



# Bison Oil Well Cementing Single Cement Surface Pipe

Date: 12/23/2014  
 Invoice # 45098  
 API# 05-123-40629  
 Foreman: JASON KELEHER

**Customer:** Anadarko Petroleum Corporation  
**Well Name:** GREENLEAF 1N-2HZ

County: Weld  
 State: Colorado  
 Sec: 2  
 Twp: 2N  
 Range: 65W

Consultant: RANDY  
 Rig Name & Number: MAJORS 42  
 Distance To Location: 19  
 Units On Location: 4031-3107/ 4022-3213  
 Time Requested: 1830  
 Time Arrived: 1700  
 Time Left Location: 2330

WELL DATA	Cement Data
Casing Size OD (in) : <u>9.625</u>	Cement Name: <u>BFN III</u>
Casing Weight (lb) : <u>36.00</u>	Cement Density (lb/gal) : <u>14.2</u>
Casing Depth (ft.) : <u>1,261</u>	Cement Yield (cuft) : <u>1.49</u>
Total Depth (ft) : <u>1277</u>	Gallons Per Sack: <u>7.48</u>
Open Hole Diameter (in.) : <u>13.50</u>	% Excess: <u>12%</u>
Conductor Length (ft) : <u>106</u>	Displacement Fluid lb/gal: <u>8.3</u>
Conductor ID : <u>15.25</u>	BBL to Pit: <u>22.0</u>
Shoe Joint Length (ft) : <u>41</u>	Fluid Ahead (bbls): <u>30.0</u>
Landing Joint (ft) : <u>8</u>	H2O Wash Up (bbls): <u>20.0</u>
Max Rate: <u>6</u>	Spacer Ahead Makeup
Max Pressure: <u>1500</u>	<u>30 BBL WATER, DYE IN 2ND 10</u>

Calculated Results	Pressure of cement in annulus
<b>cuft of Shoe</b> <u>17.98</u> <b>cuft</b> (Casing ID Squared) X (.005454) X (Shoe Joint ft)	<b>Displacement:</b> <u>94.86</u> <b>bbls</b> (Casing ID Squared) X (.0009714) X (Casing Depth + Landing Joint - Shoe Joint)
<b>cuft of Conductor</b> <u>80.89</u> <b>cuft</b> (Conductor Width Squared) -(Casing Size OD Squared) X (.005454) X (Conductor Length ft)	<b>Hydrostatic Pressure:</b> <u>929.89</u> <b>PSI</b>
<b>cuft of Casing</b> <u>634.21</u> <b>cuft</b> (Open Hole Squared)-(Casing Size Squared) X (.005454) X (Casing Depth - Conductor Length )	<b>Pressure of the fluids inside casing</b>
<b>Total Slurry Volume</b> <u>733.09</u> <b>cuft</b> (cuft of Shoe) + (cuft of Conductor) + (cuft of Casing)	<b>Displacement:</b> <u>525.65</u> <b>psi</b>
<b>bbls of Slurry</b> <u>130.56</u> <b>bbls</b> (Total Slurry Volume) X (.1781)	<b>Shoe Joint:</b> <u>30.56</u> <b>psi</b>
<b>Sacks Needed</b> <u>492</u> <b>sk</b> (Total Slurry Volume) ÷ (Cement Yield) X (% Excess Cement)	<b>Total</b> <u>556.21</u> <b>psi</b>
<b>Mix Water</b> <u>87.62</u> <b>bbls</b> (Sacks Needed) X (Gallons Per Sack) ÷ 42	<b>Differential Pressure:</b> <u>373.67</u> <b>psi</b>
	<b>Collapse PSI:</b> <u>2020.00</u> <b>psi</b>
	<b>Burst PSI:</b> <u>3520.00</u> <b>psi</b>
	<b>Total Water Needed:</b> <u>232.49</u> <b>bbls</b>

*X Randy Case*  
 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**

Customer  
Well Name

Anadarko Petroleum Corporation  
GREENLEAF 1N-2HZ

INVOICE #  
LOCATION  
FOREMAN  
Date

45098
Weld
JASON KELEHER
12/23/2014

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**DESCRIPTION OF JOB EVENTS**

	2015	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	1730															
MIRU	2100	0	2148	0	0			0			0			0		
CIRCULATE		10	2150	0	10			10			10			10		
Drop Plug		20	2154	0	20			20			20			20		
2148		30	2158	10	30			30			30			30		
		40	2203	170	40			40			40			40		
		50	2205	270	50			50			50			50		
M & P		60	2207	330	60			60			60			60		
Time	Sacks	70	2209	330	70			70			70			70		
2107-2145	492	80	2211	360	80			80			80			80		
		90	2213	390	90			90			90			90		
		100	2214	410	100			100			100			100		
		110	BUMP	1400	110			110			110			110		
% Excess	12%	120			120			120			120			120		
Mixed bbls	87.6	130			130			130			130			130		
Total Sacks	492	140			140			140			140			140		
bbl Returns	22	150			150			150			150			150		
Water Temp	37															

Notes:

PERFORMED PRESSURE TEST TO 2000 PSI AT 2057, PUMPED 30 BBL WATER W/ DYE IN THE 2ND 10 AT 2100, MIXED AND PUMPED 492 SKS AT 14.2, 130.5 BBL AT 2107, SHUT DOWN AT 2145, STARTED DISPLACEMENT AT 2148, PLUG LANDED AT 410 PSI AT 2214 AND PRESSURED UP TO 1400 PSI, HELD FOR 2 MINUTE, RELEASED PRESSURE AND GOT .5BBL BACK, FLOATS HELD, PRESSURED UP TO 1000 PSI FOR 2 MINUTES AND RELEASED

X Ron Base  
Work Performed

X APC Consultant  
Title

X  
Date

# GREENLEAF 1N-2HZ SURFACE

