



BISON

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

Invoice

Date	Invoice #
8/22/2014	55014

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

Location	Well Name & No.	Terms	Job Type		
Weld CO	Rainbow LC28-78-1HNA	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%				
	BFN III Summer ...				
	Discount 15%				
	BFN III Blend				
	Discount 15%				
	Data Acquisition ...				
	Discount 15%				
	Data Acquisition Charge	1			
	Discount 15%				
	Subtotal of Services				
KCL Mud Flush	(BHS 117)	4	qt		
Discount 15%	Discount 15%				
Dye - 4880	Dye (Hot Pink 4880)	16	oz		
Discount 15%	Discount 15%				
	Subtotal of Materials				

Please Remit Payment To:

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

Subtotal
Sales Tax
Total
Balance Due



Bison Oil Well Cementing Single Cement Surface Pipe

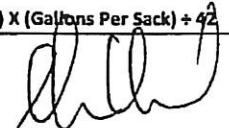
Date: 8/22/2014
Invoice #: 55014
API#
Foreman: monte

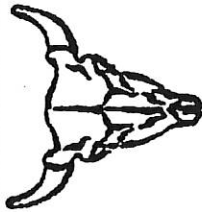
Customer: Noble Energy Inc.
Well Name: rainbow lc28-78-1hna

County: Weld
State: Colorado
Sec: 29
Twp: 9n
Range: 59w

Consultant: shane
Rig Name & Number: h&p 326
Distance To Location: 64.7
Units On Location: 4028-3102 4032-3212
Time Requested: 6:30
Time Arrived On Location: 6:00
Time Left Location: 7:15

WELL DATA		Cement Data	
Casing Size OD (in) :	9.625	Cement Name:	BFN III
Casing Weight (lb) :	36.00	Cement Density (lb/gal) :	15.2
Casing Depth (ft) :	586	Cement Yield (cuft) :	1.27
Total Depth (ft) :	640	Gallons Per Sack:	5.89
Open Hole Diameter (in.) :	13.75	% Excess:	15%
Conductor Length (ft) :	130	Displacement Fluid lb/gal:	8.3
Conductor ID :	15.6	BBL to Pit:	
Shoe Joint Length (ft) :	36	Fluid Ahead (bbls):	40.0
Landing Joint (ft) :	30	H2O Wash Up (bbls):	20.0
Max Rate:	5	Spacer Ahead Makeup	
Max Pressure:	2000	10 fresh 10 dye 20 fresh	

Casing ID	8.921	Casing Grade	J-55 only used
Calculated Results		Displacement:	44.84 bbls (Casing ID Squared) X (.0009714) X (Casing Depth + Landing Joint - Shoe Joint)
cuft of Shoe	15.63 cuft (Casing ID Squared) X (.005454) X (Shoe Joint ft)	Pressure of cement in annulus	
cuft of Conductor	106.86 cuft (Conductor Width Squared) - (Casing Size OD Squared) X (.005454) X (Conductor Length ft)	Hydrostatic Pressure:	462.71 PSI
cuft of Casing	275.77 cuft (Open Hole Squared) - (Casing Size Squared) X (.005454) X (Casing Depth - Conductor Length)	Pressure of the fluids inside casing	
Total Slurry Volume	398.26 cuft (cuft of Shoe) + (cuft of Conductor) + (cuft of Casing)	Displacement:	237.15 psi
bbls of Slurry	70.93 bbls (Total Slurry Volume) X (.1781)	Shoe Joint:	28.43 psi
Sacks Needed	314 sk (Total Slurry Volume) + (Cement Yield) X (% Excess Cement)	Total	265.58 psi
Mix Water	43.98 bbls (Sacks Needed) X (Gallons Per Sack) + 42	Differential Pressure:	197.13 psi
 X Authorization To Proceed		Collapse PSI:	2020.00 psi
		Burst PSI:	3520.00 psi
		Total Water Needed:	148.82 bbls
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
Well Name

Noble Energy Inc.
rainbow lc28-78-1hna

INVOICE #
LOCATION
FOREMAN
Date

55014
Weld
monte
8/22/2014

Treatment Report Page 2

DESCRIPTION OF JOB EVENTS

	7:00 6:35 7:35	Displace 1			Displace 2			Displace 3			Displace 4			Displace 5		
		BBS	Time	PSI	BBS	Time	PSI	BBS	Time	PSI	BBS	Time	PSI	BBS	Time	PSI
Safety Meeting		0	8:07	0	0			0			0			0		
MIRU		10	8:11	100	10			10			10			10		
CIRCULATE		20	8:13	220	20			20			20			20		
Drop Plug		30	8:15	280	30			30			30			30		
		40	8:17	310	40			40			40			40		
		50	8:19	520	50			50			50			50		
M & P		60			60			60			60			60		
Time	Sacks	70			70			70			70			70		
7:41-78:05	314	80			80			80			80			80		
		90			90			90			90			90		
		100			100			100			100			100		
		110			110			110			110			110		
% Excess	15%	120			120			120			120			120		
Mixed bbls	43.98	130			130			130			130			130		
Total Sacks	314	140			140			140			140			140		
bbl Returns	14	150			150			150			150			150		
Water Temp	75.5															

Notes:

Safety Meeting, miru, pressure test per company man circulate 40 bbls ahead with dye in 2nd 10,
mix and pump 314 sks at 15 % excess. drop plug and displace 44.8 bbls h2o

X WBS

X 8-22-14

Work Performed

Title

Date