

# HALLIBURTON

iCem<sup>®</sup> Service

## **MALLARD Exploration**

**For: Hans Cary**

Date: Tuesday, December 28, 2021

### **Mallard Exploration**

Mallard, Green Teal 34-27-5HN, Production

Job Date: Wednesday, December 29, 2021

Sincerely,

**Jacob Ayers**

## 1.0 Cementing Job Summary

---

### 1.1 Executive Summary

---

Halliburton appreciates the opportunity to perform the cementing services on the **Well Name and Number** cement **Job Type** casing 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.

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

1. **Quality of circulation before and during the job**
2. **The final circulating pressure**
3. **Whether or not any of the fluids that Halliburton pumped were returned to surface during the job**
4. **Whether or not a flare was present at any point during the job**
5. **A brief explanation any abnormalities on the job chart**
6. **If we deviated from the original job plan, a brief explanation why we did so**

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 Casper

#### Job Times

	Date	Time	Time Zone
Requested Time On Location:	12/28/2021	1500	
Called Out Time:	12/28/2021	0700	
Arrived On Location At:	12/28/2021	1630	
Job Started At:	12/28/2021	1900	
Job Completed At:	12/28/2021	2205	
Departed Location At:	12/28/2021	2330	

## 1.4 Job Overview

		Units	Description
1	Surface temperature at time of job	°F	15
2	Mud Type (OBM, WBM, SBM, Water, Brine)	-	OBM
3	Actual mud density	lb/gal	9.9#
4	Actual mud Plastic Viscosity (PV)	cp	
5	Actual mud Yield Point (YP)	lb <sub>r</sub> /100ft <sup>2</sup>	
6	Actual mud 30 min gel strength	lb <sub>r</sub> /100ft <sup>2</sup>	
7	Time circulated before job	HH:MM	2:30
8	Mud volume circulated	bbls	1500
9	Rate at which well was circulated	bpm	12
10	Pipe movement during hole circulation	Y/N	n
11	Rig pressure while circulating	psi	1000
12	Time from end mud circulation to start of job	HH:MM	0:0
13	Pipe movement during cementing	Y/N	N
14	Calculated displacement	bbls	371
15	Job displaced by	Rig/HES	HES
16	Annular flow before job	Y/N	N
17	Annular flow after job	Y/N	N
18	Length of rat hole	ft	17'
19	Units of gas detected while circulating	units	0
20	Was lost circulation experienced at any time?	Y/N	Y

## 1.8 Water Field Test

Item	Recorded 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	<291	ppm	3000 ppm	Can shorten thickening time of cement
Sulfates	<200	ppm	1500 ppm	Will greatly decrease the strength of cement
Total Hardness		ppm	500 mg/L	High concentrations will accelerate the set of the cement
Calcium		ppm	500 ppm	High concentrations will accelerate the set of the cement
Total Alkalinity		ppm	1000 ppm	Cement is greatly retarded to the point where it may not set up at all (typically occurs @ pH ≥ 8.3).
Bicarbonates		ppm	1000 ppm	Cement is greatly retarded to the point where it may not set up at all
Potassium		ppm	5000 ppm	High concentrations will shorten the pump time of cement (indicates the presence of chlorides, therefore if Potassium levels are measured as high, so should the chlorides)
Iron		ppm	300 ppm	High concentrations will accelerate the set of the cement
Temperature	47	°F	50-80 °F	High temps will accelerate; Low temps may risk freezing in cold weather

Submitted Respectfully by:

---

# HALLIBURTON

Customer: MALLARD CREEK POLYMERS  
 Job: Mallard, Green Teal 34-27-5HN, Production  
 Case: Mallard, Green Teal 34-27-5HN, Production | SO#: 907585532

## 2.0 Real-Time Job Summary

### 2.1 Job Event Log

Type	Seq No.	Activity	Graph Label	Date	Time	Source	Pump A Pressure	Dwivho Density	Cmb Pump Rate	Cmb Stg Total	Driv-Side Pump Pressure	Comments
Event	1	Call Out	Call Out	12/28/2021	07:00:39	USER						Job Called out @700
Event	2	Arrive at Rig	Arrive at Rig	12/28/2021	16:30:41	USER						Requested on location time 1500 Crew arrived on location @1630
Event	3	Other	Well info	12/28/2021	17:48:41	USER						Surface- 9 5/8" 36# @1723' OH- 8 1/2" 1'6821 Production- 16804' SJ- 10' Mud wt. 9.9#
Event	4	Other	Water Test	12/28/2021	17:49:06	USER						PH- 7 Temp-47 Chlorides<291 Sulfates<200
Event	5	Pre-Rig Up Safety Meeting	Pre-Rig Up Safety Meeting	12/28/2021	17:49:08	USER						Pre-rig up meeting with Crew
Event	6	Pre-Job Safety Meeting	Pre-Job Safety Meeting	12/28/2021	17:49:10	USER						Pre-Job Safety meeting held with all affected personnel on location.
Event	7	Start Job	Start Job	12/28/2021	18:45:00	USER						Dropped Inovex bottom plug
Event	8	Drop Plug	Drop Bottom Plug	12/28/2021	18:49:00	USER						

iCem Service

(v. 6.0.286.0)

Created: Tuesday, December 28, 2021



## 3.0 Attachments

### 3.1 Mallard, Green Teal 34-27-5HN, Production -Custom Results.png

