



Bison Oil Well Cementing Single Cement Surface Pipe

Date: 9/1/2015
 Invoice #: 80632
 API#: 05-123-41730
 Foreman: JASON KELEHER

Customer: Noble Energy Inc.
 Well Name: WELLS RANCH AE32-655

County: Weld
 State: Colorado
 Sec: 32
 Twp: 6N
 Range: 62W
 Consultant: STETSON
 Rig Name & Number: H&P 321
 Distance To Location: 24
 Units On Location: 4031-3103/ 4034-3213
 Time Requested: 730
 Time Arrived On Location: 630
 Time Left Location: 1100

WELL DATA	Cement Data
Casing Size OD (in) : 9.625	Cement Name: BFN III
Casing Weight (lb) : 36.00	Cement Density (lb/gal) : 14.2
Casing Depth (ft.) : 596	Cement Yield (cuft) : 1.49
Total Depth (ft) : 636	Gallons Per Sack: 7.48
Open Hole Diameter (in.) : 13.50	% Excess: 40%
Conductor Length (ft) : 80	Displacement Fluid lb/gal: 8.3
Conductor ID : 15.25	BBL to Pit: 18.0
Shoe Joint Length (ft) : 42	Fluid Ahead (bbls): 40.0
Landing Joint (ft) : 35	H2O Wash Up (bbls): 20.0
Max Rate: 6	Spacer Ahead Makeup
Max Pressure: 1000	40 BBL WATER DYE IN 2ND 10

Calculated Results	Pressure of cement in annulus
cuft of Shoe 18.32 cuft (Casing ID Squared) X (.005454) X (Shoe Joint ft)	Displacement: 45.54 bbls (Casing ID Squared) X (.0009714) X (Casing Depth + Landing Joint - Shoe Joint)
cuft of Conductor 61.05 cuft (Conductor Width Squared) -(Casing Size OD Squared) X (.005454) X (Conductor Length ft)	Hydrostatic Pressure: 439.84 PSI
cuft of Casing 353.22 cuft (Open Hole Squared)-(Casing Size Squared) X (.005454) X (Casing Depth - Conductor Length)	Pressure of the fluids inside casing
Total Slurry Volume 432.58 cuft (cuft of Shoe) + (cuft of Conductor) + (cuft of Casing)	Displacement: 238.89 psi Shoe Joint: 31.13 psi Total 270.02 psi
bbls of Slurry 77.04 bbls (Total Slurry Volume) X (.1781)	Differential Pressure: 169.82 psi
Sacks Needed 290 sk (Total Slurry Volume) ÷ (Cement Yield) X (% Excess Cement)	Collapse PSI: 2020.00 psi Burst PSI: 3520.00 psi
Mix Water 51.71 bbls (Sacks Needed) X (Gallons Per Sack) ÷ 42	Total Water Needed: 157.24 bbls


 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.



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Single Cement Surface Pipe**

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WELLS RANCH AE32-655

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LOCATION	Weld
FOREMAN	JASON KELEHER
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DESCRIPTION OF JOB EVENTS

Amount Pumped	Time/Date	Event	Description	Rate	BBLs	Pressure
% Excess 40%	630	ARRIVE ON LOCATION	WELL SITE ASSESMENT/ HAZARD HUNT			
Mixed bbls 51.6	800	MIRU	SPOT EQUIPMENT			
Total Sacks 290	900	JSA	REVIEW JOB/ HAZARDS/ EMERGENCIES			
bbl Returns 18	932	Pressure Test	TEST LINES TO 1400			1400
Water Temp 65	935	Spacer Ahead	40 BBL WATER	5.3	40	60
	945	Cement	14.2 PPG CEMENT (290 SKS)	6.3	76.9	130
Notes:	1001	Shutdown				
	1003	Drop Plug	PLUG PRELOADED			
	1003	Start Displacement	FRESH WATER	2.4	45.5	210
	1016	Bump Plug	BUMP PLUG			630
	1017	Pressure Test Casing	PRESSURE UP TO 1000 PSI FOR 12 MIN			1090
	1029	Check Floats	FLOATS HELD/ .5 BBL BACK			1100
	1035	Rig Down	HOLD RIG DOWN JSA			
	1100	Leave Location	HOLD PRE JOURNEY MEETING			

X 
Customer Signature

X WSS
Title

X 9-1-15
Date