

HALLIBURTON

iCem[®] Service

NOBLE ENERGY INC-EBUS

Guttersen Y12-754 Production

Job Date: Saturday, April 27, 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 **Guttersen Y12-754 -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 13.16 ppg at 5.64 bbl/min. Cement was displaced with 20 bbl. of treated water with retarder and 404.6 bbl. of treated freshwater displacement. Plug was landed at 2,355 psi and bumped to 2,800 psi. Pressure was held for 30 min casing test. With 70 bbls of spacer returning to surface, the estimated TOC is 1003'.

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 #:	05-123-52451
City, County:	ENESBURG, WELD
SO#:	909301802

Job Times		
	Date (mm/dd/yyyy)	Time (hh:mm)
Requested Time On Location:	4/26/24	23:00
Called Out Time:	4/26/24	17:00
Arrived On Location:	4/26/24	22:00
Job Started:	4/27/24	1:00
Job Completed:	4/27/24	5:45
Departed Location:	4/27/24	7:00

	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
4	Casing set depth (shoe)	ft	17457.5
5	TVD	ft	6794
6	Float collar depth	ft	17439.3
7	Length of rate hole	ft	16
8	Previous casing shoe depth	ft	2060
9	Pre-job mud circulation time	hh:mm	2:00

10	Pre-job mud circulation rate	bpm	10.5
11	Pre-job mud circulation volume	bbls	1260
12	Mud circulation pressure at start of cement	psi	1250
13	Annual flow before the start of job	Y/N	N
14	Pipe movement during cement job	Y/N	Y
15	Calculated displacement	bbls	404.6
16	Job displaced by	Rig/HES	HES
17	Estimated returns % during job	%	100
18	Fluid returns to surface	Spacer/Cement, bbls	SPACER,70 BBLS
19	Final circulation pressure, rate prior to plug bump	psi @ bpm	2355 @ 2
20	Number of Centralizers	-	
21	Number of bottom plugs	-	2
22	Number of trucks used preparing/during job	-	3
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	6		6.0 - 8.0	Chemicals in water can cause severe retardation
Temperature	60	F	60 - 80 F	Can can pre-mature setting of cement
Chlorides	0	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	2.31	14.19	292	4141
Cap Cement	13.2	39.6	1.59	7.98	140	1117
Lead Cement	13.2	225	1.68	7.92	753	5964
Tail Cement	13.2	399	1.98	9.51	1132	10752
Top Plug						
Displacement Fluid	8.4	404.6				

2.0 Real-Time Job Summary

2.1 Job Event Log

Seq. No.	Activity	Date	Time	Comments
1	Summit Crew Notified Date/Time	4/26/2024	17:00:45	Crew called out for CHEVRON Production
2	Pre-Convoy Safety Meeting	4/26/2024	20:45:46	Discussed route and possible hazards
3	Depart Location for Service Center or Other Site	4/26/2024	21:00:47	Depart yard w/ 1 pump, 2 660, 1 pickups and 4 personnel.
4	Arrive at Location from Service Center	4/26/2024	22:00:48	Requested on location @ 2300
5	Safety Meeting - Assessment of Location	4/26/2024	22:10:51	Discussed location and possible hazards. Water test: Temp - 50, Chlorides - 0, PH - 6, Sulfates - <200. 8 1/2 TD @ 17475'. Production casing set @ 17457.5'. 5.5" 17# P110 - ST - 18.23' .0232 bbl/ft. CSG/OH - .0408 bbl/ft. CSG/CSG - .0479 bbl/ft 9 5/8" 36# J55 set @ 2060'. Mud Weight - 10 ppg
6	Safety Meeting - Pre Rig-Up	4/26/2024	22:20:54	Discussed rig up and possible hazards.
7	Rig-up Lines	4/26/2024	22:30:55	Rig up equipment
8	Casing on Bottom	4/26/2024	22:50:56	
9	Circulate Well	4/26/2024	23:15:57	Rig circulating well 10.5 bpm @ 1250 psi

10	Safety Meeting - Pre Job	4/27/2024	00:30:10	Discussed job and possible hazards with everyone on location.
11	Start Job	4/27/2024	00:47:22	
12	Pump Spacer 1	4/27/2024	00:48:52	Pumped 3 bbls of FW
13	Pressure Test	4/27/2024	00:50:02	Test lines to 6500 psi
14	Drop Bottom Plug	4/27/2024	01:04:59	
15	Pump Spacer 1	4/27/2024	01:05:27	Pumped 120 bbls of 12 ppg of Tuned Spacer. 2.31 cuft/sk and 14.19 gal/sk. Verified weight with pressurized mud scales.
16	Drop Bottom Plug	4/27/2024	01:31:39	
17	Pump Lead Cement	4/27/2024	01:43:30	Pumped 39.6 bbls of 13.2 ppg Elasticem. 140 sks, 1.59 cuft/sk, and 7.98 gal/sk. Verified weight with pressurized mud scales. Estimated TOC @ 1003.63'
18	Pump Lead Cement	4/27/2024	01:55:46	Pumped 225 bbls of 13.2 ppg Isobond cmt. 753 sks, 1.68 cuft/sk, and 7.92 gal/sk. Verified weight with pressurized mud scales. Estimated TOC @ 1830.35'
19	Check Weight	4/27/2024	02:00:37	
20	Pump Tail Cement	4/27/2024	02:33:10	Pumped 399 bbls of 13.2 ppg Elasticem. 1132 sks, 1.98 cuft/sk, and 9.51 gal/sk. Verified weight with pressurized mud scales. Estimated TOC @ 7310.44'
21	Check Weight	4/27/2024	03:17:08	
22	Check Weight	4/27/2024	03:34:24	
23	Shutdown	4/27/2024	03:50:17	
24	Drop Top Plug	4/27/2024	03:57:18	3rd party rupture plug
25	Pump Displacement	4/27/2024	03:58:20	Pumped 404.6 bbls of displacement. First 20 bbl w/ MMCR and 384.6 bblsw/ MX 820-6 & BE 9
26	Bump Plug	4/27/2024	04:54:22	Bump plug from 2355 - 2800 psi

27	Bump Plug	4/27/2024	05:02:36	Bump plug to rupture. Plug ruptured @ 4344 psi. Pumped 5 bbls
28	Check Floats	4/27/2024	05:05:51	Floats are good. Got 4 bbls back.
29	Other	4/27/2024	05:09:23	30 min Inflow test
30	End Job	4/27/2024	05:39:31	1/2 bbl back from inflow test. 70 bbls of spacer back to surface.
31	Pre-Rig Down Safety Meeting	4/27/2024	05:45:51	
32	Rig-Down Equipment	4/27/2024	05:50:57	
33	Depart Location Safety Meeting	4/27/2024	06:45:06	
34	Depart Location	4/27/2024	07:00:36	Thank you for using Halliburton cement. Andrew Glover and crew.

3.0 Attachments

3.1 Noble H&P 517 Gutteresen Y12-754 Production - 909301802-Custom Results.png

