

HALLIBURTON

iCem® Service

TERRA ENERGY PARTNERS-EBUS

Rock Springs District, CO

For: H&P 318

Date: Friday, March 13, 2020

SG 521-22 Production

API # 05-045-24005

Job Date: Friday, March 13, 2020

Sincerely,

Rock Springs Engineering

Legal Notice

Disclaimer:

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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	3/12/2020	06:00	MST
On Location	3/12/2020	18:00	MST
Job Started	3/13/2020	02:27	MST
Job Complete	3/13/2020	4:30	MST
Depart Location	3/13/2020	5:00	MST

1.2 Job Overview

		Units	Description
1	Surface temperature at time of job	°F	45
2	Mud type (OBM, WBM, SBM, Water, Brine)	lb/gal	WBM
3	Actual mud density	lb/gal	9.7
4	Time circulated before job	HH:MM	1:30
5	Mud volume circulated	Bbls	900
6	Rate at which well was circulated	Bpm	10
7	Pipe movement during hole circulation	Y/N	Y
8	Rig pressure while circulating	Psi	800
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	98.3
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	6
16	Units of gas detected while circulating	Units	
17	Was lost circulation experienced at any time ?	Y/N	N

1.3 Planned Pumping Schedule

Description	Stage No.	Density (ppg)	Rate (bbl/min)	Yield (ft ³ /sack)	Water Req. (gal/sack)	Volume (bbl)	Bulk Cement (sacks)	Duration (min)
10 lb/gal Base Production Mud	1	10.00	8.00			0.00		0.00
Water	2	8.33	6.00			10.00		1.67
Mud Flush	3	8.40	6.00			20.00		3.33
Water	4	8.33	6.00			5.00		0.83
SuperFlush 101 2618245	5	10.00	6.00			40.00		6.67
Water	6	8.33	6.00			20.00		3.33
Terra Scavenger	7	11.00	8.00	2.5272	14.698	101.28	225.00	12.66
NeoCem 2508016/1	8	12.30	8.00	2.2111	11.576	204.78	520.00	25.60
Top Plug/Start Displacement								
Water - 0.1 gal/bbl MMCR, 0.1 gal/bbl BE-6	9	8.40	10.00			10.00		1.00
Water - 0.1 gal/bbl BE-6	10	8.40	10.00			20.00		2.00
Water	11-1	8.33	10.00			50.00		5.00
Water	11-2	8.33	4.00			19.11		4.78
Total:						500.17		66.87

1.4 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	60	°F	50-80 °F	High temps will accelerate; Low temps may risk freezing in cold weather

2.0 Real-Time Job Summary

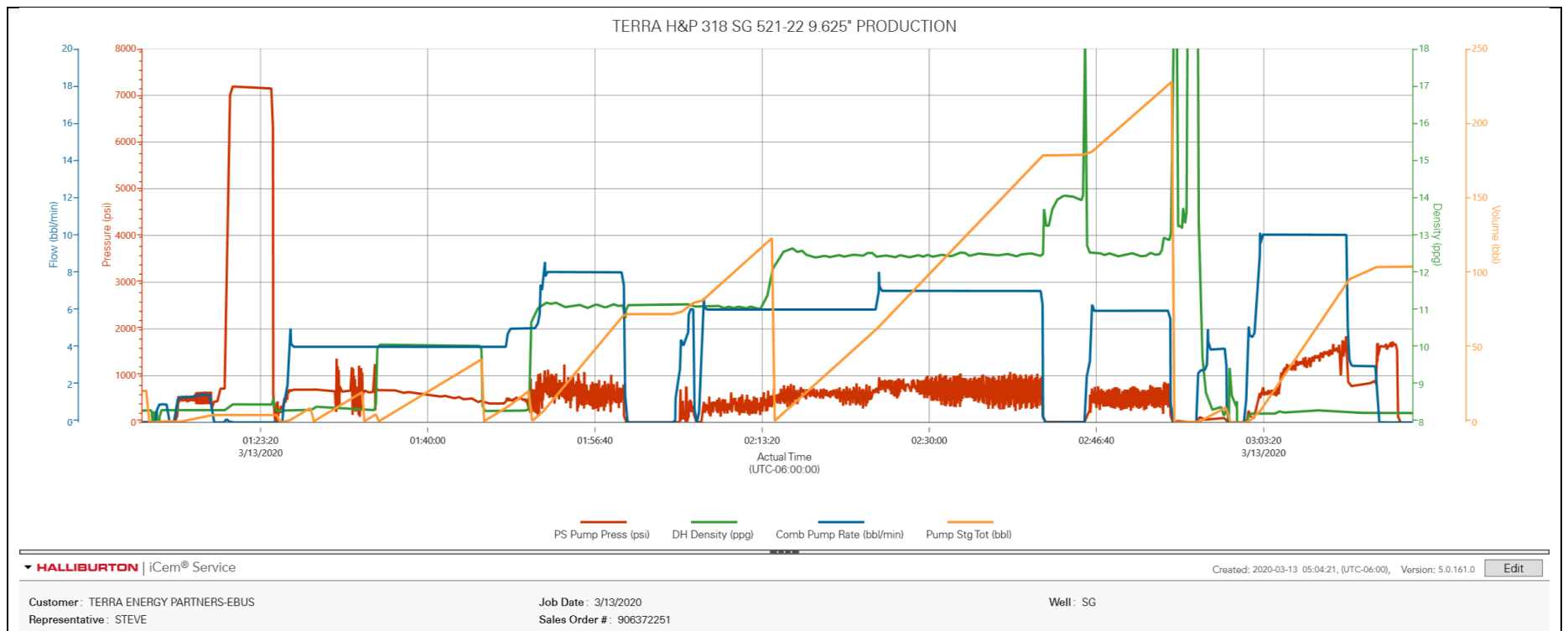
2.1 Job Event Log

Type	Seq. No.	Graph Label	Date	Time	Source	PS Pump Press (psi)	DH Density (ppg)	Comb Pump Rate (bbl/min)	Pump Stg Tot (bbl)	Comments
Event	1	Call Out	3/12/2020	06:00:00	USER					CALLED OUT FOR TERRA PRODUCTION ON LOCATION AT 18:00
Event	2	Pre-Convoy Safety Meeting	3/12/2020	08:55:00	USER					HALLIBURTON CEMENT CREW DISCUSSED THE HAZARDS OF DRIVING AND THE DIRECTIONS TO LOCATION
Event	3	Crew Leave Yard	3/12/2020	09:00:00	USER					
Event	6	Arrive At Loc	3/12/2020	18:00:00	USER					STILL RUNNING CASING. TD= 6381, TP 6374.7' 11.6# P-110. HOLE= 8.75", MUD= 9.7#, SHOE= 35.3
Event	7	Assessment Of Location Safety Meeting	3/12/2020	18:10:00	USER					HALLIBURTON CEMENT CREW DISCUSSED THE HAZARDS OF THE LOCATION.
Event	8	Pre-Rig Up Safety Meeting	3/12/2020	18:20:00	USER					HALLIBURTON CEMENT CREW DISCUSSED THE HAZARDS OF RIGGING UP THE EQUIPMENT.
Event	9	Rig-Up Equipment	3/12/2020	18:30:00	USER					
Event	22	Pre-Job Safety Meeting	3/13/2020	01:00:00	USER					HALLIBURTON CEMENT CREW, RIG CREW AND COMPANY REP. DISCUSSED THE HAZARDS OF THE JOB AND THE JOB PROCEEDURE.
Event	31	Start Job	3/13/2020	01:12:49	RTD Import	-4.64	8.18	0.00	0.00	Start Job
Event	33	Pump Water	3/13/2020	01:14:51	USER	13.18	8.33	0.02	0.00	PUMP 5 BBLS OF WATER TO FILL PUMPS AND LINES.
Event	35	Shutdown	3/13/2020	01:18:26	USER	479.12	8.34	1.03	4.97	
Event	40	Pressure Test	3/13/2020	01:20:51	USER	7177.67	8.48	0.00	5.01	PRESSURE TESTED HES LINES: 500 PSI LOW KICK OUT, 7000 PSI FOR HIGH PRESSURE.
Event	43	Pump Spacer	3/13/2020	01:25:53	USER	626.31	8.34	1.59	0.38	PUMPED 10 BBLS OF H2O AND 20 BBLS OF MUDFLUSH SPACER AT 8.4 PPG.,
Event	47	Pump Spacer	3/13/2020	01:35:28	USER	744.44	10.08	4.03	2.22	PUMPED 5 BBLS OF H2O AND 40 BBLS OF SUPERFLUSH AND 20 BBLS OF H2O

Event	66	Pump EXTENDACEM Cement	3/13/2020	01:50:38	USER	358.18	10.86	5.01	2.14	PUMPED 225 SACKS OF EXTENDACEM CEMENT AT 11 PPG., 2.51 YIELD., 14.6 GAL/ SACK AT 8 BPM
Event	68	Mud Cup Sample Pulled	3/13/2020	01:52:53	RTD Import	604.75	11.19	8.04	18.36	Mud Cup Sample Pulled
Event	70	SHUTDOWN	3/13/2020	01:59:38	USER	-2.76	11.07	3.63	72.28	SHUTDOWN DUE TO LEAK IN STAND PIPE.
Event	98	Pump NEOCEM Cement	3/13/2020	02:14:39	USER	515.68	12.20	6.03	1.46	PUMPED 520 SACKS OF NEOCEM CEMENT AT 12.3 PPG., 2.22 YLD., 11.61 GAL/ SACK. AT 8 BPM.
Event	99	Mud Cup Sample Pulled	3/13/2020	02:15:54	RTD Import	762.25	12.58	6.04	9.01	Mud Cup Sample Pulled
Event	103	SHUTDOWN	3/13/2020	02:41:14	USER	987.25	12.47	7.04	178.28	SHUTDOWN DUE TO LEAK IN STAND PIPE.
Event	123	Shutdown	3/13/2020	02:53:55	USER	526.93	12.88	5.97	226.96	
Event	135	Clean Lines	3/13/2020	02:57:18	USER	71.30	9.40	2.79	1.62	
Event	137	Drop Top Plug	3/13/2020	03:00:30	USER	-2.76	8.46	0.00	0.00	COMPANY REP. WITNESSED THE PLUG DROP
Event	138	Pump Displacement	3/13/2020	03:02:03	USER	164.12	8.25	4.57	1.71	PUMP 98.3 BBLS OF KCL DISPLACEMENT AT 10 BPM SLOWED RATE AT 88 BBLS AWAY TO 3 BPM.
Event	140	Slow Rate	3/13/2020	03:12:07	USER	745.37	8.27	3.02	96.54	SLOW RATE LAST 10 TO 3 BPM
Event	141	Bump Plug	3/13/2020	03:14:32	USER	811.00	8.26	3.03	103.84	BUMP PLUG WENT 500 PSI OVER FINAL CIRCULATING PRESSURE.
Event	142	Check Floats	3/13/2020	03:16:35	USER	1674.45	8.28	0.00	104.15	FLOATS HELD WITH .5 BBLS BACK TO HALLIBURTON PUMP.
Event	145	End Job	3/13/2020	03:22:00	USER					RETURNS THROUGHOUT JOB. STARTED TO SEE WATER TO SURFACE.
Event	146	Pre-Rig Down Safety Meeting	3/13/2020	04:35:00	USER					HALLIBURTON CEMENT CREW DISCUSSED THE HAZARDS OF RIGGING DOWN THE EQUIPMENT
Event	147	Rig-Down Equipment	3/13/2020	04:36:00	USER					
Event	148	Pre-Convoy Safety Meeting	3/13/2020	04:55:00	USER					HALLIBURTON CEMENT CREW DISCUSSED THE HAZARDS OF DRIVING
Event	149	Crew Leave Location	3/13/2020	05:00:00	USER					
Event	150	Job Complete	3/13/2020	05:00:01	USER					NO ACCIDENTS, NO INCIDENTS. THANKS FROM THE ROCK SPRINGS HALLIBURTON CEMENT CREW

3.0 Attachments

3.1 CHART WITHOUT EVENTS.png



3.2 CHART WITH EVENTS.png

