



Bison Oil Well Cementing Single Cement Surface Pipe

Date: 3/8/2018
 Invoice # 900277
 API# 05-123-46267
 Foreman: Corey Barras

Customer: Anadarko Petroleum Corporation
Well Name: Quarter Circle 24-3 HZ

County: Weld Consultant: Matt
 State: Colorado Rig Name & Number: Cartel 88
 Distance To Location: 33
 Sec: 24 Units On Location: 4027-3103/4030-3213/4024-3201
 Twp: 1N Time Requested: 1030
 Range: 67W Time Arrived On Location: 945
 Time Left Location: _____

WELL DATA	Cement Data
Casing Size OD (in) : <u>9.625</u>	Cement Name: BFN III
Casing Weight (lb) : <u>36.00</u>	Cement Density (lb/gal) : <u>14.2</u>
Casing Depth (ft.) : <u>1,871</u>	Cement Yield (cuft) : <u>1.48</u>
Total Depth (ft) : <u>1881</u>	Gallons Per Sack: <u>7.40</u>
Open Hole Diameter (in.) : <u>13.50</u>	% Excess: <u>10%</u>
Conductor Length (ft) : <u>80</u>	Displacement Fluid lb/gal: <u>8.3</u>
Conductor ID : <u>15.25</u>	BBL to Pit:
Shoe Joint Length (ft) : <u>44</u>	Fluid Ahead (bbls): <u>30.0</u>
Landing Joint (ft) : <u>15</u>	H2O Wash Up (bbls): <u>20.0</u>
Max Rate: <u>8</u>	Spacer Ahead Makeup
Max Pressure: <u>2000</u>	30 bbl with Die in 2nd 10

Casing ID 8.921 Casing Grade J-55 only used

Calculated Results	Pressure of cement in annulus
cuft of Shoe <u>19.10</u> cuft (Casing ID Squared) X (.005454) X (Shoe Joint ft)	Displacement: <u>142.40</u> bbls (Casing ID Squared) X (.0009714) X (Casing Depth + Landing Joint - Shoe Joint)
cuft of Conductor <u>61.05</u> cuft (Conductor Width Squared) -(Casing Size OD Squared) X (.005454) X (Conductor Length ft)	Hydrostatic Pressure: <u>1380.24</u> PSI
cuft of Casing <u>962.85</u> cuft (Open Hole Squared)-(Casing Size Squared) X (.005454) X (Casing Depth - Conductor Length)	Pressure of the fluids inside casing
Total Slurry Volume <u>1043.00</u> cuft (cuft of Shoe) + (cuft of Conductor) + (cuft of Casing)	Displacement: <u>787.77</u> psi
bbls of Slurry <u>185.76</u> bbls (Total Slurry Volume) X (.1781)	Shoe Joint: <u>32.46</u> PSI
Sacks Needed <u>705</u> sk (Total Slurry Volume) ÷ (Cement Yield) X (% Excess Cement)	Total <u>820.23</u> psi
Mix Water <u>124.17</u> bbls (Sacks Needed) X (Gallons Per Sack) ÷ 42	Differential Pressure: <u>560.01</u> psi
	Collapse PSI: <u>2020.00</u> psi
	Burst PSI: <u>3520.00</u> psi
	Total Water Needed: <u>316.57</u> bbls

X Ch. Kullman
 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.

Quarter Circle 24-3 HZ

