HALLIBURTON

iCem® Service

NOBLE ENERGY INC-EBUS

Ft. Lupton District, COLORADO

Bishop A18-733 Production

Job Date: Tuesday, January 09, 2024

Sincerely,

Meghan Van Zyl

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 A18-733 - 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 13.19 ppg at 7.35 bbl/min. Cement was displaced with 20 bbl. of treated water with retarder and 388 bbl. of treated freshwater displacement. Plug was landed at 2,500 psi and pressured up to 3,140 psi. Approximately 75 bbl. of spacer was returned to surface indicating a top of cement around 980'.

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 #:	05-123-52072-00
City, County:	GALETON, WELD
SO#:	0909083262

Job Times		
	Date (mm/dd/yyyy)	**Time (hh:mm)**
Requested Time On Location:	01/09/2024	08:30
Called Out Time:	01/09/2024	02:30
Arrived On Location:	01/09/2024	08:00
Job Started:	01/09/2024	11:44
Job Completed:	01/09/2024	16:10
Departed Location:	01/09/2024	17:00

	Description	Units	Value
1	Surface temperature at the time of the job	degree F	20
2	Mud type (OBM, WBM, Synthetic, Water, Brine)	-	OBM
3	Mud density	ppg	10.7
4	Casing set depth (shoe)	ft	17609
5	TVD	ft	6875
6	Float collar depth	ft	17598
7	Length of rate hole	ft	18
8	Previous casing shoe depth	ft	2069
9	Pre-job mud circulation time	hh:mm	10:00

10	Pre-job mud circulation rate	bpm	10
11	Pre-job mud circulation volume	bbls	900
12	Mud circulation pressure at start of cement	psi	1630
13	Annual flow before the start of job	Y/N	YES
14	Pipe movement during cement job	Y/N	YES
15	Calculated displacement	bbls	408.3
16	Job displaced by	Rig/HES	HES
17	Estimated returns % during job	%	100
18	Fluid returns to surface	Spacer/Cement, bbls	75 BBL'S SPACER
19	Final circulation pressure, rate prior to plug bump	psi @ bpm	2/2500
20	Number of Centralizers	-	229
21	Number of bottom plugs	-	2
22	Number of trucks used preparing/during job	-	
23	Add hours? If Yes, put #	Y/N and hours	1
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	50	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 (ft3/sk)	Water Requirement (gal/sk)	Bulk Sacks (sks)	Total Water (gals)
Spacer Fluid	12	120	2.29	14.04	294	1685
Cap Cement	13.2	39.6	1.59	7.98	140	1117
Lead Cement	13.2	225.6	1.66	7.82	763	5967
Tail Cement	13.2	421	1.98	9.51	1194	11355
Top Plug						
Displacement Fluid	8.4	408.3				17149

2.0 Real-Time Job Summary

2.1 Job Event Log

Seq. No.	Activity	Date	Time	Comments
1	Call Out	1/9/2024	02:30:00	NOBLE ENERGY BISHOP #A18-733 5 1/2" PRODUCTION CASING JOB - On location 01/09/24 @ 08:30 AM
2	Safety Meeting - Service Center or other Site	1/9/2024	05:15:00	Review Journey Management And Route With Crew Members
3	Depart from Service Center or Other Site	1/9/2024	05:30:00	Depart From Yard
4	Arrive At Loc	1/9/2024	08:00:00	Talk To Company Man () : TD = 17,623', TP = 17,605', ST = 7', OH = 8.1/2", CSG = 5 1/2" 17#, Previous Casing 9 5/8" 36# Set @ 2,069', WF = OBM @ 10.7#, Test Water = pH – 7, Chlorides - < 290 ppm, 50 F
5	Safety Meeting - Assessment of Location	1/9/2024	08:10:00	Spot Equipment
6	Safety Meeting - Pre Rig-Up	1/9/2024	08:20:00	Review JSA With Crew Members
7	Rig-Up Equipment	1/9/2024	08:30:00	Rig Up Iron And Hoses Needed For Job
8	Rig-Up Completed	1/9/2024	09:30:00	Rigged Up All Iron And Hoses Needed For CMT Job With No Issues Or Incidents.
9	Circulate Well	1/9/2024	09:31:00	Rig Circulated Well From 10:00 To 11:30 @10 BPM With 1,360 psi.
10	Safety Meeting - Pre Job	1/9/2024	10:33:19	Review Job Procedure And JSA With Rig Hands, Co. Man, And HES Members
11	Start Job	1/9/2024	11:44:30	Start Job

12	Test Lines	1/9/2024	11:47:10	Performed A 500 Kick Out Test On Both Pumps And Tested Lines To 6,500 psi, Then Tested Rigs Eye Bop Valve To 1,800 psi Good Test.
13	Drop Bottom Plug	1/9/2024	12:03:19	Dropped First Bottom Plug
14	Pump Spacer 1	1/9/2024	12:06:15	Pumped Spacer 120 bbls Of Tunes Prime @ 12 PPG @6 BPM With 7000 psi, Good Returns. HOS=2,504' TOS=0'.
15	Check Weight	1/9/2024	12:09:31	Performed A Weight Check With A Pressurized Mud Scale 12 ppg.
16	Drop Bottom Plug	1/9/2024	12:31:53	Dropped Second Bottom Plug
17	Pump Cap Cement	1/9/2024	12:31:56	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=980'.
18	Check Weight	1/9/2024	12:35:07	Performed A Weight Check With A Pressurized Mud Scale 13.2 ppg.
19	Pump Lead Cement	1/9/2024	12:39:14	Pumped 225.6 bbls Of Lead Cement 763 Sacks 13.2 PPG With A Yield Of 1.66 And A Water Requirement Of 7.82 Gals/Sack. 9 BPM With 970 psi, Good Returns. HOLC=5,485' TOLC=1,806'.
20	Check Weight	1/9/2024	12:45:33	Performed A Weight Check With A Pressurized Mud Scale 13.2 ppg.
21	Pump Tail Cement	1/9/2024	13:10:48	Pumped 421 bbls Of Tail Cement 1,194 Sacks With A Yield Of 1.98 And A Water Requirement Of 9.51 Gals/Sack. 8 BPM With 1,350 psi, Good Returns. HOTC=10,314' TOTC=7,291'.
22	Check Weight	1/9/2024	13:12:26	Performed A Weight Check With A Pressurized Mud Scale 13.2 ppg.
23	Check Weight	1/9/2024	13:29:33	Performed A Weight Check With A Pressurized Mud Scale 13.2 ppg.
24	Shutdown	1/9/2024	14:11:54	Shutdown To Wash Lines After Cement
25	Clean Lines	1/9/2024	14:14:00	Washed both Pumps And Lines To Open Top Tank
26	Drop Top Plug	1/9/2024	14:28:45	Dropped Top Plug
27	Pump Displacement	1/9/2024	14:29:29	Pump Displacement 408.3 bbls Of Treated Water, First 20 bbls Of Sugar Water Followed By 388.3 bbls Of Biocide Treated Water
28	Pump Displacement	1/9/2024	14:40:07	100 bbls Gone Into Displacement 10 BPM With 2,700 psi, Good Returns.

29	Pump Displacement	1/9/2024	14:52:07	200 bbls Gone Into Displacement 8.5 BPM With 3,330 psi, Good Returns.
30	Pump Displacement	1/9/2024	15:05:22	300 bbls Gone Into Displacement 8 BPM With 3,400 psi, Good Returns. @333 bbls into displacement we got spacer, 75 bbl total to surface.
31	Pump Displacement	1/9/2024	15:17:39	400 bbls Gone Into Displacement 2 BPM With 2,500 psi, Good Returns.
32	Bump Plug	1/9/2024	15:19:10	Bumped Plug With Calculated Displacement And Put 500 psi Over Final Circulating Pressure. Pressure Climbed From 2,500 To 3,140 psi.
33	Bleed Casing	1/9/2024	15:24:42	Bled Pressure Back To Zero And Got 5.5 bbls Back
34	Other	1/9/2024	15:26:56	Pressured Up Well To Burst Plug We Pumped 5.5 BBLS Plug Opened @ 2,570 psi Then Pumped An Additional 5 BBLS More 1 bpm With 2370 psi.
35	Bleed Casing	1/9/2024	15:38:13	Bled Pressure Back To Zero And Got 4.5 bbls Back
36	Check Floats	1/9/2024	15:39:00	Floats Held Good, Performed A 30 Minuet In Flow Test We Got An Additional .5 Of A Bbl Back.
37	End Job	1/9/2024	16:10:30	End Job
38	Safety Meeting - Pre Rig-Down	1/9/2024	16:20:00	Review JSA With HES Crew Members
39	Rig-Down Equipment	1/9/2024	16:30:00	Rig Down Iron, Plug Container, And Hoses Used On Job
40	Rig-Down Completed	1/9/2024	17:20:00	All Equipment Rigged Down With No Issues Or Incidents
41	Safety Meeting - Departing Location	1/9/2024	17:25:00	Review Journey Management And Route With Crew Members
42	Depart Location	1/9/2024	17:30:00	Depart location

3.0 Attachments

3.1 Real Time iCem Job Chart