



Bison Oil Well Cementing Single Cement Surface Pipe

Date: 10/7/2014
 Invoice # 45048
 API# 05-123-39597
 Foreman: JASON KELEHER

Customer: Anadarko Petroleum Corporation
Well Name: STEWARD 36N-6HZ

County: Weld
 State: Colorado
 Sec: 6
 Twp: 1N
 Range: 65W

Consultant: RANDY
 Rig Name & Number: MAJORS 29
 Distance To Location: 22
 Units On Location: 4031-3106/ 4007-3203
 Time Requested: 1830
 Time Arrived: 1730
 Time Left Location: 2230

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>1,589</u>	Cement Yield (cuft) :	<u>1.49</u>
Total Depth (ft) :	<u>1606</u>	Gallons Per Sack:	<u>7.48</u>
Open Hole Diameter (in.) :	<u>13.50</u>	% Excess:	<u>21%</u>
Conductor Length (ft) :	<u> </u>	Displacement Fluid lb/gal:	<u>8.3</u>
Conductor ID :	<u> </u>	BBL to Pit:	<u>40.0</u>
Shoe Joint Length (ft) :	<u>43</u>	Fluid Ahead (bbls):	<u>30.0</u>
Landing Joint (ft) :	<u>8</u>	H2O Wash Up (bbls):	<u>20.0</u>
Max Rate:	<u>7</u>	Spacer Ahead Makeup	<u>30 BBL WATER, DYE IN 2ND 10</u>
Max Pressure:	<u>2500</u>		

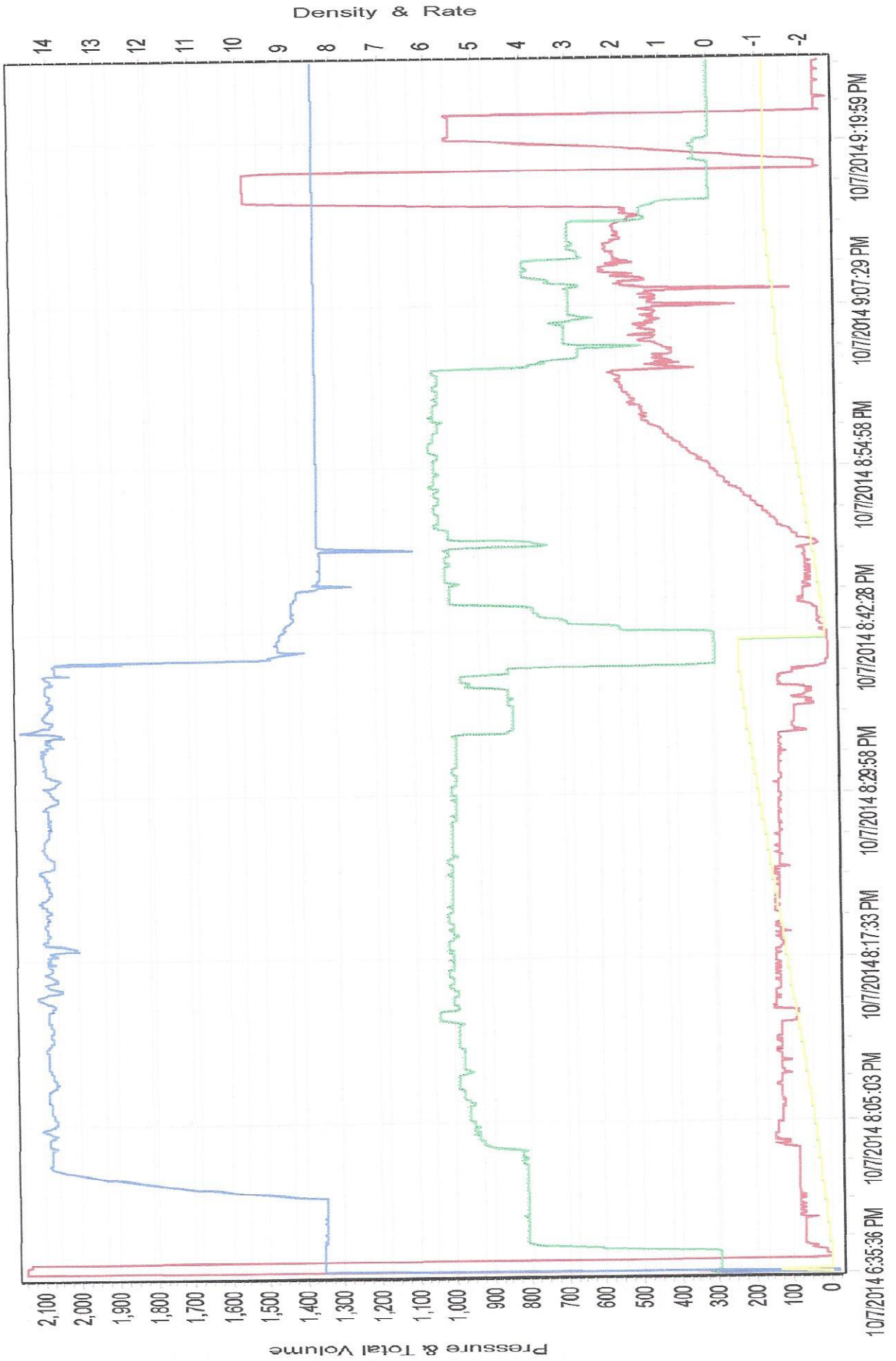
Casing ID 8.921 Casing Grade J-55 only used

Calculated Results	Displacement:	120.20 bbls
cuft of Shoe <u>18.51</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>0.00</u> cuft (Conductor Width Squared) -(Casing Size OD Squared) X (.005454) X (Conductor Length ft)	Pressure of cement in annulus	
cuft of Casing <u>936.81</u> cuft (Open Hole Squared)-(Casing Size Squared) X (.005454) X (Casing Depth - Conductor Length)	Hydrostatic Pressure: <u>1172.51 PSI</u>	
Total Slurry Volume <u>955.32</u> cuft (cuft of Shoe) + (cuft of Conductor) + (cuft of Casing)	Pressure of the fluids inside casing	
bbls of Slurry <u>170.14</u> bbls (Total Slurry Volume) X (.1781)	Displacement: <u>666.94 psi</u>	
Sacks Needed <u>641</u> sk (Total Slurry Volume) ÷ (Cement Yield) X (% Excess Cement)	Shoe Joint: <u>31.46 psi</u>	
Mix Water <u>114.19</u> bbls (Sacks Needed) X (Gallons Per Sack) ÷ 42	Total <u>698.39 psi</u>	
	Differential Pressure: <u>474.11 psi</u>	
	Collapse PSI: <u>2020.00 psi</u>	
	Burst PSI: <u>3520.00 psi</u>	
	Total Water Needed: <u>284.38 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.

STEWARD 36N-6HZ SURFACE





Bison Oil Well Cementing Single Cement Surface Pipe

Date: 10/7/2014

Invoice # 45048

API# 05-123-39597

Foreman: JASON KELEHER

Customer: Anadarko Petroleum Corporation

Well Name: STEWARD 36N-6HZ

County: Weld

State: Colorado

Sec: 6

Twp: 1N

Range: 65W

Consultant: RANDY

Rig Name & Number: MAJORS 29

Distance To Location: 22

Units On Location: 4031-3106/ 4007-3203

Time Requested: 1830

Time Arrived: 1730

Time Left Location:

WELL DATA

Casing Size OD (in) : 9.625
 Casing Weight (lb) : 36.00
 Casing Depth (ft.) : 1,589
 Total Depth (ft) : 1606
 Open Hole Diameter (in.) : 13.50
 Conductor Length (ft) :
 Conductor ID :
 Shoe Joint Length (ft) : 43
 Landing Joint (ft) : 8

Max Rate: 7
 Max Pressure: 2500

Cement Data

Cement Name: BFN III
 Cement Density (lb/gal) : 14.2
 Cement Yield (cuft) : 1.49
 Gallons Per Sack: 7.48
 % Excess: 21%
 Displacement Fluid lb/gal: 8.3
 BBL to Pit:
 Fluid Ahead (bbls): 30.0
 H2O Wash Up (bbls): 20.0

Spacer Ahead Makeup

30 BBL WATER, DYE IN 2ND 10

Casing ID

8.921

Casing Grade

J-55 only used

Calculated Results

cuft of Shoe 18.51 cuft
 (Casing ID Squared) X (.005454) X (Shoe Joint ft)

cuft of Conductor 0.00 cuft
 (Conductor Width Squared) -(Casing Size OD Squared) X (.005454) X (Conductor Length ft)

cuft of Casing 936.81 cuft
 (Open Hole Squared)-(Casing Size Squared) X (.005454) X (Casing Depth - Conductor Length)

Total Slurry Volume 955.32 cuft
 (cuft of Shoe) + (cuft of Conductor) + (cuft of Casing)

bbls of Slurry 170.14 bbls
 (Total Slurry Volume) X (.1781)

Sacks Needed 641 sk
 (Total Slurry Volume) ÷ (Cement Yield) X (% Excess Cement)

Mix Water 114.19 bbls
 (Sacks Needed) X (Gallons Per Sack) ÷ 42

Displacement: 120.20 bbls
 (Casing ID Squared) X (.0009714) X (Casing Depth + Landing Joint - Shoe Joint)

Pressure of cement in annulus

Hydrostatic Pressure: 1172.51 PSI

Pressure of the fluids inside casing

Displacement: 666.94 psi

Shoe Joint: 31.46 psi

Total 698.39 psi

Differential Pressure: 474.11 psi

Collapse PSI: 2020.00 psi

Burst PSI: 3520.00 psi

Total Water Needed: 284.38 bbls

Randy Keleher
 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.

Release and Indemnification

Customer acknowledges and assumes the risks associated with oil well drilling, cementing and acidizing, including, without limitation, destabilization, loss of production, contamination, fracturing and loss of well control. Customer agrees to release Bison Oil Well Cementing, Inc., Bison Energy Services, Inc., its agents, employees and assigns, from any and all liability for any and all damages whatsoever to property of any kind owned by, in the possession of, or leased by customer and those persons or entities customer has the ability to bind by contract. Customer also agrees to indemnify and hold harmless Bison Oil Well Cementing, Inc., Bison Energy Services, Inc., its agents, employees and assigns, from and against any and all liability, claims, costs, expenses, attorneys fees and damages whatsoever for claims, costs, expenses, attorneys fees and damages whatsoever for personal injury, illness, death, property damage and loss resulting from: loss or reduction of production, destabilization loss of oil well control, failure of or contamination by acid stimulation, hydraulic fracturing, cementing, pumping services, incompatible fluid or other processes to stimulate, complete or end production, and/or any other condition. Customer's release, indemnity and hold harmless obligation shall apply even if the liability and claims are caused by the sole, concurrent, active or passive negligence, fault, or strict liability of Bison Oil Well Cementing, Inc. and/or Bison Energy Services, Inc. or any defect in the data, products, supplies, materials or equipment furnished by Bison Oil Well Cementing, Inc. whether in the design, manufacturing, maintenance, or marketing thereof or from failure to warn of such defect. In the event that any portion of this release and indemnity is found by a court of competent jurisdiction to be inoperable or unenforceable, the remaining portions and provisions shall apply, and customer agrees that the contract price herein shall be the limit of Bison Oil Well Cementing, Inc.'s liability, if any.