HALLIBURTON

iCem® Service

GREAT WESTERN OPERATING CO LLC-EBUS

Raindance FC 23-272HC
Production Casing
API 05-123-51583
Job Date: Tuesday, September 21, 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 23-272HC 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 70 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 #:** 9087351	**Quote #:** 0022873608	**Sales Order #:** 0907384240
Customer: GREAT WESTERN OPERATING CO LLC-EBUS		**Customer Rep:** Jeremy Mills	
Well Name: RAINDANCE FC	**Well #:** 23-272HC		**API/UWI #:** 05 123 51583
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	21219ft	**Job Depth TVD**	6249ft

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	2063		2063
Casing		5.5	4.778	20		HCP110	0	21219	0	6249
Open Hole Section			8.5				2063	21219	0	6249

Tools and Accessories

Type	Size in	Qty	Make	Depth ft		Type	Size in	Qty	Make
Float Shoe	5.5	1	Citadel	21219		**Top Plug**	5.5	1	Citadel
Float Collar	5.5	1	Citadel	21214		**Bottom Plug**	5.5	1	Citadel

152 Centralizers: 2060.33, 2103.81, 2145.11, 2186.89, 2230.35, 2273.81, 2317.22, 2359.8, 2403.27, 2446.77, 2490.17, 2533.87, 2577.32, 2620.74, 2664.13, 2706.65, 2750.08, 2793.5, 2834.82, 2878.29, 2921.54, 2965, 3007.43, 3050.66, 3094.06, 3137.62, 3181.04, 3224.56, 3265.7, 3308.9, 3351.2, 3394.59, 3438.33, 3481.81, 3525.22, 3568.58, 3612.04, 3655.5, 3698.97, 3740.42, 3783.98, 3827.63, 3871.29, 3914.59, 3958.26, 4000.86, 4044.34, 4087.95, 4131.59, 4175.19, 4218.83, 4262.47, 4306.09, 4349.66, 4393.15, 4436.65, 4480.3, 4523.91, 4567.57, 4611.12, 4654.7, 4696.06, 4739.68, 4783.33, 4827.05, 4870.7, 4914.38, 4958.02, 5001.63, 5043.67, 5087.35, 5129.99, 5172.58, 5215.95, 5258.58, 5302.2, 5345.18, 5388.8, 5432.49, 5476.17, 5519.8, 5563.5, 5607.12, 5650.55, 5694, 5737.62, 5781.26, 5823.87, 5866.46, 5910.08, 5953.71, 5997.42, 6041.06, 6084.7, 6128.37, 6171.96, 6215.57, 6259.18, 6302.83, 6345.4, 6388.99, 6432.36, 6475.86, 6518.88, 6562.52, 6603.99, 6647.62, 6690.97, 6734.56, 6778.15, 6821.84, 6865.44, 6908.77, 6952.35, 6996, 7038.91, 7082.53, 7126.12, 7169.85, 7212.78, 7267.76, 7311.36, 7352.73, 7396.4, 7440.04, 7483.63, 7527.27, 7570.1, 7613.71, 7657.34, 7700.93, 7744.44, 7788.01, 7830.95, 7874.59, 7918.2, 7961.08, 8004.72, 8047.66, 8089.85, 8133.32, 8176.14, 8230.09, 8273.72, 8317.35, 8360.99, 8402.55, 8442.27, 8485.88, 8529.3, 8572.89, 8645.07

Fluid Data

Stage #: 1

Fluid #	Stage Type	Fluid Name	Qty	Qty UoM	Mixing Density lbm/gal	Yield ft3/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 ft3/sack	Mix Fluid Gal	Rate bbl/min	Total Mix Fluid Gal
2	Spacer	GWOG Spacer	110	bbl	12				

Fluid #	Stage Type	Fluid Name	Qty	Qty UoM	Mixing Density lbm/gal	Yield ft3/sack	Mix Fluid Gal	Rate bbl/min	Total Mix Fluid Gal
3	Water	Fresh Water	40	bbl	8.33				1680

Fluid #	Stage Type	Fluid Name	Qty	Qty UoM	Mixing Density lbm/gal	Yield ft3/sack	Mix Fluid Gal	Rate bbl/min	Total Mix Fluid Gal
4	ElastiCem	ElastiCem™ Cement	2350	sack	13.5	1.92	8.91	10	20130

Fluid #	Stage Type	Fluid Name	Qty	Qty UoM	Mixing Density lbm/gal	Yield ft3/sack	Mix Fluid Gal	Rate bbl/min	Total Mix Fluid Gal
5	Displacement	Fresh Water w/Retarder	20	bbl	8.6			8	840

Fluid #	Stage Type	Fluid Name	Qty	Qty UoM	Mixing Density lbm/gal	Yield ft3/sack	Mix Fluid Gal	Rate bbl/min	Total Mix Fluid Gal
6	Displacement	3% Treated KCl Water	430	bbl	8.6			12	17879

Fluid #	Stage Type	Fluid Name	Qty	Qty UoM	Mixing Density lbm/gal	Yield ft3/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:**	75 °F
Plug Bumped?	Yes	**Plug Displaced by:**	Treated Water	**Disp. Temperature:**	75 °F
Cement Returns:	0 bbl.	**Bump Pressure:**	2474 psi	**Floats Held?**	Yes

Comment: 20bbls interface and 70bbls spacer to surface, Est TOC-1589'.

2.0 Real-Time Job Summary

2.1 Job Event Log

Seq. No.	Activity	Date	Time	DH Density *(ppg)*	DS Pump Press *(psi)*	Dwnhole Density *(ppg)*	Pump A Pressure *(psi)*	Combined Volume *(bbl)*	Comments
1	Other	9/20/2021	01:45:00						Mix water test results- PH-7, Chlo-0, Temp-65F.
2	Call Out	9/20/2021	19:00:00						Called out by service coordinator for OL time of 0100.
3	Pre-Convoy Safety Meeting	9/20/2021	22:00:00						Discuss all hazards associated with journey, directions to destination, complete journey management if needed, and ensure all convoy is fit for duty.
4	Depart from Service Center or Other Site	9/20/2021	22:15:00						Depart from service center or other job site.
5	Arrive at Location from Service Center	9/20/2021	23:15:00						Upon arrival to location, signed in with onsite safety personnel. Met with company man and discussed job specific requirements and specifications.
6	Pre-Rig Up Safety Meeting	9/20/2021	23:30:00						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.
7	Rig-Up Equipment	9/20/2021	23:45:00						Begin rig up with crew.
8	Rig-Up Completed	9/21/2021	01:30:00						Complete rig up for job to nearest point before red zone.

9	Safety Meeting - Pre Job	9/21/2021	06:00:00	8.01	38.00	8.31	-4.94		Held job specific hazards as well as confirming job procedure with co man and rest of crew associated with job.
10	Start Job	9/21/2021	07:15:21	8.01	-1.00	8.18	-4.21		TD-21219', OH-8.5", TP-21219', FC-21214', 5.5" 20#, TVD-6249', SURF-2063' 9.625" 40#, MUD 11.5#
11	Test Lines	9/21/2021	07:18:14	8.17	128.00	8.30	162.48		Pump 1 pumped 3bbls fresh water to fill lines at 3bpm 720psi, shut manifold, and performed 500psi k/o function test, followed with 5th gear stall at 1800psi, proceeded to bring pressure to 7000psi, pressure stabilized and held with no leaks.
12	Test Lines	9/21/2021	07:21:33	8.12	112.00	8.26	126.84		Pump 2 pumped 3bbls fresh water to fill lines at 3bpm 620psi, 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.
13	Drop Bottom Plug	9/21/2021	07:29:27	8.08	75.00	8.26	87.66		Dropped by company man, witnessed by HES supervisor
14	Pump Cement	9/21/2021	07:29:32	8.08	76.00	8.26	87.69		Pumped 2350sks or 803bbls of 13.5# 1.92y 8.91g/s ElastiCem at 12bpm 2100psi pumped with two trucks, truck 1-9590mix water gallons, Truck 2-10540mix water gallons.
15	Check Weight	9/21/2021	07:40:03	13.59	2166.00	13.49	2091.66	58.04	Weight verified with pressurized mud scales.
16	Check Weight	9/21/2021	07:46:41	13.48	2194.00	13.50	1985.74	133.87	Weight verified with pressurized mud scales.
17	Check Weight	9/21/2021	08:32:42	13.67	2427.00	13.77	2082.70	686.20	Weight verified with pressurized mud scales.
18	Shutdown	9/21/2021	08:38:07	13.26	980.00	13.02	1393.08	747.17	Shutdown, washed lines with 10bbls fresh water through manifold on rig floor while 2nd pump finished last 50bbls.

19	Shutdown	9/21/2021	08:50:36	8.00	0.00	13.16	1290.62	453.49	Pump 2 shutdown, wash up with fresh water to pit, wait on rig to sting out head and drop plug.
20	Drop Top Plug	9/21/2021	09:03:53	8.00	8.00	8.62	29.95		Dropped by company man, witnessed by HES supervisor
21	Pump Displacement	9/21/2021	09:03:56	8.00	8.00	8.62	29.98		Pumped 430bbls brine water with 5gal O2 scavenger and 5gal corrosion inhibitor at 12bpm. First 20bbls fresh water with 10gal MMCR and last 20bbls fresh water. Total displacement-470bbls fluid.
22	Bump Plug	9/21/2021	09:51:00	8.04	3023.00	8.17	3045.54		Slowed down at 20bbls away to 5bpm, final circulating pressure-2474psi. Bump pressure-3029psi.
23	Other	9/21/2021	09:52:31	8.02	2451.00	8.13	2499.70		Released 500psi to pump and got 1bbl back, released pressure to trip tank and got 3.5bbls. Floats held.
24	End Job	9/21/2021	09:53:59	8.05	7.00	7.95	45.27		20bbls interface and 70bbls spacer to surface, Est TOC-1589'.
25	Pre-Rig Down Safety Meeting	9/21/2021	09:55:00	7.97	7.00	7.95	29.50		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.
26	Rig Down Lines	9/21/2021	10:15:00	0.00	1.00	-0.37	25.44		Begin rig down
27	Rig-Down Completed	9/21/2021	11:30:00						Rig down complete with no injuries, spills or damage to equipment.

3.0 Attachments

3.1 Job Chart