

X 8-10-18
Date



Bison Oil Well Cementing Tail & Lead

Cementing Customer Satisfaction Survey

Service Date	8/10/2018
Well Name	Emmy State H25-764
County	Weld
State	Colorado
SEC	8
TWP	5N
RNG	62W

Invoice Number	200306
API #	0
Job Type	Two Cement
Company Name	Noble Energy Inc.

Customer Representative **tommy**

Supervisor Name **Kirk Kallhoff**

Employee Name (Including Supervisor)	
kirk	
Terry R.	
monte	
chris	
bryan	

Exposure Hours (Per Employee)	
6	
6	
6	
6	
6	
30	

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
5	Personnel -
	Equipment -
	Job Design -
	Product/Material -
	Health & Safety -
	Environmental -
	Timeliness -
	Condition/Appearance -
	Communication -

CUSTOMER SATISFACTION RATING

- Did our personnel perform to your satisfaction?
- Did our equipment perform to your satisfaction?
- Did we perform the job to the agreed upon design?
- Did our products and materials perform as you expected?
- Did we perform in a safe and careful manner (Pre/post mtgs, PPE, TSMR, etc..)?
- Did we perform in an environmentally sound manner (spills, leaks, cleanup, etc..)?
- Was job performed as scheduled (On time to site, accessible to customers, completed when expected)?
- Did the equipment condition and appearance meet your expectations?
- 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:

8-10-18

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

NOÇIA A



Bison Oil Well Cementing Tail & Lead

Date: 8/10/2018

Invoice # 200306

API#

Foreman: Kirk Kallhoff

Customer: Noble Energy Inc.

Well Name: Emmy State H25-764

Consultant: tommy

County: Weld

Rig Name & Number: H&P 517

State: Colorado

Distance To Location: 23

Units On Location: 4028/4030/4039

Sec: 8

Time Requested: 500 pm

Twp: 5N

Time Arrived On Location: 300 pm

Range: 62W

Time Left Location: 9:00 pm

WELL DATA

Casing Size (in) : 9.625
Casing Weight (lb) : 36
Casing Depth (ft.) : 1,901
Total Depth (ft) : 1962
Open Hole Diameter (in) : 13.50
Conductor Length (ft) : 110
Conductor ID : 15.6
Shoe Joint Length (ft) : 43
Landing Joint (ft) : 35

Sacks of Tail Requested 100
HOC Tail (ft): 0

One or the other, cannot have quantity in both

Max Rate: 8
Max Pressure: 2500

Cement Data

Lead

Cement Name: BFN III
Cement Density (lb/gal) : 13.5
Cement Yield (cuft) : 1.68
Gallons Per Sack 8.90
% Excess 15%

Tail Type III

Cement Name:
Cement Density (lb/gal) : 15.2
Cement Yield (cuft) : 1.27
Gallons Per Sack: 5.80
% Excess: 0%

Fluid Ahead (bbls) 30.0
H2O Wash Up (bbls) 20.0

Spacer Ahead Makeup

30 BBL ahead with Die in 2nd 10

Casing ID	8.921	Casing Grade	J-55 only used
Lead Calculated Results		Tail Calculated Results	
HOC of Lead	1534.33 ft	Tail Cement Volume In Ann	127.00 cuft
Casing Depth - HOC Tail		(HOC Tail) X (OH Ann)	
Volume of Lead Cement	749.87 cuft	Total Volume of Tail Cement	108.34 Cuft
HOC of Lead X Open Hole Ann		(HOC Tail X OH Ann) - (Shoe Length X Shoe Joint Ann)	
Volume of Conductor	90.42 cuft	bbls of Tail Cement	22.62 bbls
(Conductor ID Squared) - (Casing Size OD Squared) X (.005454) X (Conductor Length ft)		(HOC of Tail) X (OH Ann) + (Cement Yield) X (Shoe Joint Ann) X (.1781) X (% Excess)	
Total Volume of Lead Cement	840.30 cuft	HOC Tail	221.67 ft
(cuft of Lead Cement) + (Cuft of Conductor)		(Tail Cement Volume) ÷ (OH Ann)	
bbls of Lead Cement	172.11 bbls	Sacks of Tail Cement	100.00 sk
(Total cuft of Lead Cement) X (.1781) X (1+%Lead Excess)		(Total Volume of Tail Cement) ÷ (Cement Yield)	
Sacks of Lead Cement	575.20 sk	bbls of Tail Mix Water	13.81 bbls
(Total Slurry Volume) ÷ (Cement Yield) X (% Excess Cement)		(Sacks of Tail Cement X Gallons Per Sack) ÷ 42	
bbls of Lead Mix Water	121.89 bbls	Pressure of cement in annulus	
(Sacks Needed) X (Gallons Per Sack) ÷ 42		Hydrostatic Pressure	585.23 PSI
Displacement	146.33 bbls		
(Casing ID Squared) X (.0009714) X (Casing Depth) + (Landing Joint) - (Shoe Length)		Collapse PSI:	2020.00 psi
Total Water Needed:	332.03 bbls	Burst PSI:	3520.00 psi

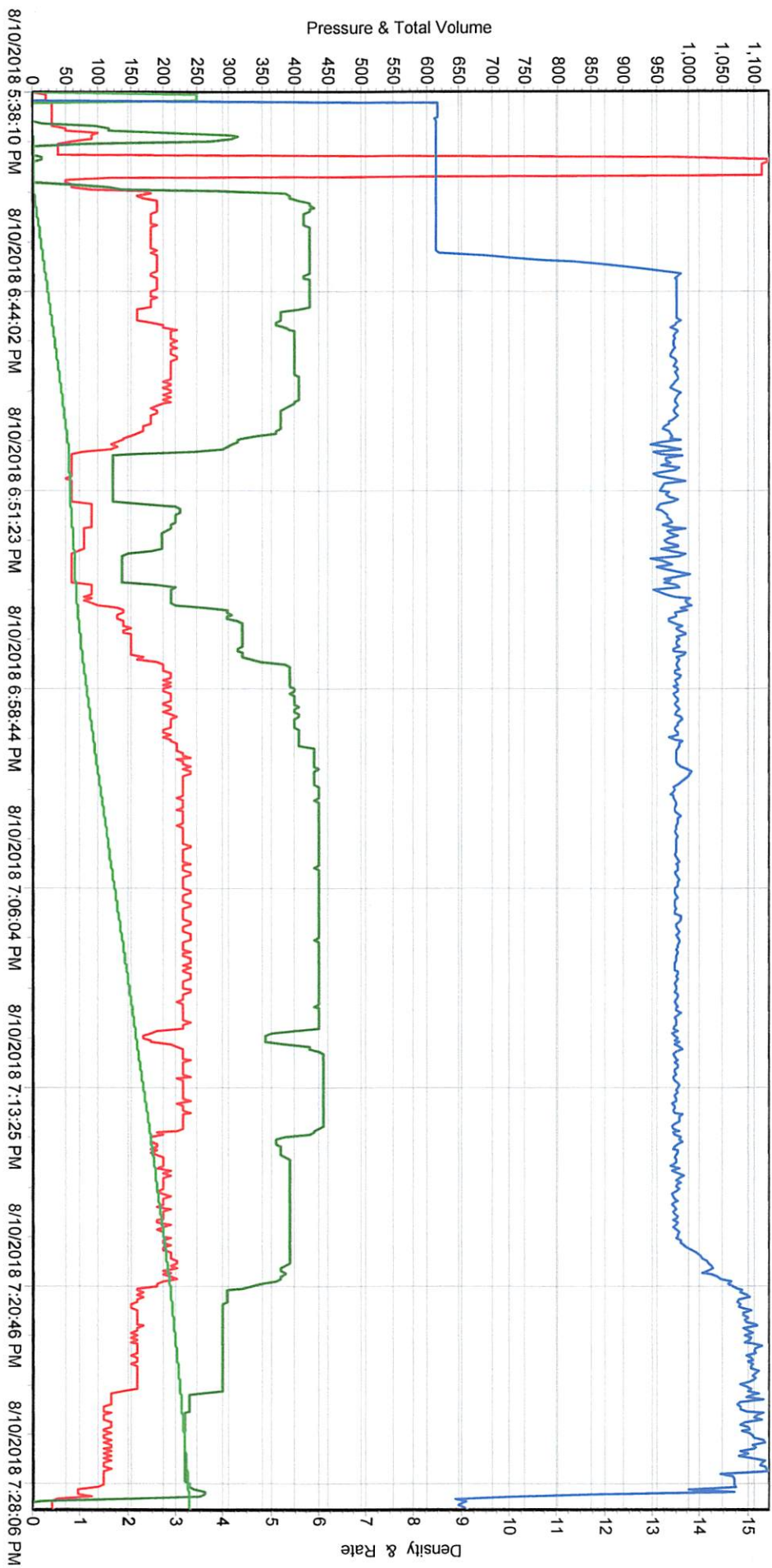
Authorization To Proceed

Release and Indemnification

Customer acknowledges and assumes the risks associated with oil well drilling, cementing and acidizing, including, without limitation, destabilization, loss of production, contamination, fracturing and loss of well control. Customer agrees to release Bison Oil Well Cementing, Inc., Bison Energy Services, Inc., its agents, employees and assigns, from any and all liability for any and all damages whatsoever to property of any kind owned by, in the possession of, or leased by customer and those persons or entities customer has the ability to bind by contract. Customer also agrees to indemnify and hold harmless Bison Oil Well Cementing, Inc., Bison Energy Services, Inc., its agents, employees and assigns, from and against any and all liability, claims, costs, expenses, attorneys fees and damages whatsoever for claims, costs, expenses, attorneys fees and damages whatsoever for personal injury, illness, death, property damage and loss resulting from: loss or reduction of production, destabilization loss of oil well control, failure of or contamination by acid stimulation, hydraulic fracturing, cementing, pumping services, incompatible fluid or other processes to stimulate, complete or end production, and/or any other condition. Customer's release, indemnity and hold harmless obligation shall apply even if the liability and claims are caused by the sole, concurrent, active or passive negligence, fault, or strict liability of Bison Oil Well Cementing, Inc. and/or Bison Energy Services, Inc. or any defect in the data, products, supplies, materials or equipment furnished by Bison Oil Well Cementing, Inc. whether in the design, manufacturing, maintenance, or marketing thereof or from failure to warn of such defect. In the event that any portion of this release and indemnity is found by a court of competent jurisdiction to be inoperable or unenforceable, the remaining portions and provisions shall apply, and customer agrees that the contract price herein shall be the limit of Bison Oil Well Cementing, Inc.'s liability, if any.

SERIES 2000

PSI Barrels / Minute Barrels Lbs / Gallon



JOB/TASK: SURFACE CASING CEMENTING		CEMENTER/SUPERVISOR: kirk kallhoff		PAGE 1	OF 3
WELL NAME: Emmy State H25-764		RIG # H&P 517	LOCATION CR 47 and CR 30	DATE: 8-10-2018	
OPERATOR: Noble		CONSULTANT: tommy		INVOICE # 200306	
<div style="display: flex; justify-content: space-between;"> <div style="width: 20%;"> PPE REQUIRED: <input type="checkbox"/> Hard Hat <input type="checkbox"/> Safety Glasses <input type="checkbox"/> Steel Toe Boots <input type="checkbox"/> Impact Gloves </div> <div style="width: 20%;"> <input type="checkbox"/> FR Coveralls <input type="checkbox"/> Reflective Vest </div> <div style="width: 20%; text-align: center;"> ADDITIONAL PPE (based on job specific hazards) </div> <div style="width: 20%;"> <input type="checkbox"/> Goggles <input type="checkbox"/> Faceshield <input type="checkbox"/> Chemical Resistant Gloves <input type="checkbox"/> Chemical Resistant Clothing </div> <div style="width: 20%;"> <input type="checkbox"/> Air Purifying Respirator <input type="checkbox"/> Supplied Air Respirator <input type="checkbox"/> Personal H2S Monitor <input type="checkbox"/> Personal Methane Monitor </div> </div>					
JOB STEPS		POTENTIAL HAZARDS	RECOMMENDED ACTION OR PROCEDURE		REVIEWED BY
1. Review JSA		Misunderstanding	Clarify job and associated hazards and safety concerns		
2. Conduct pre job safety meeting		Misunderstanding	-Hold safety meeting with all personnel on location, ensure everyone pays attention to ensure they understand their role and responsibility during the job -Review treatment report with consultant and attain signature for authorization to proceed -Identify and address short service employees (SSE) who are on location		
3. Move trucks in and rig up equipment		Other traffic on location, overhead lines, pinch points, heavy lifting, slips/falls	-Coordinate with well site supervisor for directions on where and when to park the equipment -All Bison crew members walk the location prior to driving in to access specific hazards -Utilize spotters when trucks are in motion -Establish buffer zone around equipment utilizing cones and caution tape -Cementer follows up to ensure connections are secure -Lift with your legs and use teamwork when rigging up -Utilize reflective vests and wands to increase visibility at night - Deploy spill berms and buckets		
4. Raise cement head and hoses to rig floor		Overhead work, improper hookup/load not properly secured, poor communication between ground personnel and crane/tugger operator	-Inspect slings, chains and hooks prior to lift -Ensure line of sight with crane/tugger operator is maintained throughout the lift and hand signals are understood -Ensure no personnel are under suspended equipment -Utilize a tag line to control the load		
5. Connect Cement head/swage/pln, chickens and hoses.		Working in a congested area, pinch points, swinging hammers, slippery rig floor	-Only Bison personnel install the cement head and hoses -Maintain line of sight and communication with crane/tugger operator -Remove non-essential personnel from rig floor, wait until other activity is done -Rig crew does not install chains until head and hoses are installed -Ensure a clear path when swinging a hammer -Ensure all fittings and hoses have proper pressure rating for the job and fall within the parameters of the <i>Bison Oilwell Iron Inspection Program</i>		
6. Pressure test lines	Test to: PSI- 2000	Equipment failing under high pressures	-Ensure rig floor is clear and personnel are away from hoses prior to test -Establish buffer area around high pressure hoses -Lines are checked from a distance and using pressure gauges	Pressure relief valve set to: PSI- 2500	

Maximum pressure allowed for job: PSI- 2500		-Cementer ensures pressure gauges are functioning properly	Max. pump pressure: PSI- 2800
7. Pump Spacer (dye marker)/Mix and Pump Cement	Serious injury from high pressure line failure or catastrophic equipment failure. Casing hydraulic from hole, causing injury. Burns or skin irritation from splashing cement , uncontrolled spills	-Pressure test prior to job, utilize heavy duty hose hobbles and pressure relief valve -Keep rig floor and buffer area clear while pumping - Utilize proper PPE -Have access to water to rinse affected skin -Deploy spill berms and buckets	
8. Drop plug	Slips, trips, falls. Miscommunication between pump operator and cementer, pressure against a closed stop	-Utilize 3 points of contact while descending/climbing ladder and stairs -Have visual contact between cementer and pump operator before pump is engaged	
9. Displacement	Unexpected pressure associated with resuming of pumping, casing hydraulic from hole, serious injury from high pressure line failure or catastrophic equipment failure.	-Ensure rig floor remains clear and non-essential personnel stay clear from buffer area -Pump operator monitors pump pressure constantly - Utilize proper PPE	
10. Bump plug-Test float and release pressure	Pressure jumps before expected (calculated) displacement. Pressure jumps rapidly and higher than expected.	-Pump operator slows rate to 2 BPM when 5 bbls from calculated displacement and down to 1 bpm within 2 bbls of calculated displacement -Pump operator monitors pressure constantly -Pressure relief valve installed on pump	
11. Pressure test casing (if required)	Test to: PSI- FOR: MIN-	Serious injury from high pressure line or catastrophic equipment failure	-Ensure rig floor remains clear and non-essential personnel stay clear from the buffer area
12. Wash up / rig down	Splashing cement slurry, heavy lifting, pinch points, unsecured hoses	-Utilize stakes or portable tank manifold to secure hoses -Use proper lifting technique (2 man lift, lift with legs, plan your route)	
13. Depart location	Other traffic and personnel and location, overhead lines	-All Bison crew member walk the planned exit route to access possible obstacles and hazards -Utilize spotters while backing	
14. General Precautions/Stop Work - If you see a leaking connection, notify the cementer. Do not attempt to hammer up a leaking connection as there may be pressure on the lines. -Any person location, regardless of their position or experience level has the authority and responsibility to stop the job if they witness an unsafe act or condition.			

15. OTHER HAZARDS SPECIFIC TO LOCATION OR ENVIRONMENT NOT ADDRESSED ABOVE:

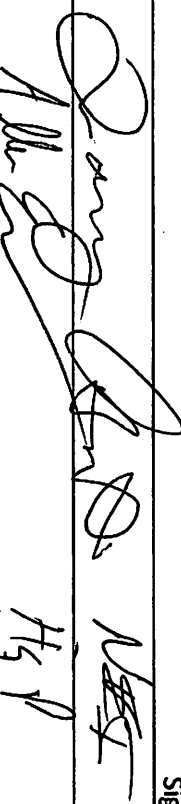







DESIGNATED EMERGENCY MUSTER AREA: ENTRANCE TO LOCATION

NEAREST EMERGENCY MEDICAL FACILITY (OTHER THAN 911):

Greeley, CO

HEAD COUNT—
6 Bison

Signature and Company

	NEST	
	H3P	
	H3P	
	JSC	
	BISON	
	NEST	
	NEST	
	BISON	