



Bison Oil Well Cementing Single Cement Surface Pipe

Date: 12/9/2014
 Invoice #: 45087
 API#: 05-123-45087
 Foreman: JASON

Customer: EnCana Oil & Gas (USA) Inc.
 Well Name: RUHL 1A-32H-B264

County: Weld
 State: Colorado
 Sec: 32
 Twp: 2N
 Range: 64W

Consultant:
 Rig Name & Number: H&P 278
 Distance To Location: 24
 Units On Location: 4031-3106, 4022-3213
 Time Requested: 2000
 Time Arrived On Location: 1930
 Time Left Location: 1300

WELL DATA

Casing Size OD (in) : 9.625
 Casing Weight (lb) : 40.00
 Casing Depth (ft) : 1,191
 Total Depth (ft) : 1230
 Open Hole Diameter (in.) : 12.25
 Conductor Length (ft) : 149
 Conductor ID : 15.25
 Shoe Joint Length (ft) : 46
 Landing Joint (ft) : 29

Max Rate: 7
 Max Pressure: 1500

Cement Data

Cement Name: BFN III
 Cement Density (lb/gal) : 15.2
 Cement Yield (cuft) : 1.27
 Gallons Per Sack: 5.89
 % Excess: 27%
 Displacement Fluid lb/gal: 8.3
 BBL to Pit: 24.0
 Fluid Ahead (bbls): 30.0
 H2O Wash Up (bbls): 20.0

Spacer Ahead Makeup
 30 BBL W/ KCL, DYE IN 2ND 10

Casing ID

8.835

Casing Grade

J-55 only used

Calculated Results

cuft of Shoe 19.70 cuft
 (Casing ID Squared) X (.005454) X (Shoe Joint ft)

cuft of Conductor 113.71 cuft
 (Conductor Width Squared) -(Casing Size OD Squared) X (.005454) X (Conductor Length ft)

cuft of Casing 413.51 cuft
 (Open Hole Squared)-(Casing Size Squared) X (.005454) X (Casing Depth - Conductor Length)

Total Slurry Volume 546.92 cuft
 (cuft of Shoe) + (cuft of Conductor) + (cuft of Casing)

bbls of Slurry 97.41 bbls
 (Total Slurry Volume) X (.1781)

Sacks Needed 431 sk
 (Total Slurry Volume) ÷ (Cement Yield) X (% Excess Cement)

Mix Water 60.39 bbls
 (Sacks Needed) X (Gallons Per Sack) ÷ 42

Displacement: 89.02 bbls
 (Casing ID Squared) X (.0009714) X (Casing Depth + Landing Joint - Shoe Joint)

Pressure of cement in annulus

Hydrostatic Pressure: 940.52 PSI

Pressure of the fluids inside casing

Displacement: 493.64 psi

Shoe Joint: 36.53 psi

Total 530.18 psi

Differential Pressure: 410.34 psi

Collapse PSI: 2570.00 psi

Burst PSI: 3950.00 psi

Total Water Needed: 199.42 bbls

X *Andy Burke*
 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 Oil & Gas (USA) Inc.
RUHL 1A-32H-B264

INVOICE #
LOCATION
FOREMAN
Date

45087
Weld
JASON
12/9/2014

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DESCRIPTION OF JOB EVENTS

		Displace 1			Displace 2			Displace 3			Displace 4			Displace 5		
		BBLs	Time	PSI												
Safety Meeting	945															
MIRU	830															
CIRCULATE	1046	0	1116	0	0			0			0			0		
Drop Plug		10	1119	10	10			10			10			10		
1116		20	1122	20	20			20			20			20		
		30	1125	40	30			30			30			30		
		40	1127	150	40			40			40			40		
M & P		50	1129	230	50			50			50			50		
Time	Sacks	60	1131	300	60			60			60			60		
1053-1112	431	70	1133	340	70			70			70			70		
		80	1135	370	80			80			80			80		
		90	1139	330	90			90			90			90		
		100	BUMP	820	100			100			100			100		
		110			110			110			110			110		
		120			120			120			120			120		
% Excess	27%	130			130			130			130			130		
Mixed bbls	60.4	140			140			140			140			140		
Total Sacks	431	150			150			150			150			150		
bbl Returns	24															
Water Temp	40															

Notes:
 PRESSURE TEST TO 2000 PSI AT 1044, PUMPED 30 BBL WATER WITH DYE IN THE 2ND 10 AT 1046, MIXED AND PUMPED 431 SKS AT 15.2, 97.4 BBL
 AT 1053, SHUT DOWN AT 1112, STARTED DISPLACEMENT AT 1116, PLUG LANDED AT 330 PSI AT 1139 AND PRESSURED UP TO 820 PSI, HELD FOR 2
 MINUTES AND PRESSURED UP TO 1500 PSI FOR 15 MINUTES FOR CASING TEST, RELEASED PRESSURE, FLOATS HELD, GOT .75 BBL BACK

X Randy Bunker
 Work Performed

X _____
 Title

X
 Date