



Bison Oil Well Cementing Single Cement Surface Pipe

Date: 8/25/2015
 Invoice # 80630
 API# 05-123-41951
 Foreman: JASON KELEHER

Customer: Anadarko Petroleum Corporation

Well Name: POWERS 1N-27HZ

County: Weld
 State: Colorado
 Sec: 22
 Twp: 2N
 Range: 65W

Consultant: HAYDEN
 Rig Name & Number: NOBLE 2
 Distance To Location: 39
 Units On Location: 4031-3106/ 4034-3203
 Time Requested: 2330
 Time Arrived On Location: 2200
 Time Left Location: 400

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>1,843</u>	Cement Yield (cuft) :	<u>1.49</u>
Total Depth (ft) :	<u>1853</u>	Gallons Per Sack:	<u>7.48</u>
Open Hole Diameter (in.) :	<u>13.50</u>	% Excess:	<u>15%</u>
Conductor Length (ft) :	<u>40</u>	Displacement Fluid lb/gal:	<u>8.3</u>
Conductor ID :	<u>15.25</u>	BBL to Pit:	<u>21.0</u>
Shoe Joint Length (ft) :	<u>42</u>	Fluid Ahead (bbls):	<u>30.0</u>
Landing Joint (ft) :	<u>7</u>	H2O Wash Up (bbls):	<u>20.0</u>
Max Rate:	<u>6</u>	Spacer Ahead Makeup	
Max Pressure:	<u>1250</u>	30BBL WATER/ DYE IN 2ND 10	

Casing ID 8.921 Casing Grade J-55 only used

Calculated Results			Displacement: 139.77 bbls	
cuft of Shoe	18.23	cuft	(Casing ID Squared) X (.0009714) X (Casing Depth + Landing Joint - Shoe Joint)	
(Casing ID Squared) X (.005454) X (Shoe Joint ft)			Pressure of cement in annulus	
cuft of Conductor	30.53	cuft	Hydrostatic Pressure: 1359.58 PSI	
(Conductor Width Squared) -(Casing Size OD Squared) X (.005454) X (Conductor Length ft)			Pressure of the fluids inside casing	
cuft of Casing	1013.36	cuft	Displacement: 776.56 psi	
(Open Hole Squared)-(Casing Size Squared) X (.005454) X (Casing Depth - Conductor Length)			Shoe Joint: 30.98 psi	
Total Slurry Volume	1062.11	cuft	Total 807.54 psi	
(cuft of Shoe) + (cuft of Conductor) + (cuft of Casing)			Differential Pressure: 552.04 psi	
bbls of Slurry	189.16	bbls	Collapse PSI: 2020.00 psi	
(Total Slurry Volume) X (.1781)			Burst PSI: 3520.00 psi	
Sacks Needed	713	sk	Total Water Needed: 316.72 bbls	
(Total Slurry Volume) ÷ (Cement Yield) X (% Excess Cement)				
Mix Water	126.95	bbls		
(Sacks Needed) X (Gallons Per Sack) ÷ 42				

[Signature]
 x _____
 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.

POWERS 1N-27HZ SURFACE

