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Customers hereby acknowledges and specifically agrees to the terms and conditions on this work order, including, without limitation, the provisions on the reverse side hereof which include the release and indemnity.



# Bison Oil Well Cementing Single Cement Surface Pipe

Date: 3/9/2014  
Invoice # 12332  
API#  
Foreman: kirk

Customer: encana  
Well Name: vogle geist 2b-5h-e267

County: weld  
State: Colorado  
Sec: 5  
Twp: 2n  
Range: 62w

Consultant: sandy  
Rig Name & Number: h&p 522  
Distance To Location:  
Units On Location: 3103-3204  
Time Requested: 930 am  
Time Arrived On Location: 800 am  
Time Left Location: 1:30 pm

## WELL DATA

Casing Size OD (in) : 9.625  
Casing Weight (lb) : 40.00  
Casing Depth (ft.) : 826  
Total Depth (ft) : 863  
Open Hole Diameter (in.) : 12.25  
Conductor Length (ft) : 100  
Conductor ID : 15.5  
Shoe Joint Length (ft) : 39  
Landing Joint (ft) : 30

Max Rate:  
Max Pressure:

## Cement Data

Cement Name: BFN III  
Cement Density (lb/gal) : 15.2  
Cement Yield (cuft) : 1.27  
Gallons Per Sack: 5.89  
% Excess: 40%  
Displacement Fluid lb/gal: 8.3  
BBL to Pit:  
Fluid Ahead (bbls):  
H2O Wash Up (bbls): 20.0

Spacer Ahead Makeup

Casing ID

8.835

Casing Grade

J-55 only used

## Calculated Results

**cuft of Shoe** 16.60 cuft  
(Casing ID Squared) X (.005454) X (Shoe Joint ft)

**cuft of Conductor** 80.51 cuft  
(Conductor Width Squared) - (Casing Size OD Squared) X (.005454) X (Conductor Length ft)

**cuft of Casing** 227.37 cuft  
(Open Hole Squared) - (Casing Size Squared) X (.005454) X (Casing Depth - Conductor Length)

**Total Slurry Volume** 324.48 cuft  
(cuft of Shoe) + (cuft of Conductor) + (cuft of Casing)

**bbls of Slurry** 80.91 bbls  
(Total Slurry Volume) X (.1781) X (% Excess Cement)

**Sacks Needed** 358 sk  
(Total Slurry Volume) ÷ (Cement Yield) X (% Excess Cement)

**Mix Water** 50.16 bbls  
(Sacks Needed) X (Gallons Per Sack) ÷ 42

**Displacement:** 61.95 bbls  
(Casing ID Squared) X (.0009714) X (Casing Depth + Landing Joint - Shoe Joint)

## Pressure of cement in annulus

**Hydrostatic Pressure:** 652.21 PSI

## Pressure of the fluids inside casing

**Displacement:** 339.34 psi

**Shoe Joint:** 30.79 psi

**Total** 370.13 psi

**Differential Pressure:** 282.08 psi

**Collapse PSI:** #N/A psi

**Burst PSI:** #N/A psi

**Total Water Needed:** 132.11 bbls

X

Authorization To Proceed





**Bison Oil Well Cementing  
Single Cement Surface Pipe**

Customer  
Well Name

encana  
vogle geist 2b-5h-e267

INVOICE #  
LOCATION  
FOREMAN  
Date

12332  
weld  
kirk  
3/9/2014

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	1115 am															
MIRU	1030am															
CIRCULATE	1152 am	0	1217p	10	0			0			0			0		
Drop Plug		10	1220p	50	10			10			10			10		
1217 pm		20	1222p	140	20			20			20			20		
		30	1224p	220	30			30			30			30		
		40	1231p	220	40			40			40			40		
M & P		50	1239p	300	50			50			50			50		
Time	Sacks	60	1243p	350	60			60			60			60		
1158 am	358	70			70			70			70			70		
1215 pm stop		80			80			80			80			80		
		90			90			90			90			90		
		100			100			100			100			100		
		110			110			110			110			110		
% Excess	40%	120			120			120			120			120		
Mixed bbls	50.2	130			130			130			130			130		
Total Sacks	358	140			140			140			140			140		
bbl Returns	25	150			150			150			150			150		
Water Temp	0															

Notes:

bumped plug at 1247 pm 820 psi 80.9 bbls slurry

X Sandy Pulley  
Work Performed

X 3-9-14  
Title

X 3-9-14  
Date