

HALLIBURTON

iCem[®] Service

NOBLE ENERGY INC-EBUS

Ft. Lupton District, Colorado

Bishop A06-731 Surface

Weld County

BISHOP A06-731 9.625' SURFACE

Job Date: Tuesday, February 06, 2024

Sincerely,

Chris Yeung

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 4

 1.1 Executive Summary 4

 1.2 Job Overview 5

 1.3 Water Field Test 7

 1.4 Actual Pump Schedule 7

2.0 Real-Time Job Summary 8

 2.1 Job Event Log 8

3.0 Attachments 10

 3.1 BISHOP A06-731 9.625' SURFACE-Custom Results (1).png 10

1.0 Cementing Job Summary

1.1 Executive Summary

Halliburton appreciates the opportunity to perform the cementing services on the Bishop A06-731 - 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 40 bbls of cement were returned to surface. Final pumping pressure was 630psi, followed by a 30-min casing test where floats held bringing 2.0 bbls 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 #:	05-123-52064
City, County:	Eaton, Weld County
SO#:	909141101

Job Times		
	Date (mm/dd/yyyy)	Time (hh:mm)
Requested Time On Location:	02/06/2024	2:30
Called Out Time:	02/05/2024	20:30
Arrived On Location:	02/06/2024	1:30
Job Started:	02/06/2024	4:52
Job Completed:	02/06/2024	7:06
Departed Location:	02/06/2024	8:00

	Description	Units	Value
1	Surface temperature at the time of the job	degree F	31
2	Mud type (OBM, WBM, Synthetic, Water, Brine)	-	WBM
3	Mud density	ppg	8.7
4	Casing set depth (shoe)	ft	2051
5	TVD	ft	2061
6	Float collar depth	ft	2004
7	Length of rate hole	ft	10
8	Previous casing shoe depth	ft	80
9	Pre-job mud circulation time	hh:mm	00:30

10	Pre-job mud circulation rate	bpm	8
11	Pre-job mud circulation volume	bbls	200
12	Mud circulation pressure at start of cement	psi	50
13	Annual flow before the start of job	Y/N	Y
14	Pipe movement during cement job	Y/N	N
15	Calculated displacement	bbls	155
16	Job displaced by	Rig/HES	HES
17	Estimated returns % during job	%	100
18	Fluid returns to surface	Spacer/Cement, bbls	30/40
19	Final circulation pressure, rate prior to plug bump	psi @ bpm	630
20	Number of Centralizers	-	
21	Number of bottom plugs	-	
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	65	F	60 - 80 F	Can can pre-mature setting of cement
Chlorides	200	ppm	3000 ppm	Can shorten thickening time

1.4 Actual Pump Schedule

	Density (ppg)	Volume (bbls)	Yield (ft ³ /sk)	Water Requirement (gal/sk)	Bulk Sacks (sks)	Total Water (gals)
Spacer Fluid	8.33	30				
Lead Cement	13.5	197	1.79	9.52	620	5901
Tail Cement	14.8	25	1.4	6.7	102	683
Top Plug	1					
Displacement Fluid	8.33	155				

2.0 Real-Time Job Summary

2.1 Job Event Log

Seq No.	Activity	Date	Time	Comments
1	Arrive At Loc	2/5/2024	20:30:00	Crew arrived on location at 2030 hrs. Meet with costumer TD 2061', 13.5 OH, TP 2051' 9.625' 36#, FC 2004', TVD 2061', P/C 80' 16' 55#, WBM WEIGHT 8.7 PPG.
2	Call Out	2/5/2024	20:30:00	Crew called out at 2030 on 2/5/2024 for a requested-on location time of 0230 on 2/6/2024.
3	Safety Meeting - Pre Rig-Up	2/6/2024	02:00:00	Discuss hazards around rig up area.
4	Rig-Up Completed	2/6/2024	03:00:00	Rig up completed.
5	Safety Meeting - Pre Job	2/6/2024	04:30:00	Pre job safety meeting discussed all hazards prior to job and reviewed job procedure.
6	Start Job	2/6/2024	04:52:13	Start recording data.
7	Test Lines	2/6/2024	04:55:56	Pressure tested HES lines to 4000 psi.
8	Pump Spacer 1	2/6/2024	04:58:31	Pumped 30 bbls of green dye spacer @4bpm with 60 psi.
9	Pump Lead Cement	2/6/2024	05:07:25	Pumped 197 bbls of SwiftCem Lead cement @7bpm with 180 psi. TOLC=0', 40 bbls of cement to surface.
10	Check Weight	2/6/2024	05:10:20	Weight verified by mud scales.
11	Pump Tail Cement	2/6/2024	05:47:25	Pumped 25 bbls of VariCem Tail cement @4bpm with 77 psi. TOTC= 1774'.
12	Check Weight	2/6/2024	05:50:50	Weight verified by mud scales.
13	Shutdown	2/6/2024	05:54:43	Shutdown to drop top plug.
14	Drop Top Plug	2/6/2024	06:01:08	Top plug verified by DSR.

15	Pump Displacement	2/6/2024	06:01:10	Pumped 155 bbls of freshwater displacement.
16	Bump Plug	2/6/2024	06:32:21	FCP@2bpm was 630 psi bumped up to 1030 psi.
17	Other	2/6/2024	06:35:23	Starting pressure for casing test 2647 psi.
18	Other	2/6/2024	07:00:00	2698 psi @25 minutes.
19	Other	2/6/2024	07:05:00	2705 psi @30 minutes
20	Other	2/6/2024	07:05:19	2 bbls back to pump truck.
21	End Job	2/6/2024	07:06:27	Stop recording data. Washed cellar pump with 10 bbls of freshwater.
22	Safety Meeting - Pre Rig-Down	2/6/2024	07:30:00	Discuss blow down and any new hazards that could have come up during job.
23	Rig-Down Completed	2/6/2024	08:00:00	Rig down completed.

3.0 Attachments

3.1 BISHOP A06-731 9.625' SURFACE-Custom Results (1).png

