Bison Oil Well Cementing
Single Cement Surface Pipe

Date: 12/24/2015
Invoice # 80475
API# 05-123-40667
Foreman: Calvin Reimers

Customer: Noble Energy Inc.
Well Name: Douglas LC 35-780

County: Weld
State: Colorado
Sec: 26
Twp: 9N
Range: 59W

Consultant: Cliff /Bryan
Rig Name & Number: H&P 43
Distance To Location: 56 Miles
Units On Location: 4023-3104/4020-3212
Time Requested: 530am
Time Arrived On Location: 515am
Time Left Location: 1045am

WELL DATA

Casing Size OD (in) :	9.625
Casing Weight (lb) :	36.00
Casing Depth (ft.) :	595
Total Depth (ft) :	624
Open Hole Diameter (in.) :	13.50
Conductor Length (ft) :	100
Conductor ID :	16
Shoe Joint Length (ft) :	45
Landing Joint (ft) :	29
Max Rate:	7
Max Pressure:	1750

Cement Data

Cement Name:	BFN III
Cement Density (lb/gal) :	14.2
Cement Yield (cuft) :	1.49
Gallons Per Sack:	7.48
% Excess:	20%
Displacement Fluid lb/gal:	8.3
BBL to Pit:	16.0
Fluid Ahead (bbls):	40.0
H20 Wash Up (bbls):	10.0

Spacer Ahead Makeup
40 bbl H2O+Dye in 2nd 10 bbls

Casing ID 8.921 Casing Grade J-55 only used

Calculated Results

cuft of Shoe 19.65 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 290.48 cuft
(Open Hole Squared)-(Casing Size Squared) X (.005454) X (Casing Depth - Conductor Length)

Total Slurry Volume 399.23 cuft
(cuft of Shoe) + (cuft of Conductor) + (cuft of Casing)

bbls of Slurry 71.10 bbls
(Total Slurry Volume) X (.1781)

Sacks Needed 268 sk
(Total Slurry Volume) ÷ (Cement Yield) X (% Excess Cement)

Mix Water 47.72 bbls
(Sacks Needed) X (Gallons Per Sack) ÷ 42

Displacement: 44.73 bbls
(Casing ID Squared) X (.0009714) X (Casing Depth + Landing Joint - Shoe Joint)

Pressure of cement in annulus

Hydrostatic Pressure: 439.15 PSI

Pressure of the fluids inside casing

Displacement: 237.16 psi
Shoe Joint: 33.40 psi
Total 270.56 psi

Differential Pressure: 168.59 psi

Collapse PSI: 2020.00 psi
Burst PSI: 3520.00 psi

Total Water Needed: 142.44 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.

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INVOICE #	80475
LOCATION	Weld
FOREMAN	Calvin Reimers
Date	12/24/2015

Customer	Noble Energy Inc.
Well Name	Douglas LC 35-780

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DESCRIPTION OF JOB EVENTS

Amount Pumped		Time/Date	Event	Description	Rate	BBLs	Pressure
% Excess	20% ~~40%~~	805am	MIRU				
Mixed bbls	47.72 ~~41.93~~	850am	JSA				
Total Sacks	268 ~~235~~	931am	Pressure Test	Test Lines	0.5	1	1300
bbl Returns	16	933am	Spacer Ahead	40 bbls H2O+Dye in 2nd 10 bbls	6	40	150
Water Temp	56.6	940am	Cement	14.2ppg 268 sks	6.5	71.1	300
		954am	Shutdown				
Notes:		956am	Drop Plug				
		957am	Start Displacement		6	44.73	70
		1009am	End Displacement		1		250
		1010am	Pressure Test Casing	1010am 1030psi to 1015am 1000psi			210
		1015am	Floats Held	1/2 bbl back on bleed off			530
		1025am	Rig Down				
		1045am	Leave Location				

X _____
Work Preformed

X Co Man
Title

X 12/24/15
Date