



BISON

Bison Oil Well Cementing Inc.
1547 Gaylord Street
Denver, CO 80206
303-296-3010

Invoice

Date	Invoice #
1/9/2015	45106

Bill To
Noble Energy Inc. Attn: Accounting 1625 Broadway Ste 2000 Denver, CO 80202

Location	Well Name & No.	Terms	Job Type		
Weld CO	Mahalo St.AA09-72-1AHNB	Net 30	Surface Pipe		
Item	Description	Qty	U/M	Rate	Amount
Pump surface	PUMP Charge-surface pipe	1			
Discount 15%	Discount 15%				
MILEAGE	Mileage charge	360			
Discount 15%	Discount 15%				
Data Acquisition ...	Data Acquisition Charge	1			
Discount 15%	Discount 15%				
Service Charge	Winterization Charge	1			
Service Charge	PSI Charge	1			
HOURS	Wait Time	1			
	Subtotal of Services				
BFN III Winter ...	BFN III Blend	389	Sack		
Discount 15%	Discount 15%				
Dye - 4880	Dye (Hot Pink 4880)	16	oz		
Discount 15%	Discount 15%				
KCL Mud Flush	(BHS 117)	4	qt		
Discount 15%	Discount 15%				
Sugar	Sugar	100	lb		
	Subtotal of Materials				

Please Remit Payment To:

Bison Oil Well Cementing, Inc.
P.O. Box 29671
Thornton, CO 80229

Subtotal	
Sales Tax	
Total	
Balance	



Bison Oil Well Cementing Single Cement Surface Pipe

Date: 1/9/2015
Invoice #: 45106
API#: 05-123-39012
Foreman: JASON KELEHER

Customer: Noble Energy Inc.
Well Name: MAHALO STATE AA09-72-1AHNB

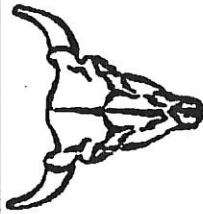
County: Weld
State: Colorado
Sec: 4
Twp: 6N
Range: 63W
Consultant: GARY
Rig Name & Number: PRECISION 828
Distance To Location: 33
Units On Location: 4031-3107/ 4022-3213
Time Requested: 2200
Time Arrived On Location: 2000
Time Left Location: 330

WELL DATA		Cement Data	
Casing Size OD (in) :	9.625	Cement Name:	BFN III
Casing Weight (lb) :	36.00	Cement Density (lb/gal) :	14.2
Casing Depth (ft.) :	809	Cement Yield (cuft) :	1.49
Total Depth (ft) :	830	Gallons Per Sack:	7.48
Open Hole Diameter (in.) :	13.50	% Excess:	40%
Conductor Length (ft) :	92	Displacement Fluid lb/gal:	8.3
Conductor ID :	15.25	BBL to Pit:	20.0
Shoe Joint Length (ft) :	42	Fluid Ahead (bbls):	40.0
Landing Joint (ft) :	21	H2O Wash Up (bbls):	20.0
Max Rate:	6	Spacer Ahead Makeup	
Max Pressure:	1000	40 BBL WATER W/ DYE IN 2ND 10	

Casing ID	8.921	Casing Grade	J-55 only used
Calculated Results		Displacement: 60.94 bbls (Casing ID Squared) X (.0009714) X (Casing Depth + Landing Joint - Shoe Joint)	
cuft of Shoe	18.23 cuft	Pressure of cement in annulus	
(Casing ID Squared) X (.005454) X (Shoe Joint ft)		Hydrostatic Pressure:	597.02 PSI
cuft of Conductor	70.21 cuft	Pressure of the fluids inside casing	
(Conductor Width Squared) -(Casing Size OD Squared) X (.005454) X (Conductor Length ft)		Displacement:	330.84 psi
cuft of Casing	490.79 cuft	Shoe Joint:	30.99 psi
(Open Hole Squared)-(Casing Size Squared) X (.005454) X (Casing Depth - Conductor Length)		Total	361.83 psi
Total Slurry Volume	579.23 cuft	Differential Pressure:	235.19 psi
(cuft of Shoe) + (cuft of Conductor) + (cuft of Casing)		Collapse PSI:	2020.00 psi
bbls of Slurry	103.16 bbls	Burst PSI:	3520.00 psi
(Total Slurry Volume) X (.1781)		Total Water Needed:	190.18 bbls
Sacks Needed	389 sk		
(Total Slurry Volume) ÷ (Cement Yield) X (% Excess Cement)			
Mix Water	69.23 bbls		
(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 #
LOCATION
FOREMAN
Date

45106
Weld
JASON KELEHER
1/9/2015

Customer
Well Name

Noble Energy Inc.
MAHALO STATE AA09-72-1AHNB

Treatment Report Page 2

DESCRIPTION OF JOB EVENTS

	Safety Meeting MIRU CIRCULATE Drop Plug 201 M & P Time	Displace 1			Displace 2			Displace 3			Displace 4			Displace 5		
		BBLs	Time	PSI	BBLs	Time	PSI	BBLs	Time	PSI	BBLs	Time	PSI	BBLs	Time	PSI
	1220	0	201	0	0			0			0			0		
	2330	10	203	60	10			10			10			10		
	120	20	205	70	20			20			20			20		
		30	208	120	30			30			30			30		
		40	212	200	40			40			40			40		
		50	215	220	50			50			50			50		
		60	219	240	60			60			60			60		
		70	220	240	70			70			70			70		
		80	BUMP	620	80			80			80			80		
		90			90			90			90			90		
		100			100			100			100			100		
		110			110			110			110			110		
		120			120			120			120			120		
		130			130			130			130			130		
		140			140			140			140			140		
		150			150			150			150			150		
% Excess	40%															
Mixed bbls	69.2															
Total Sacks	389															
bbl Returns	20															
Water Temp	52															

Notes:

PRESSURED TESTED TO 1500 PSI AT 0117, PUMPED 40 BBL WATER W/ DYE IN 2ND 10 AT 0120, MIXED AND PUMPED 389 SKS AT 14.2, 103.1 BBL
AT 0129, SHUT DOWN AT 0158, STARTED DISPLACEMENT AT 0201, PLUG LANDED AT 240 PSI AT 0220 AND PRESSURED UP TO 630 PSI, HELD FOR 1
MINUTE AND PRESSURED UP TO 1000 PSI AT 0221 FOR CASING TEST, LOST 100 PSI IN 12 MINUTES DUE TO WELL HEAD LEAKING.

X *John M Taylor*
Work Performed

X *Co. Manager*
Title

X *1-9-15*
Date