



Bison Oil Well Cementing Single Cement Surface Pipe

Date: 2/19/2014
 Invoice #: 12066
 API#: 05-087-08177
 Foreman: Calvin Reimers

Customer: Ensign
 Well Name: Ehrlich 1A

County: Morgan
 State: Colo.
 Sec: 12
 Twp: 4N
 Range: 60W

Consultant: Jason
 Rig Name & Number: Ensign 12
 Distance To Location: 51 Miles
 Units On Location: 3103/3210
 Time Requested: 800am
 Time Arrived On Location: 740am
 Time Left Location: 1245pm

WELL DATA	Cement Data
Casing Size OD (in) : 8.6250	Cement Name: BFN III
Casing Weight (lb) : 24	Cement Density (lb/gal) : 15.2
Casing Depth (ft.) : 523	Cement Yield (cuft) : 1.27
Total Depth (ft) : 545	Gallons Per Sack: 5.89
Open Hole Diameter (in.) : 12.25	% Excess: 60%
Conductor Length (ft) : _____	Displacement Fluid lb/gal: 8.3
Conductor ID : _____	BBL to Pit: 12.0
Shoe Joint Length (ft) : 44	Fluid Ahead (bbbls): _____
Landing Joint (ft) : 14	H2O Wash Up (bbbls): 20.0
Max Rate: 7	Spacer Ahead Makeup
Max Pressure: 2500	30bbbls H2O+KCL+Dye in 2nd 10bbbls

Casing ID: 8.097 Casing Grade: J-55 only used

Calculated Results	Displacement: 31.39 bbls
cuft of Shoe 15.91 cuft (Casing ID Squared) X (.005454) X (Shoe Joint ft)	(Casing ID Squared) X (.0009714) X (Casing Depth + Landing Joint - Shoe Joint)
cuft of Conductor 0.00 cuft (Conductor Width Squared) -(Casing Size OD Squared) X (.005454) X (Conductor Length ft)	
cuft of Casing 215.98 cuft (Open Hole Squared)-(Casing Size Squared) X (.005454) X (Casing Depth - Conductor Length)	Pressure of cement in annulus Hydrostatic Pressure: 413.21 PSI
Total Slurry Volume 231.89 cuft (cuft of Shoe) + (cuft of Conductor) + (cuft of Casing)	Pressure of the fluids inside casing Displacement: 206.46 psi Shoe Joint: 35.13 psi Total 241.59 psi
bbbls of Slurry 66.08 bbbls (Total Slurry Volume) X (.1781) X (% Excess Cement)	Differential Pressure: 171.62 psi
Sacks Needed 292 sk (Total Slurry Volume) ÷ (Cement Yield) X (% Excess Cement)	Collapse PSI: 1370.00 psi Burst PSI: 2950.00 psi
Mix Water 40.97 bbbls (Sacks Needed) X (Gallons Per Sack) ÷ 42	Total Water Needed: 60.97 bbbls



Authorization To Proceed



**Bison Oil Well Cementing
Single Cement Surface Pipe**

Customer
Well Name

Ensign
Ehrlich 1A

INVOICE #
LOCATION
FOREMAN
Date

12066
Morgan
Calvin Reimers
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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	1100am															
MIRU	1025am															
CIRCULATE	122am	0	1147am	50	0			0			0			0		
Drop Plug		10	1150am	130	10			10			10			10		
1146am		20	1152am	210	20			20			20			20		
		30	1155am	190	30			30			30			30		
		40	1157am	190	40			40			40			40		
M & P		50	Bump	320	50			50			50			50		
Time	Sacks	60			60			60			60			60		
1128am	292	70			70			70			70			70		
1145am		80			80			80			80			80		
		90			90			90			90			90		
		100			100			100			100			100		
		110			110			110			110			110		
% Excess	60%	120			120			120			120			120		
Mixed bbls	41	130			130			130			130			130		
Total Sacks	292	140			140			140			140			140		
		150			150			150			150			150		
bbl Returns	12															

Notes:

The day

Closed in with 320psi

X _____
Work Preformed

X _____
Title

X _____
Date

