

HALLIBURTON

iCem[®] Service

NOBLE ENERGY INC-EBUS

Ft. Lupton District, COLORADO

For: Nick Kopp

Date: Monday, February 19, 2024

Bishop A06-731 Production

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 A06-731- 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 13.2 ppg at 7.23 bbl/min. Cement was displaced with 20 bbls of treated water with retarder and 407 bbl. of treated freshwater displacement. Plug was landed at 2,500 psi and bumped to 3,050 psi. Pressure was held for 30 min casing test with 0.5bbls bled back to pump truck. With 60 bbls of spacer returning to surface, the estimated TOC is 991'.

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 #:	05-123-52064-00
City, County:	EATON, WELD
SO#:	0909161387

Job Times		
	Date (mm/dd/yyyy)	Time (hh:mm)
Requested Time On Location:	02/19/2024	07:30
Called Out Time:	02/19/2024	03:30
Arrived On Location:	02/19/2024	07:00
Job Started:	02/19/2024	10:21
Job Completed:	02/19/2024	15:06
Departed Location:	02/19/2024	16:30

	Description	Units	Value
1	Surface temperature at the time of the job	degree F	33
2	Mud type (OBM, WBM, Synthetic, Water, Brine)	-	OBM
3	Mud density	ppg	10.9
4	Casing set depth (shoe)	ft	17,552
5	TVD	ft	6,913
6	Float collar depth	ft	17,544.7
7	Length of rate hole	ft	13
8	Previous casing shoe depth	ft	2,051
9	Pre-job mud circulation time	hh:mm	08:00

10	Pre-job mud circulation rate	bpm	10
11	Pre-job mud circulation volume	bbls	1,200
12	Mud circulation pressure at start of cement	psi	1,250
13	Annual flow before the start of job	Y/N	YES
14	Pipe movement during cement job	Y/N	YES (ROTATION)
15	Calculated displacement	bbls	407
16	Job displaced by	Rig/HES	HES
17	Estimated returns % during job	%	100
18	Fluid returns to surface	Spacer/Cement, bbls	60 BBLS OF SPACER
19	Final circulation pressure, rate prior to plug bump	psi @ bpm	2460 @2 BPM
20	Number of Centralizers	-	231
21	Number of bottom plugs	-	2
22	Number of trucks used preparing/during job	-	10
23	Add hours? If Yes, put #	Y/N and hours	0
24	NPT? If Yes, put #	Y/N and hours	0

1.3 Water Field Test

	Recorded Value	Unit	Acceptable Limit	Potential Problems if Values Exceed the Limit
pH	7		6.0 - 8.0	Chemicals in water can cause severe retardation
Temperature	64	F	60 - 80 F	Can can pre-mature setting of cement
Chlorides	290	ppm	3000 ppm	Can shorten thickening time

1.4 Actual Pump Schedule

	Density (ppg)	Volume (bbls)	Yield (ft ³ /sk)	Water Requirement (gal/sk)	Bulk Sacks (sks)	Total Water (gals)
Spacer Fluid	12	120	2.31	14.15	292	4,132
Cap Cement	13.2	39.6	1.59	7.98	140	1,117
Lead Cement	13.2	225.6	1.68	7.92	754	5,972
Tail Cement	13.2	418.2	1.98	9.51	1,186	11,279
Top Plug	N/A	N/A	N/A	N/A	N/A	N/A
Displacement Fluid	8.4	407	N/A	N/A	N/A	17,094

2.0 Real-Time Job Summary

2.1 Job Event Log

Seq. No.	Activity	Date	Time	Comments
1	Call Out	2/19/2024	03:30:00	NOBLE ENERGY BISHOP #A06-731 5 1/2" PRODUCTION CASING JOB - On location 02/19/24 @ 03:30 AM
2	Safety Meeting - Service Center or other Site	2/19/2024	04:45:00	Review Journey Management And Route With Crew Members
3	Depart from Service Center or Other Site	2/19/2024	05:00:00	Depart From Yard
4	Arrive At Loc	2/19/2024	07:00:00	Talk To Company Man () : TD = 17,564', TP = 17,552', ST = 7', OH = 8.1/2", CSG = 5 1/2" 17#, Previous Casing 9 5/8" 36# Set @ 2,051', WF = OBM @ 10.9#, Test Water = pH - 7, Chlorides - < 290 ppm, 64 F
5	Safety Meeting - Assessment of Location	2/19/2024	07:10:00	Spot Equipment
6	Safety Meeting - Pre Rig-Up	2/19/2024	07:20:00	Review JSA With Crew Members
7	Rig-Up Equipment	2/19/2024	07:30:00	Rig Up Iron And Hoses Needed For Job
8	Rig-Up Equipment	2/19/2024	08:00:00	Rig Up Plug Container And Rig Floor To Pump Truck To Start Cmt Job.
9	Rig-Up Completed	2/19/2024	08:30:00	Rigged Up All Iron And Hoses Needed For CMT Job With No Issues Or Incidents.
10	Safety Meeting - Pre Job	2/19/2024	10:00:00	Review Job Procedure And JSA With Rig Hands, Co. Man, And HES Members

11	Start Job	2/19/2024	10:20:15	Start Job
12	Test Lines	2/19/2024	10:22:30	Performed A 500 Kick Out Test On Both Pumps And Tested Lines To 6,500 psi, Then Tested Rigs Eye Bop Valve To 1,500 psi Good Test.
13	Drop Bottom Plug	2/19/2024	10:40:31	Dropped First Bottom Plug
14	Pump Spacer 1	2/19/2024	10:40:47	Pumped Spacer 120 bbls Of Tunes Prime @ 12 PPG @5 BPM With 680 psi, Good Returns. HOS=2,504' TOS=0'.
15	Check Weight	2/19/2024	10:45:57	Performed A Weight Check With A Pressurized Mud Scale 12 ppg.
16	Drop Bottom Plug	2/19/2024	11:13:49	Dropped First Bottom Plug
17	Pump Cap Cement	2/19/2024	11:13:59	Pumped 39.6 bbls Of Cap Cement 140 Sacks With A Yield Of 1.59 And A Water Requirement Of 7.98 Gals/Sack. 5.5 BPM With 650 psi, Good Returns. HOCAP=826' TOLCAP=991'.
18	Check Weight	2/19/2024	11:16:48	Performed A Weight Check With A Pressurized Mud Scale 13.2 ppg.
19	Pump Lead Cement	2/19/2024	11:23:09	Pumped 225.6 bbls Of Lead Cement 754 Sacks 13.2 PPG With A Yield Of 1.68 And A Water Requirement Of 7.92 Gals/Sack. 8 BPM With 550 psi, Good Returns. HOLC=5,489' TOLC=1,817'.
20	Check Weight	2/19/2024	11:29:49	Performed A Weight Check With A Pressurized Mud Scale 13.2 ppg.
21	Pump Tail Cement	2/19/2024	11:55:02	Pumped 418.2 bbls Of Tail Cement 1,186 Sacks With A Yield Of 1.98 And A Water Requirement Of 9.51 Gals/Sack. 8 BPM With 1350 psi, Good Returns. HOTC=10,245' TOTC=7,306'.
22	Check Weight	2/19/2024	11:58:56	Performed A Weight Check With A Pressurized Mud Scale 13.2 ppg.
23	Shutdown	2/19/2024	13:00:51	Shutdown After Cement
24	Clean Lines	2/19/2024	13:05:38	Washed both Pumps And Lines To Open Top Tank
25	Drop Top Plug	2/19/2024	13:15:47	Dropped Top Plug
26	Pump Displacement	2/19/2024	13:18:41	Pump Displacement 407 bbls Of Treated Water, First 20 bbls Of Sugar Water Followed By 387 bbls Of Biocide Treated Water

27	Pump Displacement	2/19/2024	13:29:34	100 bbls Gone Into Displacement 9.5 BPM With 2,800 psi, Good Returns.
28	Pump Displacement	2/19/2024	13:40:56	200 bbls Gone Into Displacement 9 BPM With 3,130 psi, Good Returns.
29	Pump Displacement	2/19/2024	13:53:56	300 bbls Gone Into Displacement 8 BPM With 3,200 psi, Good Returns.
30	Spacer Returns to Surface	2/19/2024	14:00:44	At 348 bbls Into Displacement We Got Spacer Back To Surface, 60 bbl Of Spacer To Surface.
31	Pump Displacement	2/19/2024	14:09:49	400 bbls Gone Into Displacement 2 BPM With 2,460 psi, Good Returns.
32	Bump Plug	2/19/2024	14:12:42	Bumped Plug With Calculated Displacement And Put 500 psi Over Final Circulating Pressure. Pressure Climbed From 2,500 To 3,050 psi.
33	Bleed Casing	2/19/2024	14:17:17	Bled Pressure Back To Zero And Got 5.5 bbls Back
34	Other	2/19/2024	14:20:25	Pressured Up Well To Burst Plug We Pumped 5.5 BBLs Plug Opened @ 2,480 psi Then Pumped An Additional 5 BBLs More 1 bpm With 2,350 psi.
35	Bleeding Tubing Or Casing	2/19/2024	14:32:08	Bled Pressure Back To Zero And Got 4.5 bbls Back
36	Check Floats	2/19/2024	14:35:01	Floats Held Good, Performed A 30 Minuet In Flow Test We Got An Additional .5 Of A Bbl Back.
37	End Job	2/19/2024	15:06:57	End Job
38	Safety Meeting - Pre Rig-Down	2/19/2024	15:10:00	Review JSA With HES Crew Members
39	Rig-Down Equipment	2/19/2024	15:20:00	Rig Down Iron, Plug Container, And Hoses Used On Job
40	Rig-Down Completed	2/19/2024	16:20:00	All Equipment Rigged Down With No Issues Or Incidents

41	Safety Meeting - Departing Location	2/19/2024	16:25:00	Review Journey Management And Route With Crew Members
42	Depart Location	2/19/2024	16:30:00	Depart location

3.0 Attachments

3.1 NOBLE ENERGY BISHIP #A06-731 PRODUCTION.png

