

# HALLIBURTON

iCem® Service

## **CRESTONE PEAK RESOURCES**

Ft. Lupton District, Colorado

### **SKY RANCH 4-65 10-9-8-7 3AH Production**

Arapahoe, Watkins

Job Date: Monday, October 30, 2023

Sincerely,

**Rafael Giorgana**

## Legal Notice

---

### Disclaimer:

All information in this report is provided subject to the terms and conditions which govern the services provided by Halliburton. Halliburton personnel use their best efforts in gathering information and their best judgment in interpreting it, but any interpretation, research, analysis or recommendation furnished by Halliburton are opinions based upon inferences from measurements and empirical relationships and assumptions, which inferences and empirical relationships and assumptions are not infallible, and with respect to which professionals in the industry may differ. iCem 3D Displacement results are used to understand how fluids intermix during a cement job. Simulation and 3D displacement results are not intended as and should not be used as a replacement for bond logs in determining top of cement. Current 3D model calculations are known to model more volume than the input volume for standard cases due to known calculation improvements required. For rotational cases, the modeled volume will be impacted by the same calculations impacting the standard cases, as well as additional constraints imposed to make the calculation time required operationally feasible. Therefore, until further notice, 3D displacement results should not be used for replacement of a bond log, or used as an identifier of top of cement. HALLIBURTON IS UNABLE TO GUARANTEE THE ACCURACY OF ANY CHART INTERPRETATION, RESEARCH ANALYSIS, OR JOB RECOMMENDATION and any interpretation or recommendation is not for use of or reliance upon by any third party. The customer has full responsibility for any of its decisions which are based on the information provided in this report.

## Table of Contents

---

1.0	Cementing Job Summary .....	4
1.1	Executive Summary .....	4
1.2	Job Overview .....	5
1.3	Water Field Test .....	7
1.4	Actual Pump Schedule.....	7
2.0	Real-Time Job Summary .....	8
2.1	Job Event Log.....	8
3.0	Attachments.....	12
3.1	Real Time Job Chart.....	12

## 1.0 Cementing Job Summary

---

### 1.1 Executive Summary

---

Halliburton appreciates the opportunity to perform the cementing services on the SKY RANCH 4-65 10-9-8-7 3AH 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.

**This space is provided to enter in a brief summary of the job. Below are some important items to discuss:**

- **Quality of circulation – Prejob 100% , While pumping Cement 100%, While Pumping Displacement 95 %**
- **Final Circulating Pressure and Pump Rate / 3600 PSI @ 6 BPM**
- **Returns to Surface / None**
- **Any deviation from plan /Yes**
- **Abnormalities on job chart / Yes**

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 #:	05-005-07541-00
City, County:	Watkins, Arapahoe
SO#:	908941126

Job Times		
	Date (mm/dd/yyyy)	Time (hh:mm)
Requested Time On Location:	10/30/2023	12:00
Called Out Time:	10/30/2023	06:00
Arrived On Location:	10/30/2023	13:30
Job Started:	10/30/2023	18:34
Job Completed:	10/31/2023	01:01
Departed Location:	10/31/2023	04:15

	Description	Units	Value
1	Surface temperature at the time of the job	degree F	38
2	Mud type (OBM, WBM, Synthetic, Water, Brine)	-	OBM
3	Mud density	ppg	9.2
4	Casing set depth (shoe)	ft	28665
5	TVD	ft	7843
6	Float collar depth	ft	28659
7	Length of rate hole	ft	15
8	Previous casing shoe depth	ft	3277
9	Pre-job mud circulation time	hh:mm	02:40
10	Pre-job mud circulation rate	bpm	10

11	Pre-job mud circulation volume	bbls	1080
12	Mud circulation pressure at start of cement	psi	900
13	Annual flow before the start of job	Y/N	Y
14	Pipe movement during cement job	Y/N	N
15	Calculated displacement	bbls	753.7
16	Job displaced by	Rig/HES	HES
17	Estimated returns % during job	%	95
18	Fluid returns to surface	Spacer/Cement, bbls	0 / 0
19	Final circulation pressure, rate prior to plug bump	psi @ bpm	3600 / 6
20	Number of Centralizers	-	305
21	Number of bottom plugs	-	1
22	Number of trucks used preparing/during job	-	4
23	Add hours? If Yes, put #	Y/N and hours	N
24	NPT? If Yes, put #	Y/N and hours	N

### 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>	63	F	60 - 80 F	Can can pre-mature setting of cement
<b>Chlorides</b>	<100	ppm	3000 ppm	Can shorten thickening time

### 1.4 Actual Pump Schedule

---

#### Stage 1

	Density (ppg)	Volume (bbls)	Yield (ft3/sk)	Water Requirement (gal/sk)	Bulk Sacks (sks)	Total Water (gals)
<b>Spacer Fluid</b>	11.5	120	2.57	16.21		4250
<b>Cap Cement</b>	13	185.4	1.65	8.07	631	5092
<b>Lead Cement</b>	13	178.7	1.58	7.43	635	4718
<b>Tail Cement</b>	13.2	826.6	1.56	7.51	2975	22342
<b>Top Plug</b>	1					
<b>Displacement Fluid</b>	8.33	680				28560

## 2.0 Real-Time Job Summary

### 2.1 Job Event Log

Seq No.	Activity	Date	Time	Comments
1	Call Out	10/30/2023	06:00:00	CIVITAS RESOURCES SKY RANCH 4-65 10-9-8-7 3AH 6" PRODUCTION CASING JOB - On location 10/30/23 @ 12:00 PM
2	Safety Meeting - Service Center or other Site	10/30/2023	11:20:00	Review Journey Management And Route With Crew Members
3	Depart from Service Center or Other Site	10/30/2023	11:30:00	Depart From Yard
4	Arrive At Loc	10/30/2023	13:30:00	Talk To Company Man (Josh) : TD = 28,677', TP = 28662', ST = 3', OH = 8.75", CSG = 6" 24.1#, Previous Casing 9 5/8" 36# Set @ 3277', WF = OBM @ 9.2#, Test Water = pH - 7, Chlorides - < 220 ppm, 68 F.
5	Safety Meeting - Assessment of Location	10/30/2023	13:45:00	Spot Equipment
6	Pre-Rig Up Safety Meeting	10/30/2023	14:00:00	Review JSA With Crew Members
7	Rig-Up Equipment	10/30/2023	14:10:00	Rigged Up All Iron And Hoses Needed For CMT Job With No Issues Or Incidents.
8	Rig-Up Completed	10/30/2023	15:40:00	Rig Up Plug Container And Rig Floor To Circulate With Rig Pumps. Rig Circulated From 15:40 PM To 18:20 PM At (10 BPM) With 1414 psi, Good Returns.

9	Rig-Up Completed	10/30/2 023	16:30:0 0	Rigged Up All Iron And Hoses Needed For CMT Job With No Issues Or Incidents.
10	Safety Meeting - Pre Job	10/30/2 023	18:00:0 0	Review Job Procedure And JSA With Rig Hands, Co. Man, And HES Members
11	Start Job	10/30/2 023	18:34:2 4	Start Recording Data
12	Drop Bottom Plug	10/30/2 023	18:34:3 8	Drop Bottom Plug / Verified by Company Representative
13	Pump Spacer 1	10/30/2 023	18:50:4 7	Pumped 120 bbls of Tuned Prime Spacer @ 11.5 PPG ( 2.57 ft3, 16.21 gal/sk). Total gallons 4250. Pump Rate 7 BPM @ 600 PSI.
14	Pump Cap Cement	10/30/2 023	19:14:3 0	Pumped 185.4 bbls of ElastiCem @ 13 PPG ( 631 sk, 1.65 ft3, 8.07 gal/sk). Total gallons 5,092. Pump Rate 9 BPM @ 900 PSI.
15	Check Weight	10/30/2 023	19:37:3 0	Weight Verified by Mud Scales
16	Pump Lead Cement	10/30/2 023	19:42:5 0	Pumped 178.7 bbls of IsoBond @ 13 PPG ( 635 sk, 1.58 ft3, 7.43 gal/sk). Total gallons 4,718. Pump Rate 7 BPM @ 730 PSI. TOLC= 5918
17	Check Weight	10/30/2 023	19:47:0 0	Weight Verified by Mud Scales
18	Pump Tail Cement	10/30/2 023	20:12:2 7	Pumped 826.6 bbls of ElastiCem @ 13.2 PPG ( 2975 sk, 1.56 ft3, 7.51 gal/sk). Total gallons 22,342. Pump Rate 8.5 BPM @ 1100 PSI. TOTC= 10,487

19	Check Weight	10/30/2 023	20:59:3 7	Weight Verified by Mud Scales
20	Shutdown	10/30/2 023	22:12:4 0	Shutdown Pumping Cement
21	Drop Top Plug	10/30/2 023	22:22:3 3	Drop Top Plug / Verified by Company Representative
22	Pump Displacement - Start	10/30/2 023	22:23:0 0	Pumped 680 bbls of Displacement with 100 gallons of MMCR.
23	Pump Displacement	10/30/2 023	23:46:2 2	At 670 bbls into Displacement, Pressure started to increase and continued to increase until we Pressured up above original kickouts.
24	Bleeding Tubing Or Casing	10/31/2 023	00:03:3 3	Bleed back pressure per Company Representative
25	Pump Displacement	10/31/2 023	00:05:2 9	After Bleeding back pressure, continued to try and move fluid and continued to pressure out.
26	Pump Displacement	10/31/2 023	00:13:3 1	After pressuring out once again, made a phone call to notify HES of situation. Company Representative requested to move kickouts to 8000 PSI. Spoke with HES office and got approval to increase kickout to 8000 PSI.
27	Pump Displacement	10/31/2 023	00:24:0 3	After resetting kickouts to 8000 PSI, continued pumping and pressure out again. We kicked out pumps @ 7700 PSI.

28	Bleeding Tubing Or Casing	10/31/2 023	01:01:0 7	Bleed off Pressure and got 18 bbls back. 670 bbls into Displacement Returns stopped. Pumped a Total of 680 bbls of Displacement. No spacer or cement to surface.
29	End Job	10/31/2 023	01:28:3 0	Stop Recording Data
30	Pre-Rig Down Safety Meeting	10/31/2 023	01:50:0 0	Review JSA With HES Crew Members
31	Rig-Down Equipment	10/31/2 023	02:10:0 0	Rig Down Iron, Plug Container, And Hoses Used On Job
32	Rig-Down Completed	10/31/2 023	03:45:0 0	All Equipment Rigged Down With No Issues Or Incidents
33	Safety Meeting - Departing Location	10/31/2 023	04:00:0 0	Review Journey Management And Route With Crew Members
34	Depart Location for Service Center or Other Site	10/31/2 023	04:15:0 0	Depart location

3.0 Attachments

3.1 Real Time Job Chart

