

COLUMBINE LOGGING

Scale: 5" / 100'
Measured Depth Log

Well Name Piceance Federal 28-01M

Location SW NW SEC 28 T9S R93W 1545 FNL 1200 FWL

State Colorado

County Mesa

Country United States

Rig Number Patterson 306

API Number 05-077-10244-00

Field Vega

Region Piceance Basin

Drilling Completed 9/4/2015

Spud Date 9/1/2015

Surface Coordinates N 39.251103 W 107.779553

Ground Elevation 7556'

K.B. Elevation 7578'

Logged Interval 1625' **To** 8302'

Total Depth 8302'

Formation Rollins

Operator

Company Piceance Energy, LLC.

Address 1512 Larimer Street, Suite 1000
Denver, CO 80202

Geologist

Name Andy McCarthy

Company Laramie Energy II, LLC.

Address 1512 Larimer Street, Suite 1000
Denver, CO 80202

Other

Ben Katka Wellsite Geologist

Columbine Logging Computer 14A

Bloodhound Unit 273

Rock Types

UNKNOWN

ANHYDRITE

BENTONITE

BRECCIA

CEMENT

CHALK

CHERT

CLAY CHOKE SAND

CLAYSTONE

COAL

CONGLOMERATE

DOLOMITE

DOLOMITIC LIMESTONE

GRANITE

GYPHUM

IGNEOUS

LIMESTONE

SIDERITE or LIMONITE

MARLSTONE

METAMORPHIC

NO SAMPLE

SALT

SALT- PEPPER SAND

SANDSTONE

SHALE

SHALE COLORED

SHALE GRAY

SHALY SANDSTONE

SHALY SILTSTONE

SILTSTONE

SILTY SHALE

TILL

TUFF

WELDED TUFF

Accessories

Fossils

ALGAE
 AMPHIPORA
 BELEMNITE
 BIOCLASTIC
 BRACHIOIPOD
 BRYOZOA
 CEPHALOPOD
 CORAL
 CRINOID
 ECHINOID
 FISH
 FORAMINIFERA
 FOSSIL

GASTROPOD
 INOCERAMUS
 OOLITE
 OSTRACOD
 PELECYPOD
 PELLET
 PISOLITE
 PLANT REMAINS
 PLANT SPORES
 SCAPHOPOD
 STROMATOPOROID

Minerals

ANHYDRITIC
 ARGILLACEOUS

ARGILLITE GRAIN
 BENTONITE
 BITUMENOUS SUBSTANCE
 BRECCIA FRAGMENTS
 CALCAREOUS
 CARBONACEOUS FLAKES
 CHTDK
 CHTLT
 COAL - THIN BEDS
 DOLOMITIC
 FELDSPAR
 FERRUGINOUS PELLET
 FERRUGINOUS
 GLAUCONITE
 GYPSIFEROUS

HEAVY MINERAL
 KAOLIN
 MARCASITE
 MARLSTONE
 MICACEOUS
 MINERAL CRYSTALS
 NODULES
 PHOSPHATE PELLETS
 PYRITE
 SALT CAST
 SANDY
 SIDERITE
 SILICEOUS
 SILTY
 TUFFACEOUS

Stringer

ANHYDRITE STRINGER
 BENTONITE STRINGER
 COAL STRINGER
 DOLOMITE STRINGER
 GYPSUM STRINGER
 LIMESTONE STRINGER
 MARLSTONE (CALC) STRG
 MARLSTONE (DOL) STRG
 SANDSTONE STRINGER
 SHALE STRINGER
 SILTSTONE STRINGER

Other Symbols

Oil Show

DEAD
 EVEN
 QUESTIONABLE
 SPOTTED STAINING

Porosity

E EARTHY
 F FENESTRAL
 F FRACTURE
 X INTERCRYSTALLINE
 O INTEROOLITIC
 J MOLDIC

O ORGANIC
 P PINPOINT
 V VUGGY

Engineering

BIT CHANGE
 CONNECTION (LEFT)
 CONNECTION (RIGHT)
 CONNECTION GAS
 TRIP GAS
 DTS DOWN TIME GAS
 CORE - LOST
 CORE - RECOVERED
 DST INTERVAL

FAULT
 FORMATION TOP
 GAS SHOW
 OIL SHOW
 MN DEPTH
 MN DEPTH (RIGHT)
 NORMAL FAULT
 OVERTURNED STRATA
 REVERSE FAULT
 CASING
 SIDEWALL CORE (LEFT)
 SIDEWALL CORE (RIGHT)
 SLIDE
 SURVEY

DST DRILL STEM TEST
 WIRELINE TESTED - LEFT
 WIRELINE TESTED - RT

Rounding

A ANGULAR
 R ROUNDED
 S SUBANG
 SUBRND

Textures

BS BOUNDSTONE
 C CHALKY
 CX CRYPTOXLN

E EARTHY
 FX FINELYXLN
 GS GRAINSTONE
 L LITHOGRAPHIC
 MX MICROXLN
 MS MUDSTONE
 PS PACKSTONE
 WS WACKESTONE

Sorting

M MODERATE
 P POOR
 W WELL

Zone Color Coding

Oil
 Note
 Error

Condensate
 Core
 Water

Gas
 Pressure
 Seal

ROP
ROP

Slide/Rotate

Depth Labels

Total Gas & Chromatograph

GAS
C1
C2
C3
C4

One-Man Strip Logging
Rigged Up 9/2/2015
Began Logging @ 1626' @
13:29 hrs MST 9/2/2015

WOB: 5.1 klbs
ROP: 406.8 ft/hr
SPP: 946 - 949 psi
RPM: 37 - 38
Strokes: 87 spm

0.94

ROP (min/ft)

WOB: 16.3 - 22.5 klbs
ROP: 186.9 ft/hr
SPP: 1303 - 1325 psi
RPM: 0
Strokes: 98 spm

Bit #: 2
Type: PDC
Size: 7.88
Depth In: 1,625'
Depth Out: 8,302'
Hours: 40 hrs
Avg Ft/Hr: 166.93 ' /hr
Jets: 5x12
S/N: 12708751

MD: 1,634'
TVD: 1,571.84'
Inclination: 22.72°
Azimuth: 41.28°

MD: 1,697'
TVD: 1,629.9'
Inclination: 22.94°
Azimuth: 42.34°

GAS (units)
C1-C4 (units)

MW 8.8 VIS 31

MD: 1,791'
TVD: 1,716.22'
Inclination: 23.73°
Azimuth: 47.7°























































