

HALLIBURTON

iCem[®] Service

NOBLE ENERGY INC-EBUS

Ft. Lupton District, Colorado

Bishop A08-655 Production

Job Date: Saturday, February 03, 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 A08-655 - 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 13.21 ppg at 7.11 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 3,000 psi. Casing test was held for 30 min. Approximately 70 bbl. of spacer was returned to surface indicating a top of cement around 987'.

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 #:	05-123-52078
City, County:	Kersey, Weld
SO#:	909131407

Job Times		
	Date (mm/dd/yyyy)	Time (hh:mm)
Requested Time On Location:	02/02/2024	17:00
Called Out Time:	02/02/2024	11:00
Arrived On Location:	02/02/2024	17:00
Job Started:	02/02/2024	21:11
Job Completed:	02/03/2024	2:11
Departed Location:	02/03/2024	4:00

	Description	Units	Value
1	Surface temperature at the time of the job	degree F	45
2	Mud type (OBM, WBM, Synthetic, Water, Brine)	-	OBM
3	Mud density	ppg	10.7
4	Casing set depth (shoe)	ft	17597
5	TVD	ft	6895
6	Float collar depth	ft	17589
7	Length of rate hole	ft	10
8	Previous casing shoe depth	ft	2063
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	800
12	Mud circulation pressure at start of cement	psi	300
13	Annual flow before the start of job	Y/N	Y
14	Pipe movement during cement job	Y/N	Y
15	Calculated displacement	bbls	408
16	Job displaced by	Rig/HES	HES
17	Estimated returns % during job	%	100
18	Fluid returns to surface	Spacer/Cement, bbls	70 spacer
19	Final circulation pressure, rate prior to plug bump	psi @ bpm	2500
20	Number of Centralizers	-	229
21	Number of bottom plugs	-	2
22	Number of trucks used preparing/during job	-	4
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	7		6.0 - 8.0	Chemicals in water can cause severe retardation
Temperature	65	F	60 - 80 F	Can can pre-mature setting of cement
Chlorides	200	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	4114
Cap Cement	13.2	40	1.59	7.98	140	1117
Lead Cement	13.2	225	1.66	7.82	754	5971
Tail Cement	13.2	419	1.98	9.51	1190	11316
Top Plug	1					
Displacement Fluid	8.33	408				

2.0 Real-Time Job Summary

2.1 Job Event Log

Seq No.	Activity	Date	Time	Comments
1	Call Out	2/2/2024	11:00:00	Crew called out at 1100 on 2/2/2024 for a requested-on location time of 1700 on 2/2/2024.
2	Safety Meeting	2/2/2024	15:45:00	Pre convoy safety meeting discussed route to location and hazards of driving during rainstorm.
3	Crew Leave Yard	2/2/2024	16:00:00	Crew Leaves yard in convoy at 1600 hrs.
4	Arrive At Loc	2/2/2024	17:00:00	Crew arrived on location at 1700 hrs. Meet with costumer TD 17605', 8.5 OH, TP 17597' 5.5' 17#, FC 17589', TVD 6895', P/C 2063' 9.625 36#, OBM WEIGHT 10.7 PPG.
5	Safety Meeting - Pre Rig-Up	2/2/2024	17:30:00	Discuss hazards around rig up area.
6	Rig-Up Completed	2/2/2024	19:00:00	Rig up completed.
7	Safety Meeting - Pre Job	2/2/2024	20:30:00	Pre job safety meeting discussed all hazards prior to job and reviewed job procedure.
8	Start Job	2/2/2024	21:11:48	Start recording data.
9	Test Lines	2/2/2024	21:14:50	Pressure tested HES lines to 6500 psi & rigs manual IBOP to 1800 psi.
10	Drop Bottom Plug	2/2/2024	21:41:09	1st bottom plug verified by DSR.
11	Pump Spacer 1	2/2/2024	21:44:51	Pumped 120 bbls of 12ppg Tuned Prime Spacer @4bpm with 570 psi. 70 bbls to surface.
12	Check Weight	2/2/2024	21:46:34	Weight verified by mud scales.
13	Check Weight	2/2/2024	21:50:26	Weight verified by mud scales.
14	Check Weight	2/2/2024	22:00:53	Weight verified by mud scales.
15	Drop Bottom Plug	2/2/2024	22:14:49	2nd bottom plug verified by DSR.

16	Check Weight	2/2/2024	22:17:14	Weight verified by mud scales.
17	Pump Cap Cement	2/2/2024	22:17:17	Pumped 40 bbls of 13.2ppg EconoCem Cap cement @6bpm with 500 psi. TOCC= 987'.
18	Pump Lead Cement	2/2/2024	22:24:26	Pumped 225 bbls of 13.2ppg ElastiCem Lead cement @8bpm with 1500 psi. TOLC= 1822'.
19	Check Weight	2/2/2024	22:50:25	Weight verified by mud scales.
20	Pump Tail Cement	2/2/2024	22:58:56	Pumped 419 bbls of 13.2ppg NeoCem Tail cement @8bpm with 2000 psi. TOTC= 7336'.
21	Shutdown	2/2/2024	23:57:13	Shutdown to wash pumps & lines.
22	Clean Lines	2/3/2024	00:00:55	Washed pumps and lines with 20 bbls of freshwater.
23	Drop Top Plug	2/3/2024	00:11:11	Top plug verified by DSR.
24	Pump Displacement	2/3/2024	00:11:15	Pumped 408 bbls of freshwater displacement with 10 gallons of MMCR in first 20 bbls. MC MX & bellacide poured threw out the remainder of displacement.
25	Bump Plug	2/3/2024	01:16:13	FCP @2bpm was 2500 psi, bumped up to 3000 psi.
26	Other	2/3/2024	01:23:16	5.5 bbls back to pump truck.
27	Other	2/3/2024	01:25:45	2619 psi highest pressure @ 1bpm pumped 5 additional bbls.
28	Other	2/3/2024	01:39:43	4.5 bbls back, begin 30-minute inflow test.
29	End Job	2/3/2024	02:11:17	.5 bbl gained after 30 minutes. Washed rig stack with 20 bbls of freshwater. Stop recording data.
30	Safety Meeting - Pre Rig-Down	2/3/2024	02:45:00	Discuss blow down and any new hazards that could have come up during job.
31	Rig-Down Completed	2/3/2024	03:45:00	Rig down completed.
32	Pre-Convoy Safety Meeting	2/3/2024	03:55:00	Fit for duty check and check road conditions.
33	Crew Leave Location	2/3/2024	04:00:00	Crew departs location. Thank you for using Halliburton.

3.0 Attachments

3.1 Real Time iCem Job Chart

