Weight	3/6/2024	15:09:44	
20	Pump Lead Cement	3/6/2024	15:12:34	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 @ 1719.44'
21	Check Weight	3/6/2024	15:29:00	
22	Pump Tail Cement	3/6/2024	15:47:24	Pumped 423 bbls of 13.2 ppg Elasticem. 1200 sks, 1.98 cuft/sk, and 9.51 gal/sk. Verified weight with pressurized mud scales. Estimated TOC @ 7195.8'
23	Check Weight	3/6/2024	15:48:44	
24	Shutdown	3/6/2024	17:15:57	
25	Drop Top Plug	3/6/2024	17:21:14	3rd party rupture plug
26	Pump Displacement	3/6/2024	17:21:31	Pumped 410 bbls of displacement. First 20 bbl w/ MMCR and 390 bblsw/ MX 820-6 & BELLACIDE

27	Bump Plug	3/6/2024	18:24:22	Bump plug from 2600 - 3200 psi
28	Check Floats	3/6/2024	18:30:33	Floats are good. Got 6 bbls back.
29	Bump Plug	3/6/2024	18:36:32	Bump plug to rupture. Plug ruptured @ 2840 psi
30	Release Casing Pressure	3/6/2024	18:40:16	Release pressure and monitor for 30 minutes.
31	End Job	3/6/2024	19:11:14	Got 72 bbls of spacer back to surface.
32	Pre-Rig Down Safety Meeting	3/6/2024	19:15:41	
33	Rig-Down Equipment	3/6/2024	19:20:24	
34	Depart Location Safety Meeting	3/6/2024	19:45:39	
35	Depart Location	3/6/2024	20:00:25	Thank you for using Halliburton cement. Andrew Glover and crew.

3.0 Attachments

3.1 Noble Patterson 268 Bishop A05-773 Production -SO# 909197144-Custom Results.png

