

HALLIBURTON

iCem[®] Service

NOBLE ENERGY INC-EBUS

Gig-Em State Y9-730 Production

Job Date: Sunday, March 19, 2023

Sincerely,

Meghan Van Zyl

Legal Notice

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Table of Contents

Cementing Job Summary	4
Executive Summary	4
Job Overview	5
Water Field Test	7
Actual Pump Schedule	7
Real-Time Job Summary	8
Job Event Log	8
Attachments	11
Real Time iCem Job Chart	11

1.0 Cementing Job Summary

1.1 Executive Summary

Halliburton appreciates the opportunity to perform the cementing services on the **Gig-Em State Y9-730 - 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.

Job was pumped per design with an average cement density of 13.19 ppg at 8.06 bbl/min. Cement was displaced with 20 bbl. of treated water with retarder and 381 bbl. of treated freshwater displacement. Plug was landed at 2,630 psi and bumped to 3,150 psi. Pressure was bled off and 5.5 bbl. of fluid was returned to the truck. Approximately 40 bbl. of spacer was returned to surface indicating a top of cement around 1066’.

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 #:	05-123-51839
City, County:	Keenesburg, Weld

	Date (mm/dd/yyyy)	Time (hh:mm)
Requested Time On Location:	03/19/2023	11:30
Called Out Time:	03/19/2023	05:30
Arrived On Location:	03/19/2023	10:00
Job Started:	03/19/2023	17:00
Job Completed:	03/19/2023	21:18
Departed Location:	03/19/2023	22:30

	Description	Units	Value
1	Surface temperature at the time of the job	degree F	45
2	Mud type (OBM, WBM, Synthetic, Water, Brine)	-	OBM
3	Mud density	ppg	10.3
4	Casing set depth (shoe)	ft	17316
5	TVD	ft	6970
6	Float collar depth	ft	17309
7	Length of rate hole	ft	9
8	Previous casing shoe depth	ft	2056
9	Pre-job mud circulation time	hh:mm	2.5
10	Pre-job mud circulation rate	bpm	10
11	Pre-job mud circulation volume	bbls	1000

12	Pre-job mud circulation pressure	psi	500
13	Annual flow before the start of job	Y/N	N
14	Pipe movement during cement job	Y/N	N
15	Calculated displacement	bbls	401.5
16	Job displaced by	Rig/HES	HES
17	Estimated returns % during job	%	100
18	Fluid returns to surface	Spacer/Cement, bbls	Spacer, 40bbls
19	Final circulation pressure, rate prior to plug bump	psi @ bpm	2630psi @2bpm
20	Number of Centralizers	-	217
21	Number of plugs	-	3

1.3 Water Field Test

	Recorded Value	Unit	Acceptable Limit	Potential Problems if Values Exceed the Limit
pH	7		6.0 - 8.0	Chemicals in water can cause severe retardation
Temperature	65	F	60 - 80 F	
Chlorides	0	ppm	3000 ppm	Can shorten thickening time

1.4 Actual Pump Schedule

	Density (ppg)	Volume (bbls)	Yield (ft ³ /sk)	Water Requirement (gal/sk)	Bulk Sacks (sks)	Total Water (gals)
Spacer Fluid	11	120	3.88	24.45	84	4246
Cap Cement	13.2	39.6	1.59	8.07	140	1130
Lead Cement	13.2	221	1.68	8.1	739	5986
Tail Cement	13.2	408	2.05	9.83	1118	10990
Top Plug	1					
Displacement Fluid	8.33	401.5				16863

2.0 Real-Time Job Summary

2.1 Job Event Log

Seq No.	Activity	Date	Time	Comments
1	Call Out	3/19/2023	05:30:00	Called out by service coordinator for OL time of 1130.
2	Pre-Convoy Safety Meeting	3/19/2023	08:45:00	Discuss all hazards associated with journey, directions to destination, complete journey management if needed, and ensure all convoy is fit for duty.
3	Depart from Service Center or Other Site	3/19/2023	09:00:00	Depart from service center or other job site.
4	Arrive at Location from Service Center	3/19/2023	10:00:00	Upon arrival to location, signed in with onsite safety personnel. Met with company man and discussed job specific requirements and specifications.
5	Pre-Rig Up Safety Meeting	3/19/2023	10:15:00	Held pre rig up JSA for hazards, hazard hunt with crew, and discussed plan for spotting equipment and rigging up lines for job. Discussed muster points and closest emergency location as well as coordinates.
6	Other	3/19/2023	10:30:00	Mix water test results- PH-7, Chlo-0, Temp-65F.
7	Rig-Up Equipment	3/19/2023	10:30:00	Begin rig up with crew.
8	Rig-Up Completed	3/19/2023	11:30:00	Complete rig up for job to nearest point before red zone.
9	Safety Meeting - Pre Job	3/19/2023	15:00:00	Held job specific hazards as well as confirming job procedure with co man and rest of crew associated with job. Waited on lab report to be sent to Chevron. Rig was ready to pump at 15:15, lab report was sent at 4:25. Dave Nielsen called it 1:15hr NPT.
10	Start Job	3/19/2023	16:59:38	TD-17325', TP-17316' 5.5" 17#, FC-17309', TVD-6970', SURF-2056' 9.625" 36#, OH-8.5" MUD-10.3#
11	Test Lines	3/19/2023	17:01:46	Pumped 5bbbls fresh water to fill lines, closed 2" lo torc, performed 500psi k/o function test, followed with 5th gear stall at 1290psi, perform 6000psi test online. Held pressure,

no leaks. Bled off pressure. Closed manual valve on CRT, proceeded to bring pressure to 2000psi on Kelly line, pressure stabilized and held with no leaks.

12	Check Weight	3/19/2023	17:10:13	Weight verified with pressurized mud scales.
13	Drop Bottom Plug	3/19/2023	17:17:34	Dropped by HES supervisor, witnessed by company man.
14	Pump Spacer 1	3/19/2023	17:18:06	Pumped 120bbbls Tuned Prime 11.5# 3.88y 24.45g/s with 20g D-Air at 6bpm 340psi
15	Pump Cap Cement	3/19/2023	17:44:29	Pumped 140sks or 41bbbls Elasticem w/o CBL 13.2# 1.63y 8.07g/s at 6bpm 380psi.
16	Pump Lead Cement	3/19/2023	17:51:32	Pumped 739sks or 221bbbls Elasticem w/CBL 13.2# 1.68y 8.1g/s at 9bpm 612psi.
17	Check Weight	3/19/2023	17:55:00	Weight verified with pressurized mud scales.
18	Pump Tail Cement	3/19/2023	18:20:44	Pumped 1118sks or 408bbbls 13.2# 2.05y 9.83g/s Neocem at 9bpm 900psi.
19	Check Weight	3/19/2023	18:24:06	Weight verified with pressurized mud scales.
20	Shutdown	3/19/2023	19:16:02	Shutdown, washed up through pumps and down wash up line to pits until clean water was seen. Pumped total of 20bbbls to clean truck and lines.
21	Drop Top Plug	3/19/2023	19:31:51	Dropped by HES supervisor, witnessed by company man.
22	Pump Displacement	3/19/2023	19:31:54	Pumped 401.5bbbls fresh water with 10g MMCR in first 20bbbls, 10gal MCMX and 20gal Bellacide throughout.
23	Bump Plug	3/19/2023	20:26:02	Slowed down to 2bpm at 380bbbls away, final circulating pressure- 2630psi, Bump pressure-3150psi. Held for 5min casing test.
24	Standby - Other - see comments	3/19/2023	20:30:52	Released pressure and got 5.5bbbls fresh water to truck, floats held.
25	Pressure Up Well	3/19/2023	20:38:48	Pumped 5.5bbbls back into well took 1bbl to pressure up to burst at 4590psi. Pumped additional 5bbbls at 1bpm for wet shoe.

26	Other	3/19/2023	20:46:03	Released pressure and got 4.5bbls fresh water to truck, floats held. Held for additional 30min float check.
27	End Job	3/19/2023	21:18:58	Got 40bbls spacer to surface. Estimated TOCap-1066', TOL-1922', TOT-7316'. Centralizers-217 1,018'-17,233'.
28	Pre-Rig Down Safety Meeting	3/19/2023	21:30:00	Held safety meeting with crew prior to rig down, discussed possibility of trapped pressure, swing radius, slips trips and falls, pinch points and risks associated with rig down.
29	Rig Down Lines	3/19/2023	21:45:00	Begin rig down
30	Pre-Convoy Safety Meeting	3/19/2023	22:15:00	Held safety meeting with convoy, discussed trip hazards, directions and all crew fit for duty prior to departure.
31	Rig-Down Completed	3/19/2023	22:15:10	Rig down complete with no injuries, spills or damage to equipment.
32	Depart Location for Service Center or Other Site	3/19/2023	22:30:00	Depart location, if applicable journey will be submitted.

3.0 Attachments

3.1 Real Time iCem Job Chart

