

HALLIBURTON

iCem[®] Service

ANADARKO PETROLEUM CORP - EBUS

Ft. Lupton District, Colorado

Date: Tuesday, July 09, 2019

JDB 15-9HZ Production

Job Date: Tuesday, July 09, 2019

Sincerely,

Justin Lansdale

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1.0 Cementing Job Summary

1.1 Executive Summary

Halliburton appreciates the opportunity to perform the cementing services on the **JDB 15-9HZ** 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 4 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 #: 300466		Ship To #: 0003931154		Quote #: 0022600807		Sales Order #: 0905822398					
Customer: ANADARKO PETROLEUM CORP-EBUS				Customer Rep: Will Drake							
Well Name: JDB			Well #: 15-9HZ			API/UWI #: 05-123-49215-00					
Field: WATTENBERG		City (SAP): IONE		County/Parish: WELD		State: COLORADO					
Legal Description: SE SE-15-1N-66W-509FSL-1068FEL											
Contractor:				Rig/Platform Name/Num: Akita 522							
Job BOM: 7523 7523											
Well Type: HORIZONTAL GAS											
Sales Person: HALAMERICA\HX41066				Srv Supervisor: Michael Loughran							
Job											
Formation Name											
Formation Depth (MD)		Top		Bottom							
Form Type				BHST							
Job depth MD		13547ft		Job Depth TVD		7492					
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	1884	0	1884	
Casing		5.5	4.892	17	LTC	HCP110	0	13546.8	0	7492	
Open Hole Section			7.875				1893	13546.8	1893	7492	
Tools and Accessories											
Type	Size in	Qty	Make	Depth ft		Type	Size in	Qty	Make		
Guide Shoe	5.5					Top Plug	5.5	1			
Float Shoe	5.5			13546.8		Bottom Plug	5.5	1			
WSS	5.5			13538		SSR plug set	5.5				
Insert Float	5.5					Plug Container	5.5	1	HES		
Stage Tool	5.5					Centralizers	5.5				
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			60	bbl	10.5	6.17		5	
0.75 gal/bbl		MUSOL(R) A, 5 GAL PAIL (100064220)									
0.2830 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)							
1 lbm/bbl		FE-2 (100001615)							
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	FDP-C1337-18 (No Surfactants)	SBM FDP-C1337-18 CEMENT SPACER SYS	50	bbl	10.5	6.19		6	
0.25 gal/bbl		D-AIR 3000L, 5 GAL PAIL (101007444)							
90.63 lbm/bbl		BARITE, BULK (100003681)							
1 lbm/bbl		FE-2 (100001615)							
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	Gasstop B1	GASSTOP (TM) SYSTEM	640	sack	13.2	1.56		8	7.62
0.90 %		SCR-100 (100003749)							
5.12 Gal		FRESH WATER							
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	EconoCem	ECONOCEM (TM) SYSTEM	610	sack	13.5	1.68		8	7.99
0.10 %		SA-1015, 50 LB SACK (102077046)							
7.99 Gal		FRESH WATER							
0.35 %		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
5	Biocide Water and MMCR	Biocide Water and MMCR	20	bbl	8.34			8	
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
6	Biocide Water	Biocide Water	294	bbl	8.34			8	
Cement Left In Pipe		Amount	0.00 ft		Reason			Wet Shoe Joint	

Mix Water:	pH 7	Mix Water Chloride:	Less 200 ppm	Mix Water Temperature:	70 °F
Cement Temperature:		Plug Displaced by:	8.33 lb/gal	Disp. Temperature:	
Plug Bumped?	Yes	Bump Pressure:	2750 psi	Floats Held?	Yes
Cement Returns:		Returns Density:		Returns Temperature:	
Comment Plug bumped, 3 bbl wet shoe, Floats held, Good returns throughout job. 4 bbl spacer to surface. Estimated top cement 2365'					

2.0 Real-Time Job Summary

2.1 Job Event Log

Type	Seq. No.	Activity	Graph Label	Date	Time	Source	Comments
Event	1	Call Out	Call Out	7/9/2019	00:30:00	USER	Crew called out for on location time of 0630 hrs 7/9/2019
Event	2	Arrive At Loc	Arrive At Loc	7/9/2019	04:40:00	USER	Arrive at location, Rig running casing, Meet with customer, TP 13546.8 17# P-110, TD 13557, 7.875 Hole, WSS 13538, TVD 7492, PC 1884' 9.625 J-55 36#, WF 9.5 OBM, 3rd Party Top and Bottom plug provided by customer, Water 70 Deg., PH 7, Chlorides and sulfates less than 200 ppm
Event	3	Pre-Rig Up Safety Meeting	Pre-Rig Up Safety Meeting	7/9/2019	05:30:00	USER	Pre rig up safety meeting
Event	4	Rig-Up Equipment	Rig-Up Equipment	7/9/2019	05:40:00	USER	Rig up all service lines and iron to buffer zone
Event	5	Pre-Job Safety Meeting	Pre-Job Safety Meeting	7/9/2019	09:30:00	USER	Discuss job procedures, Discuss job hazards and hazards of Halliburton Equipment.
Event	6	Start Job	Start Job	7/9/2019	09:53:54	COM4	Begin Recording Data
Event	7	Pressure Test	Pressure Test	7/9/2019	09:57:26	USER	6500 psi test

Event	8	Pump Spacer 1	Pump Spacer 1	7/9/2019	10:02:28	COM4	60 bbl. FDP-C1337-18 Spacer, 10.5 ppg, 6.16 yield, 39.6 gal/sack, With 45 gal Musol and 45 gal Dual spacer B Surfactant
Event	9	Pump Spacer 2	Pump Spacer 2	7/9/2019	10:13:35	COM4	50 bbl. FDP-C1337-18 Spacer with customer supplied Biocide
Event	10	Drop Bottom Plug	Drop Bottom Plug	7/9/2019	10:21:12	COM4	Verified by Will
Event	11	Pump Lead Cement	Pump Lead Cement	7/9/2019	10:21:15	COM4	640 sacks GASSTOP Lead, 177.82 bbl. 13.2 ppg, 1.56 yield, 7.62 gal/sack
Event	12	Pump Tail Cement	Pump Tail Cement	7/9/2019	10:47:12	COM4	610 sacks ECONOCEM Tail, 182.52 bbl. 13.5 ppg, 1.68 yield, 7.99 gal/sack
Event	13	Shutdown	Shutdown	7/9/2019	11:14:24	COM4	Shutdown
Event	14	Clean Lines	Clean Lines	7/9/2019	11:18:45	USER	Clean pumps and lines
Event	15	Drop Top Plug	Drop Top Plug	7/9/2019	11:24:03	COM4	Verified by Will
Event	16	Pump Displacement	Pump Displacement	7/9/2019	11:25:06	COM4	314 bbl. fresh water displacement with 10 gal Micro Matrix retarder and customer supplied Biocide in first 20 bbl., Biocide throughout displace.
Event	17	Bump Plug	Bump Plug	7/9/2019	12:10:54	COM4	500 psi over final circ pressure of 2150 psi @ 3 bbl./min. Bump to 2750. Hold pressure for 10 min. 4 bbl. Spacer to surface. Approx. top cement = 2365' Good returns throughout job
Event	18	Pressure Up Well	Pressure Up Well	7/9/2019	12:20:40	COM4	Pressure up to shift sleeve @ 4900 psi. Pump 3 bbl. wet shoe.

Event	19	Check Floats	Check Floats	7/9/2019	12:23:26	USER	Floats hold. 2 bbl. back to pump truck
Event	20	End Job	End Job	7/9/2019	12:24:44	COM4	Stop recording data
Event	21	Pre-Rig Down Safety Meeting	Pre-Rig Down Safety Meeting	7/9/2019	12:30:00	USER	JSA safe Rig-Down
Event	22	Rig-Down Equipment	Rig-Down Equipment	7/9/2019	12:40:00	USER	Rig down equipment
Event	23	Crew Leave Location	Crew Leave Location	7/9/2019	14:00:00	USER	Thanks for choosing Halliburton Energy Services!

3.0 Attachments

3.1 Job Chart

