



Empirica

Scale: 5" / 100'
Measured Depth Log

Well Name DT Martinez_3-5-6

Location Sec.5-T05N-R65W

State Colorado

Country USA

API Number 05-123 37255 00

Region DJ Basin

Spud Date 2/21/2015

County Weld

Rig Number Savanna 802

Field Wattenberg

Drilling Completed TBD

Surface Coordinates SHL: 462°FNL, 1684°FEL, Sec.05

Lat: 40.43522

Long: 104.68373

Bottom Hole Coordinates BHL: 2981°FNL, 460°FWL, Sec. 06

Ground Elevation 4,640'

K.B. Elevation 4,655'

Logged Interval 5,000' **To** 7,987'

Total Depth TBD

Formation Niobrara B Chalk

Type of Drilling Fluid Water Based

Operator

Company Extraction Oil & Gas

Address 1888 Sherman St., Suite 200
Denver, CO 80203

Geologist

Name Jared Rouse

Company Extraction Oil & Gas

Address 1888 Sherman St., Suite 200
Denver, CO 80203



Other

Equipment ML-461

Comments Start: 2-23-15
Standby: TBD
TD: TBD

Services Provided

2-man Logging
On Site Geosteering
Dominic Pitre / Nicholas W

Logger Names

Address Empirica, LLC.
6360 W Sam Houston Pkw
Suite 100
Houston, TX 77041

Zone Color Coding

Oil

Note

Error

Condensate

Core

Water

Gas

Pressure

Seal

Rock Types

UNKNOWN

ANHYDRITE

GYPSUM

SALT

SIDERITE or LIMONITE

LIMESTONE

DOLOMITE

CHEERT

COAL

MARLSTONE

CLAYSTONE

SHALE

SHALE GRAY

SHALE COLORED

SILTSTONE

SANDSTONE

CONGLOMERATE

BRECCIA

TILL

BENTONITE

TUFF

IGNEOUS

METAMORPHIC

CEMENT

Accessories

F FOSSIL

GASTROPD

OOLITE

OSTRACOD

PELECYPOD

PELLET

PISOLITE

PLANT REMAINS

CEPHALOPOD

CORAL

CRINOID

ECHINOID

FISH

FORAMINIFERA

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

MARLSTONE

MINERAL CRYSTALS

NODULES

PHOSPHATE PELLETS

PHYRITE

SALT CAST

SANDY

SILICEOUS

SILT

TUFFACEOUS

Stringer

ANHYDRITE STRINGER

BENTONITE STRINGER

COAL STRINGER

DOLOMITE STRINGER

GYPSUM STRINGER

LIMESTONE STRINGER

MARLSTONE (CALC) STRG

MARLSTONE (DOU) STRG

SANDSTONE STRINGER

SHALE STRINGER

SILTSTONE STRINGER

Other Symbols

ORGANIC

PINPOINT

DEAD

EVEN

QUESTIONABLE

SPOTTED STAINING

FOR

GAS SHOW

MINDEPTH

NORMAL

OIL SHOW

OVERTURE

Engineering

BIT

CASING

CONNECTION (LEFT)

CONNECTION (RIGHT)

CONNECTION GAS

CORE - LOST

INTERCRYSTALLINE

INTEROOOLITIC

MOLDIC

REVERSE

SIDEWALL

SIDEWALL

SLIDE

SURVEY

TRIP GA

WIREFRAME

WIREFRAME

FAULT

WIRELINE

Porosity

E EARTHY

F FENESTRAL

F FRACTURE

X INTERCRYSTALLINE

INTEROOOLITIC

MOLDIC

CONNECTION (LEFT)

CONNECTION (RIGHT)

CONNECTION GAS

CORE - LOST

INTERCRYSTALLINE

INTEROOOLITIC

MOLDIC

WIRELINE

mbols

FORMATION TOP L LITHOGRAPHIC

Rounding

W MX MICROXLN

MIN DEPTH A ANGULAR MS MUDSTONE

FAULT R ROUNDED PS PACKSTONE

V B SUBANG MS WACKESTONE

MINED STRATA P SUBRND

Sorting

FAULT

Textures

CORE (LEFT) M MODERATE

CORE (RIGHT) BS BOUNDSTONE P POOR

C CHALKY W WELL

CX CRYPTOXLN

S E EARTHY

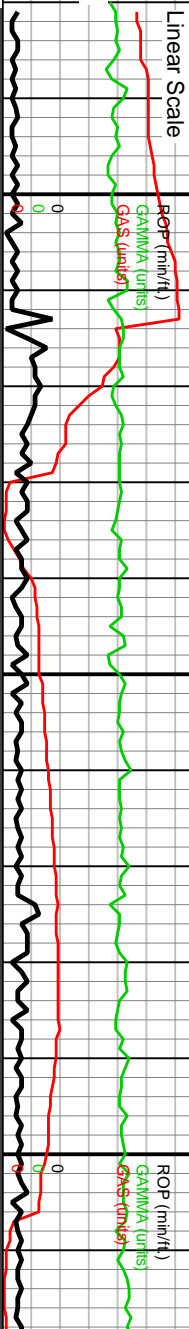
TESTED - LEFT FX FINELYXLN

TESTED - RT GS GRAINSTONE

ROP
GAMMA
GAS

Extraction O&G
Weld County, Colorado
Spud Date: 2-20-15
Surface Casing @ 1,088'
Intermediate Casing @ x,xxx'
2-man Logging / Geosteering Began: 2-24-15

DT Martinez 3-5-6



Slide/Rotate

Depth Labels

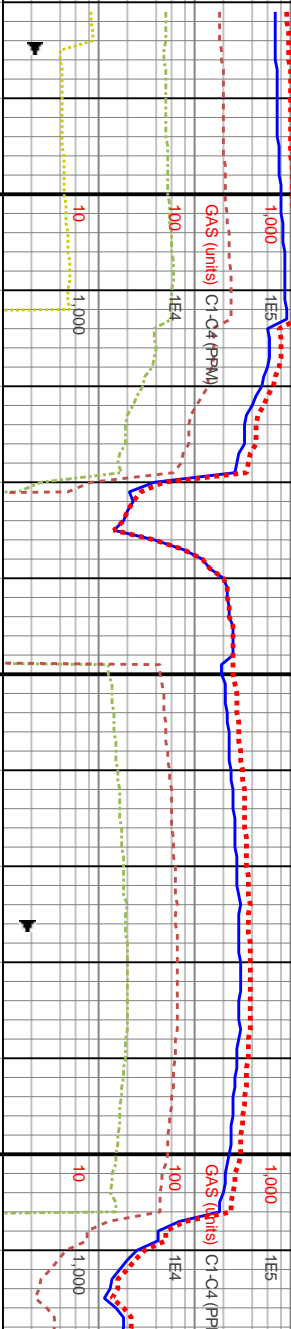
100 units = 1% methane

Logarithmic Scale 1- 10,000units

Total Gas & Chromatograph

GAS
C1
C2
C3
C4

Depths Correspond to Driller's Pipe Tally



WOB: 4.5Klbs
Rotary: 50RPM
Strokes: 187SPM
Pump Rate: 620GPM

MD: 7,013'
TVD: 6,411.84'
Inclination: 24.03°
Azimuth: 197.22°
VS: 1,410.47'

Well Bore
TVD

TVD (ft)

6980-7040 SS: pred med gy- dk gy, tr bf- ofwht- gy, occ lt gy, tr clus w trnsl grs, pred blk- sb blk, occ sb ply, pred vf- f gmd ss, tr u f gmd ss clus, frm- hd cons clus, pred sb ang- sb rd grs, mod- p srt, ip arg- silty, sil- cal cnt, tr pyr, occ intbd arg slst, abnt lith frags, occ f lam, tr lt gn cut

7040-7100 SS: pred med gy- dk gy, tr bf- ofwht- gy, occ lt gy, tr clus w trnsl grs, pred blk- sb blk, occ sb ply, pred vf- f gmd ss, tr u f gmd ss clus, frm- hd cons clus, pred sb ang- sb rd grs, mod- p srt, ip arg- silty, sil- cal cnt, tr pyr, occ intbd arg slst, abnt lith frags, occ f lam, tr lt gn cut

7100-7160 SS: occ lt gy, tr clus w trnsl grs, pred blk- sb blk, occ sb ply, pred vf- f gmd ss, tr u f gmd ss clus, pred sb ang- sb rd grs, mod- p srt, ip arg- silty, sil- cal cnt, tr pyr, occ intbd arg slst, abnt lith frags, occ f lam, tr lt gn cut

MD: 7,107'
TVD: 6,495.14'
Inclination: 31.85°
Azimuth: 224.06°
VS: 1,441.81'

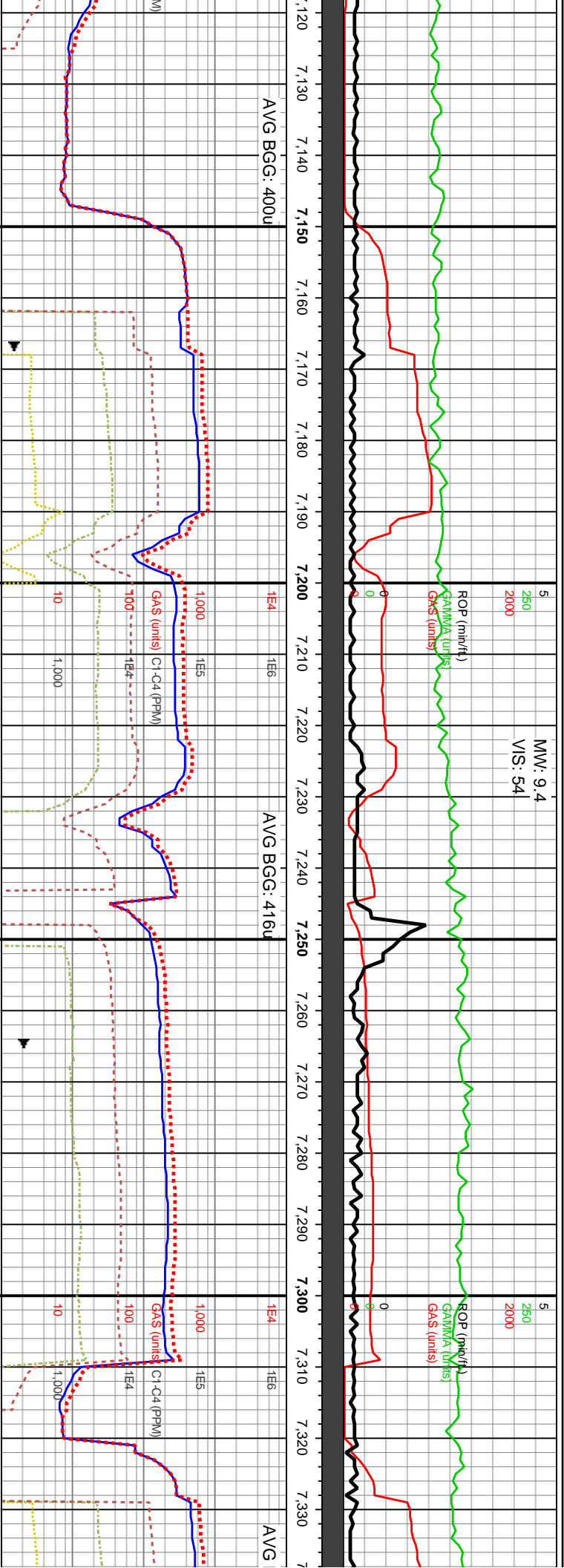
TVD (ft)

Oil Show

100 units = 1% methane

Images





MW: 9.4
VIS: 54

WOB: 2Klbs
Rotary: 50RPM
Strokes: 187SPM
Pump Rate: 620GPM

MD: 7,201'
TVD: 6,570.62'
Inclination: 41.35°
Azimuth: 236.57°
VS: 1,492.48 (ft)

7220-7280 SLTY SS: pred med gy- dk gy, r lt gy, sme gy brn, tr clus w trnsi grs, pred sb blkly- sb plty, pred vf ss, sme f grnd ss clus, frm- hd cons clus, pred sb ang- sb rd grs, mod- p srt, ip arg- silty, sil- cal cnt, tr pyr, abnt intbd arg silst- sh, abnt lith frags, sme f lam, fr lt gn mky cut

MD: 7,296'
TVD: 6,641.39'
Inclination: 42.4°
Azimuth: 242.82°
VS: 1,553.41'

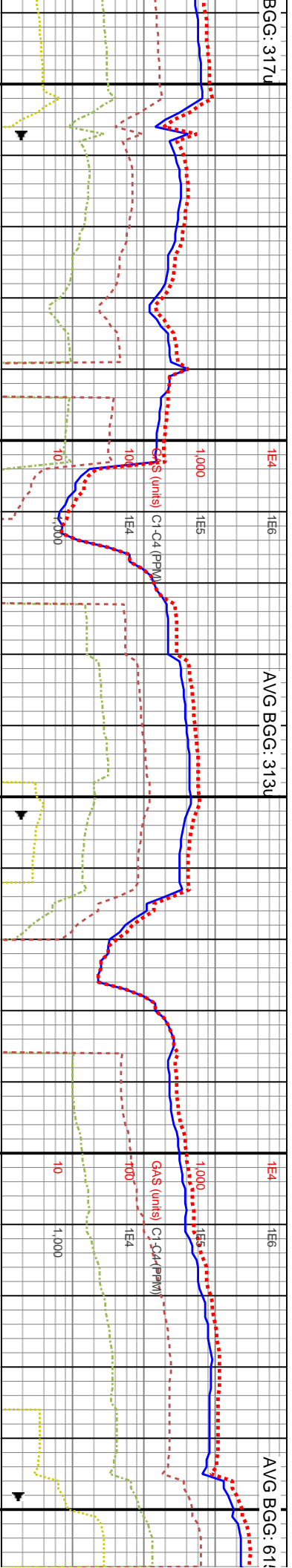
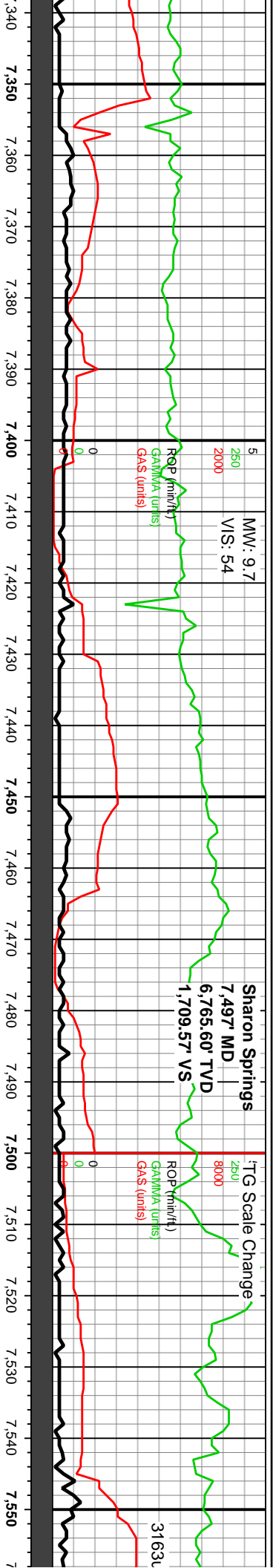
7280-7340 SLTY SS: pred med gy- dk gy, r lt gy, sme gy brn, tr clus w trnsi grs, pred sb blkly- sb plty, pred vf ss, sme f grnd ss clus, frm- hd cons clus, pred sb ang- sb rd grs, mod- p srt, ip arg- silty, sil- cal cnt, tr pyr, abnt intbd arg silst- sh, abn lith frags, sme f lam, fr lt gn mky cut

pred med gy- dk gy, tr bf- ofwht- gy, w trnsi grs, pred blkly- sb blkly, occ sb grnd ss, tr u f grnd ss clus, frm- hd cons ang- sb rd grs, mod- p srt, ip arg- silty, pyr, occ intbd arg silst, abnt lith frags, in cut

7160-7220 SLTY SS: pred med gy- dk gy, r lt gy, sme gy brn, tr clus w trnsi grs, pred sb blkly- sb plty, pred vf ss, sme f grnd ss clus, frm- hd cons clus, pred sb ang- sb rd grs, mod- p srt, ip arg- silty, sil- cal cnt, tr pyr, abnt intbd arg silst, abnt lith frags, sme f lam, fr lt gn mky cut

7000





7340-7400 70% SLTST 30% SH: med gy- gy, sme dk gy- blk, pred sl frm- sl sft, split- pty, ip blk, pred sl sily sh w sme ss intbds, mod- p srt, pred v arg- sily, tr cal, tr pyr, fr lt gn mky cut, o str

7400-7460 70% SLTST 30% SH: med gy- gy, sme dk gy- blk, pred sl frm- sl sft, split- pty, ip blk, pred sl sily sh w sme ss intbds, mod- p srt, pred v arg- sily, tr cal, tr pyr, fr lt gn mky cut, o str

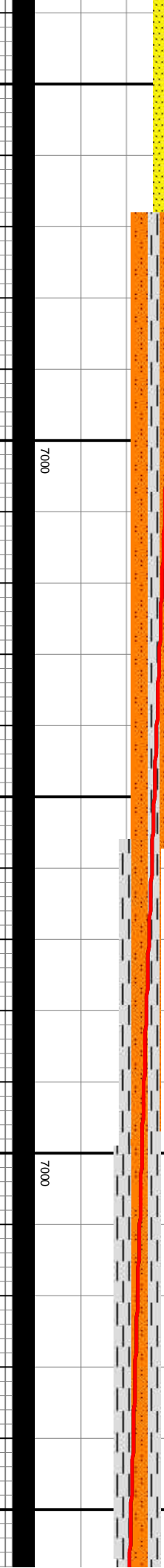
7460-7520 80% SH 20% SLTST: med- dk gy, sme blk, pred sl frm- sl sft, split- pty, ip sb blk, pred sl sily sh, tr chky- mrlly intbds, mod srt, pred v arg- sily, tr cal, tr pyr, fr lt gn mky cut, g o str

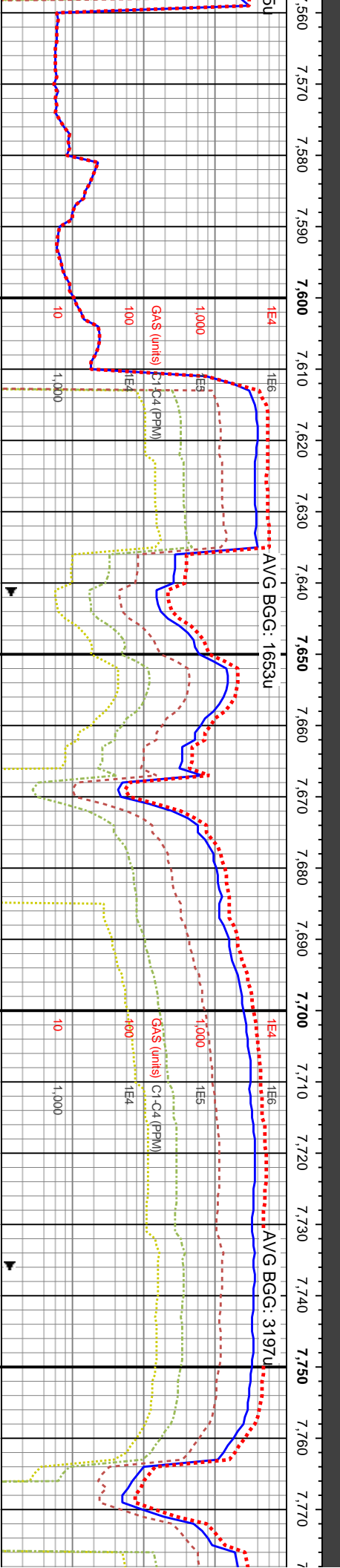
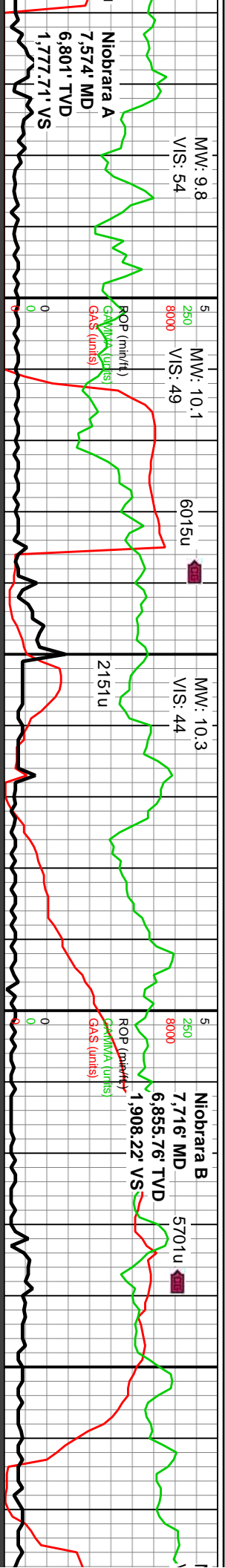
7520-7580 80% SH 20% SLTST: n blk, pred sl frm- sl sft, split- pty, ip s sh, tr chky- mrlly intbds, mod srt, pr mod calc, tr chk, tr pyr, fr lt gn mky

WOB: 47Klbs
Rotary: 0RPM
Strokes: 185SPM
Pump Rate: 610GPM

MD: 7,390'
TVD: 6,705.94'
Inclination: 50.94°
Azimuth: 253.75°
VS: 1,621.03'

MD: 7,484'
TVD: 6,759.17'
Inclination: 60.04°
Azimuth: 260.19°
VS: 1,698.31'





7580-7640 70% CHK: pred gy-dk gy, occ lt gy-tr off wh c chk, frm-v frm, sb blkly-sb pty mod fis ctgs, ang ip, com silty, sme pyr, pred v arg ls, incrg amt chk, mod-v calc, 30% MRLST: dk gy-dk gy brn, occ brn, frm-v frm, com tn-brn mot dk gy sh, quick HCL rxn, mod calc, no cut, 7-8% yel org min flr

7640-7700 70% MRLST: dk gy brn-brn-gy-dk gy, frm-v frm, com tn-brn mot dk gy sh, quick brn HCL rxn, mod calc, 30% CHK: pred gy-dk gy, v arg LS w/ occ u f-c chk incl, sb blkly-sb pty mod fis ctgs, frm-v frm, com silty, occ vf-f pyr, v calc, strng bri yel-gn cut, 7-8% min flr ctgs

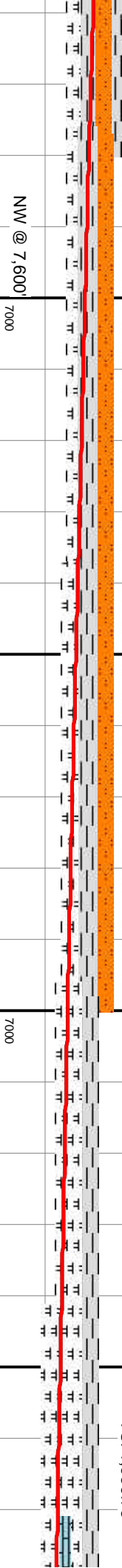
7700-7760 75% MRLST: dk gy brn-brn-gy-dk gy, occ tn-brn mot & lam, mod hi fis frm-v frm dk gy sh, sm tex, quick brn drty HCL rxn, mod calc, 25% CHK: pred gy-dk gy, occ lt gy, frm-v frm sb blkly-sb pty mod fis ctgs, com silty v arg LS w/ occ u f-c chk incl, occ f pyr, v calc, strng bri yel-gn cut, 7% org min flr

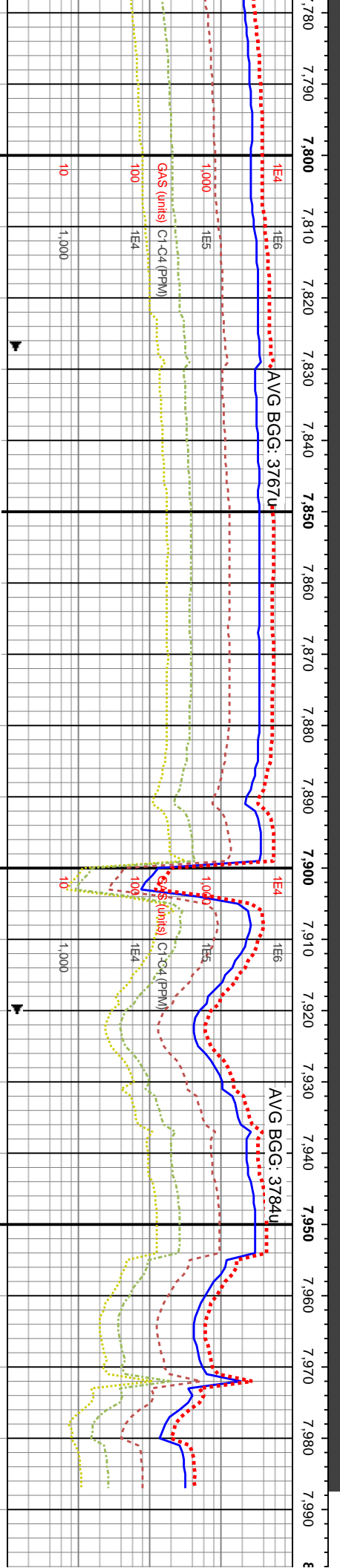
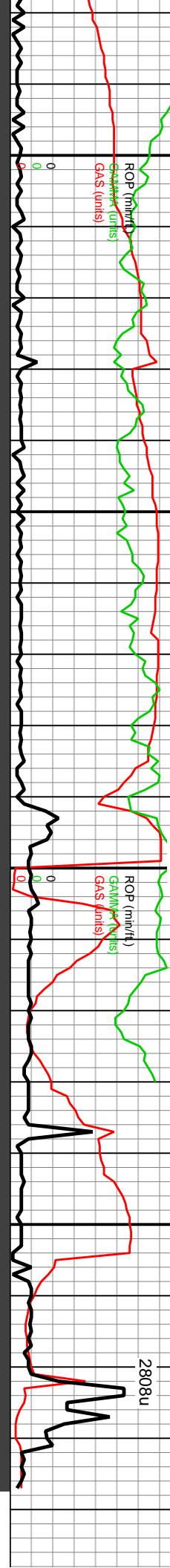
7760-7820 50% mot, occ lt gy, tr ctgs, sm-silty tex HCL rxn, 50% M tn-brn mot & lam tex, quick brn dr org min flr

MD: 7,579'
TVD: 6,803.15'
Inclination: 64.79°
Azimuth: 260.21°
VS: 1,782.22'
WOB: 8klbs
Rotary: 40RPM
Strokes: 185SPM
Pump Rate: 609GPM

MD: 7,673'
TVD: 6,840.73'
Inclination: 68.07°
Azimuth: 260.34°
VS: 1,868.08'

MD: 7,767'
TVD: 6,870.84'
Inclination: 74.54°
Azimuth: 260.62°
VS: 1,956.75'





CHK: pred gy-dk gy-brn, com brn
c off wh chk, frm-v frm, sb blk-sb pty
v arg LS, tr vt-f pyr incl ip, v calc, cin
RLST: dk gy brn-brn-gy-dk gy, occ
gy, mod hi fis frm-v frm dk gy sh, sm
gy HCL rxn, mod calc, mky cut, 4%

7820-7880 70% CHK: pred gy brn-dk gy, occ gy,
com brn mot, tr f pyr clus, tr c off wh chk, frm-v frm,
sb blk-sb pty cigs, f lam ip, sm-sily tex, v arg LS, v
calc, cin HCL rxn, 30% MRLST: dk gy brn-brn-gy-dk
gy, occ in-brn mot & lam, frm-v frm mod fis dk gy sh,
sm tex, tr gt tex, quick brn dty HCL rxn, mod calc,
mky cut, 2% org min flr

7880-7940 75% CHK: gy brn-dk gy, occ gy, mot ip,
frm-v frm, sb blk-sb pty cigs, thin cal vns, f lam ip,
sm-sily tex, v arg LS, v calc, cin HCL rxn, 25% MRLST:
dk gy brn-brn-gy-dk gy, occ in-brn mot & lam, frm-v frm
mod fis dk gy sh, sm tex, tr gt tex, quick brn dty HCL
rxn, mod calc, mky cut, 1% f org min flr

7940-7987 75% CHK: gy brn-dk
gy, occ gy, mot ip, frm-v frm, sb
blk-sb pty cigs, thin cal vns, f lam
ip, sm-sily tex, v arg LS, v calc, cin
HCL rxn, 25% MRLST: dk gy
brn-brn-gy-dk gy, occ in-brn mot &
lam, frm-v frm mod fis dk gy sh,
sm tex, tr gt tex, quick brn dty
HCL rxn, mod calc, mky cut, 1% f
org min flr

OB: 20Klbs Probes: 40RPM Jump Rate: 625GPM	TVD (ft)	MD: 7,861' TVD: 6,893.8' Inclination: 77.19° Azimuth: 260.98° VS: 2,047.52'
	TVD (ft)	MD: 7,922' TVD: 6,904.29' Inclination: 83.01° Azimuth: 265.84° VS: 2,107.01'

