Bison Oil Well Cementing
Single Cement Surface Pipe

Date: 8/14/2015
Invoice # 90025
API# 05-123-41534
Supervisor Nick

Customer: Noble Energy Inc.

Well Name: 70 Ranch State BB 18-655

County: Weld
State: Colorado

Sec: 17
Twp: 5N
Range: 63W

Consultant: Gary Stapleton
Rig Name & Number: H&P 326
Distance To Location: 60
Units On Location: 3102/4028/4022/3215
Time Requested: 1:30
Time Arrived On Location: 23:45
Time Left Location: 4:40

WELL DATA

Casing Size OD (in) :	9.625
Casing Weight (lb) :	36.00
Casing Depth (ft.) :	749
Total Depth (ft) :	759
Open Hole Diameter (in.) :	13.50
Conductor Length (ft) :	130
Conductor ID :	15.25
Shoe Joint Length (ft) :	44
Landing Joint (ft) :	30
Max Rate:	7
Max Pressure:	1500

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
BBL to Pit:	15.0
Fluid Ahead (bbls):	50.0
H20 Wash Up (bbls):	20.0

Spacer Ahead Makeup
DYE IN SECOND 10 BBL

Casing ID 8.921 Casing Grade J-55 only used

Calculated Results

cuft of Shoe	19.10	cuft
(Casing ID Squared) X (.005454) X (Shoe Joint ft)		
cuft of Conductor	99.21	cuft
(Conductor Width Squared) -(Casing Size OD Squared) X (.005454) X (Conductor Length ft)		
cuft of Casing	287.08	cuft
(Open Hole Squared)-(Casing Size Squared) X (.005454) X (Casing Depth - Conductor Length)		
Total Slurry Volume	405.39	cuft
(cuft of Shoe) + (cuft of Conductor) + (cuft of Casing)		
bbls of Slurry	83.00	bbls
(Total Slurry Volume) X (.1781)		
Sacks Needed	313	sk
(Total Slurry Volume) ÷ (Cement Yield) X (% Excess Cement)		
Mix Water	55.74	bbls
(Sacks Needed) X (Gallons Per Sack) ÷ 42		

Displacement: 54.50 bbls
(Casing ID Squared) X (.0009714) X (Casing Depth + Landing Joint - Shoe Joint)

Pressure of cement in annulus

Hydrostatic Pressure: 552.54 PSI

Pressure of the fluids inside casing

Displacement:	303.98 psi
Shoe Joint:	32.46 psi
Total	336.44 psi
Differential Pressure:	216.10 psi
Collapse PSI:	2020.00 psi
Burst PSI:	3520.00 psi
Total Water Needed:	180.24 bbls

Gary Stapleton
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 #	90025
LOCATION	Weld
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DESCRIPTION OF JOB EVENTS

Amount Pumped		Time/Date	Event	Description	Rate	BBLs	Pressure
% Excess	15%	11:45 PM	Arrive on location	Well site assesment, Hazard hunt			
Mixed bbls	83	2:10 AM	Rig up equipment	Spot in and rig up while rig was running casing.			
Total Sacks	313	2:40 AM	Pre job JSA	Held safety meeting with all personnel involved.			
bbl Returns	20	3:07 AM	Pressure Test	Pressure tested lines to 1500 psi.			
Water Temp	70	3:10 AM	Spacer Ahead	Dye in second 10 bbl	6.1	50	190
		3:19 AM	Lead Cement	14.2 ppg Cement	7.5	83	230
Notes:		3:33 AM	Shutdown				
		3:34 AM	Drop Plug	Plug was pre loaded.			
		3:35 AM	Pump Displacement	Displaced with fresh water	6.5	30	220
		3:47 AM	Bump Plug	Bumped 300 psi over final lift pressure	1.8	54.5	290
		3:48 AM	Casing Test	Tested casing to 1000 psi for 15 min.			1000
		4:03 AM	Check Floats	Floats held (.5 bbl back to truck)			
		4:05 AM	End Job	Rig down safety meeting.			
		4:10 AM	Rig down equipment				
		4:40 AM	Crew left location				

x Gary Stapleton
Work Performed

x WSS
Title

x 8/14/2015
Date