HALLIBURTON

iCem® Service

BP AMERICA PROD CO-SORAC/NAG EBIZ

For: David Warren

Date: Wednesday, September 13, 2017

E. Sauls Creek 26 #1-2,

E. Sauls Creek 26 #1-2

E. Sauls Creek 26 #1-2, Intermediate

Job Date: Wednesday, September 13, 2017

Sincerely,

Jacob Ayers

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Cementing Job Summary

The Road to Excellence Starts with Safety

Sold To #: 358135	**Ship To #:** 3797502	**Quote #:** 0022338976	**Sales Order #:** 0904292078
Customer: BP AMERICA PROD CO - NAG-EBUS		**Customer Rep:** David Warren	
Well Name: EAST SAULS CREEK 26	**Well #:** 1-2		**API/UWI #:** 05-067-10000-00
Field: IGNACIO-BLANCO	**City (SAP):** BAYFIELD	**County/Parish:** LA PLATA	**State:** COLORADO
Legal Description: SW NE-27-35N-6W-1552FNL-1623FEL			
Contractor: AZTEC WELL SERVICING CO		**Rig/Platform Name/Num:** AZTEC 507	
Job BOM: 7522 7522			
Well Type: COAL DE-GAS			
Sales Person: HALAMERICA\HB41307		**Srvc Supervisor:** Jacob Ayers	

Job

Formation Name				
Formation Depth (MD)	**Top**		**Bottom**	
Form Type			**BHST**	
Job depth MD	2796ft		**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		13.375	12.615	54.5	STC	J-55	0	610		
Casing		9.625	8.921	36	LTC	J-55	0	2796		
Open Hole Section			12.25				610	2814		

Tools and Accessories

Type	Size in	Qty	Make	Depth ft		Type	Size in	Qty	Make
Guide Shoe	9.625			2796		**Top Plug**	9.625		HES
Float Shoe	9.625					**Bottom Plug**	9.625		HES
Float Collar	9.625					**SSR plug set**	9.625		HES
Insert Float	9.625					**Plug Container**	9.625		HES
Stage Tool	9.625					**Centralizers**	9.625		HES

Fluid Data

Stage/Plug #: 1

Fluid #	Stage Type	Fluid Name	Qty	Qty UoM	Mixing Density	Yield ft3/sack	Mix Fluid	Rate bbl/min	Total Mix Fluid
1	Fresh water spacer	Fresh water spacer	20	bbl	8.33				

Fluid #	Stage Type	Fluid Name	Qty	Qty UoM	Mixing Density	Yield ft3/sack	Mix Fluid	Rate bbl/min	Total Mix Fluid
1	11.5 lb/gal Tuned Spacer 3	Tuned Spacer III	60	bbl	11.5	37.3	24		
150.82 lbm/bbl		BAROID 41 - 50 LB BAG(478095)							
36.09 gal/bbl		FRESH WATER							
1 lbm/bbl		D-AIR 5000, 50 LB SACK (102068797)							

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	Lead Cement	VARICEM (TM) CEMENT	295	sack	12.3	2.43		5	13.61
0.40 %		FE-2 (100001615)							
0.1250 lbm		POLY-E-FLAKE (101216940)							
13.61 Gal		FRESH WATER							
5 lbm		KOL-SEAL, 50 LB BAG (100064232)							

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	Lead Cement	VARICEM (TM) CEMENT	120	sack	12.3	2.43		5	13.62
0.40 %		FE-2 (100001615)							
5 lbm		KOL-SEAL, 50 LB BAG (100064232)							
0.1250 lbm		POLY-E-FLAKE (101216940)							
13.62 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	Tail Cement	VARICEM (TM) CEMENT	250	sack	13.5	1.87		5	9.38
0.1250 lbm		POLY-E-FLAKE (101216940)							
9.38 Gal		FRESH WATER							
0.40 %		FE-2 (100001615)							
5 lbm		KOL-SEAL, 50 LB BAG (100064232)							

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	WMB Displacement	WMB Displacement	212.5	bbl	8.33				

Cement Left In Pipe	**Amount**	80 ft	**Reason**		Shoe Joint
Mix Water:	pH 7	**Mix Water Chloride:**	<291 ppm	**Mix Water Temperature:**	69 °F
Sulfates :	<400 ppm	**Plug Bumped?**	Yes	**Bump Pressure:**	570 psi
Floats Held?	/No	**Cement Returns:**	60 bbl		
Comment					

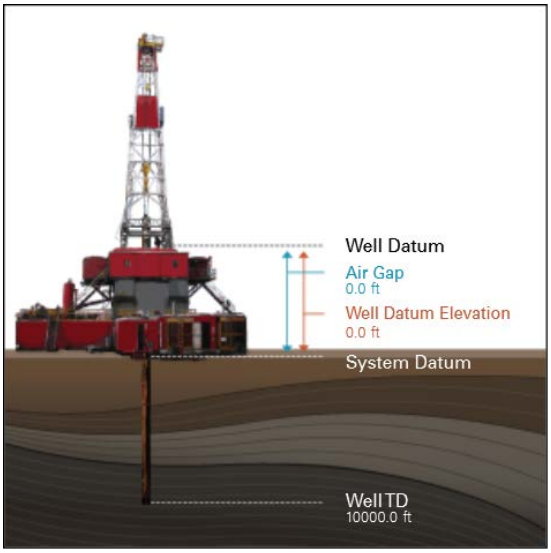
Table of Contents

1.0 Job Design

1.1 Overview

Job Type	Primary Cement Job
Injection Path	Casing/Conventional
Foam Job	No

Well Snapshot



Simulations Performed

1.1 Pump Schedule

Description	Stage No.	Density (ppg)	Rate (bbl/min)	Yield (ft^3/sack)	Water Req. (gal/sack)	Volume (bbl)	Bulk Cement (sacks)	Duration (min)
Int Mud	1	9.20	4.00			0.00		0.00
Tuned Spacer	2	11.50	5.00			60.00		12.00
PRB Lead 2334020/1	3	12.30	6.00	2.4347	13.641	127.92	295.00	21.62
PRB Lead 2334020/1 w/CBL	4	12.30	6.00	2.4347	13.641	52.04	120.00	8.67
PRB Tail 2334025/1	5-1	13.50	6.00	1.8690	9.406	83.22	250.00	13.87
Shutdown	5-2			1.8690	9.406		0.00	10.00
Top Plug/Start Displacement								
Fresh Water	6-1	8.33	6.00			140.00		23.33
Fresh Water	6-2	8.33	5.00			60.00		12.00
Fresh Water	6-3	8.33	2.50			13.90		5.56
					Total:	**537.08**		**107.05**

**Pump schedule may include additional rows for displacement if "Automatic Rate Adjustment" was enabled and ECDs approached the fracture gradient.*

2.0 Real-Time Job Summary

2.1 Job Event Log

Type	Seq. No.	Activity	Graph Label	Date	Time	Source	PS Pump Press (psi)	DH Density (ppg)	PS Pump Rate (bbl/min)	Pump Stg Tot (bbl)	Recirc Density (ppg)	Comments
Event	1	Call Out	Call Out	9/13/2017	01:00:00	USER						Job Called out @ 0100
Event	2	Depart Yard Safety Meeting	Depart Yard Safety Meeting	9/13/2017	03:20:00	USER						Depart yard safety meeting with crew @ 0320
Event	3	Depart from Service Center or Other Site	Depart from Service Center or Other Site	9/13/2017	03:30:00	USER						Departed from yard @ 0330
Event	4	Arrive At Loc	Arrive At Loc	9/13/2017	05:30:00	USER						Arrived on location @ 530 rig was rigging up Casing Crew
Event	5	Other	well info	9/13/2017	06:05:06	USER						Surface- 13 3/8 54# 610' oh-12 1/4'' 2814' intermediate 9 5/8'' 36# @ 2796'
Event	6	Other	water test	9/13/2017	07:00:00	USER						PH- 7 Chlorides- <291 Sulfates- >400 temp -69
Event	7	Pre-Rig Up Safety Meeting	Pre-Rig Up Safety Meeting	9/13/2017	12:10:00	USER						Pre rig up meeting with crew
Event	8	Rig-Up Equipment	Rig-Up Equipment	9/13/2017	12:13:00	USER						Rigged up Halliburton a 2'' iron, water hoses and mud hoses
Event	9	Pre-Job Safety Meeting	Pre-Job Safety Meeting	9/13/2017	16:30:00	USER	-0.70	8.72	0.00	0.0	8.33	Pre job safety meeting with all affected personnel on location
Event	10	Prime Pumps	Prime Pumps	9/13/2017	16:40:00	USER	-0.70	8.49	0.00	0.0	8.33	Prime pumps
Event	11	Start Job	Start Job	9/13/2017	16:41:21	COM5						
Event	12	Prime Pumps	Prime Pumps	9/13/2017	16:43:28	COM5	-13.70	8.60	0.00	0.0	8.33	
Event	13	Test Lines	Test Lines	9/13/2017	16:46:38	COM5	151.30	8.30	0.00	1.9	8.33	Test pumps and lines to 5383psi

Event	14	Check Weight	Check weight	9/13/2017	16:51:47	COM5	5346.30	8.41	0.00	1.9	11.73	
Event	15	Pump Spacer 1	Pump Fresh Water Spacer	9/13/2017	16:56:41	COM5						Pump 20 bbl fresh water
Event	16	Pump Spacer	Pump Tuned Spacer	9/13/2017	17:00:51	USER	160.30	11.16	5.10	0.0	11.92	Pump 60 bbl Tuned Spacer III at 11.5 ppg
Event	17	Pump Lead Cement	Pump Lead Cement	9/13/2017	17:11:32	COM5						295 sks@12.3# 2.43 yield 13.61 wrq = 127.6 bbl cmt 95.6 bbl mix water
Event	18	Check Weight	Check weight	9/13/2017	17:12:25	COM5						
Event	19	Check Weight	Check weight	9/13/2017	17:24:12	COM5						
Event	20	Pump Cement	Pump Lead 2 Cement	9/13/2017	17:37:52	USER	26.30	12.55	5.00	160.7	12.26	120sks @ 12.3# 2.43 yield 13.61 wrq= 52bbl cmt 39 bbl mix water
Event	21	Check Weight	Check weight	9/13/2017	17:41:19	COM5						
Event	22	Comment	Comment	9/13/2017	17:48:32	USER	8.30	13.92	5.00	53.2	12.79	Ran out of water on rig tank, slowed rate to wait for water truck.
Event	23	Comment	Comment	9/13/2017	18:26:55	USER	-11.70	1.27	3.20	145.0	12.37	Water truck hooked up and back online
Event	24	Pump Tail Cement	Pump Tail Cement	9/13/2017	18:31:01	COM5						250 sks @ 13.5# 1.87 yield 9.38 wrq = 83.2 bbl cmt 55.8 bbl mix water
Event	25	Check Weight	Check weight	9/13/2017	18:35:55	COM5						
Event	26	Check Weight	Check weight	9/13/2017	18:57:38	COM5						
Event	27	Drop Plug	Drop Plug	9/13/2017	19:08:48	USER	21.30	14.45	4.70	156.9	8.49	Drop Weatherford Top Plug
Event	28	Pump Displacement	Pump Displacement	9/13/2017	19:11:03	COM5	-8.70	24.99	0.00	0.0	0.36	calculated 212.5 bbl to land plug
Event	29	Cement Returns to Surface	Cement Returns to Surface	9/13/2017	19:30:32	USER	286.30	10.08	5.50	98.9	0.36	Calculated 98 bbl of cmt back. 60 bbl of good cmt actually returned to surface
Event	30	Other	Other	9/13/2017	19:41:13	COM5						

Event	31	Bump Plug	Bump Plug	9/13/2017	19:56:34	USER	568.30	8.19	2.90	220.4	0.36	Calculated 560psi to land plug. plug landed @ 575psi took it 400psi over to 975psi psi to life 1100psi
Event	32	Check Floats	Check Floats	9/13/2017	19:59:24	USER	926.30	8.76	0.00	220.6	0.36	Check floats, floats didn't hold 1 bbl back, floats where still flowing back a little, shut in head with 100psi on it
Event	33	End Job	End Job	9/13/2017	20:21:45	COM5						

3.0 Attachments

3.1 E. Sauls Creek 26 #1-2, Intermediate-Custom Results.png