

HALLIBURTON

iCem[®] Service

PDC ENERGY EBUS

Date: Monday, August 07, 2017

Josephine 19N-404 Production

Job Date: Friday, August 04, 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 19N-404** 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 #: 3797062	Quote #:	Sales Order #: 0904198275
Customer: PDC ENERGY-EBUS		Customer Rep: Shane	
Well Name: JOSEPHINE		Well #: 19N-404	API/UWI #: 05-123-44677-00
Field: WATTENBERG	City (SAP): KERSEY	County/Parish: WELD	State: COLORADO
Legal Description: SW NE-19-5N-64W-1774FNL-2150FEL			
Contractor: ENSIGN DRLG		Rig/Platform Name/Num: ENSIGN 158	
Job BOM: 7523 7523			
Well Type: HORIZONTAL OIL			
Sales Person: HALAMERICA/H139013		Srvc Supervisor: Nathaniel Moore	

Job

Formation Name			
Formation Depth (MD)	Top		Bottom
Form Type	BHST		
Job depth MD	12978ft		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	1654		1654
Casing		5.5	4.778	20			0	12858		6800
Open Hole Section			8.5				1654	12978	1654	6800

Tools and Accessories

Type	Size in	Qty	Make	Depth ft	Type	Size in	Qty	Make
Guide Shoe	5.5				Top Plug	5.5		HES
Float Shoe	5.5			12858	Bottom Plug	5.5		HES
Float Collar	5.5				SSR plug set	5.5		HES
Insert Float	5.5				Plug Container	5.5		HES
Stage Tool	5.5				Centralizers	5.5		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	12.0 lb/gal Tuned Spacer III	Tuned Spacer III	50	bbl	12	3.16				
35.20 gal/bbl		FRESH WATER								
176.58 lbm/bbl		BARITE, BULK (100003681)								

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	13.2# ElastiCem	ELASTICEM (TM) SYSTEM	2195	sack	13.2	1.57		6	7.53
7.53 Gal		FRESH WATER							
61.10 lbm		TYPE I / II CEMENT, BULK (101439798)							
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	Displacement fluid		287	bbl	8.33				
Cement Left In Pipe		Amount	ft	Reason				Shoe Joint	
100 bbl cement 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	8/4/2017	00:00:00	USER	OL time 0400. Verify equipment and materials
Event	2	Assessment Of Location Safety Meeting	Assessment Of Location Safety Meeting	8/4/2017	03:30:00	USER	Spot in and rig up equipment. TD 12978' 8.5" hole. TP 12858' 5.5" 20#. Wet shoesub 12830'. Surface 1654'. Will take returns through choke during cement and first 30 bbl displacement to keep 500 psi on backside. MW 10.2 ppg. Water tested PH 7 Chlorides <100 Sulfates <200 Temp 60 deg.
Event	3	Pre-Job Safety Meeting	Pre-Job Safety Meeting	8/4/2017	07:00:00	USER	Discuss job procedure with HES and rig crew
Event	4	Start Job	Start Job	8/4/2017	07:48:49	COM1	Fill lines 3 bbl water. 2 bpm 600 psi.
Event	5	Test Lines	Test Lines	8/4/2017	07:54:59	COM1	500 psi kickout test and 4800 psi pressure test.
Event	6	Pump Spacer 1	Pump Spacer 1	8/4/2017	08:00:16	COM1	50 bbl tuned spacer 12 ppg. 3.16 ft3/sk 20 gal/sk
Event	7	Pump Cement	Pump Cement	8/4/2017	08:13:41	COM1	2195 sks/614 bbl ElastiCem 13.2 ppg 1.57ft3/sk 7.53 gal/sk
Event	8	Shutdown	Shutdown	8/4/2017	10:09:33	USER	Wash pumps and lines and blow back with rig air.
Event	9	Drop Top Plug	Drop Top Plug	8/4/2017	10:25:00	COM1	Weatherford top plug. Witnessed by company rep.
Event	10	Pump Displacement	Pump Displacement	8/4/2017	10:26:10	COM1	285 bbl water displacement with MMCR in first 20 bbl and Biocide throughout.
Event	11	Shutdown	Shutdown	8/4/2017	10:36:04	USER	Swap returns over from choke to flow line.
Event	12	Other	Spacer to surface	8/4/2017	10:57:48	COM1	140 bbl into displacement.

Event	13	Other	Cement to surface	8/4/2017	11:05:47	COM1	185 bbl into displacement. 100 bbl cement to surface
Event	14	Bump Plug	Bump Plug	8/4/2017	11:22:56	COM1	2300 psi final pump pressure. Pressured up to 2850 psi. Held for 5 minutes
Event	15	Pressure Up Well	Pressure Up Well	8/4/2017	11:28:58	COM1	Shift wet shoe sub at 4430 psi and pump 5 bbl wet shoe.
Event	16	Other	Check floats	8/4/2017	11:31:56	COM1	2 bbl back. Floats held
Event	17	End Job	End Job	8/4/2017	11:39:52	COM1	
Event	18	Pre-Rig Down Safety Meeting	Pre-Rig Down Safety Meeting	8/4/2017	12:00:00	USER	
Event	19	Depart Location Safety Meeting	Depart Location Safety Meeting	8/4/2017	13:00:00	USER	

3.0 Attachments

3.1 Job Chart



