

HALLIBURTON

iCem[®] Service

BISON IV OPERATING-EBUS

Ft. Lupton District, Colorado

For: Derrick Dupee

Date: Tuesday, September 05, 2023

EIDER

Weld County

EIDER 36-1-6HN 5.5' PRODUCTION

Job Date: Tuesday, September 05, 2023

Sincerely,
Cody Haley

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
Job Overview	5
Water Field Test	7
Actual Pump Schedule	7
Real-Time Job Summary	8
Job Event Log	8
Attachments.....	13
EIDER 36-1-6HN 5.5' PRODUCTION-Custom Results (1).png	13

1.0 Cementing Job Summary

1.1 Executive Summary

Halliburton appreciates the opportunity to perform the cementing services on the EIDER 36-1-6HN 5.5' 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.

Approximately 50 bbls of cement 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 Rockies Cement Team

1.2 Job Overview

Job Details	
API #:	05-123-51702
City, County:	Raymer, Weld County
Field:	
Legal Discription:	

Job Times		
	Date (mm/dd/yyyy)	Time (hh:mm)
Requested Time On Location:	09/05/2023	14:00
Called Out Time:	09/05/2023	8:00
Arrived On Location:	09/05/2023	13:00
Job Started:	09/05/2023	18:50
Job Completed:	09/05/2023	22:31
Departed Location:	09/05/2023	23:45

	Description	Units	Value
1	Surface temperature at the time of the job	degree F	80
2	Mud type (OBM, WBM, Synthetic, Water, Brine)	-	OBM
3	Mud density	ppg	9.0
4	Casing set depth (shoe)	ft	16,770
5	TVD	ft	6232
6	Float collar depth	ft	16722.66
7	Length of rate hole	ft	10
8	Previous casing shoe depth	ft	1670

9	Pre-job mud circulation time	hh:mm	3:00
10	Pre-job mud circulation rate	bpm	10
11	Pre-job mud circulation volume	bbls	700
12	Mud circulation pressure at start of cement	psi	850
13	Annual flow before the start of job	Y/N	Y
14	Pipe movement during cement job	Y/N	Y
15	Calculated displacement	bbls	369.5
16	Job displaced by	Rig/HES	HES
17	Estimated returns % during job	%	100
18	Fluid returns to surface	Spacer/Cement, bbls	80/50
19	Final circulation pressure, rate prior to plug bump	psi @ bpm	2070
20	Number of Centralizers	-	
21	Number of bottom plugs	-	2

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	69	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 (ft3/sk)	Water Requirement (gal/sk)	Bulk Sacks (sks)	Total Water (gals)
Spacer Fluid	11.5	80	2.9	18.23	154	2823
Cap Cement						
Lead Cement	12.5	299	2.01	10.16	837	8503
Tail Cement	13.2	440	1.76	8.4	1405	11802
Top Plug	1					
Displacement Fluid	8.33	369.5				

2.0 Real-Time Job Summary

2.1 Job Event Log

Type	Seq No.	Activity	Graph Label	Date	Time	Source	Dwnhole Density (ppg)	Cmb Pump Rate (bbl/mi n)	Pump B Pressure (psi)	Cmb Stg Total (bbl)	Comments
Event	1	Call Out	Call Out	9/5/2023	08:00:00	USER					Crew called out at 0800 on 9/05/2023 for a requested-on location time of 1400 on 9/05/2023.
Event	2	Safety Meeting	Safety Meeting	9/5/2023	09:45:00	USER					Pre convoy safety meeting discussed route to location and hazards of driving during windstorm.
Event	3	Crew Leave Yard	Crew Leave Yard	9/5/2023	10:00:00	USER					Crew Leaves yard in convoy at 1000 hrs.
Event	4	Arrive At Loc	Arrive At Loc	9/5/2023	13:00:00	USER					Crew arrived on location at 1300 hrs. Meet with costumer TD 16779', 8.5 OH, TP 16769' 5.5' 20#, FC 16722.66', TVD 6232', P/C 1674' 9.625 36#, OBM WEIGHT 9.0 PPG.

Event	5	Safety Meeting - Pre Rig-Up	Safety Meeting - Pre Rig-Up	9/5/2023	14:00:00	USER						Discuss hazards around rig up area.
Event	6	Rig-Up Completed	Rig-Up Completed	9/5/2023	15:30:00	USER	7.98	0.00	0.34	17.05		Rig up completed.
Event	7	Safety Meeting - Pre Job	Safety Meeting - Pre Job	9/5/2023	18:30:00	USER	8.02	0.00	0.71	17.05		Pre job safety meeting discussed all hazards prior to job and reviewed job procedure.
Event	8	Start Job	Start Job	9/5/2023	18:50:11	USER	8.00	0.00	4.68	17.05		Start recording data.
Event	9	Drop Bottom Plug	Drop Bottom Plug	9/5/2023	18:51:00	USER	7.58	0.00	-0.60	0.00		1st bottom plug verified by DSR.
Event	10	Test Lines	Test Lines	9/5/2023	18:53:11	NONE	8.32	0.00	51.11	3.04		Pressure tested HES lines to 5,000 psi.
Event	11	Pump Spacer 1	Pump Spacer 1	9/5/2023	19:01:28	NONE	8.35	1.89	64.50	0.02		Pumped 80 bbls (154 sks) of Tuned Prime Spacer @ 11.5ppg/2.9ft3/18.2 3gal/sack. Mix gallons was 2,823 gallons. Average rate was 6bpm with 250 psi.
Event	12	Drop Bottom Plug	Drop Bottom Plug	9/5/2023	19:02:51	USER	11.25	4.21	269.55	5.11		2nd bottom plug verified by DSR.
Event	13	Check Weight	Check Weight	9/5/2023	19:07:25	NONE	11.05	4.19	174.39	24.29		Weight verified by mud scales.
Event	14	Check Weight	Check Weight	9/5/2023	19:14:26	NONE	11.28	4.21	131.43	68.89		Weight verified by mud scales.

Event	15	Pump Lead Cement	Pump Lead Cement	9/5/2023	19:21:45	NONE	11.38	0.00	41.24	0.00	Pumped 299 bbls (837 sks) of ElastiCem Lead cement @12.5ppg/2.01ft3/10.16gal/sack. Mix gallons was 8,503 gallons. Average rate was 8bpm with 825 psi on the line. TOLC= 0', 50 bbls of cement to surface.
Event	16	Check Weight	Check Weight	9/5/2023	19:24:13	NONE	12.36	3.65	163.12	6.38	Weight verified by mud scales.
Event	17	Check Weight	Check Weight	9/5/2023	19:44:04	NONE	12.31	9.01	896.13	143.16	Weight verified by mud scales.
Event	18	Pump Tail Cement	Pump Tail Cement	9/5/2023	20:04:49	NONE	12.24	6.93	551.83	0.12	Pumped 440 bbls (1405 sks) of NeoCem Tail cement @13.2ppg/1.76ft3/8.4 gal/sack. Mix gallons was 11,802 gallons. Average rate was 7bpm with 650 psi on the line. TOTC= 5,995'.
Event	19	Check Weight	Check Weight	9/5/2023	20:07:00	NONE	13.11	6.94	729.83	15.24	Weight verified by mud scales.
Event	20	Check Weight	Check Weight	9/5/2023	20:29:43	NONE	13.10	6.97	728.51	150.19	Weight verified by mud scales.

Event	21	Shutdown	Shutdown	9/5/2023	21:13:33	NONE	13.26	0.00	208.09	451.67	Shutdown and swapped over to wash up tank, washed up with 25 bbls of freshwater.
Event	22	Drop Top Plug	Drop Top Plug	9/5/2023	21:28:20	NONE	8.30	0.00	33.32	24.22	Top plug verified by DSR.
Event	23	Pump Displacement	Pump Displacement	9/5/2023	21:28:24	NONE	8.30	0.00	33.26	0.00	Pumped 369.5 bbls of displacement with 20 gallons of MMCR in first 40 bbls and treated water provided by rig threw out the rest of displacement.
Event	24	Bump Plug	Bump Plug	9/5/2023	22:24:31	NONE	8.52	0.00	2746.53	365.93	FCP @4BPM WAS 2070 PSI, BUMPED UP TO 2540 PSI.
Event	25	Other	Check Floats	9/5/2023	22:29:22	NONE	8.52	0.00	2834.02	365.93	4 bbls back to pump truck, floats holding.
Event	26	End Job	End Job	9/5/2023	22:31:06	NONE	8.37	0.00	13.93	0.00	Stop recording data.
Event	27	Safety Meeting - Pre Rig-Down	Safety Meeting - Pre Rig-Down	9/5/2023	22:40:00	USER					Discuss blow down and any new hazards that could have come up during job.
Event	28	Rig-Down Completed	Rig-Down Completed	9/5/2023	23:35:00	USER					Rig down completed.

Event	29	Pre-Convoy Safety Meeting	Pre-Convoy Safety Meeting	9/5/2023	23:40:00	USER	Fit for duty check and check road conditions.
Event	30	Crew Leave Location	Crew Leave Location	9/5/2023	23:45:00	USER	Crew departs location. Thank you for using Halliburton.

3.0 Attachments

3.1 EIDER 36-1-6HN 5.5' PRODUCTION-Custom Results (1).png

