HALLIBURTON

iCem® Service

NOBLE ENERGY INC-EBUS

Ft. Lupton District, Colorado

Bishop A08-685 Surface

Job Date: Thursday, December 28, 2023

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

1.0 Cementing Job Summary

1.1 Executive Summary

Halliburton appreciates the opportunity to perform the cementing services on the **Bishop A08-685 - Surface.** 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 25 bbls of cement were returned to surface. Final pumping pressure was 630psi, followed by a 30-min casing test where floats held bringing 1.5bbl back to the truck.

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 #:	05-123-52075-00
City, County:	Galeton, Weld
SO#:	909060885

Job Times		
	Date (mm/dd/yyyy)	**Time (hh:mm)**
Requested Time On Location:	12/28/2023	00:00
Called Out Time:	12/27/2023	18:00
Arrived On Location:	12/28/2023	23:10
Job Started:	12/28/2023	02:31
Job Completed:	12/28/2023	04:29
Departed Location:	12/28/2023	05:50

	Description	Units	Value
1	Surface temperature at the time of the job	degree F	27
2	Mud type (OBM, WBM, Synthetic, Water, Brine)	-	WBM
3	Mud density	ppg	8.9
4	Casing set depth (shoe)	ft	2051
5	TVD	ft	2051
6	Float collar depth	ft	1990.7
7	Length of rate hole	ft	10
8	Previous casing shoe depth	ft	109
9	Pre-job mud circulation time	hh:mm	00:35
10	Pre-job mud circulation rate	bpm	10.7

11	Pre-job mud circulation volume	bbls	375
12	Mud circulation pressure at start of cement	psi	300
13	Annual flow before the start of job	Y/N	Y
14	Pipe movement during cement job	Y/N	N
15	Calculated displacement	bbls	152.8
16	Job displaced by	Rig/HES	HES
17	Estimated returns % during job	%	100
18	Fluid returns to surface	Spacer/Cement, bbls	30 / 25
19	Final circulation pressure, rate prior to plug bump	psi @ bpm	630 @ 2
20	Number of Centralizers	-	17
21	Number of bottom plugs	-	0
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	7		6.0 - 8.0	Chemicals in water can cause severe retardation
Temperature	72	F	60 - 80 F	Can can pre-mature setting of cement
Chlorides	<180	ppm	3000 ppm	Can shorten thickening time

1.4 Actual Pump Schedule

	Density (ppg)	Volume (bbls)	Yield (ft3/sk)	Water Requirement (gal/sk)	Bulk Sacks (sks)	Total Water (gals)
Spacer Fluid	8.33	30				1260
Lead Cement	13.5	179.2	1.79	9.52	562	5350
Tail Cement	14.8	25.4	1.4	6.7	102	683
Top Plug	1					
Displacement Fluid	8.33	152				6384

2.0 Real-Time Job Summary

2.1 Job Event Log

Seq. No.	Activity	Date	Time	Comments
1	Call Out	12/27/2023	18:00:00	CHEVRON BISHOP A08-685 9 5/8" SURFACE CASING JOB - On location 12/28/23 @ 00:00 AM
2	Safety Meeting - Service Center or other Site	12/27/2023	21:30:00	Review Journey Management And Route With Crew Members
3	Depart from Service Center or Other Site	12/27/2023	21:40:00	Depart From Yard
4	Arrive At Loc	12/27/2023	23:10:00	Talk To Company Man (Ricky) : TD = 2,061', TP = 2,051', ST = 46.4', OH = 13.5", CSG = 9 5/8" 36#, Previous Casing 16" Set @ 109', WF = WBM @ 8.9#, Test Water = pH – 7, Chlorides - < 180 ppm, 55 F.
5	Safety Meeting - Assessment of Location	12/27/2023	23:30:00	Spot Equipment
6	Pre-Rig Up Safety Meeting	12/27/2023	23:40:00	Review JSA With Crew Members
7	Rig-Up Equipment	12/27/2023	23:50:00	Rigged Up All Iron And Hoses Needed For CMT Job With No Issues Or Incidents.
8	Rig-Up Completed	12/28/2023	00:30:00	Rigged Up All Iron And Hoses Needed For CMT Job With No Issues Or Incidents.
9	Rig-Up Completed	12/28/2023	01:30:00	Rig Up Circulating Swedge and Rig Circulated With Rig Pumps. Rig Circulated From 01:45 AM To 02:20 AM At 450 GPM (10.7 BPM) With 540 psi, Good Returns.
10	Safety Meeting - Pre Job	12/28/2023	02:15:00	Review Job Procedure And JSA With Rig Hands, Co. Man, And HES Members
11	Start Job	12/28/2023	02:31:16	Start Recording Data
12	Test Lines	12/28/2023	02:34:39	Pressure Tested Lines to 4000 PSI

13	Pump Spacer 1	12/28/2023	02:38:09	Pumped 30 bbls of Fresh Water Spacer with Uranine 2313-Green Dye. Total gallons 1260. Pump Rate 7 BPM with 270 PSI.
14	Check Weight	12/28/2023	02:46:55	Weight Verified by Mud Scales
15	Pump Lead Cement	12/28/2023	02:48:02	Pumped 179.2 bbls of SwiftCem @ 13.5 PPG (562 sk, 1.79 ft3, 9.52 gal/sk). Total gallons 5350. Pump Rate @ 7 BPM with 300 PSI. TOLC=0'
16	Check Weight	12/28/2023	02:51:19	Weight Verified by Mud Scales
17	Pump Tail Cement	12/28/2023	03:13:07	Pumped 25.4 bbls of VariCem @ 14.8 PPG (102 sk, 1.4 ft3, 6.7 gal/sk). Total gallons 683. Pump Rate 6 BPM with 170 PSI. TOTC=1800'
18	Shutdown	12/28/2023	03:18:21	Shutdown Pumping Cement
19	Drop Top Plug	12/28/2023	03:19:01	Drop Top Plug / Verified by Company Representative
20	Pump Displacement	12/28/2023	03:19:03	Pumped 152 bbls of Fresh Water Displacement. Total gallons 6384. Total of 25 bbls of Cement to Surface
21	Bump Plug	12/28/2023	03:53:04	Bump Plug / FCP is 630 PSI and took up to 1040 PSI
22	Other	12/28/2023	03:56:21	Start 30 Minute Casing Test with 2539 PSI. 25 Minutes into Test Pressure is 2561 PSI. 30 Minutes into Test Pressure is 2569 PSI.
23	Bleed Casing	12/28/2023	04:27:00	Bled Pressure Back To Zero And Got 1.5 bbls Back
24	Check Floats	12/28/2023	04:28:00	Floats Held Good.
25	End Job	12/28/2023	04:29:08	Stop Recording Data
26	Pre-Rig Down Safety Meeting	12/28/2023	04:40:00	Review JSA With HES Crew Members
27	Rig-Down Equipment	12/28/2023	04:50:00	Rig Down Iron, Circulating Swedge, And Hoses Used On Job
28	Rig-Down Completed	12/28/2023	05:30:00	All Equipment Rigged Down With No Issues Or Incidents
29	Safety Meeting - Departing Location	12/28/2023	05:40:00	Review Journey Management And Route With Crew Members

30	Depart Location for Service Center or Other Site	12/28/2023	05:50:00	Depart location

3.0 Attachments

3.1 Real Time iCem Job Chart