

HALLIBURTON

iCem[®] Service

NOBLE ENERGY INC-EBUS

Ft. Lupton District, Colorado

Aristocrat H14-785 Production

Job Date: Friday, April 5, 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 H14-785 - 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 13.26 ppg at 6.30 bbl/min. Cement was displaced with 20 bbl. of treated water with retarder and 389 bbl. of treated freshwater displacement. Plug was landed at 2,539 psi and bumped to 3,030 psi, floats held with 4.0 bbls bled back to the truck. Pressure was held for 30 min casing test. With 88bbls of spacer returning to surface, the estimated TOC is 668'.

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 #:	05-123-49085
City, County:	Le Salle, Weld
SO#:	909259117

Job Times		
	Date (mm/dd/yyyy)	Time (hh:mm)
Requested Time On Location:	4/5/2024	09:00
Called Out Time:	4/5/2024	03:00
Arrived On Location:	4/5/2024	07:00
Job Started:	4/5/2024	11:21
Job Completed:	4/5/2024	15:40
Departed Location:	4/5/2024	16:30

	Description	Units	Value
1	Surface temperature at the time of the job	degree F	50
2	Mud type (OBM, WBM, Synthetic, Water, Brine)	-	OBM
3	Mud density	ppg	10.4
4	Casing set depth (shoe)	ft	16,767'
5	TVD	ft	6,955'
6	Float collar depth	ft	16,750'
7	Length of rate hole	ft	14'
8	Previous casing shoe depth	ft	2,023'
9	Pre-job mud circulation time	hh:mm	02:00
10	Pre-job mud circulation rate	bpm	12

11	Pre-job mud circulation volume	bbls	1,440
12	Mud circulation pressure at start of cement	psi	630
13	Annual flow before the start of job	Y/N	N
14	Pipe movement during cement job	Y/N	Y
15	Calculated displacement	bbls	389.4
16	Job displaced by	Rig/HES	HES
17	Estimated returns % during job	%	100
18	Fluid returns to surface	Spacer/Cement, bbls	88/0
19	Final circulation pressure, rate prior to plug bump	psi @ bpm	2,539
20	Number of Centralizers	-	217
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	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	55	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

Stage 1

	Density (ppg)	Volume (bbls)	Yield (ft ³ /sk)	Water Requirement (gal/sk)	Bulk Sacks (sks)	Total Water (gals)
Spacer Fluid	12	120	2.3	14.11	293	4,134
Cap Cement	13.2	39.7	1.59	7.98	140	1,117
Lead Cement	13.2	233.7	1.68	7.92	781	6,186
Tail Cement	13.2	378	1.98	9.51	1,072	10,195
Top Plug						
Displacement Fluid	8.33	389.4	N/A	N/A	N/A	16,355

2.0 Real-Time Job Summary

2.1 Job Event Log

Seq No.	Activity	Date	Time	Comments
1	Call Out	4/5/2024	03:00:00	Called out for Chevron H&P 517 Aristocrat H14-785 5.5" Production with an on location time of 09:00 4/5/2024.
2	Safety Meeting - Service Center or other Site	4/5/2024	05:45:00	Review Journey Management And Route With Crew Members
3	Depart from Service Center or Other Site	4/5/2024	05:50:00	Depart From Yard
4	Arrive At Loc	4/5/2024	07:00:00	Talk To Company Man () : TD = 16,781', TP = 16,767', ST = 17', OH = 8.5", CSG = 5 1/2" 17#, Previous Casing 9 5/8" 36# Set @ 2,023', WF = OBM @ 10.4#, Test Water = pH - 7, Chlorides - < 290 ppm, 50F
5	Safety Meeting - Assessment of Location	4/5/2024	07:05:00	Spot Equipment
6	Pre-Rig Up Safety Meeting	4/5/2024	07:10:00	Review JSA With Crew Members
7	Rig-Up Equipment	4/5/2024	07:15:00	Rig Up Iron And Hoses Needed For Job. Had to wait to finish spotting in pump until all casing was ran.
8	Circulate Well	4/5/2024	09:30:00	Rig Circulated got on bottom at 09:00 and began circulating at 09:30. Rig circulated from 09:30 To 11:30 @ 12 BPM With 1370 psi. Had 3600 units of gas and gained 12bbbls during entire circulation.
9	Pre-Job Safety Meeting	4/5/2024	11:05:00	Review Job Procedure And JSA With Rig Hands, Co. Man, And HES Members
10	Rig-Up Completed	4/5/2024	11:15:00	Rigged Up All Iron And Hoses Needed For CMT Job With No Issues Or Incidents.

11	Start Job	4/5/2024	11:21:00	Rig shutdown pumps and gave well over to HES. All lines are confirmed tighten on Rig stand pipe to top drive.
12	Pump Water	4/5/2024	11:23:00	Filled lines with 5bbls of Fresh Water.
13	Pressure Test	4/5/2024	11:26:00	Low pressure kickout was done to 500 psi before performing 6500psi pressure test. Pressure held and climbed. Pressure was released and then pumped 2bbls more before pressure testing IBOP to 1800psi. Pressure held and was bled off. Kickouts were set at 3500psi during job.
14	Drop Bottom Plug	4/5/2024	11:30:00	Stung out CRT. Customer dropped first bottom plug. Stung back in and sealed CRT to pump Spacer.
15	Pump Spacer	4/5/2024	11:34:00	Mixed and Pumped 120bbls of Tuned Prime Spacer at 12lbs/gal, 2.3yld,14.11 gals/sk. 60 gals of D-air was used. Spacer was verified on pressurized mud scales. Calculated top of Spacer- Surface.
16	Check Weight	4/5/2024	11:36:00	Weight from downhole was verified with Pressurized mud scales.
17	Load Bottom Plug	4/5/2024	12:04:00	Shutdown after Spacer and stung out again, loaded 2nd bottom plug and stung back in.
18	Pump Cap Cement	4/5/2024	12:09:00	Mixed and pumped 140 sacks(39.7bbls) of EconoCem Cap Cement at 13.2lb/gal, 1.59 yld, 7.98 Gals/sk. Weight was verified on pressurized mud scales. Calculated top of cap cement-668'.
19	Check Weight	4/5/2024	12:10:00	Weight from downhole was verified with Pressurized mud scales.
20	Pump Lead Cement	4/5/2024	12:15:00	Mixed and pumped 781sacks(233.7bbls) of ElastiCem Lead Cement at 13.2lb/gal, 1.68 yld, 7.92 Gals/sk. Weight was verified on pressurized mud scales. Calculated top of lead cement-1,497'
21	Check Weight	4/5/2024	12:17:00	Weight from downhole was verified with Pressurized mud scales.
22	Pump Tail Cement	4/5/2024	12:50:00	Mixed and pumped 1,072 sacks(378bbls) of NeoCem Tail Cement at 13.2lb/gal, 1.98 yld, 9.51 Gals/sk. Used 30gals of D-air. Weight was verified on pressurized mud scales. Calculated top of tail cement-7,134'.
23	Check Weight	4/5/2024	12:53:00	Weight from downhole was verified with Pressurized mud scales.
24	Clean Lines	4/5/2024	13:58:00	Washed up with 10bbls before coming offline. Wash up was done underneath the top plug.
25	Shutdown	4/5/2024	14:03:00	Shutdown and loaded Top Plug.
26	Drop Top Plug	4/5/2024	14:04:00	Stung out of pipe to load Top Plug.
27	Pump	4/5/2024	14:06:00	Started displacement with MMCR in first 20bbls. The rest of displacement was done with Bellacide and MC MX.

	Displacement - Start			All chemicals were added to displacement tanks with D-air pump.
28	Spacer Returns to Surface	4/5/2024	14:43:00	At 305bbbls away we got Spacer to surface. 88bbbls of spacer to surface.
29	Slow Rate	4/5/2024	14:55:00	Slowed rate for last 20bbbls to 2bpm.
30	Bump Plug	4/5/2024	15:01:00	Final circulating pressure was 2539psi. Bumped pressure up to 3030psi. Pressure climbed to 3050psi before coming back online to open toe sleeve.
31	Pressure Up Well	4/5/2024	15:04:00	Began pumping in to well after holding plug bump 3 minutes. Pressured up well to 4413psi to shift toe sleeve and pump 5bbl wet shoe then shutdown.
32	Check Floats	4/5/2024	15:08:00	Released pressure and got 4bbbls back.
33	Other	4/5/2024	15:08:15	Release line open and in flow test started for 30 minutes.
34	Other	4/5/2024	15:39:00	Flowed back .25bbbls during 30 minute test.
35	Pre-Rig Down Safety Meeting	4/5/2024	15:45:00	Review JSA With HES Crew Members.
36	Rig-Down Equipment	4/5/2024	15:55:00	Rig Down Iron on the ground and from the floor.
37	Rig-Down Completed	4/5/2024	16:20:00	All Equipment Riggged Down With No Issues Or Incidents
38	Depart Location Safety Meeting	4/5/2024	16:25:00	Review Journey Management And Route With Crew Members
39	Depart Location	4/5/2024	16:30:00	Depart location

3.0 Attachments

3.1 Chevron H&P 517 Aristocrat H14-785 5.5 Production.png

