



Bison Oil Well Cementing Single Cement Surface Pipe

Date: 8/17/2018
Invoice #: 300171
API#: 05-123-47102
Foreman: JASON KELEHER

Customer: Anadarko Petroleum Corporation

Well Name: COWBOY 21-2HZ

County: Weld
State: Colorado
Sec: 21
Twp: 2N
Range: 67W
Consultant: BRYAN
Rig Name & Number: CARTEL 88
Distance To Location: 29
Units On Location: 1044-3103,4035-3213,4040-3209
Time Requested: 2130
Time Arrived On Location: 2000
Time Left Location: 100

WELL DATA

Casing Size OD (in) : 9.625
Casing Weight (lb) : 36.00
Casing Depth (ft.) : 1,870
Total Depth (ft) : 1880
Open Hole Diameter (in.) : 13.50
Conductor Length (ft) : 80
Conductor ID : 15.25
Shoe Joint Length (ft) : 43
Landing Joint (ft) : 5

Max Rate: 8
Max Pressure: 2000

Cement Data

Cement Name: BFN III
Cement Density (lb/gal) : 14.2
Cement Yield (cuft) : 1.48
Gallons Per Sack: 7.48
% Excess: 15%
Displacement Fluid lb/gal: 8.3
BBL to Pit: 14.0
Fluid Ahead (bbls): 30.0
H2O Wash Up (bbls): 10.0

Spacer Ahead Makeup
30 BBL WATER, DYE IN 2ND 10

Casing ID

8.921

Casing Grade

J-55 only used

Calculated Results

cuft of Shoe 18.51 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 1006.05 cuft
(Open Hole Squared)-(Casing Size Squared) X (.005454) X (Casing Depth - Conductor Length)
Total Slurry Volume 1085.61 cuft
(cuft of Shoe) + (cuft of Conductor) + (cuft of Casing)
bbls of Slurry 193.35 bbls
(Total Slurry Volume) X (.1781)
Sacks Needed 734 sk
(Total Slurry Volume) ÷ (Cement Yield) X (% Excess Cement)
Mix Water 130.64 bbls
(Sacks Needed) X (Gallons Per Sack) ÷ 42

Displacement: 141.66 bbls

(Casing ID Squared) X (.0009714) X (Casing Depth + Landing Joint - Shoe Joint)

Pressure of cement in annulus

Hydrostatic Pressure: 1379.50 PSI

Pressure of the fluids inside casing

Displacement: 787.92 psi

Shoe Joint: 31.46 psi

Total 819.38 psi

Differential Pressure: 560.12 psi

Collapse PSI: 2020.00 psi

Burst PSI: 3520.00 psi

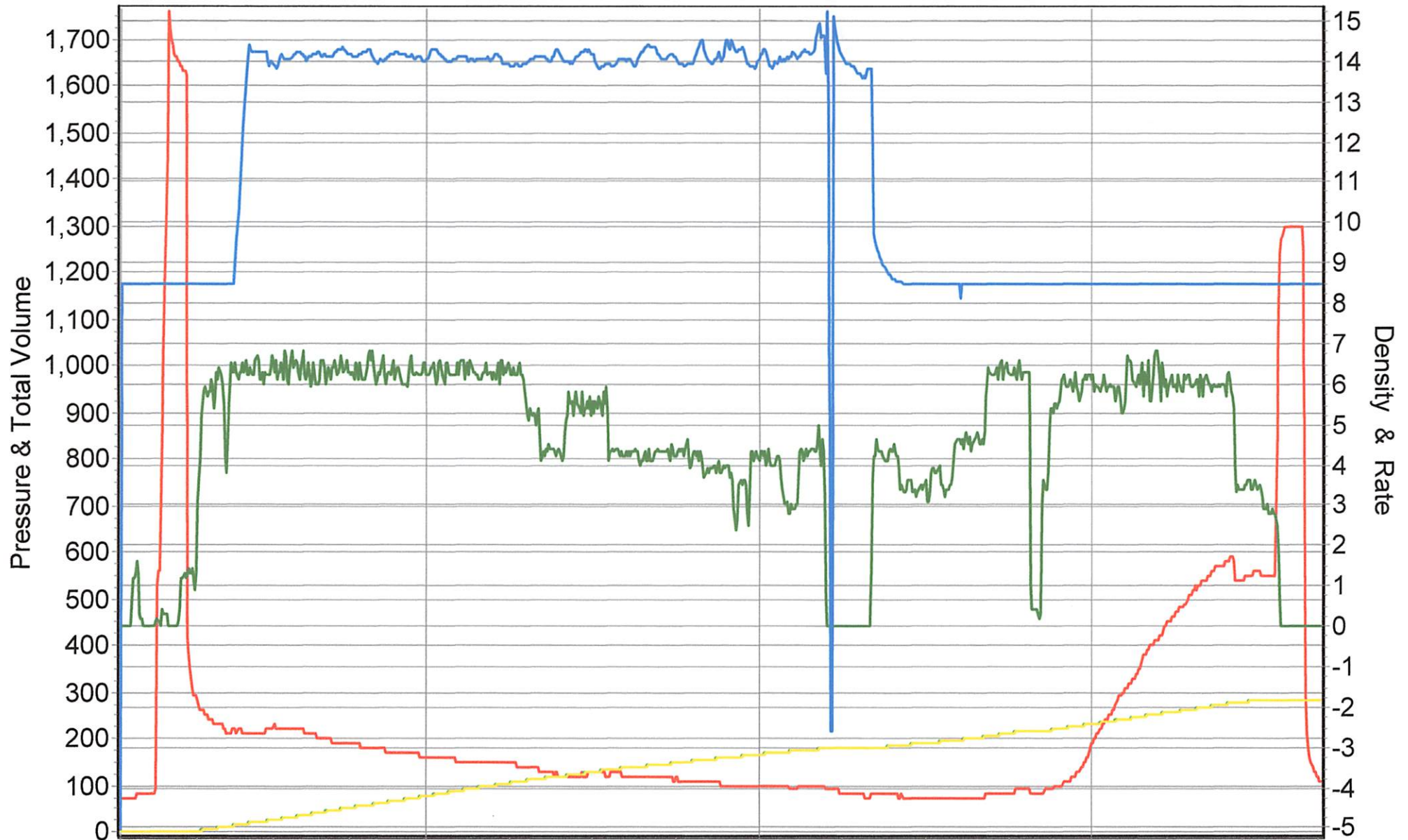
Total Water Needed: 312.29 bbls

X *Bryan Biv*
Authorization To Proceed

Bison Oil Well Cementing Single Cement Surface Pipe

COWBOY 21-2HZ SURFACE

— PSI — Barrels / Minute — Barrels — Lbs / Gallon — Stage Volume



8/16/2018 10:28:54 PM 8/16/2018 11:35:17 PM 8/16/2018 11:55:59 PM 8/17/2018 12:17:04 AM