

HALLIBURTON

iCem[®] Service

PDC ENERGY EBUS

Date: Saturday, August 05, 2017

Josephine 19M-334 Production

Job Date: Saturday, July 15, 2017

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 **Josephine 19M-334** 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 #: 304535		Ship To #: 3797097		Quote #:		Sales Order #: 0904155979				
Customer: PDC ENERGY-EBUS				Customer Rep: Billy Myers						
Well Name: JOSEPHINE			Well #: 19M-334		API/UWI #: 05-123-44682-00					
Field: WATTENBERG		City (SAP): KERSEY		County/Parish: WELD		State: COLORADO				
Legal Description: SW NE-19-5N-64W-1729FNL-2150FEL										
Contractor: ENSIGN DRLG				Rig/Platform Name/Num: ENSIGN 158						
Job BOM: 7523 7523										
Well Type: HORIZONTAL OIL										
Sales Person: HALAMERICA/H139013				Srv Supervisor: Vaughn Oteri						
Job										
Formation Name										
Formation Depth (MD)		Top		Bottom						
Form Type				BHST						
Job depth MD		12940ft		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	8.921	36			0	1674		1674
Casing		5.5	4.778	20			0	12938		6800
Open Hole Section			8.5				1674	12940	1674	6800
Tools and Accessories										
Type	Size in	Qty	Make	Depth ft		Type	Size in	Qty	Make	
Guide Shoe	5.5					Top Plug	5.5	1	Weatherford	
Float Shoe	5.5			12938		Bottom Plug	5.5			
Float Collar	5.5			12906		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	Mud Flush III (Powder)	Mud Flush III	50	bbl	8.4			2.0		

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	12.0 lb/gal Tuned Spacer III	Tuned Spacer III	50	bbl	12	3.16		5.0	
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
3	13.2# ElastiCem	ELASTICEM (TM) SYSTEM	2124	sack	13.2	1.57		8	7.53
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	Displacement fluid		285	bbl	8.33				
Cement Left In Pipe		Amount	ft		Reason			Shoe Joint	
Comment 30bbl of cement back to surface									

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	7/14/2017	20:00:00	USER	Call out from ARC hub
Event	2	Arrive At Loc	Arrive At Loc	7/14/2017	23:00:00	USER	Requested on location 0200 Arrived on location 2300 met with company rep to discuss job process and concerns
Event	3	Other	Other	7/14/2017	23:10:10	USER	TD-12940 TP=12938 FC-12906 Surf-1674 mud10.0ppg casing 5.5 20# OH-8.5
Event	4	Start Job	Start Job	7/15/2017	04:32:14	COM4	Held pre-job safety meeting with all hands on location to discuss job process and hazards
Event	5	Test Lines	Test Lines	7/15/2017	04:35:33	COM4	Pressure tested pumps and lines with fresh water 4840psi
Event	6	Pump Spacer 1	Pump Spacer 1	7/15/2017	04:41:07	COM4	Mixed 50bbl of Mud flush at 2.0bpm 440psi
Event	7	Pump Spacer 2	Pump Spacer 2	7/15/2017	05:05:26	COM4	Mixed 50bbl of 12.0ppg Tuned spacer III at 5.0bpm 717psi
Event	8	Pump Cement	Pump Cement	7/15/2017	05:16:30	COM4	Mixed 2124sks or 593bbl of 13.2ppg Y1.57 G/sk7.53 Elasticem at 8.0bpm 610psi
Event	9	Check Weight	Check weight	7/15/2017	05:17:27	COM4	Confrim weight of 13.2ppg on scales
Event	10	Clean Lines	Clean Lines	7/15/2017	06:33:23	COM4	Wash pumps and lines with fresh water
Event	11	Shutdown	Shutdown	7/15/2017	06:33:29	COM4	
Event	12	Drop Top Plug	Drop Top Plug	7/15/2017	06:33:35	COM4	Released plug witnessed by company rep
Event	13	Pump Displacement	Pump Displacement	7/15/2017	06:43:54	COM4	Pumped 285bbl of fresh water to displace cement

Event	14	Bump Plug	Bump Plug	7/15/2017	07:30:57	COM4	Bump plug 500psi over final pump pressure
Event	15	Pressure Up Well	Pressure Up Well	7/15/2017	07:36:26	COM4	Pressure up well to pump 5bbl for wet shoe
Event	16	Check Floats	Check Floats	7/15/2017	07:39:36	USER	Released pressure back to pump truck to check floats 2.0bbl back
Event	17	End Job	End Job	7/15/2017	07:40:52	USER	30bbl of cement back to surface
Event	18	End Job	End Job	7/15/2017	07:43:56	COM4	