



Bison Oil Well Cementing Single Cement Surface Pipe

Date: 3/21/2016
 Invoice # 80478
 API# 05-123-42136
 Foreman: Matthew

Customer: Noble Energy Inc.
Well Name: Wells Ranch AF 05-625

County: Weld Consultant: _____
 State: Colorado Rig Name & Number: H&P 343
 Distance To Location: 24
 Sec: 5 Units On Location: 4027/3106
 Twp: 5N Time Requested: 2:30am 3.21.16
 Range: 62W Time Arrived On Location: _____
 Time Left Location: _____

WELL DATA	Cement Data
Casing Size OD (in) : <u>9.625</u>	Cement Name: <u>BFN III</u>
Casing Weight (lb) : <u>36.00</u>	Cement Density (lb/gal) : <u>14.2</u>
Casing Depth (ft.) : <u>1,930</u>	Cement Yield (cuft) : <u>1.49</u>
Total Depth (ft) : <u>1961</u>	Gallons Per Sack: <u>7.48</u>
Open Hole Diameter (in.) : <u>13.50</u>	% Excess: <u>15%</u>
Conductor Length (ft) : <u>104</u>	Displacement Fluid lb/gal: <u>8.7</u>
Conductor ID : <u>15.25</u>	BBL to Pit: <u>18.0</u>
Shoe Joint Length (ft) : <u>41</u>	Fluid Ahead (bbls): <u>50.0</u>
Landing Joint (ft) : <u>5</u>	H2O Wash Up (bbls): <u>20.0</u>
Max Rate: <u>7</u>	Spacer Ahead Makeup
Max Pressure: <u>1500</u>	<u>40Water , 10 Dye</u>

Calculated Results	Pressure of cement in annulus
cuft of Shoe <u>17.62</u> cuft (Casing ID Squared) X (.005454) X (Shoe Joint ft)	Displacement: <u>148.00</u> bbls (Casing ID Squared) X (.0009714) X (Casing Depth + Landing Joint - Shoe Joint)
cuft of Conductor <u>79.37</u> cuft (Conductor Width Squared) -(Casing Size OD Squared) X (.005454) X (Conductor Length ft)	Hydrostatic Pressure: <u>1423.76</u> PSI
cuft of Casing <u>1022.35</u> cuft (Open Hole Squared)-(Casing Size Squared) X (.005454) X (Casing Depth - Conductor Length)	Pressure of the fluids inside casing
Total Slurry Volume <u>1119.34</u> cuft (cuft of Shoe) + (cuft of Conductor) + (cuft of Casing)	Displacement: <u>853.82</u> psi
bbls of Slurry <u>201.70</u> bbls (Total Slurry Volume) X (.1781)	Shoe Joint: <u>29.95</u> psi
Sacks Needed <u>751</u> sk (Total Slurry Volume) ÷ (Cement Yield) X (% Excess Cement)	Total <u>883.77</u> psi
Mix Water <u>133.75</u> bbls (Sacks Needed) X (Gallons Per Sack) ÷ 42	Differential Pressure: <u>539.99</u> psi
	Collapse PSI: <u>2020.00</u> psi
	Burst PSI: <u>3520.00</u> psi
	Total Water Needed: <u>210.00</u> bbls

X Charles Collier
 Authorization To Proceed



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

Customer
Well Name

Noble Energy Inc.
Wells Ranch AF 05-625

INVOICE #
LOCATION
FOREMAN
Date

80478
Weld
Matthew
3/21/2016

Treatment Report Page 2

DESCRIPTION OF JOB EVENTS

Amount Pumped	Time/Date	Event	Description	Rate	BBLs	Pressure
% Excess 15%	3/21/2016 12:30	Arrive on location				
Mixed bbls 199	5:00am	Rig Up				
Total Sacks 751	5:30am	JSA				
bbl Returns 18	5:42am	Pressure Test	3 bbls fresh h2o to fill lines	2	3	
Water Temp 65	5:45am	Spacer Ahead	40bbls Fresh h2o 10bbls dye h2o	7.4	50	230
	5:52am	Pump Cement	Neat Type III 14.2#/gal, 1.49yield, 7.48gal/sk	7.4	199	280
Notes:	6:25am	Shutdown				
	6:27am	Drop Plug				
	6:30am	Pump Displacement	Displaced with OBM 8.7#/gal	7.4	148	480
	6:54am	Bump Plug	Bumped Plug	2		550
	6:56am	Casing Test	Increased pressure to 1000psi	1		1000
	7:11am	Check Floats	Floats Held			
	8:10am	Top Off Well	Cement Fell after wash up 10bbl slurry,56sks	1	15	20
	8:30am	Rig Down				
	9:30am	Leave Location				

MAIL TO: NOBLE ENERGY INC.
ATTN: ACCOUNTS PAYABLE
1625 BROADWAY, SUITE 2200
DENVER, CO 80202
NO INVOICE WILL BE PAID W/O ALL
ATTACHED SIGNED FIELD TICKETS

ROUTE TO APPROVER

FIELD APPROVAL DATE

DOLLAR TOTAL BEING APPLIED
\$ 320.16.0017

ACTG CODE
320.16.0017

EXP TYPE
Cmt

TASK (DRL, REP, WQ, P&A)
DRL

WELL NAME & NUMBER
WELLS RANCH AF 05-625

AFE NUMBER
20046

RIG NAME & NUMBER
H&P 3431

X Charles Ad
Work Performed

X Wass
Title

X 3/21/16
Date