

# HALLIBURTON

iCem<sup>®</sup> Service

## **TERRA ENERGY PARTNERS-EBUS**

Rock Springs District, Colorado

### **For: H&P 318**

Date: Wednesday, November 06, 2019

### **GM 513-8 Surface**

API# 05-045-24094

Job Date: Wednesday, November 06, 2019

Sincerely,

Rock Springs Engineering

## Legal Notice

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### Disclaimer:

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## 1.0 Cementing Job Summary

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### 1.1 Executive Summary

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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	11-06-2019	01:00	MST
On Location	11-06-2019	04:59	MST
Job Started	11-06-2019	07:00	MST
Job Complete	11-06-2019	08:10	MST
Depart Location	11-06-2019	09:05	MST

### 1.2 Job Overview

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		Units	Description
1	Surface temperature at time of job	°F	34
2	Mud type (OBM, WBM, SBM, Water, Brine)	lb/gal	WBM
3	Actual mud density	lb/gal	9.3
4	Time circulated before job	HH:MM	00:30
5	Mud volume circulated	Bbls	300
6	Rate at which well was circulated	Bpm	10
7	Pipe movement during hole circulation	Y/N	N
8	Rig pressure while circulating	Psi	570
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	75.7 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	NA
17	Was lost circulation experienced at any time ?	Y/N	N

1.3 Water Analysis Report

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**CEMENT MIX WATER REQUIREMENTS**

<b>Item</b>	<b>Recorded Test Value</b>	<b>Units</b>	<b>Max. Acceptable Limit</b>	<b>Potential Problems in Exceeding Limit</b>
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	65	°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	Call Out	11/6/2019	01:00:00	USER					REQUESTED ON LOCATION TIME 05:00
Event	2	Pre-Convoy Safety Meeting	11/6/2019	03:40:00	USER					WITH HES, JSA COMPLETED, 1 IRON TRUCK, 1 ELITE CEMENTING UNIT, 1 660 BULK TRUCK
Event	3	Arrive At Loc	11/6/2019	04:15:00	USER					RIG ON BOTTOM WITH CASING, CIRCULATING UPON HES ARRIVAL
Event	4	Assessment Of Location Safety Meeting	11/6/2019	04:30:00	USER					WITH HES, JSA COMPLETED, SDS OFFERED FOR ALL HES MATERIALS
Event	5	Pre-Rig Up Safety Meeting	11/6/2019	04:45:00	USER					WITH HES, 1 LINE RAN TO THE FLOOR, 1 9.625 IN QUICK-LATCH PLUG CONTAINER
Event	6	Rig-Up Equipment	11/6/2019	05:00:00	USER					
Event	7	Water Test	11/6/2019	05:47:20	USER					TEMP 65 DEG F, PH 7.0, CHLOR 0
Event	8	Comment	11/6/2019	05:47:23	USER					TD 1023 FT, TP 1016.65 FT, 9.625 IN 36 LB/FT J-55, HOLE 13.5 IN, SHOE 42.3 FT
Event	9	Comment	11/6/2019	05:47:25	USER					RIG CIRCULATION, 300 BBL, 10 BBL/MIN, 570 PSI, MWT 9.3 LB/GAL WBM, PIPE WAS STATIC, RAT HOLE LENGTH 7 FT
Event	10	Pre-Job Safety Meeting	11/6/2019	06:30:00	USER					WITH HES, TERRA , AND H&P 318
Event	11	Start Job	11/6/2019	06:59:55	COM5					
Event	12	Fill Lines	11/6/2019	07:00:49	USER	63.00	8.49	2.10	1.30	5 BBL FRESH WATER
Event	13	Test Lines	11/6/2019	07:05:14	USER	3044.00	8.47	0.00	5.10	LOW TEST AT 1580 PSI, HIGH TEST AT 3014 PSI, PRESSURE HOLDING
Event	14	Pump Fresh Water Spacer	11/6/2019	07:07:46	USER	52.00	8.40	2.10	0.30	20 BBL FRESH WATER
Event	15	Pump Lead Cement	11/6/2019	07:15:53	USER	256.00	12.30	4.00	0.60	MIXED AT 12.3 LB/GAL, 2.38 FT3/SK, 13.74 GAL/SK, DENSITY VERIFIED USING PRESSURIZED MUD SCALES

Event	16	Pump Tail Cement	11/6/2019	07:22:55	USER	712.00	12.82	8.00	1.30	MIXED AT 12.8 LB/GAL, (VARICEM) SKS, 2.11 FT3/SK, 11.74GAL/SK, DENSITY VERIFIED USING PRESSURIZED MUD SCALES
Event	17	Shutdown	11/6/2019	07:30:32	USER	360.00	12.89	6.10	57.20	
Event	18	Drop Top Plug	11/6/2019	07:32:39	USER	10.00	13.46	0.00	59.40	PLUG LAUNCHED, CUSTOMER WITNESSED
Event	19	Pump Displacement	11/6/2019	07:34:51	USER	176.00	10.24	4.00	1.20	FRESH WATER
Event	20	Slow Rate	11/6/2019	07:43:40	USER	247.00	8.22	2.00	67.40	SLOWED AT 65 BBL AWAY TO 2 BBL/MIN
Event	21	Bump Plug	11/6/2019	07:46:50	USER	265.00	8.23	2.00	73.90	PLUG BUMPED AT CALCULATED DISPLACEMENT, 260 PSI
Event	22	Pressure Test	11/6/2019	07:47:42	USER	1243.00	8.25	0.00	74.40	TESTED CASING FOR 15 MIN, 1200 PSI, PRESSURE HOLDING
Event	23	Check Floats	11/6/2019	08:03:25	USER	1251.00	8.23	0.00	74.40	FLOATS HOLDING, PRESSURE HOLDING, .5 BBL RETURNED TO THE TANKS
Event	24	End Job	11/6/2019	08:10:00	USER					GOOD CIRCULATION, NO ADD HOURS, RIG DID NOT USE SUGAR, RIG USED TOP PLUG
Event	25	Pre-Rig Down Safety Meeting	11/6/2019	08:15:00	USER					WITH HES, JSA COMPLETED
Event	26	Rig Down Lines	11/6/2019	08:20:00	USER					
Event	27	Pre-Convoy Safety Meeting	11/6/2019	08:40:00	USER					WITH HES, JSA COMPLETED
Event	28	Comment	11/6/2019	09:00:00	USER					SPACER 20 BBL FRESH WATER, LEAD CEMENT 53 BBL, TAIL CEMENT 56 BBL, FINAL DISPLACEMENT 75.3 BBL, 26 BBL CEMENT CIRCULATED TO SURFACE, TOP OF TAIL CEMENT 406 FT
Event	29	Crew Leave Location	11/6/2019	09:05:00	USER					THANKS FOR USING HALLIBURTON, JOHN KEANE AND CREW

3.0 Attachments

3.1 TERRA - GM - 513-8 - SURFACE.png

