

# HALLIBURTON

iCem® Service

## **CRESTONE PEAK RESOURCES-EBUS**

Ft. Lupton District, Colorado

**Cosslett East 1C-22H-H168 Production**

Job Date: Tuesday, April 18, 2023

Sincerely,

**Meghan Van Zyl**

## Legal Notice

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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 on the **Cosslett East 1C-22H-H168 - 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 46 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 #:	05-123-51949
City, County:	Erie

Job Times		
	Date (mm/dd/yyyy)	Time (hh:mm)
Requested Time On Location:	04/18/2023	14:00
Called Out Time:	04/18/2023	08:00
Arrived On Location:	04/18/2023	13:00
Job Started:	04/18/2023	18:00
Job Completed:	04/18/2023	21:30
Departed Location:	04/18/2023	0:00

	Description	Units	Value
1	Surface temperature at the time of the job	degree F	60
2	Mud type (OBM, WBM, Synthetic, Water, Brine)	-	OBM
3	Mud density	ppg	9.0
4	Casing set depth (shoe)	ft	18,262
5	TVD	ft	7,753
6	Float collar depth	ft	18,258
7	Length of rate hole	ft	10
8	Previous casing shoe depth	ft	2,527
9	Pre-job mud circulation time	hh:mm	2:00
10	Pre-job mud circulation rate	bpm	10
11	Pre-job mud circulation volume	bbls	600

12	Mud circulation pressure at start of cement	psi	260
13	Annual flow before the start of job	Y/N	N
14	Pipe movement during cement job	Y/N	N
15	Calculated displacement	bbls	406
16	Job displaced by	Rig/HES	HES
17	Estimated returns % during job	%	100
18	Fluid returns to surface	Spacer/Cement, bbls	Spacer- 120 Cement- 46
19	Final circulation pressure, rate prior to plug bump	psi @ bpm	2,521 @ 4
20	Number of Centralizers	-	310
21	Number of bottom plugs	-	2

1.3 Water Field Test

	Recorded Value	Unit	Acceptable Limit	Potential Problems if Values Exceed the Limit
<b>pH</b>	7		6.0 - 8.0	Chemicals in water can cause severe retardation
<b>Temperature</b>	68	F	60 - 80 F	Can can pre-mature setting of cement
<b>Chlorides</b>	0	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)
<b>Spacer Fluid</b>	11.5	120	3.84	24.17	176	4,241
<b>Cap Cement</b>	13.0	171	1.64	7.96	585	4,657
<b>Lead Cement</b>	13.0	224	1.57	7.32	800	5,856
<b>Tail Cement</b>	13.2	430	1.56	7.52	1545	11,619
<b>Top Plug</b>						
<b>Displacement Fluid</b>	8.33	406				

## 2.0 Real-Time Job Summary

### 2.1 Job Event Log

Seq No.	Activity	Date	Time	Comments
1	Call Out	4/18/2023	05:00:00	CREW CALLED OUT APRIL 17, 2023 @ 05:00, REQUESTED ON LOCATION @ 14:00. CHEMICALS GRABBED FROM FORT LUPTON 70-GALS D-AIR, 100 LBS SUGAR, AND 10-GALS MMCR. BULK 660 11398319, PUMP 12632040, P/U 12992452.
2	Crew Leave Shop	4/18/2023	12:00:00	CREW HEADED TO LOCATION IN CONVOY.
3	Arrive at Location from Service Center	4/18/2023	13:00:00	MET WITH CO. MAN TO DISCUSS JOB; SURFACE CASING- 9.625" 36 LB/FT @ 2,527', 5.5" CASING: 20 LB/FT TOTAL 18,262', 8.5" OH, TD 18,272', TVD- 7,753', SHOE TRAC 4', TOTAL OF 310 CENTRALIZERS. CITADEL FLOAT EQUIPMENT TOP AND BOTTOM PLUG, TOE SLEEVE @ 18,252' AND 18,242', WF 9.0 LB. RIG LANDED CASING AND BEGAN CIRCULATING @ 16:00.
4	Pre-Rig Up Safety Meeting	4/18/2023	13:15:00	HAZARD HUNT. DISCUSSED POSSIBLE HAZARDS ASSOCIATED WITH LOCATION, RIG UP AND WEATHER.
5	Rig-Up Equipment	4/18/2023	13:30:00	CREW STAGED EQUIPMENT, RIGGED UP BULK, IRON AND WATER HOSES TO PERFORM JOB.
6	Rig-Up Completed	4/18/2023	15:00:00	WAITED ON RIG TO FINISH CIRCULATING.
7	Pre-Job Safety Meeting	4/18/2023	17:30:00	MEETING WITH HALLIBURTON AND RIG PERSONNEL. COMMUNICATED POTENTIAL SAFETY HAZARDS AND JOB DETAILS.
8	Drop Bottom Plug	4/18/2023	18:02:18	PLUG LOADED BY JOSH JOHNSON.
9	Start Job	4/18/2023	18:08:05	BEGIN RECORDING JOB DATA.

10	Test Lines	4/18/2023	18:09:54	PRESSURE TESTED IRON TO 4,500 PSI. KICKOUTS SET @ 500 PSI, KICKED OUT @ 800 PSI, 5TH GEAR STALL OUT @ 1,500 PSI.
11	Pump Spacer 1	4/18/2023	18:18:40	PUMP 120 BBLS OF TUNED PRIME SPACER @ 11.5 LB/GAL, 3.84 FT3/SK, 24.17 GAL/SK. INJECTED 15 GALLONS D-AIR ON THE FLY, DRY SURFACTANTS MIXED IN WITH BLEND. DENSITY VERIFIED BY PRESSURIZED MUD SCALES. PUMP RATE 7 BBLS/MIN @ 290 PSI.
12	Check Weight	4/18/2023	18:23:03	DENSITY VERIFIED BY PRESSURIZED MUD SCALES.
13	Pump Cap Cement	4/18/2023	18:38:36	PUMPED 575 SKS OF ELASTICEM CAP @ 13.0 LB/GAL, 1.64 FT3/SK, 7.96 GAL/SK. 170.86 BBLS, HOC CALCULATED @ 2,298', TOC CALCULATED @ SURFACE GETTING 59 BBLS BACK TO SURFACE. DENSITY VERIFIED BY PRESSURIZED MUD SCALES. PUMP RATE 9.5 BBLS/MIN 540 PSI.
14	Check Weight	4/18/2023	18:41:24	DENSITY VERIFIED BY PRESSURIZED MUD SCALES.
15	Check Weight	4/18/2023	18:43:14	DENSITY VERIFIED BY PRESSURIZED MUD SCALES.
16	Check Weight	4/18/2023	18:50:52	DENSITY VERIFIED BY PRESSURIZED MUD SCALES.
17	Pump Lead Cement	4/18/2023	18:58:30	PUMPED 800 SKS OF ISOBOND LEAD @ 13.0 LB/GAL, 1.57 FT3/SK, 7.52 GAL/SK. 223.70 BBLS, HOL CALCULATED @ 5,443', TOL CALCULATED @ 2,298'. DENSITY VERIFIED BY PRESSURIZED MUD SCALES. PUMP RATE 6.5 BBLS/MIN 390 PSI.
18	Check Weight	4/18/2023	19:06:10	DENSITY VERIFIED BY PRESSURIZED MUD SCALES.
19	Check Weight	4/18/2023	19:08:06	DENSITY VERIFIED BY PRESSURIZED MUD SCALES.
20	Check Weight	4/18/2023	19:19:29	DENSITY VERIFIED BY PRESSURIZED MUD SCALES.
21	Pump Tail Cement	4/18/2023	19:33:39	PUMPED 1545 SKS OF ELASTICEM TAIL @ 13.2 LB/GAL, 1.56 FT3/SK, 7.52 GAL/SK. 429.26 BBLS. HOT CALCULATED @ 10,521', TOL CALCULATED @ 7,741'. DENSITY VERIFIED BY PRESSURIZED MUD SCALES. PUMP RATE 9 BBLS/MIN 590 PSI.
22	Check Weight	4/18/2023	19:40:28	DENSITY VERIFIED BY PRESSURIZED MUD SCALES.
23	Check Weight	4/18/2023	19:43:04	DENSITY VERIFIED BY PRESSURIZED MUD SCALES.

24	Check Weight	4/18/2023	20:04:39	DENSITY VERIFIED BY PRESSURIZED MUD SCALES.
25	Check Weight	4/18/2023	20:06:04	DENSITY VERIFIED BY PRESSURIZED MUD SCALES.
26	Check Weight	4/18/2023	20:19:53	DENSITY VERIFIED BY PRESSURIZED MUD SCALES.
27	Clean Lines	4/18/2023	20:30:14	WASH LINES WITH 16 BBLS FRESH WATER PRIOR TO DROPPING PLUG.
28	Drop Top Plug	4/18/2023	20:37:05	PLUG LOADED BY JOSH JOHNSON.
29	Pump Displacement	4/18/2023	20:38:37	BEGIN CALCULATED DISPLACEMENT OF 406 BBLS FRESH WATER WITH 10-GALS MMCR IN FIRST 20 BBLS. PUMPED 350 BBLS WITH BIOCIDES THROUGHOUT DISPLACEMENT. SPACER TO SURFACE @ 250 AWAY. CEMENT TO SURFACE @ 360 BBLS AWAY WITH TOTAL OF 46 BBLS CEMENT TO SURFACE. PUMP RATE 9 BBLS/MIN @ 2,950 PSI.
30	Bump Plug	4/18/2023	21:26:05	PLUG BUMPED AT CALCULATED DISPLACEMENT. FINAL CIRCULATING PRESSURE 2,521 PSI PRESSURED 500 PSI OVER BUMP.
31	Check Floats	4/18/2023	21:29:09	RELEASED PRESSURE, FLOATS HELD, 4.5 BBLS BACK.
32	End Job	4/18/2023	21:29:47	STOP RECORDING JOB DATA.
33	Safety Meeting - Pre Rig-Down	4/18/2023	21:45:00	DISCUSSED POSSIBLE HAZARDS ASSOCIATED WITH WEATHER, LOCATION SPECIFIC HAZARDS, PINCH POINTS RIGGING DOWN/RACKING UP IRON AND HOSES.
34	Rig-Down Equipment	4/18/2023	22:00:00	RIG DOWN BULK AND MIXING EQUIPMENT.
35	Rig-Down Completed	4/18/2023	23:30:00	ALL HALLIBURTON ITEMS WERE STOWED FOR TRAVEL AND LOCATION WAS CLEAN.
36	Depart Location Safety Meeting	4/18/2023	23:45:00	CREW DISCUSSED ROUTES HAZARDS AND COMMUNICATION WITH CREW.
37	Crew Leave Location	4/18/2023	23:50:00	THANK YOU FOR USING HALLIBURTON – NICK PETERSON AND CREW.

3.0 Attachments

3.1 Real Time iCem Job Chart

