



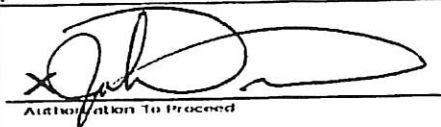
**Bison Oil Well Cementing
Single Cement Surface Pipe**

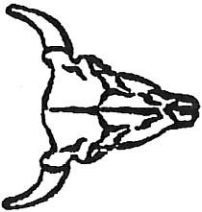
Date: 1/5/2015
 Invoice # 65054
 API# 445564
 Foreman: lee Sharp

Customer: Noble Energy Inc.
 Well Name: Mahalo State AA00974-1BHNB

County: Weld Consultant: John D
 State: Colorado Rig Name & Number: 829
 Distance To Location: 30
 Units On Location: 4027-3106/
 Sec: 28 Time Requested: 1400
 Twp: 3N Time Arrived On Location: 1300
 Range: 68W Time Left Location: 2230

WELL DATA	Cement Data
Casing Size OD (in) : <u>9.625</u>	Cement Name: <u>BFN III</u>
Casing Weight (lb) : <u>36.60</u>	Cement Density (lb/gal) : <u>14.2</u>
Casing Depth (ft.) : <u>636</u>	Cement Yield (cuft) : <u>1.49</u>
Total Depth (ft) : <u>846</u>	Gallons Per Sack: <u>7.49</u>
Open Hole Diameter (in.) : <u>13.50</u>	% Excess: <u>0%</u>
Conductor Length (ft) : <u>65</u>	Displacement Fluid lb/gal: <u>8.3</u>
Conductor ID : <u>15.325</u>	BBL to Pit: <u>0.0</u>
Shoe Joint Length (ft) : <u>46</u>	Fluid Ahead (bbbls): <u>50.0</u>
Landing Joint (ft) : <u>0</u>	H2O Wash Up (bbbls): <u>20.0</u>
Max Rate:	Spacer Ahead Makeup
Max Pressure:	

Casing ID	8.921	Casing Grade	J-55 only used
Calculated Results	Displacement: <u>61.11</u> bbls (Casing ID Squared) X (.0009714) X (Casing Depth + Landing Joint - Shoe Joint)		
cuft of Shoe	<u>19.75</u>	cuft	Pressure of cement in annulus Hydrostatic Pressure: <u>616.72</u> PSI
(Casing ID Squared) X (.005454) X (Shoe Joint ft)			
cuft of Conductor	<u>50.42</u>	cuft	Pressure of the fluids inside casing Displacement: <u>340.85</u> psi Shoe Joint: <u>33.57</u> psi Total: <u>374.41</u> psi
(Conductor Width Squared) - (Casing Size OD Squared) X (.005454) X (Conductor Length ft)			
cuft of Casing	<u>376.81</u>	cuft	Differential Pressure: <u>242.30</u> psi
(Open Hole Squared) - (Casing Size Squared) X (.005454) X (Casing Depth - Conductor Length)			
Total Slurry Volume	<u>446.98</u>	cuft	Collapse PSI: <u>2020.00</u> psi Burst PSI: <u>3520.00</u> psi
(cuft of Shoe) + (cuft of Conductor) + (cuft of Casing)			
bbbls of Slurry	<u>79.61</u>	bbbls	
(Total Slurry Volume) X (.1781)			
Sacks Needed	<u>300</u>	sk	
(Total Slurry Volume) + (Cement Yield) X (% Excess Cement)			
Mix Water	<u>53.50</u>	bbbls	
(Sacks Needed) X (Gallons Per Sack) ÷ 42			
 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**

INVOICE # 65054
LOCATION Weld
FOREMAN Lee Sharp
Date 1/5/2015

Customer
Well Name

Noble Energy Inc.
Mahalo State AA00974-1BHNB

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DESCRIPTION OF JOB EVENTS

	7:47	Displace 1		Displace 2		Displace 3		Displace 4		Displace 5		
		BBSL	Time	PSI	BBSL	Time	PSI	BBSL	Time	PSI	BBSL	Time
Safety Meeting	7:30	0	8:34	0	0	0	0	0	0	0	0	0
MIRU	7:50	10	8:36	100	10	10	10	10	10	10	10	10
CIRCULATE		20	8:38	110	20	20	20	20	20	20	20	20
Drop Plug		30	8:40	190	30	30	30	30	30	30	30	30
8:34		40	8:43	260	40	40	40	40	40	40	40	40
		50	8:45	310	50	50	50	50	50	50	50	50
M & P		60	8:52	240	60	60	60	60	60	60	60	60
Time		70	8:55	710	70	70	70	70	70	70	70	70
8:00-8:32	Sacks	80			80	80	80	80	80	80	80	80
		90			90	90	90	90	90	90	90	90
		100			100	100	100	100	100	100	100	100
		110			110	110	110	110	110	110	110	110
		120			120	120	120	120	120	120	120	120
% Excess	0%	130			130	130	130	130	130	130	130	130
Mixed bbls	53.5	140			140	140	140	140	140	140	140	140
Total Sacks	300	150			150	150	150	150	150	150	150	150
bbl Returns	15											
Water Temp	45											

Notes:

miru safety meeting pressure test per company man, circulate 50 bbls ahead with dye in 2nd 10, mix and pump 300 sks cement, drop plug and displace
61.11 bbls h2o, bump plug at 8:54 pm, at 710 psi, raise to 1000 psi hold 15 min, release pressure, wash up rig down.

X

X *Co Man*
Title

X 1/5/15
Date

Work performed