

HALLIBURTON

iCem[®] Service

TERRA ENERGY PARTNERS-EBUS

Rock Springs District, Colorado

For: H&P 318

Date: Tuesday, November 05, 2019

GM 444-8

API# 05-045-24102

Job Date: Tuesday, November 05, 2019

Sincerely,

John Keane

Legal Notice

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1.0 Cementing Job Summary

1.1 Executive Summary

Halliburton appreciates the opportunity to perform the cementing services for this cementing services 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.

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, Rock Springs

Job Times

	Date	Time	Time Zone
Called Out	11-5-2019	00:01	MST
On Location	11-5-2019	08:30	MST
Job Started	11-5-2019	13:00	MST
Job Complete	11-5-2019	15:50	MST
Depart Location	11-5-2019	17:00	MST

1.2 Job Overview

		Units	Description
1	Surface temperature at time of job	°F	39
2	Mud type (OBM, WBM, SBM, Water, Brine)	lb/gal	WBM
3	Actual mud density	lb/gal	9.8
4	Time circulated before job	HH:MM	01:00
5	Mud volume circulated	Bbls	600
6	Rate at which well was circulated	Bpm	10 BPM
7	Pipe movement during hole circulation	Y/N	N
8	Rig pressure while circulating	Psi	1400
9	Time from end mud circulation to start of job	HH:MM	00:10
10	Pipe movement during cementing	Y/N	N
11	Calculated displacement	Bbls	112.7 BBL
12	Job displaced by	Rig/HES	HES
13	Annular flow before job	Y/N	N
14	Annular flow after job	Y/N	N
15	Length of rat hole	Ft	7
16	Units of gas detected while circulating	Units	58
17	Was lost circulation experienced at any time ?	Y/N	N

1.3 Water Analysis Report

CEMENT MIX WATER REQUIREMENTS

Item	Recorded Test Value	Units	Max. Acceptable Limit	Potential Problems in Exceeding Limit
pH	7	----	6.0 - 8.0	Chemicals in the water can cause severe retardation
Chlorides	0	ppm	3000 ppm	Can shorten thickening time of cement
Temperature	82	°F	50-80 °F	High temps will accelerate; Low temps may risk freezing in cold weather

2.0 Real-Time Job Summary

2.1 Job Event Log

Type	Seq. No.	Graph Label	Date	Time	Source	PS Pump Press <i>(psi)</i>	DH Density <i>(ppg)</i>	Comb Pump Rate <i>(bbl/min)</i>	Pump Stg Tot <i>(bbl)</i>	Comments
Event	1	Job Called In	11/5/2019	00:01:00	USER					REQUESTED ON LOCATION TIME 09:00
Event	2	Safety Meeting	11/5/2019	02:00:00	USER					WITH HES, 1 IRON TRUCK, 1 ELITE CEMENTING UNIT, 1 660 BULK TRUCK
Event	3	Arrive at Rig	11/5/2019	08:30:00	USER					RIG RUNNING CASING, UPON HES ARRIVAL
Event	4	Assessment Of Location Safety Meeting	11/5/2019	09:30:00	USER					WITH HES, JSA COMPLETED, SDS OFFERED FOR ALL HES MATERIALS
Event	5	Safety Meeting - Pre Rig-Up	11/5/2019	10:00:00	USER					WITH HES, JSA COMPLETED
Event	6	Rig-Up Equipment	11/5/2019	10:10:00	USER					1 LINE RAN TO THE FLOOR, 1 LINE RAN TO THE PIT, 1 4.5 IN. QUICK-LATCH PLUG CONTAINER, WASH-UP MANIFOLD ON THE GROUND
Event	7	Other	11/5/2019	12:49:06	USER					TD 7315 FT, TP 7308.7 FT, HOLE 8.75 IN, CSG 4.5 IN 11.6 LB/FT L-80, SHOE 31.9 FT, SURFACE SET AT 1020 FT, 9.625 IN 32.3 LB FT L-80
Event	8	Other	11/5/2019	12:50:31	USER					RIG CIRCULATION, 1400 PSI, 10 BBBL/MIN, 600 BBL, PIPE WAS RECIPROCATED, RATE HOLE LENGTH 7 FT, MWT 9.8 LB/GAL WBM
Event	9	Other	11/5/2019	12:50:38	USER					WATER TEST PH 7. CHLOR 0, TEMP 83 DEG F
Event	10	Pre-Job Safety Meeting	11/5/2019	13:10:00	USER					WITH HES, TEP, AND H&P 318
Event	11	Start Job	11/5/2019	13:43:50	COM5					
Event	12	Fill Lines	11/5/2019	13:45:06	USER	472.00	8.52	2.10	2.10	PRIMED LINES WITH 5 BBL FRESH WATER
Event	13	Test Lines	11/5/2019	13:53:21	USER	5551.00	8.35	0.00	5.00	LOW TEST AT 688 PSI, HGH TEST AT 5552 PSI, PRESSURE HOLDING
Event	14	Pump Fresh Water	11/5/2019	14:01:53	USER	439.00	8.33	2.00	0.50	20 BBL FRESH WATER
Event	15	Mud Flush III Spacer	11/5/2019	14:06:49	USER	442.00	8.28	2.00	0.30	USED 80 LBS MUD FLUSH III, 20 BBL

Event	16	Pump Lead Cement	11/5/2019	14:13:19	USER	778.00	12.34	4.00	1.10	MIXED AT 12.3 LB/GAL, 365 SKS, (NEOCEM), 2.20 FT3/SK, 11.43 GAL/SK, DENSITY VERIFEID USING PRESSURIZED MUD SCALES
Event	17	Check Weight	11/5/2019	14:22:01	COM5	630.00	12.33	6.00	51.00	
Event	18	Pump Tail Cement	11/5/2019	14:41:05	USER	962.00	12.72	8.40	13.80	MIXED AT 12.5 LB/GAL, 515 SKS, (NEOCEM), 2.11 FT3/SK, 10.78GAL/SK, DENSITY VERIFEID USING PRESSURIZED MUD SCALES
Event	19	Shutdown	11/5/2019	15:08:12	USER	636.00	12.89	6.00	225.00	
Event	20	Clean Lines	11/5/2019	15:15:13	USER	2.00	9.58	4.00	2.70	WASHED PUMPS AND LINES TO TEH RESERVE PIT
Event	21	Drop Top Plug	11/5/2019	15:23:02	USER	11.00	8.15	0.00	19.50	LUG LAUNCHED, CUSTOMER WITNESSED
Event	22	Pump Displacement	11/5/2019	15:25:57	USER	1385.00	8.20	10.00	31.40	FRESH WATER, KCL, 3 LBS BE-6, 1 GAL MMCR ADDED
Event	23	Slow Rate	11/5/2019	15:33:46	USER	1072.00	8.19	4.00	106.50	SLOWED AT 102 BBL AWAY TO 4 BBL/MIN
Event	24	Bump Plug	11/5/2019	15:35:22	USER	1180.00	8.25	4.00	112.80	PLUG BUMPED AT CALCULATED DISPLACEMENT, 1205 PSI,
Event	25	Check Floats	11/5/2019	15:37:29	USER	1658.00	8.22	0.00	114.70	FLOATS HOLDING, .75 BBL RETURNED TO THE TRUCK
Event	26	End Job	11/5/2019	15:50:00	USER					GOOD CIRCULATION, RIG USED 1 GAL MMCR, THE TOP PLUG, 3 LBS BE-6, AND 20 LBS MUD FLUSH, NO ADD HOURS
Event	27	Pre-Rig Down Safety Meeting	11/5/2019	15:55:55	USER					WITH HES
Event	28	Rig Down Lines	11/5/2019	16:10:00	USER					
Event	29	Pre-Convoy Safety Meeting	11/5/2019	16:25:00	USER					WITH HES
Event	30	Comment	11/5/2019	17:00:00	USER					SPACER 20 BBL MUD FLUSH, 10 BBL FRESH WATER, LEAD CEMENT 144.3 BBL, TAIL CEMENT 193.5 BBL, FINAL DISPLACEMENT 112.7 BBL, TOP OF TAIL CEMENT 3781 FT, TOP OF LEAD CEMENT 1143 FT
Event	31	Crew Leave Location	11/5/2019	17:00:00	USER					THANKS FOR USING HALLIBURTON, JOHN KEANE AND CREW

3.0 Attachments

3.1 TERRA - GM 444-8 - PRODUCTION.png

