



# Bison Oil Well Cementing Single Cement Surface Pipe

Date: 10/9/2014  
 Invoice #: 45050  
 API#: 05-123-40316  
 Foreman: JASON KELEHER

**Customer:** Anadarko Petroleum Corporation  
**Well Name:** THOMSEN 1N-18HZ

County: Weld  
 State: Colorado  
 Sec: 7  
 Twp: 2N  
 Range: 65W

Consultant: TOBY  
 Rig Name & Number: MAJORS 42  
 Distance To Location: 15  
 Units On Location: 4031-3106/ 4024-3203  
 Time Requested: 1300  
 Time Arrived: 1200  
 Time Left Location: 1600

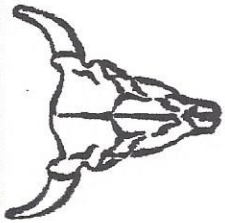
WELL DATA	Cement Data
Casing Size OD (in): 9.625	Cement Name: BFN III
Casing Weight (lb): 36.00	Cement Density (lb/gal): 14.2
Casing Depth (ft): 1,349	Cement Yield (cuft): 1.49
Total Depth (ft): 1360	Gallons Per Sack: 7.48
Open Hole Diameter (in.): 13.50	% Excess: 20%
Conductor Length (ft):	Displacement Fluid lb/gal: 8.3
Conductor ID:	BBL to Pit: 23.0
Shoe Joint Length (ft): 42	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	Pressure and Displacement
<b>cuft of Shoe</b> 18.20 cuft (Casing ID Squared) X (.005454) X (Shoe Joint ft)	<b>Displacement:</b> 101.54 bbls (Casing ID Squared) X (.0009714) X (Casing Depth + Landing Joint - Shoe Joint)
<b>cuft of Conductor</b> 0.00 cuft (Conductor Width Squared) -(Casing Size OD Squared) X (.005454) X (Conductor Length ft)	<b>Pressure of cement in annulus</b>
<b>cuft of Casing</b> 792.70 cuft (Open Hole Squared)-(Casing Size Squared) X (.005454) X (Casing Depth - Conductor Length)	<b>Hydrostatic Pressure:</b> 995.44 PSI
<b>Total Slurry Volume</b> 810.90 cuft (cuft of Shoe) + (cuft of Conductor) + (cuft of Casing)	<b>Pressure of the fluids inside casing</b>
<b>bbls of Slurry</b> 144.42 bbls (Total Slurry Volume) X (.1781)	<b>Displacement:</b> 563.75 psi
<b>Sacks Needed</b> 544 sk (Total Slurry Volume) ÷ (Cement Yield) X (% Excess Cement)	<b>Shoe Joint:</b> 30.93 psi
<b>Mix Water</b> 96.92 bbls (Sacks Needed) X (Gallons Per Sack) ÷ 42	<b>Total</b> 594.68 psi
	<b>Differential Pressure:</b> 400.76 psi
	<b>Collapse PSI:</b> 2020.00 psi
	<b>Burst PSI:</b> 3520.00 psi
	<b>Total Water Needed:</b> 248.46 bbls

X *Toby*  
 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**

INVOICE # 45050  
LOCATION Weld  
FOREMAN JASON KELEHER  
Date 10/9/2014

Customer Anadarko Petroleum Corporation  
Well Name THOMSEN 1N-18HZ

Treatment Report Page 2

**DESCRIPTION OF JOB EVENTS**

	1345	Displace 1		Displace 2		Displace 3		Displace 4		Displace 5				
		BbLS	Time	BbLS	Time	BbLS	Time	BbLS	Time	BbLS	Time	BbLS	Time	PSI
Safety Meeting	1210	0	1446	0		0		0		0		0		
MIRU	1409	10	1449	20		10		10		10		10		
CIRCULATE		20	1452	40		20		20		20		20		
Drop Plug		30	1455	110		30		30		30		30		
1446		40	1457	200		40		40		40		40		
M & P		50	1459	290		50		50		50		50		
Time		60	1501	350		60		60		60		60		
1416-1443		70	1502	420		70		70		70		70		
		80	1504	470		80		80		80		80		
		90	1506	490		90		90		90		90		
		100	1509	440		100		100		100		100		
		110	1510	440		110		110		110		110		
% Excess		120	BUMP	1440		120		120		120		120		
Mixed bbls		130				130		130		130		130		
Total Sacks		140				140		140		140		140		
bbl Returns		150				150		150		150		150		
Water Temp														

Notes:

PERFORMED PRESSURE TEST TO 2000 PSI AT 1407, PUMPED 30 BBL WATER W/ DYE IN 2ND 10 AT 1409, MIXED AND PUMPED 544 SKS AT 14.2, 144.4  
BBL AT 1416, SHUT DOWN AT 1443, STARTED DISPLACEMENT AT 1446, LANDED PLUG AT 440 PSI AT 1510 AND PRESSURED UP TO 1440 PSI, HELD FOR  
2 MINUTES AND CHECKED FLOATS, GOT .5 BBL BACK, REPRESSURED WELL TO 1000 PSI FOR 2 MINUTES AND RELEASED.

X *Jason Keleher*  
Work Performed

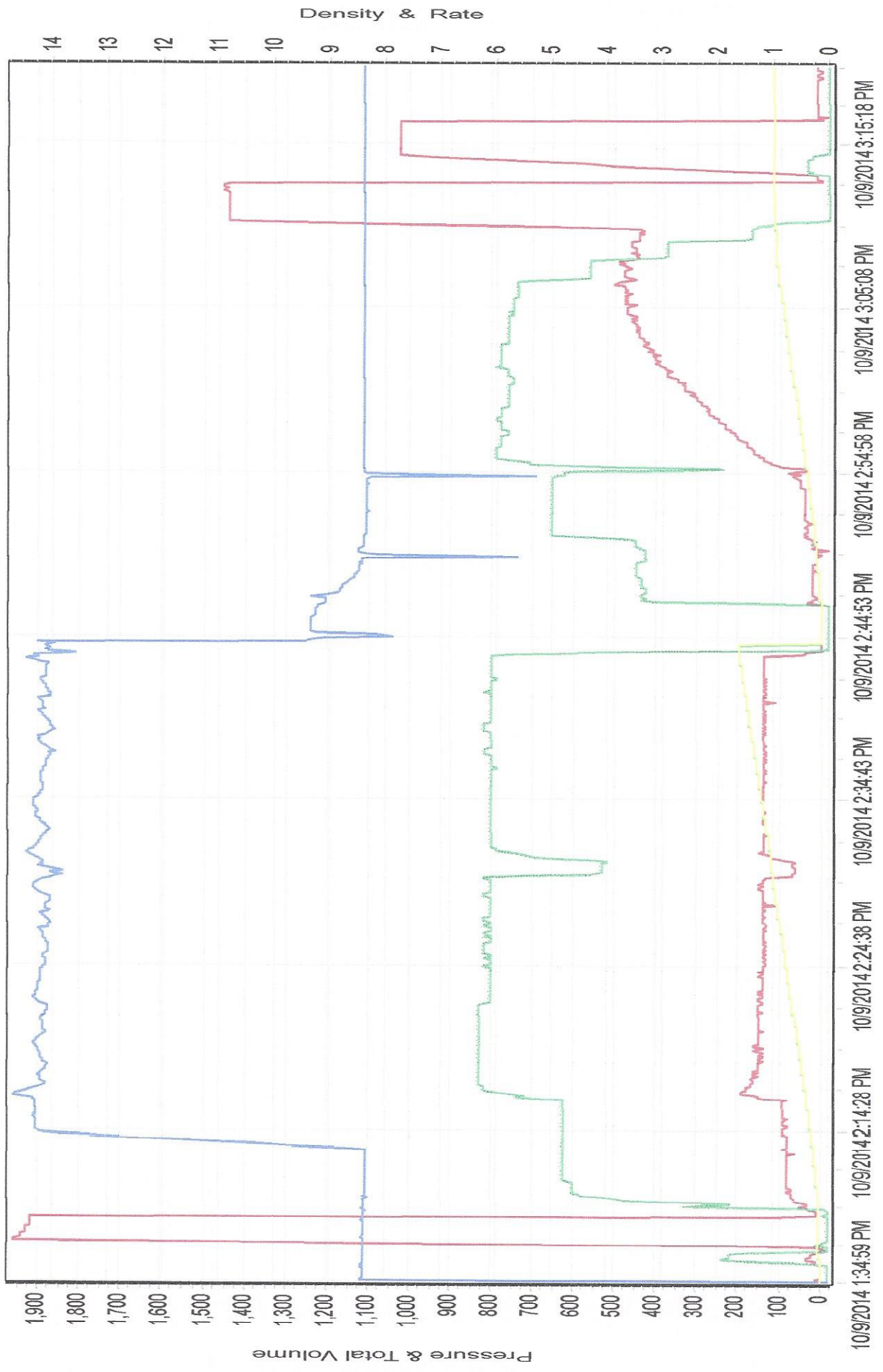
X

X

Title

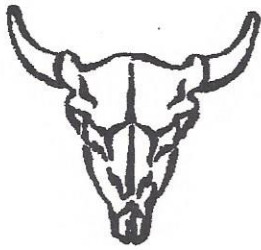
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# THOMSEN 1N-18HZ SURFACE



## 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.



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