



Laramie Energy

End of Well Cement Report

Nichols 0994-24-05E 05-077-10408

S:24 T:9S R:94W Mesa CO

Quote #: 03457/02137

I Execution #: 01952/02065



Laramie Energy

Attention: Mr. Aaron Duncan | (303) 339-4913 | aduncan@laramie-energy.com

Laramie Energy | 1401 17th St, Suite 1400 | Denver, CO 80202

Dear Mr. Duncan,

Thank you for the opportunity to provide cementing services on this well. BJ Services strives to achieve complete customer satisfaction. If you have any questions regarding the services or data provided, please contact BJ Services at any time.

Sincerely,

Zen Keith
Field Engineer III | (307) 757-7178 | Zen.Keith@BJServices.com

Field Office 28730 US-6, Rifle, CO 81650
Phone: (970) 632-2412

Sales Office 999 18th St. Suite 1200 Denver, CO 80202
Phone: (281) 408-2361

Cementing Treatment



Start Date	11/18/2017	Well	Nichols 0994-24-05E
End Date	2/28/2018	County	MESA
Client	LARAMIE ENERGY	State/Province	CO
Client Field Rep	Roger Foster	API	05-077-10408
Service Supervisor	Javier Castillo	Formation	-
Field Ticket No.	Surface	Rig	H&P 290
District	Rifle, CO	Type of Job	Surface

WELL GEOMETRY

Type	ID (in)	OD (in)	Wt. (lb/ft)	MD (ft)	TVD (ft)	Excess(%)	Grade	Thread
Previous Casing	15.25	16.00	65.00	60.00	60.00	0.00		
Open Hole	11.00			1,562.00	1,496.00	75.00		
Casing	8.10	8.63	24.00	1,524.00	1,496.00		J-55	ST&C

Shoe Length (ft): 40

HARDWARE

Bottom Plug Used?	Yes	Tool Type	Float Collar
Bottom Plug Provided By	Non BJ	Tool Depth (ft)	1,511.00
Bottom Plug Size	8.625	Max Tubing Pressure - Rated (psi)	-
Top Plug Used?	Yes	Max Tubing Pressure - Operated (psi)	-
Top Plug Provided By	Non BJ	Max Casing Pressure - Rated (psi)	2,950.00
Top Plug Size	8.625	Max Casing Pressure - Operated (psi)	2,360.00
Centralizers Used	Yes	Pipe Movement	None
Centralizers Quantity	20.00	Job Pumped Through	No Manifold
Centralizers Type	Bow	Top Connection Thread	8RD
Landing Collar Depth (ft)	1,484	Top Connection Size	8.625

Cementing Treatment



CIRCULATION PRIOR TO JOB

Well Circulated By	Rig	Solids Present at End of Circulation	No
Circulation Prior to Job	Yes	10 sec SGS	16.00
Circulation Time (min)	-	10 min SGS	39.00
Circulation Rate (bpm)	-	30 min SGS	56.00
Circulation Volume (bbls)	-	Flare Prior to/during the Cement Job	No
Lost Circulation Prior to Cement Job	No	Gas Present	No
Mud Density In (ppg)	9.70	Gas Units	0
Mud Density Out (ppg)	9.70		
PV Mud In	18		
PV Mud Out	18		
YP Mud In	16		
YP Mud Out	16		

TEMPERATURE

Ambient Temperature (°F)	35.00	Slurry Cement Temperature (°F)	-
Mix Water Temperature (°F)	80.00	Flow Line Temperature (°F)	96.00

BJ FLUID DETAILS

Fluid Type	Fluid Name	Density (ppg)	Yield (Cu Ft/sk)	H2O Req. (gals/sk)	Vol (sk)	Vol (Cu Ft)	Vol (bbls)
Spacer / Pre Flush / Flush	Fresh Water	8.3300					40.0000
Lead Slurry	S100-12	12.0000	2.5329	14.89	191	480.0000	85.5000
Tail Slurry	S100-12	12.5000	2.2282	12.62	107	237.0000	42.1000
Displacement Final	Water	8.3300				0.0000	94.5000

Cementing Treatment



Fluid Type	Fluid Name	Component	Concentration	UOM
Lead Slurry	S100-12	ACCELERATOR, SALT, CHLORIDE, CALCIUM, A-7P, PELLETS	2.00	LBS/SK
Lead Slurry	S100-12	FP-25, Dry Foam Preventer (BJS Only)	0.30	BWOB
Lead Slurry	S100-12	CEMENT EXTENDER, GYPSUM, A-10	5.00	BWOB
Lead Slurry	S100-12	CEMENT, ASTM TYPE III	100.00	PCT
Lead Slurry	S100-12	CEMENT EXTENDER, SODIUM METASILICATE, A-2	2.00	LBS/SK
Lead Slurry	S100-12	IntegraSeal CELLO	0.13	LBS/SK
Tail Slurry	S100-12	ACCELERATOR, SALT, CHLORIDE, CALCIUM, A-7P, PELLETS	2.00	LBS/SK
Tail Slurry	S100-12	CEMENT EXTENDER, GYPSUM, A-10	5.00	BWOB
Tail Slurry	S100-12	CEMENT, ASTM TYPE III	100.00	PCT
Tail Slurry	S100-12	IntegraSeal CELLO	0.13	LBS/SK
Tail Slurry	S100-12	CEMENT EXTENDER, SODIUM METASILICATE, A-2	2.00	LBS/SK
Tail Slurry	S100-12	FP-25, Dry Foam Preventer (BJS Only)	0.30	BWOB

TREATMENT SUMMARY

Time	Fluid	Rate (bpm)	Fluid Vol. (bbls)	Pipe Pressure (psi)
12/18/2017 12:58 PM	Fresh Water	5.00	40.00	275.00
12/18/2017 1:07 PM	S100-12	5.00	85.50	215.00
12/18/2017 1:24 PM	S100-12	5.00	42.10	287.00
12/18/2017 1:36 PM	Water	5.00	94.50	262.00

	Min	Max	Avg
Pressure (psi)	200.00	1,000.00	275.00
Rate (bpm)	2.00	8.00	5.00



DISPLACEMENT AND END OF JOB SUMMARY

Displaced By	BJ	Amount of Cement Returned/Reversed	20.00
Calculated Displacement Volume (bbls)	96.00	Method Used to Verify Returns	Visual
Actual Displacement Volume (bbls)	96.00	Amount of Spacer to Surface	40.00
Did Float Hold?	Yes	Pressure Left on Casing (psi)	0.00
Bump Plug	Yes	Amount Bled Back After Job	0.75
Bump Plug Pressure (psi)	338.00	Total Volume Pumped (bbls)	264.00
Were Returns Planned at Surface	Yes	Top Out Cement Spotted	No
Cement returns During Job	Full	Lost Circulation During Cement Job	No

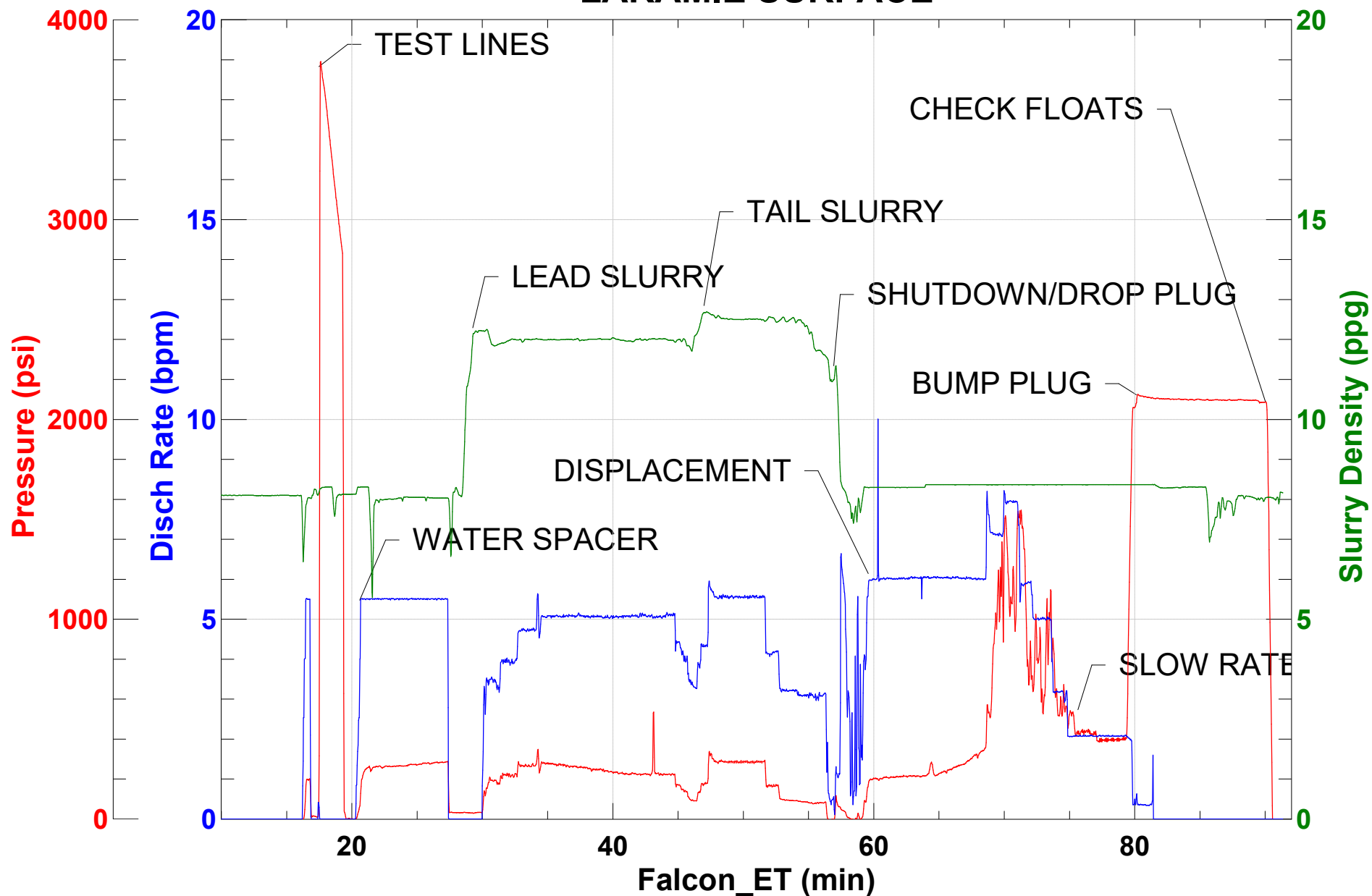
Customer Name LARAMIE District RIFLE
 Well Name NICHOLS 0994-24-05E Supervisor JAVIER CASTILLO
 Job Type SURFACE Engineer GAGE PUTNAM



Seq No.	Start Date	Start Time	Event	Equipment	Density (lb/gal)	Pump Rate (bpm)	Pump Vol (bbls)	Pipe Pressure	Comments
1	12/18/2017	6:00	CALL OUT						RTS 11:00HRS, CREW ALREADY ON LOCATION
2	12/18/2017	9:00	MEETING						STEACS MEETING WITH BJ CREW
3	12/18/2017	9:10	RIG UP						RIG UP FOR SURFACE JOB
4	12/18/2017	10:15	RIG UP						RIG UP COMPLETE, WAITING ON RIG TO FINISH RUNNING CASING
5	12/18/2017	12:25	LAND CASING						RIG LANDED CASING
6	12/18/2017	12:30	MEETING						PRE-JOB SAFETY MEETING WITH RIG CREW, DROP BOTTOM PLUG
7	12/18/2017	12:53	SPACER		8.34	5	5	200	FILL LINES
8	12/18/2017	12:55	TEST LINES					3700	PRESSURE TEST PUMPING IRON TO 3700PSI
9	12/18/2017	12:58	SPACER		8.34	5	40	275	FRESH WATER SPACER AHEAD
10	12/18/2017	13:07	LEAD SLURRY		12	5	86	215	LEAD SLURRY 12.0PPG, 2.53, 14.85
11	12/18/2017	13:24	TAIL SLURRY		12.5	5	42	287	TAIL SLURRY 12.5PPG, 2.22, 12.58
12	12/18/2017	13:33	SHUTDOWN						SHUTDOWN, DROP TOP PLUG
13	12/18/2017	13:36	DISPLACEMENT		8.34	5	80	1,000	DISPLACEMENT
14	12/18/2017	13:50	SLOW RATE		8.34	2	16	411	SLOW RATE WITH 16 BBLS REMAINING
15	12/18/2017	13:57	BUMP PLUG					2117	BUMP TOP PLUG, CIRCULATION THROUGH ENTIRE JOB
16	12/18/2017	14:07	CHECK FLOATS						FLOATS HELD, 0.75BBL FLOW BACK
17	12/18/2017	14:11	MEETING						RIG DOWN MEETING
18	12/18/2017	14:18	RIG DOWN						RIG DOWN BJ EQUIPMENT
19	12/18/2017	15:45	RIG DOWN						RIG DOWN COMPLETE
20	12/18/2017	15:50	MEETING						AAR MEETING WITH BJ CREW
21	12/18/2017	16:00	LEAVE LOCATION						DEPART LOCATION
22	12/18/2017	16:05							CALCULATED TOP OF TAIL 691ft
23	12/18/2017	16:10							20BBLS OF LEAD CEMENT TO SURFACE
24	12/18/2017	16:15							THANK YOU FOR YOUR BUSINESS FROM JAVIER AND CREW



LARAMIE SURFACE



Cementing Treatment



Start Date	12/20/2017	Well	Nichols 0994-24-05E
End Date	12/21/2017	County	MESA
Client	LARAMIE ENERGY	State/Province	CO
Client Field Rep	Matt Settles	API	05-077-10408
Service Supervisor	Andrew Linn	Formation	-
Field Ticket No.	Production	Rig	H&P 290
District	Rifle, CO	Type of Job	Long String

WELL GEOMETRY

Type	ID (in)	OD (in)	Wt. (lb/ft)	MD (ft)	TVD (ft)	Excess(%)	Grade	Thread
Open Hole	8.88			7,692.00	7,682.00	10.00		
Casing	4.00	4.50	11.60	7,672.00	7,672.00		L-80	LT&C
Previous Casing	8.10	8.63	24.00	1,524.00	1,491.00		J-55	ST&C

Shoe Length (ft): 92

HARDWARE

Bottom Plug Used?	Yes	Tool Type	Float Collar
Bottom Plug Provided By	Non BJ	Tool Depth (ft)	7,580.00
Bottom Plug Size	4.500	Max Tubing Pressure - Rated (psi)	-
Top Plug Used?	Yes	Max Tubing Pressure - Operated (psi)	-
Top Plug Provided By	Non BJ	Max Casing Pressure - Rated (psi)	6,350.00
Top Plug Size	4.500	Max Casing Pressure - Operated (psi)	5,080.00
Centralizers Used	Yes	Pipe Movement	None
Centralizers Quantity	120.00	Job Pumped Through	Manifold
Centralizers Type	Bow	Top Connection Thread	8 rnd.
Landing Collar Depth (ft)	7,580	Top Connection Size	4.5

Cementing Treatment



CIRCULATION PRIOR TO JOB

Well Circulated By	Rig	Solids Present at End of Circulation	No
Circulation Prior to Job	Yes	10 sec SGS	16.00
Circulation Time (min)	50.00	10 min SGS	39.00
Circulation Rate (bpm)	7.50	30 min SGS	56.00
Circulation Volume (bbls)	375.00	Flare Prior to/during the Cement Job	No
Lost Circulation Prior to Cement Job	No	Gas Present	No
Mud Density In (ppg)	9.30	Gas Units	0
Mud Density Out (ppg)	9.30		
PV Mud In	18		
PV Mud Out	18		
YP Mud In	16		
YP Mud Out	16		

TEMPERATURE

Ambient Temperature (°F)	35.00	Slurry Cement Temperature (°F)	41.00
Mix Water Temperature (°F)	40.00	Flow Line Temperature (°F)	-

BJ FLUID DETAILS

Fluid Type	Fluid Name	Density (ppg)	Yield (Cu Ft/sk)	H2O Req. (gals/sk)	Vol (sk)	Vol (Cu Ft)	Vol (bbls)
Spacer / Pre Flush / Flush	CD Spacer	11.0000					60.0000
Lead Slurry	P100-X2	12.7000	1.9775	11.11	798	1,570.0000	279.5000
Tail Slurry	P70-X1	13.5000	1.8511	9.33	393	727.0000	129.4000
Displacement Final	Freshwater with Clay Stabilizer	8.3300				0.0000	118.3000

Cementing Treatment



Fluid Type	Fluid Name	Component	Concentration	UOM
Spacer / Pre Flush / Flush	CD Spacer	SAND, S-8, Silica Flour, 200 Mesh	179.97	PPB
Spacer / Pre Flush / Flush	CD Spacer	Spacer Surfactant, SS-247, (BJS Only)	0.80	GPB
Spacer / Pre Flush / Flush	CD Spacer	R-6 LOW TEMP RETARDER 50 LB BAG BJS	1.40	PPB
Spacer / Pre Flush / Flush	CD Spacer	GELLANT WATER, GW-86	0.80	PPB
Lead Slurry	P100-X2	R-6 LOW TEMP RETARDER 50 LB BAG BJS	0.50	BWOB
Lead Slurry	P100-X2	BONDING AGENT, BA-60	0.30	BWOB
Lead Slurry	P100-X2	GELLANT WATER, GW-86	0.10	BWOB
Lead Slurry	P100-X2	CEMENT, ASTM TYPE III	100.00	PCT
Lead Slurry	P100-X2	DISPERSANT, CD-31	0.10	BWOB
Lead Slurry	P100-X2	FP-25, Dry Foam Preventer (BJS Only)	0.30	BWOB
Tail Slurry	P70-X1	R-6 LOW TEMP RETARDER 50 LB BAG BJS	0.30	BWOB
Tail Slurry	P70-X1	FLUID LOSS, FL-24, (BJS Only)	0.40	BWOB
Tail Slurry	P70-X1	FP-25, Dry Foam Preventer (BJS Only)	0.30	BWOB
Tail Slurry	P70-X1	CEMENT, CLASS G	70.00	PCT
Tail Slurry	P70-X1	Flyash (Rockies)	20.00	PCT
Tail Slurry	P70-X1	EXTENDER, BENTONITE	6.00	BWOB
Tail Slurry	P70-X1	SAND, S-8, Silica Flour, 200 Mesh	25.00	BWOB
Tail Slurry	P70-X1	BONDING AGENT, BA-60	0.20	BWOB
Tail Slurry	P70-X1	BONDING AGENT, BA-90	10.00	PCT
Displacement Final	Freshwater with Clay Stabilizer	CLAY STABILIZATION, ResCare CS	0.08	GPB

Cementing Treatment



TREATMENT SUMMARY

Time	Fluid	Rate (bpm)	Fluid Vol. (bbls)	Pipe Pressure (psi)
12/21/2017 2:36 AM	CD Spacer	3.50	60.00	265.00
12/21/2017 2:51 AM	P100-X2	6.00	279.50	442.00
12/21/2017 3:37 AM	P70-X1	5.00	129.40	356.00
12/21/2017 4:12 AM	Freshwater with Clay Stabilizer	7.50	118.30	214.00

	Min	Max	Avg
Pressure (psi)	54.00	3,014.00	530.00
Rate (bpm)	2.00	8.50	6.00

DISPLACEMENT AND END OF JOB SUMMARY

Displaced By	BJ	Amount of Cement Returned/Reversed	0.00
Calculated Displacement Volume (bbls)	117.49	Method Used to Verify Returns	Visual
Actual Displacement Volume (bbls)	118.00	Amount of Spacer to Surface	40.00
Did Float Hold?	Yes	Pressure Left on Casing (psi)	0.00
Bump Plug	Yes	Amount Bled Back After Job	1.50
Bump Plug Pressure (psi)	1,864.00	Total Volume Pumped (bbls)	573.00
Were Returns Planned at Surface	Yes	Top Out Cement Spotted	No
Cement returns During Job	Partial	Lost Circulation During Cement Job	No

Customer Name LARAMIE District Rifle
 Well Name NICHOLS 24-05E Supervisor ANDREW LINN
 Job Type Long String Engineer GAGE PUTNAM



Seq No.	Start Date	Start Time	Event	Density (lb/gal)	Pump Rate (bpm)	Pump Vol (bbls)	Pipe Pressure (psi)	Comments
1	12/20/2017	18:00	CALL OUT					CALL OUT. ON LOCATION TIME OF 02:00
2	12/20/2017	19:15	STEACS					PRE CONVOY SAFETY MEETING
3	12/20/2017	19:30	DEPART RIFLE YARD					DEPART FROM RIFLE YARD FOR H&P 290
4	12/20/2017	20:45	ARRIVE ON LOCATION					ARRIVE ON LOCATION. RIG WAS RUNNING CASING
5	12/20/2017	21:00	SITE ASSESSMENT					CREW DID A SITE ASSESSMENT
6	12/20/2017	21:10	SPOT EQUIPMENT					SPOTTED IN EQUIPMENT
7	12/20/2017	21:15	STEACS					PRE RIG UP SAFETY MEETING WITH ALL BJ CEMENT CREW
8	12/20/2017	21:20	RIG UP					RIG UP ALL GROUND EQUIPMENT
9	12/21/2017	1:30	SAFETY MEETING					PRE JOB SAFETY MEETING WITH RIG CREW AND ALL BJ CEMENT CREW
10	12/21/2017	2:05	RIG UP					LOAD BOTH PLUGS IN PLUG CONTAINER, STAB PLUG CONTAINER, HOOK LINES TO PLUG CONTAINER.
11	12/21/2017	2:22	FILL LINES	8.33	2	5	498	FILL LINES WITH 5 BBLs. OF FRESH WATER
12	12/21/2017	2:28	PRESSURE TEST				5013	PRESSURE TEST TO 5013 PSI.
13	12/21/2017	7:12	DROP PLUG					DROP BOTTOM PLUG
14	12/21/2017	2:36	WEIGHTED SPACER	11	3.5	20	265	11 PPG. WEIGHTED SPACER
15	12/21/2017	2:47	WEIGHTED SPACER	11	2	50	54	11 PPG. WEIGHTED SPACER
16	12/21/2017	2:49	WEIGHTED SPACER	11	2	59	62	11 PPG. WEIGHTED SPACER
17	12/21/2017	2:51	LEAD CEMENT	12.7	6	5	442	LEAD CEMENT 12.7 PPG. 798 SKS. 1.98 CUFT./SK. 11.11 GAL./SK. FOR A TOTAL OF 281.41 BBLs OF LEAD CEMENT, REQUIRING 211.09 BBLs. OF WATER. WEIGHT VERIFIED WITH MUD SCALE. CALCULATED TOP OF LEAD IS 0 FT. WITH A HEIGHT OF 4517.57 FT.
18	12/21/2017	3:01	LEAD CEMENT	12.7	6	50	613	PUMPED LEAD CEMENT
19	12/21/2017	3:09	LEAD CEMENT	12.7	6	100	408	PUMPED LEAD CEMENT
20	12/21/2017	3:17	LEAD CEMENT	12.7	6	150	412	PUMPED LEAD CEMENT
21	12/21/2017	3:26	LEAD CEMENT	12.7	6	200	395	PUMPED LEAD CEMENT
22	12/21/2017	3:33	LEAD CEMENT	12.7	4.5	238	236	PUMPED LEAD CEMENT
23	12/21/2017	3:35	LEAD CEMENT	12.7	3.5	248	155	PUMPED LEAD CEMENT
24	12/21/2017	3:37	LEAD CEMENT	12.7	3.5	257	136	FINISHED PUMPING LEAD CEMENT WITH 257 BBLs. AWAY.
25	12/21/2017	3:38	TAIL CEMENT	13.5	6	5	556	TAIL CEMENT 13.5 PPG. 393 SKS. 1.85 CUFT./SK. 9.33 GAL./SK. FOR A TOTAL OF 129.41 BBLs OF TAIL CEMENT, REQUIRING 87.3 BBLs. OF WATER. WEIGHT VERIFIED WITH MUD SCALE. CALCULATED TOP OF TAIL IS 4517.57 FT. WITH A HEIGHT OF 3154.43 FT.
26	12/21/2017	3:46	TAIL CEMENT	13.5	6	50	883	PUMPED TAIL CEMENT
27	12/21/2017	3:49	TAIL CEMENT	13.5	4	72	351	PUMPED TAIL CEMENT
28	12/21/2017	3:52	TAIL CEMENT	13.5	3	82	196	PUMPED TAIL CEMENT
29	12/21/2017	3:53	TAIL CEMENT	13.5	6	88	781	PUMPED TAIL CEMENT
30	12/21/2017	3:55	TAIL CEMENT	13.5	6	100	730	PUMPED TAIL CEMENT
31	12/21/2017	4:01	TAIL CEMENT	13.5	4	134	111	FINISHED PUMPING TAIL CEMENT WITH 134 BBLs. AWAY.
32	12/21/2017	4:01	SHUT DOWN					SHUT DOWN
33	12/21/2017	4:02	WASH PUMPS AND LINES					WASH PUMPS AND LINES TO CELLAR
34	12/21/2017	4:10	DROP PLUG					DROP TOP PLUG VERIFIED BY DRILLER
35	12/21/2017	4:12	DISPLACEMENT	8.33	7.5	10	214	FRESH WATER DISPLACEMENT WITH 10 GALS. OF RESCARE
36	12/21/2017	4:15	DISPLACEMENT	8.33	8.5	20	556	FRESH WATER DISPLACEMENT WITH 10 GALS. OF RESCARE
37	12/21/2017	4:19	DISPLACEMENT	8.33	8.5	50	1307	FRESH WATER DISPLACEMENT WITH 10 GALS. OF RESCARE
38	12/21/2017	4:22	SPACER TO SURFACE					40 BBLs. OF WEIGHTED SPACER TO SURFACE
39	12/21/2017	4:25	DISPLACEMENT	8.33	8.5	100	2137	FRESH WATER DISPLACEMENT WITH 10 GALS. OF RESCARE
40	12/21/2017	4:26	DISPLACEMENT	8.33	4	108	1654	FRESH WATER DISPLACEMENT WITH 10 GALS. OF RESCARE
41	12/21/2017	4:29	DISPLACEMENT	8.33	4	118	1864	FRESH WATER DISPLACEMENT WITH 10 GALS. OF RESCARE
42	12/21/2017	4:29	LAND PLUG				3014	LANDED THE PLUG FINAL CIRCULATING PRESSURE WAS 1864 PSI. TOOK TO 3014 PSI.
43	12/21/2017	4:29	CASING TEST					10 MIN CASING TEST AT 3014 PSI.
44	12/21/2017	4:40	CHECK FLOATS					CHECK FLOATS, FLOATS HELD 1 1/2 BBLs. BACK.
45	12/21/2017	4:45	SAFETY MEETING					PRE RIG DOWN SAFETY MEETING WITH RIG CREW
46	12/21/2017	4:52	RIG DOWN					RIG DOWN RIG FLOOR
47	12/21/2017	5:00	WASH PUMPS AND LINES					WASH PUMPS AND LINES TO CELLAR
48	12/21/2017	5:17	SAFETY MEETING					PRE RIG DOWN SAFETY MEETING WITH ALL BJ SERVICES CEMENT CREW
49	12/21/2017	5:20	RIG DOWN					RIG DOWN SOME IRON AND ALL BULK EQUIPMENT. SPOTTED PUMP OUT OF THE WAY.
50	12/21/2017	5:30	AAR					AFTER ACTION REVIEW
51	12/21/2017	5:40	DIDN'T DEPART FROM LOCATION					CREW STAYED ON LOCATION FOR SURFACE JOB. THANK YOU FOR USING BJ SERVICES, ANDREW LINN AND CREW.

