Bison Oil Well Cementing
Single Cement Surface Pipe

Date:	12/18/2015
Invoice #	90061
API#	05-123-40660
Supervisor	Nick

Customer: Noble Energy Inc.

Well Name: Douglas LC35-770

County:	Weld	Consultant:	Cliff Kester
State:	Colorado	Rig Name & Number:	H&P 343
		Distance To Location:	55
Sec:	26	Units On Location:	3102/4016/4022/3215
Twp:	9N	Time Requested:	7:00
Range:	59W	Time Arrived On Location:	6:25
		Time Left Location:	10:00

WELL DATA

Casing Size OD (in) :	_9.625
Casing Weight (lb) :	36.00
Casing Depth (ft.) :	631
Total Depth (ft) :	641
Open Hole Diameter (in.) :	13.50
Conductor Length (ft) :	80
Conductor ID :	15.25
Shoe Joint Length (ft) :	43
Landing Joint (ft) :	5
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:	18.0
Fluid Ahead (bbls):	40.0
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 18.66 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 258.52 cuft
(Open Hole Squared)-(Casing Size Squared) X (.005454) X (Casing Depth - Conductor Length)

Total Slurry Volume 338.23 cuft
(cuft of Shoe) + (cuft of Conductor) + (cuft of Casing)

bbls of Slurry 60.30 bbls
(Total Slurry Volume) X (.1781)

Sacks Needed 227 sk

Mix Water 40.43 bbls
(Sacks Needed) X (Gallons Per Sack) ÷ 42

Displacement: 45.50 bbls
(Casing ID Squared) X (.0009714) X (Casing Depth + Landing Joint - Shoe Joint)

Pressure of cement in annulus

Hydrostatic Pressure: 465.49 PSI

Pressure of the fluids inside casing

Displacement:	253.53 psi
Shoe Joint:	31.72 psi
Total	285.26 psi
Differential Pressure:	180.23 psi
Collapse PSI:	2020.00 psi
Burst PSI:	3520.00 psi
Total Water Needed:	145.93 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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Well Name	Douglas LC35-770

INVOICE #	90061
LOCATION	Weld
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Treatment Report Page 2

DESCRIPTION OF JOB EVENTS

Amount Pumped		Time/Date	Event	Description	Rate	BBLs	Pressure
% Excess	15%	6:25 AM	Arrive on location	Well site assesment, Hazard hunt			
Mixed bbls	69.3	7:30 AM	Rig up equipment	Rig up safety meeting.			
Total Sacks	261	8:00 AM	Pre job JSA	Held safety meeting with all personnel involved.			
bbl Returns	18	8:30 AM	Pressure Test	Pressure tested lines to 1500 psi.			
Water Temp	60	8:33 AM	Spacer Ahead	Dye in second 10 bbl	7.4	40	220
		8:43 AM	Lead Cement	14.2 ppg Cement	7.4	69.3	190
Notes:		8:58 AM	Shutdown				
		8:59 AM	Drop Plug	Plug was pre loaded.			
		9:00 AM	Pump Displacement	Displaced with fresh water	5.6	20	110
		9:13 AM	Bump Plug	Bumped 400 psi over final lift pressure	2.5	45.5	280
		9:14 AM	Casing Test	Tested casing to 1000 psi for 15 min.			1000
		9:28 AM	Check Floats	Floats held (.5 bbl back to truck)			
		9:29 AM	End Job	Rig down safety meeting.			
		9:35 AM	Rig down equipment				
		7:00 PM	Crew left location				

X _____ X WSS X 12-18-15

Work Performed | Title | Date