



# Bison Oil Well Cementing Single Cement Surface Pipe

Date: 11/27/2014

Invoice # 45080

API# 05-123-40547

Foreman: JASON KELEHER

Customer: Anadarko Petroleum Corporation

Well Name: THOMSEN 2N-31HZ

County: Weld

State: Colorado

Sec: 7

Twp: 2N

Range: 65W

Consultant: RANDY

Rig Name & Number: MAJORS 29

Distance To Location: 18

Units On Location: 4031-3106/ 4024-3203

Time Requested: 500

Time Arrived: 300

Time Left Location: 1000

## WELL DATA

Casing Size OD (in) : 9.625  
Casing Weight (lb) : 36.00  
Casing Depth (ft.) : 1,333  
Total Depth (ft) : 1350  
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: 16%  
Displacement Fluid lb/gal: 8.3  
BBL to Pit: 10.0  
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** 18.57 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** 753.29 cuft  
(Open Hole Squared) - (Casing Size Squared) X (.005454) X (Casing Depth - Conductor Length)  
**Total Slurry Volume** 771.86 cuft  
(cuft of Shoe) + (cuft of Conductor) + (cuft of Casing)  
**bbls of Slurry** 137.47 bbls  
(Total Slurry Volume) X (.1781)  
**Sacks Needed** 518 sk  
(Total Slurry Volume) ÷ (Cement Yield) X (% Excess Cement)  
**Mix Water** 92.26 bbls  
(Sacks Needed) X (Gallons Per Sack) ÷ 42

**Displacement:** 100.39 bbls

(Casing ID Squared) X (.0009714) X (Casing Depth + Landing Joint - Shoe Joint)

## Pressure of cement in annulus

**Hydrostatic Pressure:** 983.59 PSI

## Pressure of the fluids inside casing

**Displacement:** 556.45 psi

**Shoe Joint:** 31.57 psi

**Total** 588.02 psi

**Differential Pressure:** 395.57 psi

**Collapse PSI:** 2020.00 psi

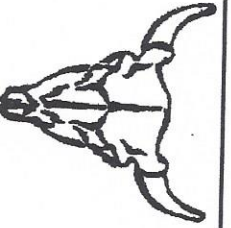
**Burst PSI:** 3520.00 psi

**Total Water Needed:** 242.65 bbls

X *Randy Case*  
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  
THOMSEN 2N-31HZ

INVOICE #  
LOCATION  
FOREMAN  
Date

45080  
Well  
JASON KELEHER  
11/27/2014

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**DESCRIPTION OF JOB EVENTS**

Safety Meeting	740	Displace 1			Displace 2			Displace 3			Displace 4			Displace 5		
	630	BLS	Time	PSI	BLS	Time	PSI	BLS	Time	PSI	BLS	Time	PSI	BLS	Time	PSI
MIRU	810	0	847	0	0			0			0			0		
CIRCULATE		10	849	10	10			10			10			10		
Drop Plug		20	852	30	20			20			20			20		
		30	855	50	30			30			30			30		
		40	857	110	40			40			40			40		
		50	859	160	50			50			50			50		
M & P		60	901	220	60			60			60			60		
Time	Sacks	70	902	280	70			70			70			70		
0818-0845	518	80	904	380	80			80			80			80		
		90	906	420	90			90			90			90		
		100	911	430	100			100			100			100		
		110	BUMP	1400	110			110			110			110		
% Excess	16%	120			120			120			120			120		
Mixed bbls	92.3	130			130			130			130			130		
Total Sacks	518	140			140			140			140			140		
bbl Returns	10	150			150			150			150			150		
Water Temp	77															

Notes:

PERFORMED PRESSURE TEST TO 2000 PSI AT 0807, PUMPED 30 BBL WATER WITH DYE IN 2ND 10 AT 0810, MIXED AND PUMPED 518 SKS AT 14.2

137.5 BBL AT 0818, SHUT DOWN AT 0845, STARTED DISPLACEMENT AT 0847, BUMPED PLUG AT 430 PSI AT 0911 AND PRESSURED UP TO 1400 PSI,

HELD FOR 2 MINUTES, RELEASED PRESSURE, FLOATS HELD, GOT .5 BBL BACK, REPRESSURE TO 1000 PSI FOR 2 MINUTES AND RELEASED

X *Paul Gabe*

X *APC Consultant*

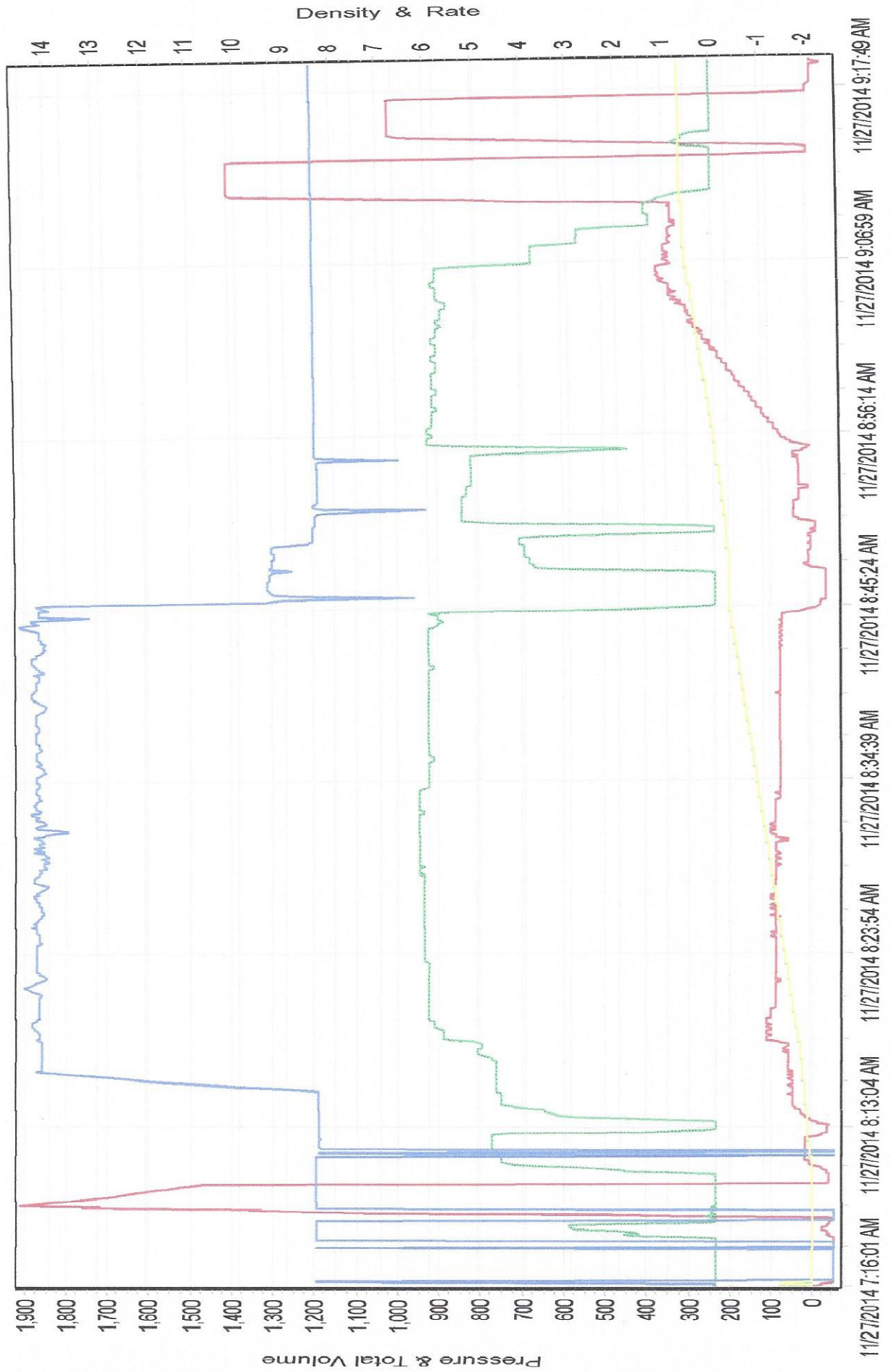
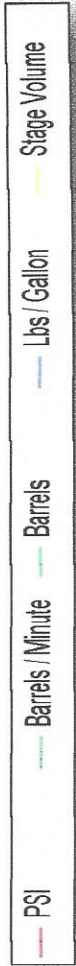
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Work Performed

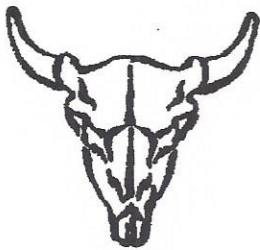
Title

Date

# THOMSEN 2N-31HZ SURFACE







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## **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.