



Bison Oil Well Cementing Tail & Lead

Date: 9/17/2017
Invoice # 200168
API#
Foreman: Kirk Kallhoff

Customer: Noble Energy Inc.
Well Name: wells ranch state bb11-635

County: Weld
State: Colorado
Sec: 20
Twp: 9n
Range: 58w
Consultant: jim
Rig Name & Number: H&P 524
Distance To Location: 23
Units On Location: 4028/4031
Time Requested: 400 am
Time Arrived On Location: 230 am
Time Left Location: 9:30 am

WELL DATA	Cement Data
<p>Casing Size (in) : 9.625 Casing Weight (lb) : 36 Casing Depth (ft.) : 1,908 Total Depth (ft) : 1953 Open Hole Diameter (in) : 13.50 Conductor Length (ft) : 80 Conductor ID : 15.6 Shoe Joint Length (ft) : 47 Landing Joint (ft) : 35</p> <p>Sacks of Tail Requested 100 HOC Tail (ft): 0</p> <p>One or the other, cannot have quantity in both</p> <p>Max Rate: Max Pressure:</p>	<p>Lead Cement Name: fn3 gel calcium Cement Density (lb/gal) : 13.5 Cement Yield (cuft) : 1.7 Gallons Per Sack 9.00 % Excess 15%</p> <p>Tail Cement Name: bfn 3 Cement Density (lb/gal) : 15.2 Cement Yield (cuft) : 1.27 Gallons Per Sack: 5.89 % Excess: 0%</p> <p>Fluid Ahead (bbls) 146.6 H2O Wash Up (bbls) 20.0</p> <p>Spacer Ahead Makeup</p>

Casing ID	8.921	Casing Grade	J-55 only used
Lead Calculated Results		Tail Calculated Results	
HOC of Lead	1574.88 ft	Tail Cement Volume In Ann	127.00 cuft
Casing Depth - HOC Tail		(HOC Tail) X (OH Ann)	
Volume of Lead Cement	769.69 cuft	Total Volume of Tail Cement	106.60 Cuft
HOC of Lead X Open Hole Ann		(HOC Tail X OH Ann) - (Shoe Length X Shoe Joint Ann)	
Volume of Conductor	65.76 cuft	bbls of Tail Cement	22.62 bbls
(Conductor ID Squared) - (Casing Size OD Squared) X (.005454) X (Conductor Length ft)		(HOC of Tail) X (OH Ann) + (Cement Yield) X (Shoe Joint Ann) X (.1781) X (% Excess)	
Total Volume of Lead Cement	835.45 cuft	HOC Tail	218.12 ft
(cuft of Lead Cement) + (Cuft of Conductor)		(Tail Cement Volume) ÷ (OH Ann)	
bbls of Lead Cement	171.11 bbls	Sacks of Tail Cement	100.00 sk
(Total cuft of Lead Cement) X (.1781) X (1+%Lead Excess)		(Total Volume of Tail Cement) ÷ (Cement Yield)	
Sacks of Lead Cement	565.16 sk	bbls of Tail Mix Water	14.02 bbls
(Total Slurry Volume) ÷ (Cement Yield) X (% Excess Cement)		(Sacks of Tail Cement X Gallons Per Sack) ÷ 42	
bbls of Lead Mix Water	121.11 bbls	Pressure of cement in annulus	
(Sacks Needed) X (Gallons Per Sack) ÷ 42		Hydrostatic Pressure	585.23 PSI
Displacement	146.56 bbls		
(Casing ID Squared) X (.0009714) X (Casing Depth) + (Landing Joint) - (Shoe Length)		Collapse PSI:	2020.00 psi
Total Water Needed:	448.25 bbls	Burst PSI:	3520.00 psi

X

Authorization To Proceed



Customer
Well Name

Noble Energy Inc.
wells ranch state bb11-635

Date
INVOICE #
LOCATION
FOREMAN

9/17/2017

200168

Weld

Kirk Kallhoff

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DESCRIPTION OF JOB EVENTS

X

Work Performed

X

Title

x

Date _____