HALLIBURTON

iCem® Service

NOBLE ENERGY INC-EBUS

Guttersen C28-785
Production Casing
Job Date: Saturday, August 27, 2022

Sincerely,
Nick Roles and Crew

Legal Notice

Disclaimer:

All information in this report is provided subject to the terms and conditions which govern the services provided by Halliburton. Halliburton personnel use their best efforts in gathering information and their best judgment in interpreting it, but any interpretation, research, analysis or recommendation furnished by Halliburton are opinions based upon inferences from measurements and empirical relationships and assumptions, which inferences and empirical relationships and assumptions are not infallible, and with respect to which professionals in the industry may differ. iCem 3D Displacement results are used to understand how fluids intermix during a cement job. Simulation and 3D displacement results are not intended as and should not be used as a replacement for bond logs in determining top of cement. Current 3D model calculations are known to model more volume than the input volume for standard cases due to known calculation improvements required. For rotational cases, the modeled volume will be impacted by the same calculations impacting the standard cases, as well as additional constraints imposed to make the calculation time required operationally feasible. Therefore, until further notice, 3D displacement results should not be used for replacement of a bond log, or used as an identifier of top of cement. HALLIBURTON IS UNABLE TO GUARANTEE THE ACCURACY OF ANY CHART INTERPRETATION, RESEARCH ANALYSIS, OR JOB RECOMMENDATION and any interpretation or recommendation is not for use of or reliance upon by any third party. The customer has full responsibility for any of its decisions which are based on the information provided in this report.

Table of Contents

1.0 Cementing Job Summary

1.1 Executive Summary

Halliburton appreciates the opportunity to perform the cementing services on the Guttersen C28-785 production casing. 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.

Approximately 70 bbl. of spacer were returned to surface.

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 Fort Lupton

The Road to Excellence Starts with Safety

Sold To #: 345242	**Ship To #:** 3925428	**Quote #:**	**Sales Order #:** 0908070561
Customer: NOBLE ENERGY INC-EBUS		**Customer Rep:** Shayne Hackford	
Well Name: GUTTERSEN	**Well #:** C28-785		**API/UWI #:** 05-123-48935-00
Field: WATTENBERG	**City (SAP):** KERSEY	**County/Parish:** WELD	**State:** COLORADO
Contractor: PRECISION DRLG		**Rig/Platform Name/Num:** PRECISION 460	
Job BOM: 7523			
Well Type: HORIZONTAL OIL			
Sales Person: HALAMERICA\HX41066		**Srvc Supervisor:** Nicholas Roles	

Job

Job depth MD	17509ft	**Job Depth TVD**	6807ft

Well Data

Description	New / Used	Size in	ID in	Weight lbm/ft	Thread	Grade	Top MD ft	Bottom MD ft	Top TVD ft	Bottom TVD ft
Casing		9.625	8.921	36			0	1938	0	1937
Casing		5.5	4.892	17			0	17511	0	6807
Open Hole Section			8.5				1937	17519	1937	6807

Tools and Accessories

Type	Size in	Qty	Make	Depth ft		Type	Size in	Qty	Make
Float Shoe	5.5	1	Citadel	17510		**Bottom Plug**	5.5	4	Citadel
Float Collar	5.5	1	Citadel	17503					

Fluid Data

Stage #: 1

Fluid #	Stage Type	Fluid Name	Qty	Qty UoM	Mixing Density lbm/gal	Yield ft3/sack	Mix Fluid Gal	Rate bbl/min	Total Mix Fluid Gal
1	Spacer	Tuned Prime Spacer	120	bbl	11.5	3.88		8	4246

Fluid #	Stage Type	Fluid Name	Qty	Qty UoM	Mixing Density lbm/gal	Yield ft3/sack	Mix Fluid Gal	Rate bbl/min	Total Mix Fluid Gal
2	Cap Cement	EconoCem™	140	sack	13.2	1.58	7.99	6	1119

Fluid #	Stage Type	Fluid Name	Qty	Qty UoM	Mixing Density lbm/gal	Yield ft3/sack	Mix Fluid Gal	Rate bbl/min	Total Mix Fluid Gal
3	Lead Cement	ElastiCem™	739	sack	13.2	1.67	8.03	8.5	5934

Fluid #	Stage Type	Fluid Name	Qty	Qty UoM	Mixing Density lbm/gal	Yield ft3/sack	Mix Fluid Gal	Rate bbl/min	Total Mix Fluid Gal
4	Tail Cement	NeoCem™	1158	sack	13.2	2.04	9.79	8.5	11337

Fluid #	Stage Type	Fluid Name	Qty	Qty UoM	Mixing Density lbm/gal	Yield ft3/sack	Mix Fluid Gal	Rate bbl/min	Total Mix Fluid Gal
5	Displacement	Treated Fresh Water	406	bbl	8.33			10	17012

Cement Left In Pipe	**Amount**	0 ft	**Reason**		Wet Shoe
Mix Water:	pH 7	**Mix Water Chloride:**	0 ppm	**Mix Water Temperature:**	65 °F
Plug Bumped?	Yes	**Plug Displaced by:**	8.33 lb/gal Treated Water	**Disp. Temperature:**	65 °F
Cement Returns:	0 bbl.	**Bump Pressure:**	2720 psi	**Floats Held?**	Yes

Comment: Got 70 bbl. spacer to surface. Estimated TOCap-989', TOL-1812', TOT-7191'.

2.0 Real-Time Job Summary

2.1 Job Event Log

Seq. No.	Activity	Date	Time	Comments
1	Call Out	8/26/2022	07:00:00	Called out by service coordinator for OL time of 1300.
2	Pre-Convoy Safety Meeting	8/26/2022	11:15:00	Discuss all hazards associated with journey, directions to destination, complete journey management if needed, and ensure all convoy is fit for duty.
3	Depart from Service Center or Other Site	8/26/2022	11:30:00	Depart from service center or other job site.
4	Arrive at Location from Service Center	8/26/2022	12:30:00	Upon arrival to location, signed in with onsite safety personnel. Met with company man and discussed job specific requirements and specifications.
5	Pre-Rig Up Safety Meeting	8/26/2022	13:30:00	Held pre rig up JSA for hazards, hazard hunt with crew, and discussed plan for spotting equipment and rigging up lines for job. Discussed muster points and closest emergency location as well as coordinates.
6	Rig-Up Equipment	8/26/2022	13:45:00	Begin rig up with crew.
7	Rig-Up Completed	8/26/2022	14:30:00	Complete rig up for job to nearest point before red zone.
8	Other	8/26/2022	14:45:00	Mix water test results- PH-7, Chlo-0, Temp-65F.
9	Safety Meeting - Pre Job	8/26/2022	16:00:00	Held job specific hazards as well as confirming job procedure with co man and rest of crew associated with job.
10	Start Job	8/27/2022	00:08:13	Mix spacer
11	Start Job	8/27/2022	00:25:12	TD-17519', TP-17509.5' 5.5" 17#, FC-17502.5', TVD-6807', SURF-1937' 9.625" 36#, OH-8.5" MUD-10#
12	Test Lines	8/27/2022	00:28:18	Leak occurred on standpipe single chiksen, needed to replace gasket.

13	Test Lines	8/27/2022	00:57:38	Pumped 5bbls fresh water to fill lines, closed 2" lo torc, performed 500psi k/o function test, followed with 5th gear stall at 1290psi, perform 6500psi test. Held pressure, no leaks. Bled off pressure, pumped 1bbl to ensure lines still full and closed valve. Proceeded to bring pressure to 2000psi on Kelly line, pressure stabilized and held with no leaks.
14	Drop Bottom Plug	8/27/2022	01:02:07	Dropped by HES supervisor, witnessed by company man.
15	Pump Spacer	8/27/2022	01:06:06	Pumped 120bbls Tuned Prime 11.5# 3.88y 24.45g/s with 20g D-Air at 8bpm 340psi
16	Drop Bottom Plug	8/27/2022	01:24:47	Dropped by HES supervisor, witnessed by company man.
17	Pump Cap Cement	8/27/2022	01:26:24	Pumped 140sks or 39.4bbls Elasticem w/o CBL 13.2# 1.58y 7.99g/s at 8bpm 580psi.
18	Pump Lead Cement	8/27/2022	01:35:45	Pumped 739sks or 220bbls Elasticem w/CBL 13.2# 1.67y 8.03g/s at 8.5bpm 612psi.
19	Check Weight	8/27/2022	01:45:25	Weight verified with pressurized mud scales.
20	Pump Tail Cement	8/27/2022	02:05:25	Pumped 1158sks or 421bbls 13.2# 2.04y 9.79g/s Neocem at 8bpm 900psi.
21	Check Weight	8/27/2022	02:07:33	Weight verified with pressurized mud scales.
22	Check Weight	8/27/2022	02:36:06	Weight verified with pressurized mud scales.
23	Shutdown	8/27/2022	03:00:33	Shutdown, washed up through pumps and down wash up line to pit until clean water was seen. Pumped total of 20bbls to clean truck and lines. Pumped 4bbls green dye/MMCR water to establish MMCR at CRT.
24	Drop Top Plug	8/27/2022	03:18:48	Dropped 1500psi top plug by HES supervisor, witnessed by company Man.
25	Pump Displacement	8/27/2022	03:18:54	Pumped 3bbls MMCR water, Shutdown.
26	Drop Top Plug	8/27/2022	03:20:46	Dropped 3000psi top plug by HES supervisor, witnessed by company Man.
27	Pump Displacement	8/27/2022	03:22:44	Pumped 406bbls total fresh water with 10g MMCR in remaining 17bbls (20bbls total), 10gal MCMX and 20gal Bellacide throughout.
28	Bump Plug	8/27/2022	04:23:00	Slowed down to 2bpm at 380bbls away, final circulating pressure- 2224psi, Bump pressure-2720psi. Held for 5min casing test.

29	Other	8/27/2022	04:28:16	Released pressure and got 4.5bbls fresh water to truck, floats held.
30	Other	8/27/2022	04:31:20	Pumped 4.5bbls back into well at 1bpm.
31	Standby - Other - see comments	8/27/2022	04:37:00	Burst 1500psi plug at 1bpm 3450psi.
32	Bump Plug	8/27/2022	04:39:19	Pumped 3bbls to bump 3000psi top plug at 1bpm final-2150psi bumped-2650. Held for 5min casing test. Pressure bled off from 2650 to 2450psi due to packer cup leak on CRT.
33	Other	8/27/2022	04:43:48	Released pressure and got 5.5bbls fresh water to truck, floats held. Held for additional 30min float check.
34	End Job	8/27/2022	05:15:47	Got 70bbls spacer to surface. Estimated TOCap-989', TOL-1812', TOT-7191'.
35	Pre-Rig Down Safety Meeting	8/27/2022	05:20:00	Held safety meeting with crew prior to rig down, discussed possibility of trapped pressure, swing radius, slips trips and falls, pinch points and risks associated with rig down.
36	Rig Down Lines	8/27/2022	05:30:00	Begin rig down
37	Rig-Down Completed	8/27/2022	06:30:00	Rig down complete with no injuries, spills or damage to equipment.
38	Pre-Convoy Safety Meeting	8/27/2022	06:45:00	Held safety meeting with convoy, discussed trip hazards, directions and all crew fit for duty prior to departure.
39	Depart Location for Service Center or Other Site	8/27/2022	07:00:00	Depart location, if applicable journey will be submitted.

3.0 Attachments

3.1 Job Chart