Bison Oil Well Cementing
Single Cement Surface Pipe

Date: 8/19/2016
Invoice # 80520
API# 05-123-40818
Foreman: Matthew Rosales

Customer: Noble Energy Inc.
Well Name: Reagan LD06-675

County: Weld
State: Colorado
Sec: NENE 5
Twp: 9N
Range: 58W

Consultant:
Rig Name & Number: H&P 517
Distance To Location: 70
Units On Location:
Time Requested: 8/19/2016 7:L00am
Time Arrived On Location: 6:30am
Time Left Location:

WELL DATA

Casing Size OD (in) :	9.625
Casing Weight (lb) :	36.00
Casing Depth (ft.) :	1,914
Total Depth (ft) :	1918
Open Hole Diameter (in.) :	13.50
Conductor Length (ft) :	80
Conductor ID :	15.25
Shoe Joint Length (ft) :	40
Landing Joint (ft) :	3
Max Rate:	8
Max Pressure:	1700

Cement Data

Cement Name:	BFN III
Cement Density (lb/gal) :	14.2
Cement Yield (cuft) :	1.49
Gallons Per Sack:	7.48
% Excess:	15%
Displacement Fluid lb/gal:	8.3
Fluid Ahead (bbls):	50.0
H20 Wash Up (bbls):	20.0

Spacer Ahead Makeup
40h2o, 10 dye h2o

Casing ID 8.921 Casing Grade J-55 only used

Calculated Results

cuft of Shoe 18.00 cuft
(Casing ID Squared) X (.005454) X (Shoe Joint ft)

cuft of Conductor 61.05 cuft
(Conductor Width Squared) -(Casing Size OD Squared) X (.005454) X (Conductor Length ft)

cuft of Casing 880.00 cuft
(Open Hole Squared)-(Casing Size Squared) X (.005454) X (Casing Depth - Conductor Length)

Total Slurry Volume 1091.00 cuft
(cuft of Shoe) + (cuft of Conductor) + (cuft of Casing)

bbls of Slurry 194.00 bbls
(Total Slurry Volume) X (.1781)

Sacks Needed 731 sk
(Total Slurry Volume) ÷ (Cement Yield) X (% Excess Cement)

Mix Water 122.00 bbls
(Sacks Needed) X (Gallons Per Sack) ÷ 42

Displacement: 143.60 bbls
(Casing ID Squared) X (.0009714) X (Casing Depth + Landing Joint - Shoe Joint)

Pressure of cement in annulus

Hydrostatic Pressure: 1411.59 PSI

Pressure of the fluids inside casing

Displacement: 807.72 psi
Shoe Joint: 29.67 psi
Total 837.39 psi

Differential Pressure: 574.20 psi

Collapse PSI: 2020.00 psi
Burst PSI: 3520.00 psi

Total Water Needed: 300.00 bbls

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.

Bison Oil Well Cementing
Single Cement Surface Pipe

Customer	Noble Energy Inc.
Well Name	Reagan LD06-675

INVOICE #	80520
LOCATION	Weld
FOREMAN	Matthew Rosales
Date	7/28/2016

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DESCRIPTION OF JOB EVENTS

Amount Pumped		Time/Date	Event	Description	Rate	BBLs	Pressure
% Excess	15%	6:30am 8/19/16	Arrive on Location	Rig is Running Casing			
Mixed bbls	194	7:30am	Pre Rig up JSA				
Total Sacks	733	7:35am	Rig Up				
bbl Returns	45	8:05am	Pre Job Jsa				
Water Temp	70	8:20am	Start Job				
		8:21am	Fill Lines		1.5	2	100
Notes:		8:23am	Water Spacer	40h20, 10 dye h2o	6.4	50	160
		8:32am	Pump Cement		6.4	194	200
		9:10am	Shutdown				
		9:11am	Drop Plug				
		9:12am	Displace				
		9:48am	Bump Plug				
		9:40am	Test Casing				
		9:55am	Check Floats				
		10:50am	Pump Cement	Well Fell 10'	1	5	100
		11:00am	Rig Down				
		11:30am	Leave Location				

x _____
Work Preformed

x WSS
Title

x 8/19/16
Date