



Bison Oil Well Cementing Single Cement Surface Pipe

Date: 7/25/2017
 Invoice # 900144
 API# 05-123-44791
 Foreman: Corey B.

Customer: Anadarko Petroleum Corporation
Well Name: Cannon 27C-9HZ

County: Weld Consultant: Matt
 State: Colorado Rig Name & Number: Cartel 88
 Distance To Location: 28
 Sec: 33 Units On Location: 027/3103-4033/3212-4020/321
 Twp: 3N Time Requested: 1730
 Range: 65W Time Arrived On Location: 1600
 Time Left Location: 1945

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>1,868</u>	Cement Yield (cuft) : <u>1.48</u>
Total Depth (ft) : <u>1878</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: <u>7.0</u>
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 @nd 10</u>

Calculated Results	Pressure of cement in annulus
Displacement: <u>142.17 bbls</u> (Casing ID Squared) X (.0009714) X (Casing Depth + Landing Joint - Shoe Joint)	Hydrostatic Pressure: <u>1378.02 PSI</u>
cuft of Shoe <u>19.10</u> cuft (Casing ID Squared) X (.005454) X (Shoe Joint ft)	Pressure of the fluids inside casing
cuft of Conductor <u>61.05</u> cuft (Conductor Width Squared) -(Casing Size OD Squared) X (.005454) X (Conductor Length ft)	Displacement: <u>786.47 psi</u>
cuft of Casing <u>917.54</u> cuft (Open Hole Squared)-(Casing Size Squared) X (.005454) X (Casing Depth - Conductor Length)	Shoe Joint: <u>32.46 psi</u>
Total Slurry Volume <u>997.69</u> cuft (cuft of Shoe) + (cuft of Conductor) + (cuft of Casing)	Total <u>818.93 psi</u>
bbls of Slurry <u>177.69</u> bbls (Total Slurry Volume) X (.1781)	Differential Pressure: <u>559.09 psi</u>
Sacks Needed <u>674</u> sk (Total Slurry Volume) ÷ (Cement Yield) X (% Excess Cement)	Collapse PSI: <u>2020.00 psi</u>
Mix Water <u>118.77</u> bbls (Sacks Needed) X (Gallons Per Sack) ÷ 42	Burst PSI: <u>3520.00 psi</u>
	Total Water Needed: <u>310.94 bbls</u>

[Signature]
 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
Cannon 27C-9HZ

INVOICE #
LOCATION
FOREMAN
Date

900144
Weld
Corey B.
7/25/2017

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DESCRIPTION OF JOB EVENTS

Amount Pumped	Time	Event	Description	Rate	BBLs	Pressure
% Excess 5%	1600	What rig is doing upon Bison Arrival	Running casing			
Mixed bbls 118.77	1605	JSA	Bison Crew			
Total Sacks 674	1615	Rig up				
bbl Returns 7	1700	Safety Meeting	Bison and Rig crew			
Water Temp 65	1740	Start Job				
	1742	Pressure Test				
Notes:						
	1744	Spacer Ahead	2nd 10 with die	5	30	70
	1750	Lead Cement	14.2 ppg	5	177	70
	1828	Shutdown				
	1830	Drop Plug	Preloaded in plug container			
	1832	Start Displacement		7	90	320
	1858	Bump Plug	500 over final lift 1060 psi	2	142	520
	1900	Floats Held	Held for 2 MIN with 1/2 bll back			
	1902	End Job				
	1915	Rig Down				
	1945	Leave Location				

X *Sam Kelly*
Work Performed

X WSC
Title

X 7/25/17
Date

Cannon 2C-4HZ

