

## HALLIBURTON

## Cementing Job Summary

*The Road to Excellence Starts with Safety*

Sold To #: 300466		Ship To #: 3712343		Quote #: 0022273816		Sales Order #: 0903848893					
Customer: ANADARKO PETROLEUM CORP - EBUS				Customer Rep: Ruban Hernandez							
Well Name: PUMA			Well #: 4N-14HZ			API/UWI #: 05-123-42563-00					
Field: WATTENBERG		City (SAP): IONE		County/Parish: WELD			State: COLORADO				
Legal Description: SW SW-23-1N-67W-290FSL-721FWL											
Contractor: NABORS DRLG					Rig/Platform Name/Num: NABORS X22						
Job BOM: 7523											
Well Type: HORIZONTAL GAS											
Sales Person: HALAMERICA\HX41066					Srv Supervisor: Vaughn Oteri						
Job											
Formation Name											
Formation Depth (MD)		Top			Bottom						
Form Type					BHST						
Job depth MD		13913ft			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		J-55	0	2293	0	2293
Casing			5.5	4.892	17	LTC	HCP110	0	13907	0	7353
Open Hole Section				8.5				2293	13913	2293	7353
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			13907		Bottom Plug	5.5	1	Weatherford		
Float Collar	5.5			13810		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	Tuned Spacer III	Tuned Spacer III			80	bbl	11	4.64		4	
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	ElastiCem - Cap Cement	ELASTICEM (TM) SYSTEM			150	sack	13.2	1.57		8	7.53

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Fluid #	Stage Type	Fluid Name	Qty	Qty UoM	Mixing Density lbm/gal	Yield ft <sup>3</sup> /sack	Mix Fluid Gal	Rate bbl/min	Total Mix Fluid Gal
3	ElastiCem	ELASTICEM (TM) SYSTEM	540	sack	13.2	1.6		8	7.69
Fluid #	Stage Type	Fluid Name	Qty	Qty UoM	Mixing Density lbm/gal	Yield ft <sup>3</sup> /sack	Mix Fluid Gal	Rate bbl/min	Total Mix Fluid Gal
4	EconoCem	ECONOCEM (TM) SYSTEM	1150	sack	13.5	1.68		8	7.99
Fluid #	Stage Type	Fluid Name	Qty	Qty UoM	Mixing Density lbm/gal	Yield ft <sup>3</sup> /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	
Fluid #	Stage Type	Fluid Name	Qty	Qty UoM	Mixing Density lbm/gal	Yield ft <sup>3</sup> /sack	Mix Fluid Gal	Rate bbl/min	Total Mix Fluid Gal
6	Biocide Water	Biocide Water	300	bbl	8.34			8	
Cement Left In Pipe			Amount	97ft	Reason			Shoe Joint	
Comment 70bbl of Tuned spacerll back to surface									

## 2.0 Real-Time Job Summary

### 2.1 Job Event Log

Type	Seq. No.	Activity	Graph Label	Date	Time	Source	PS Pump Press <i>(psi)</i>	DH Density <i>(ppg)</i>	Comb Pump Rate <i>(bbl/min)</i>	Pump Stg Tot <i>(bbl)</i>	Comments
Event	1	Call Out	Call Out	2/20/2017	06:30:00	USER					Call out from ARC hub
Event	2	Arrive At Loc	Arrive At Loc	2/20/2017	10:30:00	USER					Arrived on location met with company rep to discuss job process and concerns
Event	3	Other	Other	2/20/2017	10:32:00	USER					TD-13913 TP-13907 FC-13810 Surf-2293 Mud-9.1ppg Casing-5.5 17#
Event	4	Start Job	Start Job	2/20/2017	14:52:42	COM4					Held pre-job safety meeting all hands on location to discuss job process and hazards
Event	5	Test Lines	Test Lines	2/20/2017	15:03:38	COM4	5107.00	8.35	0.00	0.70	Pressure tested pumps and lines with fresh water 5107psi found no leaks and pressure held good
Event	6	Pump Spacer 1	Pump Spacer 1	2/20/2017	15:06:36	COM4	95.00	8.36	0.00	0.70	Mixed 80bbl of 11.0ppg Tuned spacer III at 4.0bpm 320psi
Event	7	Drop Bottom Plug	Drop Bottom Plug	2/20/2017	15:26:11	COM4	43.00	11.34	1.80	69.30	Released plug witnessed by company rep
Event	8	Pump Lead Cement	Pump Lead Cement	2/20/2017	15:27:13	COM4	562.00	12.91	6.30	73.30	Mixed 690sks of 192bbl of 13.2ppg Y-1.57 G/sk7.48 Elasticem at 8.0bpm 798psi
Event	9	Check Weight	Check weight	2/20/2017	15:49:10	COM4	647.00	13.24	8.00	171.90	Confrimed weight of 13.2ppg on scales
Event	10	Pump Tail Cement	Pump Tail Cement	2/20/2017	15:53:04	COM4	770.00	13.46	8.00	203.20	Mixed 1150sks or 344bbl of 13.5ppg y-1.68 g/sk7.99 Econocem at 8.0bpm 820psi
Event	11	Shutdown	Shutdown	2/20/2017	16:34:11	COM4	43.00	13.01	0.90	322.60	
Event	12	Clean Lines	Clean Lines	2/20/2017	16:34:14	COM4	34.00	13.02	0.90	322.60	Washed pumps and lines with fresh water
Event	13	Drop Top Plug	Drop Top Plug	2/20/2017	16:34:16	COM4	29.00	13.00	0.90	322.70	Released plug witnessed by company rep
Event	14	Pump Displacement	Pump Displacement	2/20/2017	16:45:27	COM4	-3.00	-0.24	0.00	342.80	Pumped 320bbl of fresh water to displace cement
Event	15	Bump Plug	Bump Plug	2/21/2017	17:32:24	COM4	3068.00	8.22	0.00	315.50	Bumped plug 500psi over final pump pressure

Event	16	Pressure Up Well	Pressure Up Well	2/21/2017	17:32:42	COM4	3100.00	8.22	0.00	315.50	Pressure up well to test casing for 15min at 3000psi
Event	17	Check Floats	Check Floats	2/21/2017	17:46:24	USER	3358.00	8.22	0.00	315.50	Released pressure back to pump truck to check floats, floats held good 3.5bbl back
Event	18	End Job	End Job	2/21/2017	18:05:43	COM4	-18.00	-0.26	0.00	330.70	70bbl of spacer back to surface

3.0 Attachments

3.1 Case 1-Custom Results.png

