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1.0 Cementing Job Summary

1.1 Executive Summary

Halliburton appreciates the opportunity to perform the cementing services on the **Mab 15-11HZ** 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 #: 3932200	Quote #: 0022577795	Sales Order #: 0905679941
Customer: ANADARKO PETROLEUM CORP-EBUS		Customer Rep: Will Drake	
Well Name: MAB		Well #: 15-11HZ	API/UWI #: 05-123-49233-00
Field: WATTENBERG	City (SAP): IONE	County/Parish: WELD	State: COLORADO
Legal Description: SW SE-15-1N-66W-638FSL-2171FEL			
Contractor:		Rig/Platform Name/Num: Akita 522	
Job BOM: 7523 7523			
Well Type: HORIZONTAL GAS			
Sales Person: HALAMERICA/HX41066		Srvc Supervisor: Clifton Keck	

Job

Formation Name			
Formation Depth (MD)	Top	Bottom	
Form Type		BHST	
Job depth MD	18740ft	Job Depth TVD	7466ft
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	8.921	36		J-55	0	1872	0	1872
Casing		5.5	4.892	17	LTC	HCP110	0	18740	0	7466
Open Hole Section			7.875				1872	18740	1894	7466

Tools and Accessories

Type	Size in	Qty	Make	Depth ft	Type	Size in	Qty	Make
Guide Shoe	5.5			18740	Top Plug	5.5	1	
Float Shoe	5.5				Bottom Plug	5.5	1	
Float Collar	5.5				SSR plug set	5.5		
Insert Float	5.5				Plug Container	5.5	1	
Stage Tool	5.5				Centralizers	5.5	394	

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	FDP-C1337-18	SBM FDP-C1337-18 CEMENT SPACER SYS	80	bbl	10.5	6.17		4	
1 lbm/bbl		FE-2 (100001615)							
0.75 gal/bbl		MUSOL(R) A, 5 GAL PAIL (100064220)							

0.25 gal/bbl	D-AIR 3000L, 5 GAL PAIL (101007444)								
90.94 lbm/bbl	BARITE, BULK (100003681)								
0.75 gal/bbl	DUAL SPACER SURFACTANT B, 5 GAL PAIL (100003665)								
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	Gasstop B1	GASSTOP (TM) SYSTEM	640	sack	13.2	1.56		5	7.71
0.90 %	SCR-100 (100003749)								
5.11 Gal	FRESH WATER								
0.10 Gal	D-AIR 3000L, TOTETANK (101396181)								
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	EconoCem	ECONOCEM (TM) SYSTEM	1160	sack	13.5	1.68		8	7.99
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 ft3/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 ft3/sack	Mix Fluid Gal	Rate bbl/min	Total Mix Fluid Gal
5	Biocide Water	Biocide Water	415	bbl	8.34				
Mix Water: pH 7		Mix Water Chloride: 0 ppm			Mix Water Temperature: 57 °F				
Plug Bumped? Yes		Bump Pressure: ##### psi			Floats Held? Yes				
Comment: ESTIMATED TOP OF TAIL CEMENT AT 7510', ESTIMATED TOP OF LEAD CEMENT AT 1788', ESTIMATED TOP OF SPACER AT 118', BUMPED PLUG ON CALCULATED DISPLACEMENT, LANDED PLUG ON CALCULATED DISPLACEMENT, 2450 PSI – 3000 PSI, HELD 10 MINUTES FOR CASING TEST, PRESSURED UP TO 5150 PSI TO RUPTURE WET SHOE SLEEVE, PUMPED 3 BBL BEHIND, BLED BACK 3 BBL, FLOATS HELD									

2.0 Real-Time Job Summary

2.1 Job Event Log

Type	Seq. No.	Activity	Graph Label	Date	Time	Source	Comments
Event	1	Arrive At Loc	Arrive At Loc	5/11/2019	01:00:00	USER	ON LOCATION TIME WAS SET TO 02:00, RIG WAS HAVING ISSUES WITH DRAW WORKS, CM SIGNED WOC, TESTED WATER- 57 DEGREES F, CHLORIDES- 0, SULFATES- <200, T/L- PASS, GOT NUMBERS, ASSESSED LOCATION FOR HAZARDS
Event	2	Assessment Of Location Safety Meeting	Assessment Of Location Safety Meeting	5/11/2019	01:15:00	USER	HELD SAFETY MEETING AND DISCUSSED HAZARDS ASSOCIATED WITH SPOTTING TRUCKS AND RIGGING UP HES EQUIPMENT
Event	3	Rig-Up Equipment	Rig-Up Equipment	5/11/2019	01:30:00	USER	RIGGED UP ALL HES EQUIPMENT TO BE AS READY AS POSSIBLE.
Event	4	Condition Well Fluid	Condition Well Fluid	5/11/2019	05:58:29	USER	
Event	5	Safety Meeting - Pre Job	Safety Meeting - Pre Job	5/11/2019	07:45:00	USER	DISCUSSED HAZARDS ASSOCIATED WITH PRESSURE TEST, MIXING CMT, RUNNING BULK EQUIPMENT, AND ALL JOB RESPONSIBILITIES ASSOCIATED
Event	6	Test Lines	Test Lines	5/11/2019	07:54:41	COM5	TESTED KICKOUTS AT 500 PSI AND LINES TO 8000 PSI
Event	7	Drop Bottom Plug	Drop Bottom Plug	5/11/2019	07:59:55	COM5	

Event	8	Pump Spacer 1	Pump Spacer 1	5/11/2019	08:04:25	COM5	FDP-C1337-18 SPACER, 80 BBL, 10.5 PPG, 4 BPM, 700 PSI
Event	9	Pump Lead Cement	Pump Lead Cement	5/11/2019	08:24:15	COM5	GASSTOP B1 LATEX LEAD CEMENT, 178 BBL, 13.2 PPG, 5 BPM, 216 PSI
Event	10	Check Weight	Check Weight	5/11/2019	08:27:47	COM5	
Event	11	Check Weight	Check Weight	5/11/2019	08:38:21	COM5	
Event	12	Pump Tail Cement	Pump Tail Cement	5/11/2019	09:04:30	COM5	ECONOCEM TAIL CEMENT, 1160 SKS, 347 BBL, 13.5 PPG, 8 BPM, 627 PSI
Event	13	Clean Lines	Clean Lines	5/11/2019	10:00:17	COM5	
Event	14	Drop Top Plug	Drop Top Plug	5/11/2019	10:08:38	COM5	
Event	15	Pump Displacement	Pump Displacement	5/11/2019	10:08:41	COM5	435 BBL TOTAL, FIRST 20 BBL W/ MMCR AND BIOCIDES, REMAINING 415 BBL W/ BIOCIDES
Event	16	Bump Plug	Bump Plug	5/11/2019	11:10:28	COM5	LANDED PLUG ON CALCULATED DISPLACEMENT, 2450 PSI - 3000 PSI, HELD 10 MINUTES FOR CASING TEST
Event	17	Pressure Up Well	Pressure Up Well	5/11/2019	11:20:52	COM5	PRESSURED UP TO 5150 PSI TO RUPTURE WET SHOE SLEEVE, PUMPED 3 BBL BEHIND
Event	18	Other	Other	5/11/2019	11:24:38	COM5	bled back 3 BBL, floats held
Event	19	Post-Job Safety Meeting (Pre Rig-Down)	Post-Job Safety Meeting (Pre Rig-Down)	5/11/2019	11:30:00	USER	DISCUSSED ALL HAZARDS ASSOCIATED WITH RIGGING DOWN HES EQUIPMENT
Event	20	Rig-Down Equipment	Rig-Down Equipment	5/11/2019	11:45:00	USER	

Event	21	Depart Location Safety Meeting	Depart Location Safety Meeting	5/11/2019	12:45:00	USER	DISCUSSED HAZARDS ASSOCIATED WITH LEAVING LOCATION AND BEST ROUTE TO TAKE
Event	22	Depart Location	Depart Location	5/11/2019	13:00:00	USER	

3.0 Attachments

3.1 Job Chart

