



Bison Oil Well Cementing Single Cement Surface Pipe

Date: 2/14/2015
 Invoice # 45126
 API# 05-123-39271
 Foreman: JASON

Customer: EnCana Oil & Gas (USA) Inc.
 Well Name: SPRAGUE 3D-9H-N267

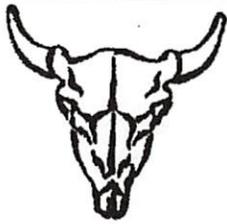
County: Weld Consultant: NORMAN
 State: Colorado Rig Name & Number: PATTERSON 272
 Distance To Location: 19
 Sec: 9 Units On Location: 4031-3107/ 4020-3212
 Twp: 2N Time Requested: 1100
 Range: 67W Time Arrived On Location: 1030
 Time Left Location: 1700

WELL DATA	Cement Data
Casing Size OD (in) : <u>9.625</u>	Cement Name: <u>BFN III</u>
Casing Weight (lb) : <u>36.00</u>	Cement Density (lb/gal) : <u>15.2</u>
Casing Depth (ft.) : <u>832</u>	Cement Yield (cuft) : <u>1.27</u>
Total Depth (ft) : <u>880</u>	Gallons Per Sack: <u>5.89</u>
Open Hole Diameter (in.) : <u>12.25</u>	% Excess: <u>50%</u>
Conductor Length (ft) : <u>84</u>	Displacement Fluid lb/gal: <u>8.3</u>
Conductor ID : <u>15.25</u>	BBL to Pit: <u>23.0</u>
Shoe Joint Length (ft) : <u>44</u>	Fluid Ahead (bbls): <u>30.0</u>
Landing Joint (ft) : <u>35</u>	H2O Wash Up (bbls): <u>20.0</u>
Max Rate: <u>6</u>	Spacer Ahead Makeup
Max Pressure: <u>1500</u>	<u>30 BBL W/ KCL, DYE IN 2ND 10</u>

Calculated Results	Pressure of cement in annulus
cuft of Shoe <u>19.14</u> cuft (Casing ID Squared) X (.005454) X (Shoe Joint ft)	Displacement: <u>63.62</u> bbls (Casing ID Squared) X (.0009714) X (Casing Depth + Landing Joint - Shoe Joint)
cuft of Conductor <u>64.10</u> cuft (Conductor Width Squared) -(Casing Size OD Squared) X (.005454) X (Conductor Length ft)	Hydrostatic Pressure: <u>656.95</u> PSI
cuft of Casing <u>351.39</u> cuft (Open Hole Squared)-(Casing Size Squared) X (.005454) X (Casing Depth - Conductor Length)	Pressure of the fluids inside casing
Total Slurry Volume <u>434.63</u> cuft (cuft of Shoe) + (cuft of Conductor) + (cuft of Casing)	Displacement: <u>339.73</u> psi Shoe Joint: <u>34.82</u> psi Total <u>374.55</u> psi
bbls of Slurry <u>77.41</u> bbls (Total Slurry Volume) X (.1781)	Differential Pressure: <u>282.40</u> psi
Sacks Needed <u>342</u> sk (Total Slurry Volume) ÷ (Cement Yield) X (% Excess Cement)	Collapse PSI: <u>2020.00</u> psi Burst PSI: <u>3520.00</u> psi
Mix Water <u>47.99</u> bbls (Sacks Needed) X (Gallons Per Sack) ÷ 42	Total Water Needed: <u>161.61</u> bbls

X [Signature]
 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.
SPRAGUE 3D-9H-N267

INVOICE #
LOCATION
FOREMAN
Date

45126
Weld
JASON
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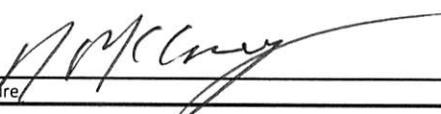
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DESCRIPTION OF JOB EVENTS

		Displace 1			Displace 2			Displace 3			Displace 4			Displace 5		
		BBLS	Time	PSI												
Safety Meeting	140															
MIRU	1315															
CIRCULATE	1500	0	1535	0	0			0			0			0		
Drop Plug		10	1537	70	10			10			10			10		
1535		20	1539	70	20			20			20			20		
		30	1544	160	30			30			30			30		
		40	1548	260	40			40			40			40		
M & P		50	1552	350	50			50			50			50		
Time	Sacks	60	1556	360	60			60			60			60		
1511-1533	342	70	1557	360	70			70			70			70		
		80	BUMP	900	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	47.9	130			130			130			130			130		
Total Sacks	342	140			140			140			140			140		
bbl Returns	23	150			150			150			150			150		
Water Temp	60															

Notes:

PRESSURE TEST TO 1500 PSI AT 1458, PUMPED 30 BBL WATER WITH DYE IN THE 2ND 10 AT 1500, MIXED AND PUMPED 342 SKS AT 15.2, 77.4 BBL AT 1511, SHUT DOWN AT 1533, STARTED DISPLACEMENT AT 1535, PLUG LANDED AT 360 PSI AT 1557 AND PRESSURED UP TO 900 PSI, HELD FOR 2 MINUTES, RELEASED PRESSURE AND GOT .5 BBL BACK AND FLOATS HELD

X 
Signature

X _____
Title

X _____
Date