



Bison Oil Well Cementing Single Cement Surface Pipe

Date: 3/25/2014
Invoice #: 12132
API#: 05-123-38073
Foreman: LEE

Customer: ~~NOBLE~~ *Encano*
Well Name: EDITH ANN-DUCKWORTH 4B-21H

County: WELD
State: Colorado
Sec: 21
Twp: 2N
Range: 68W

Consultant: LENARD
Rig Name & Number: H&P 272
Distance To Location: 25
Units On Location: 4027-3106:
Time Requested: 6:00
Time Arrived On Location: 4:40 AM
Time Left Location:

WELL DATA

Casing Size OD (in) : 9.6250
Casing Weight (lb) : 40
Casing Depth (ft.) : 897
Total Depth (ft) : 907
Open Hole Diameter (in.) : 12.25
Conductor Length (ft) : 100
Conductor ID : 15.5
Shoe Joint Length (ft) : 46
Landing Joint (ft) : 0

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: 35%
Displacement Fluid lb/gal: 8.3
BBL to Pit:
Fluid Ahead (bbls):
H2O Wash Up (bbls): 20.0

Spacer Ahead Makeup
30KCLBBL DIE 2ND 10

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

cuft of Casing 249.60 cuft
(Open Hole Squared) - (Casing Size Squared) X (.005454) X (Casing Depth - Conductor Length)

Total Slurry Volume 349.69 cuft
(cuft of Shoe) + (cuft of Conductor) + (cuft of Casing)

bbls of Slurry 83.77 bbls
(Total Slurry Volume) X (.1781) X (% Excess Cement)

Sacks Needed 370 sk
(Total Slurry Volume) ÷ (Cement Yield) X (% Excess Cement)

Mix Water 51.94 bbls
(Sacks Needed) X (Gallons Per Sack) ÷ 42

Displacement: 64.53 bbls

(Casing ID Squared) X (.0009714) X (Casing Depth + Landing Joint - Shoe Joint)

Pressure of cement in annulus

Hydrostatic Pressure: 708.27 PSI

Pressure of the fluids inside casing

Displacement: 366.94 psi

Shoe Joint: 36.32 psi

Total 403.26 psi

Differential Pressure: 305.01 psi

Collapse PSI: 2570.00 psi

Burst PSI: 3950.00 psi

Total Water Needed: 71.94 bbls

X

Leonard Clark
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
EDITH ANN-DUCKWORTH 4B-21H

INVOICE #
LOCATION
FOREMAN
Date

12132
WELD
LEE
3/25/2014

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	7:27															
MIRU	7:20															
CIRCULATE	7:40	0	8:14		0			0			0			0		
Drop Plug		10	8:16	190	10			10			10			10		
8:14		20	8:18	270	20			20			20			20		
		30	8:20	370	30			30			30			30		
		40	8:22	450	40			40			40			40		
M & P		50	8:24	490	50			50			50			50		
Time	Sacks	60	8:26	500	60			60			60			60		
7:42	370	70	8:29	1070	70			70			70			70		
		80			80			80			80			80		
		90			90			90			90			90		
		100			100			100			100			100		
		110			110			110			110			110		
% Excess	35%	120			120			120			120			120		
Mixed bbls	52	130			130			130			130			130		
Total Sacks	371	140			140			140			140			140		
		150			150			150			150			150		
bbl Returns	21															

Notes:

The day COMPANY LENARD PROVIDED NUMBERS TO BE USED

JOB WENT WELL NO ISSUES TO REPORT, PRIOR TO BEGINNING HAD A HAMMER WING HALF CRACK ON BULK TRUCK

X

Leonard Claus

Work Performed

X

D SM

Title

X

3-25-14

Date