Bison Oil Well Cementing
Single Cement Surface Pipe

Date: 8/7/2017
Invoice # 666177
API# 05-123-43573
Foreman: Nick Vigil

Customer: Anadarko Petroleum Corporation

Well Name: Norden 2N-14HZ

County: Weld
State: Colorado

Sec: 14
Twp: 1N
Range: 67W

Consultant: Brian
Rig Name & Number: Cartel 88
Distance To Location: 32 Miles
Units On Location: 4023/4044/4045
Time Requested: 15:00
Time Arrived On Location: 13:30
Time Left Location:

WELL DATA

Casing Size OD (in) :	_9.625
Casing Weight (lb) :	36.00
Casing Depth (ft.) :	1,860
Total Depth (ft) :	1869
Open Hole Diameter (in.) :	13.50
Conductor Length (ft) :	80
Conductor ID :	15.25
Shoe Joint Length (ft) :	46
Landing Joint (ft) :	10
Max Rate:	8
Max Pressure:	2000

Cement Data

Cement Name:	BFN III
Cement Density (lb/gal) :	14.2
Cement Yield (cuft) :	1.49
Gallons Per Sack:	7.48
% Excess:	5%
Displacement Fluid lb/gal:	8.3
BBL to Pit:	0.0
Fluid Ahead (bbls):	30.0
H20 Wash Up (bbls):	20.0

Spacer Ahead Makeup
Dye in second 10 bbl

Casing ID 8.921 Casing Grade J-55 only used

Calculated Results

cuft of Shoe 19.97 cuft
(Casing ID Squared) X (.005454) X (Shoe Joint ft)

cuft of Conductor 61.05 cuft
(Conductor Width Squared) -(Casing Size OD Squared) X (.005454) X (Conductor Length ft)

cuft of Casing 913.44 cuft
(Open Hole Squared)-(Casing Size Squared) X (.005454) X (Casing Depth - Conductor Length)

Total Slurry Volume 994.45 cuft
(cuft of Shoe) + (cuft of Conductor) + (cuft of Casing)

bbls of Slurry 177.11 bbls
(Total Slurry Volume) X (.1781)

Sacks Needed 667 sk
(Total Slurry Volume) ÷ (Cement Yield) X (% Excess Cement)

Mix Water 118.86 bbls
(Sacks Needed) X (Gallons Per Sack) ÷ 42

Displacement: 141.01 bbls
(Casing ID Squared) X (.0009714) X (Casing Depth + Landing Joint - Shoe Joint)

Pressure of cement in annulus

Hydrostatic Pressure: 1372.12 PSI

Pressure of the fluids inside casing

Displacement: 782.16 psi
Shoe Joint: 33.93 psi
Total 816.10 psi

Differential Pressure: 556.03 psi

Collapse PSI: 2020.00 psi
Burst PSI: 3520.00 psi

Total Water Needed: 309.87 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.

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Single Cement Surface Pipe

Customer	nadarko Petroleum Corporatio
Well Name	Norden 2N-14HZ

INVOICE #	666177
LOCATION	Weld
FOREMAN	Nick Vigil
Date	8/7/2017

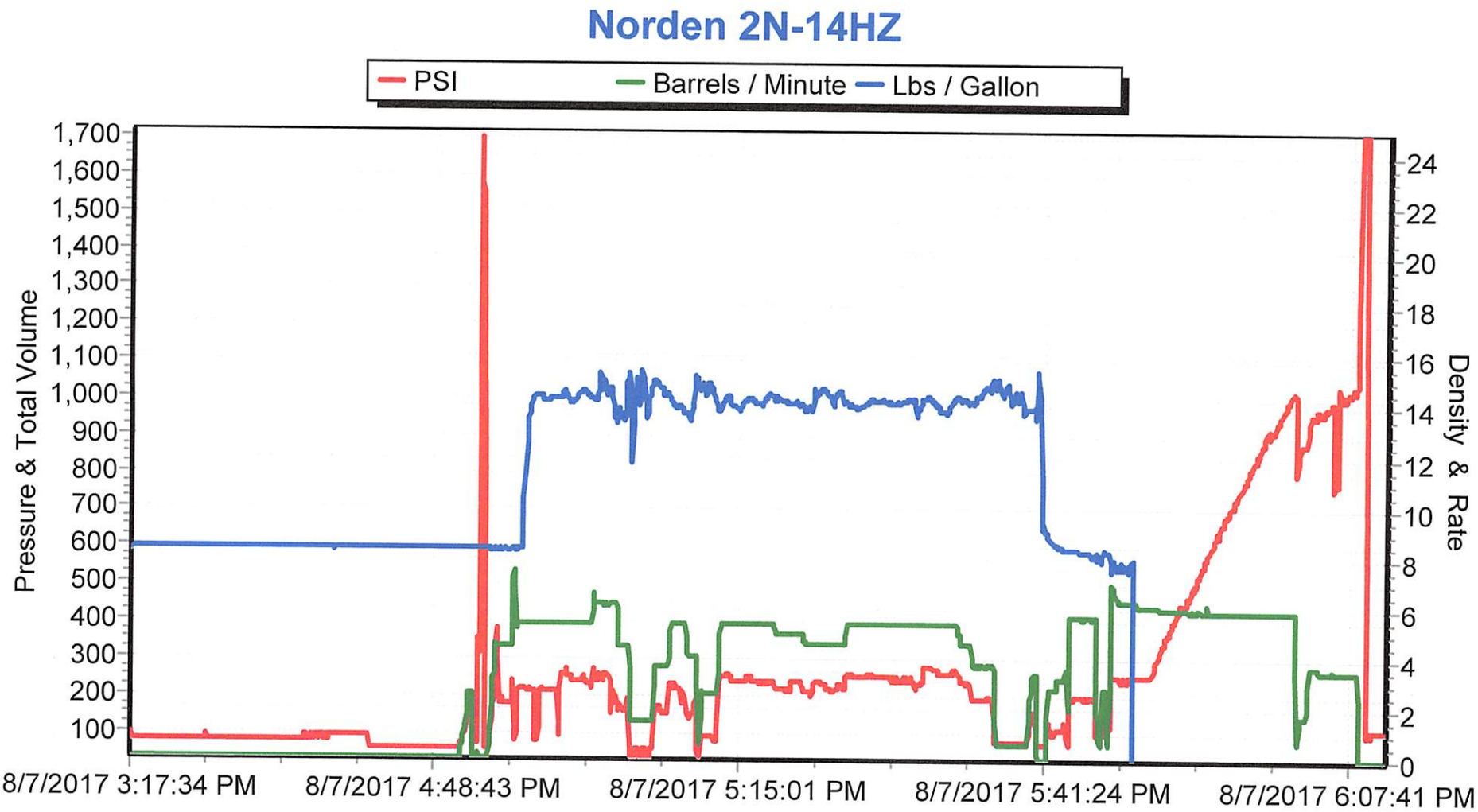
Treatment Report Page 2

DESCRIPTION OF JOB EVENTS

Amount Pumped		Time/Date	Event	Description	Rate	BBLs	Pressure
% Excess	5%	13:30	Arrive On Location	Rig was running casing.			
Mixed bbls	177	13:35	Well Site Assesment	Hazard hunt, Rig up safety meeting			
Total Sacks	667	13:40	Rig Up Equipment				
bbl Returned	18	16:20	JSA	Held Safety meeting with all personel involved in job.			
Water Temp	60	16:50	Pressure Test Lines	Pressure tested lines to 1500 psi.			
		16:55	Spacer Ahead	Fresh water with dye in second 10 bbl.	5.5	30	180
Notes:		16:58	Pump Cement	14.2 ppg Cement	5.5	177	260
		17:40	Shut Down				
		17:41	Drop Plug	Plug was pre loaded.			
		17:41	Pump Displacement	Fresh water	6	70	310
		18:07	Bump Plug	Bumped plug 520 psi over final lift. (1220 psi)	3.5	141	700
		18:08	Check Floats	Floats held Flowed back .5 bbl.			
		18:10	End Job	Rig down safety meeting.			
		18:15	Rig Down Equipment				
		18:30	Crew Left Location				

X _____ X _____ X 8-7-17

Work Preformed | Title | Date


Norden 2N-14HZ
PSI
Barrels / Minute
Lbs / Gallon
Pressure & Total Volume
Density & Rate
1,700
1,600
1,500
1,400
1,300
1,200
1,100
1,000
900
800
700
600
500
400
300
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24
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8/7/2017 6:07:41 PM