



BISON

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

Invoice ✓

Date	Invoice #
9/2/2014	45031

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

Location	Well Name & No.	Terms	Job Type		
Weld CO	Rohn State LD03-64HN	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	522			
Discount 15%	Discount 15%				
Data Acquisition ...	Data Acquisition Charge	1			
Discount 15%	Discount 15%				
HOURS	Wait Time	1.5			
	Subtotal of Services				
BFN III Summer ...	BFN III Blend	490	Sack		
Discount 15%	Discount 15%				
Dye - 4880	Dye (Hot Pink 4880)	16	oz		
Discount 15%	Discount 15%				
KCL Mud Flush	(BHS 117)	5	qt		
Discount 15%	Discount 15%				
Sugar	Sugar	50	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 Due



**Bison Oil Well Cementing
Tail & Lead**

Customer: NOBLE
Well Name: ROHN STATE LD03-64HN

Date: 9/2/2014
Invoice #: 12071
API#: 05-123-37457
Foreman: JASON KELEHER

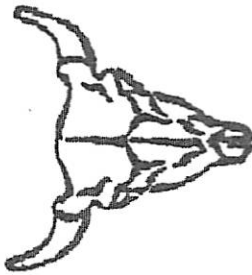
County: Weld
State: Colorado
Sec: 4
Twp: 9N
Range: 58W

Consultant: KEVIN
Rig Name & Number: H&P 277
Distance To Location: 87
Units On Location: 3
Time Requested: 1500
Time Arrived On Location: 1500
Time Left Location:

WELL DATA	Cement Data
Casing Size (in) : 9.625	Lead
Casing Weight (lb) : 36	Cement Name: BFN III
Casing Depth (ft) : 1,228	Cement Density (lb/gal) : 13.1
Total Depth (ft) : 1238	Cement Yield (cuft) : 1.69
Open Hole Diameter (in) : 13.50	Gallons Per Sack : 8.64
Conductor Length (ft) : 100	% Excess : 30% 25
Conductor ID : 15.25	Tail
Shoe Joint Length (ft) : 45	Cement Name: BFN III
Landing Joint (ft) : 28	Cement Density (lb/gal) : 15.2
	Cement Yield (cuft) : 1.27
	Gallons Per Sack : 5.89
	% Excess:
Sacks of Tail Requested : 105	Fluid Ahead (bbls) : 93.6
HOC Tail (ft):	H2O Wash Up (bbls) : 20.0
One or the other, cannot have quantity in both	
Max Rate: 7	Spacer Ahead Makeup
Max Pressure: 2000	50 BBL WATER W/KCL, 2ND 10 W/DYE

Casing ID 8.921	Casing Grade J-55 only used
Lead Calculated Results	Tail Calculated Results
HOC of Lead : 866.67 ft	Tail Cement Volume In Ann : 133.35 cuft
Casing Depth - HOC Tail	(HOC Tail) X (OH Ann)
Volume of Lead Cement : 423.57 cuft	Total Volume of Tail Cement : 114.02 Cuft
HOC of Lead X Open Hole Ann	(HOC Tail X OH Ann) - (Shoe Length X Shoe Joint Ann)
Volume of Conductor : 76.31 cuft	bbls of Tail Cement : 23.75 bbls
(Conductor ID Squared) - (Casing Size OD Squared) X (.005454) X (Conductor Length ft)	(HOC of Tail) X (OH Ann) + (Cement Yield) X (Shoe Joint Ann) X (.1781) X (% Excess)
Total Volume of Lead Cement : 499.88 cuft	HOC Tail : 233.29 ft
(cuft of Lead Cement) + (Cuft of Conductor)	(Tail Cement Volume) ÷ (OH Ann)
bbls of Lead Cement : 115.92 bbls	Sacks of Tail Cement : 105.00 sk
(Total cuft of Lead Cement) X (.1781) X (1+%Lead Excess)	(Total Volume of Tail Cement) ÷ (Cement Yield)
Sacks of Lead Cement : 385.11 sk	bbls of Tail Mix Water : 14.73 bbls
(Total Slurry Volume) ÷ (Cement Yield) X (% Excess Cement)	(Sacks of Tail Cement X Gallons Per Sack) ÷ 42
bbls of Lead Mix Water : 79.22 bbls	Pressure of cement in annulus
(Sacks Needed) X (Gallons Per Sack) ÷ 42	Hydrostatic Pressure : 835.65 PSI
Displacement : 93.65 bbls	
(Casing ID Squared) X (.0009714) X (Casing Depth) + (Landing Joint) - (Shoe Length)	Collapse PSI: 2020.00 psi
Total Water Needed: 301.25 bbls	Burst PSI: 3520.00 psi

X *Jason Keleher*
Authorization To Proceed



Bison Oil Well Cementing
Two Cement Surface Pipe

Date 9/2/2014
INVOICE # 12071
LOCATION Weld
FOREMAN JASON KELEHER

Customer NOBLE
Well Name ROHN STATE LD03-64HN

Treatment Report Page 2

DESCRIPTION OF JOB EVENTS

	1740	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
Safety Meeting	1645	0	1900	0	0			0			0			0		
MIRU	1817	10	1902	50	10			10			10			10		
CIRCULATE		20	1905	40	20			20			20			20		
Drop Plug		30	1908	40	30			30			30			30		
		40	1910	160	40			40			40			40		
		50	1912	240	50			50			50			50		
M & P		60	1914	300	60			60			60			60		
Time		70	1915	340	70			70			70			70		
1829-1851	385	80	1917	400	80			80			80			80		
1851-1857	105	90	1919	350	90			90			90			90		
		100	1920	350	100			100			100			100		
		110	BUMP	900	110			110			110			110		
		120			120			120			120			120		
Lead mixed bbls	79.2	130			130			130			130			130		
Lead % Excess	25.30%	140			140			140			140			140		
Lead Sacks	385	150			150			150			150			150		

Notes:

PERFORMED PRESSURE TEST TO 1500 PSI AT 1813, PUMPED 50 BBL WATER WITH DYE IN THE 2ND 10 AT 1817, MIXED AND PUMPED 385 SKS AT 13.1, 115.8 BBLs AT 1829, MIXED AND PUMPED 105 SKS AT 15.2, 23.7 BBL AT 1851, SHUT DOWN AT 1857, DROPPED PLUG AT 1900, STARTED DISPLACEMENT AT 1900, LANDED PLUG AT 350 PSI AT 1920 AND PRESSURE UP INTO CASING TEST AT 1300 PSI FOR 10 MINUTES, RELEASED PRESSURE AND GOT .5 BBLs BACK

Tail mixed bbls	14.7
Tail % Excess	0%
Tail Sacks	105
Total Sacks	490
Water Temp	63
bbl Returns	32

X *Peter Nichols*
Work Performed

X *W/S*
Title

X *9-2-14*
Date