HALLIBURTON

iCem® Service

BP AMERICA PROD CO-SORAC/NAG EBIZ

For: Luke Walker

Date: Monday, January 30, 2017

SOUTHERN UTE GAS UNIT

SOUTHERN UTE GAS UNIT -BK- #2

SOUTHERN UTE GAS UNIT -BK- #2 PRODUCTION

Job Date: Monday, January 30, 2017

Sincerely,

Jacob Ayers

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1.0 Job Design

1.1 Overview

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

1.2 Pressure Schedule Inputs

Pressure Mode	Conventional

1.3 Pressure Schedule Table

Start *(Pump Volume in bbl)*	**End** *(Pump Volume in bbl)*	**Pressure** *(psi)*
0.00	End	0.00

1.4 Job Summary

HALLIBURTON *Cementing Job Summary*

The Road to Excellence Starts with Safety

Sold To #: 358135	**Ship To #:** 3709797	**Quote #:** 0022257504	**Sales Order #:** 0903822986
Customer: BP AMERICA PROD CO-SORAC/NAG EBIZ		**Customer Rep:** MARK JOHNSON	
Well Name: SOUTHERN UTE TRIBAL K	**Well #:** 4		**API/UWI #:** 05-067-09964-02
Field: IGNACIO-BLANCO	**City (SAP):** IGNACIO	**County/Parish:** LA PLATA	**State:** COLORADO
Legal Description: SW NW-5-33N-7W-1581FNL-1154FWL			
Contractor: AZTEC WELL SERVICING CO		**Rig/Platform Name/Num:** AZTEC 507	
Job BOM: 7523			
Well Type: COAL DE-GAS			
Sales Person: HALAMERICA\HB41307		**Srvc Supervisor:** John Keane	

Job

Formation Name				
Formation Depth (MD)	**Top**		**Bottom**	
Form Type			**BHST**	
Job depth MD	3340ft		**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		8.625	8.097	24	LTC	J-55	0	350	0	350
Casing		5.5	4.95	15.5	LTC	J-55	0	3340	0	2946
Open Hole Section			7.875				350	3340	350	2946

Tools and Accessories

Type	Size in	Qty	Make	Depth ft		Type	Size in	Qty	Make
Guide Shoe	5.5			3340		Top Plug	5.5		HES
Float Shoe	5.5					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	11.5 lb/gal Tuned Spacer III	Tuned Spacer III	20	bbl	11.5	3.73			
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)							

HALLIBURTON *Cementing Job Summary*

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	155	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 (with Super CBL)	VARICEM (TM) CEMENT	60	sack	12.3	2.43		5	13.64
0.30 %		SUPER CBL, 50 LB PAIL (100003668)							
0.40 %		FE-2 (100001615)							
13.64 Gal		FRESH WATER							
0.1250 lbm		POLY-E-FLAKE (101216940)							
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
4	Tail Cement	VARICEM (TM) CEMENT	155	sack	13.5	1.87		5	9.4
0.1250 lbm		POLY-E-FLAKE (101216940)							
9.40 Gal		FRESH WATER							
0.30 %		SUPER CBL, 50 LB PAIL (100003668)							
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	Displacement	Displacement	80.2	bbl	8.33				

Cement Left In Pipe	Amount	ft	Reason	Shoe Joint

Mix Water:	pH ##	Mix Water Chloride:	## ppm	Mix Water Temperature:	## °F °C
Cement Temperature:	## °F °C	Plug Displaced by:	## lb/gal kg/m3 XXXX	Disp. Temperature	## °F °C
Plug Bumped?	Yes/No	Bump Pressure:	#### psi MPa	Floats Held?	Yes/No
Cement Returns:	## bbl m3	Returns Density:	## lb/gal kg/m3	Returns Temperature	## °F °C

Comment

2.0 Real-Time Job Summary

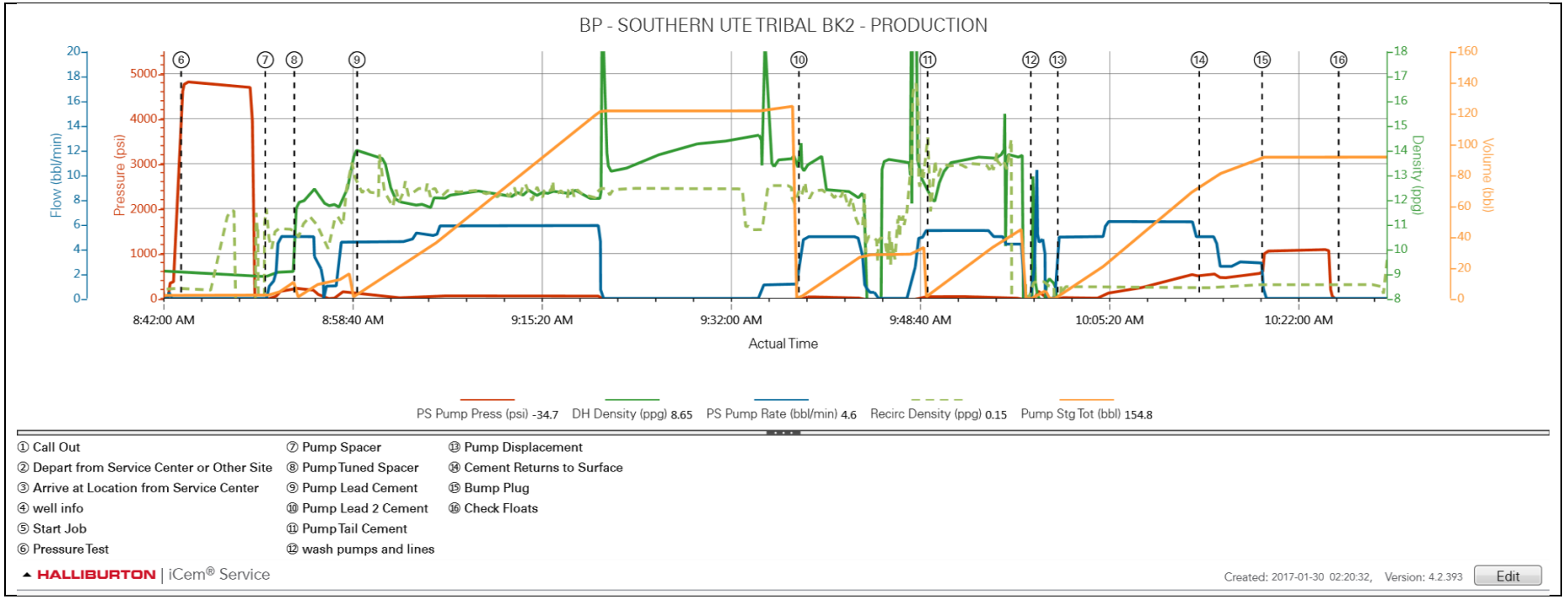
2.1 Job Event Log

Type	Seq. No.	Activity	Graph Label	Date	Time	Source	PS Pump Press *(psi)*	DH Density *(ppg)*	PS Pump Rate *(bbl/min)*	Recirc Density *(ppg)*	Pump Stg Tot *(bbl)*	Comments
Event	1	Call Out	Call Out	1/29/2017	08:00:00	USER						job called out @2000
Event	2	Depart from Service Center or Other Site	Depart from Service Center or Other Site	1/29/2017	22:30:00	USER						departed from the yard @ 2230
Event	3	Arrive at Location from Service Center	Arrive at Location from Service Center	1/30/2017	01:00:00	USER						requested on location time was 0100
Event	4	Other	well info	1/30/2017	01:30:00	USER						surface8 5/8 24# 377' open hole 7 7/8 3750' production 5 1/2 15.5# 3742'
Event	5	Start Job	Start Job	1/30/2017	08:35:48	COM5	-33.70	8.89	0.00	8.34	0.0	
Event	6	Pressure Test	Pressure Test	1/30/2017	08:43:46	USER	4761.30	9.10	0.00	8.41	2.0	test pumps and lines to 4700psi
Event	7	Pump Spacer	Pump Spacer	1/30/2017	08:51:11	USER	-21.70	8.90	1.00	11.27	2.1	pump 10 bbl fresh water ahead
Event	8	Pump Spacer 2	Pump Tuned Spacer	1/30/2017	08:53:44	USER	213.30	11.85	5.00	10.48	0.5	20 bbl tuned spacer @11.5#
Event	9	Pump Lead Cement	Pump Lead Cement	1/30/2017	08:59:16	USER	117.30	13.99	4.60	12.69	3.6	205 sks @ 12.3# 2.43 yield 13.64mwrq= 88.72 bbl
Event	10	Other	shut down	1/30/2017	09:20:50	USER	-38.70	16.44	0.00	12.45	121.4	shut down and discussed the routs that where available to us. with the co man and engineer the decision was made to finish pumping job.
Event	11	Pump Cement	Pump Lead 2 Cement	1/30/2017	09:38:12	USER	-27.70	13.39	4.50	12.15	1.4	60 sks@ 12.3# 2.43 yield 13.64mwrq = 25.96 bbl
Event	12	Pump Tail Cement	Pump Tail Cement	1/30/2017	09:49:33	USER	39.30	12.25	5.50	11.45	3.2	145sks @ 13.5# 1.87 yield 9.4 mwrq = 48.29bbl

Event	13	Other	wash pumps and lines	1/30/2017	09:58:37	USER	-19.70	11.50	2.30	8.66	0.2	wash pumps and lines
Event	14	Pump Displacement	Pump Displacement	1/30/2017	10:01:00	USER	14.30	7.87	5.00	8.57	1.9	calculated 88bbl to land plug
Event	15	Cement Returns to Surface	Cement Returns to Surface	1/30/2017	10:13:28	USER	524.30	7.86	5.00	8.47	73.4	Calculated 45 bbl cmt back. 30bbl of 11.1# cmt returned to surface
Event	16	Bump Plug	Bump Plug	1/30/2017	10:19:01	USER	1028.30	7.87	0.00	8.56	91.5	Calculated 850 psi to land the plug. actually landed the plug @ 590psi took it 500psi over landing pressure
Event	17	Check Floats	Check Floats	1/30/2017	10:25:45	USER	-49.70	7.81	0.00	8.55	91.5	floats held 1/2bbl back
Event	18	Other	Other	1/30/2017	11:01:10	USER	317.30	8.76	12.20	0.14	164.1	due to job issues (pumped half of 1st lead @11.1#) it was decided to forgo the additional hours charges.
Event	19	End Job	End Job	1/30/2017	11:11:57	COM5	-76.70	-0.48	0.00	0.15	230.2	

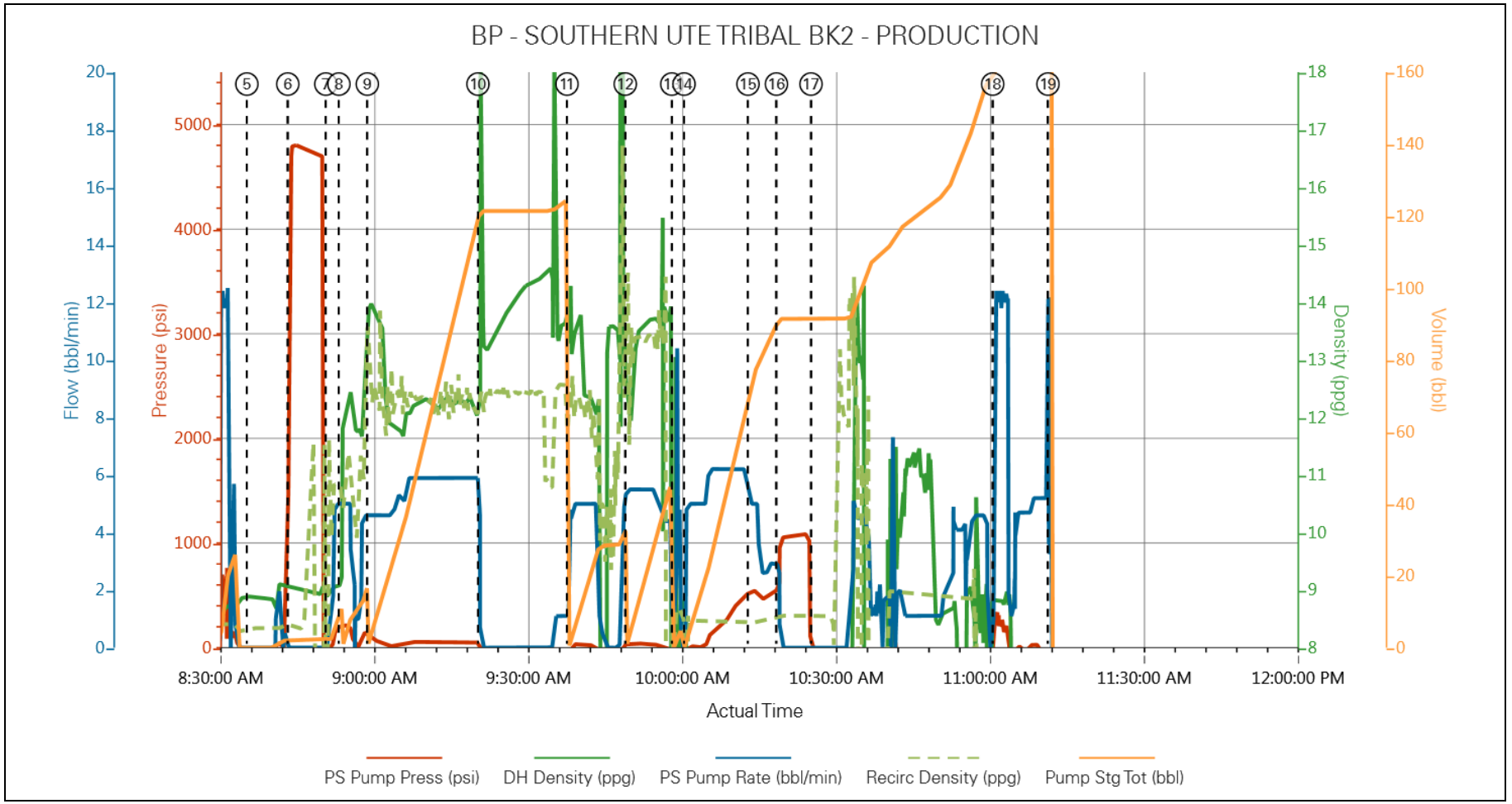
3.0 Attachments

3.1 SOUTHERN UTE GAS UNIT -BK- #2 PRODUCTION -Custom Results.png



4.0 Custom Graphs

4.1 Custom Graph



5.0 Appendix

5.1 3D Wellbore Schematic