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1.0 Cementing Job Summary

1.1 Executive Summary

Halliburton appreciates the opportunity to perform the cementing services on the **Buddy 7-15HZ** 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.

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 #: 300466	Ship To #: 3917395	Quote #: 0022579342	Sales Order #: 0905694424
Customer: ANADARKO PETROLEUM CORP-EBUS		Customer Rep: Travis/Steve	
Well Name: BUDDY		Well #: 7-15HZ	API/UWI #: 05-123-48451-00
Field: WATTENBERG	City (SAP): IONE	County/Parish: WELD	State: COLORADO
Legal Description: NE NE-7-1N-67W-818FNL-990FEL			
Contractor: PRECISION DRLG		Rig/Platform Name/Num: PRECISION 464	
Job BOM: 7523 7523			
Well Type: HORIZONTAL GAS			
Sales Person: HALAMERICA/HX41066		Srvc Supervisor: Thomas Haas	

Job

Formation Name			
Formation Depth (MD)	Top	Bottom	
Form Type		BHST	
Job depth MD	18158ft	Job Depth TVD	7543
Water Depth		Wk Ht Above Floor	5
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	8.921	36		J-55	0	1874	0	1874
Casing		5.5	4.892	17	LTC	HCP110	0	18158	0	7543
Open Hole Section			7.875				1874	18168	1875	7543

Tools and Accessories

Type	Size in	Qty	Make	Depth ft	Type	Size in	Qty	Make
					Top Plug	5.5	1	W.F.
Float Shoe	5.5	1	W.F.	18158	Bottom Plug	5.5	1	W.F.
Float Collar	5.5	1	W.F.	18145				
					Plug Container	5.5	1	HES

Fluid Data

Stage/Plug #: 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	FDP-C1337-18	SBM FDP-C1337-18 CEMENT SPACER SYS	80	bbl	10.5	6.17	39.6	6	2882	
1 lbm/bbl		FE-2 (100001615)								
0.75 gal/bbl		MUSOL(R) A, 5 GAL PAIL (100064220)								

90.94 lbm/bbl	BARITE, BULK (100003681)
0.75 gal/bbl	DUAL SPACER SURFACTANT B, 5 GAL PAIL (100003665)
0.25 gal/bbl	D-AIR 3000L, 5 GAL PAIL (101007444)

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	Gasstop B1	GASSTOP (TM) SYSTEM	640	sack	13.2	1.56	7.72	6	4941
	0.10 Gal	D-AIR 3000L, 5 GAL PAIL (101007444)							
	0.90 %	SCR-100 (100003749)							
	5.12 Gal	FRESH WATER							

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	EconoCem	ECONOCEM (TM) SYSTEM	1100	sack	13.5	1.68	8	6	8800
	0.10 %	SA-1015, 50 LB SACK (102077046)							
	8 Gal	FRESH WATER							
	0.31 %	HR-5, 50 LB SK (100005050)							

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	Biocide Water and MMCR	Biocide Water and MMCR	20	bbl	8.34				
	0.50 gal/bbl	MICRO MATRIX CEMENT RETARDER, 5 GAL PAIL (100003781)							

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	Biocide Water	Biocide Water	401	bbl	8.34				

Cement Left In Pipe	Amount	N/A	Reason	Shoe Joint	
Mix Water:	pH 7	Mix Water Chloride:	<300 ppm	Mix Water Temperature:	64 °F
Cement Temperature:	N/A	Plug Displaced by:	8.33 lb/gal F.W.	Disp. Temperature:	61 °F
Plug Bumped?	Yes	Bump Pressure:	2350 psi	Floats Held?	Yes
Cement Returns:	N/A	Returns Density:	N/A	Returns Temperature:	N/A

Comment Pug bumped at calculated displacement, final circulating pressure of 2350 psi, held 10 min casing test at 3000 psi, tool shifted at psi, pumped a 3 bbl wet shoe, released pressure back to the truck, floats held, 3 bbl back. Nothing returned to surface.

Real-Time Job Summary

1.2 Job Event Log

Type	Seq. No.	Activity	Graph Label	Date	Time	Source	Comments
Event	1	Call Out	Call Out	5/16/2019	10:00:00	USER	CREW CALLED OUT AT 10:00 5/16/2019, REQUESTED ON LOCATION 16:00 5/16/2019. CREW PICKED UP CEMENT, CHEMICALS (60 GAL MUSOL A, 60 GAL DUAL SPACER B, 20 GAL D-AIR, 10 GAL MMCR, 1600 GAL FDP LATEX), 100 LBS SUGAR, PLUG CONTAINER AND MANIFOLD FROM FORT LUPTON,CO. BULK 660: 10989685/10867431, BULK 660: 12644881/10867098; CHEMICAL TRUCK: 12240040/12051520, PUMP ELITE; 11897034/11645460.
Event	2	Pre-Convoy Safety Meeting	Pre-Convoy Safety Meeting	5/16/2019	14:00:00	USER	DISCUSSED ROUTES, HAZARDS, AND COMMUNICATION WITH CREW
Event	3	Crew Leave Yard	Crew Leave Yard	5/16/2019	14:30:00	USER	STARTED JOURNEY MANAGEMENT.

Event	4	Arrive At Loc	Arrive At Loc	5/16/2019	15:00:00	USER	END JOURNEY MANAGEMENT. MEET WITH CO. MAN TO DISCUSS JOB; SURFACE CASING: 9.625" 36# @ 1874', CASING: 5.5" 17# @ 18158', 13' SHOE JOINT, 7.875" OPEN HOLE, TVD @ 7543', 9.3 PPG WELL FLUID, FRESH WATER DISPLACEMENT.
Event	5	Pre-Rig Up Safety Meeting	Pre-Rig Up Safety Meeting	5/16/2019	15:10:00	USER	HAZARD HUNT. DISCUSSED POSSIBLE HAZARDS ASSOCIATED WITH LOCATION, RIG UP AND WEATHER.
Event	6	Rig-Up Equipment	Rig-Up Equipment	5/16/2019	15:20:00	USER	CREW STAGED EQUIPMENT AND RIGGED UP BULK, IRON, AND WATER HOSES TO PERFORM JOB.
Event	7	Pre-Job Safety Meeting	Pre-Job Safety Meeting	5/16/2019	18:00:00	USER	MEETING WITH HALLIBURTON AND RIG PERSONNEL. COMMUNICATED POTENTIAL SAFETY HAZARDS AND JOB DETAILS.
Event	8	Start Job	Start Job	5/16/2019	18:37:01	COM4	
Event	9	Test Lines	Test Lines	5/16/2019	18:39:21	COM4	PRESSURE TESTED IRON TO 6500 PSI. KICKOUTS SET @ 500 PSI, KICKED OUT @ 1100 PSI, 5TH GEAR STALL OUT @ 1930 PSI.
Event	10	Pump Spacer 1	Pump Spacer 1	5/16/2019	18:44:00	COM4	PUMP 80 BBLS OF TUNED SPACER @ 10.5 LB/GAL, ADDED 60 GAL MUSOL A, 60 GAL DUAL SPACER B, 5 GAL D-AIR, .8 GAL BIOCID, DENSITY VERIFIED BY PRESSURIZED MUD SCALES.

Event	11	Other	Drop Bottom Plug	5/16/2019	18:54:35	COM4	PLUG LEFT PLUG CONTAINER, VERIFIED BY COMPANY MAN.
Event	12	Pump Lead Cement	Pump Lead Cement	5/16/2019	19:03:50	COM4	PUMP 640 SKS OF GASSTOP @ 13.2 LB/GAL, 1.56 YIELD, 7.75 GAL/SK, 177.8 BBLS, CALCULATED TOL @ 1797', MIX WATER MIXED WITH 1600 GAL OF LATEX AND 15 GAL D-AIR, DENSITY VERIFIED BY PRESSURIZED MUD SCALES.
Event	13	Pump Tail Cement	Pump Tail Cement	5/16/2019	19:27:38	COM4	PUMP 1100 SKS OF ECONOCEM @ 13.5 LB/GAL, 1.68 YIELD, 7.99 GAL/SK, 329.1 BBLS, CALCULATED TOT @ 7508', DENSITY VERIFIED BY PRESSURIZED MUD SCALES.
Event	14	Shutdown	Shutdown	5/16/2019	20:09:22	COM4	SHUTDOWN TO CLEAN PUMPS/LINES AND DROP TOP PLUG.
Event	15	Drop Top Plug	Drop Top Plug	5/16/2019	20:20:32	COM4	PLUG LEFT PLUG CONTAINER, VERIFIED BY COMPANY MAN.
Event	16	Pump Displacement	Pump Displacement	5/16/2019	20:20:35	COM4	BEGIN CALCULATED DISPLACEMENT OF 421 BBLS WITH FRESH WATER. 10 GAL MMCR AND BIOCIDES ADDED TO 1ST 20 BBLS. BIOCIDES ADDED THROUGH REST OF DISPLACEMENT.
Event	17	Bump Plug	Bump Plug	5/16/2019	21:14:08	COM4	PLUG BUMPED AT CALCULATED DISPLACEMENT, FINAL CIRCULATING PRESSURE OF 2350 PSI. NOTHING RETURNED TO SURFACE.
Event	18	Other	Casing Test	5/16/2019	21:15:00	USER	HOLD 10 MIN CASING TEST AT 3000 PSI.
Event	19	Other	Shift Tool	5/16/2019	21:24:30	USER	PRESSURE UP TO SHIFT WET SHOE SUB, TOOL SHIFTED AT 4920 PSI.
Event	20	Other	Wet Shoe	5/16/2019	21:25:40	USER	PUMP A 3 BBL WET SHOE.
Event	21	Check Floats	Check Floats	5/16/2019	21:26:50	USER	RELEASED PRESSURE BACK TO THE TRUCK, FLOATS HELD, 3 BBL BACK.
Event	22	End Job	End Job	5/16/2019	21:28:36	COM4	END JOB DATA RECORDING.

Event	23	Pre-Rig Down Safety Meeting	Pre-Rig Down Safety Meeting	5/16/2019	21:33:00	USER	DISCUSSED POSSIBLE HAZARDS ASSOCIATED WITH WEATHER, LOCATION AND RIGGING DOWN IRON AND HOSES.
Event	24	Rig-Down Completed	Rig-Down Completed	5/16/2019	22:30:00	USER	ALL HALLIBURTON ITEMS WERE STOWED FOR TRAVEL.
Event	25	Pre-Convoy Safety Meeting	Pre-Convoy Safety Meeting	5/16/2019	22:45:00	USER	DISCUSSED ROUTES HAZARDS AND COMMUNICATION WITH CREW.
Event	26	Crew Leave Location	Crew Leave Location	5/16/2019	23:00:00	USER	THANK YOU FOR USING HALLIBURTON - THOMAS HAAS AND CREW.

2.0 Attachments

2.1 Job Chart

