

HALLIBURTON

iCem[®] Service

GREAT WESTERN OPERATING CO LLC-EBUS

Raindance FC 23-289HN

API 05-123-51585

Production Casing

Job Date: Saturday, August 07, 2021

Sincerely,

Nick Roles and Crew

Legal Notice

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1.0 Cementing Job Summary

1.1 Executive Summary

Halliburton appreciates the opportunity to perform the cementing services on the Raindance FC 23-289HN production casing. 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 62 bbl. of spacer 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 Fort Lupton

The Road to Excellence Starts with Safety

Sold To #: 346459		Ship To #: 9082079		Quote #:		Sales Order #: 0907294323				
Customer: GREAT WESTERN OPERATING CO LLC-EBUS					Customer Rep: Brad Stevens					
Well Name: RAINDANCE FC 23-289HN,WELD				Well #: 9082079		API/UWI #: 05-123-51585				
Field:		City (SAP): WINDSOR		County/Parish: Weld			State: COLORADO			
Legal Description:										
Contractor: PRECISION DRLG					Rig/Platform Name/Num: PRECISION 462					
Job BOM: 7523										
Well Type: OIL										
Sales Person: HALAMERICA\HB41307					Srvc Supervisor: Nicholas Roles					
Job										
Job depth MD 20837 ft Job Depth TVD 6211 ft										
Well Data										
Description	New / Used	Size in	ID in	Weight lbm/ft	Thread	Grade	Top MD ft	Bottom MD ft	Top TVD ft	Bottom TVD ft
Casing		9.625	8.835	40			0	2069		2069
Casing		5.5	4.778	20		HCP110	0	20837	0	6212
Open Hole Section			8.5				2069	20837	2069	6212
Tools and Accessories										
Type	Size in	Qty	Make	Depth ft		Type	Size in	Qty	Make	
Float Shoe	5.5	1	Citadel	20837		Top Plug	5.5	1	Citadel	
Float Collar	5.5	1	Citadel	20832		Bottom Plug	5.5	1	Citadel	

138 Centralizers: 2081.41, 2126.68, 2171.95, 2217.21, 2262.46, 2307.7, 2352.97, 2398.22, 2443.48, 2488.74, 2534, 2579.25, 2624.5, 2669.76, 2715.01, 2760.27, 2805.5, 2850.71, 2895.98, 2941.23, 2986.48, 3031.71, 3076.97, 3122.23, 3167.47, 3212.73, 3257.99, 3303.26, 3344.01, 3389.26, 3434.52, 3479.78, 3525.03, 3570.31, 3615.56, 3660.81, 3704.47, 3749.72, 3794.99, 3840.24, 3885.48, 3930.75, 3975.99, 4020.15, 4065.41, 4110.66, 4155.91, 4201.16, 4246.41, 4291.67, 4337.1, 4382.34, 4427.59, 4472.85, 4518.11, 4563.36, 4608.61, 4653.87, 4699.1, 4744.37, 4789.63, 4834.88, 4880.16, 4925.42, 4970.68, 5015.93, 5057.5, 5102.78, 5148.05, 5193.3, 5238.17, 5283.41, 5328.66, 5373.92, 5418.8, 5464.05, 5509.31, 5554.57, 5599.83, 5645.1, 5690.36, 5735.62, 5780.87, 5826.12, 5863.95, 5908.91, 5953.87, 5998.73, 6040.33, 6085.61, 6130.5, 6175.77, 6217.36, 6262.64, 6307.89, 6353.16, 6398.41, 6443.68, 6488.94, 6534.18, 6579.42, 6624.66, 6669.92, 6715.19, 6760.44, 6805.69, 6850.96, 6896.21, 6952.59, 6997.86, 7043.1, 7088.35, 7133.33, 7178.57, 7223.83, 7269.11, 7314.39, 7359.61, 7404.89, 7450.15, 7495.37, 7540.62, 7585.87, 7631.13, 7676.42, 7721.69, 7766.93, 7812.17, 7868.68, 7913.66, 7958.91, 8004.17, 8049.06, 8094.3, 8139.56, 8184.81, 8229.8, 8305.3

Fluid Data										
Stage #: 1										
Fluid #	Stage Type	Fluid Name	Qty	Qty UoM	Mixing Density lbm/gal	Yield ft ³ /sack	Mix Fluid Gal	Rate bbl/min	Total Mix Fluid Gal	
1	Diesel	Diesel	40	bbl	7.4				0	
Fluid #	Stage Type	Fluid Name	Qty	Qty UoM	Mixing Density lbm/gal	Yield ft ³ /sack	Mix Fluid Gal	Rate bbl/min	Total Mix Fluid Gal	
2	Spacer	GWOG Spacer	148	bbl	11.5					
Fluid #	Stage Type	Fluid Name	Qty	Qty UoM	Mixing Density lbm/gal	Yield ft ³ /sack	Mix Fluid Gal	Rate bbl/min	Total Mix Fluid Gal	
3	Spacer	Water	40	bbl	8.33				840	
Fluid #	Stage Type	Fluid Name	Qty	Qty UoM	Mixing Density lbm/gal	Yield ft ³ /sack	Mix Fluid Gal	Rate bbl/min	Total Mix Fluid Gal	
4	Primary Cement	ElastiCem Cement	2275	sack	13.5	1.92	8.9	10	19860	
Fluid #	Stage Type	Fluid Name	Qty	Qty UoM	Mixing Density lbm/gal	Yield ft ³ /sack	Mix Fluid Gal	Rate bbl/min	Total Mix Fluid Gal	
5	Displacement	MMCR Water	20	bbl	8.6			10	840	
Fluid #	Stage Type	Fluid Name	Qty	Qty UoM	Mixing Density lbm/gal	Yield ft ³ /sack	Mix Fluid Gal	Rate bbl/min	Total Mix Fluid Gal	
6	Displacement	Treated 3% KCl Water	422	bbl	8.6			10	17458	
Fluid #	Stage Type	Fluid Name	Qty	Qty UoM	Mixing Density lbm/gal	Yield ft ³ /sack	Mix Fluid Gal	Rate bbl/min	Total Mix Fluid Gal	
7	Displacement	Fresh Water	20	bbl	8.33			5	840	
Cement Left In Pipe										
Amount		5 ft			Reason			Shoe Joint		
Mix Water:		pH 7		Mix Water Chloride:		0 ppm		Mix Water Temperature:		70 °F
Plug Bumped?		Yes		Plug Displaced by:		8.6 lb/gal KCl Water		Disp. Temperature:		70 °F
Cement Returns:		0 bbl		Bump Pressure:		2478 psi		Floats Held?		Yes
Comment: 40gal diesel returned to surface followed by 10bbls interface and 62bbls spacer to surface, Est TOC-1810'.										

2.0 Real-Time Job Summary

2.1 Job Event Log

Seq. No.	Activity	Date	Time	Combined Rate (bbl/min)	Combined Volume (bbl)	DH Density (ppg)	DS Pump Press 1 (psi)	DS Pump Press 2 (psi)	Comments
1	Call Out	8/7/2021	08:00:00						Called out by service coordinator for OL time of 1300.
2	Arrive at Location from Service Center	8/7/2021	08:00:00						Upon arrival to location, signed in with onsite safety personnel. Met with company man and discussed job specific requirements and specifications.
3	Pre-Rig Up Safety Meeting	8/7/2021	11:00:00						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.
4	Rig-Up Equipment	8/7/2021	11:30:00						Begin rig up with crew.
5	Other	8/7/2021	11:45:00						Mix water test results- PH-7, Chlo-0, Temp-65F.
6	Rig-Up Completed	8/7/2021	12:30:00						Complete rig up for job to nearest point before red zone.
7	Safety Meeting - Pre Job	8/7/2021	14:00:00			7.99	-2.00	-12.00	Held job specific hazards as well as confirming job procedure with co man and rest of crew associated with job.
8	Pump Spacer	8/7/2021	18:04:48			8.00	-3.00	-17.00	Pumped 40bbls Diesel, 148bbls 11.5# spacer with surfactants, followed with 40bbls fresh water with rig pumps prior to rigging up HES iron.
9	Start Job	8/7/2021	18:10:28			8.00	-5.00	-5.00	TD-20837', OH-8.5", TP-20837', FC-20832', 5.5" 20#, TVD-6211', SURF-2069' 9.625" 40#, MUD 10.5#

10	Drop Bottom Plug	8/7/2021	18:13:11		7.96	29.00	33.00	Dropped by company man and tool hand, witnessed by HES supervisor	
11	Test Lines	8/7/2021	18:14:30		7.97	5.00	41.00	Pumped 3bbls fresh water with pump #1 to fill lines at 2bpm 200psi, shut manifold, and performed 500psi k/o function test, followed with 5th gear stall at 1800psi, proceeded to bring pressure to 5000psi, pressure stabilized and held with no leaks.	
12	Test Lines	8/7/2021	18:14:32		7.97	4.00	41.00	Pumped 3bbls fresh water with pump #2 to fill lines at 2bpm 220psi, shut manifold, and performed 500psi k/o function test, followed with 5th gear stall at 1930psi, proceeded to bring pressure to 5000psi, pressure stabilized and held with no leaks.	
13	Pump Cement	8/7/2021	18:24:22		14.30	13.59	601.00	322.00	Pumped 2275sks or 778bbls of 13.5# 1.92y 8.91g/s ElastiCem at 10bpm 1150psi.
14	Check Weight	8/7/2021	18:28:20		44.10	13.55	1516.00	992.00	Weight verified with pressurized mud scales.
15	Check Weight	8/7/2021	18:28:57	10.30	50.30	13.57	1165.00	1221.00	Weight verified with pressurized mud scales.
16	Check Weight	8/7/2021	18:39:39	10.20	159.80	13.65	1054.00	926.00	Weight verified with pressurized mud scales.
17	Check Weight	8/7/2021	18:57:42	8.30	340.90	13.58	615.00	637.00	Weight verified with pressurized mud scales.
18	Check Weight	8/7/2021	19:11:57	10.10	484.00	13.56	1560.00	1011.00	Weight verified with pressurized mud scales.
19	Shutdown	8/7/2021	19:39:23	5.80	761.60	13.10	571.00	845.00	Shutdown pump #1, washed lines with 10bbls fresh water through manifold on rig floor while 2nd pump finished last 80bbls cement. Pump #1 mix gallons-9980g.
20	Shutdown	8/7/2021	19:49:16			8.60	-39.00	100.00	Shutdown with pump #2, washed lines with 10bbls fresh water through manifold on rig floor. Pump #2 mix gallons-9880gal.
21	Drop Top Plug	8/7/2021	19:56:00		8.60	1.00	20.00	Dropped by company man/tool hand, witnessed by HES supervisor	

22	Pump Displacement	8/7/2021	19:56:03	8.60	1.00	20.00	Pumped 422bbls brine water at 10bpm. First 20bbls fresh water with 10gal MMCR, last 20bbls fresh water. Total displacement-462bbls.
23	Bump Plug	8/7/2021	20:55:25	8.38	2999.00	21.00	Slowed down at 20bbls away to 5bpm, final circulating pressure-2500psi. Bump pressure-3000psi.
24	Other	8/7/2021	20:56:03	8.37	3003.00	21.00	Released 500psi to pump and got 1bbl back, released pressure to trip tank and got 3.1bbls. Floats held.
25	End Job	8/7/2021	21:00:44			22.00	40gal diesel returned to surface followed by 10bbls interface and 62bbls spacer to surface, Est TOC-1810'.
26	Pre-Rig Down Safety Meeting	8/7/2021	21:10:00	8.32	-4.00	21.00	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.
27	Rig Down Lines	8/7/2021	21:30:00	8.37	-3.00	16.00	Begin rig down
28	Rig-Down Completed	8/7/2021	22:30:00				Rig down complete with no injuries, spills or damage to equipment.
29	Pre-Convoy Safety Meeting	8/7/2021	22:45:00				Held safety meeting with convoy, discussed trip hazards, directions and all crew fit for duty prior to departure.
30	Depart Location for Service Center or Other Site	8/7/2021	23:00:00				Depart location, if applicable journey will be submitted.

3.0 Attachments

3.1 Job Chart

