Bison Oil Well Cementing
Single Cement Surface Pipe

Customer	Noble Energy Inc.
Well Name	wells ranch ae 32-670

INVOICE #	80530
LOCATION	Weld
FOREMAN	Kirk Kallhoff
Date	9/18/2015

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DESCRIPTION OF JOB EVENTS

Amount Pumped		Time/Date	Event	Description	Rate	BBLs	Pressure
% Excess	10%	1000 am	Rig up				
Mixed bbls	46.5	1035 am	JSA				
Total Sacks	261	1103 am	Pressure Test		1	1	1100
bbl Returns	8	1105 am	Spacer Ahead	10 bbls fresh h2o	5	10	90
Water Temp			Spacer Ahead	10 bbls dye h2o	5	10	
			Spacer Ahead	30 bbls fresh h2o	5	30	
Notes:		1113 am	Lead Cement	261 sks cement 69.2 bbls slurry	5	69.2	120
		1125 am	Shutdown				
		1128 am	Drop Plug				
		1128 am	Start Displacement	47.5 bbls h2o	5	47.5	150
		1138 am	Bump Plug	250 psi before bump	1		700
		1140 am	End Job	release psi			0
		1145 am	Rig Down				
		1200 pm	Leave Location				

X _____ Work Preformed

X CUSTOMER Title

X 9-18-15 Date

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Cementing Customer Satisfaction Survey

Service Date	9/18/2015
Well Name	wells ranch ae 32-670
County	Weld
State	Colorado
SEC	25
TWP	6n
RNG	68w

Invoice Number	80530
API #	0
Job Type	Single Cement Surface Pipe
Company Name	Noble Energy Inc.
Customer Representative	jeremy

Supervisor Name: Kirk Kallhoff

Employee Name (Including Supervisor)	Exposure Hours (Per Employee)
kirk	5.5
scott	5.5
lee	5.5
Total Exposure Hours	16.5

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
5	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:			Please Circle:		
Yes	(No)	Did an accident or injury occur?	(Yes)	No	Was a pre-job safety meeting held?
Yes	(No)	Did an injury requiring medical treatment occur?	(Yes)	No	Was a job safety analysis completed?
Yes	(No)	Did a first-aid injury occur?	(Yes)	No	Were emergency services discussed
Yes	(No)	Did a vehicle accident occur?	Yes	(No)	Did environmental incident occur?
(Yes)	No	Was a post-job safety meeting held?	Yes	(No)	Did any near misses occur?

Additional Comments:

THE INFORMATION HEREIN IS CORRECT -

X _____
Customer Representative's Signature

DATE: 9-18-15

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

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Date: 9/18/2015
Invoice # 80530
API#
Foreman: Kirk Kallhoff

Customer: Noble Energy Inc.
Well Name: wells ranch ae 32-670

County: Weld
State: Colorado
Sec: 25
Twp: 6n
Range: 68w

Consultant: jeremy
Rig Name & Number: H&P 321
Distance To Location:
Units On Location: 4029-3106/4020-3205
Time Requested: 800 am
Time Arrived On Location: 630 am
Time Left Location: 12:00 pm

WELL DATA

Casing Size OD (in) :	9.625
Casing Weight (lb) :	36.00
Casing Depth (ft.) :	623
Total Depth (ft) :	633
Open Hole Diameter (in.) :	13.50
Conductor Length (ft) :	100
Conductor ID :	16
Shoe Joint Length (ft) :	43
Landing Joint (ft) :	35
Max Rate:	
Max Pressure:	

Cement Data

Cement Name:	BFN III
Cement Density (lb/gal) :	14.2
Cement Yield (cuft) :	1.49
Gallons Per Sack:	7.48
% Excess:	30%
Displacement Fluid lb/gal:	8.3
BBL to Pit:	
Fluid Ahead (bbls):	50.0
H20 Wash Up (bbls):	10.0

Spacer Ahead Makeup

Casing ID 8.921 Casing Grade J-55 only used

Calculated Results

cuft of Shoe 18.66 cuft
(Casing ID Squared) X (.005454) X (Shoe Joint ft)

cuft of Conductor 89.10 cuft
(Conductor Width Squared) -(Casing Size OD Squared) X (.005454) X (Conductor Length ft)

cuft of Casing 332.29 cuft
(Open Hole Squared)-(Casing Size Squared) X (.005454) X (Casing Depth - Conductor Length)

Total Slurry Volume 440.05 cuft
(cuft of Shoe) + (cuft of Conductor) + (cuft of Casing)

bbls of Slurry 78.37 bbls
(Total Slurry Volume) X (.1781)

Sacks Needed 295 sk
(Total Slurry Volume) ÷ (Cement Yield) X (% Excess Cement)

Mix Water 52.60 bbls
(Sacks Needed) X (Gallons Per Sack) ÷ 42

Displacement: 47.54 bbls
(Casing ID Squared) X (.0009714) X (Casing Depth + Landing Joint - Shoe Joint)

Pressure of cement in annulus

Hydrostatic Pressure: 459.59 PSI

Pressure of the fluids inside casing

Displacement: 250.09 psi
Shoe Joint: 31.72 psi
Total 281.81 psi

Differential Pressure: 177.78 psi

Collapse PSI: 2020.00 psi
Burst PSI: 3520.00 psi

Total Water Needed: 160.14 bbls

X _____
Authorization To Proceed

Customers hereby acknowledges and specifically agrees to the terms and condition on this work order, including, without limitation, the provisions on this work order.