

HALLIBURTON

iCem® Service

**GREAT WESTERN OPERATING CO LLC-
EBUS**

RAINDANCE FC 23-232 HN

Production Casing

Job Date: Sunday, October 03, 2021

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 23-232 HN** cement production 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.

Approximately 67 bbls 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 #: 9078400	Quote #: 0022878387	Sales Order #: 0907409866
Customer: GREAT WESTERN OPERATING CO LLC-EBUS		Customer Rep: Kyle Hibbert	
Well Name: RAINDANCE FC 23-232HN,WELD		Well #: 9078400	API/UWI #: 05-123-51581
Field:	City (SAP): WINDSOR	County/Parish: WELD	State: COLORADO
Legal Description:			
Contractor: PRECISION DRLG		Rig/Platform Name/Num: PRECISION 462	
Job BOM: 7523 7523			
Well Type: OIL			
Sales Person: HALAMERICA\HB41307		Srvc Supervisor: Michael Loughran	

Job

Formation Name			
Formation Depth (MD)	Top		Bottom
Form Type			BHST 250 degF
Job depth MD	21273ft		Job Depth TVD
Water Depth			Wk Ht Above Floor
Perforation Depth (MD)	From		To

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	2072		
Casing		5.5	4.778	20		HCP110	0	21273		
Open Hole Section			8.5				2072	21273		

Tools and Accessories

Type	Size in	Qty	Make	Depth ft	Type	Size in	Qty	Make
Float Shoe	5.5			21273	Top Plug	5.5	1	citadel
Float Collar	5.5			21268	Bottom Plug	5.5	1	citadel

Fluid Data

Stage/Plug #: 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				

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 (Customer Supplied)	Spacer (Customer Supplied)	110	bbl	12.5				
	0.60 gal/bbl	DUAL SPACER SURFACTANT B, 5 GAL PAIL (100003665)							
	0.60 gal/bbl	SEM-8, 5 GAL PAIL (101235090)							

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	Water	40	bbl	8.33				

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	SBM CEM ELASTICEM™ SYS	2330	sack	13.5	1.92		12	8.91
4 %		MICROBOND HT - 2204 LB BAGS - (101967337)							
8.90 Gal		FRESH WATER							
0.0080 Gal		HR-6L, 5 GAL PAIL (100005058)							

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	Brine Displacement (3rd Party Retarder)	Brine Displacement (3rd Party Retarder)	20	bbl	8.6			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
6	Brine Displacement (3rd Party Chems)	Brine Displacement (3rd Party Chems)	431.7	bbl	8.6			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
7	Fresh Water Displacement	Fresh Water Displacement	20	bbl	8.33				

Cement Left In Pipe	Amount	.5 ft	Reason	Shoe Joint
Mix Water:	pH 7	Mix Water Chloride:	Less 286 ppm	Mix Water Temperature:
		Plug Displaced by:	9 lb/gal	
Plug Bumped?	Yes	Bump Pressure:	3300 psi	Floats Held?
				Yes

Comment 67 bbls spacer surface. Estimated toc=1804'

151 Centralizers: 2054.33, 2097.91, 2141.48, 2184.94, 2228.38, 2269.77, 2312.38, 2354.93, 2398.38, 2441.38, 2484.85, 2528.06, 2571.55, 2614.9, 2656.87, 2700.4, 2743.46, 2786.93, 2829.37, 2873.02, 2916.52, 2959.1, 3002.73, 3045.77, 3088.9, 3131.88, 3175.35, 3218.99, 3262.64, 3306.31, 3348.93, 3392.57, 3436.21, 3477.78, 3521.41, 3565, 3608.63, 3651.68, 3695.09, 3738.72, 3782.38, 3826.01, 3869.6, 3911.62, 3953.63, 3997.24, 4040.76, 4084.02, 4127.52, 4171.01, 4214.68, 4258, 4301.57, 4344.19, 4387.88, 4429.82, 4473.48, 4516.46, 4559.8, 4603.21, 4646.09, 4687.55, 4731.19, 4774.38, 4817.98, 4861.48, 4904.9, 4948.39, 4991.96, 5035.44, 5078.14, 5121.62, 5165.31, 5208.26, 5251.94, 5295.57, 5339.24, 5382.88, 5426.48, 5470.15, 5513.79, 5556.85, 5600.52, 5644.16, 5687.14, 5729.74, 5773.37, 5817, 5860.64, 5904.28, 5947.89, 5989.1, 6031.98, 6074.17, 6117.8, 6161.43, 6205.1, 6248.43, 6292.11, 6335.8, 6378.78, 6422.45, 6465, 6507.58, 6550.55, 6594.19, 6637.86, 6681.5, 6725.1, 6768.74, 6812.37, 6856.05, 6899.72, 6943.42, 6987.07, 7029.7, 7073.37, 7116, 7159.62, 7203.24, 7256.8, 7300.38, 7342.8, 7384.29, 7427.91, 7471.56, 7515.27, 7558.92, 7601.34, 7645.02, 7688.67, 7731.98, 7774.17, 7816.79, 7860.46, 7904.13, 7947.75, 7991.38, 8035.01, 8078.38, 8121.97, 8165.07, 8208.7, 8252.04, 8307.65, 8351.34, 8395.03, 8438.59, 8482.15, 8525.73, 8597.91

2.0 Real-Time Job Summary

2.1 Job Event Log

Type	Seq. No.	Activity	Graph Label	Date	Time	Source	Equation 1 (gpm)	Equation 2 (bbl)	Dwnhole Density (ppg)	Pump A Pressure (psi)	DS Pump Press (psi)	Comments
Event	1	Call Out	Call Out	10/3/2021	06:00:00	USER						CREW CALLED OUT AT 0600 HRS 10/3/2021 WHILE ON ANOTHER LOCATION. REQUESTED ON LOCATION 1200 HRS
Event	2	Crew Leave Yard	Crew Leave Yard	10/3/2021	15:00:00	USER						CREW LEAVE YARD
Event	3	Arrive At Loc	Arrive At Loc	10/3/2021	15:30:00	USER						MEET WITH CO. MAN TO DISCUSS JOB; SURFACE CASING- 9.625" 40 LB/FT @ 2072', 5.5" CASING: 20 LB/FT TOTAL 21273', 8.5" HOLE, TD 21273', F/C 21268, TVD- 6,062', WF 11.5 PPG, PLUGS CITADEL. WATER 62 DEGREES, PH 7, CHLORIDES LESS THAN 286 PPM. FIRST CREW ON LOCATION AT 1000 HRS
Event	4	Pre-Rig Up Safety Meeting	Pre-Rig Up Safety Meeting	10/3/2021	15:40:00	USER						HAZARD HUNT. DISCUSSED POSSIBLE HAZARDS ASSOCIATED WITH LOCATION, RIG UP, AND WEATHER.

Event	5	Rig-Up Equipment	Rig-Up Equipment	10/3/2021	15:45:00	USER					CREW STAGED EQUIPMENT AND RIGGED UP BULK, IRON AND WATER HOSES TO PERFORM JOB.	
Event	6	Pre-Job Safety Meeting	Pre-Job Safety Meeting	10/3/2021	17:30:00	USER	8.43	54.34	38.00		SAFETY MEETING WITH HALLIBURTON, AND RIG PERSONNEL. CREW COMMUNICATED POTENTIAL SAFETY HAZARDS, AND JOB DETAILS. RIG CIRCULATES 3 BOTTOMS UP 14 BBL/MIN/2700 PSI	
Event	7	Start Job	Start Job	10/3/2021	18:23:48	NONE	2.48	53.71	0.00		BEGIN RECORDING DATA	
Event	8	Drop Bottom Plug	Drop Bottom Plug	10/3/2021	18:24:05	NONE	0.00	53.81	0.00		BOTTOM PLUG BY WELLBOSS	
Event	9	Test Lines	Test Lines	10/3/2021	18:26:20	NONE	8.34	200.50	110.00		TRUCK 1 7500 PSI / TRUCK 2 5050 PSI	
Event	10	Pump Cement	Pump Cement	10/3/2021	18:35:33	USER	8.35	126.02	83.00		2330 SACKS SBMCCEM ELASTICEM. 796.75 BBLS, 13.5 PPG, 1.92 YIELD, 8.91 GAL/SACK. 80 GALLONS D-AIR	
Event	11	Shutdown	Shutdown	10/3/2021	19:41:53	NONE	315.0	793.36	12.77	1289.42	1954.00	SHUTDOWN / WASH PUMPS AND LINES. ADD 50 LBS SUGAR
Event	12	Drop Top Plug	Drop Top Plug	10/3/2021	19:52:12	NONE	430.97	8.09	220.18	316.00		TOP PLUG BY WELL BOSS

Event	13	Pump Displacement	Pump Displacement	10/3/2021	19:52:16	NONE	431.07	8.09	229.33	310.00	471.7 BBLS DISPLACE. 20 BBLS FRESH W/10 GALLONS MMCR. 431.7 BBLS BRINE, 20 BBLS FRESH WATER. 34 BBLS INTERFACE. 67 BBLS SPACER TO SURFACE. ESTIMATED TOC=1804'
Event	14	Bump Plug	Bump Plug	10/3/2021	20:49:35	NONE		8.23	3379.49	3332.00	FINAL CIRCULATING PRESSURE 2700 PSI / 5 BPM. BUMP PRESSURE 3300 PSI
Event	15	Other	Other	10/3/2021	20:51:35	NONE		8.17	2700.35	2634.00	CHECK FLOATS. FLOATS HOLD, 3.9 BBLS BACK
Event	16	End Job	End Job	10/3/2021	20:54:24	NONE		7.89	72.21	7.00	STOP RECORDING DATA
Event	17	Pre-Rig Down Safety Meeting	Pre-Rig Down Safety Meeting	10/3/2021	21:00:00	USER					DISCUSSED POSSIBLE HAZARDS ASSOCIATED WITH WEATHER, LOCATION AND RIGGING DOWN IRON AND HOSES.
Event	18	Rig-Down Equipment	Rig-Down Equipment	10/3/2021	21:10:00	USER					RIG DOWN BULK AND MIXING EQUIPMENT
Event	19	Rig-Down Completed	Rig-Down Completed	10/3/2021	22:30:00	USER					ALL HALLIBURTON ITEMS WERE STOWED FOR TRAVEL, AND LOCATION WAS CLEAN.
Event	20	Crew Leave Location	Crew Leave Location	10/3/2021	23:30:00	USER					THANK YOU FOR USING HALLIBURTON – MIKE LOUGHRAN AND CREW.

3.0 Attachments

3.1 Case 1 JOB CHART.png

