



Bison Oil Well Cementing Single Cement Surface Pipe

Date: 11/26/2016
 Invoice #: 666038
 API#: 05-123-42627
 Foreman: Nick

Customer: Anadarko Petroleum Corporation
Well Name: Jaguar Fed 29N-14HZ

County: Weld
 State: Colorado
 Sec: 23
 Twp: 1N
 Range: 67W

Consultant: Rick Duran
 Rig Name & Number: Extreme 24
 Distance To Location: 34 miles
 Units On Location: 4023,3104,4022,3215,4020,3214
 Time Requested: 13:30
 Time Arrived On Location: 13:05
 Time Left Location:

| WELL DATA | |
|----------------------------|-------|
| Casing Size OD (in) : | 9.625 |
| Casing Weight (lb) : | 36.00 |
| Casing Depth (ft.) : | 2,281 |
| Total Depth (ft) : | 2291 |
| Open Hole Diameter (in.) : | 13.50 |
| Conductor Length (ft) : | 90 |
| Conductor ID : | 15.25 |
| Shoe Joint Length (ft) : | 43 |
| Landing Joint (ft) : | 0 |
| Max Rate: | 8 |
| Max Pressure: | 2000 |

| Cement Data | |
|----------------------------|--------------------------|
| Cement Name: | BFN III |
| Cement Density (lb/gal) : | 14.2 |
| Cement Yield (cuft) : | 1.49 |
| Gallons Per Sack: | 7.48 |
| % Excess: | 15% |
| Displacement Fluid lb/gal: | 8.3 |
| BBL to Pit: | 0.0 |
| Fluid Ahead (bbls): | 30.0 |
| H2O Wash Up (bbls): | 20.0 |
| Spacer Ahead Makeup | Dye in the second 10 bbl |

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

| Calculated Results | | |
|--|----------------|-------------|
| cuft of Shoe | 18.66 | cuft |
| (Casing ID Squared) X (.005454) X (Shoe Joint ft) | | |
| cuft of Conductor | 68.68 | cuft |
| (Conductor Width Squared) -(Casing Size OD Squared) X (.005454) X (Conductor Length ft) | | |
| cuft of Casing | 1231.43 | cuft |
| (Open Hole Squared)-(Casing Size Squared) X (.005454) X (Casing Depth - Conductor Length) | | |
| Total Slurry Volume | 1318.77 | cuft |
| (cuft of Shoe) + (cuft of Conductor) + (cuft of Casing) | | |
| bbls of Slurry | 234.87 | bbls |
| (Total Slurry Volume) X (.1781) | | |
| Sacks Needed | 885 | sk |
| (Total Slurry Volume) ÷ (Cement Yield) X (% Excess Cement) | | |
| Mix Water | 157.63 | bbls |
| (Sacks Needed) X (Gallons Per Sack) ÷ 42 | | |

| | |
|--|--------------------|
| Displacement: | 173.02 bbls |
| (Casing ID Squared) X (.0009714) X (Casing Depth + Landing Joint - Shoe Joint) | |
| Pressure of cement in annulus | |
| Hydrostatic Pressure: | 1682.69 PSI |
| Pressure of the fluids inside casing | |
| Displacement: | 964.98 psi |
| Shoe Joint: | 31.72 psi |
| Total | 996.70 psi |
| Differential Pressure: | 685.99 psi |
| Collapse PSI: | 2020.00 psi |
| Burst PSI: | 3520.00 psi |
| Total Water Needed: | 380.64 bbls |

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.

Jaguar Fed 29N-14HZ

