

# HALLIBURTON

iCem<sup>®</sup> Service

## **NOBLE ENERGY INC-EBUS**

**Guttersen D12-755**

Production Casing

Job Date: Tuesday, May 10, 2022

Sincerely,

**Meghan Van Zyl**

## 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

---

Cementing Job Summary .....	4
Executive Summary .....	4
Real-Time Job Summary .....	7
Job Event Log .....	7
Attachments.....	10
Job Chart.....	10

## 1.0 Cementing Job Summary

---

### 1.1 Executive Summary

---

Halliburton appreciates the opportunity to perform the cementing services on the **Guttersen D12-755** cement **Production** casing job. 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 13.15 ppg at 7.76 bbl/min. Cement was displaced with 20 bbl. of treated water with retarder and 382 bbl. of treated freshwater displacement. Plug was landed at 2,732 psi and bumped to 3,255 psi. Pressure was bled off and 5.5 bbl. of fluid was returned to the truck. Approximately 70 bbl. of spacer was returned to surface indicating a top of cement around 1,010'.

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**

<b>Sold To #:</b> 345242		<b>Ship To #:</b> 3928825		<b>Quote #:</b>		<b>Sales Order #:</b> 0907848699	
<b>Customer:</b> NOBLE ENERGY INC-EBUS				<b>Customer Rep:</b> Charles Collver			
<b>Well Name:</b> GUTTERSEN			<b>Well #:</b> D12-755		<b>API/UWI #:</b> 05-123-49077-00		
<b>Field:</b> WATTENBERG		<b>City (SAP):</b> KERSEY		<b>County/Parish:</b> WELD		<b>State:</b> COLORADO	
<b>Legal Description:</b> NE NW-1-3N-64W-316FNL-1707FWL							
<b>Contractor:</b> H & P DRLG				<b>Rig/Platform Name/Num:</b> H & P 517			
<b>Job BOM:</b> 7523 7523							
<b>Well Type:</b> HORIZONTAL OIL							
<b>Sales Person:</b> HALAMERICA\HX41066				<b>Srvc Supervisor:</b> Nicholas Roles			

**Job**

<b>Job depth MD</b>	17364ft	<b>Job Depth TVD</b>	
---------------------	---------	----------------------	--

**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	1940	0	1940
Casing		5.5	4.892	17			0	17364	0	6658
Open Hole Section			8.5				1950	17374	1950	6658

**Tools and Accessories**

Type	Size in	Qty	Make	Depth ft	Type	Size in	Qty	Make
Float Shoe	5.5			17364	Top Plug	5.5	1	HES
Float Collar	5.5			17322	Bottom Plug	5.5	2	HES
					Centralizers	5.5	210	HES

**Fluid Data**

<b>Stage/Plug #: 1</b>										
Fluid #	Stage Type	Fluid Name	Qty	Qty UoM	Mixing Density lbm/gal	Yield ft <sup>3</sup> /sack	Mix Fluid Gal	Rate bbl/min	Total Mix Fluid Gal	
1	Tuned Prime	TUNED PRIME CEMENT SPACER SYS	120	bbl	11.5	3.88	24.67	6	4237	

  

Fluid #	Stage Type	Fluid Name	Qty	Qty UoM	Mixing Density lbm/gal	Yield ft <sup>3</sup> /sack	Mix Fluid Gal	Rate bbl/min	Total Mix Fluid Gal
2	ElastiCem Cap	SBM CEM ELASTICEM™ SYS	140	sack	13.2	1.6	7.63	6	1068

Fluid #	Stage Type	Fluid Name	Qty	Qty UoM	Mixing Density lbm/gal	Yield ft <sup>3</sup> /sack	Mix Fluid Gal	Rate bbl/mi n	Total Mix Fluid Gal
3	ElastiCem w/ SCBL	SBM CEM ELASTICEM™ SYS	710	sack	13.2	1.67	8.03	9	5701

Fluid #	Stage Type	Fluid Name	Qty	Qty UoM	Mixing Density lbm/gal	Yield ft <sup>3</sup> /sack	Mix Fluid Gal	Rate bbl/mi n	Total Mix Fluid Gal
4	NeoCem NT1	NeoCem TM	1166	sack	13.2	2.04	9.75	9	11368

Fluid #	Stage Type	Fluid Name	Qty	Qty UoM	Mixing Density lbm/gal	Yield ft <sup>3</sup> /sack	Mix Fluid Gal	Rate bbl/mi n	Total Mix Fluid Gal
5	MMCR Displacement	MMCR Displacement	20	bbl	8.33			10	840

Fluid #	Stage Type	Fluid Name	Qty	Qty UoM	Mixing Density lbm/gal	Yield ft <sup>3</sup> /sack	Mix Fluid Gal	Rate bbl/mi n	Total Mix Fluid Gal
6	Treated Displacement	Treated Displacement	382	bbl	8.33			10	16044

Cement Left In Pipe	<b>Amount</b>	42 ft	Reason	Shoe Joint
---------------------	---------------	-------	--------	------------

Mix Water:	pH 7	<b>Mix Water Chloride:</b>	>3000 ppm	Mix Water Temperature:	65 °F
------------	------	----------------------------	-----------	------------------------	-------

Plug Bumped?	Yes	<b>Plug Displaced by:</b>	8.33 lb/gal Water	Disp. Temperature:	65 °F
--------------	-----	---------------------------	-------------------	--------------------	-------

Spacer Returns:	70 bbl	<b>Bump Pressure:</b>	3275 psi	Floats Held?	Yes
-----------------	--------	-----------------------	----------	--------------	-----

## 2.0 Real-Time Job Summary

### 2.1 Job Event Log

Seq No.	Activity	Date	Time	Comments
1	Call Out	5/9/2022	20:00:00	Called out by service coordinator for OL time of 0230.
2	Pre-Convoy Safety Meeting	5/9/2022	23:45:00	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	5/10/2022	00:00:00	Depart from service center or other job site.
4	Arrive at Location from Service Center	5/10/2022	01:00:00	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	5/10/2022	02:30:00	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	5/10/2022	02:45:00	Begin rig up with crew.
7	Rig-Up Completed	5/10/2022	04:00:00	Complete rig up for job to nearest point before red zone.
8	Other	5/10/2022	04:30:00	Mix water test results- PH-7, Chlo-0, Temp-65F.
9	Safety Meeting - Pre Job	5/10/2022	06:00:00	Held job specific hazards as well as confirming job procedure with co man and rest of crew associated with job.
10	Start Job	5/10/2022	06:47:07	TD-17374', TP-17364' 5.5" 17#, FC-17322', TVD-6658', SURF-1940' 9.625" 36#, OH-8.5" MUD-10.1#
11	Test Lines	5/10/2022	06:49:28	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 4500psi test on line. 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.

12	Pump Spacer 1	5/10/2022	06:56:14	Pumped 120bbls Tuned Prime 11.5# 3.88y 24.46g/s with 20g D-Air at 6bpm 340psi
13	Check Weight	5/10/2022	06:59:16	Weight verified with pressurized mud scales.
14	Check Weight	5/10/2022	07:06:28	Weight verified with pressurized mud scales.
15	Check Weight	5/10/2022	07:07:58	Weight verified with pressurized mud scales.
16	Check Weight	5/10/2022	07:10:27	Weight verified with pressurized mud scales.
17	Drop Bottom Plug	5/10/2022	07:18:00	Dropped by HES supervisor, witnessed by company man.
18	Pump Cap Cement	5/10/2022	07:18:04	Pumped 140sks or 40bbls Elasticem w/o CBL 13.2# 1.6y 7.63g/s at 8bpm 580psi.
19	Check Weight	5/10/2022	07:24:00	Weight verified with pressurized mud scales.
20	Pump Lead Cement	5/10/2022	07:27:53	Pumped 710sks or 211bbls Elasticem w/CBL 13.2# 1.67y 8.03g/s at 9bpm 612psi.
21	Check Weight	5/10/2022	07:30:55	Weight verified with pressurized mud scales.
22	Check Weight	5/10/2022	07:41:58	Weight verified with pressurized mud scales.
23	Pump Tail Cement	5/10/2022	07:54:01	Pumped 1166sks or 423.6bbls 13.2# 2.04y 9.75g/s Neocem at 9bpm 900psi.
24	Check Weight	5/10/2022	08:01:17	Weight verified with pressurized mud scales.
25	Shutdown	5/10/2022	08:46:35	Shutdown, washed up through pumps and down wash up line to pits until clean water was seen. Pumped total of 20bbls to clean truck and lines
26	Drop Top Plug	5/10/2022	08:58:03	Dropped by HES supervisor, witnessed by company man.
27	Pump Displacement	5/10/2022	08:58:05	Pumped 402bbls production water with 10g MMCR in first 20bbls, 10gal MCMX and 15gal Bellacide throughout.
28	Bump Plug	5/10/2022	10:18:58	Slowed down to 4bpm at 375bbls away, final circulating pressure- 2740psi, Bump pressure-3275psi.

29	Other	5/10/2022	10:23:10	Released pressure and got 5.5bbls fresh water to truck, floats held.
30	End Job	5/10/2022	10:25:18	Got 70bbls spacer to surface. Estimated TOCap-1010', TOL-1845', TOT-6996'.
31	Pre-Rig Down Safety Meeting	5/10/2022	10:30:00	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.
32	Rig Down Lines	5/10/2022	10:45:00	Begin rig down
33	Rig-Down Completed	5/10/2022	11:30:00	Rig down complete with no injuries, spills or damage to equipment.
34	Pre-Convoy Safety Meeting	5/10/2022	11:45:00	Held safety meeting with convoy, discussed trip hazards, directions and all crew fit for duty prior to departure.
35	Depart Location for Service Center or Other Site	5/10/2022	12:00:00	Depart location, if applicable journey will be submitted.

3.0 Attachments

3.1 Job Chart

