



Bison Oil Well Cementing Single Cement Surface Pipe

Date: 1/27/2015

Invoice # 45118

API# 05-123-38142

Foreman: JASON KELEHER

Customer: Noble Energy Inc.

Well Name: RELIANCE E23-68-1HN

County: Weld

State: Colorado

Sec: 23

Twp: 6N

Range: 65W

Consultant: GARY

Rig Name & Number: H&P 326

Distance To Location: 19

Units On Location: 4031-3107/ 4035-3204

Time Requested: 2230

Time Arrived On Location: 2100

Time Left Location: 130

WELL DATA

Casing Size OD (in) : 9.625
Casing Weight (lb) : 36.00
Casing Depth (ft) : 772
Total Depth (ft) : 809
Open Hole Diameter (in.) : 13.50
Conductor Length (ft) : 100
Conductor ID : 15.25
Shoe Joint Length (ft) : 43
Landing Joint (ft) : 32

Max Rate: 6
Max Pressure: 1000

Cement Data

Cement Name: BFN III
Cement Density (lb/gal) : 14.2
Cement Yield (cuft) : 1.49
Gallons Per Sack: 7.48
% Excess: 45%
Displacement Fluid lb/gal: 8.3
BBL to Pit: 23.0
Fluid Ahead (bbls): 30.0
H2O Wash Up (bbls): 20.0

Spacer Ahead Makeup

30 BBL WATER W/ DYE IN 2ND 10

Casing ID

8.921

Casing Grade

J-55 only used

Calculated Results

cuft of Shoe 18.59 cuft
(Casing ID Squared) X (.005454) X (Shoe Joint ft)
cuft of Conductor 76.31 cuft
(Conductor Width Squared) - (Casing Size OD Squared) X (.005454) X (Conductor Length ft)
cuft of Casing 474.58 cuft
(Open Hole Squared) - (Casing Size Squared) X (.005454) X (Casing Depth - Conductor Length)
Total Slurry Volume 569.48 cuft
(cuft of Shoe) + (cuft of Conductor) + (cuft of Casing)
bbls of Slurry 101.42 bbls
(Total Slurry Volume) X (.1781)
Sacks Needed 382 sk
(Total Slurry Volume) ÷ (Cement Yield) X (% Excess Cement)
Mix Water 68.07 bbls
(Sacks Needed) X (Gallons Per Sack) ÷ 42

Displacement: 58.85 bbls
(Casing ID Squared) X (.0009714) X (Casing Depth + Landing Joint - Shoe Joint)

Pressure of cement in annulus

Hydrostatic Pressure: 569.50 PSI

Pressure of the fluids inside casing

Displacement: 314.41 psi

Shoe Joint: 31.59 psi

Total 346.00 psi

Differential Pressure: 223.51 psi

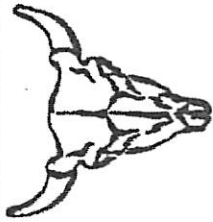
Collapse PSI: 2020.00 psi

Burst PSI: 3520.00 psi

Total Water Needed: 176.91 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.



Bison Oil Well Cementing
Single Cement Surface Pipe

INVOICE #
LOCATION
FOREMAN
Date

45118
Weld
JASON KELEHER
1/27/2015

Customer
Well Name

Noble Energy Inc.
RELIANCE E23-68-1HN

Treatment Report Page 2

DESCRIPTION OF JOB EVENTS

	2315 2230 2329	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		0	1201	0	0			0			0			0		
MIRU		10	1202	50	10			10			10			10		
CIRCULATE		20	1203	120	20			20			20			20		
Drop Plug		30	1208	170	30			30			30			30		
		40	1210	240	40			40			40			40		
		50	1213	250	50			50			50			50		
M & P		60	1216	260	60			60			60			60		
Time	Sacks	70	BUMP	740	70			70			70			70		
2336-2358	382	80			80			80			80			80		
		90			90			90			90			90		
		100			100			100			100			100		
		110			110			110			110			110		
% Excess	45%	120			120			120			120			120		
Mixed bbls	68.1	130			130			130			130			130		
Total Sacks	382	140			140			140			140			140		
bbl Returns	23	150			150			150			150			150		
Water Temp	41															

Notes:

PRESSURED TESTED TO 1500 PSI AT 2328, PUMPED 30 BBL WATER W/ DYE IN 2ND 10 AT 2329, MIXED AND PUMPED 382 SKS AT 14.2, 101.3 BBL
AT 2336, SHUT DOWN AT 2358, STARTED DISPLACEMENT AT 0001, PLUG LANDED AT 260 PSI AT 0016 AND PRESSURED UP TO 740 PSI, HELD FOR 1
MINUTE AND PRESSURED UP TO 1020 PSI TO PERFORM CASING TEST, HELD FOR 15 MINUTES AND THEN RELEASED AND CHECKED FLOATS, FLOATS
HELD, GOT .5 BBL BACK

Work Performed
X

X WSS
Title

X 1/26/15
Date