



Bison Oil Well Cementing Single Cement Surface Pipe

Date: 1/29/2018
 Invoice # 900249
 API# 05-123-45919
 Foreman: Corey Barras

Customer: Anadarko Petroleum Corporation
Well Name: Azul 13-5HZ

County: Weld Consultant: Matt
 State: Colorado Rig Name & Number: Cartel 88
 Distance To Location: 37
 Sec: 13 Units On Location: 1027-3103/4030-3214/4024-321
 Twp: 1N Time Requested: 1600
 Range: 66W Time Arrived On Location: 1440
 Time Left Location: _____

| 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>1,856</u> | Cement Yield (cuft) : <u>1.48</u> |
| Total Depth (ft) : <u>1866</u> | Gallons Per Sack: <u>7.40</u> |
| Open Hole Diameter (in.) : <u>13.50</u> | % Excess: <u>5%</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> | <u>30 bbl with Die in 2nd 10</u> |

| Calculated Results | Displacement: 141.24 bbls |
|---|--|
| cuft of Shoe <u>19.10</u> cuft (Casing ID Squared) X (.005454) X (Shoe Joint ft) | (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) | Pressure of cement in annulus |
| cuft of Casing <u>911.38</u> cuft (Open Hole Squared)-(Casing Size Squared) X (.005454) X (Casing Depth - Conductor Length) | Hydrostatic Pressure: 1369.17 PSI |
| Total Slurry Volume <u>991.53</u> cuft (cuft of Shoe) + (cuft of Conductor) + (cuft of Casing) | Pressure of the fluids inside casing |
| bbls of Slurry <u>176.59</u> bbls (Total Slurry Volume) X (.1781) | Displacement: 781.30 psi |
| Sacks Needed <u>670</u> sk (Total Slurry Volume) ÷ (Cement Yield) X (% Excess Cement) | Shoe Joint: 32.46 PSI |
| Mix Water <u>118.04</u> bbls (Sacks Needed) X (Gallons Per Sack) ÷ 42 | Total 813.76 psi |
| | Differential Pressure: 555.41 psi |
| | Collapse PSI: 2020.00 psi |
| | Burst PSI: 3520.00 psi |
| | Total Water Needed: 309.28 bbls |

X Corey Barras
 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 |
| Azul 13-5HZ |

INVOICE #
LOCATION
FOREMAN
Date

| |
|--------------|
| 900249 |
| Weld |
| Corey Barras |
| 1/29/2018 |

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DESCRIPTION OF JOB EVENTS

| Amount Pumped | | Event | Description | Rate | BBLs | Pressure |
|---------------|--------|-------|--------------------------------------|---------------------------------|------|----------|
| % Excess | 5% | 1440 | What rig is doing upon Bison Arrival | | | |
| Mixed bbls | 118.04 | 1450 | JSA | | | |
| Total Sacks | 670 | | | | | |
| bbl Returns | 10 | 1630 | Safety Meeting | | | |
| Water Temp | 48 | 1710 | Start Job | | | |
| | | 1712 | Pressure Test | | | |
| Notes: | | | | | | |
| | | 1714 | Spacer Ahead | 2nd 10 with die | 6 | 30 70 |
| | | 1720 | Lead Cement | 14.2 ppg | 6 | 176 130 |
| | | 1750 | Shutdown | | | |
| | | 1752 | Drop Plug | Preloaded in plug container | | |
| | | 1754 | Start Displacement | | 7 | 90 330 |
| | | 1816 | Bump Plug | 500 over final lift (1210 PSI) | 2 | 141 530 |
| | | 1818 | Floats Held | Held for 2 MIN with .5 bll back | | |
| | | 1820 | End Job | | | |
| | | 1830 | Rig Down | | | |
| | | 1900 | Leave Location | | | |

x CF Kuller
Work Performed

x APC
Title

x 1/29/18
Date

AZUI 13-5HZ

