



Bison Oil Well Cementing Single Cement Surface Pipe

Date: 5/4/2014

Invoice #: 12190

API#

Foreman: kirk

Customer: encana

Well Name: bohrer 2d-19h

County: weld

State: Colorado

Sec: 19

Twp: 3N

Range: 68W

Consultant: norman

Rig Name & Number: pattersen 326

Distance To Location: 50

Units On Location: 3103-3211

Time Requested: 630 pm

Time Arrived On Location: 500 pm

Time Left Location: 8:30pm

WELL DATA		Cement Data	
Casing Size OD (in) :	9.625	Cement Name:	BFN III
Casing Weight (lb) :	40.00	Cement Density (lb/gal) :	15.2
Casing Depth (ft.) :	844	Cement Yield (cuft) :	1.27
Total Depth (ft) :	893	Gallons Per Sack:	5.89
Open Hole Diameter (in.) :	12.25	% Excess:	50%
Conductor Length (ft) :	112	Displacement Fluid lb/gal:	8.3
Conductor ID :	16	BBL to Pit:	
Shoe Joint Length (ft) :	44	Fluid Ahead (bbls):	30.0
Landing Joint (ft) :	35	H2O Wash Up (bbls):	20.0
Max Rate:		Spacer Ahead Makeup	
Max Pressure:			

Calculated Results		Pressure of cement in annulus	
cuft of Shoe	18.73 cuft	Displacement:	63.31 bbls
(Casing ID Squared) X (.005454) X (Shoe Joint ft)		(Casing ID Squared) X (.0009714) X (Casing Depth + Landing Joint - Shoe Joint)	
cuft of Conductor	99.79 cuft	Hydrostatic Pressure:	666.42 PSI
(Conductor Width Squared) -(Casing Size OD Squared) X (.005454) X (Conductor Length ft)		Pressure of the fluids inside casing	
cuft of Casing	343.87 cuft	Displacement:	344.94 psi
(Open Hole Squared)-(Casing Size Squared) X (.005454) X (Casing Depth - Conductor Length)		Shoe Joint:	34.74 psi
Total Slurry Volume	462.39 cuft	Total	379.69 psi
(cuft of Shoe) + (cuft of Conductor) + (cuft of Casing)		Differential Pressure:	286.74 psi
bbls of Slurry	82.35 bbls	Collapse PSI:	2570.00 psi
(Total Slurry Volume) X (.1781)		Burst PSI:	3950.00 psi
Sacks Needed	364 sk	Total Water Needed:	164.37 bbls
(Total Slurry Volume) ÷ (Cement Yield) X (% Excess Cement)			
Mix Water	51.06 bbls		
(Sacks Needed) X (Gallons Per Sack) ÷ 42			

X 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 encana
Well Name bohrer 2d-19h

INVOICE # 12190
LOCATION weld
FOREMAN kirk
Date 5/4/2014

Treatment Report Page 2

DESCRIPTION OF JOB EVENTS

		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
Safety Meeting	626pm															
MIRU	530pm															
CIRCULATE	642pm	0	709pm	10	0			0			0			0		
Drop Plug		10	712pm	70	10			10			10			10		
709 pm		20	714pm	130	20			20			20			20		
		30	716pm	240	30			30			30			30		
		40	718pm	300	40			40			40			40		
M & P		50	720pm	340	50			50			50			50		
Time	Sacks	60	722pm	330	60			60			60			60		
649 pm	364	70			70			70			70			70		
705 pm stop		80			80			80			80			80		
		90			90			90			90			90		
		100			100			100			100			100		
		110			110			110			110			110		
% Excess	0%	120			120			120			120			120		
Mixed bbls	51	130			130			130			130			130		
Total Sacks	364	140			140			140			140			140		
bbl Returns	25	150			150			150			150			150		
Water Temp																

Notes:

bumped plug at 726 pm 930 psi 82.3 bbls slurry

X [Signature]
Work Performed

X _____
Title

X 5-4-14
Date