



# Laramie Energy

## End of Well Cement Report

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Nichols 0994-13-21W 05-077-10413

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

Quote #: 05129/05130

I Execution #: 03046/03147

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# Laramie Energy

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

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

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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,

Gage Putnam  
Field Engineer I | (307) 887-4243 | [Gage.Putnam@BJServices.com](mailto:Gage.Putnam@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

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# Cementing Treatment



<b>Start Date</b>	1/25/2018	<b>Well</b>	Nichols 0994-13-21W
<b>End Date</b>	1/25/2018	<b>County</b>	MESA
<b>Client</b>	LARAMIE ENERGY	<b>State/Province</b>	CO
<b>Client Field Rep</b>		<b>API</b>	05-077-10413
<b>Service Supervisor</b>		<b>Formation</b>	
<b>Field Ticket No.</b>	Surface	<b>Rig</b>	H&P 290
<b>District</b>	Rifle, CO	<b>Type of Job</b>	Surface

## WELL GEOMETRY

Type	ID (in)	OD (in)	Wt. (lb/ft)	MD (ft)	Excess(%)	Grade	Thread
Previous Casing	15.25	16.00	65.00	60.00	0.00		
Open Hole	11.00			1,581.00	75.00		
Casing	8.10	8.63	24.00	1,571.00		J-55	ST&C

**Shoe Length (ft):** 43

## HARDWARE

<b>Bottom Plug Used?</b>	No	<b>Tool Type</b>	Float Collar
<b>Bottom Plug Provided By</b>		<b>Tool Depth (ft)</b>	1,527.00
<b>Bottom Plug Size</b>		<b>Max Tubing Pressure - Rated (psi)</b>	
<b>Top Plug Used?</b>	Yes	<b>Max Tubing Pressure - Operated (psi)</b>	
<b>Top Plug Provided By</b>	Non BJ	<b>Max Casing Pressure - Rated (psi)</b>	3,950.00
<b>Top Plug Size</b>	8.625	<b>Max Casing Pressure - Operated (psi)</b>	3,000.00
<b>Centralizers Used</b>	Yes	<b>Pipe Movement</b>	None
<b>Centralizers Quantity</b>	19.00	<b>Job Pumped Through</b>	No Manifold
<b>Centralizers Type</b>	Bow	<b>Top Connection Thread</b>	8rd
<b>Landing Collar Depth (ft)</b>	1,527	<b>Top Connection Size</b>	8.625

# Cementing Treatment



## CIRCULATION PRIOR TO JOB

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Well Circulated By	Rig	Solids Present at End of Circulation	No
Circulation Prior to Job	No	10 sec SGS	
Circulation Time (min)	60.00	10 min SGS	
Circulation Rate (bpm)	6.00	30 min SGS	
Circulation Volume (bbls)	250.00	Flare Prior to/during the Cement Job	No
Lost Circulation Prior to Cement Job	No	Gas Present	No
Mud Density In (ppg)	9.20	Gas Units	0
Mud Density Out (ppg)	9.10		

## TEMPERATURE

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Ambient Temperature (°F)	14.00	Slurry Cement Temperature (°F)	56.00
Mix Water Temperature (°F)	66.00	Flow Line Temperature (°F)	

## BJ FLUID DETAILS

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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	CEMENT, ASTM TYPE III	100.0000	PCT
Lead Slurry	S100-12	CEMENT EXTENDER, SODIUM METASILICATE, A-2	2.0000	LBS/SK
Lead Slurry	S100-12	CEMENT EXTENDER, GYPSUM, A-10	5.0000	BWOB
Lead Slurry	S100-12	IntegraSeal CELLO	0.1300	LBS/SK
Lead Slurry	S100-12	Foam Preventer, FP-25	0.3000	BWOB
Lead Slurry	S100-12	ACCELERATOR, SALT, CHLORIDE, CALCIUM, A- 7P, PELLETS	2.0000	LBS/SK
Tail Slurry	S100-12	ACCELERATOR, SALT, CHLORIDE, CALCIUM, A- 7P, PELLETS	2.0000	LBS/SK
Tail Slurry	S100-12	CEMENT EXTENDER, GYPSUM, A-10	5.0000	BWOB
Tail Slurry	S100-12	Foam Preventer, FP-25	0.3000	BWOB
Tail Slurry	S100-12	CEMENT, ASTM TYPE III	100.0000	PCT
Tail Slurry	S100-12	CEMENT EXTENDER, SODIUM METASILICATE, A-2	2.0000	LBS/SK
Tail Slurry	S100-12	IntegraSeal CELLO	0.1300	LBS/SK

## TREATMENT SUMMARY

Time	Fluid	Rate (bpm)	Fluid Vol. (bbls)	Pipe Pressure (psi)	Annulus Pressure (psi)	Comments
1/25/2018 7:53 AM	Fresh Water	6.00	40.00	407.00		
1/25/2018 8:10 AM	S100-12	6.00	85.50	350.00		
1/25/2018 8:30 AM	S100-12	4.00	42.10	275.00		
1/25/2018 8:45 AM	Water	8.00	96.50	614.00		

# Cementing Treatment



	Min	Max	Avg
Pressure (psi)	0.00	2,110.00	500.00
Rate (bpm)	0.00	8.00	5.00

## DISPLACEMENT AND END OF JOB SUMMARY

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Displaced By	BJ	Amount of Cement Returned/Reversed	26.00
Calculated Displacement Volume (bbls)	97.00	Method Used to Verify Returns	Visual
Actual Displacement Volume (bbls)	96.50	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	1.00
Bump Plug Pressure (psi)	2,110.00	Total Volume Pumped (bbls)	291.50
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  
**Well Name** NICHOLS 0994-13-21W  
**Job Type** Surface

**District** Rifle  
**Supervisor** JAMES ROUSH  
**Engineer** GAGE PUTNAM

Seq No.	Start Date	Start Time	Category	Event	Equipment	Event ID	Density (lb/gal)	Pump Rate (bpm)	Pump Vol (bbls)	Pipe Pressure (psi)	Comments
1	1/25/2018	0:00	Mobilization	Callout		1					BJ CREW CALLED OUT WITH A RTS OF 04:00 AM 1/25/18
2	1/25/2018	0:30	Mobilization								JOURNEY MANAGEMENT WITH BJ CREW
3	1/25/2018	0:45	Mobilization	Leave Location		74					LEAVE DISTRICT
4	1/25/2018	2:30	Mobilization	Arrive on Location		48					ARRIVE ON LOCATION
5	1/25/2018	2:40	Operational								STEACS BREIFING WITH BJ CREW
6	1/25/2018	2:50	Operational	Spot Units		49					SPOT TRUCKS
7	1/25/2018	3:10	Operational	Rig Up		50					RIG UP ALL EQUIPMENT
8	1/25/2018	4:15	StandBy	Customer		85					BJ ON STANDBY, RIG RUNNING CASING
9	1/25/2018	6:30	Operational	Prime Up		52					PIPE ON BOTTOM, RIG TO CIRCULATE
10	1/25/2018	7:40	Operational	Safety Meeting							SAFETY MEETING WITH BJ CREW, COMPANY, AND RIG CREW
11	1/25/2018	7:34	Operational	Rig Up		50					RIG UP CEMENT HEAD TO CASING
12	1/25/2018	7:53	Operational	Start Pumping		55	8.34	4	5	89	BREAK CIRCULATION
13	1/25/2018	7:57	Operational	Pressure Test		54					TEST LINES 3000
14	1/25/2018	7:59	Operational	Pump Spacer		56	8.34	6	35	407	FRESH WATER SPACER
17	1/25/2018	8:10	Operational	Pump Lead Cement		58	12				BATCH UP LEAD CEMENT @ 12.0 PPG ( 191 SXS Y- 2.53 MW- 14.89)
18	1/25/2018	8:13	Operational	Pump Lead Cement		58	12	5	86	327	LEAD CEMENT @ 12.0 PPG DOWNHOLE
19	1/25/2018	8:21	Operational	Pump Lead Cement		58	12	6		350	50 BBLS GONE LEAD SLURRY
25	1/25/2018	8:30	Operational	Pump Tail Cement		60	12.5				BATCH UP TAIL SLURRY @ 12.5 PPG ( 107 SXS Y- 2.22 MW-12.62)

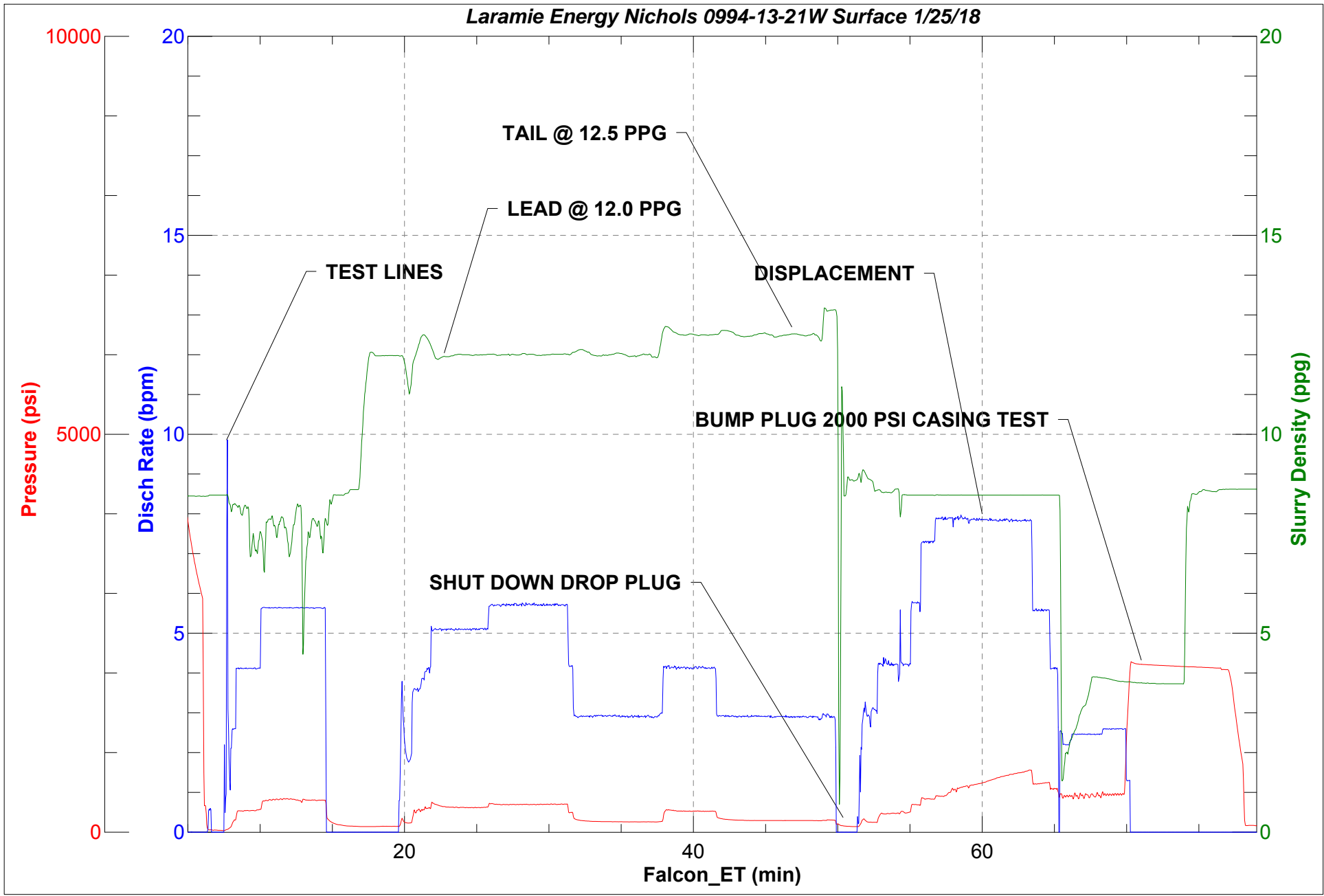


**Customer Name** LARAMIE  
**Well Name** NICHOLS 0994-13-21W  
**Job Type** Surface

**District** Rifle  
**Supervisor** JAMES ROUSH  
**Engineer** GAGE PUTNAM

Seq No.	Start Date	Start Time	Category	Event	Equipment	Event ID	Density (lb/gal)	Pump Rate (bpm)	Pump Vol (bbls)	Pipe Pressure (psi)	Comments
26	1/25/2018	8:31	Operational	Pump Tail Cement		60	12.5	4	42	275	TAIL CEMENT @ 12.5 PPG DOWN HOLE
28	1/25/2018	8:45	Operational	Pump Displacement		64			87		DROP TOP PLUG START DISPLACEMENT
30	1/25/2018	8:52	Operational	Pump Displacement		64	8.34	8		614	50 BBLs GONE DISPLACEMENT
33	1/25/2018	8:58	Operational	Pump Displacement		64	8.34	2	10	440	SLOW RATE TO BUMP PLUG
34	1/25/2018	9:03	Operational	Land Plug		67					BUMP PLUG 2110 PSI
35	1/25/2018	9:13	Operational	Check Floats		68					BLEED PRESSURE, CHECK FLOATS 1 BBLs BACK
54	1/25/2018	9:20	Operational	Safety Meeting		53					RIG DOWN MEETING WITH BJ CREW
55	1/25/2018	9:30	Operational	Lean Pumps and Lines		62					START WASH UP OF PUMP AND RIG DOWN EQUIPMENT
56	1/25/2018	10:30	Operational	Safety Meeting		53					JOURNEY MANAGEMENT WITH BJ CREW
57	1/25/2018	10:45	Mobilization	Leave Location		74					LEAVE LOCATION
58	1/25/2018										
59	1/25/2018										FCP- 445 PSI, BUMP PLUG-2110 PSI, BLEED PRESSURE FLOATS HOLDING- 1 BBL BACK





# Cementing Treatment



<b>Start Date</b>	1/28/2018	<b>Well</b>	Nichols 0994-13-21W
<b>End Date</b>	1/29/2018	<b>County</b>	MESA
<b>Client</b>	LARAMIE ENERGY	<b>State/Province</b>	CO
<b>Client Field Rep</b>	ROGER FOSTER	<b>API</b>	05-077-10413
<b>Service Supervisor</b>	Glen Gilliam	<b>Formation</b>	-
<b>Field Ticket No.</b>	Production	<b>Rig</b>	H&P 290
<b>District</b>	Rifle, CO	<b>Type of Job</b>	Long String

## WELL GEOMETRY

Type	ID (in)	OD (in)	Wt. (lb/ft)	MD (ft)	Excess(%)	Grade	Thread
Open Hole	8.88			7,931.00	10.00		
Casing	4.00	4.50	11.60	7,921.00		P-110	LT&C
Previous Casing	8.10	8.63	24.00	1,524.00		J-55	ST&C

**Shoe Length (ft):** 88

## HARDWARE

<b>Bottom Plug Used?</b>	Yes	<b>Tool Type</b>	Float Collar
<b>Bottom Plug Provided By</b>	Non BJ	<b>Tool Depth (ft)</b>	7,883.00
<b>Bottom Plug Size</b>	4.500	<b>Max Tubing Pressure - Rated (psi)</b>	0.00
<b>Top Plug Used?</b>	Yes	<b>Max Tubing Pressure - Operated (psi)</b>	0.00
<b>Top Plug Provided By</b>	Non BJ	<b>Max Casing Pressure - Rated (psi)</b>	10,690.00
<b>Top Plug Size</b>	4.500	<b>Max Casing Pressure - Operated (psi)</b>	4,000.00
<b>Centralizers Used</b>	Yes	<b>Pipe Movement</b>	None
<b>Centralizers Quantity</b>	130.00	<b>Job Pumped Through</b>	No Manifold
<b>Centralizers Type</b>	Bow	<b>Top Connection Thread</b>	8 round
<b>Landing Collar Depth (ft)</b>	7,921	<b>Top Connection Size</b>	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	6.00
Circulation Time (min)	2.00	10 min SGS	23.00
Circulation Rate (bpm)	7.80	30 min SGS	53.00
Circulation Volume (bbls)	800.00	Flare Prior to/during the Cement Job	Yes
Lost Circulation Prior to Cement Job	No	Gas Present	No
Mud Density In (ppg)	9.95	Gas Units	0
Mud Density Out (ppg)	-		
PV Mud In	22		
PV Mud Out	-		
YP Mud In	21		
YP Mud Out	-		

## TEMPERATURE

Ambient Temperature (°F)	16.00	Slurry Cement Temperature (°F)	47.00
Mix Water Temperature (°F)	84.00	Flow Line Temperature (°F)	100.00

## 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	CD Spacer	11.0000					60.0000
Lead Slurry	P100-X2	12.7000	1.9775	11.11	844	1,662.0000	295.9000
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	121.0000

# Cementing Treatment



Fluid Type	Fluid Name	Component	Concentration	UOM
Spacer / Pre Flush / Flush	CD Spacer	GELLANT WATER, GW-86	0.8000	PPB
Spacer / Pre Flush / Flush	CD Spacer	R-6 LOW TEMP RETARDER 50 LB BAG BJS	1.4000	PPB
Spacer / Pre Flush / Flush	CD Spacer	RETARDER, R-7C	0.3000	PPB
Spacer / Pre Flush / Flush	CD Spacer	SAND, S-8, Silica Flour, 200 Mesh	179.9700	PPB
Lead Slurry	P100-X2	CEMENT, ASTM TYPE III	100.0000	PCT
Lead Slurry	P100-X2	R-6 LOW TEMP RETARDER 50 LB BAG BJS	0.5000	BWOB
Lead Slurry	P100-X2	BONDING AGENT, BA-60	0.3000	BWOB
Lead Slurry	P100-X2	Foam Preventer, FP-25	0.3000	BWOB
Lead Slurry	P100-X2	GELLANT WATER, GW-86	0.1000	BWOB
Lead Slurry	P100-X2	DISPERSANT, CD-31	0.1000	BWOB
Tail Slurry	P70-X1	CEMENT, CLASS G	70.0000	PCT
Tail Slurry	P70-X1	Flyash (Rockies)	20.0000	PCT
Tail Slurry	P70-X1	R-6 LOW TEMP RETARDER 50 LB BAG BJS	0.2000	BWOB
Tail Slurry	P70-X1	EXTENDER, BENTONITE	6.0000	BWOB
Tail Slurry	P70-X1	BONDING AGENT, BA-60	0.2000	BWOB
Tail Slurry	P70-X1	Foam Preventer, FP-25	0.3000	BWOB
Tail Slurry	P70-X1	FLUID LOSS, FL-24	0.4000	BWOB
Tail Slurry	P70-X1	SAND, S-8, Silica Flour, 200 Mesh	25.0000	BWOB
Tail Slurry	P70-X1	BONDING AGENT, BA-90	10.0000	PCT
Displacement Final	Freshwater with Clay Stabilizer	CLAY STABILIZER ResCare CS	0.0800	GPB

# Cementing Treatment



## TREATMENT SUMMARY

Time	Fluid	Rate (bpm)	Fluid Vol. (bbls)	Pipe Pressure (psi)
1/29/2018 1:11 PM	CD Spacer	3.50	60.00	317.00
1/29/2018 1:26 PM	P100-X2	6.00	295.90	350.00
1/29/2018 2:14 PM	P70-X1	5.00	129.40	371.00
1/29/2018 2:48 PM	Freshwater with Clay Stabilizer	10.00	122.40	434.00

	Min	Max	Avg
Pressure (psi)	1.00	5,000.00	365.00
Rate (bpm)	1.00	10.00	6.00

## DISPLACEMENT AND END OF JOB SUMMARY

Displaced By	BJ	Amount of Cement Returned/Reversed	0.00
Calculated Displacement Volume (bbls)	121.00	Method Used to Verify Returns	Visual
Actual Displacement Volume (bbls)	121.00	Amount of Spacer to Surface	15.00
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)	1,505.00	Total Volume Pumped (bbls)	121.00
Were Returns Planned at Surface	Yes	Top Out Cement Spotted	No
Cement returns During Job	None	Lost Circulation During Cement Job	No

Customer Name LARAMIE District Rifle  
 Well Name NICHOLS 13-21W Supervisor GLEN GILLIAM  
 Job Type Long String Engineer ZEN KEITH



Seq No.	Start Date	Start Time	Event	Equipment	Density (lb/gal)	Pump Rate (bpm)	Pump Vol (bbls)	Pipe Pressure (psi)	Comments
1	1/28/2018	18:00	CALLOUT						BJ CREW CALLED OUT WITH AN RTS OF 24:00
2	1/28/2018	19:30	YARD TIME						BJ CREW YARD CALL, PRE-TRIP TRUCKS AND GET EQUIPMENT READY
3	1/28/2018	20:00	STEACS/ JOURNEY						STEACS JOURNEY WITH BJ CREW ON CONVOY TO LOCATION
4	1/28/2018	20:15	DEPART YARD						BJ CREW DEPARTS YARD
5	1/28/2018	22:15	ON LOCATION						BJ CREW ON LOCATION, SPOT TRUCKS
6	1/28/2018	22:25	STEACS/ RIG UP						STEACS MEETING WITH BJ CREW ON RIG UP AND JOB OPERATIONS
7	1/28/2018	22:30	RIG UP EQUIPMENT						BJ CREW RIGS UP EQUIPMENT ON LOCATION
8	1/28/2018	23:00	DOWN TIME						BJ CREW DOWN, RIG RUNNING CASING
9	1/28/2018	23:45	PIPE ON BOTTOM						PIPE ON BOTTOM RIG CIRCULATING
10	1/29/2018	0:30	SAFETY MEETING						SAFETY MEETING WITH RIG CREW
11	1/29/2018	0:45	DOWN TIME						RIG HOOKED BACK UP TO CRT TOOL, PRESSURE KICK BACK
12	1/29/2018	13:00	STAB HEAD						BJ CREW STABS HEAD
13	1/29/2018	13:05	FILL LINES		8.34	3	5	265	FILL LINES 5 BBLS FRESH WATER
14	1/29/2018	13:07	TEST LINES						TEST LINES AT 5000 PSI
15	1/29/2018	13:00	BATCH UP SPACER		11				BATCH UP SPACER AT 11 PPG
16	1/29/2018	13:11	SPACER DOWN HOLE		11	3.5		317	SPACER DOWN HOLE AT 11 PPG
17	1/29/2018	13:21	50 BBLS GONE		11	4.4	50	140	50 BBLS GONE SPACER
18	1/29/2018	13:25	BATCH UP LEAD		12.7				BATCH UP LEAD CEMENT AT 12.7 PPG
19	1/29/2018	13:26	LEAD DOWN HOLE		12.7	6		350	LEAD CEMENT DOWN HOLE AT 12.7 PPG
20	1/29/2018	13:35	50 BBLS GONE		12.7	6	50	416	50 BBLS LEAD CEMENT GONE
21	1/29/2018	13:42	100 BBLS GONE		12.7	6	100	375	100 BBLS LEAD CEMENT GONE
22	1/29/2018	13:51	150 BBLS GONE		12.7	6	150	400	150 BBLS LEAD CEMENT GONE
23	1/29/2018	13:59	200 BBLS GONE		12.7	6	200	389	200 BBLS LEAD CEMENT GONE
24	1/29/2018	14:07	250 BBLS GONE		12.7	6	250	383	250 BBLS LEAD CEMENT GONE/ 296 TOTAL BBLS
25	1/29/2018	14:13	BATCH UP TAIL		13.5				BATCH UP TAIL CEMENT AT 13.5 PPG
26	1/29/2018	14:14	TAIL DOWN HOLE		13.5	5		371	TAIL CEMENT DOWN HOLE AT 13.5 PPG
27	1/29/2018	14:22	50 BBLS GONE		13.5	6	50	496	50 BBLS GONE TAIL CEMENT
28	1/29/2018	14:33	100 BBLS GONE		13.5	5	100	360	100 BBLS GONE TAIL CEMENT
29	1/29/2018	14:42	SHUT DOWN						SHUT DOWN WASH PUMPS AND LINES
30	1/29/2018	14:47	DROP TOP PLUG						DROP TOP PLUG, START DISPLACEMENT
31	1/29/2018	14:47	DISPLACEMENT		8.34	8.5		434	KICK OUT PLUG, START DISPLACEMENT
32	1/29/2018	14:53	50 BBLS GONE		8.34	10	50	1362	50 BBLS GONE DISPLACEMENT
33	1/29/2018	14:59	100 BBLS GONE		8.34	10	100	2088	100 BBLS GONE DISPLACEMENT
34	1/29/2018	15:04	BUMP PLUG		8.34	2.5	121	1505	BUMP PLUG FCP-1505 PSI TOOK TO 3010 PSI HELD FOR 10 MINS
35	1/29/2018	15:14	CHECK FLOATS						FLOATS HELD. 1.5 BBLS BACK
36	1/29/2018	15:20	STEACS/ RIG DOWN						STEACS/ RIG DOWN WITH BJ CREW
37	1/29/2018	15:25	RIG DOWN						BJ CREW RIGS DOWN EQUIPMENT AND WASH PUMP
38	1/29/2018	16:00	JOB COMPLETE						JOB COMPLETE, RIG DOWN COMPLETE
39	1/29/2018	16:10	AAR						AAR MEETING WITH BJ CREW ON JOB OPEARTIONS
40	1/29/2018	16:15	STEACS/ JOURNEY						STEACS/ JOURNEY WITH BJ CREW ON CONVOY BACK TO YARD
41	1/29/2018	17:00	DEPART LOCATION						BJ CREW DEPARTS LOCATION
42	1/29/2018		***MISC***						BUMP PLUG FCP-1505 PSI TOOK TO 3010 PSI HELD FOR 10 MINS, CALCULATED DISPLACEMENT WAS 121, ACTUAL DISPLACEMENT WAS 121. 15 BBLS OF CEMENT TO SURFACE, FLOATS HELD 1.5 BBLS BACK. NO ISSUES DURING JOB.

