

Bison Oil Well Cementing Single Cement Surface Pipe

Date: 10/19/2014

Invoice # 45057

API# 05-123-39709

Foreman: JASON KELEHER

Customer: Anadarko Petroleum Corporation

Well Name: FRONT RANGE FARMS 15N-14HZ

County: Weld
State: Colorado

Sec: 11
Twp: 1N
Range: 68W

Consultant: ELLIS
Rig Name & Number: MAJORS 29
Distance To Location: 30
Units On Location: 4031-3106/ 4022-3213
Time Requested: 530
Time Arrived: 430
Time Left Location: 800

WELL DATA

Casing Size OD (in) : 9.625
Casing Weight (lb) : 36.00
Casing Depth (ft.) : 1,288
Total Depth (ft) : 1304
Open Hole Diameter (in.) : 13.50
Conductor Length (ft) :
Conductor ID :
Shoe Joint Length (ft) : 41
Landing Joint (ft) : 6

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: 15.0
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 17.84 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 763.73 cuft
(Open Hole Squared)-(Casing Size Squared) X (.005454) X (Casing Depth - Conductor Length)

Total Slurry Volume 781.57 cuft
(cuft of Shoe) + (cuft of Conductor) + (cuft of Casing)

bbls of Slurry 139.20 bbls
(Total Slurry Volume) X (.1781)

Sacks Needed 525 sk
(Total Slurry Volume) ÷ (Cement Yield) X (% Excess Cement)

Mix Water 93.42 bbls
(Sacks Needed) X (Gallons Per Sack) ÷ 42

Displacement: 96.88 bbls
(Casing ID Squared) X (.0009714) X (Casing Depth + Landing Joint - Shoe Joint)

Pressure of cement in annulus

Hydrostatic Pressure: 950.36 PSI

Pressure of the fluids inside casing

Displacement: 537.76 psi

Shoe Joint: 30.32 psi

Total 568.08 psi

Differential Pressure: 382.28 psi

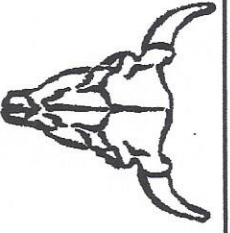
Collapse PSI: 2020.00 psi

Burst PSI: 3520.00 psi

Total Water Needed: 240.30 bbls

X *Ellis* 10/29
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
 FRONT RANGE FARMS 15N-14HZ

INVOICE #
 LOCATION
 FOREMAN
 Date

45057
 Weld
 JASON KELEHER
 10/19/2014

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DESCRIPTION OF JOB EVENTS

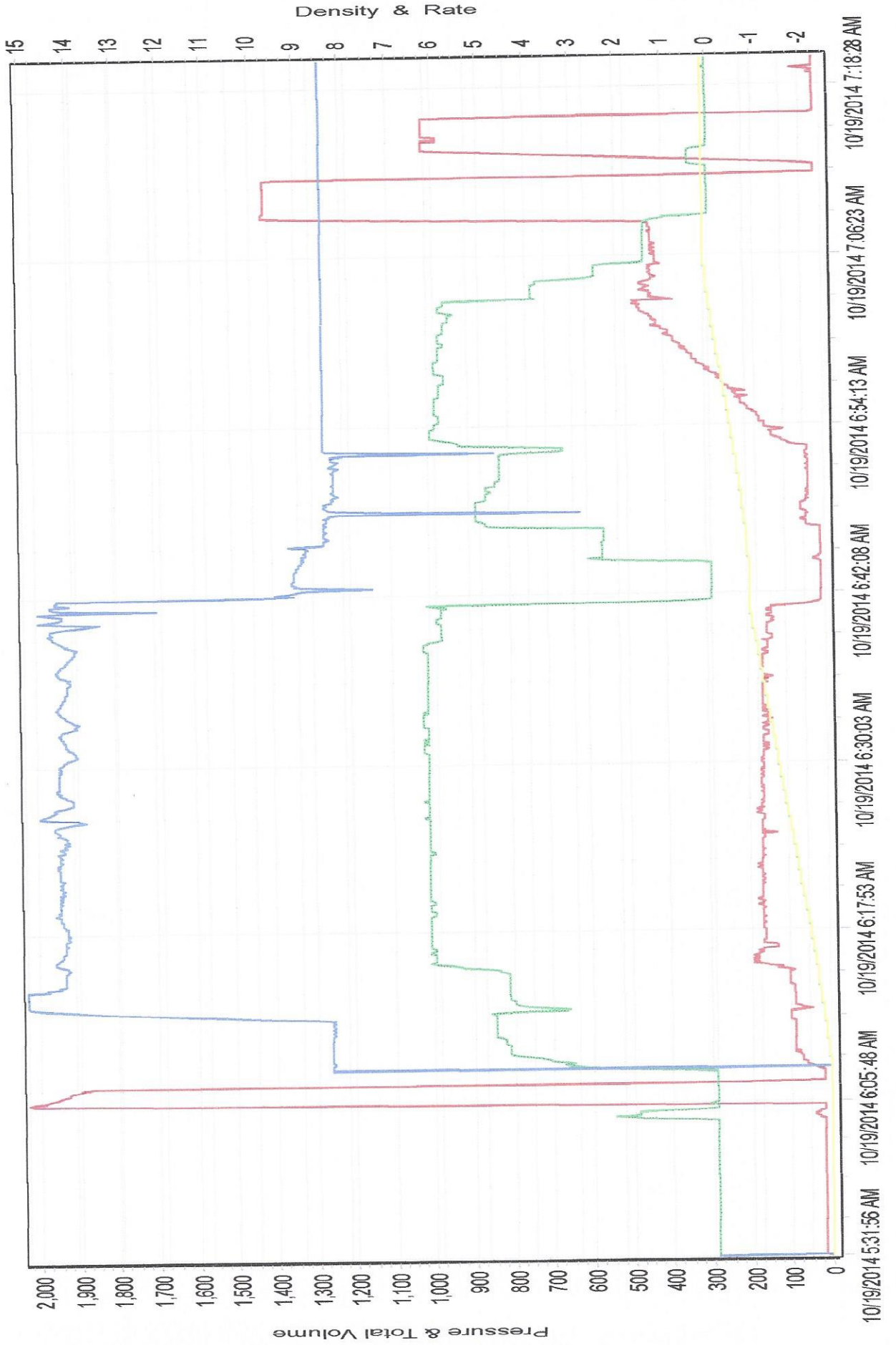
Safety Meeting	Sacks	Displace 1			Displace 2			Displace 3			Displace 4			Displace 5		
		BBLs	Time	PSI	BBLs	Time	PSI	BBLs	Time	PSI	BBLs	Time	PSI	BBLs	Time	PSI
MIRU	44															
CIRCULATE	607	0	1757	0	0		0		0		0		0		0	
Drop Plug		10	1800	30	10		10		10		10		10		10	
		20	1802	50	20		20		20		20		20		20	
		30	1805	100	30		30		30		30		30		30	
		40	1807	180	40		40		40		40		40		40	
		50	1809	230	50		50		50		50		50		50	
M & P		60	1811	340	60		60		60		60		60		60	
Time	Sacks	70	1813	390	70		70		70		70		70		70	
0615-0641	525	80	1815	400	80		80		80		80		80		80	
		90	1818	450	90		90		90		90		90		90	
		100	1819	440	100		100		100		100		100		100	
		110		1440	110		110		110		110		110		110	
% Excess	21%	120			120		120		120		120		120		120	
Mixed bbbs	93.45	130			130		130		130		130		130		130	
Total Sacks	525	140			140		140		140		140		140		140	
bbbl Returns	15	150			150		150		150		150		150		150	
Water Temp	59															

Notes:

PERFORMED PRESSURE TEST TO 2000 PSI AT 0605, PUMPED 30 BBL WATER W/ DYE IN 2ND 10 AT 0607, MIXED AND PUMPED 525 SKS AT 14.2, 139.2
 BBL AT 0615, SHUT DOWN AT 0641, STARTED DISPLACEMENT AT 0644, LANDED PLUG AT 430 PSI AT 0709 AND PRESSURED UP TO 1420 PSI, HELD FOR
 2 MINUTES AND CHECKED FLOATS, GOT .5 BBL BACK, REPRESSURED WELL TO 1000 PSI FOR 2 MINUTES AND RELEASED.

X *John A. ...* _____ X _____
 Work Performed Title Date

FRONT RANGE FARMS 15N-14HZ SURFACE





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Casing Depth (ft.) :	1,288	Cement Yield (cuft) :	1.49
Total Depth (ft) :	1304	Gallons Per Sack:	7.48
Open Hole Diameter (in.) :	13.50	% Excess:	21%
Conductor Length (ft) :		Displacement Fluid lb/gal:	8.3
Conductor ID :		BBL to Pit:	
Shoe Joint Length (ft) :	41	Fluid Ahead (bbls):	30.0
Landing Joint (ft) :	6	H2O Wash Up (bbls):	20.0
Max Rate:	7	Spacer Ahead Makeup	
Max Pressure:	2500	30 BBL WATER, DYE IN 2ND 10	

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

Calculated Results			Displacement: 96.88 bbls	
cuft of Shoe	17.84	cuft	(Casing ID Squared) X (.0009714) X (Casing Depth + Landing Joint - Shoe Joint)	
(Casing ID Squared) X (.005454) X (Shoe Joint ft)			Pressure of cement in annulus	
cuft of Conductor	0.00	cuft	Hydrostatic Pressure:	950.36 PSI
(Conductor Width Squared) -(Casing Size OD Squared) X (.005454) X (Conductor Length ft)			Pressure of the fluids inside casing	
cuft of Casing	763.73	cuft	Displacement:	537.76 psi
(Open Hole Squared)-(Casing Size Squared) X (.005454) X (Casing Depth - Conductor Length)			Shoe Joint:	30.32 psi
Total Slurry Volume	781.57	cuft	Total	568.08 psi
(cuft of Shoe) + (cuft of Conductor) + (cuft of Casing)			Differential Pressure:	382.28 psi
bbls of Slurry	139.20	bbls	Collapse PSI:	2020.00 psi
(Total Slurry Volume) X (.1781)			Burst PSI:	3520.00 psi
Sacks Needed	525	sk	Total Water Needed:	240.30 bbls
(Total Slurry Volume) ÷ (Cement Yield) X (% Excess Cement)				
Mix Water	93.42	bbls		
(Sacks Needed) X (Gallons Per Sack) ÷ 42				

X Ellis Major 29
 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.