



Empirica

Scale: 5" / 100'
Measured Depth Log

Well Name Fairview 8

Location Sec 5, T2N, R68W

State CO

Country USA

API Number 05-123-41525

County Weld

Rig Number Savannah 802

Field Wattenberg

Geographic Region DJ Basin

Drilling Completed 1/2/2016

Spud Date 12/9/2015

Surface Coordinates Lat: 40° 9' 56.7576" N

Long: 105° 2' 7.3248" W

Bottom Hole Coordinates Lat: 40° 9' 54.0407" N

Long: 105° 0' 35.1682" W

Ground Elevation 4,948'

K.B. Elevation 4,963'

Logged Interval 5,000' To 14,420'

Total Depth 14,420'

Formation Niobara B

Type of Drilling Fluid Invert

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-197


Comments Start: 12-31-15
End: 1-2-16


Services Provided 2-Man Logging


Logger Names Brian Ferwerda / Mark G


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


Zone Color Coding


 Oil


 Note


 Error


 Condensate

 Core

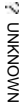
 Water

 Gas

 Pressure


 Seal


Rock Types


 UNKNOWN


 ANHYDRITE

 GYPSUM

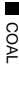
 SALT

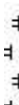
 CHALK

 LIMESTONE

 DOLOMITE


 CHERT

 COAL

 MARLSTONE


 CLAYSTONE


 SHALE

 SHALE GRAY

 SHALE COLORED


 SILTSTONE


 SANDSTONE

 CONGLOMERATE


 BRECCIA

 TILL

 BENTONITE


 TUFF


 IGNEOUS


 METAMORPHIC


 CEMENT


Accessories


 F FOSSIL


 GASTROPOD


 ALGAE


 AMPHIPORA


 BELEMNITE


 BIOCLASTIC


 BRACHIOPOD


 BRYOZOA


 CEPHALOPOD


 CORAL


 CRINOID


 ECHINOID


 FISH


 FORAMINIFERA


 ARGILLACEOUS


 ARGILLITE GRAIN


 BENTONITE


 BITUMENOUS SUBSTANCE


 BRECCIA FRAGMENTS


 CALCAREOUS


 CARBONACEOUS FLAKES


 CHERT


 COAL - THIN BEDS


 DOLOMITIC


 FELDSPAR


 FERRUGINOUS PELLET


 FERRUGINOUS


 GLAUCONITE


 GYPSIFEROUS


 HEAVY MINERAL


 KAOLIN


 MARLSTONE


 MINERAL CRYSTALS


 NODULES


 PHOSPHATE PELLET


 PYRITE


 SALT CAST


 SANDY


 SILICEOUS


 SILTY


 TUFFACEOUS


 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 Syn


 ORGANIC


 PINPOINT


 DEAD


 VUGGY


 EVEN


 NORMAL F


 QUESTIONABLE

 OIL SHOW

 SPOTTED STAINING

 BIT

 OVERTURF

 REVERSE

Engineering

CASING

REVERSE

CONNECTION (LEFT)

SIDEWALL

CONNECTION (RIGHT)

SIDEWALL

CONNECTION GAS

SLIDE

CORE - LOST

SURVEY

INTERCRYSTALLINE

TRIP GAS

DST INTERVAL

WIRELINE

FAULT

WIRELINE

Oil Show

Porosity

E EARTHY

F FENESTRAL

F FRACTURE

X INTERCRYSTALLINE

Φ INTEROOLITIC

M MOLDIC

mbols

ATION TOP L LITHOGRAPHIC

Rounding

MX MICROXLN

A ANGULAR **MS** MUDSTONE

R ROUNDED **PS** PACKSTONE

S SUBANG **WS** WAKESTONE

F SUBRND

Sorting

Textures

M MODERATE

B BOUNDSTONE **P** POOR

C CHALKY **W** WELL

CX CRYPTOXLN

E EARTHY

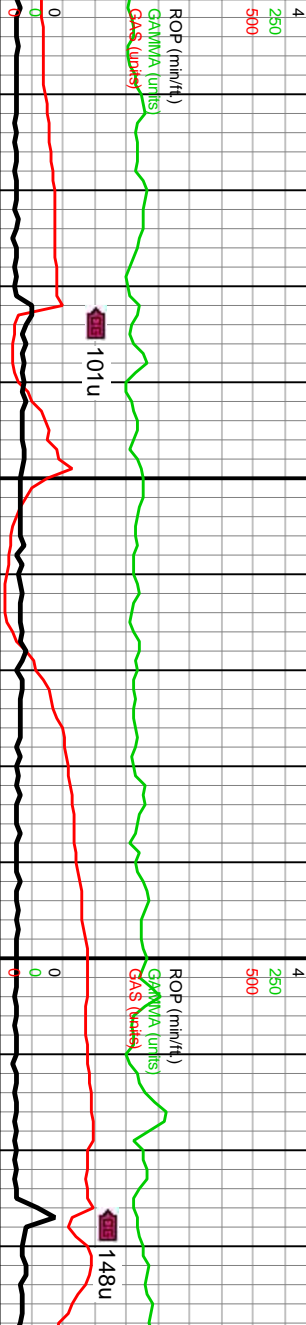
FX FINELYXLN

GS GRAINSTONE

ROP
—
GAMMA
—
GAS
—

Extraction OG
Fairview 8
Weld County, CO
Spud Date: 12-09-15
Surface Casing @ 1,547'
2-man logging began: 12-31-15
1% Methane = 100 Units
Depths Correspond to Driller's Pipe Tally

Linear Scale



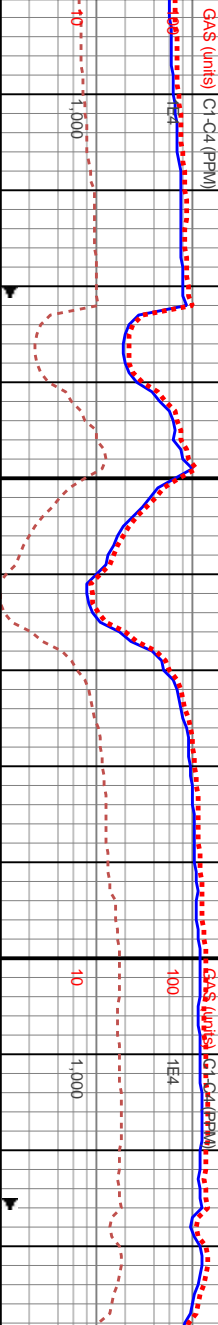
Slide/Rotate

Depth Labels



Total Gas & Chromatograph

GAS
C1
C2
C3
C4



Logarithmic Scale

Bit #: 2
Type: E516-B34-Z
Size: 7.88
Depth In: 1,547'
Depth Out: 9,520'
Hours: 18.2 hrs
Avg Ft/Hr: 438.08 '/h
Jets: 7x10
S/N: A196170

Well Bore
—
TVD

TVD (ft)

TVD (ft)

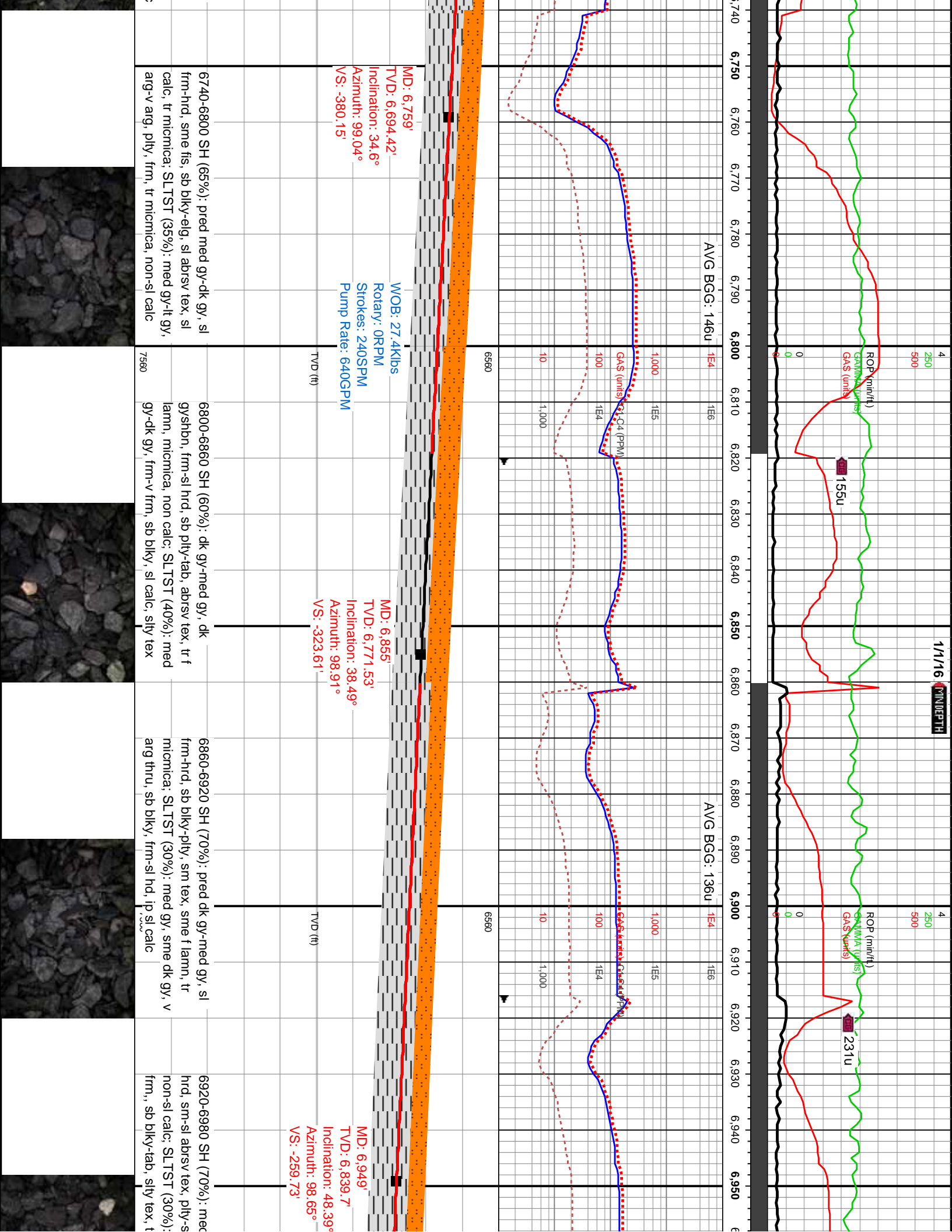
6560-6620 SH (50%): dk gy-med gy, blkly-pty, frm-sl hrd, non-sl calc, sm-sily tex, tr micnica; SLTST (50%): pred med gy-sl dk gy, frm-sl hrd, sb blkly-pty, occ sl calc, pred rgh tex, tr micnica

6620-6680 SH (60%): med gy-dk gy, gysbhn, frm-v frm, sb pily, sm-sily tex, pred non calc; SLTST (40%): gy-sl bnshty, v arg, pred non calc, split-sb blkly

6680-6740 SH (80%): med gy-dk gy, gysbhn, sl frm-hrd, sb blkly, sm-sl abrsv tex, non-sl calc, tr micnica; SLTST (20%): med gy-gysbhn, lt gy, arg, pily-blkly, frm, non-sl calc

Images

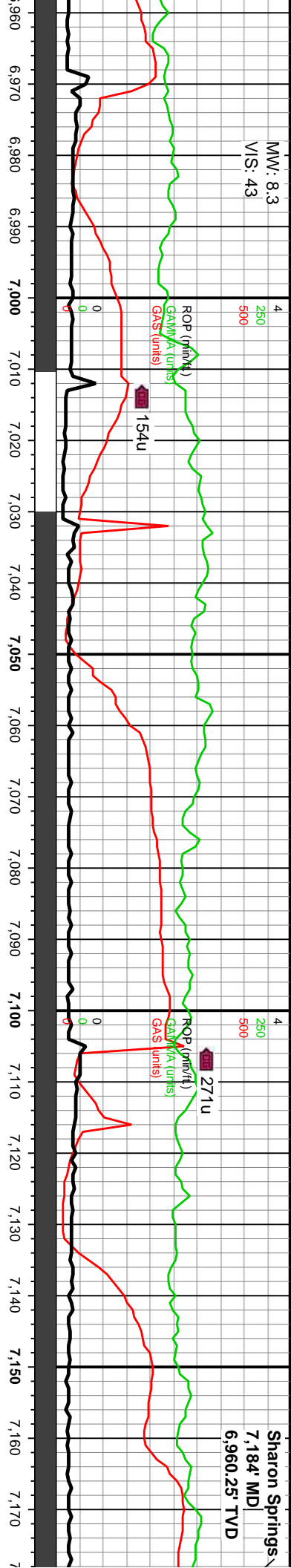




MW: 8.3
VIS: 43

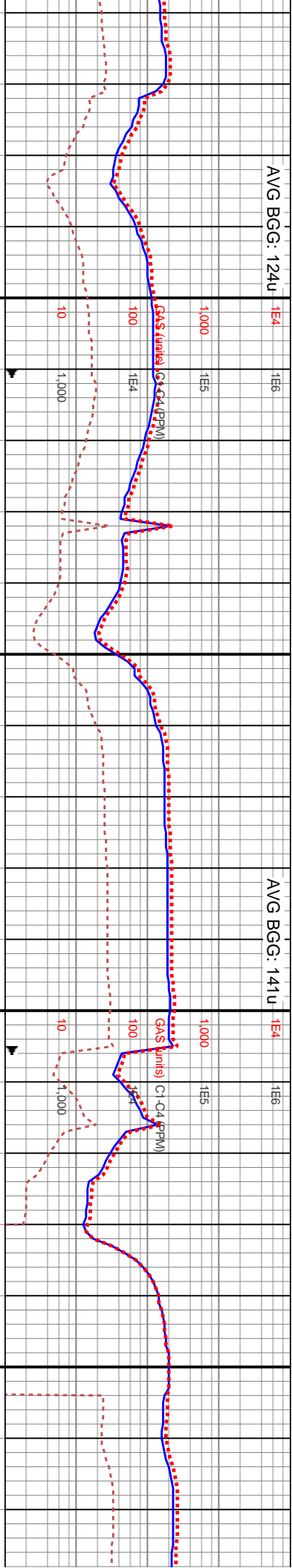
4
250
500

Sharon Springs
7,184' MD
6,960.25' TVD



AVG BGC: 124u

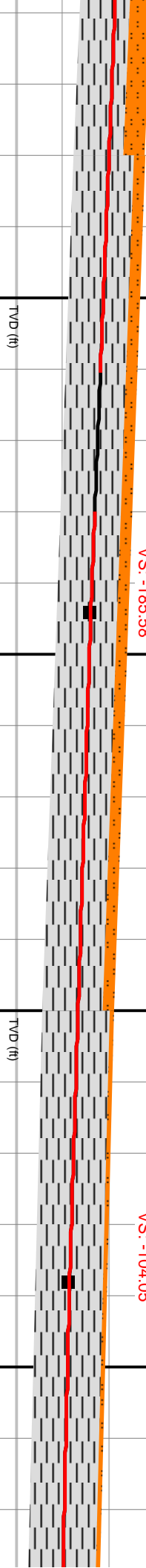
AVG BGC: 141u



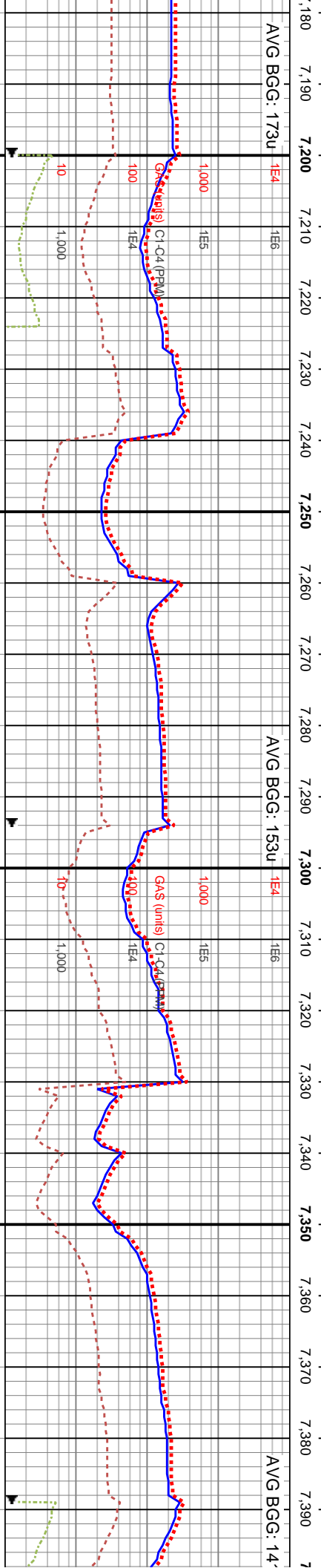
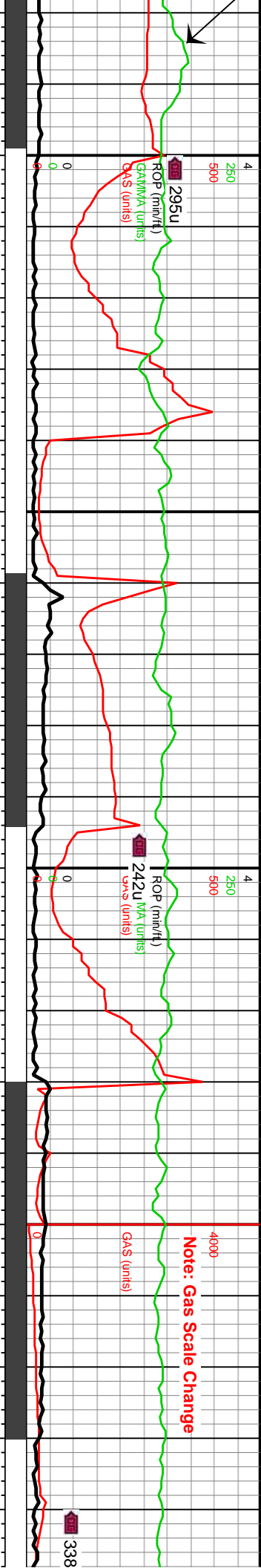
WOB: 24.4Klbs
Rotary: 0RPM
Strokes: 240SPM
Pump Rate: 641GPM

MD: 7,044'
TVD: 6,897.96'
Inclination: 55.9°
Azimuth: 99.22°
VS: -185.58'

MD: 7,138'
TVD: 6,943.86'
Inclination: 65.62°
Azimuth: 92.43°
VS: -104.05'



6980-7040 SH (85%): med gy-dk gy, gyshbn ip, sl frm-hrd, sb blk-y-pty, sm tex, occ silty, sl calc, tr micmica; SLTST (15%): med gy-lt gy, arg-v arg, pily, frm, tr micmica, non-sl calc	7040-7100 SH (85%): med gy-dk gy, occ gyshbn-blk, frm-v frm, sb blk-y-pty, sm-sily tex, sl calc; SLTST (15%): gy-sl bnshgy, v arg, pred non calc, spl-sb blk	7100-7160 SH (95%): med gy-dk gy, gyshbn, frm-v frm, sb pily, sm-sily tex, pred non calc; SLTST (5%): gy-sl bnshgy, v arg, mntr sdy, pred non calc, spl-sb blk	7160-7220 SH (95%): med gy-dk gy, gyshbn, frm-v frm, sb blk-y-pty, sm-sily tex, pred non calc; SLTST (5%): gy-sl bnshgy, v arg, mntr sdy, pred non calc, spl-sb blk
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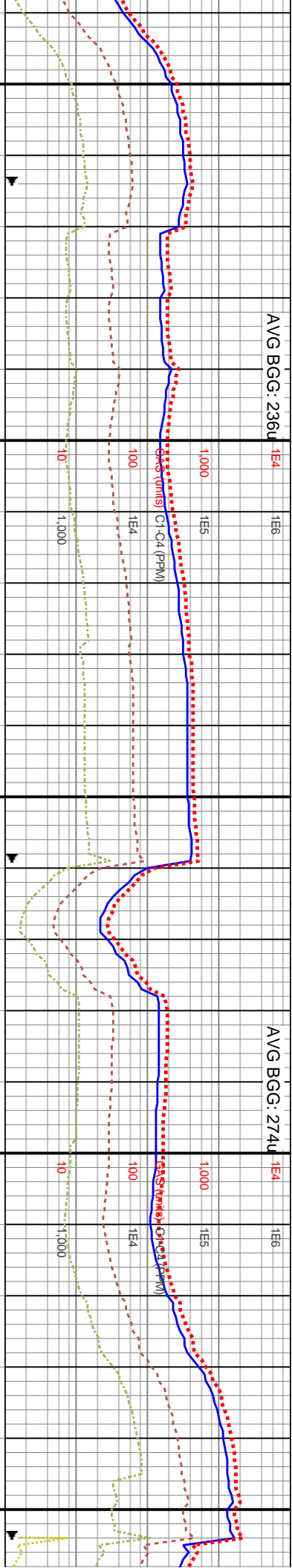
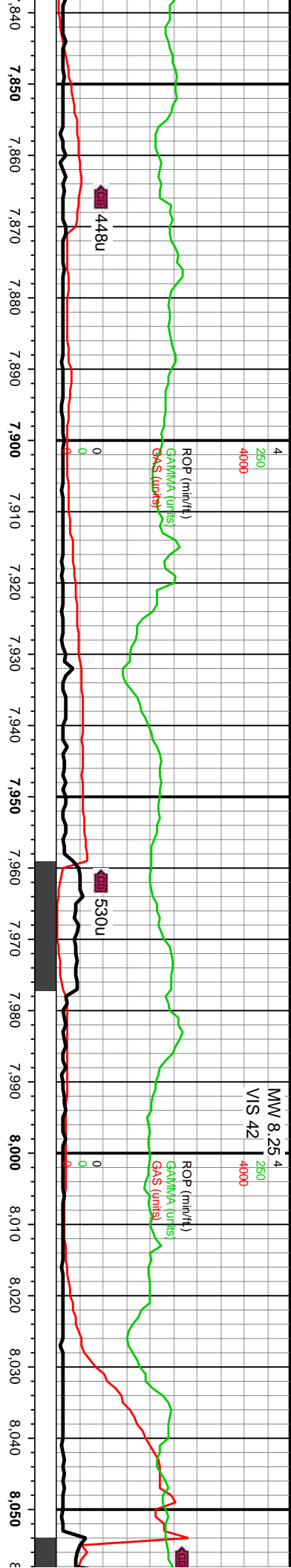
WOB: 34.2Klbs
Rotary: 15RPM
Strokes: 240SPM
Pump Rate: 641GPM

MD: 7.232'
TVD: 6,977.36'
Inclination: 72.6°
Azimuth: 92.52°
VS: -16.34'

MD: 7.327'
TVD: 7,001.78'
Inclination: 77.6°
Azimuth: 90.32°
VS: 75.42'

WOB: 37.
Rotary: 20
Strokes: 2
Pump Rate:

0 SH (95%); dk gy-med gy, sme blk, frm-sl hrd, sl calc, sm tex; SLTST red med gy-sl dk gy, frm-sl hrd, sb sl calc, pred rgh tex, tr micnica	7220-7280 SH: dk gy-blk, occ dk gysbhn, frm, sl sft ip, rr sl hrd, pily, sl blkly ip, tr-scat micnica, sm tex, tr-v sl calc, tr mic pyr	7280-7340 SH: dk gy-med gy, occ dk gysbhn, frm, sl sft ip, rr sl hrd, pily, sl blkly ip, tr-scat micnica, sm tex, tr-v sl calc, mnr scat/imbd mic pyr	7340-7400 SH (90%); med gy-dk gy, gysbhn, frm-v frm, sb pily-splt, sm-sily tex, mod-v calc, arg, mnr scat/pp pyr mod
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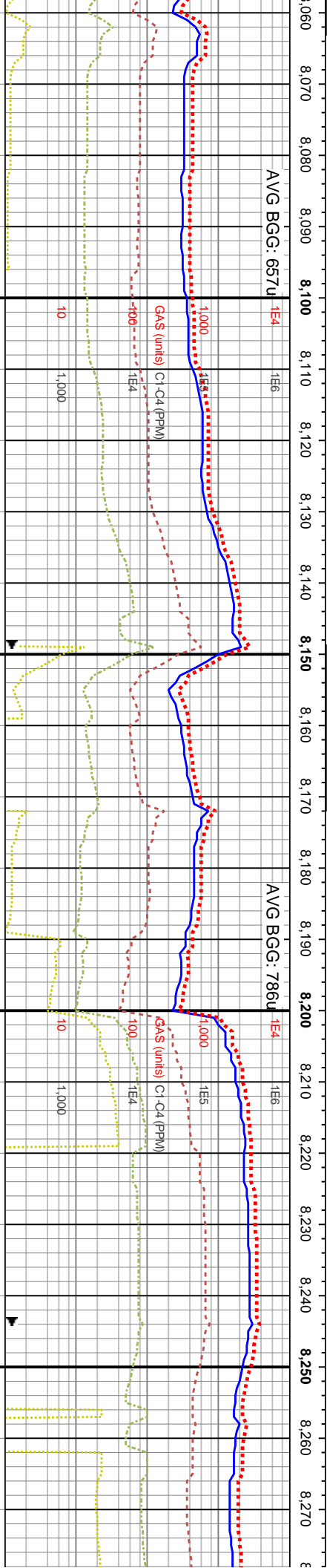
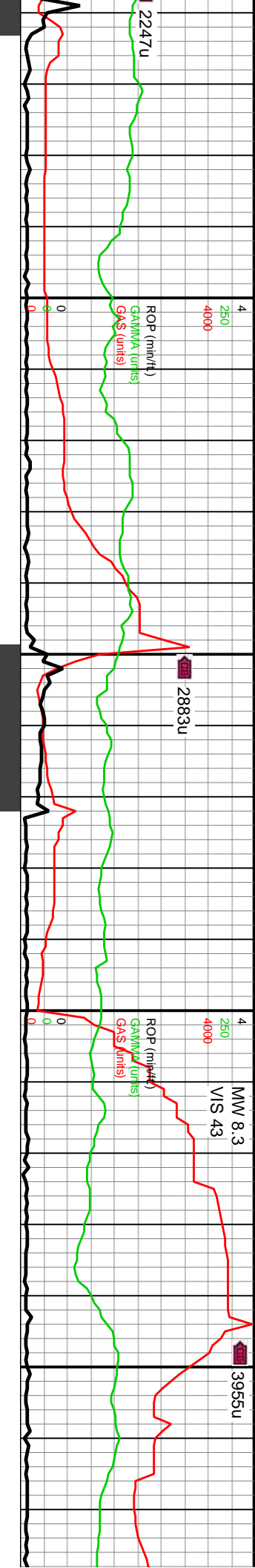
MD: 7.897'
TVD: 7.082.25'
Inclination: 80.12°
Azimuth: 89.13°
VS: 645'

MD: 7.992'
TVD: 7.097.32'
Inclination: 81.62°
Azimuth: 91.11°
VS: 738.73'

WOB: 34.2Klbs
Rotary: 62RPM
Strokes: 240SPM
Pump Rate: 641GPM

7880 MRLST (75%): predy dk gy-dk i, frm-v frm, pred sb pily, sl silty tex, v ntr mifios, scat pyrc nod; CHK (25%): yshbn-crm, chky tex, calc, sb splt-pily, intbtd, bri omg-dul yelgn flor	7880-7940 MRLST (75%): mot dk gy-med gy, gyshbn, blk-pily, frm-v frm, sl sm tex, v calc, chk intbtd, scat pp pyr; CHK (25%): mot lt gyshbn-crm, tn, chky tex, calc, tab-pily, dul yelgn-bri omg flor, mod mky cut, dul blshwn resd ring	7900-7960 MRLST (75%): predy dk gy, med gy-gyshbn, frm-sl hrd, pily-splt, sl abrsv tex, v calc, scat intbtd pyr; CHK (25%): ofwht-lt gyshbn, crm, chky tex, mod calc, sb tab, mrlst intbtd, dul-mod yelgn flor, mod mky cut,	7960-8020 MRLST (65%): dk gy-med gy, v calc, frm-sl hrd, sb pily, tr lamm, scat pyr; CHK (35%): lt gyshbn-ofwht, crm, chky tex, calc, pily-blky, intbtd mrlst, dul-mod yelgn flor, moc mky cut, mod blshwn resd ring
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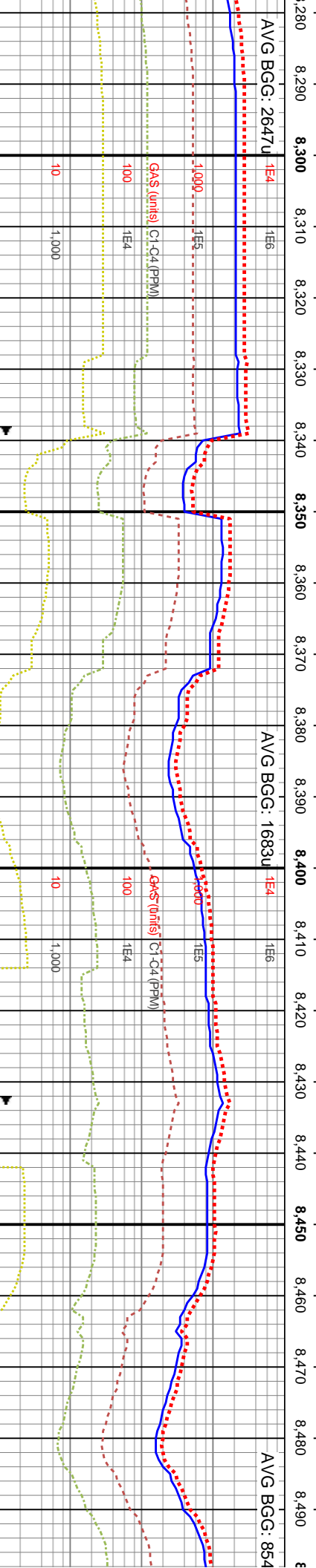
MD: 8,087'
TVD: 7,111.09'
Inclination: 81.71°
Azimuth: 91.95°
VS: 832.72'

MD: 8,182'
TVD: 7,122.76'
Inclination: 84.18°
Azimuth: 91.42°
VS: 926.99'


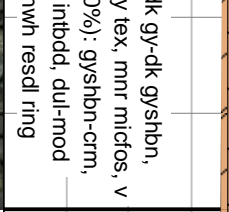
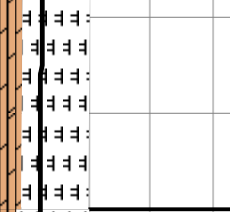
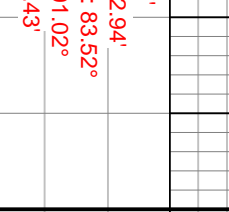
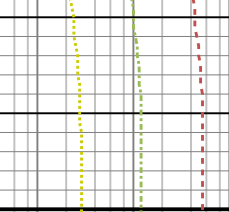
MD: 8,277'
TVD: 7,130.00'
Inclination: 84.18°
Azimuth: 91.42°
VS: 1,021.00'

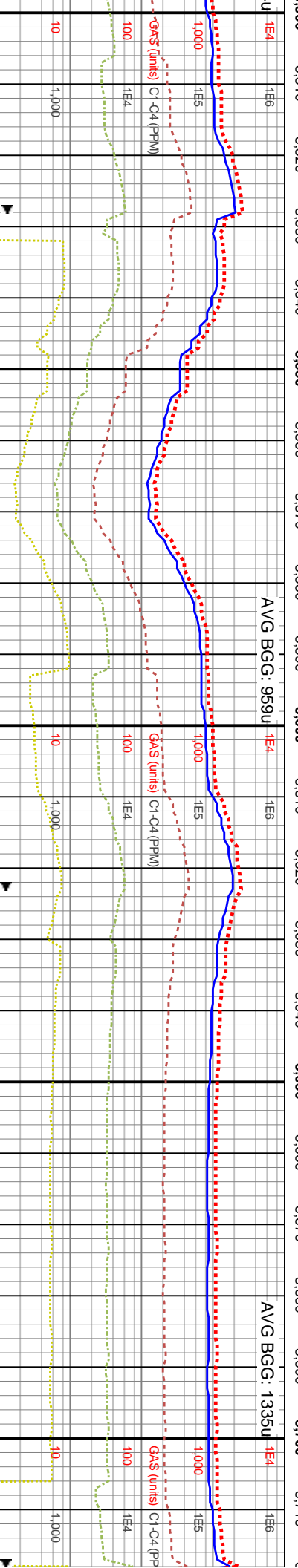
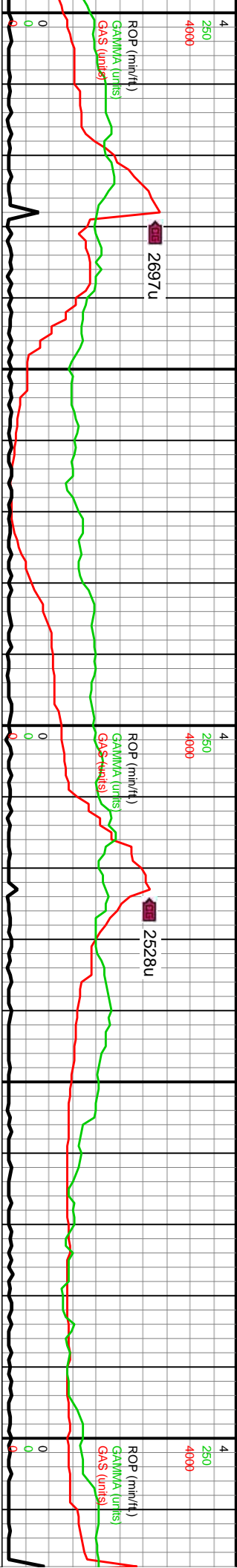
8060-8120 MRLST (75%): predy dk gy-dk gysbhn, frm-sl hrd, sb spl, sm tex, v calc, pp/imbd mic pyr; CHK (25%): mot gysbhn, crm, chky tex, calc, sl tab, mnr micfos, intbd mlst, dul-mod yelgn flor, mod mky cut,	8120-8180 MRLST (70%): dk gy-med gy, frm, blkly-tab, sl abrsv tex, v calc, mnr micfos, scat pp pyr; CHK (30%): lt gysbhn-crm, chky tex, calc, pty-sb blkly, dul-mod yelgn, mod mky cut, blshwn resdl ring	8180-8240 MRLST (55%): dk gysbhn-dk gy, med gy, frm-sl hrd, sl spl, sm tex, v calc, imbd mic pyr; CHK (45%): crm-gysbhn, chky tex, calc, sb tab, mnr micfos, intbd mlst, dul-mod yelgn flor, mod mky cut, blshwn resdl ring	8240-8300 MRLST (70%): c frm-v frm, pred sb pty, sl slt calc, scat pyrc nod; CHK (30%): chky tex, calc, sb spl, mlst yelgn flor, mod mky cut, blshwn resdl ring
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2.94'	6560	MD: 8.371'	WOB: 40.9Klbs
83.52°		TV D: 7,142.43'	Rotary: 50RPM
1.02°		Inclination: 84.89°	Strokes: 240SPM
43'		Azimuth: 91.64°	Pump Rate: 641GPM
		VS: 1,114.94'	
			MD: 8.467'
			TV D: 7,150.87'
			Inclination: 85.02°
			Azimuth: 91.02°
			VS: 1,210.55'

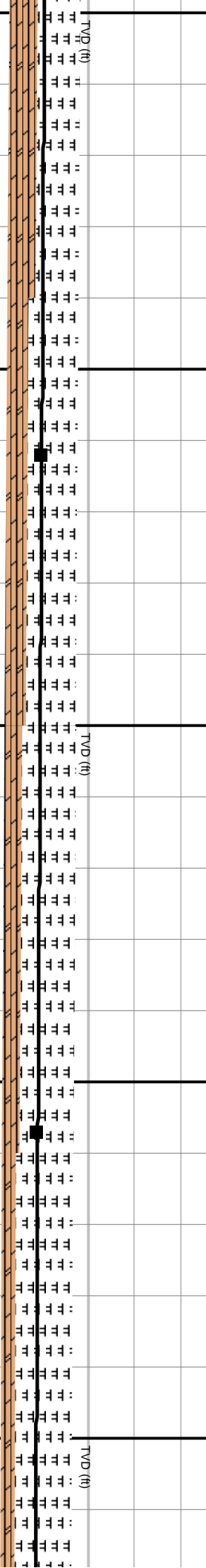
dk gy-dk gysbhn, v tex, mnr micfos, v 3%): gysbhn-crm, inbadd, dul-mod bshwn resal ring	8300-8360 MRLST (75%): dk gy-med gy, frm, blkly-tab, sl abrsv tex, v calc, mnr micfos, scat pp pyr; CHK (25%): lt gysbhn-crm, chky tex, calc, pily-sb blkly, dul-mod yeign, dul mky cut, bshwn resal ring	8360-8420 MRLST (80%): pred dk gy-gysbhn, frm-sl hrd, split-sb blkly, sm tex, v calc, scat imbd pyr; CHK (20%): lt gysbhn-crm, chky tex, calc, tab, mnr micfos, mrlst inbadd, dul-mod yeign flor, mod mky cut, bshwn resal ring	8420-8480 MRLST (85%): mot dk gy-med gy, frm-sl hrd, blkly-pily, sl abrsv tex, v calc, tr chk lamm, scat mic pyr; CHK (15%): gysbhn-crm, chky tex, calc, pily, dul yeign flor, dul mky cut, mod bshwn resal ring	8480-85
				



MD: 8,562'
TVD: 7,159.12'
Inclination: 85.02°
Azimuth: 91.24°
VS: 1,305.18'

WOB: 41.6Klbs
Rotary: 50RPM
Strokes: 240SPM
Pump Rate: 641GPM

MD: 8,657'
TVD: 7,167.8'
Inclination: 84.49°
Azimuth: 91.33°
VS: 1,399.77'

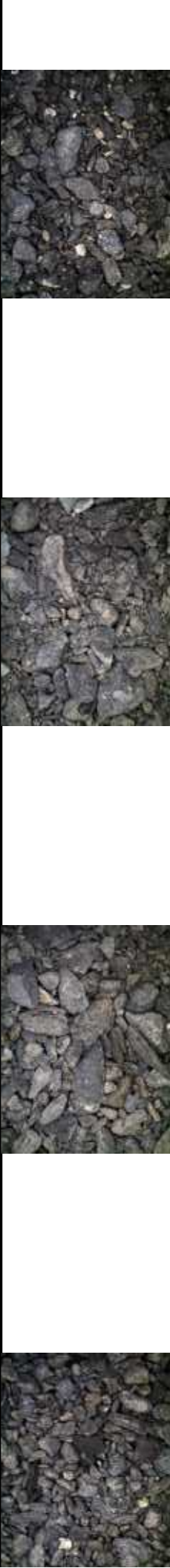


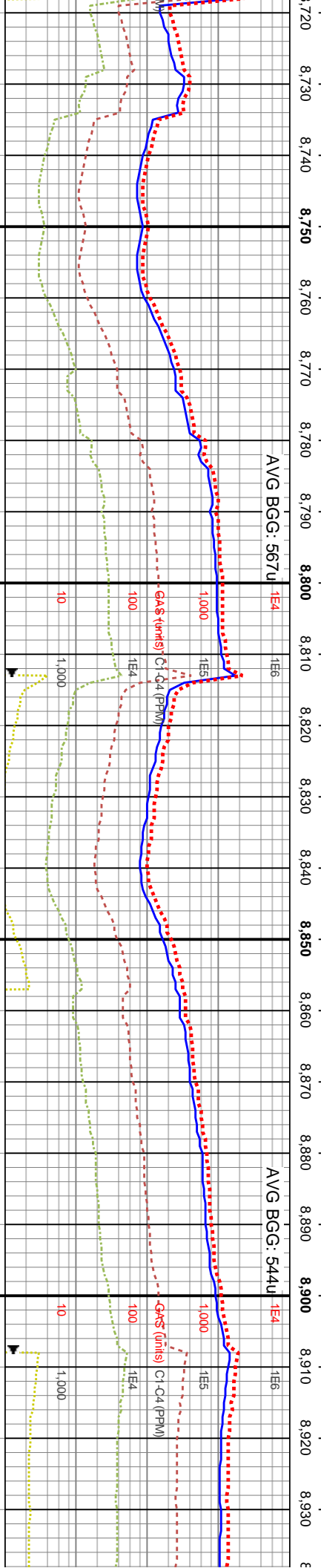
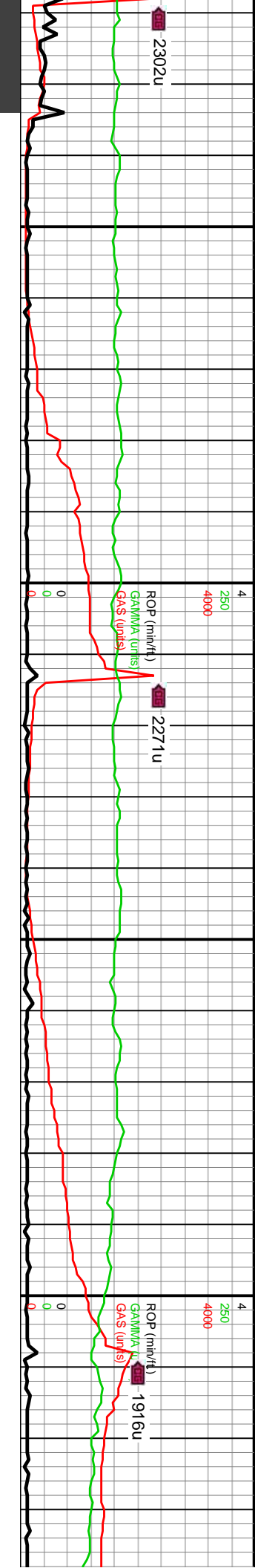
440 MRLST (60%): dk gy-med gy,
sl stly tex, frm-sl hrd, blkly-pty, v calc, tr
p mic pyr; CHK (40%): gysbhn-crm,
mmr micos, intbdd mlst, blkly, dul
r, dulnky cut, mod blshwh resd ring

8540-8600 MRLST (70%): predy dk gy-med
gy, mot gysbhn, frm-sl hrd, blkly-pty, sl stly tex,
v calc; CHK (30%): lt gysbhn-crm, tn, chky tex,
calc, intbdd mlst, blkly, dul-mod yelgn flor,
mod mky cut, blshwh resd ring

8600-8660 MRLST (75%): med gy-dk gy, frm-v
frm, blkly-pty, sl abrv tex, v calc, tr f lamn, scat
pyrc nod; CHK (25%): gysbhn-crm, calc, tab,
chky tex, intbdd wi mlst, dul-mod yelgn flor,
mod mky cut, blshwh resd ring

8660-8720 MRLST (80%): dk gy-v dk gy, med
gy-gysbhn, frm-sl hrd, pty-blky, sm-sl stly tex,
v calc, tr f lamn, scat pp pyr; CHK (20%): pred l
gysbhn-crm, tn, chky tex, calc, dul-mod yelgn
flor, mod mky cut, blshwh resd ring



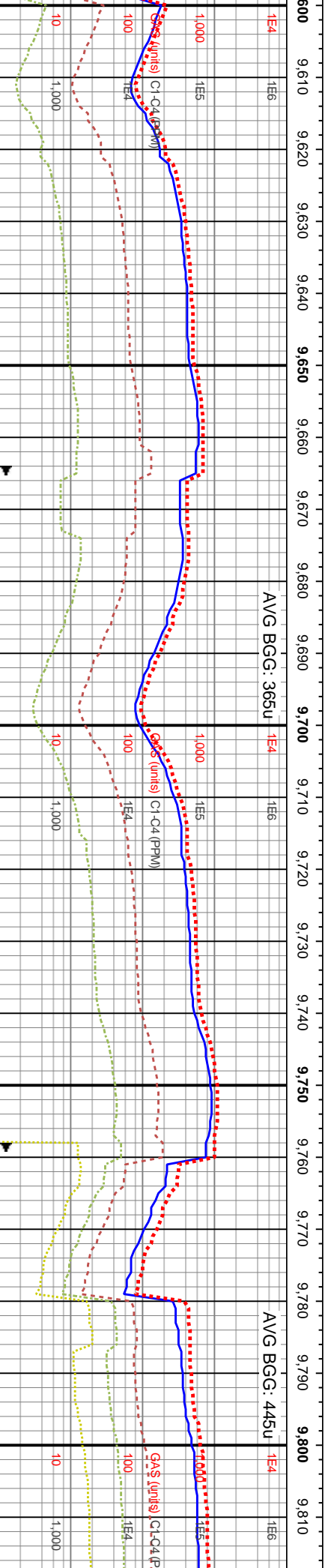
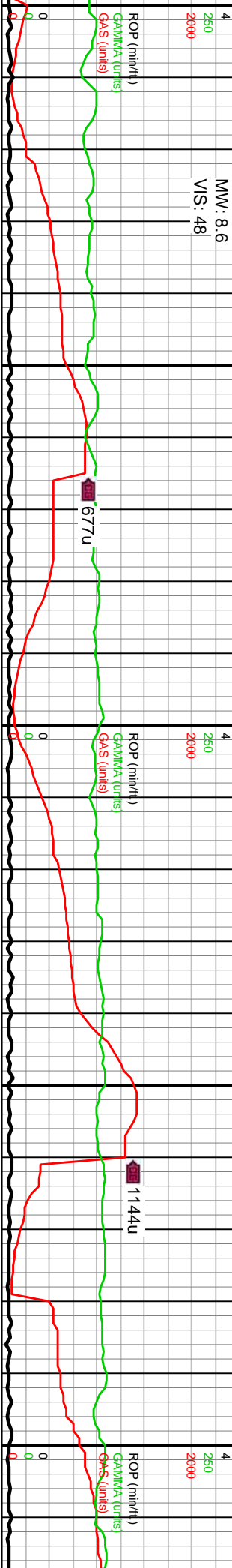


MD: 8,751' TVD: 7,174.69' Inclination: 87.1° Azimuth: 91.64° VS: 1,493.5'	WOB: 41.2Klbs Rotary: 50RPM Strokes: 240SPM Pump Rate: 641GPM	MD: 8,846' TVD: 7,178.51' Inclination: 88.29° Azimuth: 91.64° VS: 1,588.42'	MD: 8,960' TVD: 7,180.00' Inclination: 88.29° Azimuth: 91.64° VS: 1,683.30'
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8720-8780 MRLST (85%): predy dk gy-med gy, frm-sl hrd, sl abrsv tex, ply-tab, v calc, tr f lamm, scat pyrc nod, CHK (15%): gysbhn-crm, lt gy, blk, chky tex, intbdd mrlst, calc, dul-mod yelgn flor, mod mky cut, blshwh resdl ring	8780-8840 MRLST (65%): mot dk gy-med gy, sb ply, sl slty tex, frm-v frm, v calc, tr f lamm, scat pp pyr, CHK (15%): gysbhn-crm, chky tex, sl blk, calc, intbdd mrlst, dul-mod yelgn flor, mod mky cut, blshwh resdl ring	8840-8900 MRLST (90%): dk gy-med gy, occ gysbhn, blk, frm-sl hrd, tr f lamm, v calc, scat pp pyr, CHK (10%): pred lt gysbhn-crm, calc, chky tex, dul-mod yelgn flor, mod mky cut, blshwh resdl ring	8900-8960 MRLST (80%): frm-hrd, ply-blky, v calc, tr mot lt gysbhn-crm, chky tex, intbdd mrlst, dul-mod yelgn mod blshwh resdl ring
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MW: 8.6
VIS: 48

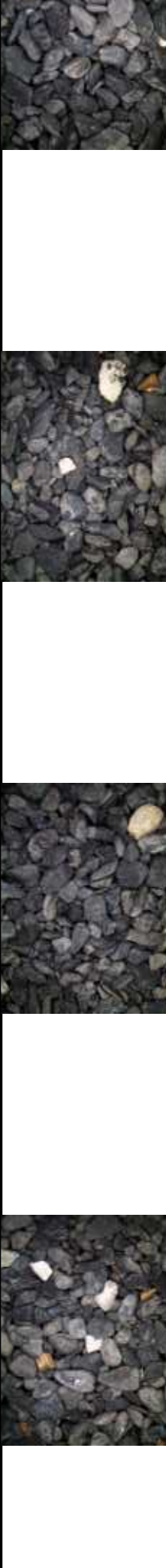


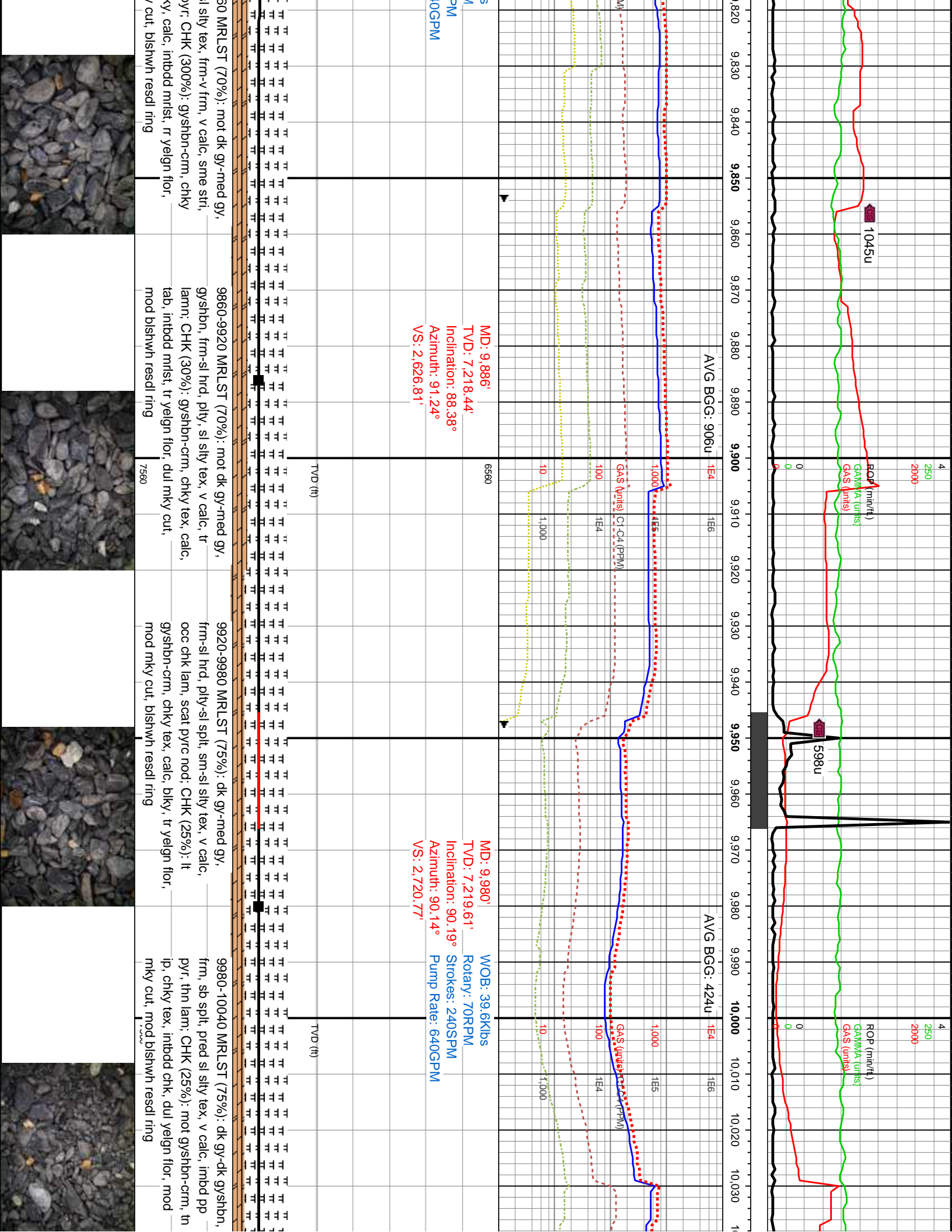
9,603'
7,213.67'
Station: 90.01°
uth: 89.53°
2,344.06'

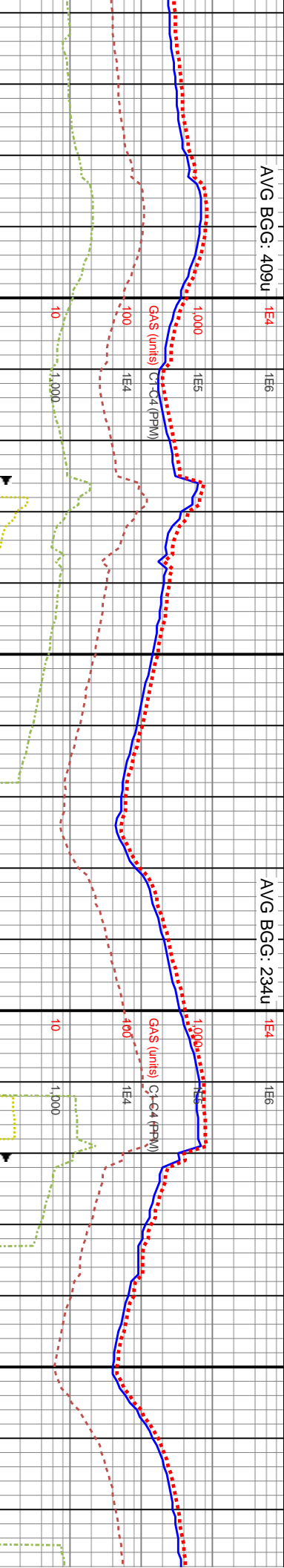
MD: 9,697'
TVD: 7,214.48'
Inclination: 89°
Azimuth: 89.35°
VS: 2,437.95'

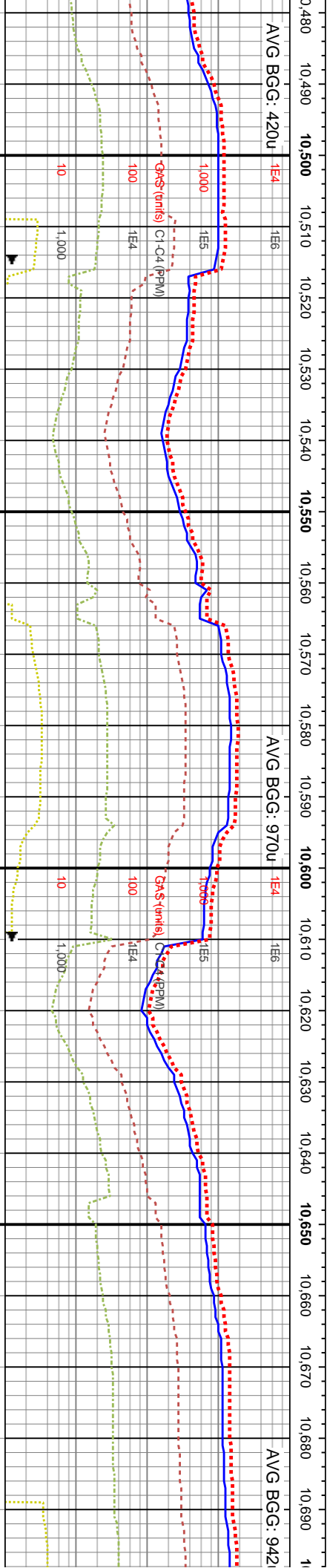
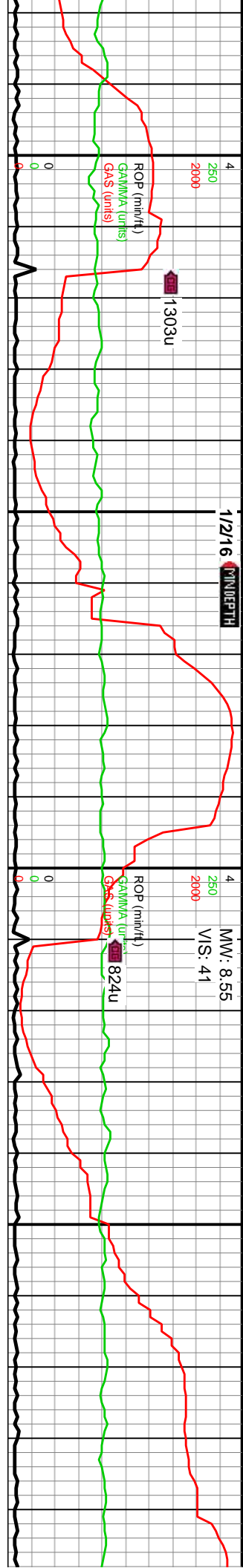
MD: 9,792'
TVD: 7,216.22'
Inclination: 88.91°
Azimuth: 90.63°
VS: 2,532.86'

9620-9680 MRLST (90%): mot dk gy-med gy, ply-biky, frm-sl hrd, sl abrsv tex, v calc: CHK (10%): mot lt gyshbn-offwht, crm, calc, ply-biky, intbdd mrst, mod-bri yeign flor, mod mky cut, blshwh resd ring	9680-9740 MRLST (85%): predy dk gy, med gy-gyshbn, frm-sl hrd, ply-splt, v calc, scat imbd pyr: CHK (15%): offwht-lt gyshbn, crm, chky tex, mod calc, sb tab, mrst intbdd, dul-mod yeign flor, mod mky cut,	9740-9800 MRLST (80%): dk gy, mot med gy-gyshbn, frm-sl hrd, ply-tab, sm-sily tex, v calc, tr intbd chk lamn, scat pyrc nod: CHK (20%): gyshbn-crm, chky tex, calc, tab-biky, dul yeign flor, mod mky cut, blshwh resd ring
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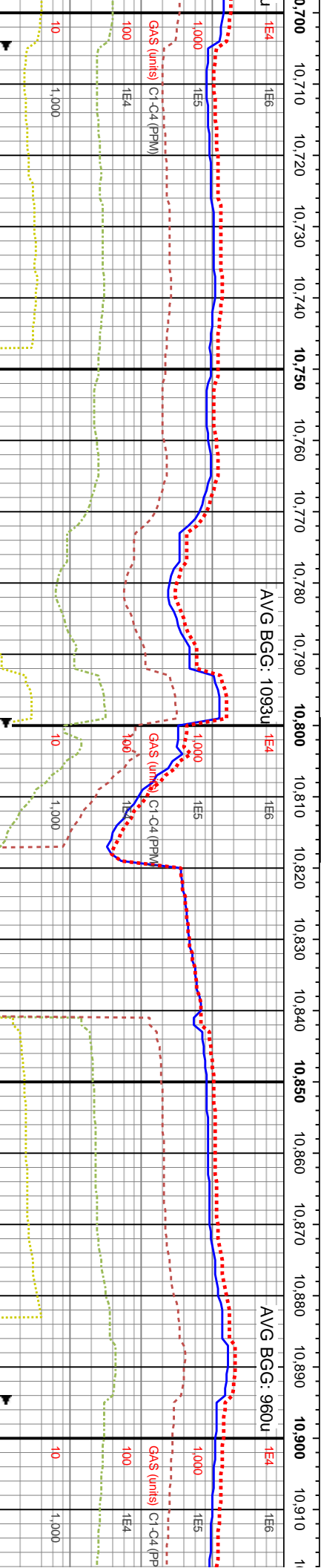
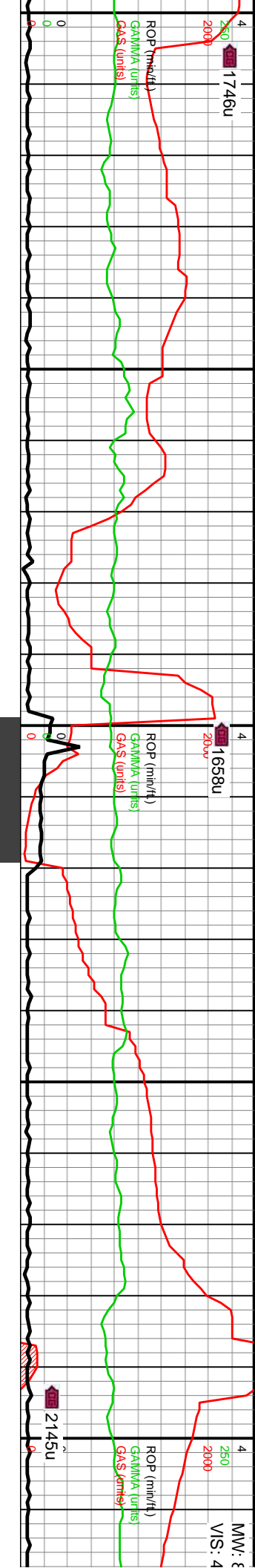


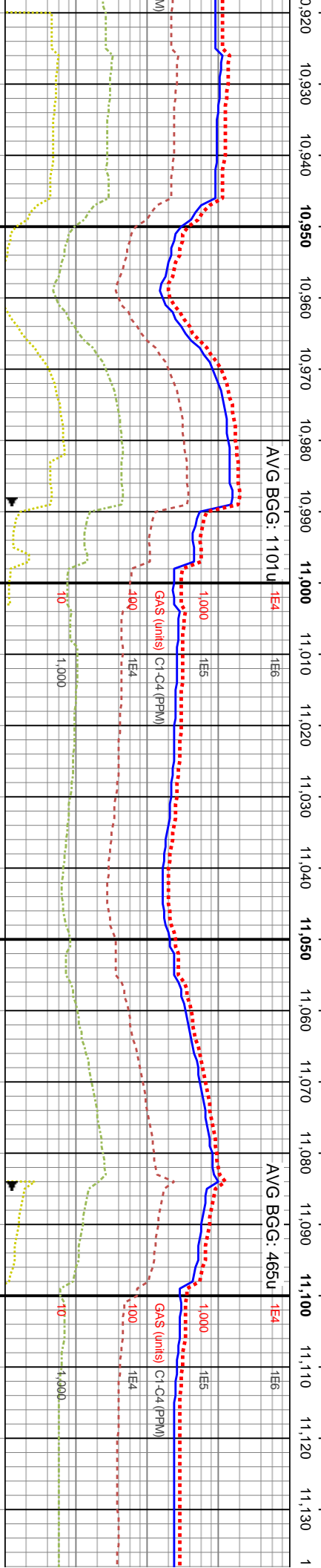


10520 MRLST (70%): dk gy-med gy, 1, ply-elg, sm-sl silty tex, mnr lamm, v scat mic pyr: CHK (30%): lt gy-gyshbn, lamm, intbdd wi mltst, yelgn flor, dul mky	10520-10580 MRLST (60%): med gy-dk gyshbn, mot, sm v dk gy, frm, pred ply, v calc, tr f lam, scat pyrc nod: CHK (40%): mot lt gyshbn-gyshbn, frm, chky tex, calc, yelgn flor, dul mky cut, mod blshwn resdl ring	10580-10640 MRLST (65%): mot dk gy-med gy, mot gyshbn, frm-sl hrd, blyk-elg, sl silty tex, v calc, tr intbdd chk lam, scat imbd pyr: CHK (35%): lt gyshbn-crm, chky tex, calc, blyk, scat yelgn flor, dul mky cut, blshwn resdl ring	10640-10700 MRLST (70%): mot med gy-gyshbn, ply-tab, frm, v calc, vf imbd pyr: CHK (30%): mot lt gy-offwrt, lt gyshbn, sft, chky tex, sb ply-sb blyk, sme yelgn flor, dul mky cut, mod blshwn resdl ring
6560	MD: 10,548' TVD: 7,217.91' Inclination: 89.88° Azimuth: 89.22° VS: 3,288.18'	WOB: 41.6Klbs Rotary: 70RPM Strokes: 240SPM Pump Rate: 640GPM	MD: 10,643' TVD: 7,218.5' Inclination: 89.4° Azimuth: 90.32° VS: 3,383.09'

AVG BGC: 420u	1E4	1E6	1E4	1E6	AVG BGC: 970u	1E4	1E6	AVG BGC: 942	1E4	1E6
ROP (min/ft)	1,000	1E5	ROP (min/ft)	1,000	1E5	ROP (min/ft)	1,000	ROP (min/ft)	1,000	1E5
GAMMA (units)	100	1E4	GAS (units)	100	1E4	GAS (units)	100	GAS (units)	100	1E4
GAS (units)	10	1,000	GAS (units)	10	1,000	GAS (units)	10	GAS (units)	10	1,000
C1-C4 (PPM)	10	1,000	C1-C4 (PPM)	10	1,000	C1-C4 (PPM)	10	C1-C4 (PPM)	10	1,000
TVD (ft)	10	1,000	TVD (ft)	10	1,000	TVD (ft)	10	TVD (ft)	10	1,000
7560	7560	7560	7560	7560	7560	7560	7560	7560	7560	7560



[illegible][illegible]



MD: 10,927' VD: 7,222.31' Inclination: 89.22° Azimuth: 89.22° S: 3,666.79'	WOB: 55.1Klbs Rotary: 0RPM Strokes: 240SPM Pump Rate: 640GPM	MD: 11,023' TVD: 7,222.62' Inclination: 90.41° Azimuth: 89.44° VS: 3,762.67'	6560	MD: 11,118' TVD: 7,222.71' Inclination: 89.48° Azimuth: 89.04° VS: 3,857.54'
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6): med gy-dk gy, c, mntr mifcos, scat gysbhn-crm, offwht, yelgn flor, mky cut,	10940-11000 MRLST (60%): dk gy-med gy, frm-hrd, sb blk, sl abrsv tex, v calc, intbd chk lam, scat pp pyr: CHK (40%): lt gysbhn-crm, blk, chky tex, calc, dul yelgn flor, dul mky cut, bishwh resdl ring	11000-11060 MRLST (65%): mot dk gy-med gy, frm-sl hrd, ply-blk, v calc, tr f lamn: CHK (35%): lt gysbhn-offwht, chky tex, calc, blk, intbd wi mrlst, dul yelgn flor, dul mky cut, mod bishwh resdl ring	11060-11120 MRLST (55%): med gy-dk gysbhn, mot, frm, pred ply, v calc, tr f lam, scat pyrc nod, tr f lam: CHK (50%): mot lt gysbhn-gysbhn, frm, chky tex, calc, yelgn flor, dul mky cut, mod bishwh resdl ring	11120-11180 MRLST (50%): med gy-dk gysbhn, mot, frm, pred ply, v calc, tr f lam, scat pyrc nod, tr f lam: CHK (50%): mot lt gysbhn-gysbhn, frm, chky tex, calc, yelgn flor, dul mky cut, mod bishwh resdl ring
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MW 8.55
VIS 40

ROP (mhr/ft)
GAMMA (units)
GAS (units)

ROP (mhr/ft)
GAMMA (units)
GAS (units)

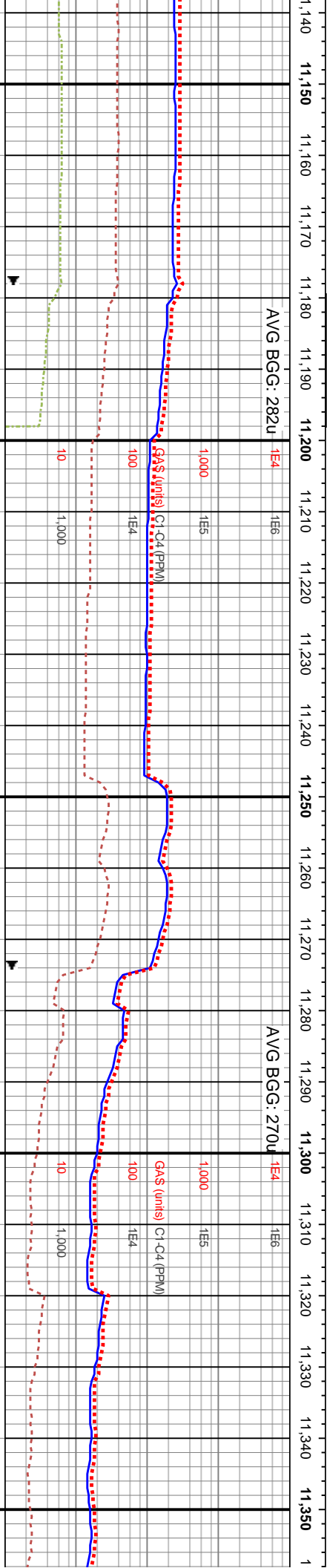
Note: Replace Frozen Gas Line

319u

195u

AVG BGG: 282u

AVG BGG: 270u



WOB: 50Klbs
Rotary: 45RPM
Strokes: 240SPM
Pump Rate: 640GPM
MD: 11,212'
TVD: 7,222.65'
Inclination: 90.59°
Azimuth: 91.24°
VS: 3,951.48'

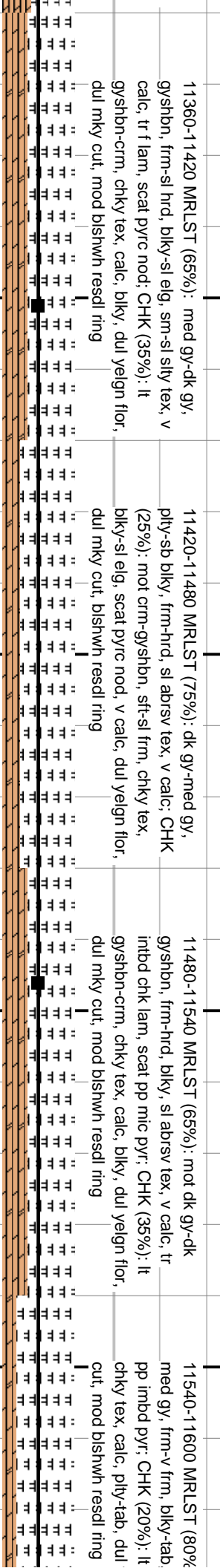
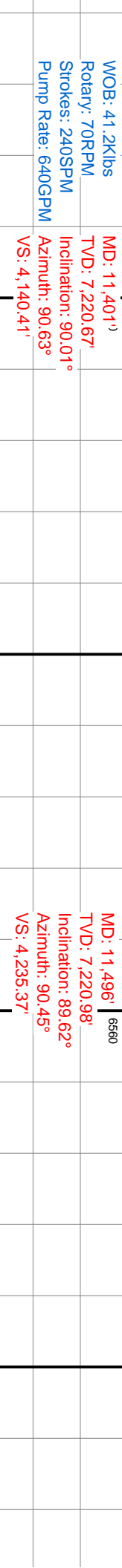
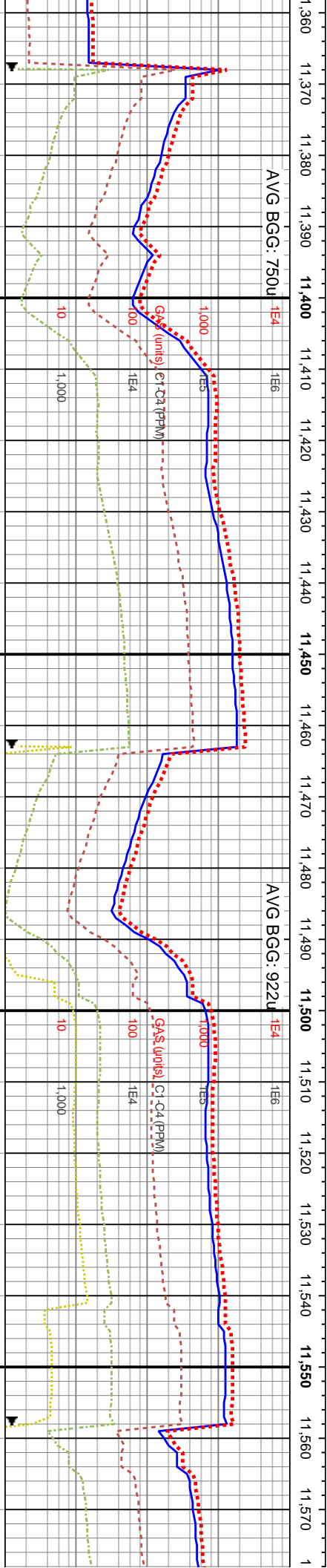
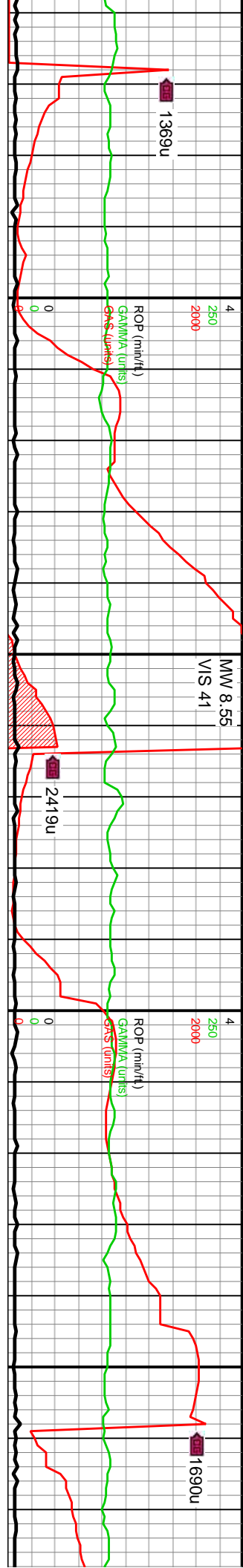
MD: 11,307'
TVD: 7,221.42'
Inclination: 90.9°
Azimuth: 90.72°
VS: 4,046.45'

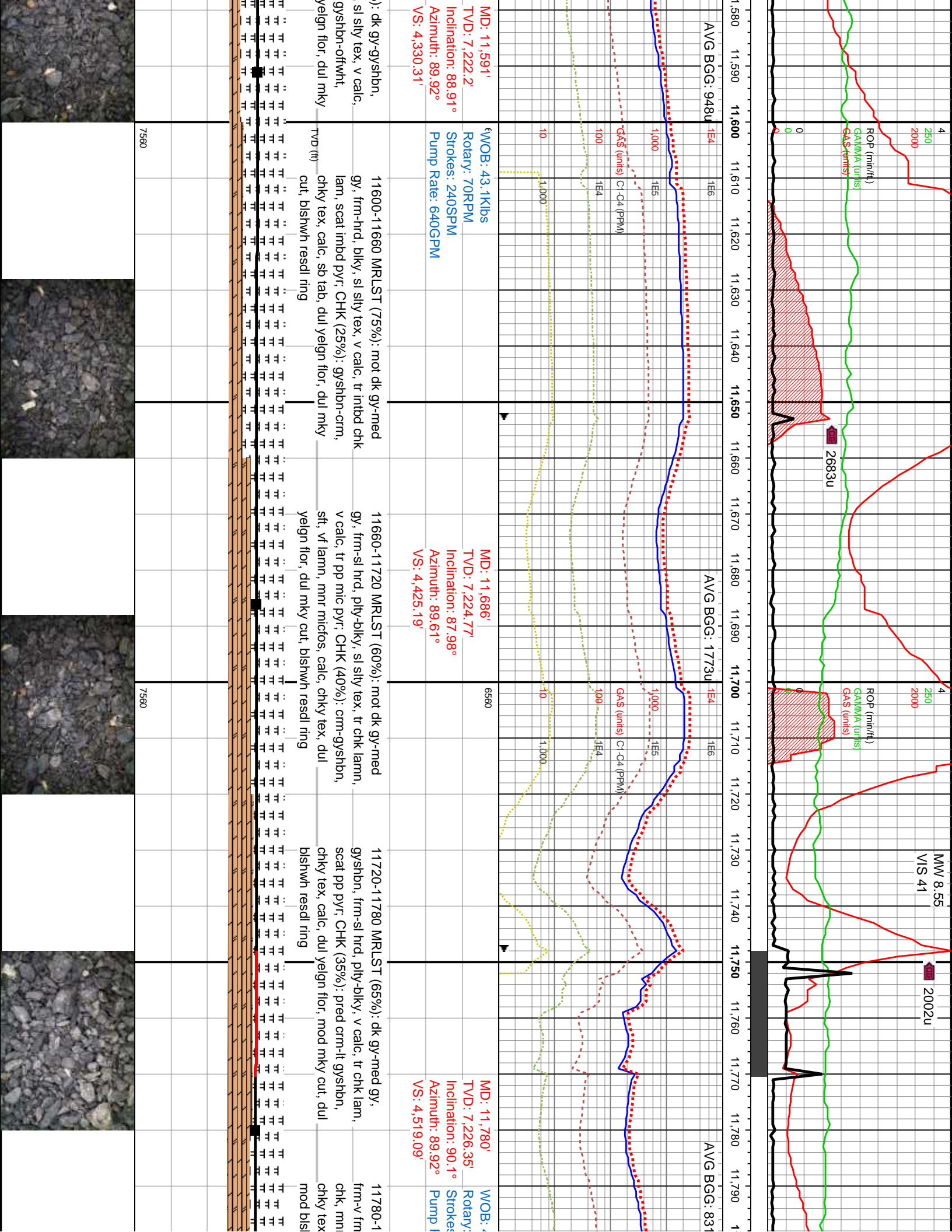
11180 MRLST (65%): mot dk gy-med sl hrd, blkyl-tab, sl sty tex, v calc, tr f scat pp pyr: CHK (24%): gyshbn-lt gy, calc, blkyl, intbdd mst, dul yelgn flr, cut, mod bishwh resd ring	11180-11240 MRLST (55%): med gy-dk gy, frm-sl hrd, blkyl-sl elg, sm-sl sty tex, v calc, scat cal frac flr: CHK (45%): lt gyshbn-crm, chky tex, calc, ply, dul-mod yelgn flr, mod mky cut, bishwh resd ring	11240-11300 MRLST (50%): dk gy-med gy, gyshbn, frm-sl hrd, ply-blky, v calc, tr chk lam, scat pp pyr: CHK (50%): pred crm-lt gyshbn, chky tex, calc, dul yelgn flr, mod mky cut, dul bishwh resd ring	11300-11360 MRLST (60%): mot dk gy-med gy, mot gyshbn, frm-sl hrd, blkyl-elg, sl sty tex, v calc, tr intbd chk lam, scat imbd pyr: CHK (40%): lt gyshbn-crm, chky tex, calc, blkyl, dul yelgn flr, dul mky cut, bishwh resd ring
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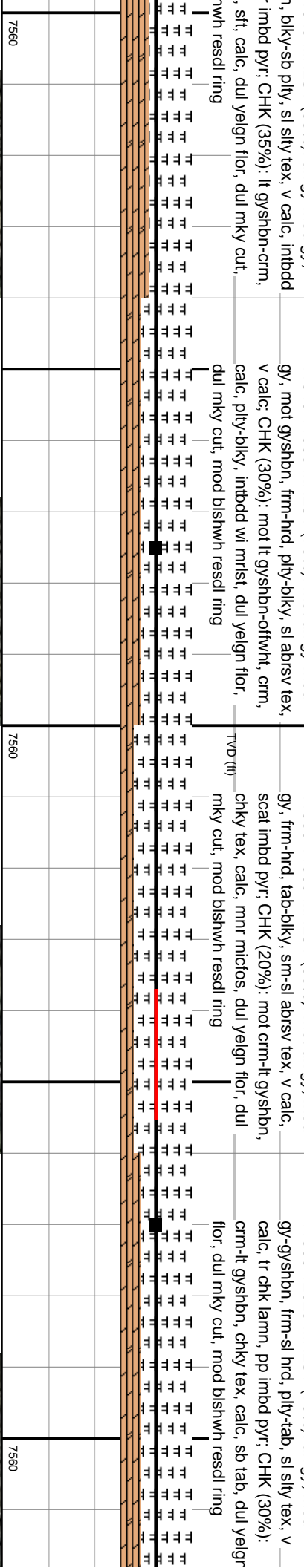
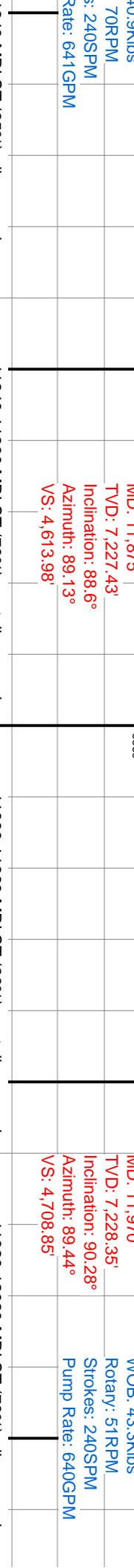
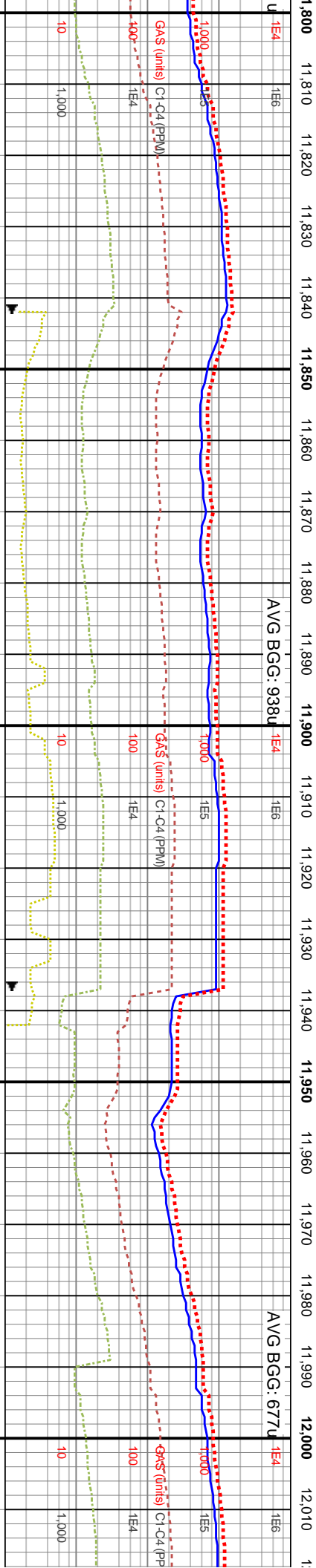
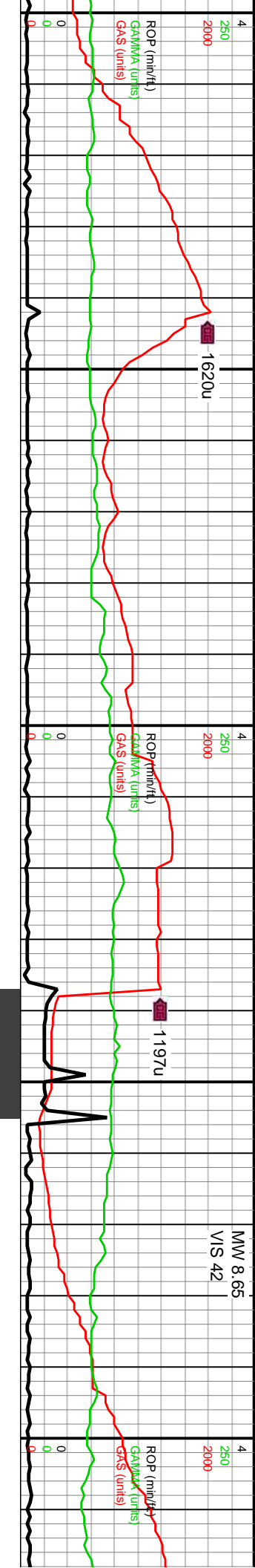
7560

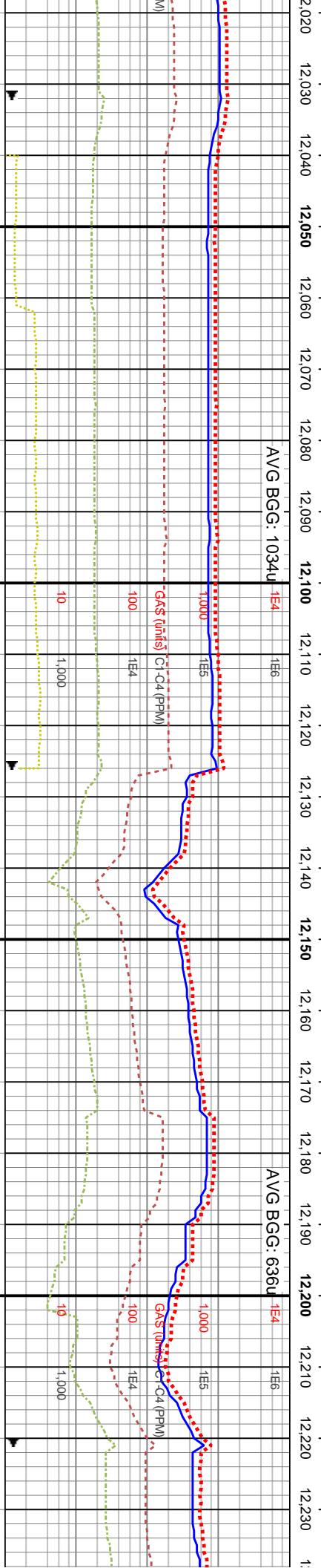
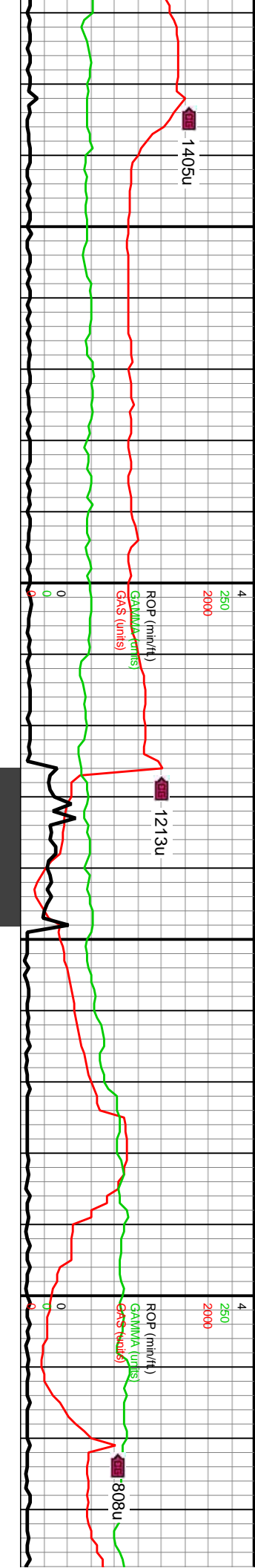
7560







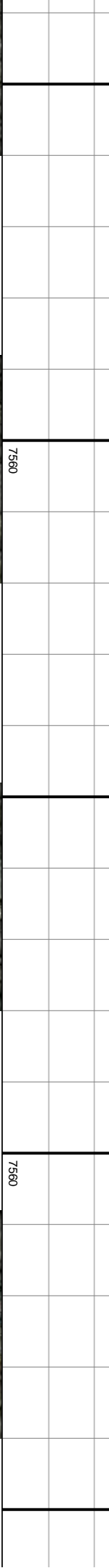
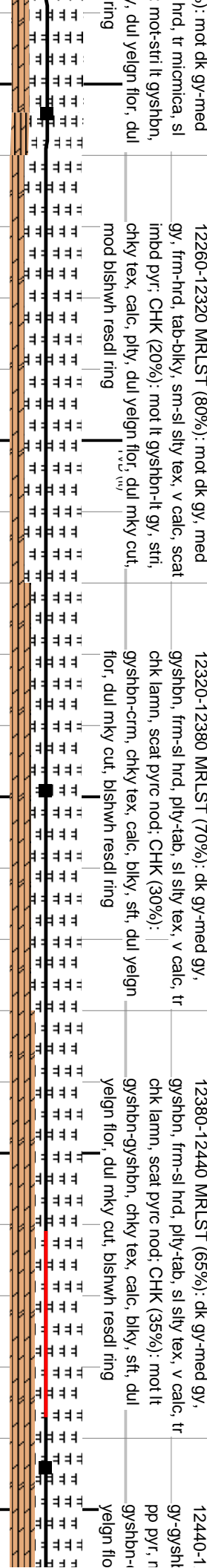
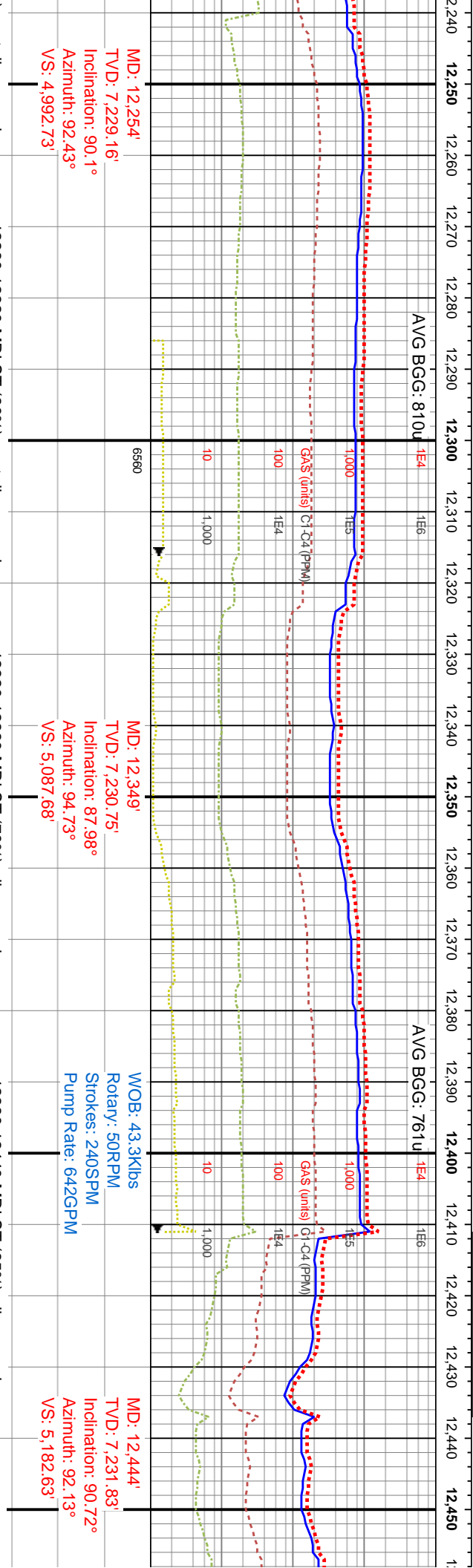
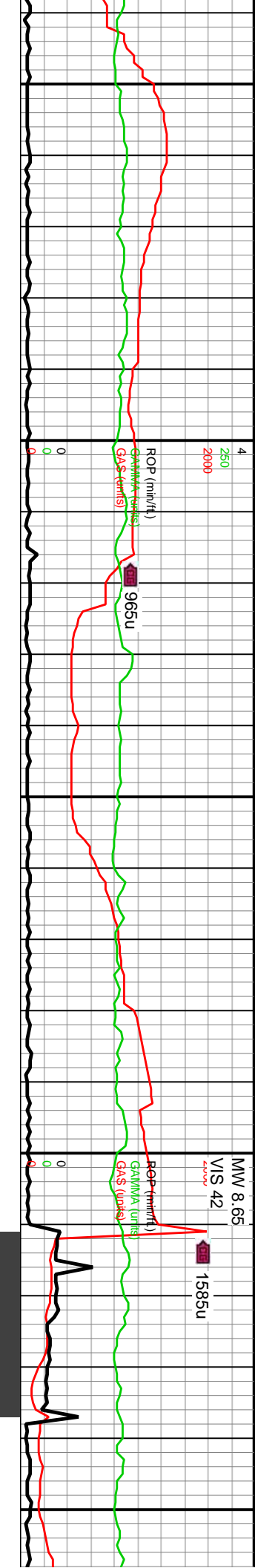


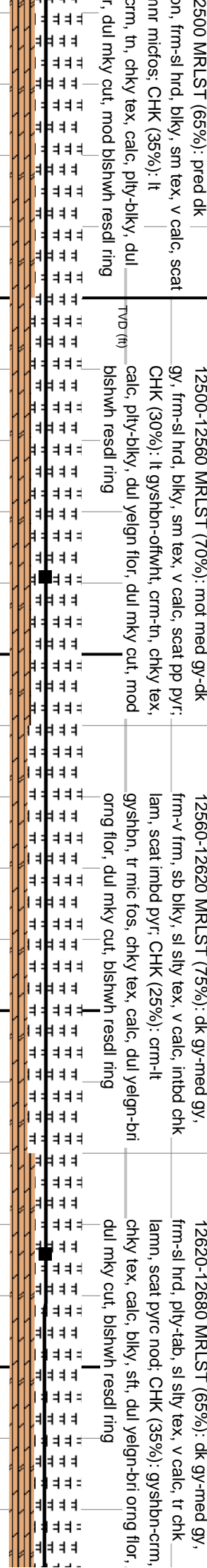
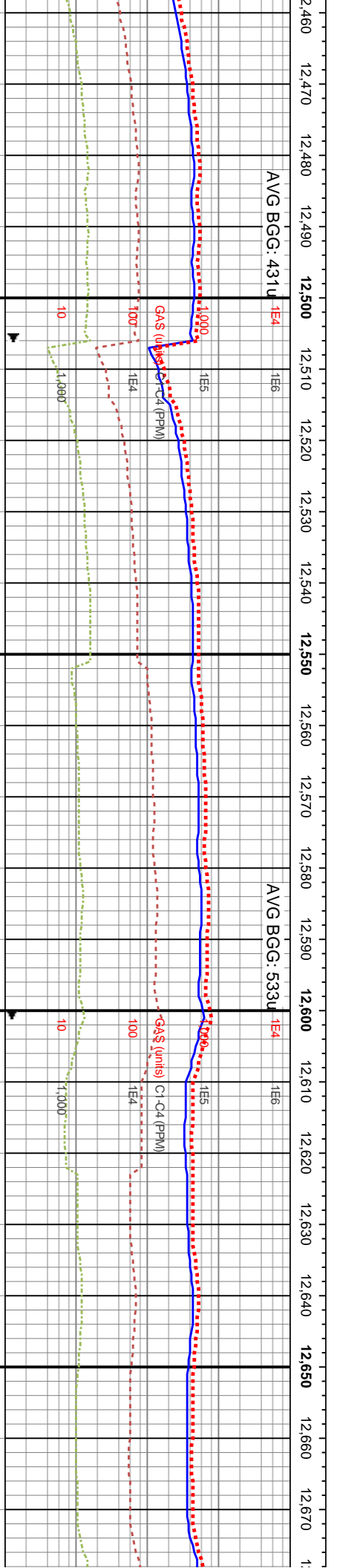
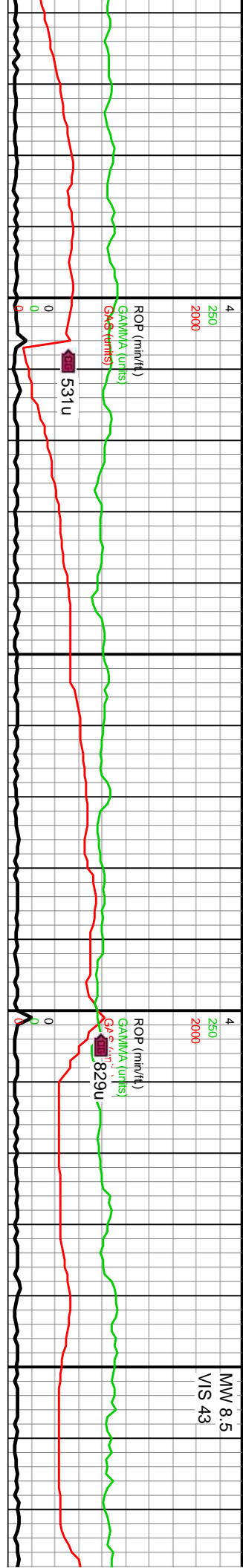


MD: 12,064' TVD: 7,229.02' Inclination: 88.91° Azimuth: 90.01° VS: 4,802.76'		6560		MD: 12,159' TVD: 7,229.58' Inclination: 90.41° Azimuth: 92.83° VS: 4,897.73'		WOB: 54.3kbs Rotary: 50RPM Strokes: 240SPM Pump Rate: 640GPM	
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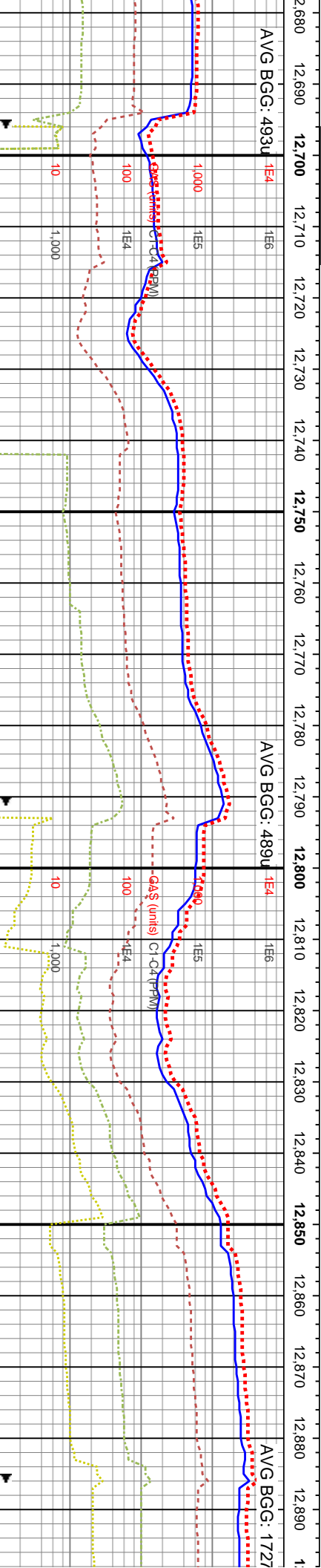
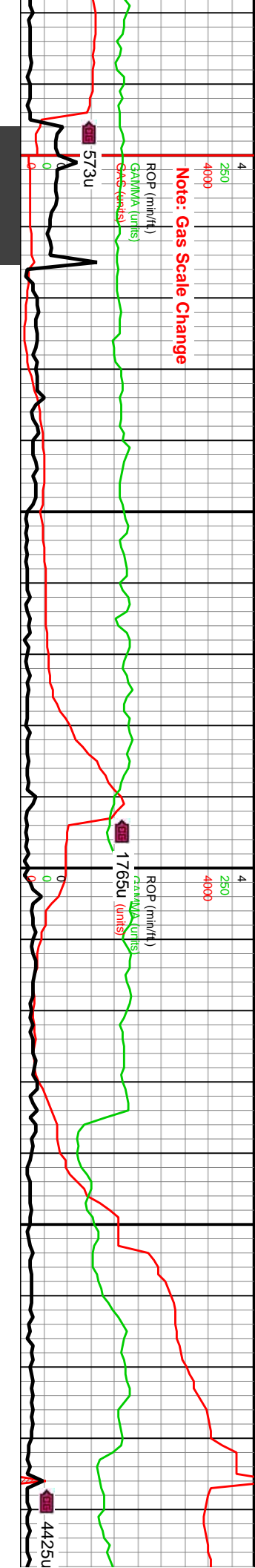
12020-12080 MRLST (60%): dk gy-blk gy, occ med gy, frm-sl hrd, ply-sl eig, v calc, tr f lam, scat pp pyr; CHK (40%): pred lt gysbhn-crm, offwht, chky tex, calc, dul yeign flor, mky cut, dul bishwh resdl ring	12080-12140 MRLST (55%): pred dk gy-gyshbn, blk gy, frm-sl hrd, ply-sb blk, sm tex, occ sl stly, v calc, scat imbd pp pyr; CHK (45%): mot gysbhn-offwht, chky tex, sft, dul yeign flor, dul mky cut, mod bishwh resdl ring	12140-12200 MRLST (70%): dk gy, mot med gy, frm-sl hrd, ply-blky, sl stly tex, tr chk lamm, v calc, tr pp mic pyr; CHK (30%): crm-gyshbn, sft, vf lamm, mnr mic fos, calc, chky tex, dul yeign flor, dul-mod mky cut, bishwh resdl ring	12200-12260 MRLST (75%): gysbhn, sb spt-blky, frm-sl stly tex, v calc; CHK (25%): sl frm, tr mic fos, blk-sl ply mky cut, mod bishwh resdl
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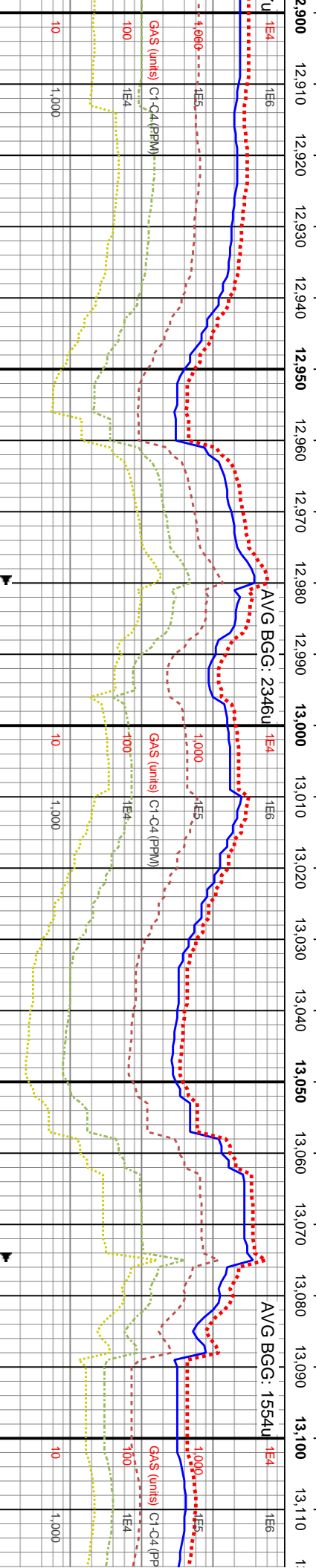
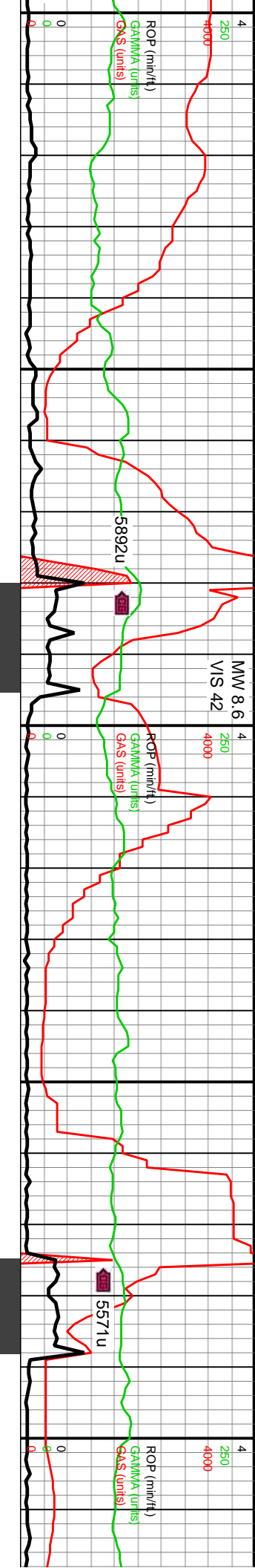
12500 MRLST (65%): pred dk on, frm-sl hrd, blk, sm tex, v calc, scat ntr micos; CHK (35%): lt cm, tn, chky tex, calc, pty-blky, dul r, dul mky cut, mod bishwh resdl ring	12500-12560 MRLST (70%): mot med gy-dk gy, frm-sl hrd, blk, sm tex, v calc, scat pp pyr; CHK (30%): lt gysbhn-offwht, crm-tn, chky tex, calc, pty-blky, dul yelgn flor, dul mky cut, mod bishwh resdl ring	12560-12620 MRLST (75%): dk gy-med gy, frm-v frm, sb blk, sl silty tex, v calc, intbd chk lam, scat imbd pyr; CHK (25%): crm-lt gysbhn, tr mic fos, chky tex, calc, dul yelgn-bri ornng flor, dul mky cut, bishwh resdl ring	12620-12680 MRLST (65%): dk gy-med gy, frm-sl hrd, pty-tab, sl silty tex, v calc, tr chk lamn, scat pyrc nod; CHK (35%): gysbhn-crm, chky tex, calc, blk, sft, dul yelgn-bri ornng flor, dul mky cut, bishwh resdl ring
6560	6560	7560	7560



12680-12740 MRLST (80%): mot dk gy-med gy, gysbhn, frm-sl hrd, sb blkly, sl silty tex, tr f lamn, pp mic pyr; CHK (20%): gysbhn, blkly, chky tex, calc, dul yeign-bri orng flor, dul mky cut, mod bishwh resdl ring	12740-12800 MRLST (65%): dk gy-med gy, frm-v frm, sb blkly, sl silty tex, v calc, inbnd chk lam, scat imbd pyr; CHK (35%): crm-lt gysbhn, tr mic fos, chky tex, calc, dul yeign-bri orng flor, dul mky cut, bishwh resdl ring	12800-12860 MRLST (60%): mot dk gy-med gysbhn, pily-blky, frm-sl hrd, sl silty tex, v calc; CHK (40%): mot lt gysbhn-gysbhn, sft-sl frm, chky tex, blkly-sl pily, scat mic fos, v calc, dul yeign flor, dul mky cut, bishwh resdl ring	12860-12920 MRLST (55%): gy-gysbhn, frm-sl hrd, pily-blky, v calc, scat imbd pp mot gysbhn-offwht, chky tex, mod bishwh resdl ring
MD: 12,729' TVD: 7,233.23' Inclination: 90.19° Azimuth: 92.61° VS: 5,467.6'	WOB: 40.3kibs Rotary: 50RPM Strokes: 240SPM Pump Rate: 640GPM MD: 12,823' TVD: 7,233.82' Inclination: 89.09° Azimuth: 93.14° VS: 5,561.59'		

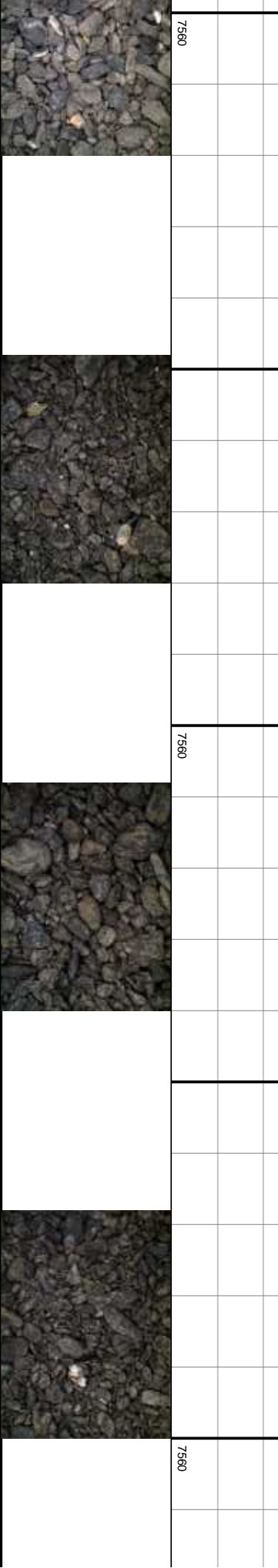
12680-12740 MRLST (80%): mot dk gy-med gy, gysbhn, frm-sl hrd, sb blkly, sl silty tex, tr f lamn, pp mic pyr; CHK (20%): gysbhn, blkly, chky tex, calc, dul yeign-bri orng flor, dul mky cut, mod bishwh resdl ring	12740-12800 MRLST (65%): dk gy-med gy, frm-v frm, sb blkly, sl silty tex, v calc, inbnd chk lam, scat imbd pyr; CHK (35%): crm-lt gysbhn, tr mic fos, chky tex, calc, dul yeign-bri orng flor, dul mky cut, bishwh resdl ring	12800-12860 MRLST (60%): mot dk gy-med gysbhn, pily-blky, frm-sl hrd, sl silty tex, v calc; CHK (40%): mot lt gysbhn-gysbhn, sft-sl frm, chky tex, blkly-sl pily, scat mic fos, v calc, dul yeign flor, dul mky cut, bishwh resdl ring	12860-12920 MRLST (55%): gy-gysbhn, frm-sl hrd, pily-blky, v calc, scat imbd pp mot gysbhn-offwht, chky tex, mod bishwh resdl ring
MD: 12,729' TVD: 7,233.23' Inclination: 90.19° Azimuth: 92.61° VS: 5,467.6'	WOB: 40.3kibs Rotary: 50RPM Strokes: 240SPM Pump Rate: 640GPM MD: 12,823' TVD: 7,233.82' Inclination: 89.09° Azimuth: 93.14° VS: 5,561.59'		

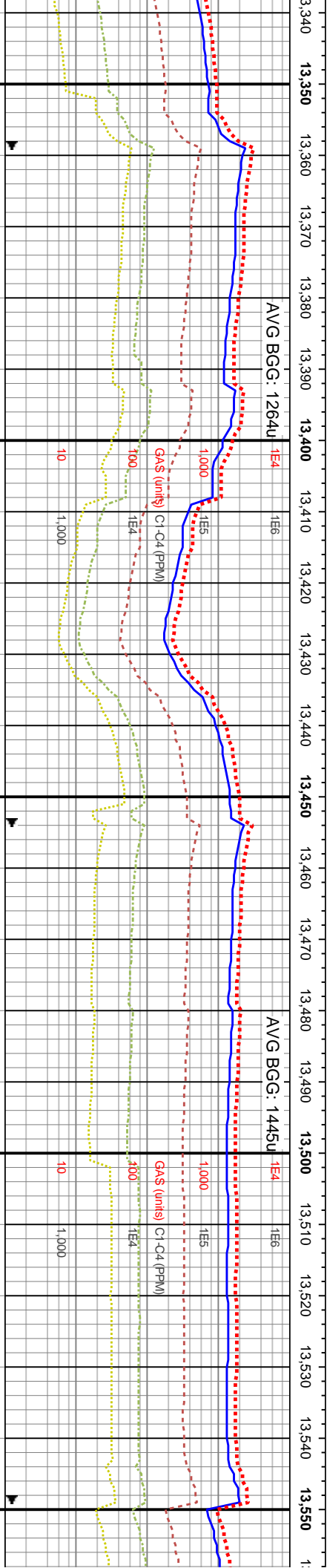
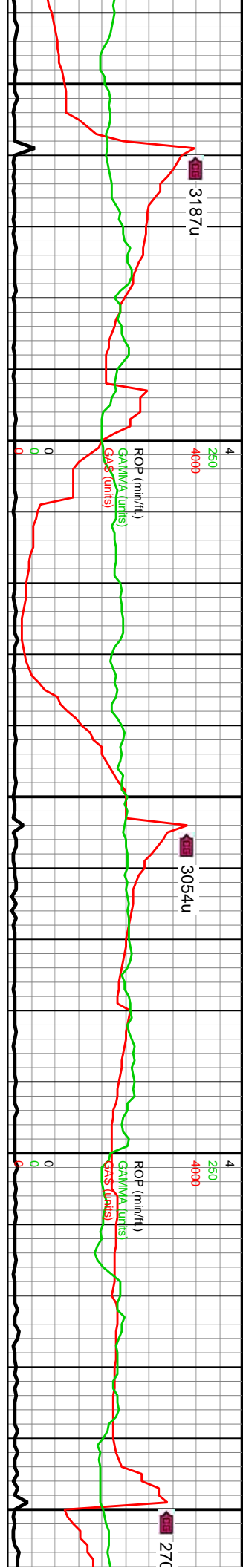




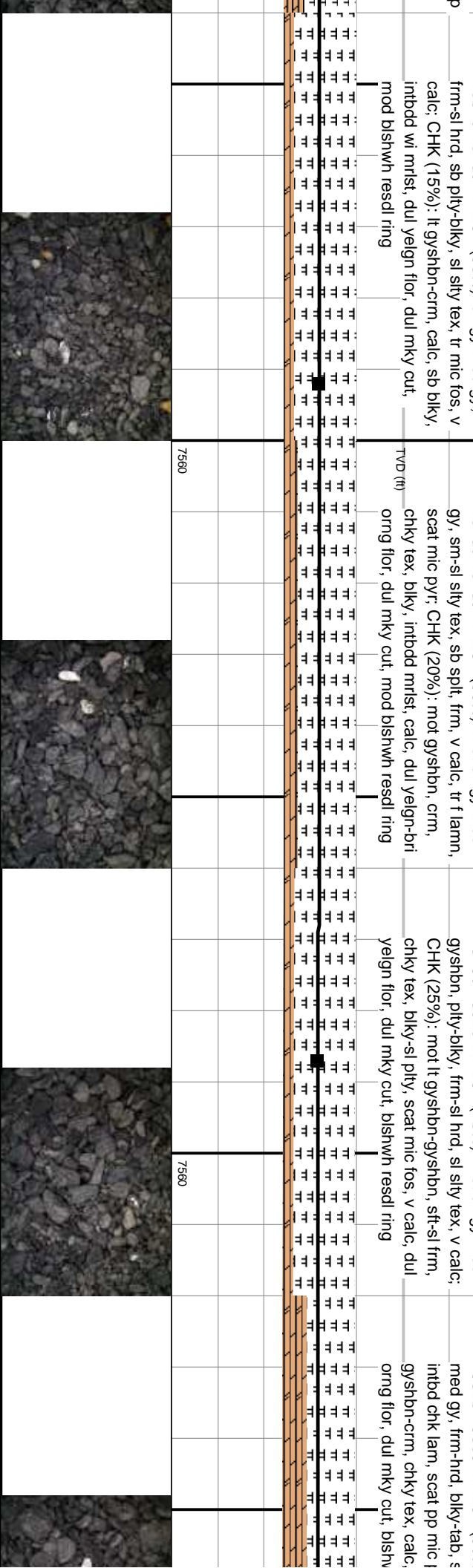
MD: 12,918'		WOB: 30.2Klbs		MD: 13,013'		MD: 13,108'	
TVD: 7,234.89'		Rotary: 70RPM		TVD: 7,237.03'		TVD: 7,240.27'	
Inclination: 89.62°		Strokes: 240SPM		Inclination: 87.8°		Inclination: 88.29°	
Azimuth: 92.52°		Pump Rate: 642GPM		Azimuth: 90.63°		Azimuth: 90.01°	
VS: 5,656.57'		VS: 5,751.54'		VS: 5,846.43'			

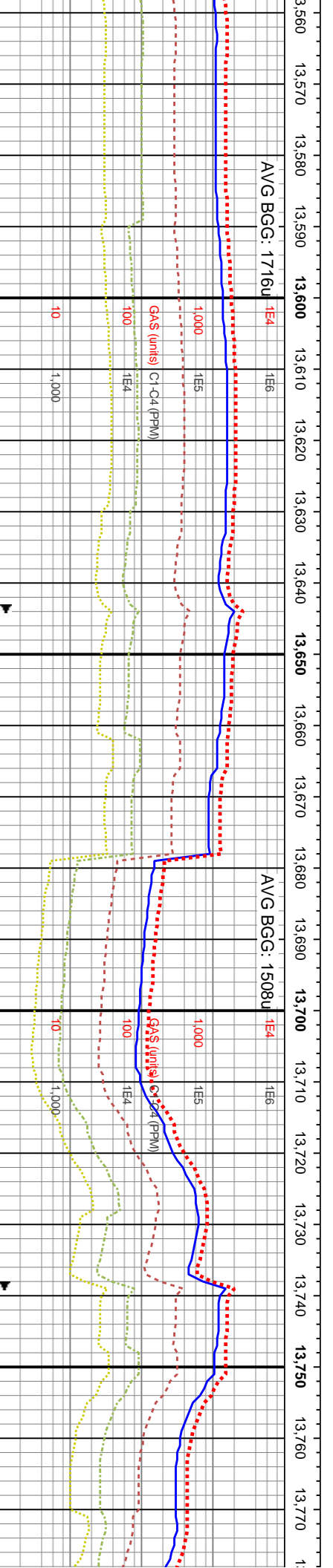
6560	12920-12980 MRLST (60%): mot dk gy-blk gy, mot gysbhn, frm-hrd, blk, sl abrsv tex, v calc, tr inbnd chk lam, scat pp mic pyr; CHK (40%): lt gysbhn-crm, chky tex, calc, blk, dul yeign flor, dul mky cut, bishwh resdl ring	6560	12980-13040 MRLST (70%): mot dk gy-dk gysbhn, frm-hrd, blk, sl abrsv tex, v calc, tr inbnd chk lam, scat pp mic pyr; CHK (30%): lt gysbhn-crm, chky tex, calc, blk, dul yeign-brl onng flor, dul mky cut, mod bishwh resdl ring	6560	13040-13100 MRLST (75%): dk gy, mot med gy, frm-sl hrd, ply-blky, sl sity tex, tr chk lamm, v calc, tr pp mic pyr; CHK (25%): crm-gysbhn, sft, vf lamm, inbnd wi mlst, calc, chky tex, dul yeign flor, dul mky cut, bishwh resdl ring	6560	13100-13160 MRLST (80%): dk gy, mot med gy, frm-sl hrd, ply-blky, sl sity tex, tr chk lamm, v calc, tr pp mic pyr; CHK (20%): crm-gysbhn, sft, vf lamm, inbnd wi mlst, calc, chky tex, dul yeign flor, dul mky cut, bishwh resdl ring
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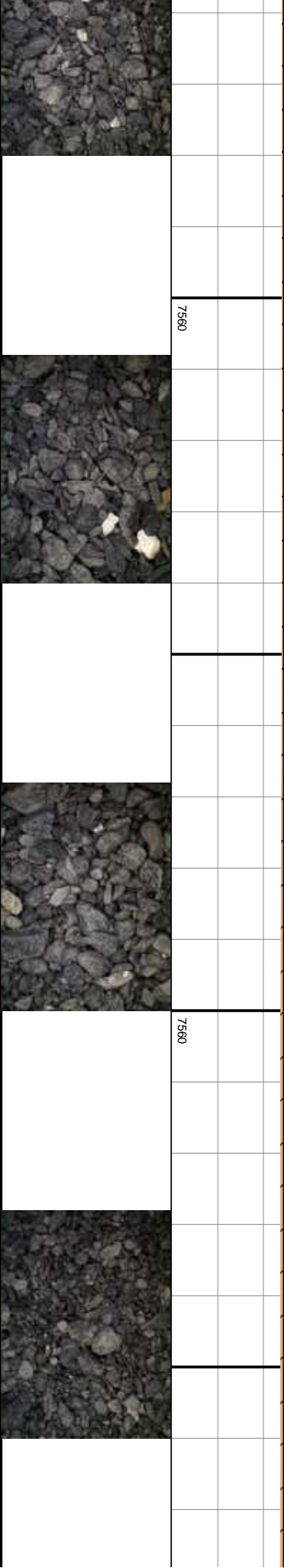


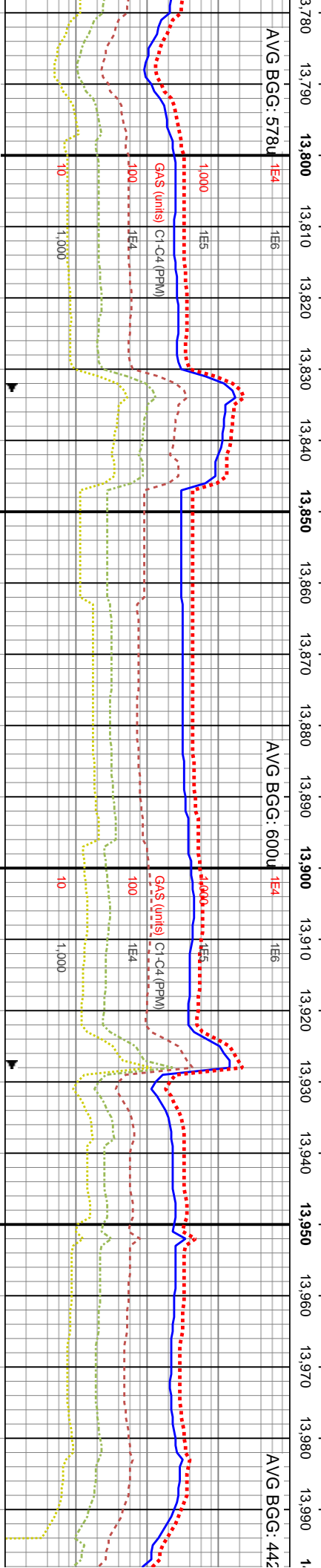
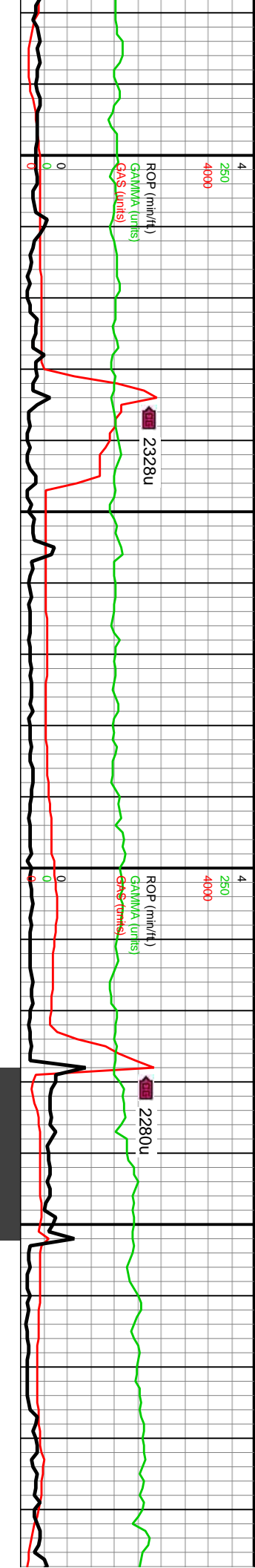
MD: 13,392' TVD: 7,241.2' Inclination: 90.01° Azimuth: 90.23° VS: 6,130.27'		fWOB: 45.2klbs Rotary: 60RPM Strokes: 240SPM Pump Rate: 640GPM	
13340-13400 MRLST (85%): dk gy-med gy, frm-sl hrd, sb ply-biky, sl silty tex, tr mic fos, v calc; CHK (15%): lt gysbn-crm, calc, sb biky, intbdd wl mlst, dul yeign flor, dul mky cut, mod bishwh resdl ring	13400-13460 MRLST (80%): mot dk gy-med gy, sm-sl silty tex, sb spt, frm, v calc, tr f lamn, scat mic pyr; CHK (20%): mot gysbn, crm, chky tex, biky, intbdd mlst, calc, dul yeign-bri orng flor, dul mky cut, mod bishwh resdl ring	13460-13520 MRLST (75%): mot dk gy-med gysbn, ply-biky, frm-sl hrd, sl silty tex, v calc; CHK (25%): mot lt gysbn-gysbn, sft-sl frm, chky tex, biky-sl ply, scat mic fos, v calc, dul yeign flor, dul mky cut, bishwh resdl ring	13520-13580 MRLST (90%): med gy, frm-hrd, biky-tab, s intbdd chk lam, scat pp mic p gysbn-crm, chky tex, calc, orng flor, dul mky cut, bishwh





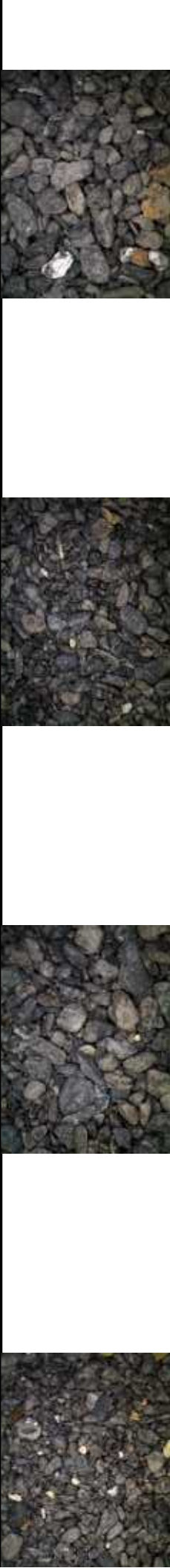
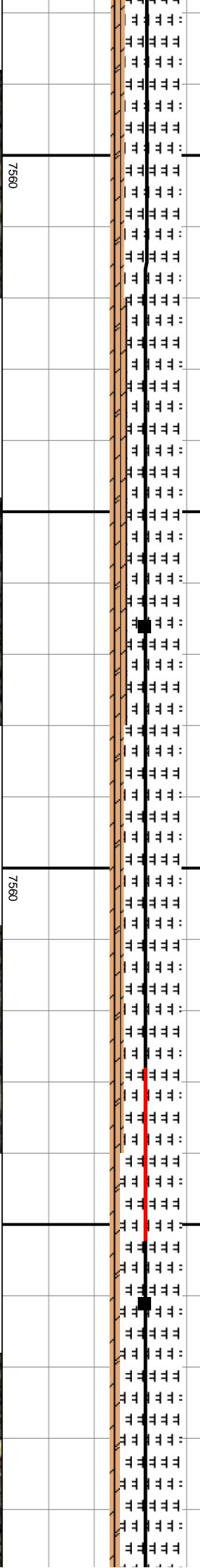
Material	Material	Material	Material
13580-13640 MRLST (75%): mot dk gy, med gy, frm-hrd, tab-biky, sm-sl abrsv tex, v calc, scat imbd pyr; CHK (25%): mot crm-lt gyshbn, chky tex, calc, mnr microf, dul yelgn flor, dul mky cut, mod blshwh resdl ring	13640-13700 MRLST (70%): pred dk gy-gyshbn, frm-sl hrd, biky, sm tex, v calc, scat imbd/pp pyr, mnr microf, CHK (30%): lt gyshbn-crm, tn, chky tex, calc, ply-biky, dul yelgn flor, dul mky cut, mod blshwh resdl ring	13700-13760 MRLST (85%): dk gy-med gy, gyshbn, frm-sl hrd, ply-tab, sl slty tex, v calc, tr chk lamm, scat mic pyr; CHK (15%): gyshbn, chky tex, calc, biky, sft, dul yelgn flor, dul mky cut, blshwh resdl ring	13760-13820 MRLST (90%): dk gy-med gy, frm-hrd, tab-biky, sm-sl abrsv tex, v calc, scat imbd/pp pyr; CHK (10%): lt gyshbn-crm, tn, chky tex, calc, mnr microf, dul yelgn flor, dul mky cut, mod blshwh resdl ring

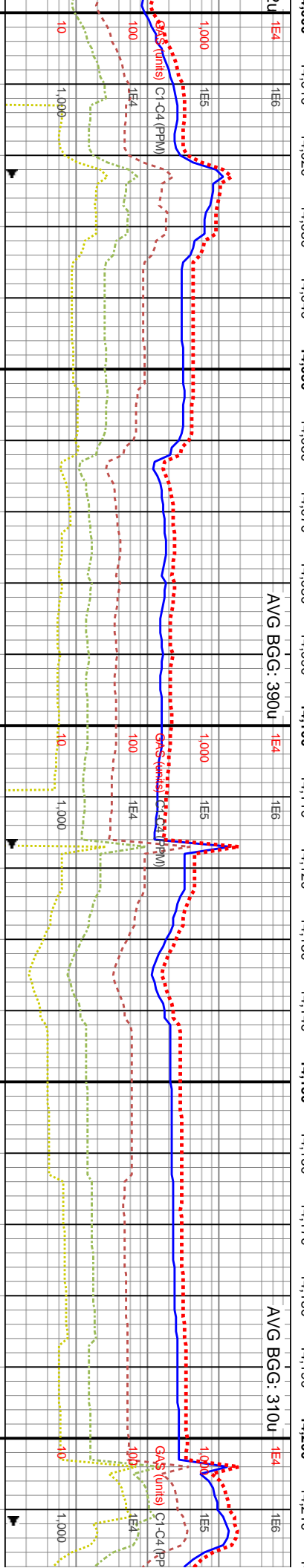
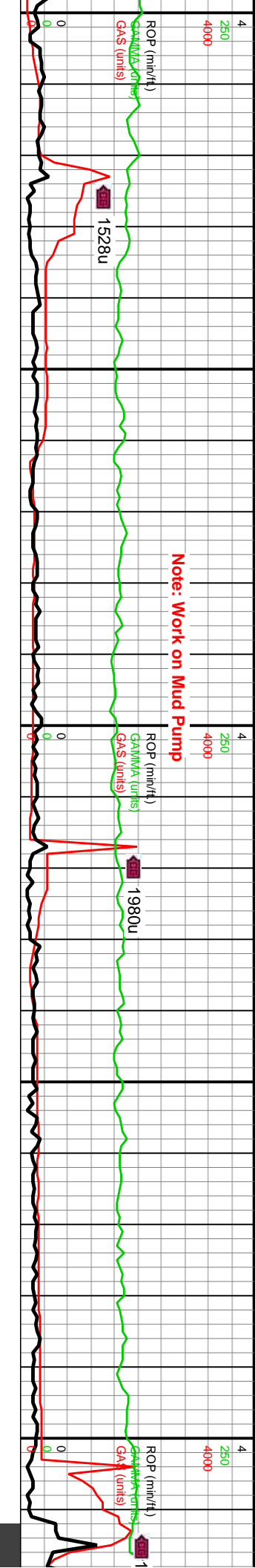




WOB: 46.8Klbs		MD: 13,866'		WOB: 48	
Rotary: 61RPM		TVD: 7,249.27'		Rotary: 5	
Strokes: 240SPM		Inclination: 87.89°		Strokes:	
Pump Rate: 641GPM		Azimuth: 89.92°		Pump Rate:	
1°		VS: 6,603.51'		VS: 6,698.43'	

3820 MRLST (80%): dk gy-dk gysbhn, frm-hrd, pty-biky, sm-sl abrsv tex, v shk lamm; CHK (20%): lt gysbhn, chky, biky, sft, dul yelgn flor, dul mky cut, resdl ring	13820-13880 MRLST (75%): mot med gy-dk gy, gysbhn, frm-sl hrd, biky-sl eig, sm-sl silty tex, v calc; CHK (25%): mot lt gysbhn-gy, chky tex, calc, pty, bishwn-dul yelgn flor, mky cut, dul bishwn resdl ring	13880-13940 MRLST (80%): dk gy-med gy, gysbhn, frm-hrd, pty-sb biky, sl sm tex, v calc, tr mictos, tr chk lamm; CHK (20%): lt gysbhn, chky tex, calc, biky, sft, dul yelgn flor, dul mky cut, bishwn resdl ring	13940-14000 MRLST (85%): mot dk gy-med gy, frm-sl hrd, pty-biky, sm-sl silty tex, v calc, mic fos, scat pp pyr; CHK (15%): pred lt gysbhn-lt gy, sft, chky tex, calc, dul yelgn flor, mod mky cut, dul bishwn resdl ring
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5Klbs
22RPM
2240SPM
Rate: 640GPM

MD: 14,055'
TVD: 7,250.11'
Inclination: 90.1°
Azimuth: 90.54°
VS: 6,792.39'

6560

MD: 14,150'
TVD: 7,250.6'
Inclination: 89.31°
Azimuth: 90.85°
VS: 6,887.35'

WOB: 45.2Klbs
Rotary: 50RPM
Strokes: 240SPM
Pump Rate: 641GPM

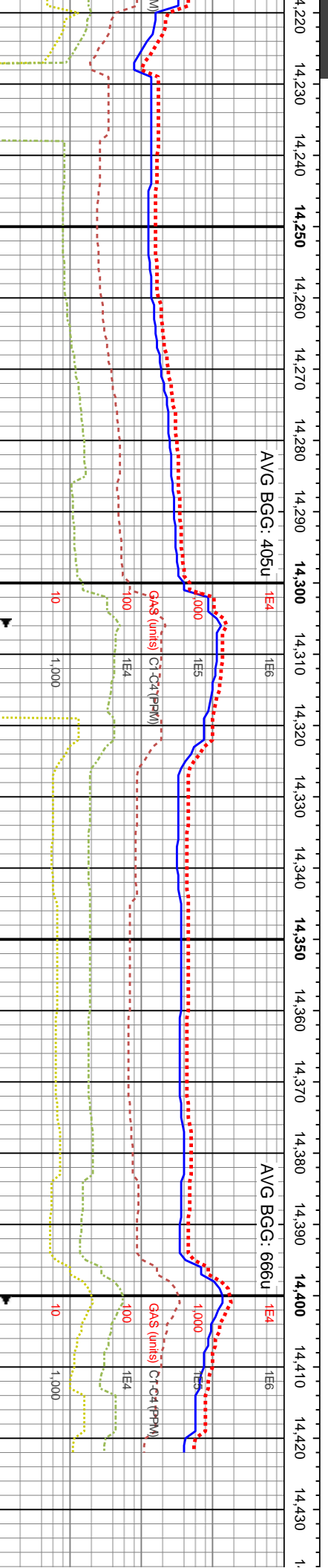
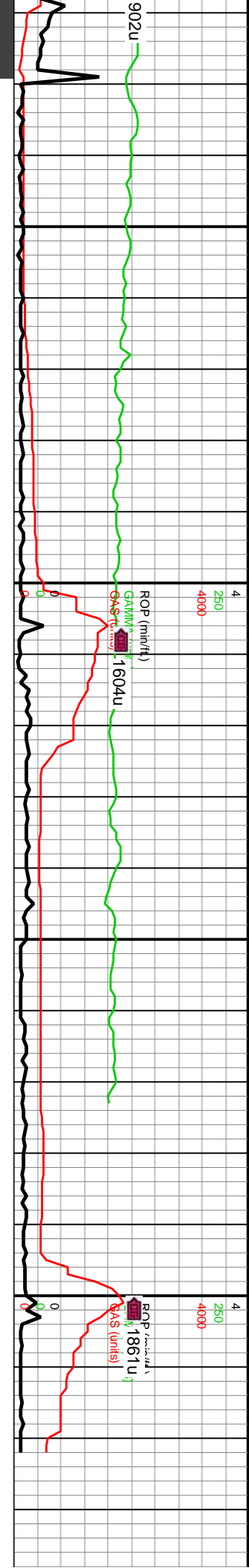
14000-14060 MRLST (80%): mot dk gy-dk
gysbhn, frm-hrd, pty-sb blk, sm-sl silty tex, v
calc, chk lamn; CHK (20%): crm-lt gysbhn,
chky tex, calc, blk, sft, mnr mifcos, dul yelgn
flor, dul mky cut, bishwh resdl ring

14060-14120 MRLST (75%): mot dk gy-med
gy, gysbhn, frm-sl hrd, blk, sm-sl silty tex, v
calc, scat imbd pyr; CHK (25%): mot crm-lt
gysbhn, chky tex, calc, pty, dul yelgn, dul mky
cut, mod bishwh resdl ring

14120-14180 MRLST (85%): mot dk gy-dk
gysbhn, frm-hrd, pty-sb blk, sm-sl silty tex, v
calc, chk lamn; CHK (15%): crm-lt gysbhn,
chky tex, calc, blk, sft, mnr mifcos, dul yelgn
flor, dul mky cut, bishwh resdl ring

14180-14240 MRLST (75%):
mot gysbhn, frm-sl hrd, sb
chk lamn, mnr pp mic pyr;
gysbhn, chky tex, calc, sb
dul mky cut, mod bishwh r





MD: 14,244'
TVD: 7,250.1'
Inclination: 91.3°
Azimuth: 89.13°
VS: 6,981.27'

MD: 14,339'
TVD: 7,248.79'
Inclination: 90.28°
Azimuth: 89.04°
VS: 7,076.13'

WOB: 46.3Klbs
Rotary: 70RPM
Strokes: 240SPM
Pump Rate: 640GPM

MD: 14,420'
TVD: 7,248.4'
Inclination: 90.28°
Azimuth: 89.04°
VS: 7,157'

6): dk gy-med gy, tab, v calc, sme
CHK (25%): crm-lt
plty, dul yelgn flr, resd ring

14240-14300 MRLST (75%): mot dk gy-med gy, sm-sl silty tex, sb spl, frm, v calc, tr f lamn, scat mic pyr; CHK (25%): mot gysbhn, crm, chky tex, blk, intbdd mrlst, calc, dul yelgn flr, dul mky cut, mod bishwh resd ring

14300-14360 MRLST (85%): mot dk gy-med gy, sm-sl silty tex, sb spl, frm, v calc, tr f lamn, scat mic pyr; CHK (15%): mot gysbhn, crm, chky tex, blk, intbdd mrlst, calc, dul yelgn flr, dul mky cut, mod bishwh resd ring

14360-14420 MRLST (75%): dk gy-med gy, frm-v frm, sb blk, sl silty tex, v calc, intbd chk lam, scat imbd pyr; CHK (25%): crm-lt gysbhn, tr mic fos, chky tex, calc, dul yelgn flr, dul mky cut, bishwh resd ring



