

Bison Oil Well Cementing Single Cement Surface Pipe

Date: 21/31/13
Invoice #: 12546
API#: 445564
Foreman: MONTE

Customer: encana
Well Name: liberty 2d-21h

County: weld
State: colorado

Sec: 21
Twp: 3n
Range: 68w

Consultant: bill
Rig Name & Number: ensign135
Distance To Location: 21.6
Units On Location: 1005-3211
Time Requested: 1:30pm
Time Arrived On Location: 12:50am
Time Left Location:

WELL DATA

Casing Size OD (in) : 9.6250
Casing Weight (lb) : 40
Casing Depth (ft.) : 913
Total Depth (ft) : 919
Open Hole Diameter (in.) : 12.25
Conductor Length (ft) : 93
Conductor ID : 15.5
Shoe Joint Length (ft) : 46
Landing Joint (ft) : 17

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
10 fresh 10 dye 10 fresh

Casing ID

8.835

Casing Grade

J-55 only used

Calculated Results

cuft of Shoe 19.58 cuft
(Casing ID Squared) X (.005454) X (Shoe Joint ft)

cuft of Conductor 74.87 cuft
(Conductor Width Squared) - (Casing Size OD Squared) X (.005454) X (Conductor Length ft)

cuft of Casing 256.81 cuft
(Open Hole Squared) - (Casing Size Squared) X (.005454) X (Casing Depth - Conductor Length)

Total Slurry Volume 351.26 cuft
(cuft of Shoe) + (cuft of Conductor) + (cuft of Casing)

bbls of Slurry 87.58 bbls
(Total Slurry Volume) X (.1781) X (% Excess Cement)

Sacks Needed 387 sk
(Total Slurry Volume) ÷ (Cement Yield) X (% Excess Cement)

Mix Water 54.30 bbls
(Sacks Needed) X (Gallons Per Sack) ÷ 42

Displacement: 67.00 bbls
(Casing ID Squared) X (.0009714) X (Casing Depth + Landing Joint - Shoe Joint)

Pressure of cement in annulus

Hydrostatic Pressure: 720.90 PSI

Pressure of the fluids inside casing

Displacement: 373.83 psi

Shoe Joint: 36.32 psi

Total 410.16 psi

Differential Pressure: 310.75 psi

Collapse PSI: 2570.00 psi

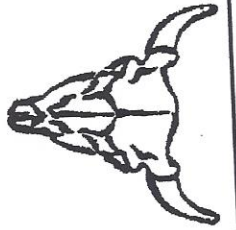
Burst PSI: 3950.00 psi

Total Water Needed: 74.30 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
liberty 2d-21h

INVOICE #
LOCATION
FOREMAN
Date

12546
weld
MONTE
21/31/13

Treatment Report Page 2

DESCRIPTION OF JOB EVENTS

	3:30pm 2:55 4:15	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																
MIRU		0	5:12	0:00	0			0			0			0		
CIRCULATE		10	5:15	0:00	10			10			10			10		
Drop Plug		20	5:20	0:00	20			20			20			20		
		30	5:25	0:00	30			30			30			30		
		40	5:28	0:00	40			40			40			40		
		50	5:34	0:00	50			50			50			50		
M & P		60			60			60			60			60		
		70			70			70			70			70		
		80			80			80			80			80		
		90			90			90			90			90		
		100			100			100			100			100		
		110			110			110			110			110		
		120			120			120			120			120		
		130			130			130			130			130		
		140			140			140			140			140		
		150			150			150			150			150		
% Excess	40%															
Mixed bbls	54.3															
Total Sacks	387															
bbl Returns	23															

Notes:

safety meeting, miru, pressure test per company man, circulate 30 bbls ahead with dye in 2nd 10. mix and pump 387 sks at 40% excess, drop plug and displace 67 bbls

drop plug and displace 67 bbls h2o,

23 bbls back to pit, 40 % excess

X
Work Performed
Title
Date