



**Bison Oil Well Cementing
Tail & Lead**

Date: 8/21/2018

Invoice # 300173

API# 05-123-46978

Foreman: JASON KELEHER

Customer: Noble Energy Inc.

Well Name: EMMY STATE H25-777

County: Weld
State: Colorado

Sec: 25
Twp: 3N
Range: 65W

Consultant: CHRIS
Rig Name & Number: H&P 517
Distance To Location: 23
Units On Location: 4044-3103,4032-3203
Time Requested: 2330
Time Arrived On Location: 2230
Time Left Location: 430

WELL DATA	Cement Data
<p>Casing Size (in) : <u>9.625</u> Casing Weight (lb) : <u>36</u> Casing Depth (ft.) : <u>1,959</u> Total Depth (ft) : <u>1969</u> Open Hole Diameter (in) : <u>13.50</u> Conductor Length (ft) : <u>80</u> Conductor ID : <u>15.25</u> Shoe Joint Length (ft) : <u>44</u> Landing Joint (ft) : <u>5</u></p> <p>Sacks of Tail Requested <u>100</u> HOC Tail (ft): <u>0</u></p> <p>One or the other, cannot have quantity in both</p> <p>Max Rate: <u>8</u> Max Pressure: <u>1500</u></p>	<p>Lead</p> <p>Cement Name: Cement Density (lb/gal) : <u>13.5</u> Cement Yield (cuft) : <u>1.7</u> Gallons Per Sack <u>9.00</u> % Excess <u>15%</u></p> <p>Tail</p> <p>Cement Name: Cement Density (lb/gal) : <u>15.2</u> Cement Yield (cuft) : <u>1.27</u> Gallons Per Sack: <u>5.89</u> % Excess: <u>0%</u></p> <p>Fluid Ahead (bbls) <u>30.0</u> H2O Wash Up (bbls) <u>20.0</u></p> <p>Spacer Ahead Makeup <u>30 BBL WATER DYE IN 2ND 10</u></p>

Lead Calculated Results	Tail Calculated Results
HOC of Lead <u>1738.31 ft</u> Casing Depth - HOC Tail	Tail Cement Volume In Ann <u>107.80 cuft</u> (HOC Tail) X (OH Ann)
Volume of Lead Cement <u>931.98 cuft</u> HOC of Lead X Open Hole Ann	Total Volume of Tail Cement <u>127.00 Cuft</u> (HOC Tail X OH Ann) - (Shoe Length X Shoe Joint Ann)
Volume of Conductor <u>61.03 cuft</u> (Conductor ID Squared) -(Casing Size OD Squared) X (.005454) X (Conductor Length ft)	bbls of Tail Cement <u>22.62 bbls</u> (HOC of Tail) X (OH Ann) + (Cement Yield) X (Shoe Joint Ann) X (.1781) X (% Excess)
Total Volume of Lead Cement <u>992.54 cuft</u> (cuft of Lead Cement) + (Cuft of Conductor)	HOC Tail <u>220.69 ft</u> (Tail Cement Volume) ÷ (OH Ann)
bbls of Lead Cement <u>176.80 bbls</u> (Total cuft of Lead Cement) X (.1781) X (1+%Lead Excess)	Sacks of Tail Cement <u>100.00 sk</u> (Total Volume of Tail Cement) ÷ (Cement Yield)
Sacks of Lead Cement <u>584.00 sk</u> (Total Slurry Volume) ÷ (Cement Yield) X (% Excess Cement)	bbls of Tail Mix Water <u>14.02 bbls</u> (Sacks of Tail Cement X Gallons Per Sack) ÷ 42
bbls of Lead Mix Water <u>125.10 bbls</u> (Sacks Needed) X (Gallons Per Sack) ÷ 42	Pressure of cement in annulus
Displacement <u>148.40 bbls</u> (Casing ID Squared) X (.0009714) X (Casing Depth) + (Landing Joint) - (Shoe Length)	Hydrostatic Pressure <u>460.00 PSI</u>
Total Water Needed: <u>189.00 bbls</u>	Collapse PSI: <u>2020.00 psi</u> Burst PSI: <u>3520.00 psi</u>

X [Signature]
Authorization To Proceed



**Bison Oil Well Cementing
Two Cement Surface Pipe**

Customer: Noble Energy Inc.
Well Name: EMMY STATE H25-777

Date: 8/21/2018
INVOICE #: 300173
LOCATION: Weld
FOREMAN: JASON KELEHER

Treatment Report Page 2

DESCRIPTION OF JOB EVENTS

Amount Pumped	Time/Date	Event	Description	Rate	BBLs	Pressure
Lead mixed bbls	125.1	2230	ARRIVE ON LOCATION	ASSESS LOCATION AND HAZARDS		
Lead % Excess	15%	1230	MIRU	SPOT EQUIPMENT, PRE RIG UP MEETING		
Lead Sacks	584	115	PRE JOB SAFETY MEETING	RIG CREW AND BISON		
		137	PRESSURE TEST LINES			1500
		139	SPACER AHEAD	WATER SUPPLIED RIG W/DYE IN 2ND 10	3	30
Tail mixed bbls	14	147	LEAD CEMENT	CEMENT MIXED AT 13.5 PPG 584 SKS	4	176.8
Tail % Excess	0%	228	TAIL CEMENT	CEMENT MIXED AT 15.2 PPG 100 SKS	3.5	22.6
Tail Sacks	100	234	SHUT DOWN			
		238	DROP PLUG			
Total Sacks	675	238	DISPLACEMENT	RIG DISPLACES	1	148.4
Water Temp	60	303	BUMP PLUG			11.25
bbl Returns	28	320	CHECK FLOATS	FLOATS HELD, 2 BBL BACK, WATCH FALL BACK		10.13
		340	RIG DOWN			
Notes:	430	LEAVE LOCATION				
			monitered well no top off			

X [Signature]
Signature

X WSS
Title

X 8-21-18
Date



Bison Oil Well Cementing Tail & Lead

Cementing Customer Satisfaction Survey

Service Date	8/21/2018
Well Name	EMMY STATE H25-777
County	Weld
State	Colorado
SEC	25
TWP	3N
RNG	65W

Invoice Number	300173
API #	05-123-46978
Job Type	Two Cement
Company Name	Noble Energy Inc.

Customer Representative: CHRIS

Supervisor Name: JASON KELEHER

Employee Name (Including Supervisor)
JASON
JESSE
CHRIS
AMBER

Exposure Hours (Per Employee)
6
6
6
6
24

Total Exposure Hours

Did we encounter any problems on this job? Yes No

To Be Completed By Customer

Rating/Description

- 5 - Superior Performance (Established new quality/performance standards)
 - 4 - Exceeded Expectation (Provided more than what was required/expected)
 - 3 - Met Expectations (Did what was expected)
 - 2 - Below Expectations (Job problems/failures occurred - *Recovery made)
 - 1 - Poor Performance (Job problems/failures occurred - *Some recovery made)
- *Recovery: resolved issue(s) on jobsite in a timely and professional manner

RATING	CATEGORY	CUSTOMER SATISFACTION RATING
3	Personnel -	Did our personnel perform to your satisfaction?
	Equipment -	Did our equipment perform to your satisfaction?
	Job Design -	Did we perform the job to the agreed upon design?
	Product/Material -	Did our products and materials perform as you expected?
	Health & Safety -	Did we perform in a safe and careful manner (Pre/post mtgs, PPE, TSMR, etc..)?
	Environmental -	Did we perform in an environmentally sound manner (spills, leaks, cleanup, etc..)?
	Timeliness -	Was job performed as scheduled (On time to site, accessible to customers, completed when expected)?
	Condition/Appearance -	Did the equipment condition and appearance meet your expectations?
	Communication -	How well did our personnel communicate during mobilization, rig up and job execution?

Please Circle:

- Yes No Did an accident or injury occur?
- Yes No Did an injury requiring medical treatment occur?
- Yes No Did a first-aid injury occur?
- Yes No Did a vehicle accident occur?
- Yes No Was a post-job safety meeting held?

Please Circle:

- Yes No Was a pre-job safety meeting held?
- Yes No Was a job safety analysis completed?
- Yes No Were emergency services discussed?
- Yes No Did environmental incident occur?
- Yes No Did any near misses occur?

Additional Comments:

THE INFORMATION HEREIN IS CORRECT -

X

[Signature]

Customer Representative's Signature

DATE:

8-21-18

Any additional Customer Comments or HSE concerns should be described on the back of this form

EMMY STATE H25-77 SURFACE

