

HALLIBURTON

iCem[®] Service

TERRA ENERGY PARTNERS-EBUS

Rock Springs District, Colorado

For: Darrell Leatherman

Date: Wednesday, October 09, 2019

GM 433-8 Production

Garfield, GM 433-8

API 05-045-24098-00

Sincerely,

Rock Springs Engineering

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

1.2 Job Overview

		Units	Description
1	Surface temperature at time of job	°F	60
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	6
7	Pipe movement during hole circulation	Y/N	N
8	Rig pressure while circulating	Psi	775
9	Time from end mud circulation to start of job	HH:MM	00:10
10	Pipe movement during cementing	Y/N	Y
11	Calculated displacement	Bbls	107.6
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	2
16	Units of gas detected while circulating	Units	200
17	Was lost circulation experienced at any time ?	Y/N	N

Lost Circulation Details

N/A

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	62	°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	10/8/2019	13:00:00	USER					REQUESTED ON LOCATION TIME 21:00
Event	2	Safety Meeting	10/8/2019	13:40:00	USER					WITH HES, 1 IRON TRUCK, 1 ELITE CEMENTING UNIT, 1 660 BULK TRUCK
Event	3	Arrive at Rig	10/8/2019	22:30:00	USER					RIG RUNNING CASING, UPON HES ARRIVAL
Event	4	Assessment Of Location Safety Meeting	10/8/2019	23:00:00	USER					WITH HES, JSA COMPLETED, SDS OFFERED FOR ALL HES MATERIALS
Event	5	Safety Meeting - Pre Rig-Up	10/9/2019	00:10:00	USER					WITH HES, JSA COMPLETED
Event	6	Rig-Up Equipment	10/9/2019	00:15:00	USER					1 LINE RAN TO THE FLOOR, 1 LINE RAN TO THE PIT, 1 4.5 IN. HPPC, WASH-UP MANIFOLD ON THE GROUND
Event	7	Other	10/9/2019	00:30:00	USER					TD 6972 FT, TP 6975 FT, HOLE 8.75 IN, CSG 4.5 IN 11.6 LB/FT L-80, SHOE 29.9 FT, SURFACE SET AT 1035 FT, 9.625 IN 32.3 LB FT L-80
Event	8	Other	10/9/2019	00:45:00	USER					RIG CIRCULATION, 775 PSI, 10 BBBL/MIN, 600 BBL, PIPE WAS RECIPROCATED, RATE HOLE LENGTH 2 FT, MWT 9.8 LB/GAL WBM
Event	9	Other	10/9/2019	00:50:00	USER					WATER TEST PH 7. CHLOR 0, TEMP 62 DEG F
Event	10	Pre-Job Safety Meeting	10/9/2019	01:40:00	USER					WITH HES, TEP, AND H&P 318
Event	22	FILL LINES	10/9/2019	02:16:16	USER	175.92	8.75	1.97	2.69	PRIMED LINES WITH 5 BBL FRESH WATER
Event	27	Test Lines	10/9/2019	02:20:32	USER	5112.88	8.89	0.00	5.11	LOW TEST AT 1170 PSI, HGH TEST AT 5150 PSI, PRESSURE HOLDING
Event	30	Mud Flush III Spacer	10/9/2019	02:26:55	USER	108.42	8.75	2.02	20.0	USED 80 LBS MUD FLUSH III, 20 BBL
Event	60	Pump Fresh Water	10/9/2019	02:34:10	USER	327.80	8.75	3.94	10.0	20 BBL FRESH WATER

Event	67	Pump Lead Cement	10/9/2019	02:38:00	USER	776.87	12.29	3.93	115.0	MIXED AT 12.3 LB/GAL, 295 SKS, (NEOCEM), 2.20 FT3/SK, 11.43 GAL/SK, DENSITY VERIFEID USING PRESSURIZED MUD SCALES
Event	86	Pump Tail Cement	10/9/2019	02:58:28	USER	672.80	12.60	6.01	180.0	MIXED AT 12.5 LB/GAL, 485 SKS, (NEOCEM), 2.09 FT3/SK, 10.64 GAL/SK, DENSITY VERIFEID USING PRESSURIZED MUD SCALES
Event	146	Shutdown	10/9/2019	03:39:17	USER	211.55	12.71	4.59	180.0	
Event	151	Clean Lines	10/9/2019	03:41:37	USER	30.61	12.88	1.08	0.16	WASHED PUMPS AND LINES TO THE RESERVE PIT
Event	156	Drop Top Plug	10/9/2019	03:47:16	USER	1.54	0.06	0.00	0.00	LUG LAUNCHED, CUSTOMER WITNESSED
Event	157	Pump Displacement	10/9/2019	03:49:31	USER	212.48	8.22	10.01	9.46	FRESH WATER, KCL, 3 LBS BE-6, 1 GAL MMCR ADDED
Event	158	Shutdown	10/9/2019	03:51:39	USER	2.48	8.25	0.00	26.94	SHUTDOWN TO FIX A LEAK ON THE STAND PIPE
Event	160	Slow Rate	10/9/2019	04:13:36	USER	884.68	8.75	4.03	97.00	SLOWED AT 197 BBL AWAY TO 4 BBL/MIN
Event	161	Bump Plug	10/9/2019	04:16:03	USER	1066.56	8.71	4.00	107.6	PLUG BUMPED AT CALCULATED DISPLACEMENT, 1150 PSI,
Event	162	Check Floats	10/9/2019	04:17:44	USER	1911.26	8.74	0.00	107.6	FLOATS HOLDING, 1.5 BBL RETURNED TO THE TRUCK
Event	165	End Job	10/9/2019	04:20:20	USER					GOOD CIRCULATION, RIG USED 1 GAL MMCR, THE TOP PLUG, 3 LBS BE-6, AND 20 LBS MUD FLUSH, NO ADD HOURS
Event	166	Pre-Rig Down Safety Meeting	10/9/2019	04:30:00	USER					WITH HES
Event	167	Rig Down Lines	10/9/2019	04:40:00	USER					
Event	168	Pre-Convoy Safety Meeting	10/9/2019	05:00:00	USER					WITH HES
Event	169	Comment	10/9/2019	05:45:00	USER					SPACER 20 BBL MUD FLUSH, 10 BBL FRESH WATER, LEAD CEMENT 115 BBL, TAIL CEMENT 180 BBL, FINAL DISPLACEMENT 107.6 BBL, TOP OF TAIL CEMENT 3653 FT, TOP OF LEAD CEMENT 1540 FT
Event	170	Crew Leave Location	10/9/2019	06:05:41	USER					THANKS FOR USING HALLIBURTON, JOHN KEANE AND CREW

3.0 Attachments

3.1 TEP-GM 433-8 - PRODUCTION.png



