

HALLIBURTON

iCem[®] Service

NOBLE ENERGY INC-EBUS

Ft. Lupton District, CO

Aristocrat H14-765 Production

Job Date: Friday, March 29, 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 **Aristocrat H14-765 5.5 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 7.31 bbl/min. Cement was displaced with 20 bbl. of treated water with retarder and 379 bbl. of treated freshwater displacement. Plug was landed at 2,550 psi and bumped to 3,050 psi, floats held with 5.0 bbls bled back to the truck. Pressure was held for 30 min casing test. With 73bbls of spacer returning to surface, the estimated TOC is 948'.

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 #:	05-123-49087-00
City, County:	Gilcrest
SO#:	909247348

Job Times		
	Date (mm/dd/yyyy)	Time (hh:mm)
Requested Time On Location:	3/29/24	09:00
Called Out Time:	3/29/24	0300
Arrived On Location:	3/29/24	0815
Job Started:	3/29/24	1044
Job Completed:	3/29/24	1442
Departed Location:	3/29/24	1600

	Description	Units	Value
1	Surface temperature at the time of the job	degree F	65
2	Mud type (OBM, WBM, Synthetic, Water, Brine)	-	OBM
3	Mud density	ppg	10.3
4	Casing set depth (shoe)	ft	16,355
5	TVD	ft	6,956
6	Float collar depth	ft	16347.5
7	Length of rate hole	ft	25
8	Previous casing shoe depth	ft	1,971
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	650
12	Mud circulation pressure at start of cement	psi	900
13	Annual flow before the start of job	Y/N	N
14	Pipe movement during cement job	Y/N	Y
15	Calculated displacement	bbls	379
16	Job displaced by	Rig/HES	HES
17	Estimated returns % during job	%	95
18	Fluid returns to surface	Spacer/Cement, bbls	73 Spacer
19	Final circulation pressure, rate prior to plug bump	psi @ bpm	2550
20	Number of Centralizers	-	
21	Number of bottom plugs	-	2
22	Number of trucks used preparing/during job	-	11
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	70	F	60 - 80 F	Can can pre-mature setting of cement
Chlorides	1200	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	2.31	14.19		4138
Cap Cement	13.2	39.645	1.59	7.98	140	1117
Lead Cement	13.2	233.681	1.68	7.92	781	6185
Tail Cement	13.2	361.101	1.98	9.51	1024	9738
Top Plug						
Displacement Fluid	8.33	379				

2.0 Real-Time Job Summary

2.1 Job Event Log

Seq No.	Activity	Date	Time	Comments
1	Call Out	3/29/2024	03:00:00	Call out
2	Pre-Convoy Safety Meeting	3/29/2024	06:45:00	Pre-Convoy Safety Meeting
3	Crew Leave Yard	3/29/2024	07:00:00	Crew Leave Yard
4	Arrive at Location from Service Center	3/29/2024	08:15:00	Arrive at Location from Service Center
5	Pre-Rig Up Safety Meeting	3/29/2024	08:30:00	Pre-Rig Up Safety Meeting, Be aware of your surroundings, Use two spotters one in front and one in back of vehicle, Utilize hearing protection, Have good communication and make sure Line of Fire is clear before swinging hammer Identify points were hand/finger can get crushed
6	Rig-Up Equipment	3/29/2024	08:45:00	Rig Up equipment as far as possible, Rig running casing
7	Safety Meeting - Pre Job	3/29/2024	10:00:00	Safety Meeting-Pre job, Eyes on task Use impact gloves Have good communication to identify pinch points between steel hoses, iron and drill pipe and while making up the hammer unions. Identify points were hand/finger can get crushed

8	Start Job	3/29/2024	10:43:13	START OF JOB. Begin recording chart.
9	Test Lines	3/29/2024	10:45:56	Filled HES lines with fresh water and pressure tested HES lines to 6500PSI. Tested Rig's IBOP valve to 1800PSI.
10	Drop Bottom Plug	3/29/2024	10:55:00	Dropped 1st bottom plug with driller and Charles.
11	Pump Spacer 1	3/29/2024	10:56:41	Pumped 120BBLs of 12PPG Tuned Prime Spacer. Pumped at a rate of 6BPM with a pressure of 800PSI. Pre job calculated 73BBLs of spacer to surface.
12	Check Weight	3/29/2024	11:01:02	Checked Weight of spacer with pressurized mud scales.
13	Drop Bottom Plug	3/29/2024	11:21:50	Dropped 2nd bottom plug with Driller and Charles.
14	Pump Cap Cement	3/29/2024	11:22:30	Pumped 140s / 39.645Bbls of 13.2PPG Econocem cap cement. Pumped at a rate of 6BPM with a pressure of 650PSI. Pre job calculated TOC cement was at 948.35FT.
15	Check Weight	3/29/2024	11:25:53	Checked weight of Cap with pressurized mud scales.
16	Pump Lead Cement	3/29/2024	11:29:03	Pumped 781s / 233.681BBLs of 13.2PPG Elasticem Lead cement. Pumped at a rate of 8BPM with a pressure of 950PSI. Pre job calculated TOL cement was at 1776.011FT.
17	Check Weight	3/29/2024	11:31:28	Checked weight of lead with pressurized mud scales.
18	Pump Tail Cement	3/29/2024	12:03:48	Pumped 1024s / 361.101BBLs of 13.2PPG Neocem Tail cement. Pumped at a rate of 8BPM with a pressure of 1200PSI. Pre job calculated TOT was at 7503.486FT.
19	Check Weight	3/29/2024	12:06:30	Checked weight of tail with pressurized mud scales.
20	Drop Top Plug	3/29/2024	13:08:04	Dropped top plug with driller and Charles.
21	Pump Displacement	3/29/2024	13:08:16	Pumped 379BBLs of fresh water displacement. First 20BBLs had MMCR. The remaining displacement had Bellacide and MCMX corrosion inhibitor.
22	Bump Plug	3/29/2024	13:56:00	Bumped plug 500PSI over Final Circulating pressure. Held 3050PSI on for 3 minutes.

23	Pressure Up Well	3/29/2024	14:00:49	Pressured up well to rupture. Pressured up well to 4400PSI an continued to pump a 5BBL wet shoe. Checked floats and got back 4BBLs back.
24	Other	3/29/2024	14:08:41	30 minute inflow test. half a bbl back during test.
25	End Job	3/29/2024	14:41:41	Job complete. End of recording.
26	Pre-Rig Down Safety Meeting	3/29/2024	16:00:00	Pre-Rig Down Safety Meeting
27	Rig-Down Equipment	3/29/2024	16:15:00	Rig-Down Equipment
28	Depart Location Safety Meeting	3/29/2024	17:00:00	Depart Location Safety Meeting, Verify all equipment has been thoroughly pre-tripped. All safety and quality issues should be resolved before proceeding.
29	Crew Leave Location	3/29/2024	17:15:00	Crew leave location

3.0 Attachments

3.1 CHEVRON Aristocrat H14-765-Custom Results.png

