

# HALLIBURTON

iCem<sup>®</sup> Service

**NOBLE ENERGY INC-EBUS**

Ft. Lupton District, COLORADO

**Guttersen Y12-773 Production**

Job Date: Friday, April 19, 2024

Sincerely,  
**Chris Yeung**

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## 1.0 Cementing Job Summary

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### 1.1 Executive Summary

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Halliburton appreciates the opportunity to perform the cementing services on the **Guttersen Y12-773 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 13.00 ppg at 6.13 bbl/min. Cement was displaced with 20 bbl. of treated water with retarder and 409.6 bbls of treated freshwater displacement. Plug was landed at 2,550 psi and bumped to 3,050 psi. Pressure was held for 30 min casing test with 0.75bbls bled back to pump truck. With 69 bbls of spacer returning to surface, the estimated TOC is 1043'.

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 #:	05-123-52449
City, County:	KEENESBURG, WELD
SO#:	0909291423

Job Times		
	Date (mm/dd/yyyy)	Time (hh:mm)
Requested Time On Location:	04/19/2024	10:30
Called Out Time:	04/19/2024	04:00
Arrived On Location:	04/19/2024	10:00
Job Started:	04/19/2024	14:17
Job Completed:	04/19/2024	18:57
Departed Location:	04/19/2024	20:30

	Description	Units	Value
1	Surface temperature at the time of the job	degree F	38
2	Mud type (OBM, WBM, Synthetic, Water, Brine)	-	OBM
3	Mud density	ppg	10.2
4	Casing set depth (shoe)	ft	17,662
5	TVD	ft	6,792
6	Float collar depth	ft	17,656
7	Length of rate hole	ft	11
8	Previous casing shoe depth	ft	2,076
9	Pre-job mud circulation time	hh:mm	12:50

10	Pre-job mud circulation rate	bpm	12
11	Pre-job mud circulation volume	bbls	960
12	Mud circulation pressure at start of cement	psi	1,381
13	Annual flow before the start of job	Y/N	YES
14	Pipe movement during cement job	Y/N	YES (ROTATION)
15	Calculated displacement	bbls	409.6
16	Job displaced by	Rig/HES	HES
17	Estimated returns % during job	%	100
18	Fluid returns to surface	Spacer/Cement, bbls	69 BBLS OF SPACER
19	Final circulation pressure, rate prior to plug bump	psi @ bpm	2,550
20	Number of Centralizers	-	230
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	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
<b>pH</b>	7		6.0 - 8.0	Chemicals in water can cause severe retardation
<b>Temperature</b>	48	F	60 - 80 F	Can can pre-mature setting of cement
<b>Chlorides</b>	290	ppm	3000 ppm	Can shorten thickening time

### 1.4 Actual Pump Schedule

#### Stage 1

	Density (ppg)	Volume (bbls)	Yield (ft <sup>3</sup> /sk)	Water Requirement (gal/sk)	Bulk Sacks (sks)	Total Water (gals)
<b>Spacer Fluid</b>	12	120	2.31	14.19	292	4,144
<b>Cap Cement</b>	13.2	39.6	1.59	7.98	140	1,117
<b>Lead Cement</b>	13.2	235.5	1.68	7.92	787	6,233
<b>Tail Cement</b>	13.2	399.5	1.98	9.51	1,133	8,509
<b>Top Plug</b>						
<b>Displacement Fluid</b>	8.4	409.6	N/A	N/A	N/A	17,203

## 2.0 Real-Time Job Summary

### 2.1 Job Event Log

Seq No.	Activity	Date	Time	Comments
1	Call Out	4/19/2024	04:00:00	NOBLE ENERGY GUTTERSEN #Y12-773 5 1/2" PRODUCTION CASING JOB - On location 04/19/2024 @ 10:30 AM
2	Safety Meeting - Service Center or other Site	4/19/2024	05:45:00	Review Journey Management And Route With Crew Members
3	Depart from Service Center or Other Site	4/19/2024	06:00:00	Depart From Yard
4	Arrive At Loc	4/19/2024	10:00:00	Talk To Company Man ( ) : TD = 17,673', TP = 17,662.2', FC = 6', OH = 8.5", CSG = 5 1/2" 17#, Previous Casing 9 5/8" 36# Set @ 2076', WF = OBM @ 10.2#, Test Water = pH - 7, Chlorides - < 290 ppm, 48 F
5	Safety Meeting - Assessment of Location	4/19/2024	10:10:00	Spot Equipment
6	Safety Meeting - Pre Rig-Up	4/19/2024	10:20:00	Review JSA With Crew Members
7	Rig-Up Equipment	4/19/2024	10:30:00	Rig Up Iron And Hoses Needed For Job
8	Rig-Up Completed	4/19/2024	11:30:00	Rigged Up All Iron And Hoses Needed For CMT Job With No Issues Or Incidents.
9	Circulate Well	4/19/2024	12:00:00	Rig Circulated Well From 12:50 To 14:10 @12 BPM With 1,371 psi.

10	Safety Meeting - Pre Job	4/19/2024	13:50:00	Review Job Procedure And JSA With Rig Hands, Co. Man, And HES Members
11	Start Job	4/19/2024	14:17:47	Start Job
12	Test Lines	4/19/2024	14:21:07	Performed A 500 Kick Out Test With Both Pumps And Lines To 6,500 psi Then Test I BOP To 1,500 psi, Good Test
13	Drop Bottom Plug	4/19/2024	14:28:31	Drop First Bottom Plug
14	Pump Spacer 1	4/19/2024	14:30:13	Pumped Spacer 120 bbls Of Tunes Prime @ 12 PPG @ 6 BPM With 900 psi, Good Returns. HOS=2,504' TOS=0'.
15	Check Weight	4/19/2024	14:34:41	Performed A Weight Check With Pressurized Mud Scale 12 PPG.
16	Drop Bottom Plug	4/19/2024	14:54:52	Dropped Second Bottom Plug
17	Pump Cap Cement	4/19/2024	14:54:56	Pumped 39.6 bbls Of Cap Cement 140 Sacks With A Yield Of 1.59 And A Water Requirement Of 7.98 Gals/Sack. 7 BPM With 675 psi, Good Returns. HOLC=828' TOLC=1043'.
18	Check Weight	4/19/2024	15:03:07	Performed A Weight Check With Pressurized Mud Scale 13.2 PPG.
19	Pump Lead Cement	4/19/2024	15:06:23	Pumped 235.5 bbls Of Lead Cement 787 Sacks 13.2 PPG With A Yield Of 1.68 And A Water Requirement Of 7.92 Gals/Sack. 8 BPM With 970 psi, Good Returns. HOLC=5,772' TOLC=1,908'.
20	Check Weight	4/19/2024	15:09:37	Performed A Weight Check With Pressurized Mud Scale 13.2 PPG.
21	Pump Tail Cement	4/19/2024	15:41:03	Pumped 399.5 bbls Of Tail Cement 1,133 Sacks With A Yield Of 1.98 And A Water Requirement Of 9.51 Gals/Sack. 7 BPM With 1,450 psi, Good Returns. HOTC=9,793' TOTC=7,669'.
22	Clean Lines	4/19/2024	17:05:22	Washed Pumps And Lines Down Hole With 10 bbls Before Dropping Top Plug
23	Drop Top Plug	4/19/2024	17:09:21	Dropped Top Plug
24	Pump Displacement	4/19/2024	17:09:30	Pump Displacement 409.6 bbls Of Treated Water, First 20 bbls Of MMCR Followed By 389.6 bbls Of Biocide Treated Water
25	Pump Displacement	4/19/2024	17:20:54	100 bbls Pumped Into Displacement 9 BPM With 2,350 psi, Good Returns.

26	Pump Displacement	4/19/2024	17:33:11	200 bbls Pumped Into Displacement 7.5 BPM With 3,150 psi, Good Returns.
27	Pump Displacement	4/19/2024	17:46:48	300 bbls Pumped Into Displacement 7.5 BPM With 3,395 psi, Good Returns.
28	Pump Displacement	4/19/2024	17:50:18	400 bbls Pumped Into Displacement 2 BPM With 2,550 psi, Good Returns.
29	Bump Plug	4/19/2024	18:12:48	Bumped Plug With Calculated Displacement And Put 500 psi Over Final Circulating Pressure. Pressure Climbed From 2,550 To 3,050 psi.
30	Other	4/19/2024	18:17:33	We Pumped 2.5 bbls To Burst Top Plug, Plug Ruptured With 4,600 psi Then Pumped An Additional 5 bbls For Wet Shoe.
31	Bleed Casing	4/19/2024	18:22:00	Bled Pressure Back To Zero And Got 4 bbls Back
32	Check Floats	4/19/2024	18:25:00	Performed A 30 Minutes In Flow Test And Got An Additional .75 Of A bbl. Floats Held Good.
33	End Job	4/19/2024	18:57:13	End Job
34	Safety Meeting - Pre Rig-Down	4/19/2024	19:10:14	Review JSA With HES Crew Members
35	Rig-Down Equipment	4/19/2024	19:20:51	Rig Down Iron, Plug Container, And Hoses Used On Job
36	Rig-Down Completed	4/19/2024	20:20:00	All Equipment Rigged Down With No Issues Or Incidents
37	Safety Meeting - Departing Location	4/19/2024	20:25:00	Review Journey Management And Route With Crew Members
38	Depart Location	4/19/2024	20:30:00	Depart location

3.0 Attachments

3.1 NOBLE ENERGY GUTTERSEN #Y12-773 PRODUCTION-NOBLE ENERGY GUTTERSEN #Y12-773 PRODUCTION.png

