



Bison Oil Well Cementing Single Cement Surface Pipe

Date: 12/29/2013
Invoice # 12576
API# 512336206
Foreman: Kirk

Customer: encana
Well Name: libertl 2b-21h

County: weld
State: Colorado
Sec: 21
Twp: 3n
Range: 68w

Consultant: cody
Rig Name & Number: ensign 135
Distance To Location:
Units On Location: 3103-3203
Time Requested: 730 pm
Time Arrived On Location: 745 pm
Time Left Location: 11:15 pm

WELL DATA

Casing Size OD (in) : 9.6250
Casing Weight (lb) : 40
Casing Depth (ft.) : 900
Total Depth (ft) : 916
Open Hole Diameter (in.) : 12.25
Conductor Length (ft) : 100
Conductor ID : 15.5
Shoe Joint Length (ft) : 44
Landing Joint (ft) : 16

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: 50%
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 18.73 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 250.54 cuft
(Open Hole Squared) - (Casing Size Squared) X (.005454) X (Casing Depth - Conductor Length)

Total Slurry Volume 349.78 cuft
(cuft of Shoe) + (cuft of Conductor) + (cuft of Casing)

bbls of Slurry 93.44 bbls
(Total Slurry Volume) X (.1781) X (% Excess Cement)

Sacks Needed 413 sk
(Total Slurry Volume) ÷ (Cement Yield) X (% Excess Cement)

Mix Water 57.94 bbls
(Sacks Needed) X (Gallons Per Sack) ÷ 42

Displacement: 66.12 bbls
(Casing ID Squared) X (.0009714) X (Casing Depth + Landing Joint - Shoe Joint)

Pressure of cement in annulus

Hydrostatic Pressure: 710.64 PSI

Pressure of the fluids inside casing

Displacement: 369.09 psi

Shoe Joint: 34.74 psi

Total 403.83 psi

Differential Pressure: 306.81 psi

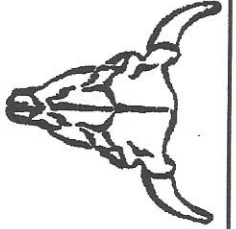
Collapse PSI: 2570.00 psi

Burst PSI: 3950.00 psi

Total Water Needed: 77.94 bbls

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
Well Name

encana
libertl 2b-21h

INVOICE #
LOCATION
FOREMAN
Date

12576
weld
Kirk
12/29/2013

DESCRIPTION OF JOB EVENTS

Treatment Report Page 2

Safety Meeting	900pm	Displace 1			Displace 2			Displace 3			Displace 4			Displace 5		
	840pm	BBLS	Time	PSI	BBLS	Time	PSI	BBLS	Time	PSI	BBLS	Time	PSI	BBLS	Time	PSI
MIRU	932pm	0			0			0			0			0		
CIRCULATE		10			10			10			10			10		
Drop Plug		20			20			20			20			20		
1008 pm		30			30			30			30			30		
		40			40			40			40			40		
M & P		50			50			50			50			50		
Time	Sacks	60			60			60			60			60		
937 pm	414	70			70			70			70			70		
1005 pm stop		80			80			80			80			80		
		90			90			90			90			90		
		100			100			100			100			100		
		110			110			110			110			110		
% Excess	50%	120			120			120			120			120		
Mixed bbls	58	130			130			130			130			130		
Total Sacks	414	140			140			140			140			140		
bbl Returns	30	150			150			150			150			150		

Notes:

bumped plug at 1025 pm 820 psi 93.4 bbls slurry

X
Work Performed

X
Title

X
Date 12-29-13