



**Bison Well Cementing
Single Cement Surface Pipe**

Date: 4/29/2015
 Invoice #: 80130
 API#: 05-123-40600
 Foreman: JASON KELEHER

Customer: Noble Energy Inc.
Well Name: HALEY LC27-735

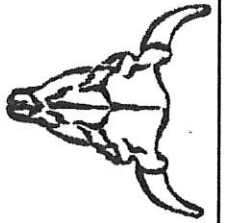
County: Weld
 State: Colorado
 Sec: 34
 Twp: 9N
 Range: 59W
 Consultant: JW
 Rig Name & Number: H&P 343
 Distance To Location: 67
 Units On Location: 4031-3107/ 4020-3212
 Time Requested: 1030
 Time Arrived On Location: 1030
 Time Left Location: 1500

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.) : 588	Cement Yield (cuft) : 1.49
Total Depth (ft) : 622	Gallons Per Sack: 7.48
Open Hole Diameter (in.) : 13.50	% Excess: 35%
Conductor Length (ft) : 100	Displacement Fluid lb/gal: 8.3
Conductor ID : 15.25	BBL to Pit: 14.0
Shoe Joint Length (ft) : 45	Fluid Ahead (bbls): 40.0
Landing Joint (ft) : 24	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 (Casing ID Squared) X (.005454) X (Shoe Joint ft)	Displacement: 43.83 bbls (Casing ID Squared) X (.0009714) X (Casing Depth + Landing Joint - Shoe Joint)
cuft of Conductor (Conductor Width Squared) - (Casing Size OD Squared) X (.005454) X (Conductor Length ft)	Hydrostatic Pressure: 433.94 PSI
cuft of Casing (Open Hole Squared) - (Casing Size Squared) X (.005454) X (Casing Depth - Conductor Length)	Pressure of the fluids inside casing
Total Slurry Volume (cuft of Shoe) + (cuft of Conductor) + (cuft of Casing)	Displacement: 234.10 psi
bbls of Slurry (Total Slurry Volume) X (.1781)	Shoe Joint: 33.43 psi
Sacks Needed (Total Slurry Volume) ÷ (Cement Yield) X (% Excess Cement)	Total: 267.53 psi
Mix Water (Sacks Needed) X (Gallons Per Sack) ÷ 42	Differential Pressure: 166.42 psi
	Collapse PSI: 2020.00 psi
	Burst PSI: 3520.00 psi
	Total Water Needed: 153.80 bbls

X
 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

Noble Energy Inc.
 HALEY LC27-735

INVOICE #
 LOCATION
 FOREMAN
 Date

80130
 Weld
 JASON KELEHER
 4/29/2015

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DESCRIPTION OF JOB EVENTS

Amount Pumped	Time/Date	Event	Description	Rate	BBLs	Pressure
% Excess 35%	1030	ARRIVE ON LOCATION	WELL SITE ASSESSMENT/ HAZARD HUNT			
Mixed bbls with water 50	1130	MIRU	SPOT EQUIPMENT			
Total Sacks 281	1220	JSA	REVIEW JOB/ HAZARDS/ EMERGENCIES			
bbl Returns 14	1254	Pressure Test	TEST LINES TO 1500			1500
Water Temp 66	1256	Spacer Ahead	40 BBL WATER/ DYE IN 2ND 10	5	40	90
	1305	Cement	14.2 PPG CEMENT (281 SKS)	6	74.5	150
Notes:	1319	Shutdown				
	1321	Drop Plug	PLUG PRELOADED			
	1321	Start Displacement	FRESH WATER			
	1334	Bump Plug	BUMP PLUG 360 PSI OVER	2.4	43.8	170
	1335	Pressure Test Casing	TEST CASING TO 1000 PSI FOR 15 MINUTES			530
	1350	Check Floats	FLOATS HELD/ .5 BBL BACK			1080
	1355	Rig Down	HOLD RIG DOWN JSA			1100
	1500	Leave Location	HOLD PRE JOURNEY MEETING			

X Customer Signature _____ X Title _____ X Date _____