



Bison Oil Well Cementing Single Cement Surface Pipe

Date: 5/13/2016
 Invoice #: 80489
 API#: 05-123-42882
 Foreman: Steve

Customer: Noble Energy Inc.
Well Name: Shadow A26-646

County: Weld
 State: Colorado
 Sec: SWSE
 Twp: 306N
 Range: 63W

Consultant: JW
 Rig Name & Number: H&P 321
 Distance To Location: 15
 Units On Location: 3106
 Time Requested: 4:00am
 Time Arrived On Location: 2:00am
 Time Left Location:

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.) :	1,882	Cement Yield (cuft) :	1.49
Total Depth (ft) :	1927	Gallons Per Sack:	7.48
Open Hole Diameter (in.) :	13.50	% Excess:	15%
Conductor Length (ft) :	80	Displacement Fluid lb/gal:	8.7
Conductor ID :	15.25	Fluid Ahead (bbls):	50.0
Shoe Joint Length (ft) :	45	H2O Wash Up (bbls):	20.0
Landing Joint (ft) :	34		
Max Rate:	7	Spacer Ahead Makeup	50water
Max Pressure:	1500		

Casing ID: 8.921 Casing Grade: J-55 only used

Calculated Results			Pressure of cement in annulus	
cuft of Shoe	19.53	cuft	Displacement:	147.00 bbls
(Casing ID Squared) X (.005454) X (Shoe Joint ft)			(Casing ID Squared) X (.0009714) X (Casing Depth + Landing Joint - Shoe Joint)	
cuft of Conductor	61.05	cuft	Hydrostatic Pressure:	1388.46 PSI
(Conductor Width Squared) -(Casing Size OD Squared) X (.005454) X (Conductor Length ft)			Pressure of the fluids inside casing	
cuft of Casing	880.70	cuft	Displacement:	830.21 psi
(Open Hole Squared)-(Casing Size Squared) X (.005454) X (Casing Depth - Conductor Length)			Shoe Joint:	33.20 psi
Total Slurry Volume	1092.30	cuft	Total	863.40 psi
(cuft of Shoe) + (cuft of Conductor) + (cuft of Casing)			Differential Pressure:	525.06 psi
bbls of Slurry	194.54	bbls	Collapse PSI:	2020.00 psi
(Total Slurry Volume) X (.1781)			Burst PSI:	3520.00 psi
Sacks Needed	733	sk	Total Water Needed:	200.00 bbls
(Total Slurry Volume) ÷ (Cement Yield) X (% Excess Cement)				
Mix Water	130.54	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.

