



RESERVOIR GROUP

Scale: 5" / 100'
Measured Depth Log

Well Name Flaschenriem 4

Location Section 3, Township 4N, Range 68W

State Colorado

County Weld

Country USA

Rig Number Ensign 140

API Number 05-123-49818

AFE # N/A

Geographic Region Rockies

Field Wattenberg

Spud Date 3/24/2019

Drilling Completed 5/9/2019

Surface Coordinates 1,893FNL & 2,178FWL, Sec:3 T:4N R:68W

Latitude: 40.34401, Longitude: -104.99154

Bottom Hole Coordinates 1,596FSL & 460FEL, Sec:35 T:5N R:68W

Latitude: 40.35353 Longitude: -104.96611

Ground Elevation 5,068'

K.B. Elevation 5,091'

Logged Interval 7,900' To 15,741'

Total Depth 15,741'

Formation Codell

Type of Drilling Fluid Oil Based Mud

Operator

Company Petro Operating Company, LLC

Address 9033 East Easter Place, Suite 112
Centennial, CO 80112-2105

Petro  **operatin**
Company, LLC

Geologist

Name Michael Domenick

Company Petro Operating Company, LLC

Address 9033 East Easter Place, Suite 112
Centennial, CO 80112-2105

Petro  **operatin**
Company, LLC

Other

Loggers: Byron Pitulski/Greg Diefenbach

Services Provided: 2 Man Logging, Geosteering

Equipment: ML-585

Start Date 05/07/2019

Release Date: 05/09/2019

Job #: 2075RK1904

Zone Color Coding

Oil

Note

Error

Condensate

Core

Water

Gas

Pressure

Seal

Rock Types

UNKNOWN

ANHYDRITE

GYPSUM

SALT

SIDERITE or LIMONITE

LIMESTONE

DOLOMITE

CHERT

COAL

MARLSTONE

CHALK

SHALE

SHALE GRAY

SHALE COLORED

SILTSTONE

SANDSTONE

CONGLOMERATE

BRECCIA

TILL

BENTONITE

TUFF

IGNEOUS

METAMORPHIC

CEMENT

Acc

F FOSSIL

GASTROPOD

ARGILLITE GRAY

B BENTONITE

BITUMENOUS

BRECCIA FRAC

CALCAREOUS

CARBONACEO

CHTDK

CHTLT

COAL - THIN BR

DOLOMITIC

FELDSPAR

FERRUGINOUS

FERRUGINOUS

GASTROPOD

OOULTE

OSTRACOD

PELECYPOD

PELLET

PISOLITE

PLANT REMAINS

PLANT SPORES

SCAPHOPOD

STROMATOPOROID

ANHYDRITIC

Minerals

Other

OIL SHOW

ORGANIC

P PINPOINT

DEAD

EVEN

QUESTIONABLE

SPOTTED STAINING

Engineering

CASING

CONNECTION (LEFT)

CONNECTION (RIGHT)

CONNECTION GAS

CORE - LOST

CORE - RECOVERED

DST INTERVAL

FAULT

Porosity

E EARTHY

FENESTRAL

F FRACTURE

INTERCRYSTALLINE

INTEROOLITIC

MOLDIC

Accessories

S	GLAUCONITE	
AIN	GYPSIFEROUS	
	HEAVY MINERAL	ANHYDRITE STRINGER
	SUBSTANCE KAOLIN	BENTONITE STRINGER
MENTS	MARLSTONE	COAL STRINGER
	MINERAL CRYSTALS	DOLomite STRINGER
S FLAKES	NODULES	GYPSUM STRINGER
	PHOSPHATE PELLETS	LIMESTONE STRINGER
DS	PYRITE	MARLSTONE (CALC) STRG
	SALT CAST	MARLSTONE (DOL) STRG
	SANDY	SANDSTONE STRINGER
	SILICEOUS	SHALE STRINGER
PELLET	SILTY	SILTSTONE STRINGER
S	TUFFACEOUS	

Stringer

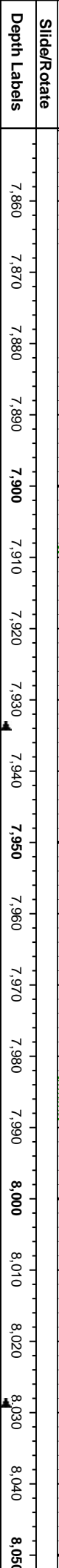
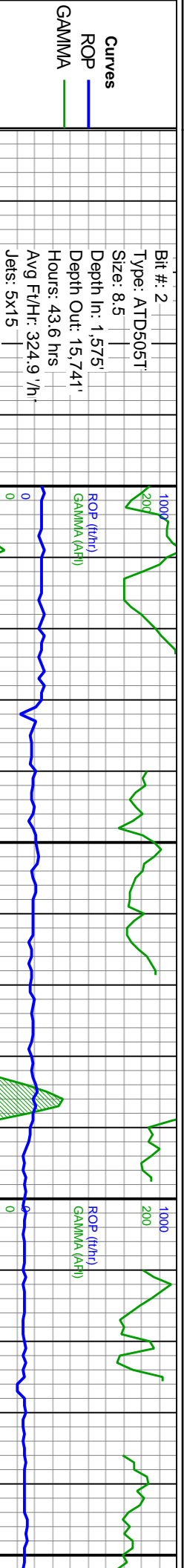
Symbols

FORMATION TOP		L LITHOGRAPHIC
AS SHOW		MX MICROXLN
DEPTH	MIN DEPTH	MS MUDSTONE
ORMAL FAULT	R ROUNDED	PS PACKSTONE
L SHOW	S SUBANG	WS WACKESTONE
VERTURNED STRATA	SUBRND	
VERSE FAULT		
DE WALL CORE (LEFT)		M MODERATE
DE WALL CORE (RIGHT)	B BOUNDSTONE	P POOR
DE	C CHALKY	W WELL
SURVEY	CX CRYPTOXLN	
RIP GAS	E EARTHY	
RELINe TESTED - LEFT	FX FINELYYLN	
RELINe TESTED - RT	GS GRAINSTONE	

Rounding

Sorting

Textures



Notes

MD: 7,910'

INC: 44.79°

AZM: 45.57°

TVD: 6,938.3'

VS: 875.59'

WOB: 14klbs

RPM: 119

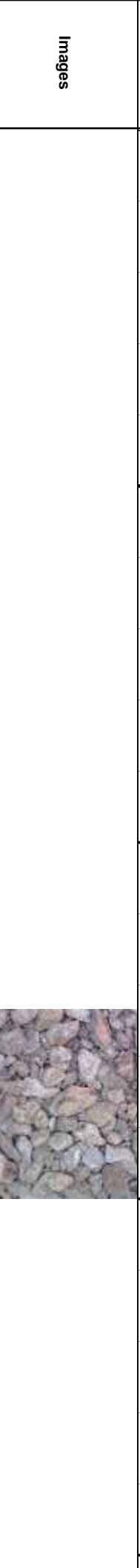
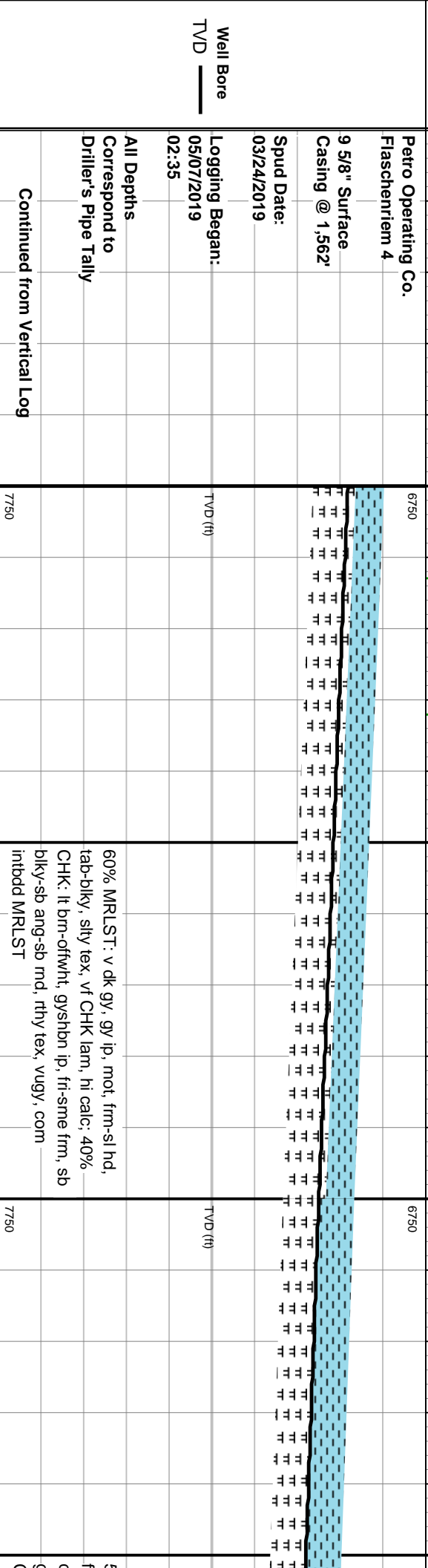
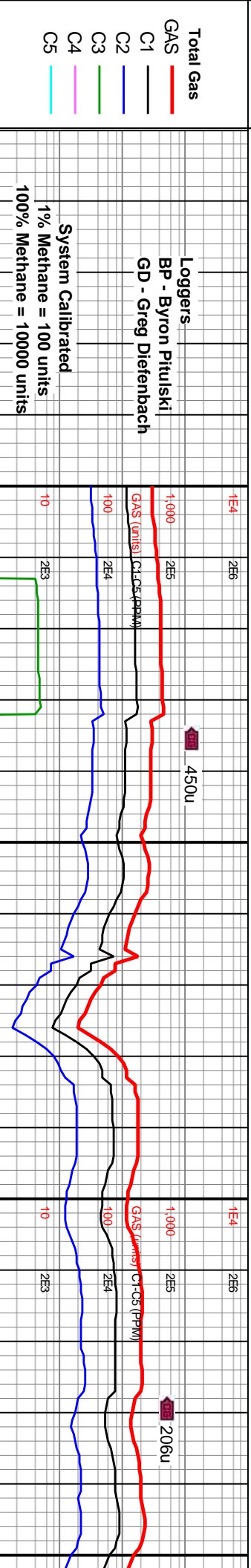
SPM: 202

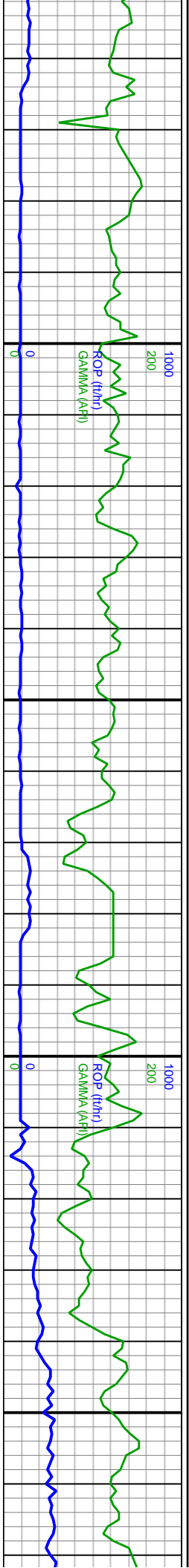
SPP: 3,466psi

VS: 942.63'

Niobrara B

7,988TMD / 6,991TVD





MD: 8,099'
INC: 55.89°
AZM: 55.65°
TVD: 7,059.23
VS: 1,016.09'

MW IN: 9.6
VIS IN: 48
MW OUT: 9.6
VIS OUT: 47

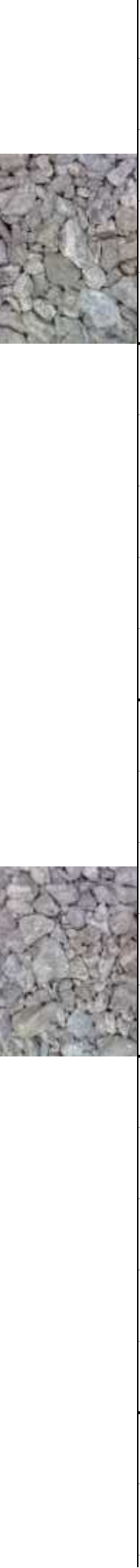
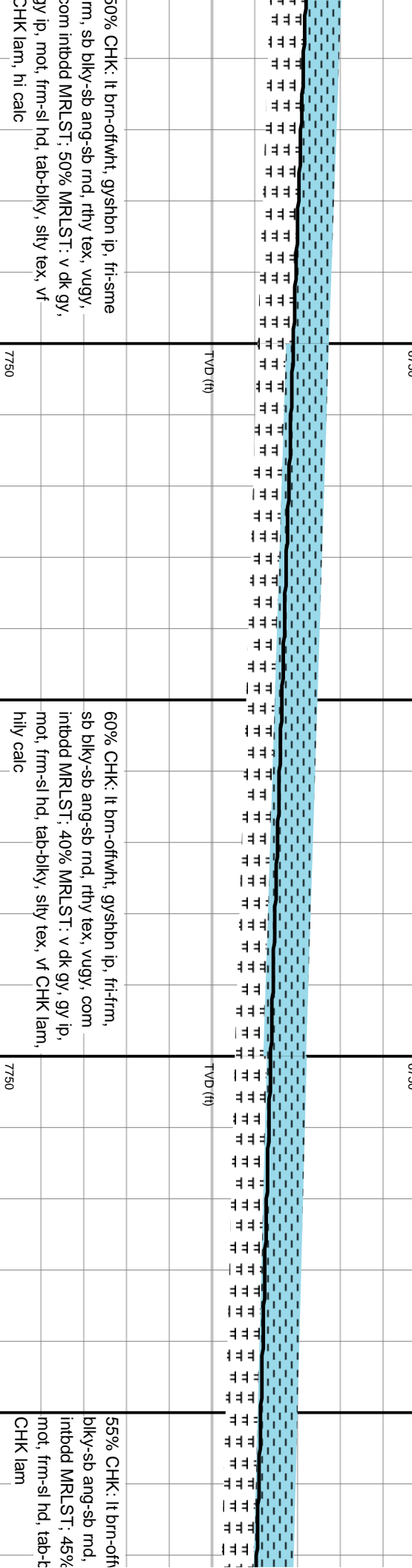
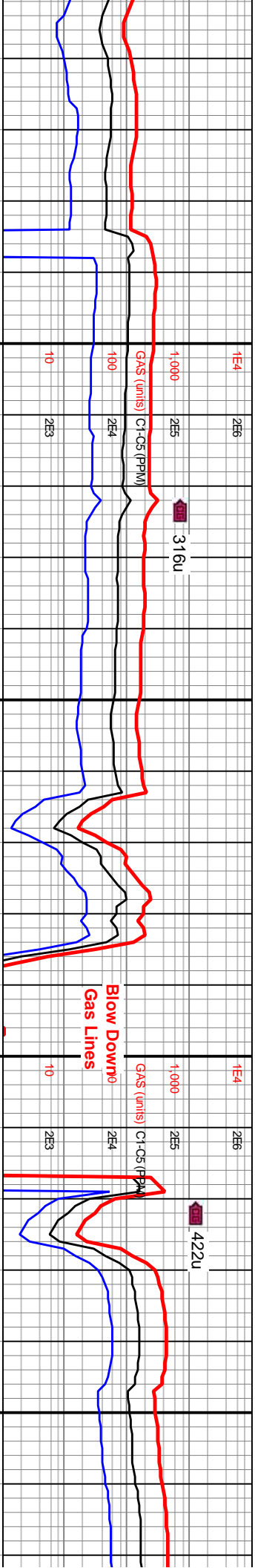
GD

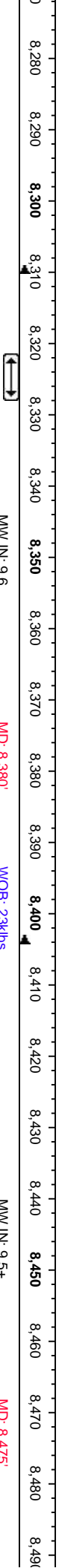
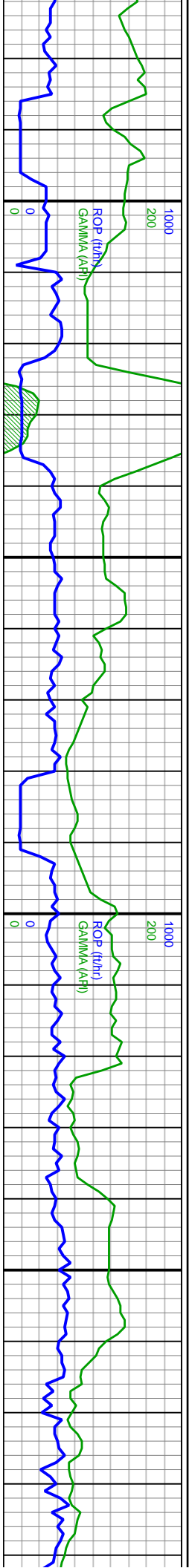
Niobara C
8,154'WD / 7,089'TVD

MD: 8,193'
INC: 59.82°
AZM: 66.23°
TVD: 7,109.32
VS: 1,095.39'

WOB: 10.6kips
RPM: 121
SPM: 200
SPP: 3,318psi

MW IN: 9.6
VIS IN: 48
MW OUT: 9.6
VIS OUT: 47





MD: 8,286'
INC: 65.09°
AZM: 76.76°
TVD: 7,152.42'
VS: 1,176.95'

Base Niobrara C
8,323MD / 7,167TVD

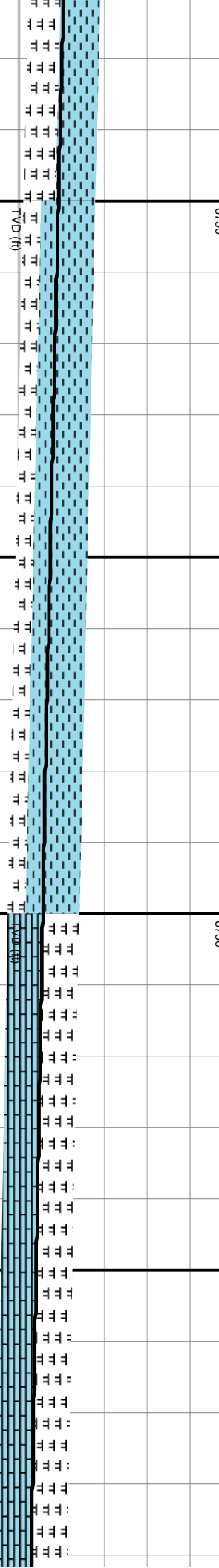
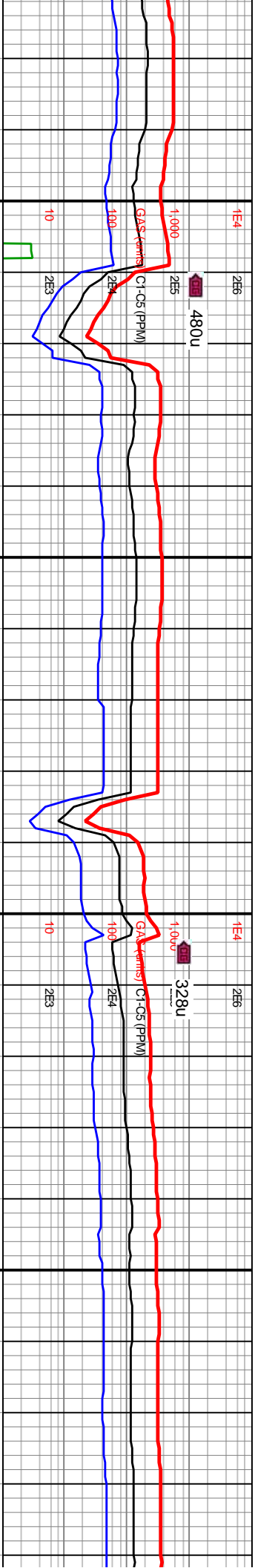
MW IN: 9.6
VIS IN: 47
MW OUT: 9.6
VIS OUT: 46

MD: 8,380'
INC: 69.76°
AZM: 82.3°
TVD: 7,188.52'
VS: 1,260.43'

WOB: 23kbs
RPM: 120
SPM: 202
SPP: 4,000psi

MW IN: 9.5+
VIS IN: 47
MW OUT: 9.5+
VIS OUT: 46

MD: 8,475'
INC: 75.06°
AZM: 85.32°
TVD: 7,217.23'
VS: 1,345.49'

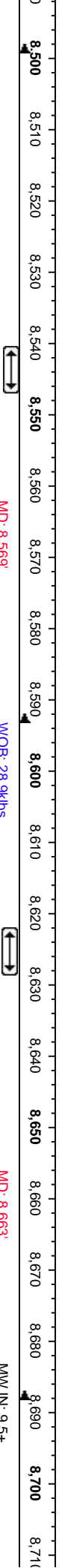
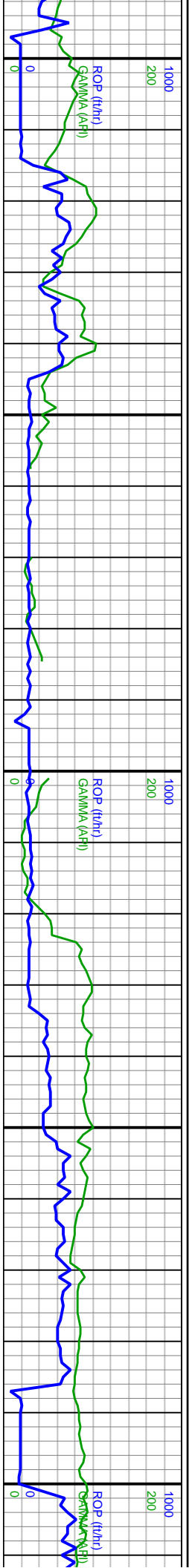


wht, gyshtn ip, fri-fm, sb
rthy tex, vugy, com
MRLST: v dk gy, gy ip,
biky, silty tex, hily calc, vf

75% CHK: lt br-oftwht, gyshtn ip, fri-fm,
sb biky-sb ang-sb rnd, rthy tex, vugy, com
intbdd MRLST: 25% MRLST: v dk gy, gy ip,
mot, frm-hd, tab-biky, silty tex, tr cal incl, vf
CHK lam, hily calc

50% MRLST: v dk gy, gy ip, mot, frm-s
tab-biky, silty tex, tr cal incl, vf CHK lam
calc, 50% LS: oftwhnt to lt gry, dk gry ip
occ silty-sdy, dolc ip





Ft Hayes
8,542' MD / 7,232' TVD

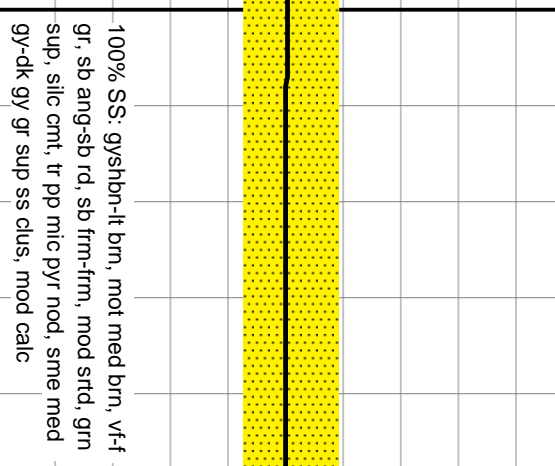
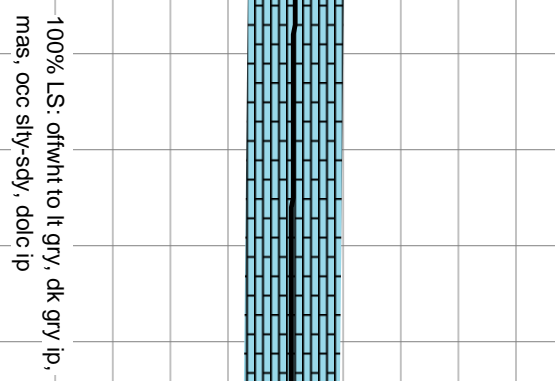
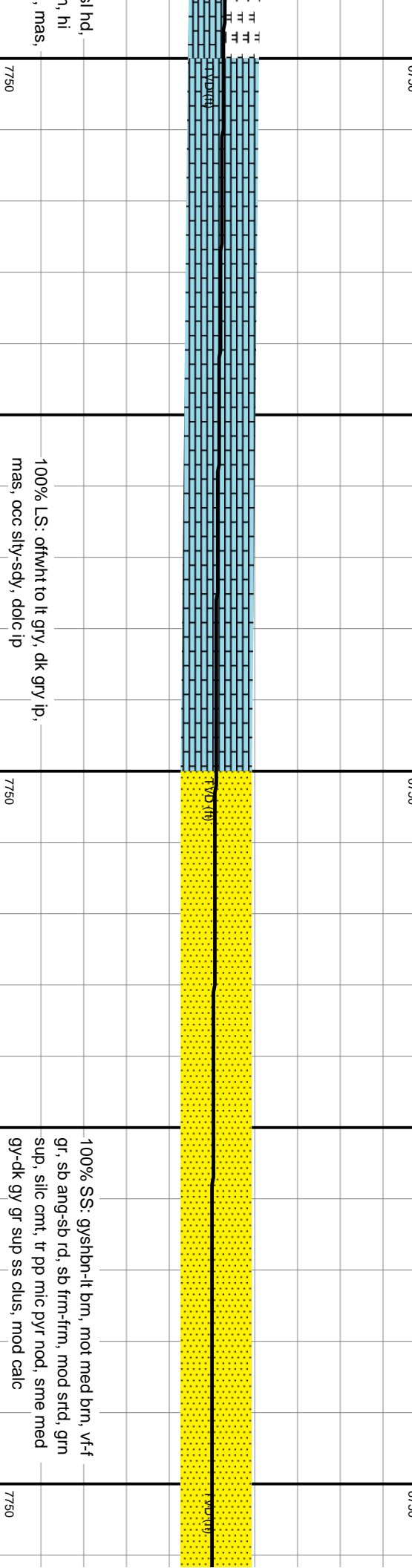
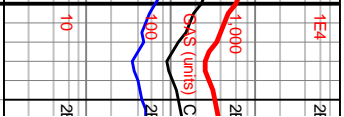
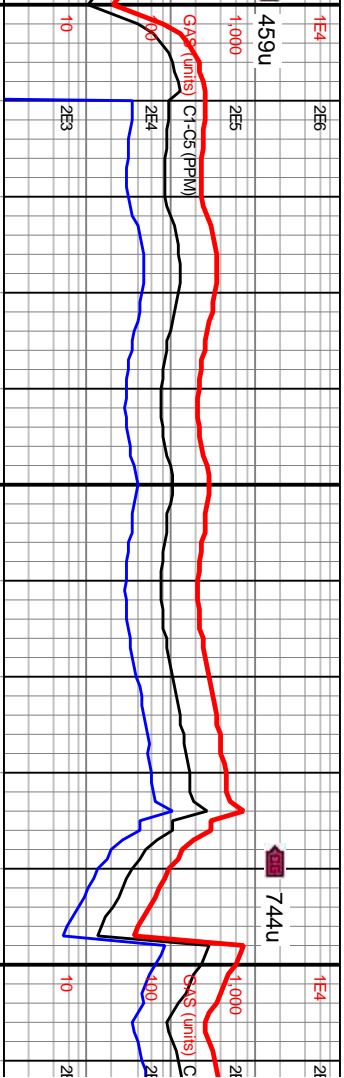
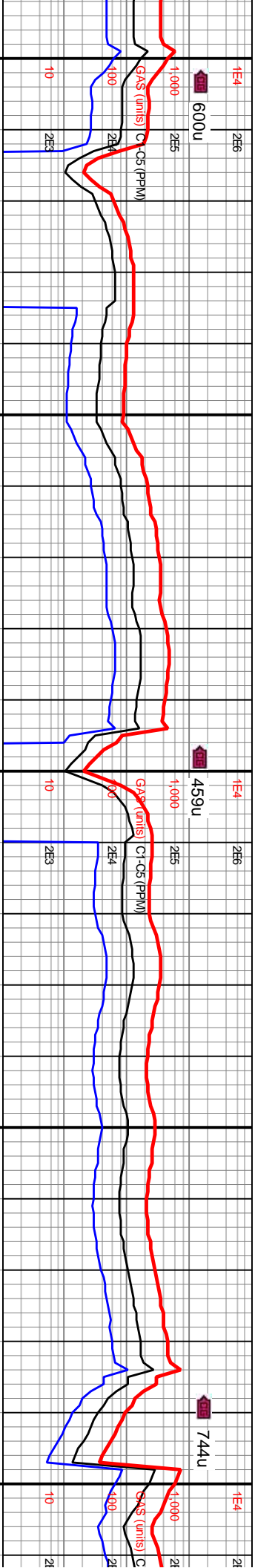
MD: 8,569'
INC: 79.92°
AZM: 88.49°
TVD: 7,237.59'
VS: 1,429.88'

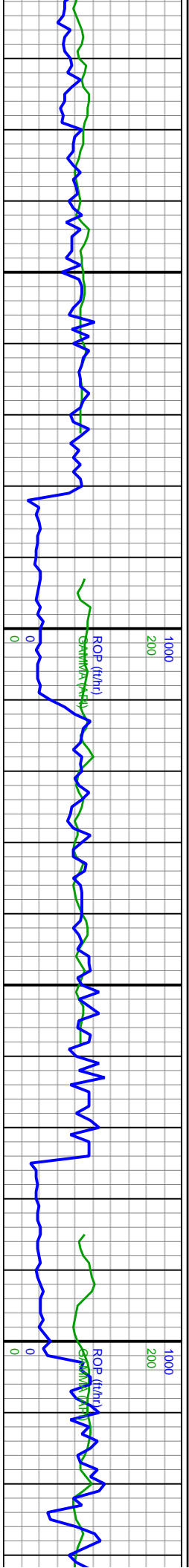
WOB: 28.9klbs
RPM: 120
SPM: 203
SPP: 3,330psi

Codeil
8,624' MD / 7,244' TVD

MD: 8,663'
INC: 86.18°
AZM: 89.51°
TVD: 7,248.96'
VS: 1,514.29'

MW IN: 9.5+
VIS IN: 46
MW OUT: 9.5+
VIS OUT: 46

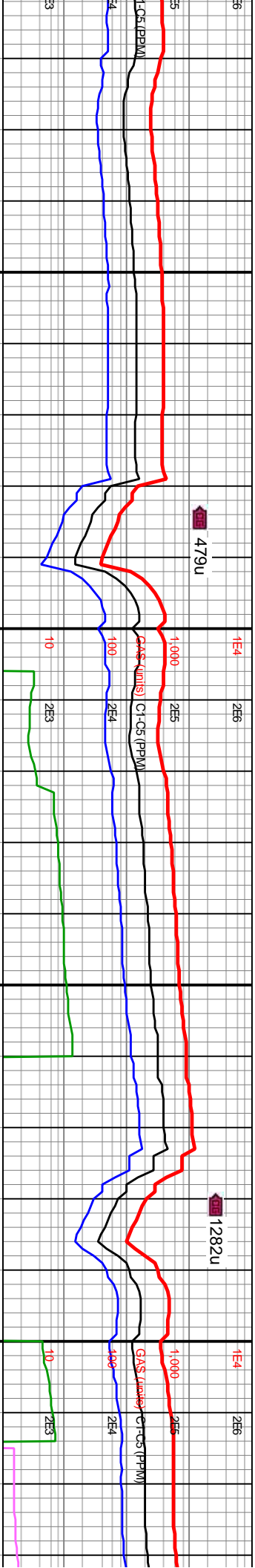




Land Curve
MD: 8,757'
INC: 89.38°
AZM: 89.1°
TVD: 7,252.6'
VS: 1,599.08'

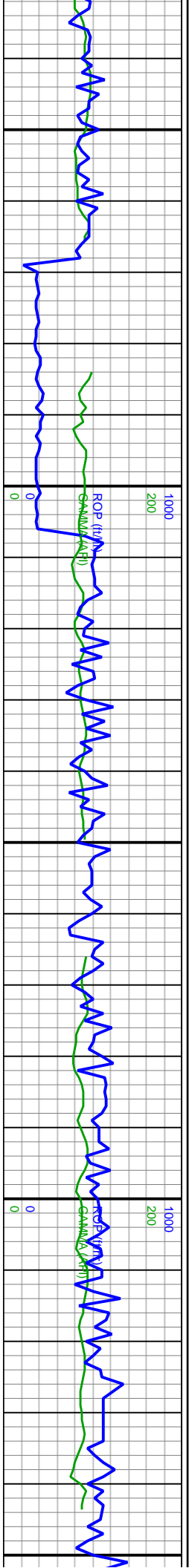
WOB: 9.2klbs
RPM: 120
SPM: 204
SPP: 3,575psi

MD: 8,852'
INC: 89.48°
AZM: 86.78°
TVD: 7,253.54'
VS: 1,685.79'

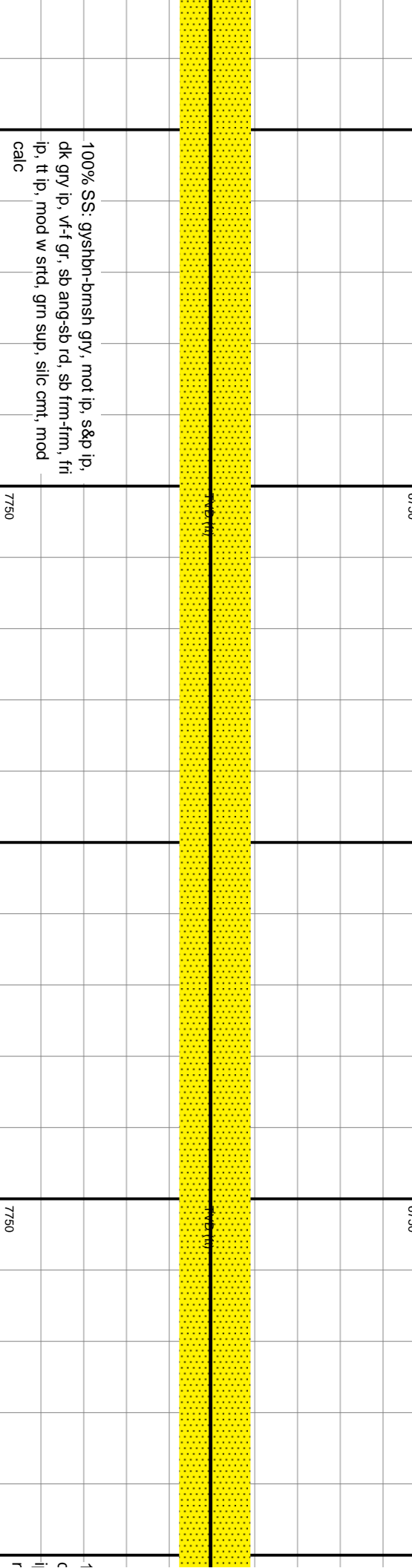
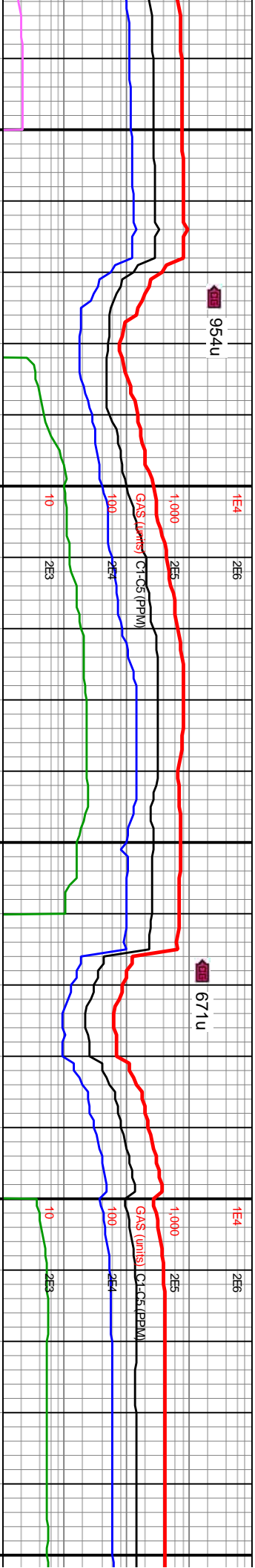


100% SS: gyshtn-lt brn, mot med brn, v-f-f
gr, sb ang-sb rd, sb frm-frm, mod strd, grn
sup, silc cnt, tr pp mic pyr nod, sme med
gy-dk gy gr sup ss clus, mod calc



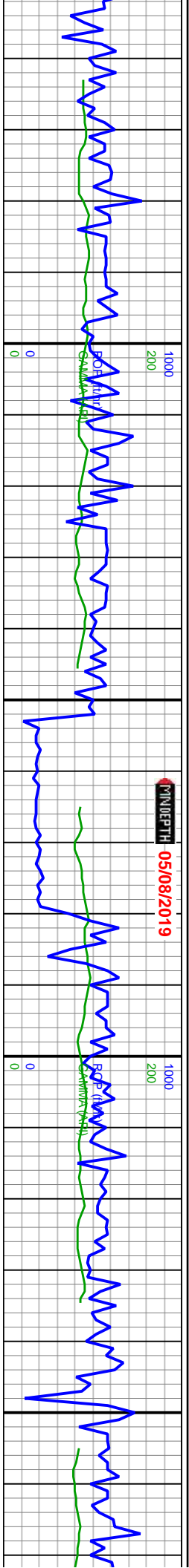


MD: 8.946'	WOB: 12.9kbs	MD: 9.041'	MW IN: 9.6+	MD: 9.136'
INC: 89.86°	RPM: 119	INC: 89.91°	VIS IN: 48	INC: 90.03°
AZM: 85.82°	SPM: 206	AZM: 87.87°	MW OUT: 9.7+	AZM: 88.81°
TVD: 7,254.09'	SPP: 3,699psi	TVD: 7,254.29'	VIS OUT: 49	TVD: 7,254.34'
VS: 1,772.66'		VS: 1,860.1'		VS: 1,946.54'



100% SS: gyshtn-brnsh gry, mot ip, s&p ip, dk gry ip, vt-f gr, sb ang-sb rd, sb frm-frm, fri ip, tt ip, mod w strd, grn sup, silc cmt, mod calc



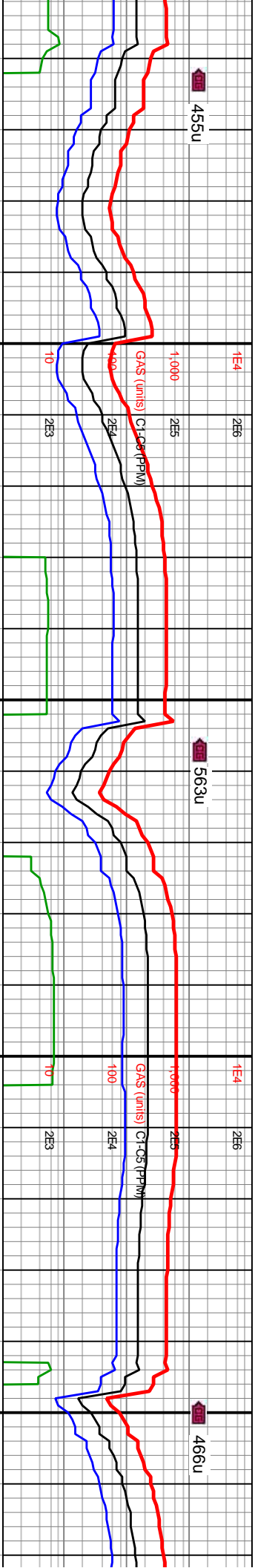


MOB: 21.8kbs
RPM: 120
SPM: 204
SP: 4,166psi

MD: 9,230'
INC: 90.09°
AZM: 90.69°
TVD: 7,254.24'
VS: 2,031.09'

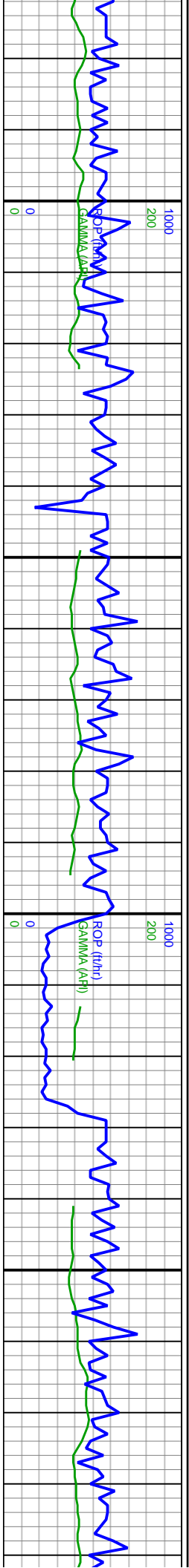
MD: 9,325'
INC: 89.94°
AZM: 91.21°
TVD: 7,254.22'
VS: 2,115.65'

MW IN: 9.6+
VIS IN: 48
MW OUT: 9.7+
VIS OUT: 48



455u	1E4	2E6	1E4	2E6	466u
1,000	2E5	1,000	2E5		
GAS (units)	Cl-05 (PPM)	GAS (units)	Cl-05 (PPM)		
10	2E3	100	2E4		
6750		6750			
7750		7750			
00% SS: gyshtn-brnsh gry, mot ip, s&p ip, dk gry ip, vf-f gr, sb ang-sb rd, sb frm-frm, fri					100% SS: dk gysht ip, dk gry ip, vf-f gr, frm-frm, fri ip, tt ip, mod-v calc, oc
mod-v calc					



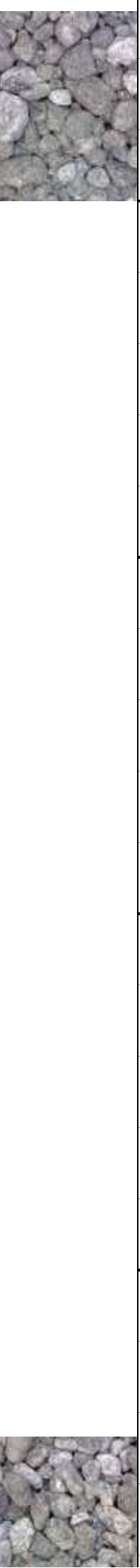
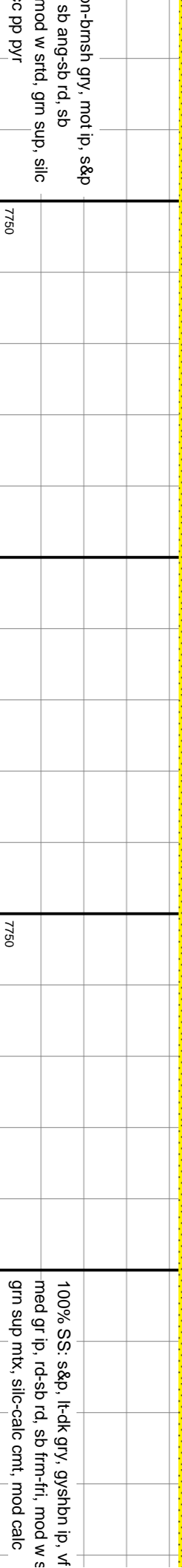
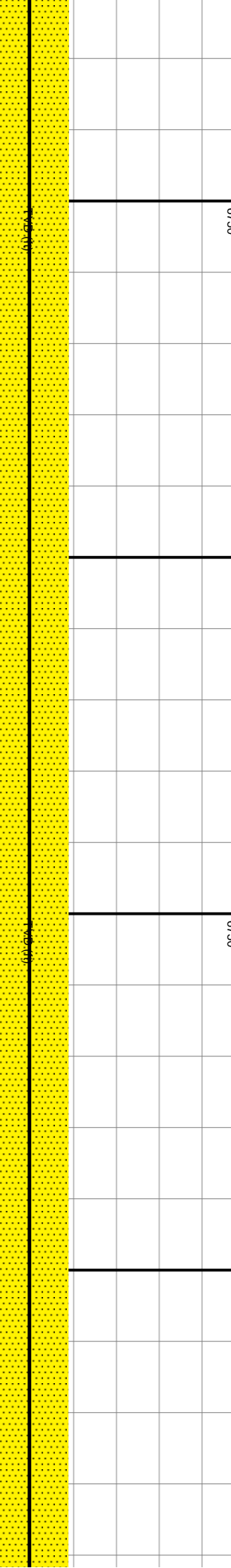
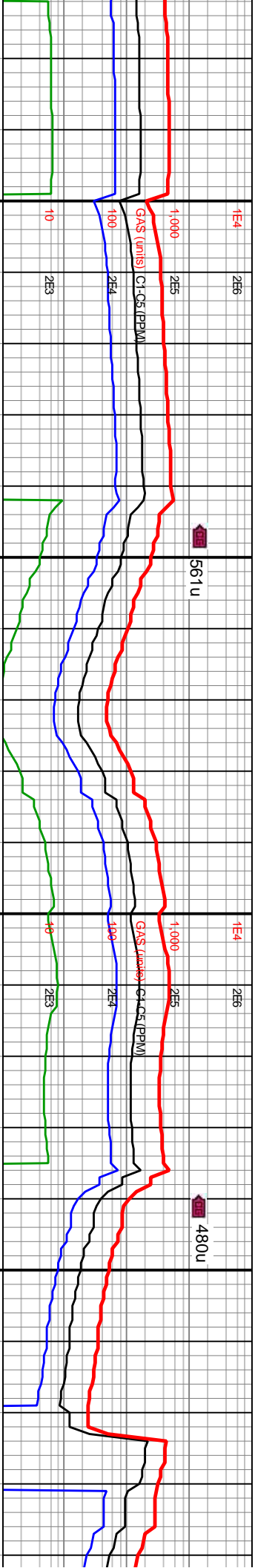


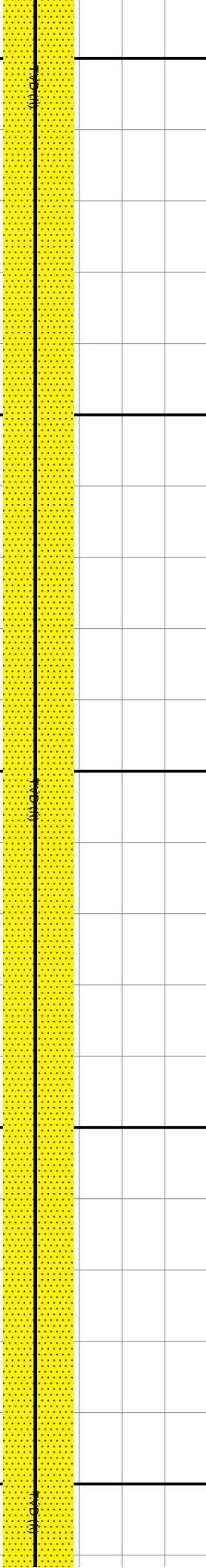
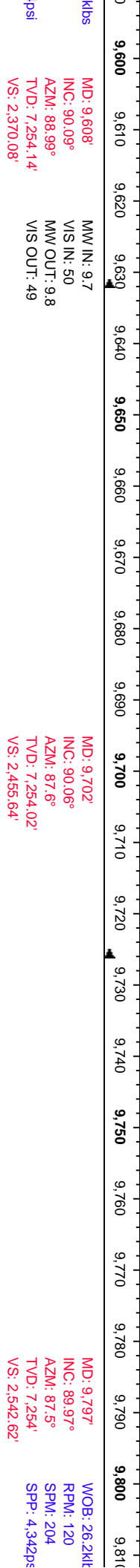
WOB: 18.5kbs
RPM: 119
SPM: 204
SPP: 4,264psi

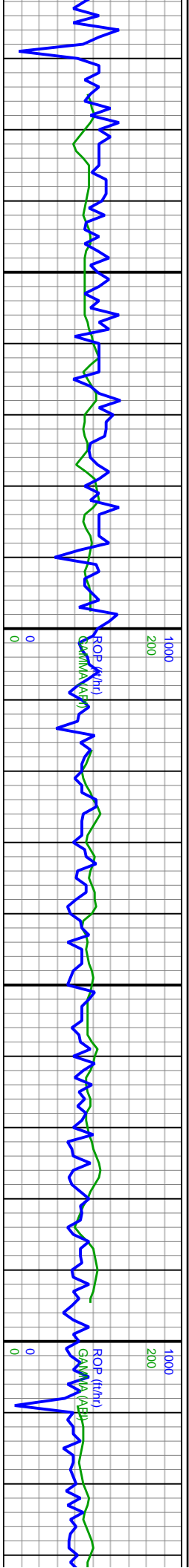
MD: 9,419'
INC: 89.97°
AZM: 90.37°
TVD: 7,254.29'
VS: 2,199.44'

MD: 9,513'
INC: 90.06°
AZM: 88.93°
TVD: 7,254.27'
VS: 2,284.06'

WOB: 19.1
RPM: 120
SPM: 204
SPP: 4,294psi



[illegible]

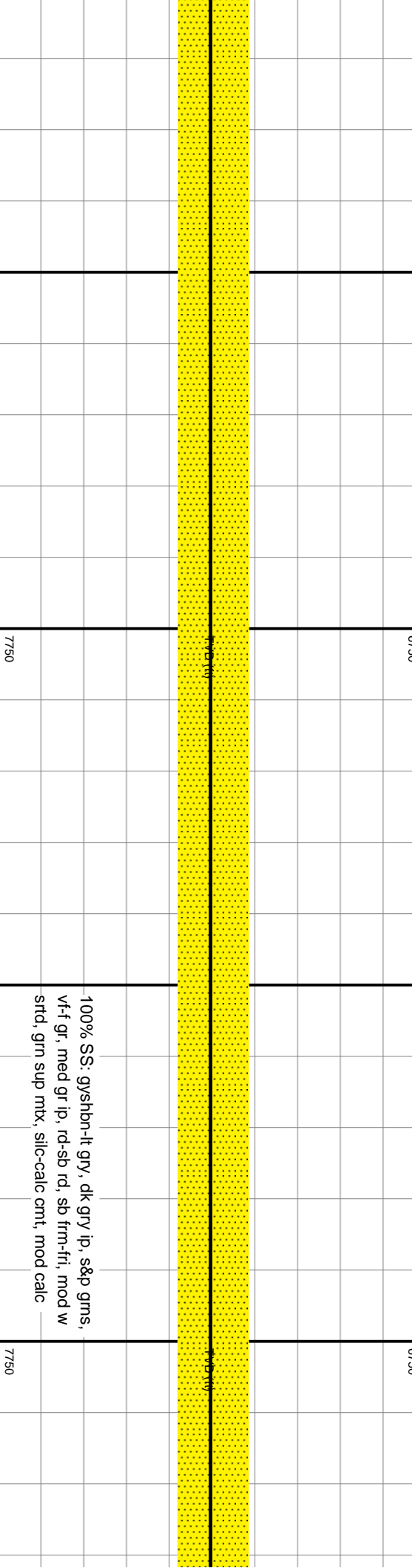
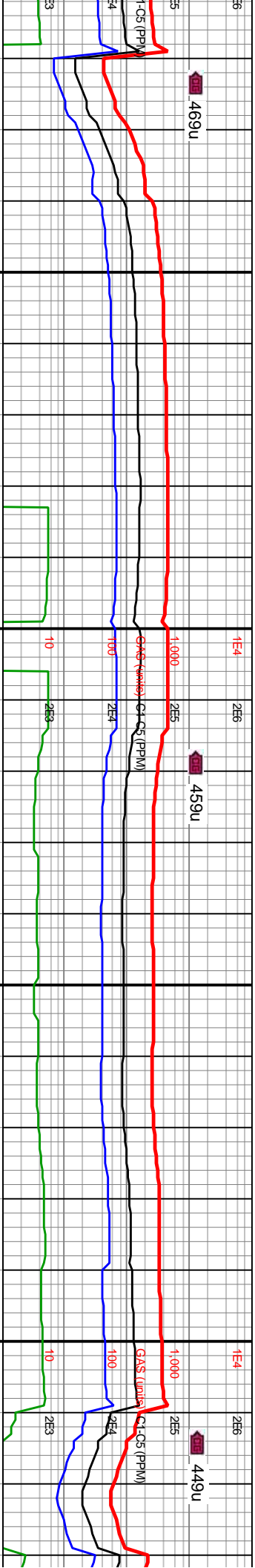


MD: 9,891'
INC: 90.03°
AZM: 88.03°
TVD: 7,254'
VS: 2,628.55'

MW IN: 9.7
VIS IN: 49
MW OUT: 9.8
VIS OUT: 48

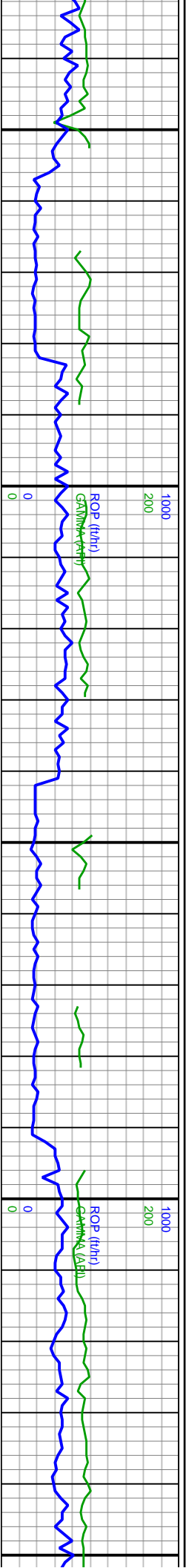
MD: 9,986'
INC: 90.03°
AZM: 88.61°
TVD: 7,253.95'
VS: 2,715.01'

WOB: 19.8klbs
RPM: 120
SPM: 204
SPD: 4.286psi



100% SS: gysshn-lt gry, dk gry ip, s&p grms, vf-f gr, med gr ip, rd-sb rd, sb frm-fri, mod w srt, grn sup mt, silc-calc cnt, mod calc



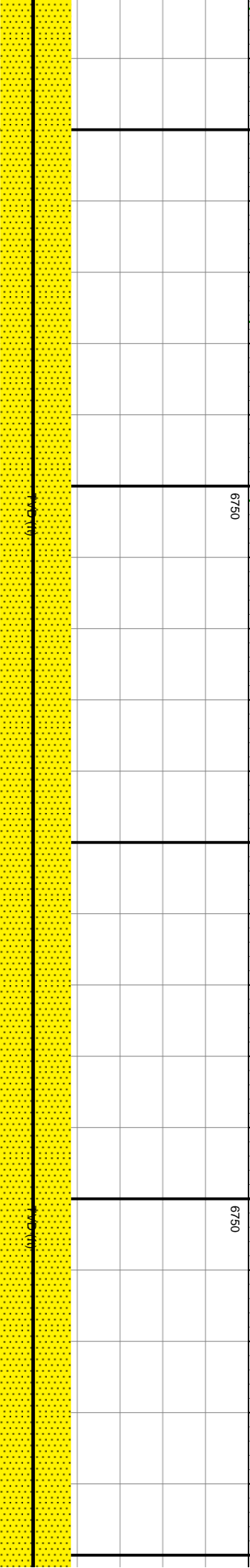
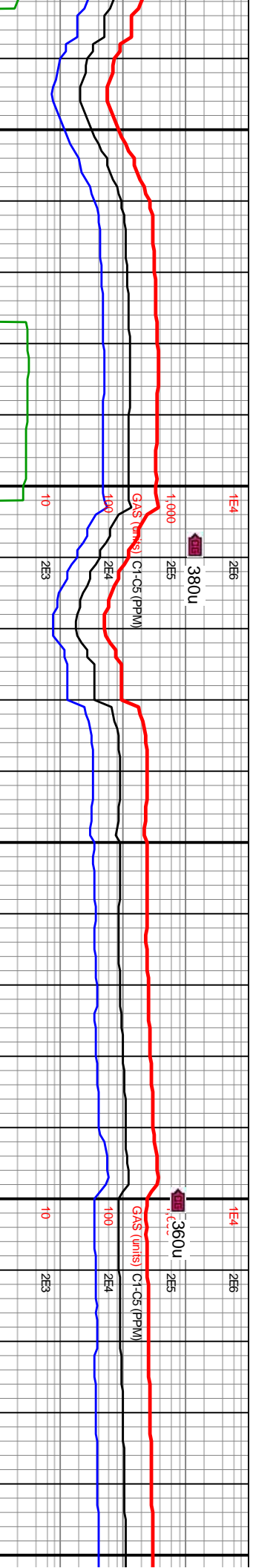


MD: 10,081'
INC: 89.78°
AZM: 89.13°
TVD: 7,254.1'
VS: 2,801.08'

MW IN: 9.7+
VIS IN: 48
MW OUT: 9.9
VIS OUT: 48

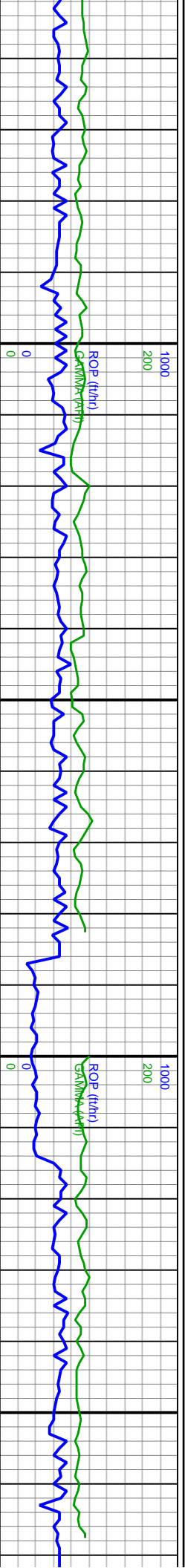
MD: 10,175'
INC: 89.94°
AZM: 89.73°
TVD: 7,254.33'
VS: 2,885.86'

WOB: 20.1kbs
RPM: 120
SPM: 204
SP: 4,231psi



7750	100% SS: gyshtn-lt gry, dk gry ip, s&p grms, vf-f gr, med gr ip, rd-sb rd, sb frm-fri, mod-w strd, grn sup mtx, silic cnt, mod calc, sme free qtz	7750
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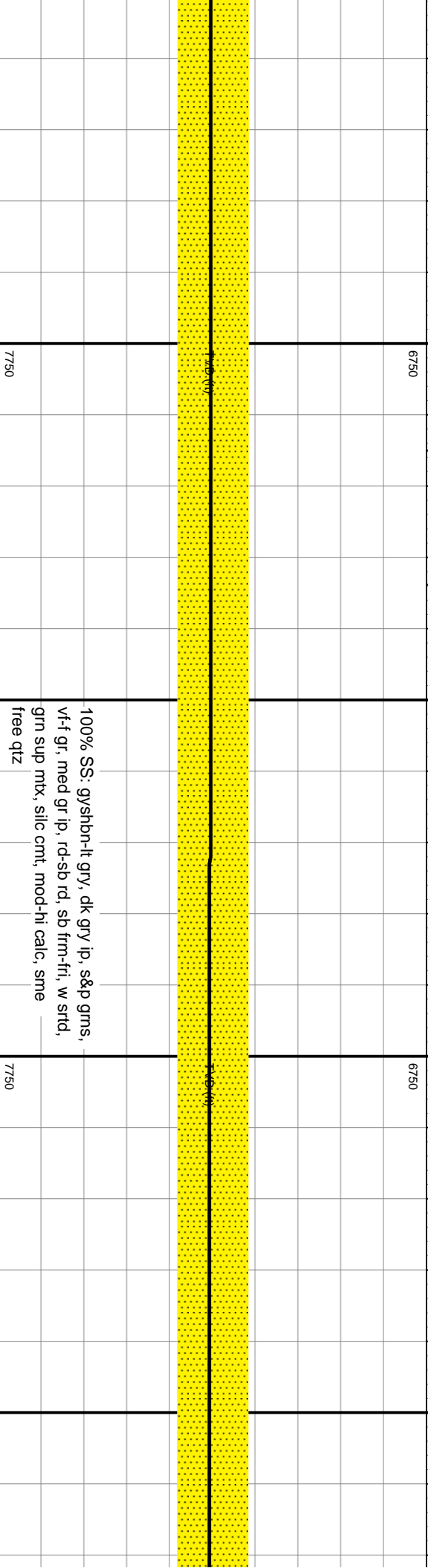
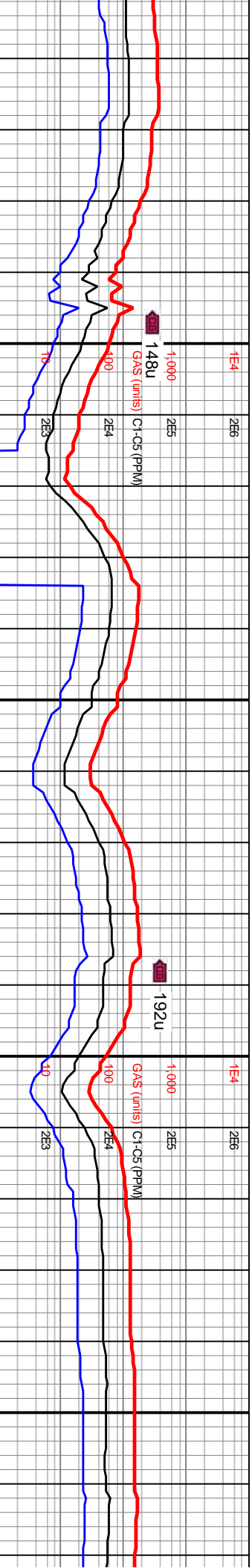
MD: 10,269'
INC: 89.75°
AZM: 91.91°
TVD: 7,254.59'
VS: 2,969.63'

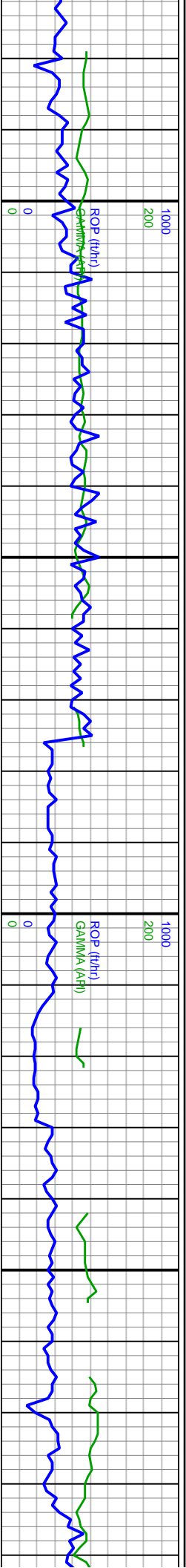
BP

MD: 10,363'
INC: 89.78°
AZM: 91.49°
TVD: 7,254.97'
VS: 3,062.73'

WOB: 24.9klbs
RPM: 119
SPM: 204
SPP: 4,405psi

MD: 10,458'
INC: 89.85°
AZM: 91.88°
TVD: 7,255.28'
VS: 3,136.73'



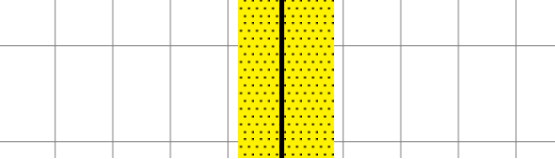
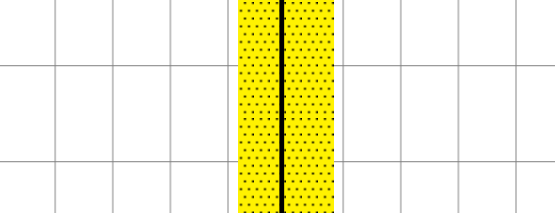
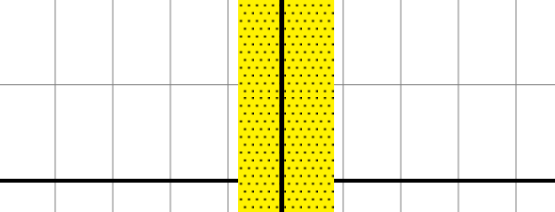
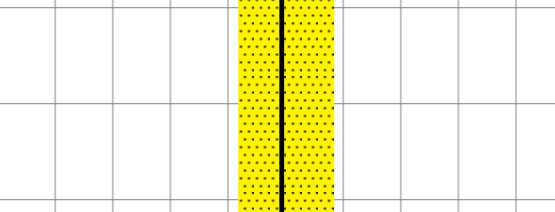
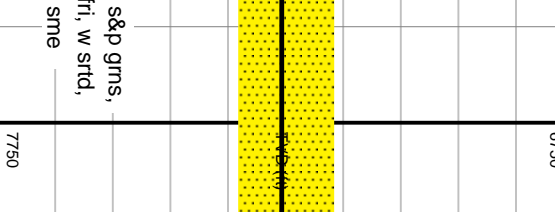
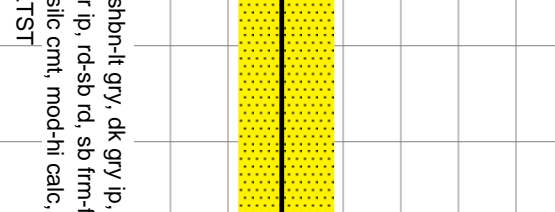
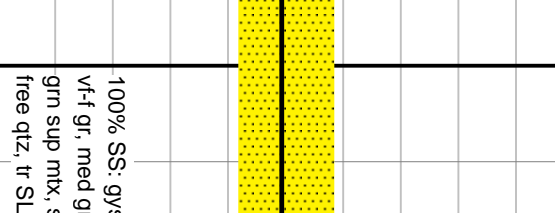
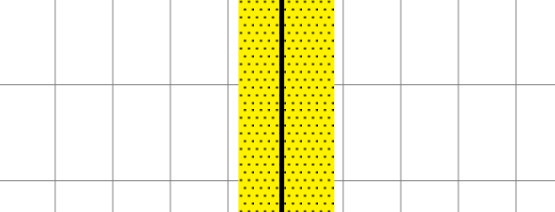
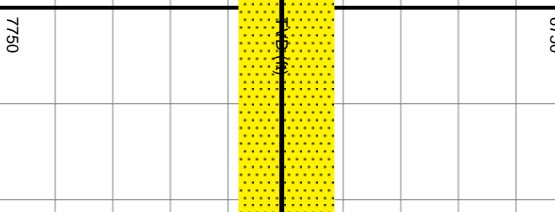
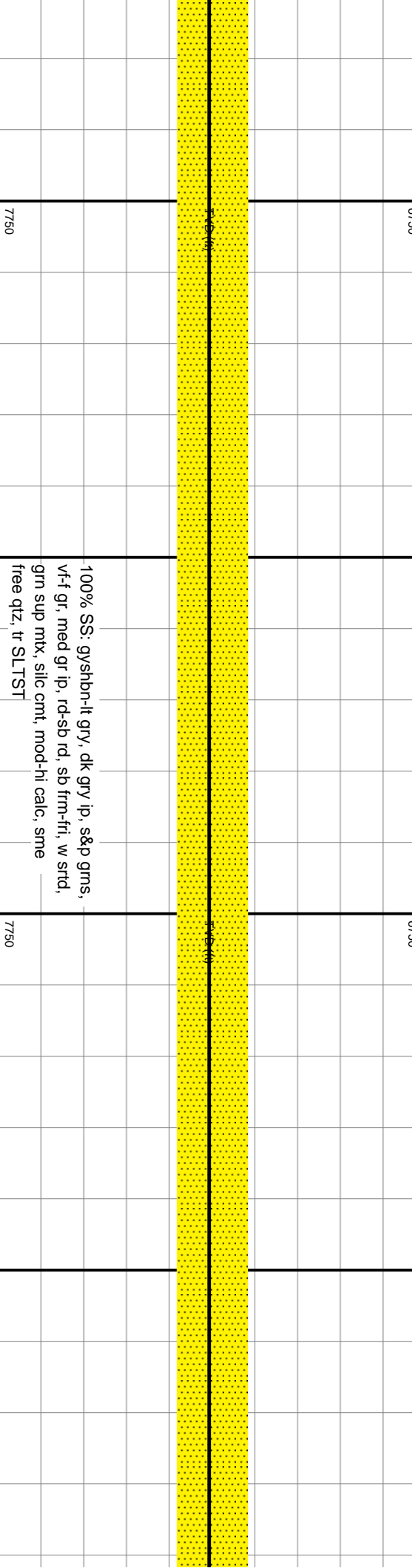
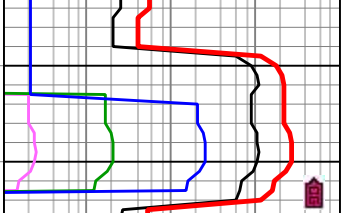
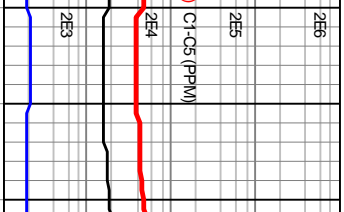
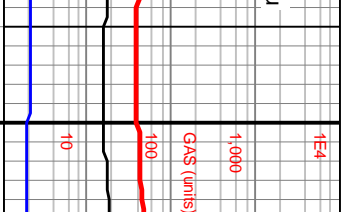
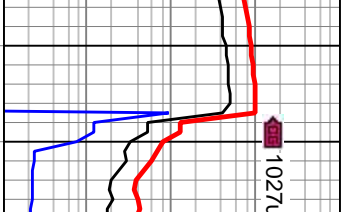
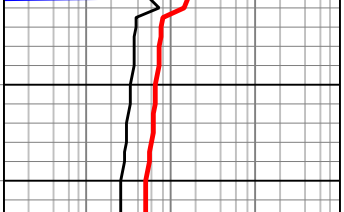
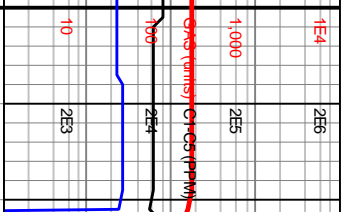
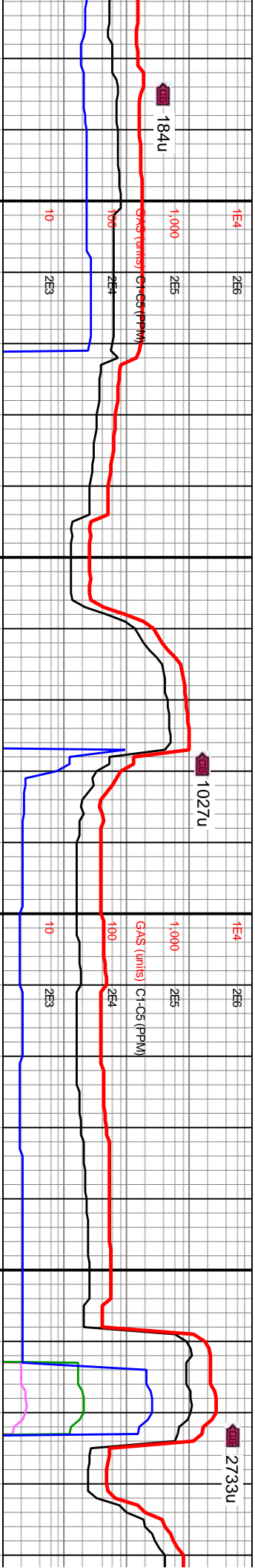


MD: 10,552'
INC: 89.57°
AZM: 93.1°
TVD: 7,255.76'
VS: 3,219.22'

MW IN: 9.7
VIS IN: 4.7
MW OUT: 9.8
VIS OUT: 4.8

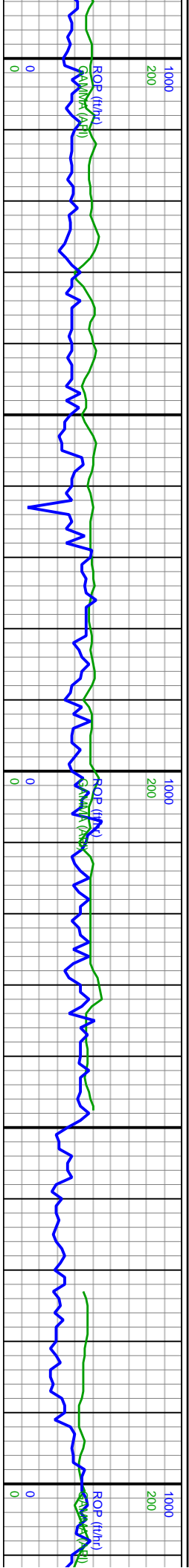
WOB: 15klbs
RPM: 120
SPM: 204
SPP: 3.464psi

MD: 10,647'
INC: 89.57°
AZM: 95.16°
TVD: 7,256.47'
VS: 3,301.24'



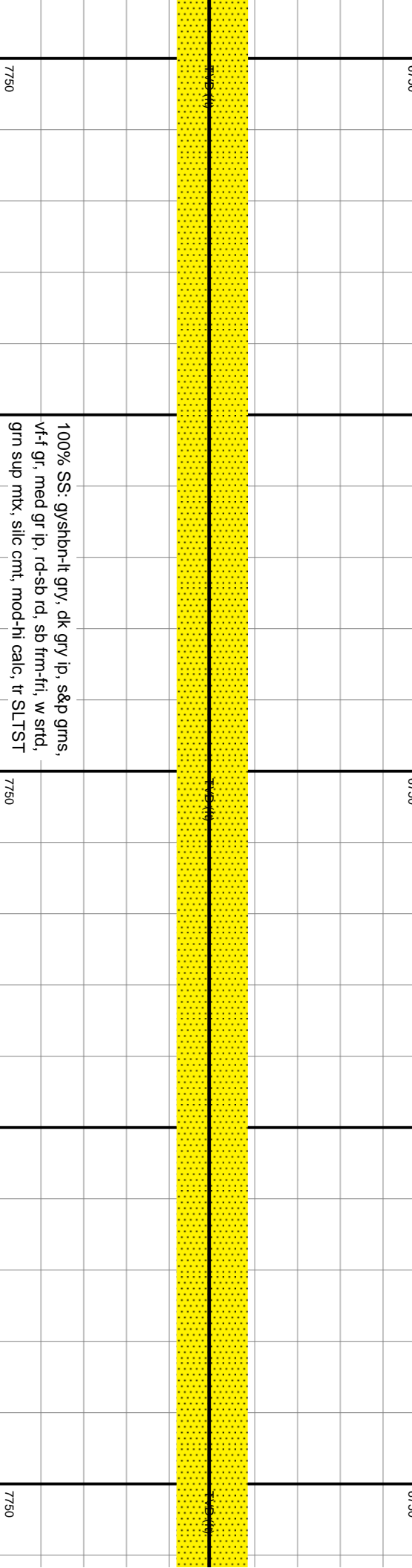
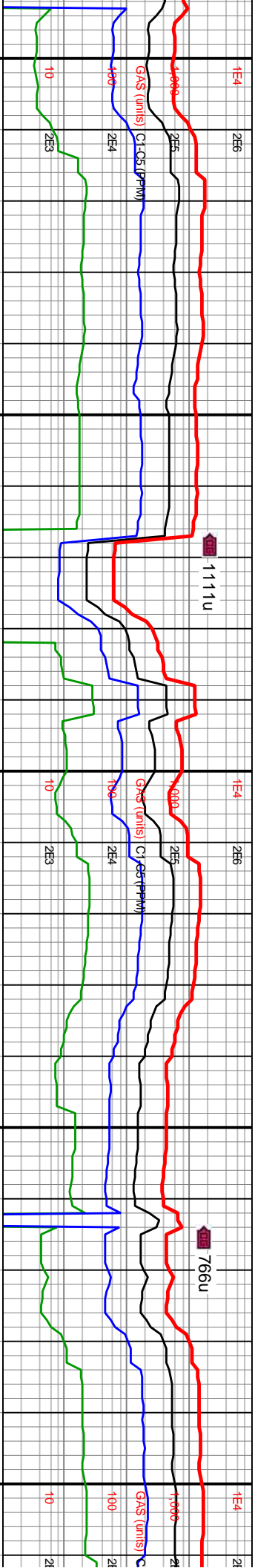
100% SS: gyshtn-lt gry, dk gry ip, s&p grms, vf-f gr, med gr ip, rd-sb rd, sb frm-fri, w strd, grn sup mtx, silc cnt, mod-hi calc, sme free qtz, tr SLTST





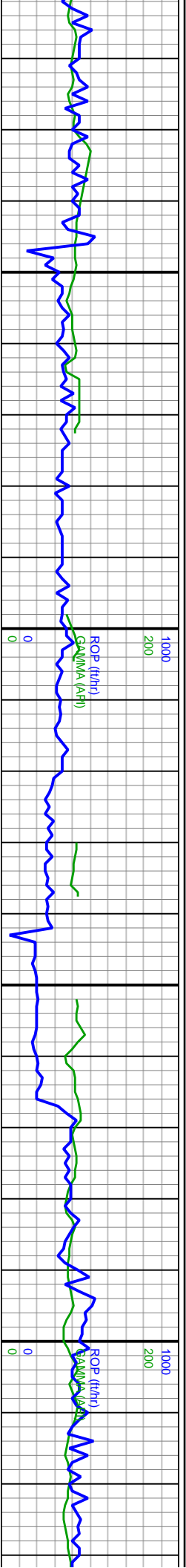
MW IN: 9.7 MD: 10,741'
VIS IN: 48 INC: 89.66°
MW OUT: 9.8 AZM: 93.57°
VIS OUT: 47 TVD: 7,257.1'
VS: 3,382.21'

WOB: 18kbs
RPM: 119
SPM: 201
SPP: 4,234psi



100% SS: gysbn-lt gry, dk gry ip, s&p grms,
vf-f gr, med gr ip, rd-sb rd, sb frm-fri, w strd,
grn sup mtx, silic cnt, mod-hi calc, tr SLTST





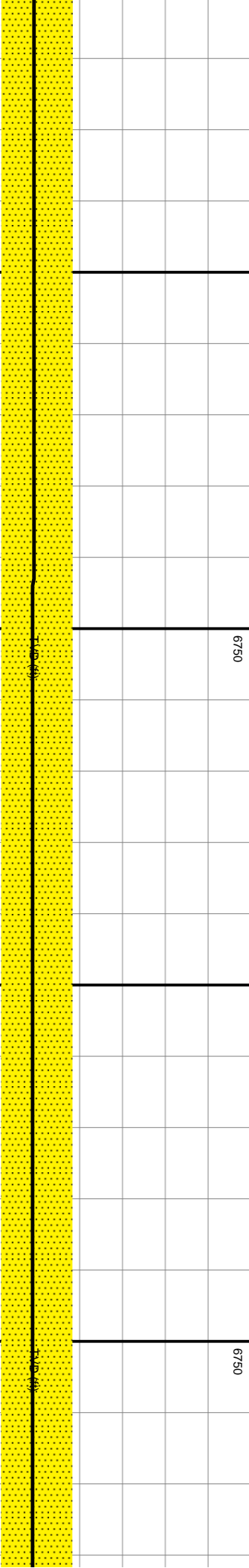
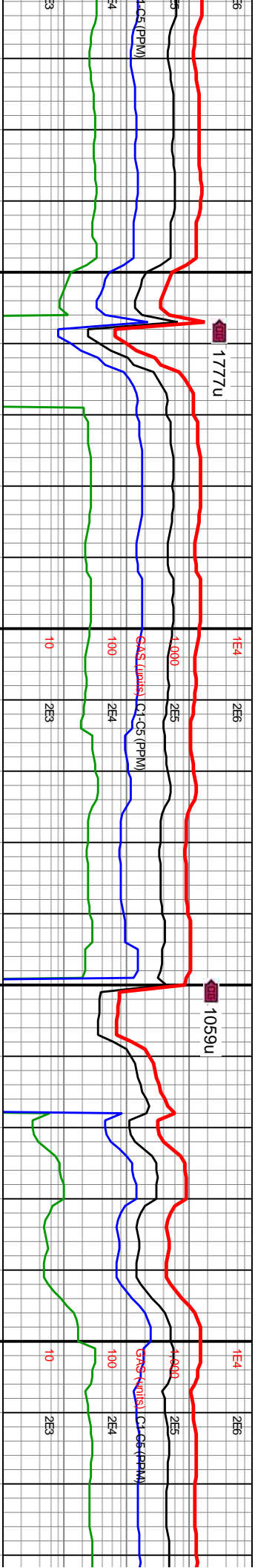
10,920 10,930 10,940 10,950 10,960 10,970 10,980 10,990 11,000 11,010 11,020 11,030 11,040 11,050 11,060 11,070 11,080 11,090 11,100 11,110 11,120 11,130

MD: 10,929'
INC: 89.78°
AZM: 90.02°
TVD: 7,258.02'
VS: 3,548.25'

WOB: 13klbs
RPM: 120
SPM: 202
SPP: 3,698psi

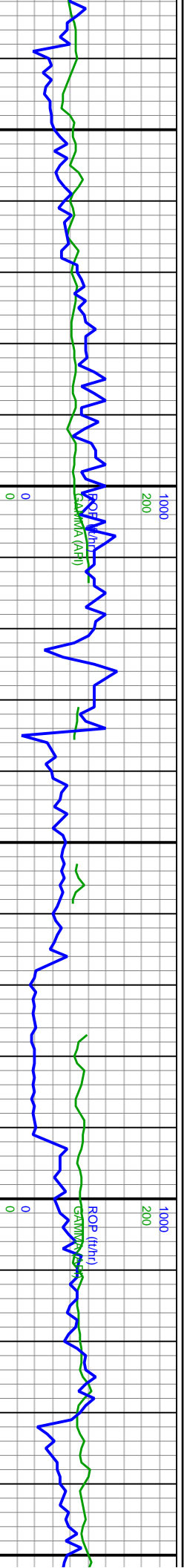
MD: 11,023'
INC: 89.66°
AZM: 88.58°
TVD: 7,258.48'
VS: 3,633.11'

MD: 11,117'
INC: 89.72°
AZM: 88.38°
TVD: 7,258.99'
VS: 3,718.55'



100% SS: gyshbr-lt gry, dk gry ip, s&p grms, vf-f gr, med gr ip, rd-sb rd, sb frm-fri, w strd, grn sup mtx, silic cnt, mod-hi calc, tr SLTST		7750	7750	7750
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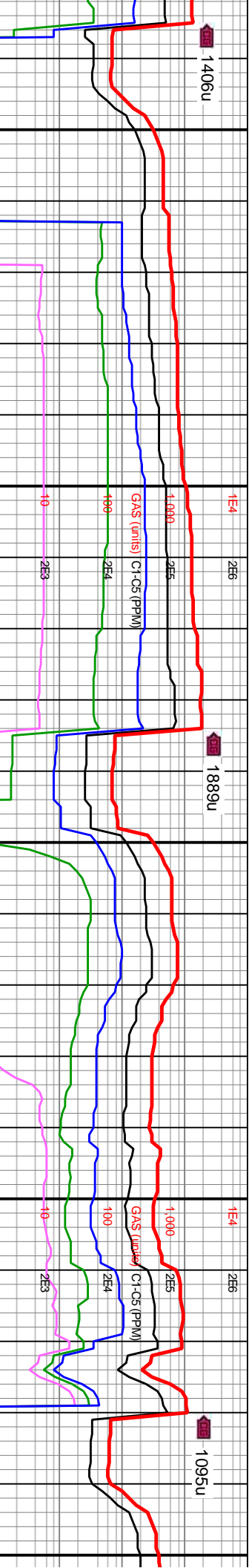


WOB: 19kbs
RPM: 120
SPM: 202
SPP: 4,424psi

MD: 11,212'
INC: 89.6°
AZM: 88.09°
TVD: 7,259.55'
VS: 3,805.07'

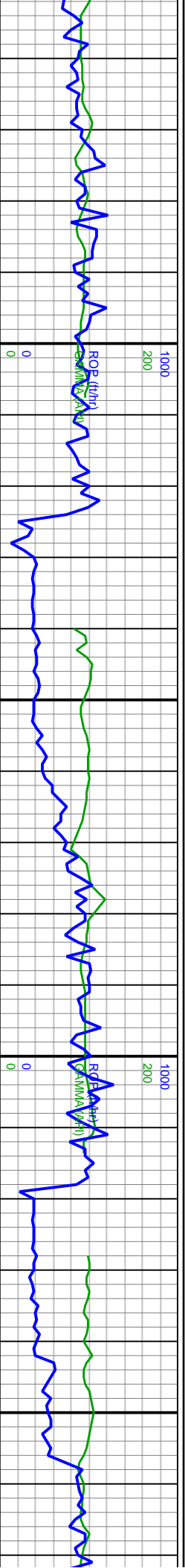
MW IN: 9.7
VIS IN: 48
MW OUT: 9.8
VIS OUT: 46

MD: 11,306'
INC: 89.6°
AZM: 88.78°
TVD: 7,260.21'
VS: 3,890.54'



100% SS: gysbn-lt gry, dk gry ip, s&p gms, ftn-fri, vft gr, med gr ip, rd-sb rd, w srd, grn sup mtb, silc cnt, mod-hi calc, tr SLTST



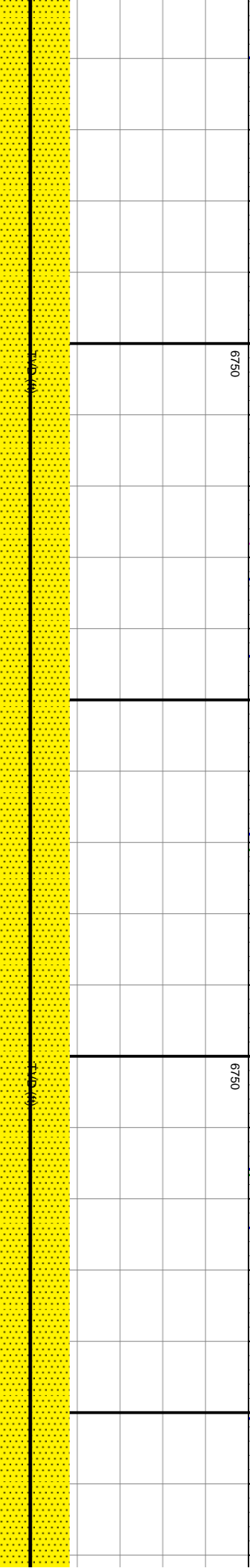
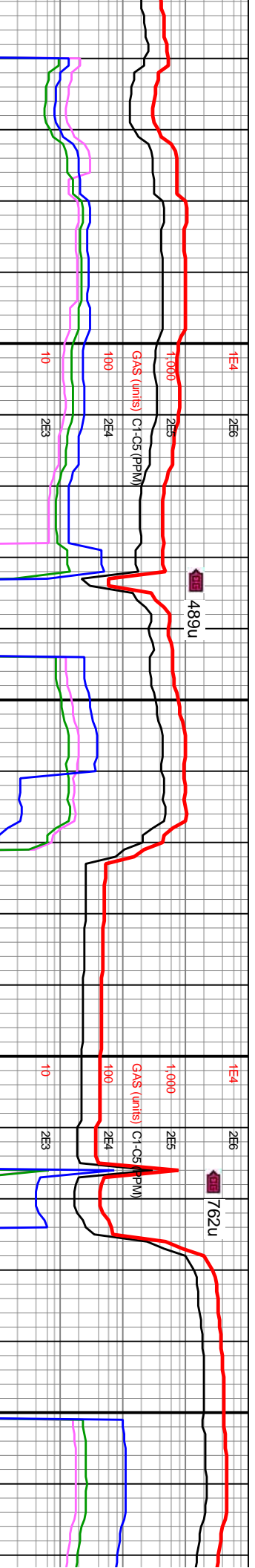


WOB: 20kbs
RPM: 119
SPM: 202
SPP: 4,450psi

MD: 11,401'
INC: 89.66°
AZM: 90.49°
TVD: 7,260.82'
VS: 3,976.07'

MW IN: 9.7
VIS IN: 47
MW OUT: 9.8
VIS OUT: 46

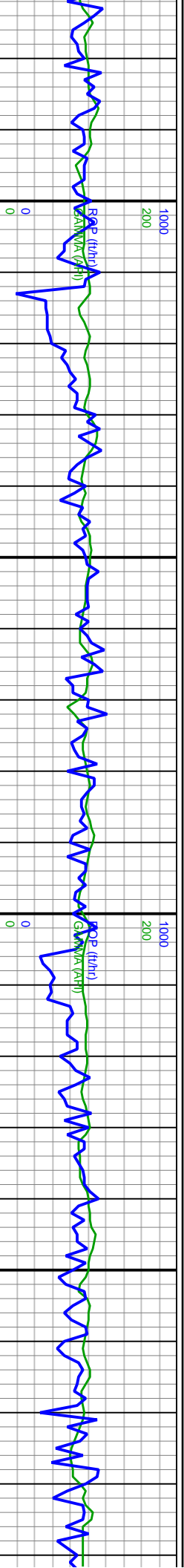
MD: 11,495'
INC: 90.12°
AZM: 91.99°
TVD: 7,261'
VS: 4,059.52'



00% SS: gysbhn-lt gry, dk gry ip, s&p grms, m-fri, vf-f gr, med gr ip, rd-sb rd, w srd, grn sup mtb, silc cnt, mod-hi calc, tr SLTST, tr free qtz	7750	7750	7750
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100% SS: gysbhn-lt sb frm-fri, vf-f gr, m grn sup mtb, silc cnt



MD: 11,590'
INC: 89.91°
AZM: 92.28°
TVD: 7,260.98'
VS: 4,143.17'

WOB: 23klbs
RPM: 121
SPM: 202
SPP: 4,458psi

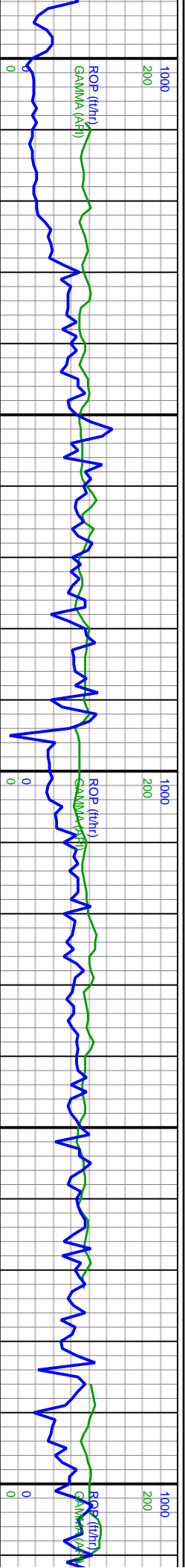
MD: 11,684'
INC: 89.88°
AZM: 91.35°
TVD: 7,261.15'
VS: 4,226.18'

MD: 11,779'
INC: 89.88°
AZM: 89.9°
TVD: 7,261.35'
VS: 4,310.99'



gry, dk gry ip, s&p grms,
red gr ip, rd-sb rd, w srtid,
it, mod-hi calc, tr SLTST,

100% SS: gystbn-lt gry, dk gry ip, s&p
sb frm-fri, vt-f gr, med gr ip, rd-sb rd, w
grn sup mx, silic cnt, mod-hi calc, tr fr
tr SLTST



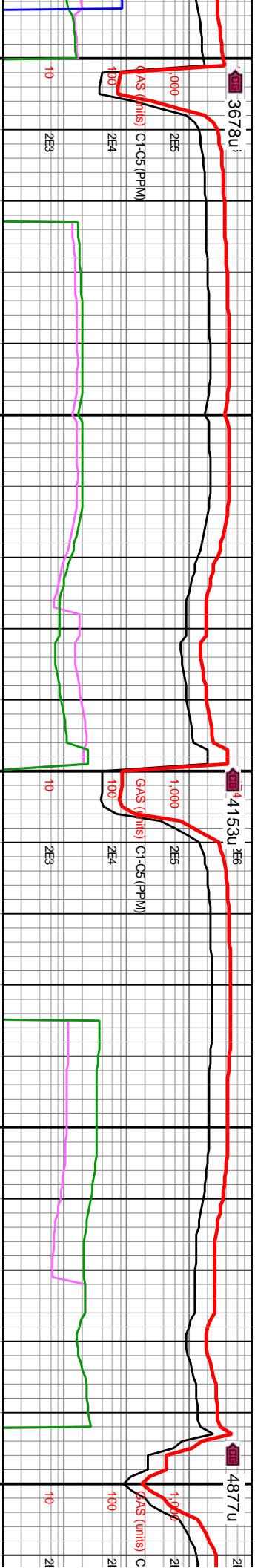
WOB: 16kibs
RPM: 120
SPM: 202
SPP: 4.321psi

MW IN: 9.7
VIS IN: 47
MW OUT: 9.8
VIS OUT: 47

MD: 11,874'
INC: 89.94°
AZM: 89.61°
TVD: 7,261.5'
VS: 4,396.44'

MD: 11,968'
INC: 89.85°
AZM: 90.09°
TVD: 7,261.67'
VS: 4,480.91'

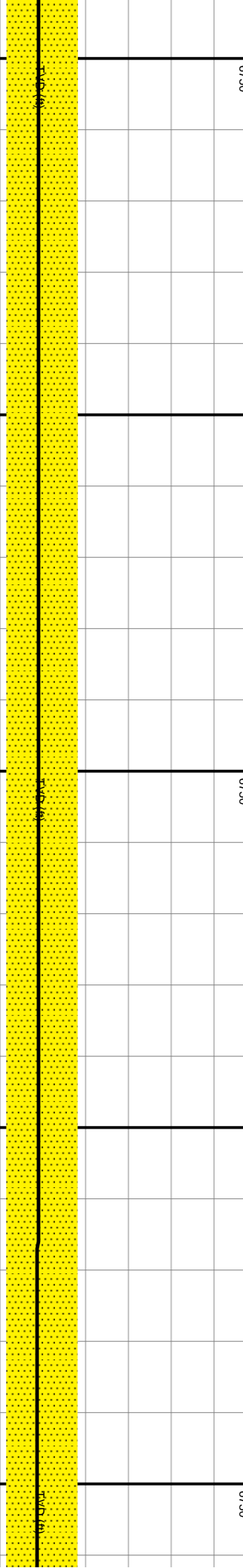
WOB: 25kibs
RPM: 120
SPM: 202
SPP: 4.424psi



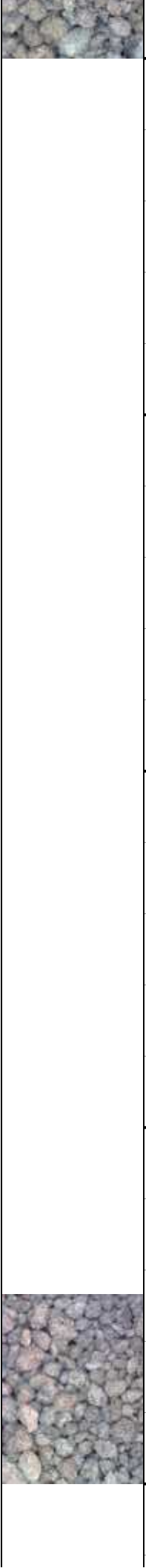
3678u
GAS (units)
Ct-C5 (PPM)

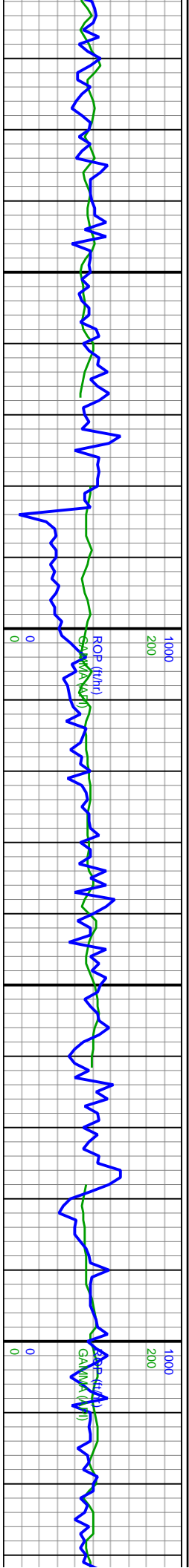
4153u
GAS (units)
Ct-C5 (PPM)

4877u
GAS (units)
Ct-C5 (PPM)



gms, strd, ee qtz,	7750	7750	7750	7750	100% SS: gyshtn-lt gry, dk gry ip, s&p gms, sb frm-fri, vt-f gr, med gr ip, rd-sb rd, w strd, grn sup mtx, silic cmt, silty, mod-hi calc, tr free qtz	7750
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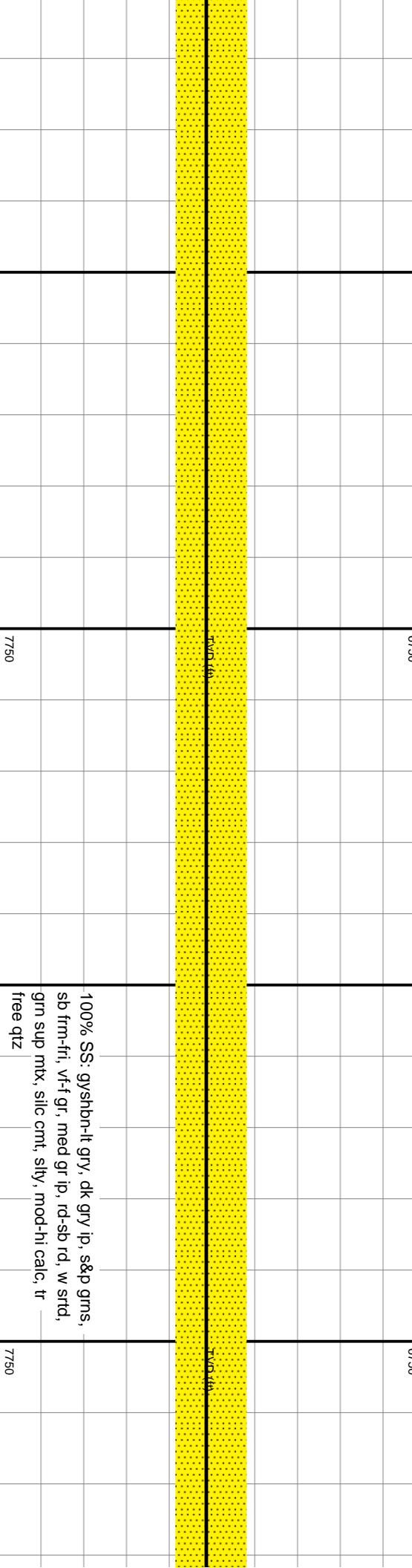
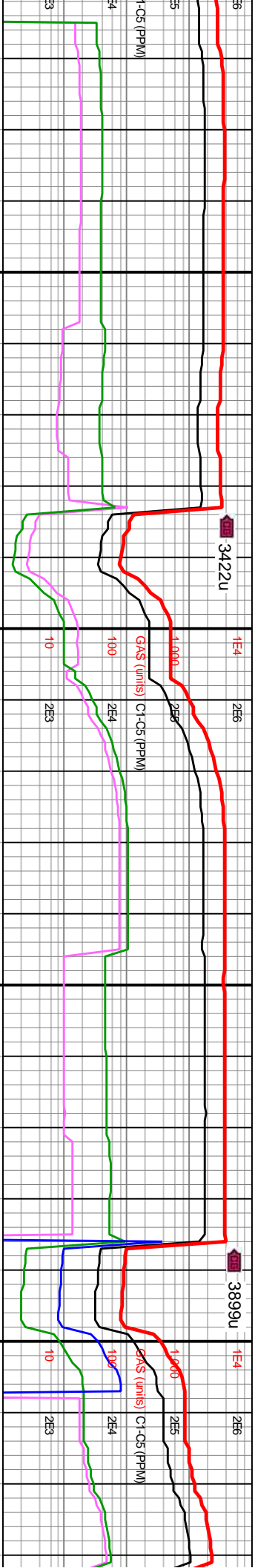


MD: 12,062'
INC: 89.94°
AZM: 90.08°
TVD: 7,261.84'
VS: 4,565.22'

MW IN: 9.7
VIS IN: 48
MW OUT: 9.8
VIS OUT: 48

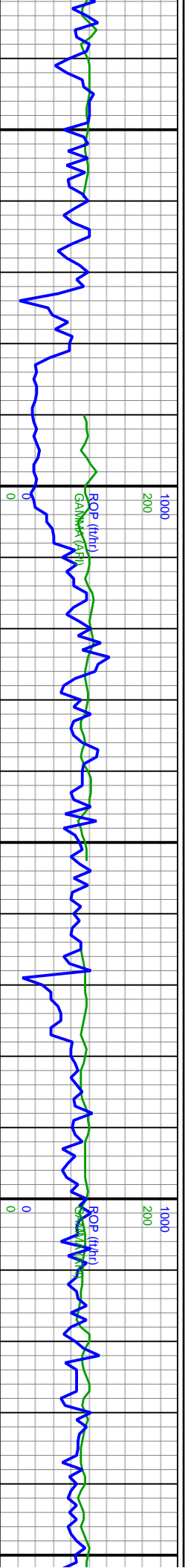
MD: 12,157'
INC: 89.94°
AZM: 89.62°
TVD: 7,261.94'
VS: 4,650.6'

WOB: 25kbs
RPM: 121
SPM: 204
SPP: 4,635psi



100% SS: gyshtn-llt gry, dk gry ip, s&p grms, sb frm-fri, vf-f gr, med gr ip, rd-sb rd, w strd, grn sup mtx, silc cnt, slty, mod-hi calc, tr free qtz





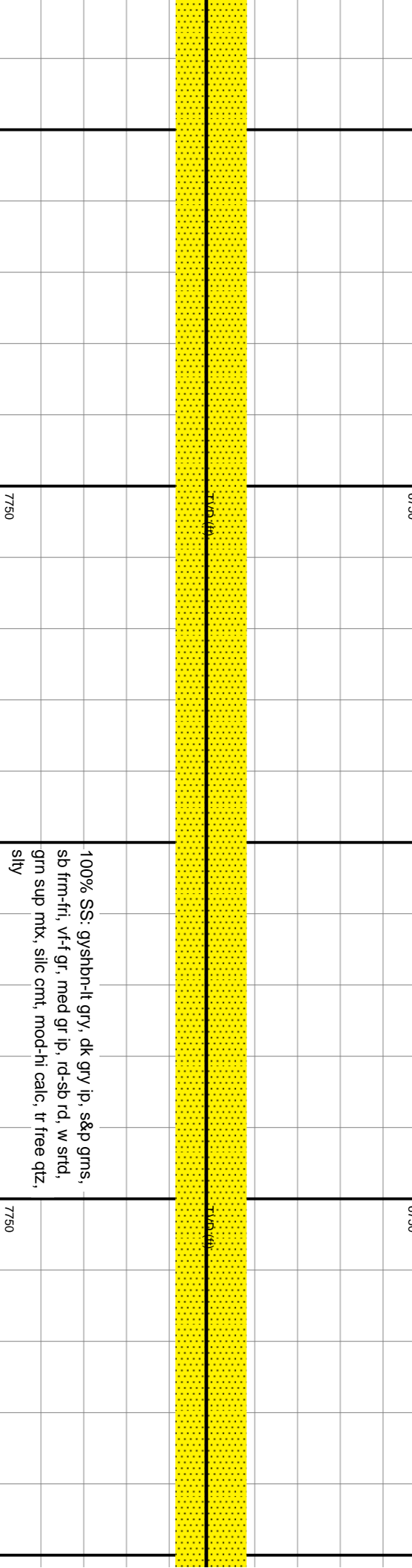
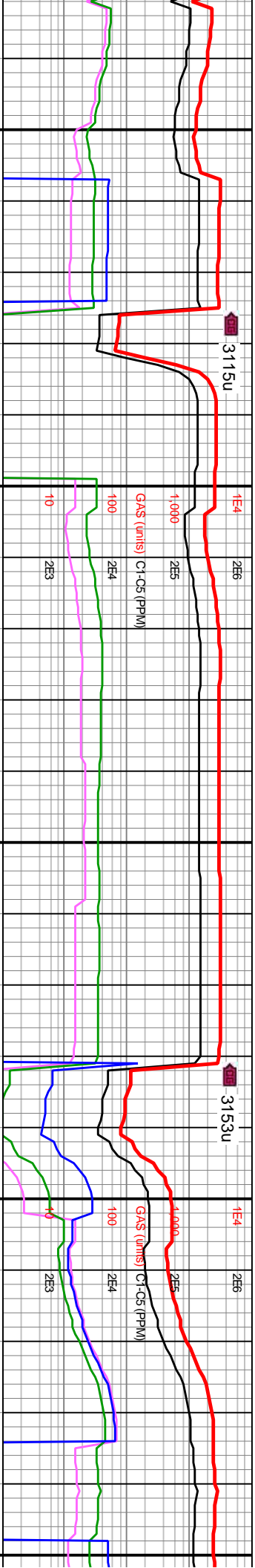
MD: 12,252'
INC: 89.88°
AZM: 90.2°
TVD: 7,262.09'
VS: 4,735.94'

MW IN: 9.7
VIS IN: 48
MW OUT: 9.8
VIS OUT: 45

MD: 12,346'
INC: 90.12°
AZM: 90.57°
TVD: 7,262.09'
VS: 4,820.03'

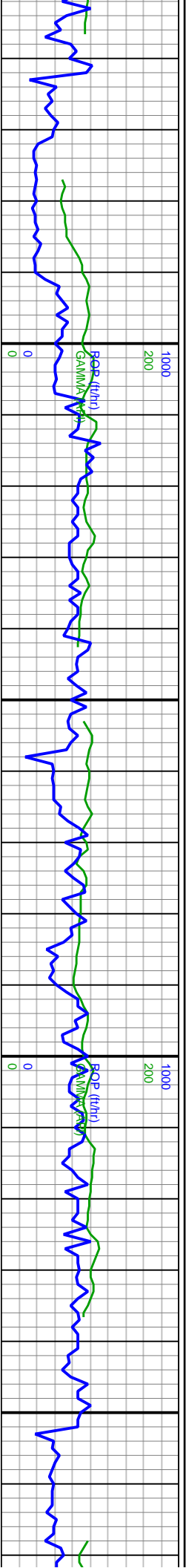
WOB: 27klbs
RPM: 119
SPM: 202
SPP: 4,647psi

MD: 12,440'
INC: 90.06°
AZM: 91.44°
TVD: 7,261.94'
VS: 4,903.66'



100% SS: gyshbn-lt gry, dk gry ip, s&p grms, sb frm-fri, vf-f gr, med gr ip, rd-sb rd, w strd, grn sup mtx, silic cnt, mod-hi calc, tr free qtz, silty

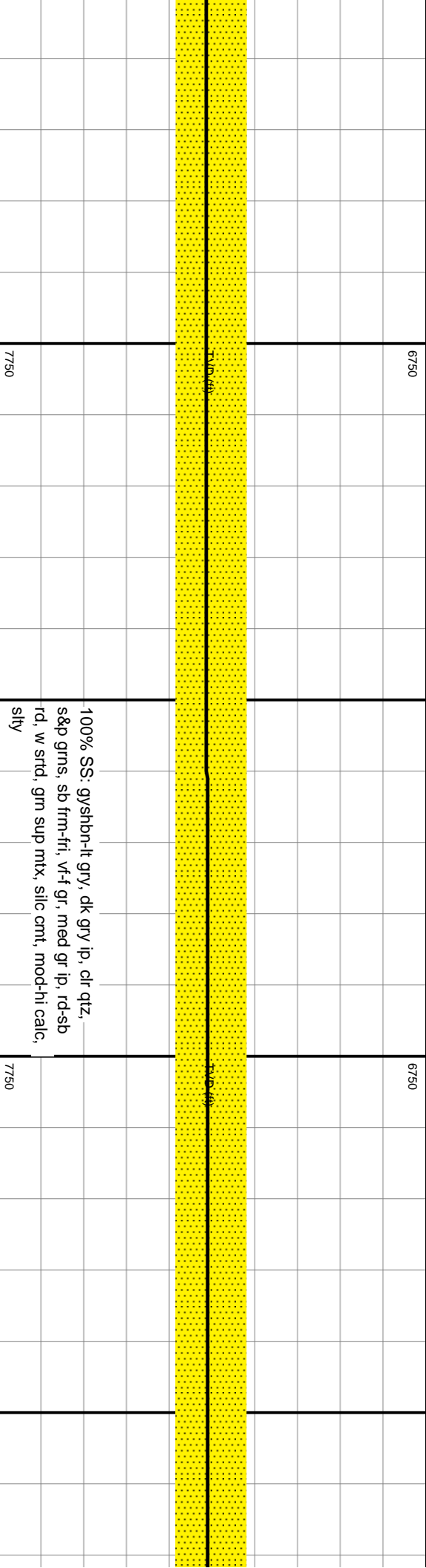
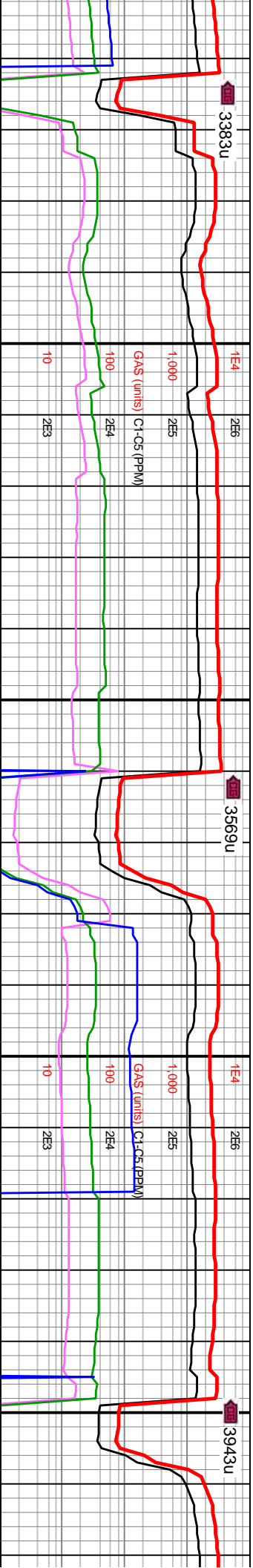




MW IN: 9.7
VIS IN: 48
MW OUT: 9.8
VIS OUT: 47
MD: 12,535'
INC: 90.18°
AZM: 90.98°
TVD: 7,261.74'
VS: 4,988.02'

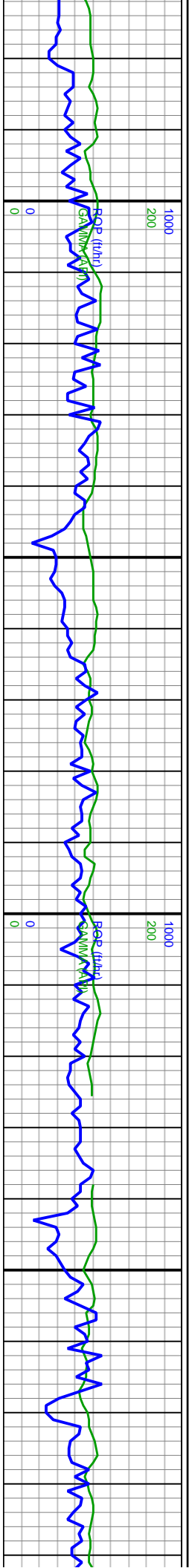
WOB: 31kbs
RPM: 120
SPM: 200
SPP: 4,696psi

MD: 12,630'
INC: 90.15°
AZM: 89.93°
TVD: 7,261.47'
VS: 5,072.95'



100% SS: gyshtn-lt gry, dk gry ip, clr qtz, s&p grms, sb frm-fri, v-f gr, med gr ip, rd-sb rd, w srted, gm sup mtx, silc cnt, mod-hi calc, silty



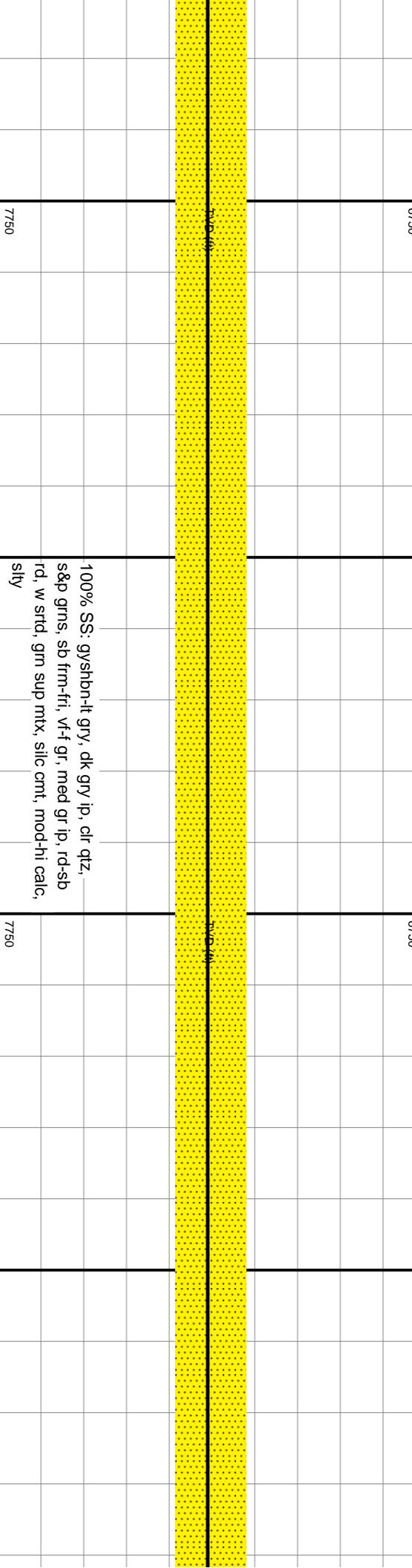
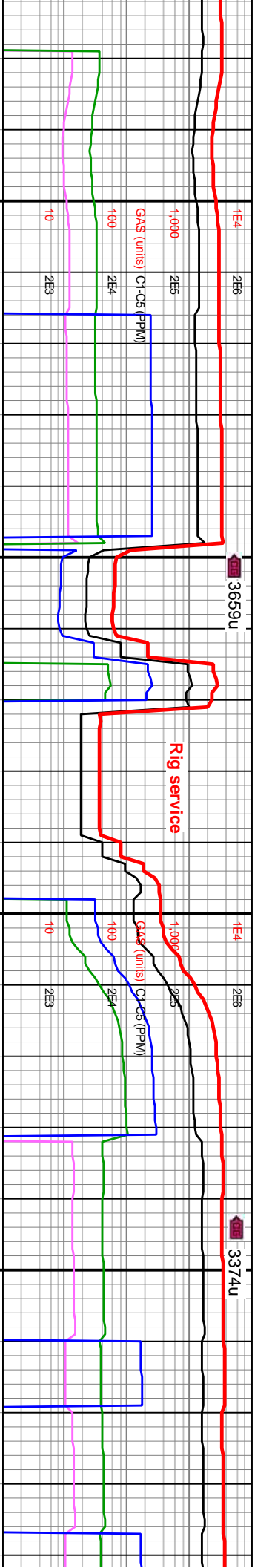


MD: 12,725'
INC: 90.15°
AZM: 89.81°
TVD: 7,261.22'
VS: 5,158.32'

WOB: 21kbs
RPM: 120
SPM: 202
SPP: 4,790psi

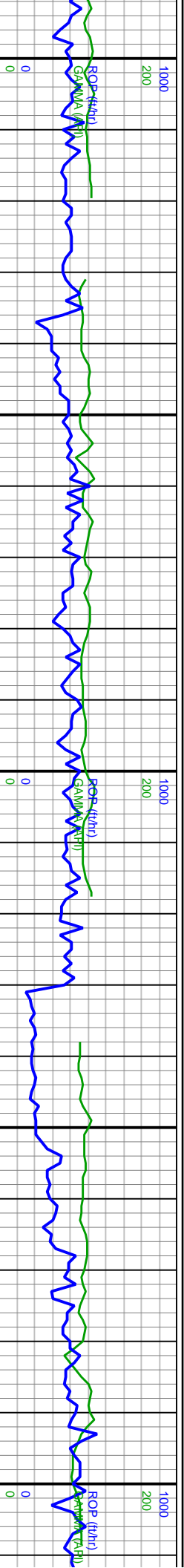
MD: 12,819'
INC: 90.12°
AZM: 89.96°
TVD: 7,261'
VS: 5,242.77'

MW IN: 9.7
VIS IN: 50
MW OUT: 9.8+
VIS OUT: 48



100% SS: gyshtn-lt gry, dk gry ip, clr qtz, s&p grms, sb frm-fri, v-f gr, med gr ip, rd-sb rd, w srted, grm sup mtx, silc cnt, mod-hi calc, silty





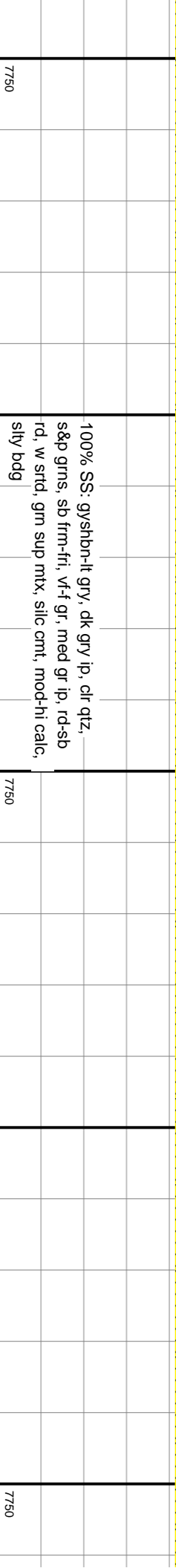
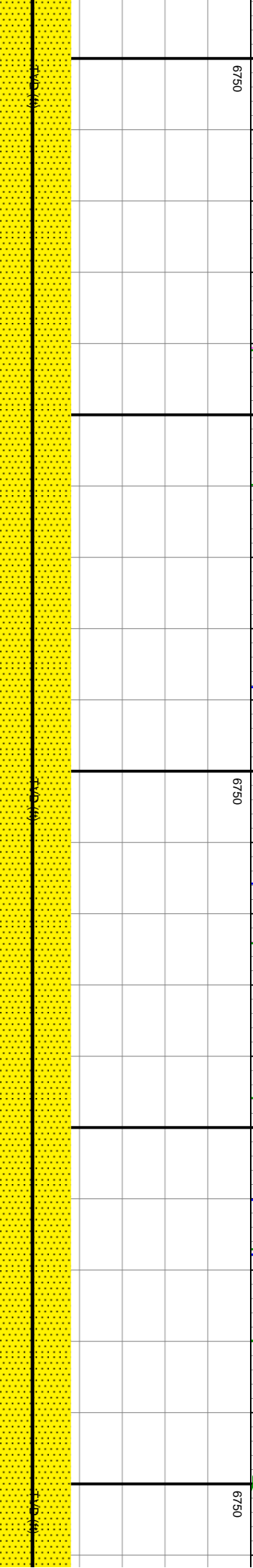
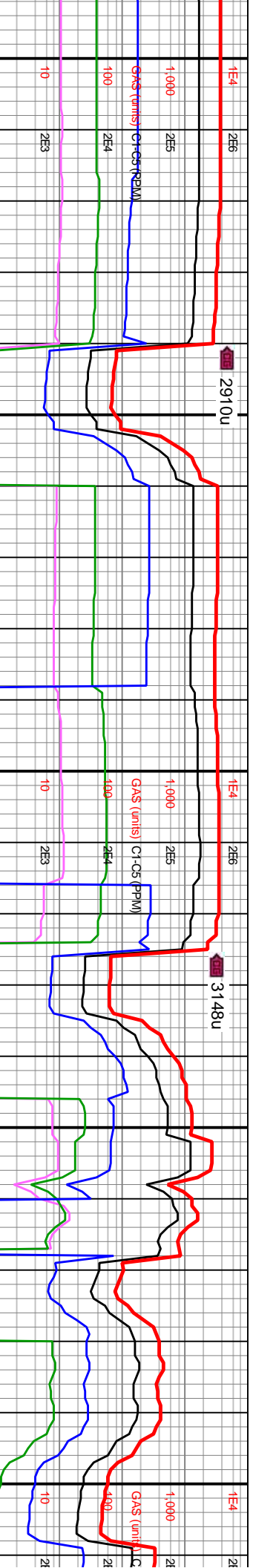
MD: 12,914'
INC: 90.06°
AZM: 90.01°
TVD: 7,260.85'
VS: 5,328.05'

WOB: 17klbs
RPM: 120
SPM: 202
SP: 4,762psi

MD: 13,008'
INC: 90.09°
AZM: 90.72°
TVD: 7,260.65'
VS: 5,411.91'

MW IN: 9.7
VIS IN: 49
MW OUT: 9.8
VIS OUT: 48

MD: 13,103'
INC: 90.18°
AZM: 91°
TVD: 7,260.43'
VS: 5,496.54'



100% SS: gysbn-lt gry, dk gry ip, clr qtz, s&p grms, sb frm-fri, vf-f gr, med gr ip, rd-sb rd, w srted, gm sup mtx, silc cnt, mod-hi calc, stly bdg



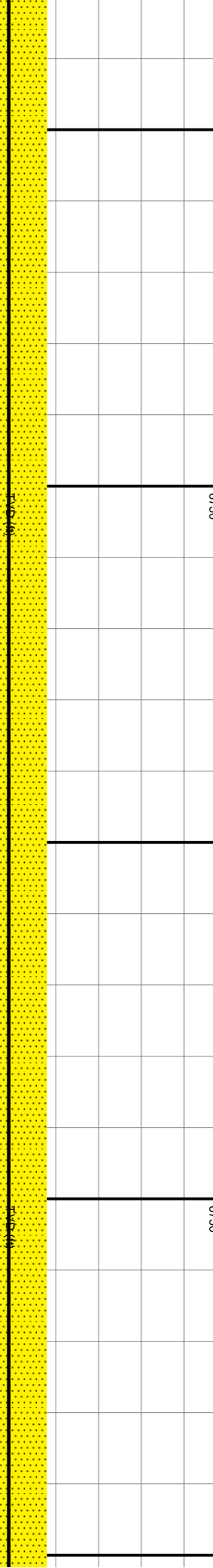
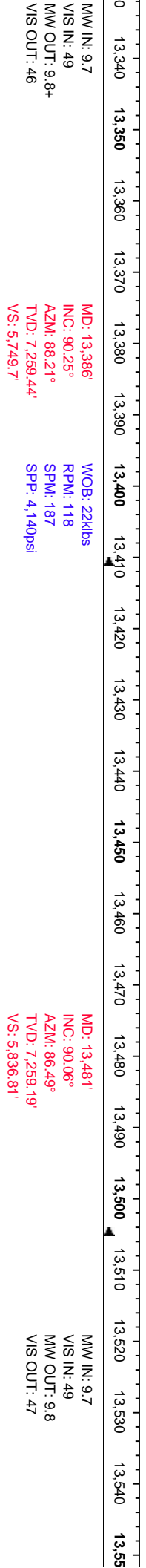


GD



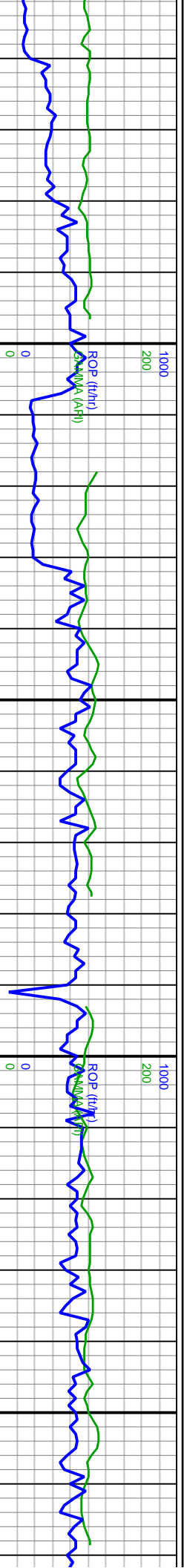
7750





7750





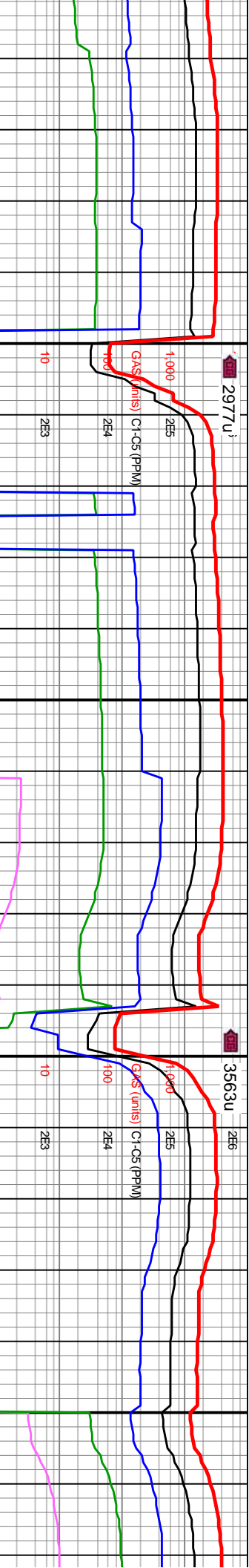
MD: 13,576'
INC: 89.54°
AZM: 88.07°
TVD: 7,259.52'
VS: 5,923.96'

WOB: 8.6klbs
RPM: 119
SPM: 186
SPP: 2,589psi

MD: 13,670'
INC: 89.75°
AZM: 89.58°
TVD: 7,260.1'
VS: 6,009.16'

MW IN: 9.7
VIS IN: 48
MW OUT: 9.8
VIS OUT: 46

MD: 13,765'
INC: 89.75°
AZM: 89.26°
TVD: 7,260.51'
VS: 6,094.85'



13,560

13,570

13,580

13,590

13,600

13,610

13,620

13,630

13,640

13,650

13,660

13,670

13,680

13,690

13,700

13,710

13,720

13,730

13,740

13,750

13,760

13,770

100% SS: gysbhn-lt gry, dk gry ip, clr qtz,
s&p grns, sb frm-fri, vf-f gr, med gr ip, rd-sb
d, w srltd, gm sup mltx, silc cnt, slty bddg,
mod-hily calc, clc ip

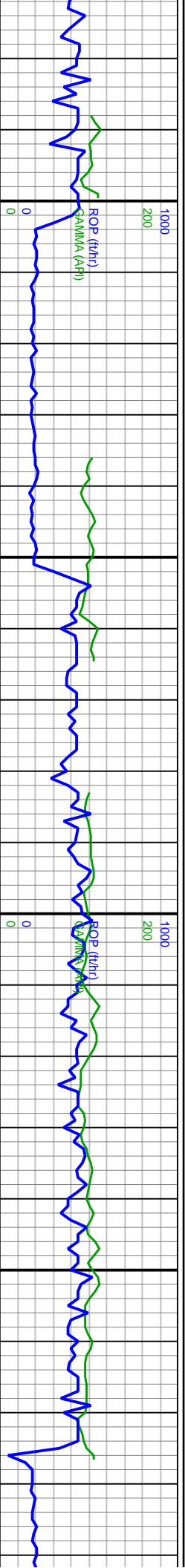
7750

7750

100% SS: gysbhn-lt
s&p grns, sb frm-fri,
rd, w srltd, gm sup r
bddg, mod-hily calc,

7750



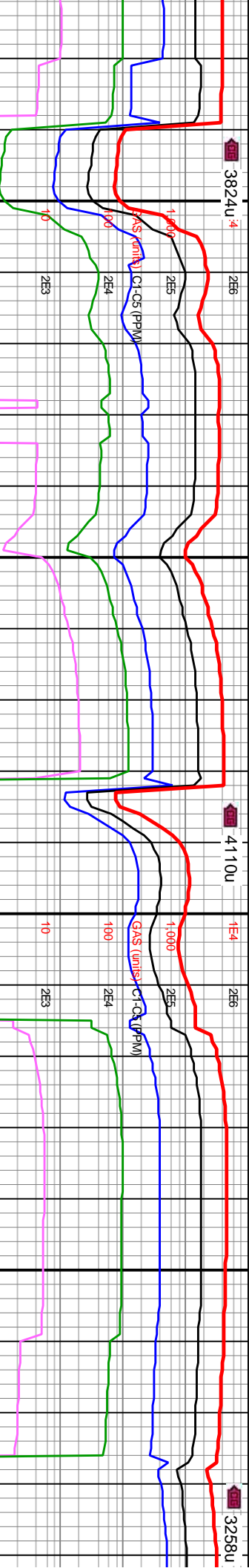


WOB: 13.5klbs
RPM: 120
SPM: 188
SPP: 4.093psi

MD: 13.856'
INC: 90.09°
AZM: 89.43°
TVD: 7.260.65'
VS: 6.179.69'

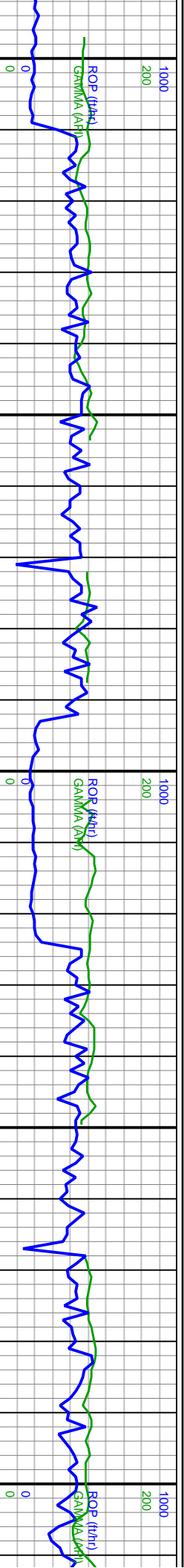
MD: 13.954'
INC: 90.09°
AZM: 88.06°
TVD: 7.260.5'
VS: 6.265.85'

MW IN: 9.7
VIS IN: 48
MW OUT: 9.8
VIS OUT: 46



gry, dk gry ip, clr qtz,
vf-f gr, med gr ip, rd-sb
mtx, silic-carb cmt, silty
calc ip

100% SS: gyshtn-lt gry, dk gry ip, clr
s&p grns, sb frm-frii, vf-f gr, med gr ip,
rd, w strd, gm sup mtx, silty bdg, mod-
calc, calc ip, silic-carb cmt

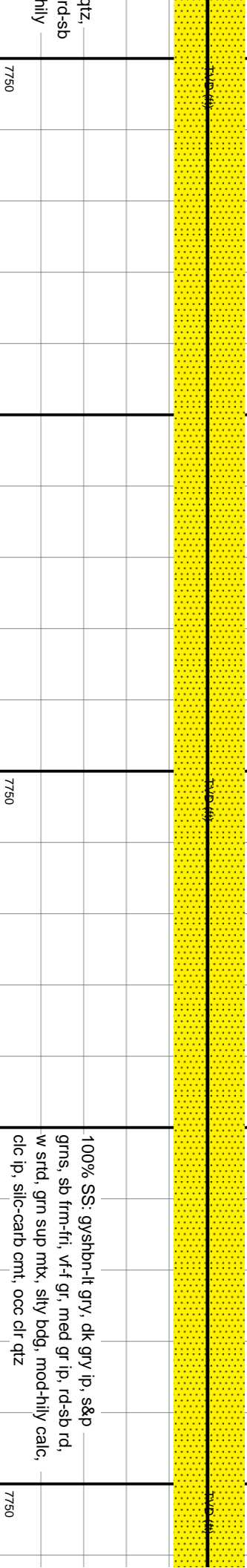
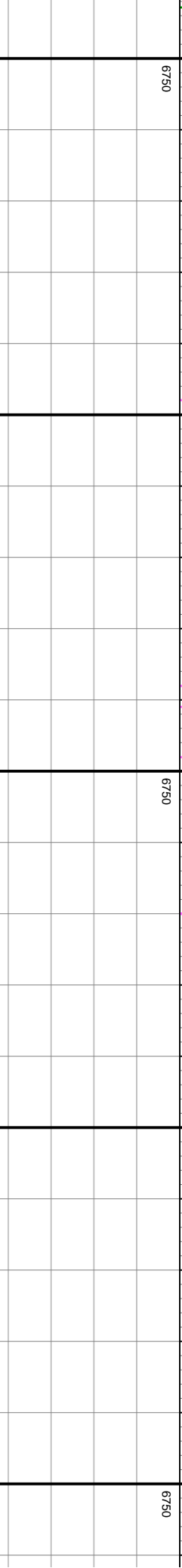
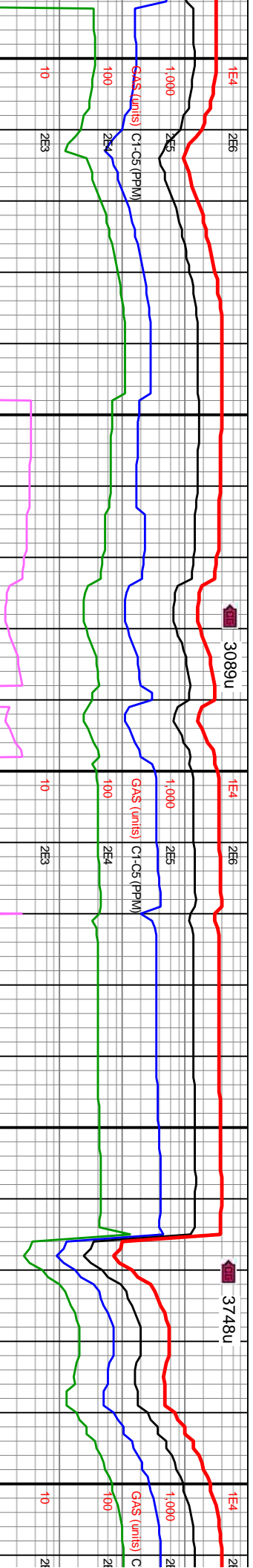


WOB: 13.4klbs
RPM: 119
SPM: 186
SPP: 4.051psi

MD: 14,049'
INC: 90°
AZM: 87.59°
TVD: 7,260.42'
VS: 6,352.65'

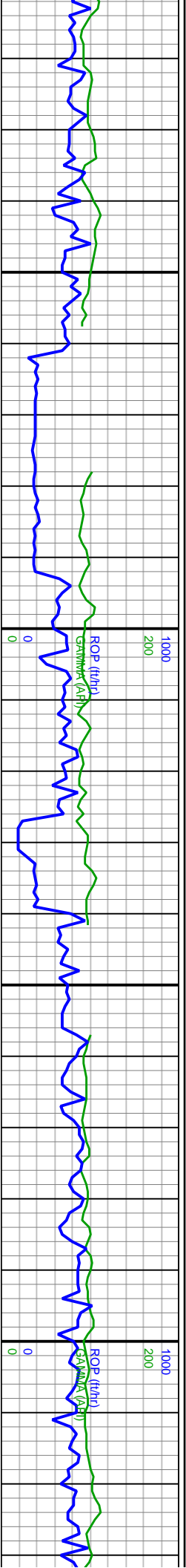
MD: 14,144'
INC: 90.52°
AZM: 88.49°
TVD: 7,259.99'
VS: 6,439.3'

WOB: 28.3klbs
RPM: 119
SPM: 186
SPP: 4.509psi



100% SS: gysbshn-lt gry, dk gry ip, s&p
grns, sb frm-fri, vf-f gr, med gr ip, rd-sb rd,
w srt'd, grn sup mtz, silty bdg, mod-hily calc,
clic ip, silic-carb cnt, occ clr qtz





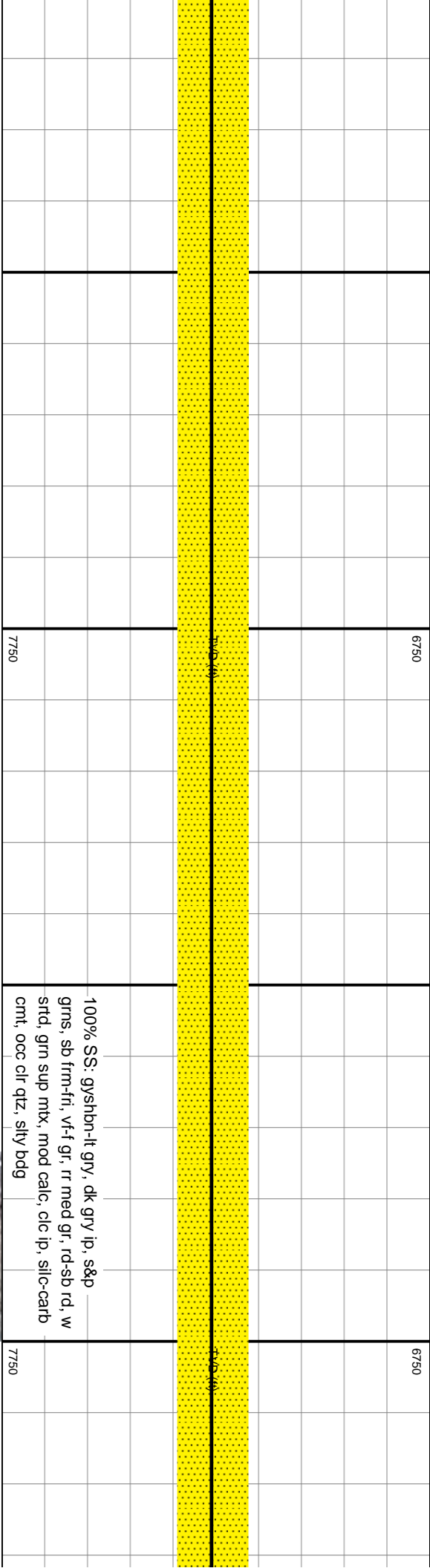
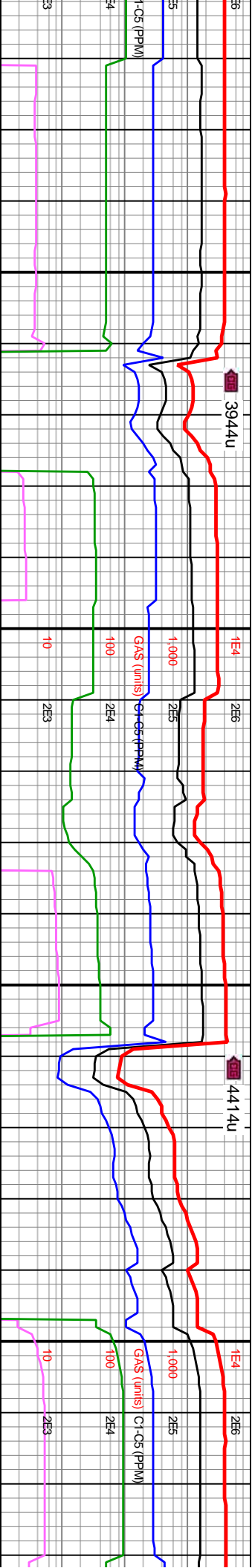
MD: 14,239'
INC: 90.4°
AZM: 90.41°
TVD: 7,259.23'
VS: 6,524.96'

MD: 14,333'
INC: 89.66°
AZM: 90.12°
TVD: 7,259.18'
VS: 6,609.14'

MW IN: 9.7
VIS IN: 48
MW OUT: 9.8+
VIS OUT: 47

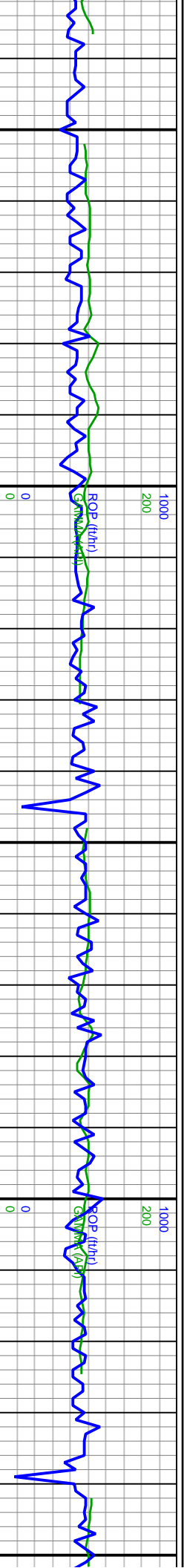
WOB: 22.6klbs
RPM: 120
SPM: 186
SPP: 4,465psi

MD: 14,427'
INC: 89.69°
AZM: 90.11°
TVD: 7,259.7'
VS: 6,693.42'



100% SS: gysbn-ft gry, dk gry ip, s&p
grns, sb frm-fri, vf-f gr, rr med gr, rd-sb rd, w
srt'd, grn sup mtz, mod calc, clic ip, silic-carb
cmt, occ clr qtz, silty bddg





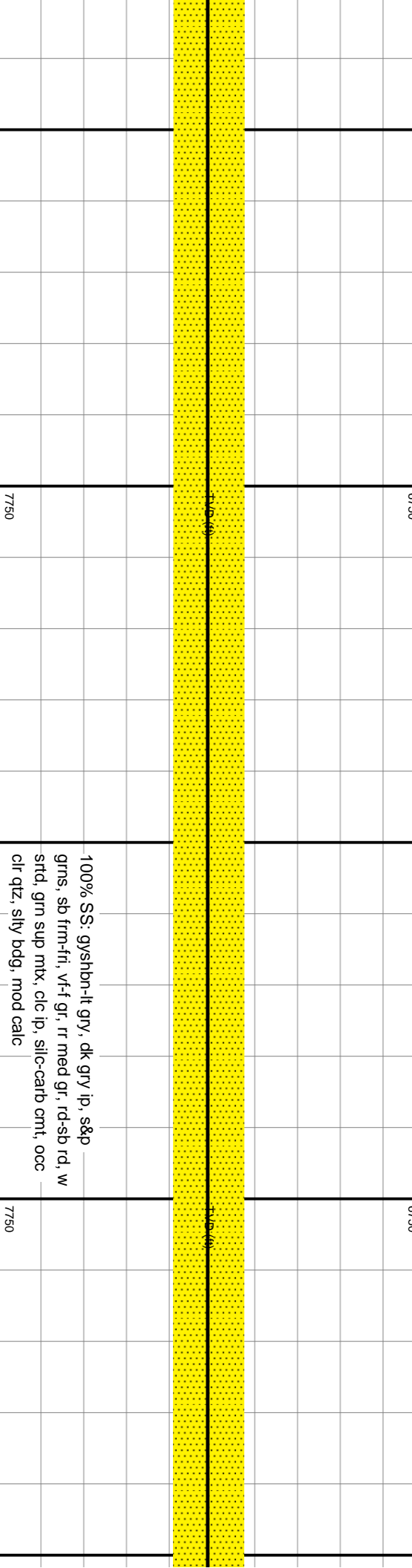
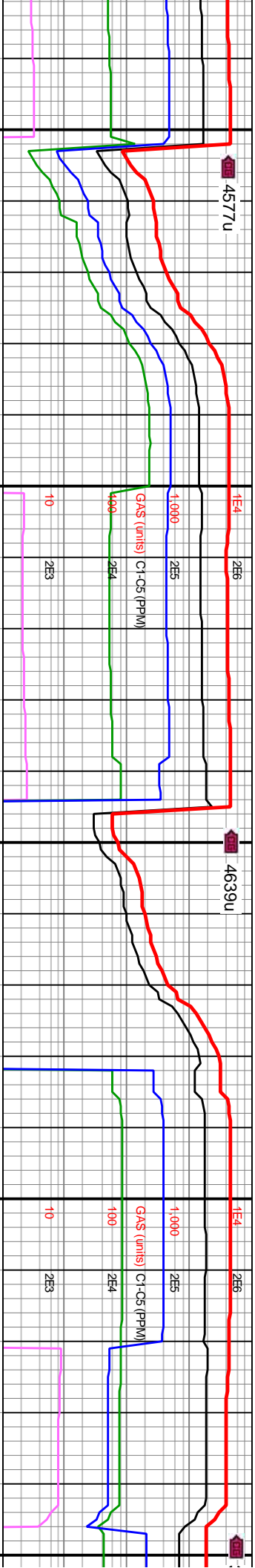
14,440 14,450 14,460 14,470 14,480 14,490 14,500 14,510 14,520 14,530 14,540 14,550 14,560 14,570 14,580 14,590 14,600 14,610 14,620 14,630 14,640 14,650

MD: 14,522'
INC: 89.63°
AZM: 89.54°
TVD: 7,260.28'
VS: 6,778.82'

MW IN: 9.7
VIS IN: 48
MW OUT: 9.8+
VIS OUT: 47

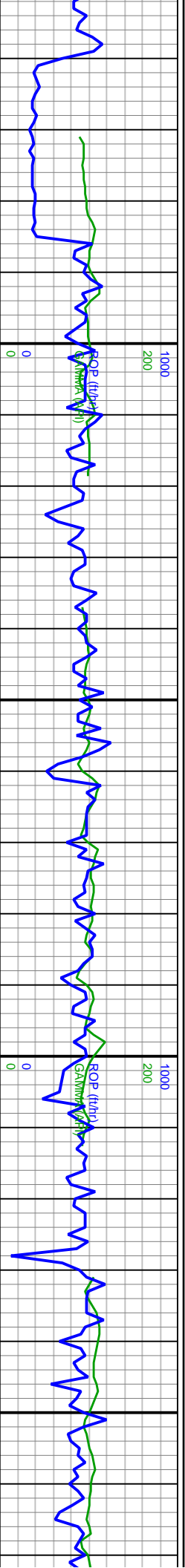
WOB: 28.1kbs
RPM: 120
SPM: 186
SPP: 4.531psi

MD: 14,616'
INC: 89.69°
AZM: 89.3°
TVD: 7,260.83'
VS: 6,863.6'



100% SS: gyshtn-ft gry, dk gry ip, s&p
grms, sb frm-fri, vf-f gr, rr med gr, rd-sb rd, w
srtd, grm sup mtx, clc ip, silc-carb cmt, occ
clr qtz, silty bdcg, mod calc





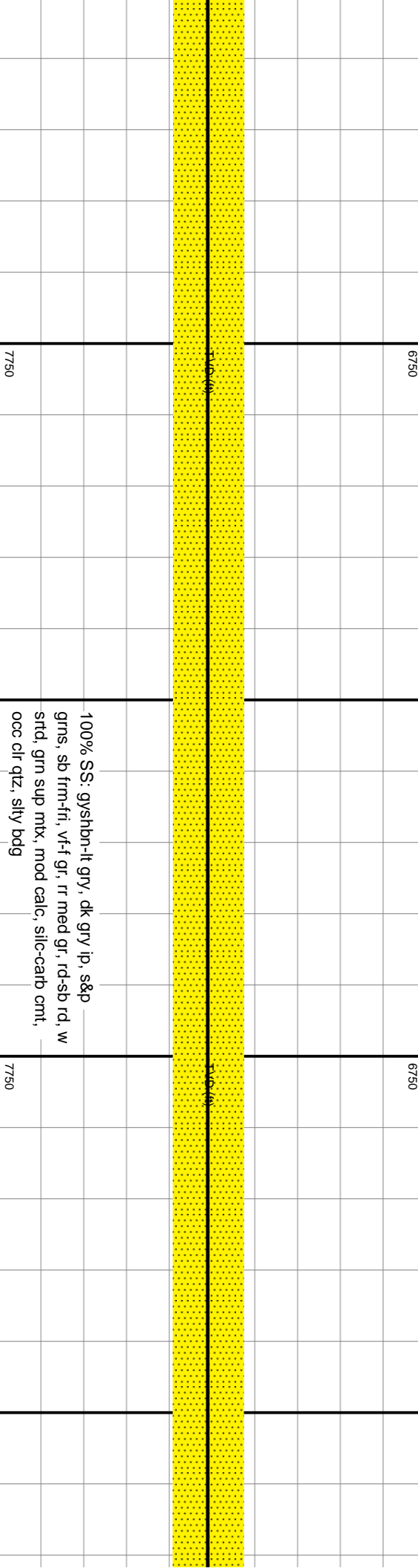
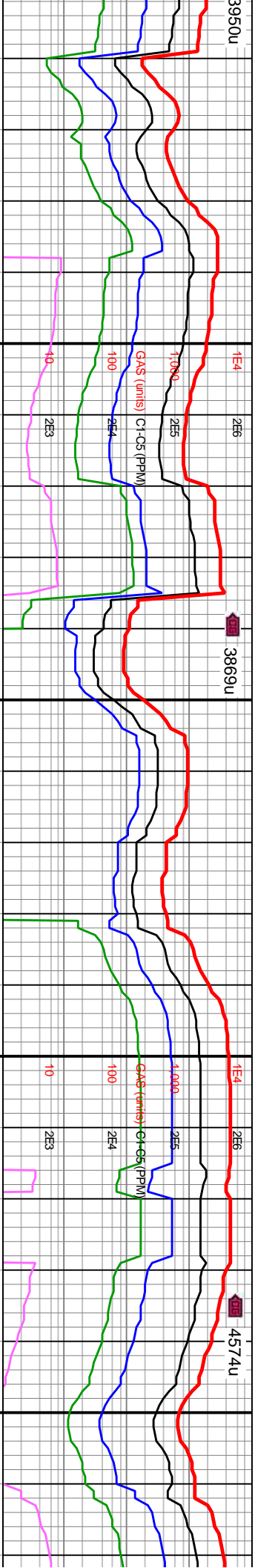
14,660 14,670 14,680 14,690 14,700 14,710 14,720 14,730 14,740 14,750 14,760 14,770 14,780 14,790 14,800 14,810 14,820 14,830 14,840 14,850 14,860 14,87

MD: 14,711'
INC: 90.15°
AZM: 89.21°
TVD: 7,260.97'
VS: 6,949.41'

MW IN: 9.7
VIS IN: 48
MW OUT: 9.8+
VIS OUT: 47

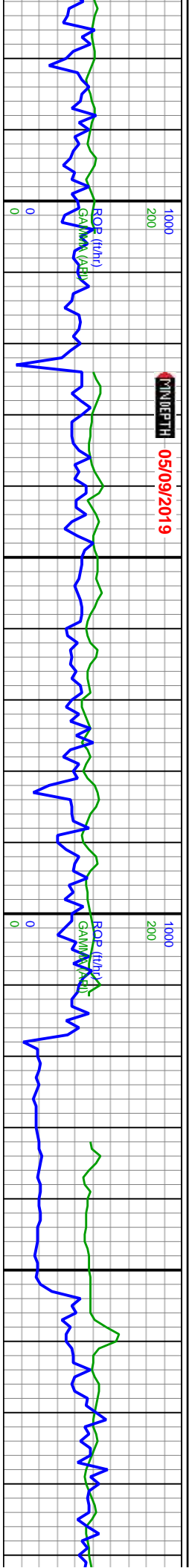
WOB: 26.5kbs
RPM: 121
SPM: 184
SPP: 4,558psi

MD: 14,806'
INC: 90.18°
AZM: 90.66°
TVD: 7,260.69'
VS: 7,034.72'



100% SS: gyshtn-ht gry, dk gry ip, s&p
grms, sb frm-fri, vf-f gr, rr med gr, rd-sb rd, w
srt'd, grm sup mtx, mod calc, silc-carb cntl,
occ clr qtz, silty bdg

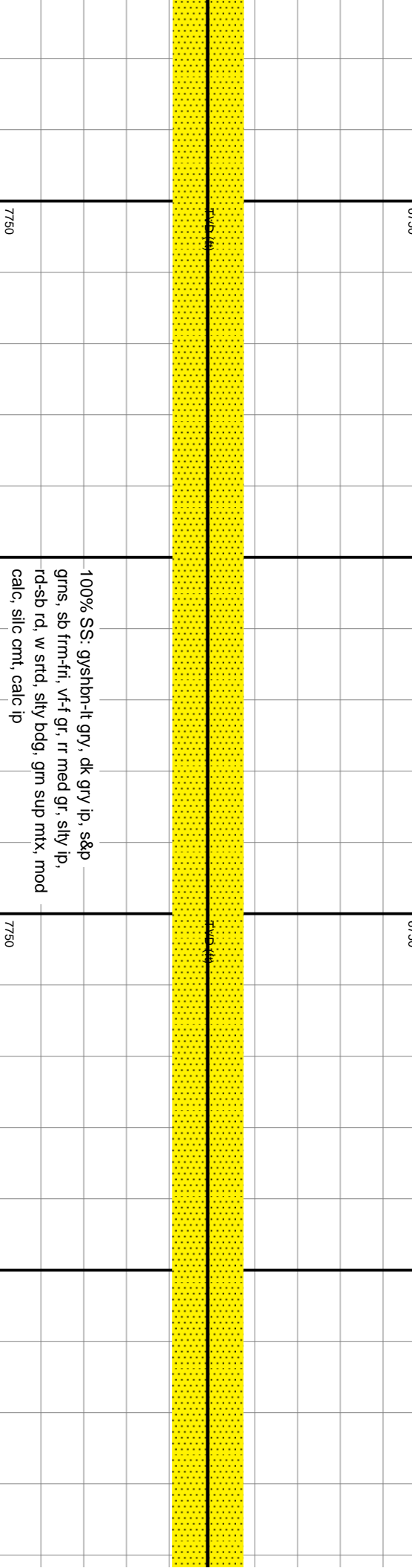
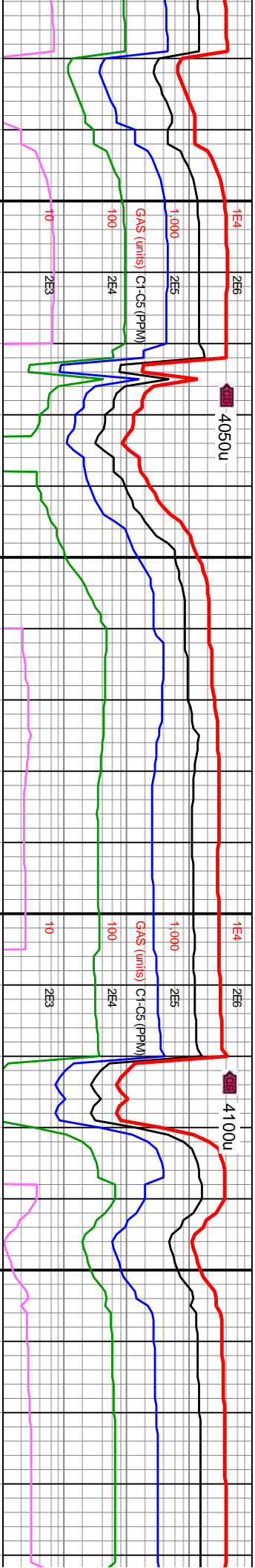




MD: 14,901'
INC: 90.15°
AZM: 91.69°
TVD: 7,260.42'
VS: 7,119.11'

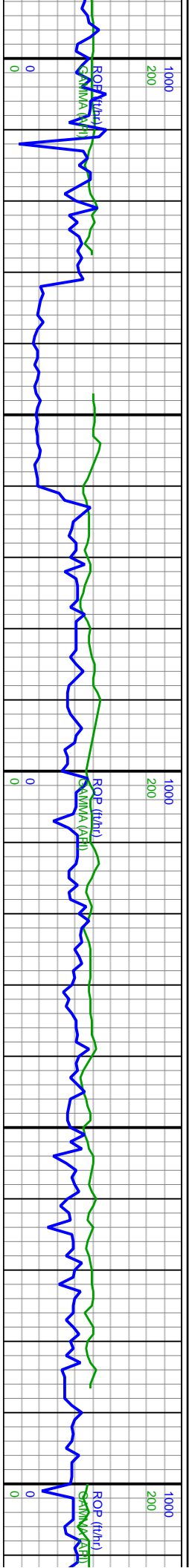
MD: 14,995'
INC: 90.15°
AZM: 92.07°
TVD: 7,260.17'
VS: 7,202.08'

MD: 15,065'
INC: 90°
AZM: 92.5°
TVD: 7,265'
VS: 7,285'



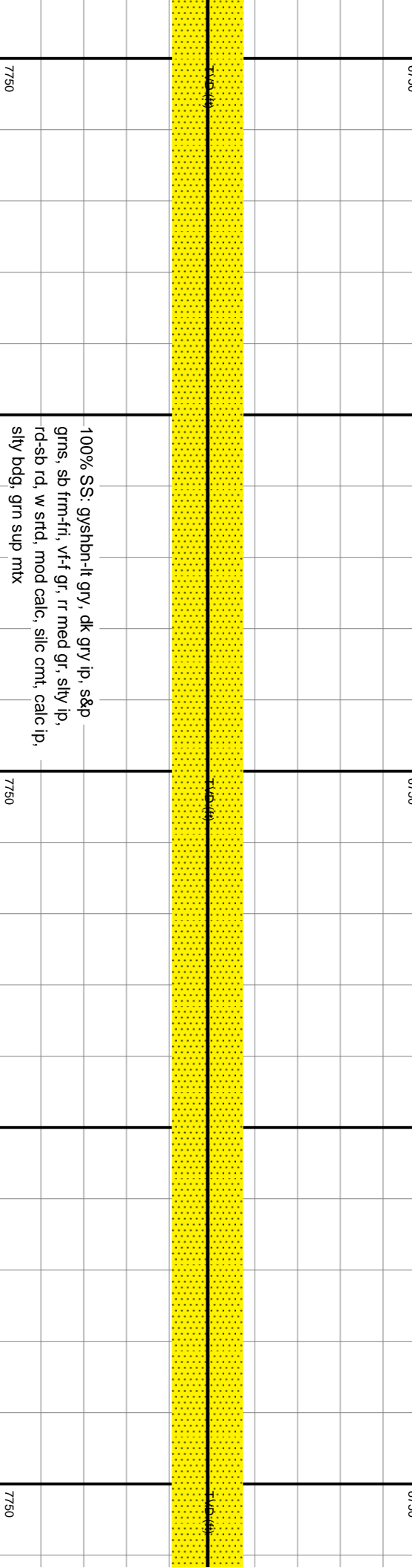
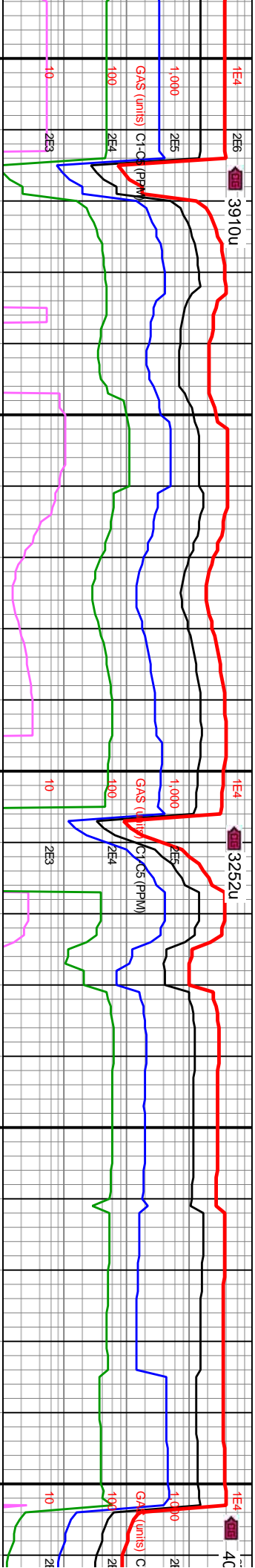
100% SS: gyshtn-ht gry, dk gry ip, s&p
grns, sb frm-fri, vf-f gr, rr med gr, silty ip,
rd-sb rd, w strd, silty bdg, gm sup mtz, mod
calc, silc cnt, calc ip

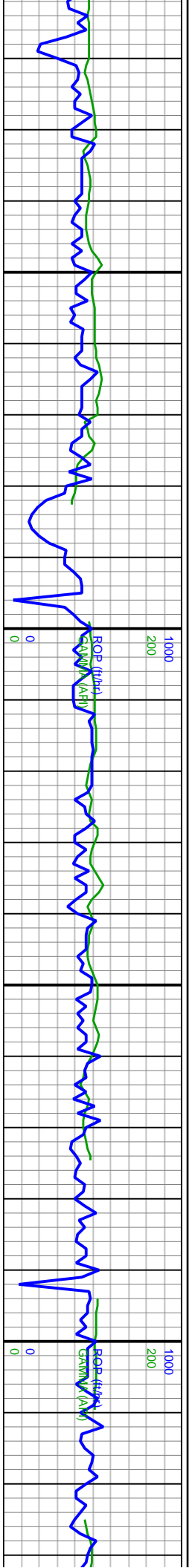




MD: 15,185' WOB: 27klbs
INC: 90.25° RPM: 119
AZM: 92.12° SPM: 188
TVD: 7,259.84' SPP: 4.642psi
VS: 7,368.78'

MD: 15,279' WOB: 27klbs
INC: 89.48° RPM: 119
AZM: 90.55° SPM: 188
TVD: 7,260.06' SPP: 4.642psi
VS: 7,452.16'



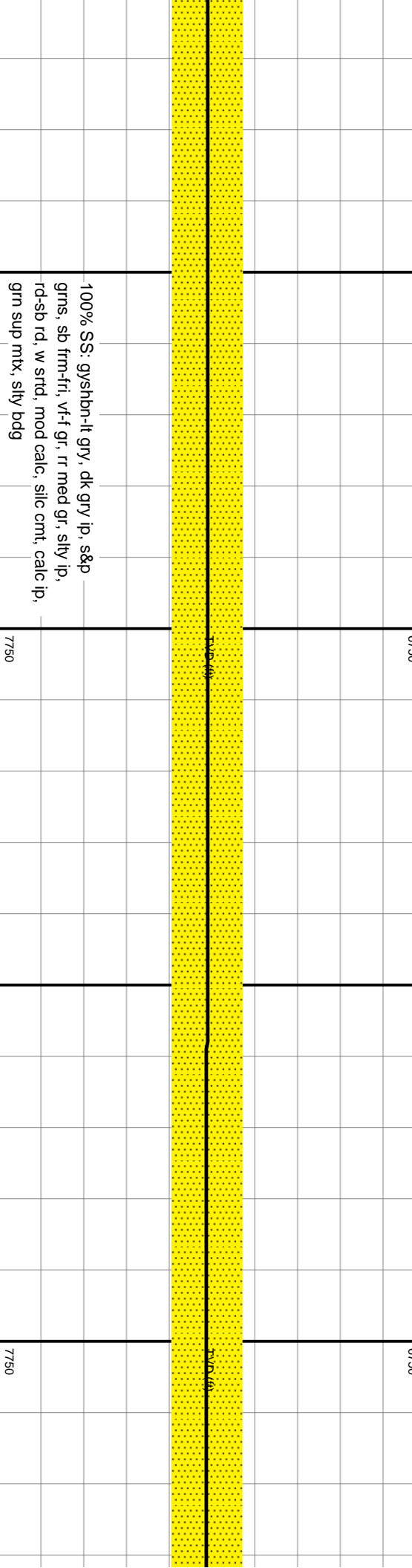
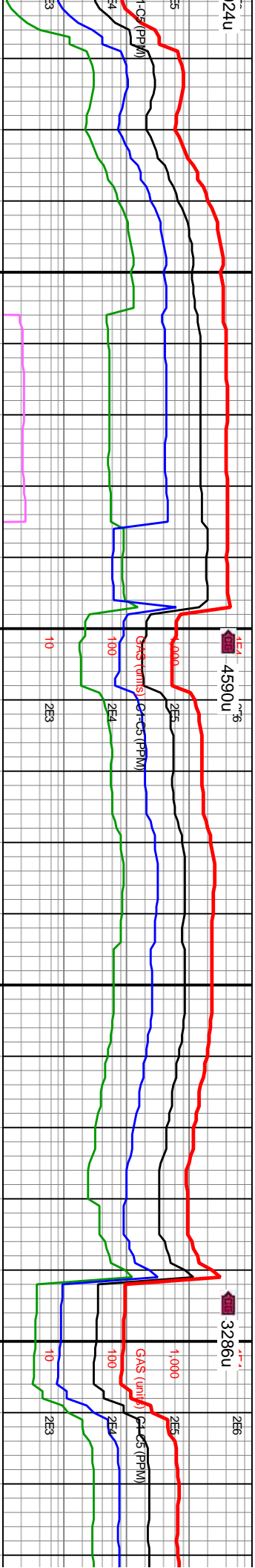


MD: 15,374'
INC: 89.35°
AZM: 90.58°
TVD: 7,261.03'
VS: 7.537'

WOB: 18.9klbs
RPM: 119
SPM: 187
SPP: 4,642psi

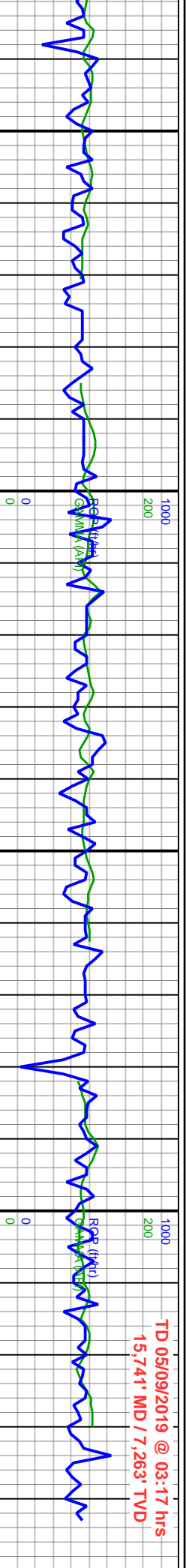
MD: 15,469'
INC: 89.78°
AZM: 89.91°
TVD: 7,261.75'
VS: 7.622.09'

MW IN: 9.7
VIS IN: 46
MW OUT: 9.9
VIS OUT: 46



100% SS: gyshtn-lt gry, dk gry ip, s&p
grns, sb frm-fri, vf-f gr, rr med gr, silty ip,
rd-sb rd, w srted, mod calc, silic cnt, calc ip,
grn sup mtx, silty bdg





MD: 15,563'
INC: 89.82°
AZM: 89.2°
TVD: 7,262.08'
VS: 7,706.78'

WOB: 20.5kibs
RPM: 119
SPM: 186
SPP: 4,717psi

MD: 15,657'
INC: 89.88°
AZM: 89.77°
TVD: 7,262.33'
VS: 7,791.52'

MW IN: 9.7+
VIS IN: 48
MW OUT: 9.9+
VIS OUT: 45

MD: 15,717'
INC: 89.75°
AZM: 89.95°
TVD: 7,262.52'
VS: 7,845.44'



6750		6750	
TVD: 6750		TVD: 6750	
100% SS: gyshtn-lt gry, dk gry ip, s&p grns, sb frm-fri, vt-f gr, rr med gr, silty ip, rd-sb rd, sub-ang ip, w strd, mod calc, silc cnt, calc ip, grn sup mtz, silty bdg		100% SS: gyshtn-lt gry, dk gry ip, s&p grns, sb frm-fri, vt-f gr, rr med gr, silty ip, rd-sb rd, w strd, mod calc, silc cnt, calc ip, grn sup mtz, silty bdg, sub-ang ip	
7750		7750	

End of Horizontal Log

