

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		Srvc 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	bbbl	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	bbbl	8.33				

Cement Left In Pipe	Amount	ft	Reason	Shoe Joint

Comment 30bbbl 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 2124sk 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	