

Scale: 5" / 100'
Measured Depth Log

Location 350' FSL 2299' FWL
Lat/Long: 40.045032/-104.971821

Type of Drilling Fluid WBM/ POLY

Address 1099 18th St, Suite 1800
Denver, CO 80202

Address 2385 S. Lipan St.
Denver, CO 80223

Oil	Condensate
Note	Core
Error	Water

[illegible]

Accessories

Fossils	GASTROPOD	ARGILLITE GRAIN	HEAVY MINERAL	Stringer
INOCERAMUS	B BENTONITE	K KAOLIN	ANHYDRITE STRINGER	
ALGAE	O OOLITE	M MARCASITE	BENTONITE STRINGER	
AMPHIPORA	O OSTRACOD	T MARLSTONE	COAL STRINGER	
BELEMNITE	P PELECYPOD	M MICACEOUS	DOLOMITE STRINGER	
BIOCLASTIC	P PELLET	C CARBONACEOUS FLAKES	GYPSUM STRINGER	
BRACHIOPOD	P PISOLITE	CHT CHERT	LIMESTONE STRINGER	
BRYOZOA	P PLANT REMAINS	C COAL - THIN BEDS	MARLSTONE (CALC) STRG	
CEPHALOPOD	S PLANT SPORES	D DOLOMITIC	MARLSTONE (DOL) STRG	
CORAL	S SCAPHOPOD	F FELDSPAR	SANDSTONE STRINGER	
CRINOID	S STROMATOPOROID	F FERRUGINOUS PELLET	SHALE STRINGER	
E ECHINOID		S SILICEOUS	SILTSTONE STRINGER	
F FISH	Minerals	F FERRUGINOUS		
F FORAMINIFERA	A ANHYDRITIC	G GLAUCONITE	S SILTY	
F FOSSIL	A ARGILLACEOUS	G GYPSIFEROUS	T TUFFACEOUS	

Other Symbols

Oil Show	P PINPOINT	DST INTERVAL	WIRELINE TESTED - LEFT	E EARTHY
V VUGGY	FAULT	WIRELINE TESTED - RT	FX FINELYXLN	
Engineering	FORMATION TOP	DRILL STEM TEST	GS GRAINSTONE	
D DEAD	GAS SHOW	MN DEPTH	L LITHOGRAPHIC	
E EVEN	OIL SHOW		MX MICROXLN	
Q QUESTIONABLE	BIT	Rounding	MS MUDSTONE	
S SPOTTED STAINING	A CONNECTION (UP)			
Porosity	T CONNECTION (DOWN)	A ANGULAR	PS PACKSTONE	
CONNECTION GAS	NORMAL FAULT	R ROUNDED	WS WACKESTONE	
E EARTHY	CONNECTION GAS (LEFT)	B SUBANG		
F FENESTRAL	T TRIP GAS	R REVERSE FAULT	P SUBRAND	
F FRACTURE	TRIP GAS (LEFT)	CASING		
INTERCRYSTALLINE	DOWN TIME GAS	SIDEWALL CORE (LEFT)	Textures	
INTERCRYSTALLINE	DOWN TIME GAS (LEFT)	SIDEWALL CORE (RIGHT)	P POOR	
M MOLDIC	CORE - LOST	S SLIDE	W WELL	
O ORGANIC	CORE - RECOVERED	S SURVEY	CX CRYPTOXLN	



MARLSTONE	SHALY SANDSTONE
METAMORPHIC	SHALY SILTSTONE
O SAMPLE	SILTY SHALE
SANDSTONE	SILTSTONE
SALT	TILL
SALT-PEPPER SAND	TUFF
SHALE	WELDED TUFF
SHALE COLORED	
SHALE GRAY	

Slide/Rotate

ROP
ROF
GAMMA

7 COLUMBINE 2 PERSON LOGGING
20 RIGGED UP 10:00am MDT 9/30/2014
BLOODHOUND GAS CHROMATOGRAPH
UNIT #0125; JOB# 19; IBALL DATABASE
G4 NAME: Ranchview 28C 11HZ.mdb

Total Gas & Chromatograph
GAS
C1
C2
C3
C4

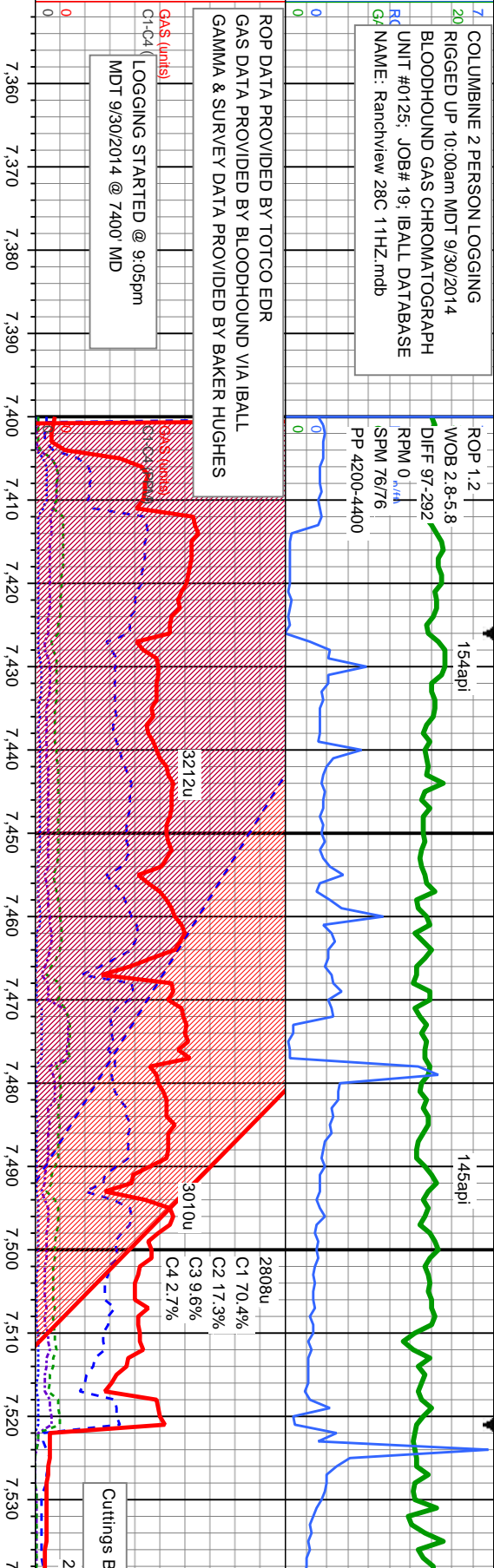
Depth Labels

% Lith

Well Bore
TVD

Oil Show

Images



Acetone was used as the cutting agent with the dimple filled to the rim
The ratings are based on 7 descriptors: None, Slight trace, Trace, Fair, Moderate, Good, and Excellent. The descriptor used is based on the loggers observations and best judgement of brilliance, color and longevity of the cut.

Oil Shows Every 100'

7400'-7450MD: SLTY SH: lt-dk gy-dk gy brn, sl hd-firm, sb blk-y-sb pily, silty tex, non-calc, tr bent

7450'-7500MD: SLTY SH: lt-dk gy-dk gy brn, sl hd-firm, sb blk-y-sb pily, silty tex, non-calc, tr bent, rr pyr, occ yel mnrl flor, tr dim yel flor w/ fnt lt bl mky cut

7500'-7550MD: SLTY SH: lt-dk gy-dk gy slt-firm, sb blk-y-sb pily, silty tex, non-ca

MD: 7.426°
TVD: 7.351.51
Inclination: 7.4°
Azimuth: 3.45°
VS: -847.13

WT IN: 10.2 OUT: 10.2
VIS IN: 53 OUT: 51

MD: 7.473°
TVD: 7.397.96
Inclination: 10.17°
Azimuth: 357.33°
VS: -839.96

WT IN: 10.2 OUT: 10.1
VIS IN: 46 OUT: 49

MD: 7.520°
TVD: 7.443.95
Inclination: 13.5°
Azimuth: 0.09°
VS: -830.33

E
G
M
F
T
S



10/1/2014

MINDEPTH

ROP 0.65
WOB 32-34
DIFF 190-367
RPM 0-1
SPM 72/73
PP 4150-4300

297api
299api
ROP (mbl/hr)
GAMMA (api)
6000
600000

GAS (units)
C1-C4 (PPM)

Cuttings Blocked off Gas Trap

Cuttings Blocked off Gas Trap

4700u
C1 73.5%
C2 17.0%
C3 7.2%
C4 2.2%

Sharon Springs
7568MD / 7480' TVD

MD: 7,567'
TVD: 7,489.3
Inclination: 16.9°
Azimuth: 0.62°
VS: -818.07

Niobrara A
7598MD / 7518' TVD

MD: 7,614'
TVD: 7,533.83
Inclination: 20.37°
Azimuth: 358.36°
VS: -803

WT IN: 10.2 OUT: 10.2
VIS IN: 50 OUT: 45

MD: 7,661'
TVD: 7,577.41
Inclination: 23.62°
Azimuth: 354.83°
VS: -785.44

TOOH Due To Poor Build Rate
7710MD 5:00am MDT 10/1/14
Resumed Drilling 8:30pm MDT

MD: 7,710'
TVD: 7,621.56
Inclination: 27.73°
Azimuth: 355.48°
VS: -764.3

Niobrara B
7749MD / 7655' TVD

MD: 7,755'
TVD: 7,660.55
Inclination: 32°
Azimuth: 357.4°
VS: -741.9

7550'-7600MD: SLTY SH: lt-dk gy-dk gy brn, sl
sft-firm, sb blk-ly-sb ply, silty tex, sl calc, occ bent,
about yel mott flr, dim yel flr w/ string bl mky cut

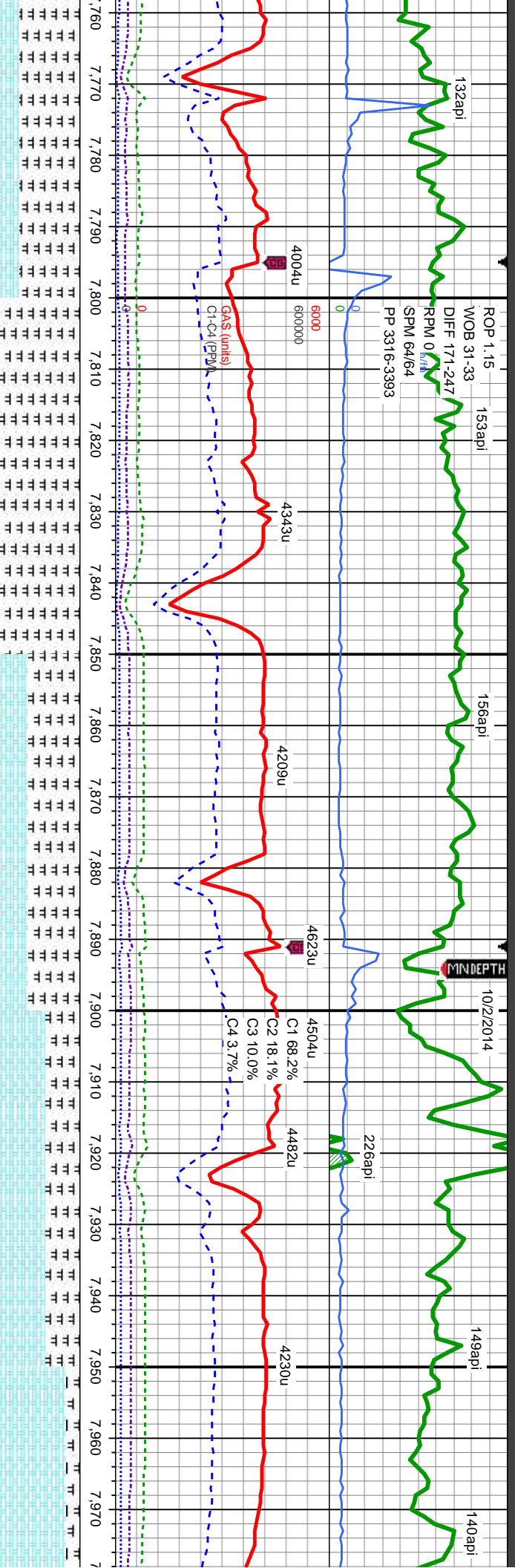
7600'-7650MD MRLST: gy-dk gy-gy brn, sb
blk-ly-sb ply, sl mot-silty tex, v calc, SLTY SH:
med-dk gy-dk gy brn, sl sft-firm, sb blk-ly-sb ply,
silty tex, non-calc tr bent w/ yel flr, tr ch

7650'-7700MD MRLST: gy-dk gy-gy brn, sb
blk-ly-sb ply, sl mot-silty tex, v calc; CHK: med-lt
gy-gy brn, sft-sl frm, sb blk-ly, mot, sl rthy, v cal;
occ pyr, fnt bl-wh flr w/ string lt bl mky cut

7700'-7750MD CHK: med-lt gy-gy brn, sft-firm, sb
blk-ly, mot, sl rthy, v calc; MRLST: gy-dk gy-gy brn,
sb blk-ly-sb ply, sl mot-silty tex, v calc; tr pyr

7750'-7800MD: med-lt gy-gy brn, sft-firm,
sl mot-silty tex, v calc; tr pyr





WT IN: 10.2 OUT: 10.2
VIS IN: 53 OUT: 50

7800-7850 MD MRLST: gy-dk gy, sb blyk-sb
ply, sl mot-sly tex, v calc CHK: lt gy-crm,
sft-frm, sb blyk, mot, sl rthy, v calc

7850-7900 MD MRLST: gy-dk gy-gy brn, sb
blyk-sb ply, mot-sly tex, v calc, CHK: lt gy-gy, rr
crm, sb blyk, mot-wxy tex, v calc, tr bent, frt
yel-wht flr wi sting lt bl mky cut

7900-7950 MD CHK: lt gy-gy, rr crm, sb blyk,
mot-wxy tex, v calc; MRLST: gy-dk gy-gy brn, sb
blyk-sb ply, mot-sly tex, v calc, tr bent, rr pyr

7950-8000 MD CHK: lt gy-cr
tex, v calc; MRLST: gy-dk gy
ply, mot-sly tex, v calc, frt
modl mky cut

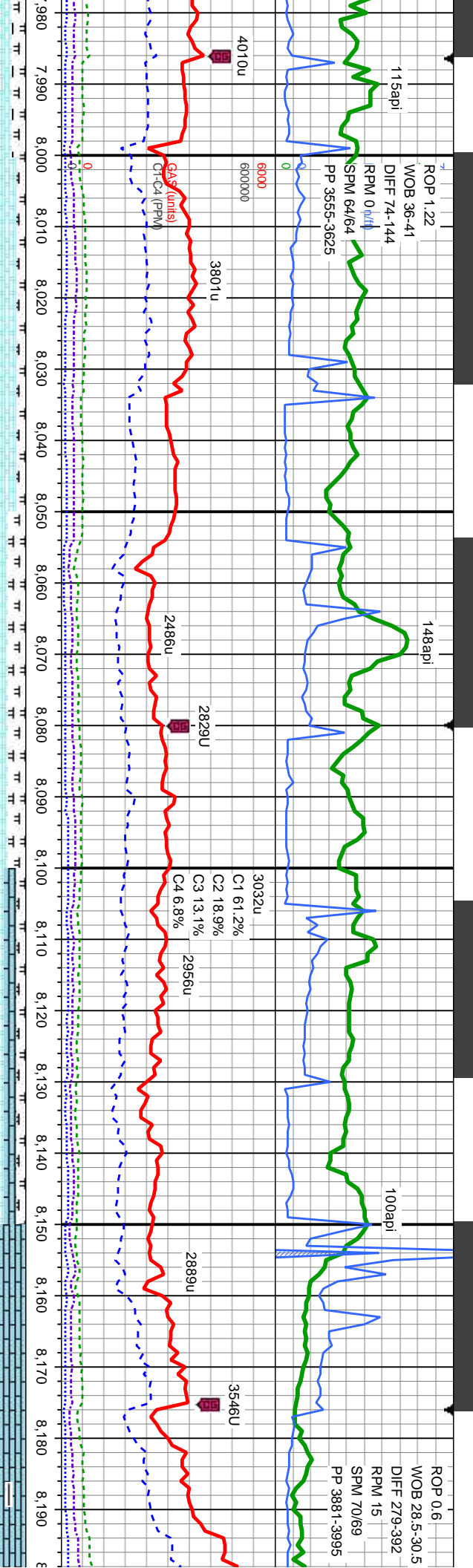
MD: 7.802°
TVD: 7.699.1
Inclination: 37.8°
Azimuth: 358.67°
VS: -715.06

MD: 7.850°
TVD: 7.735.72
Inclination: 42.9°
Azimuth: 359.35°
VS: -684.06

MD: 7.944°
TVD: 7.796.81
Inclination: 55.83°
Azimuth: 357°
VS: -612.94

3000 MD MRLST: gy-dk gy, sb blyk-sb ply,
ply tex, v calc CHK: med-lt gy-gy brn,
sb blyk, mot, sl rthy, v calc, mod bl-wht
ting lt bl mky cut





sb blkly, mot-wxy
-gy brn, sb blkly-sb
bl-whit flr wi slow

8000-8050 MD CHK: lt brn-crm, sft frm, sb blkly,
mot-wxy tex, v calc; MRLST: gy-dk gy-gy brn, sb
blkly-sb ply, mot-sily tex, v calc

8050-8100 MD CHK: lt gy-gy, sft-sl frm, sb blkly,
sl mot-wxy tex abnt mic xl wi grily tex, v calc;
MRLST: gy-dk gy-gy brn, sb blkly-sb ply, mot-sily
tex, v calc, mod yel-oring flr wi stmg wht-bl
mky cut

8100-8150 MD CHK: lt gy-gy, sft-sl frm, sb blkly,
sl wxy tex abnt mic xl wi grily tex, v calc, occ
grdg - ls
MRLST: gy-dk gy-gy brn, sb blkly-sb ply, mot-sily
tex, v calc
LS: wh-off wh, sl frm, blkly - sb blkly, wxy tex, v
cal

8150-8200 MD LS: tan-brn, wh-off wh occ gy,
frm, blkly - sb blkly, v wxy tex, mic xl v cal
CHK: lt gy-gy, sft-sl frm, sb blkly, sl wxy tex abnt
mckn wi grily tex, v calc, occ grdg - ls, fnt
bl-whit flr wi slow stmg wht-bl mky cut

WT IN: 10.2
VIS IN: 51

WT IN: 10.2
VIS IN: 45

MD: 7.991'
TVD: 7.821.23
Inclination: 61.54°
Azimuth: 356.45°
VS: -572.88

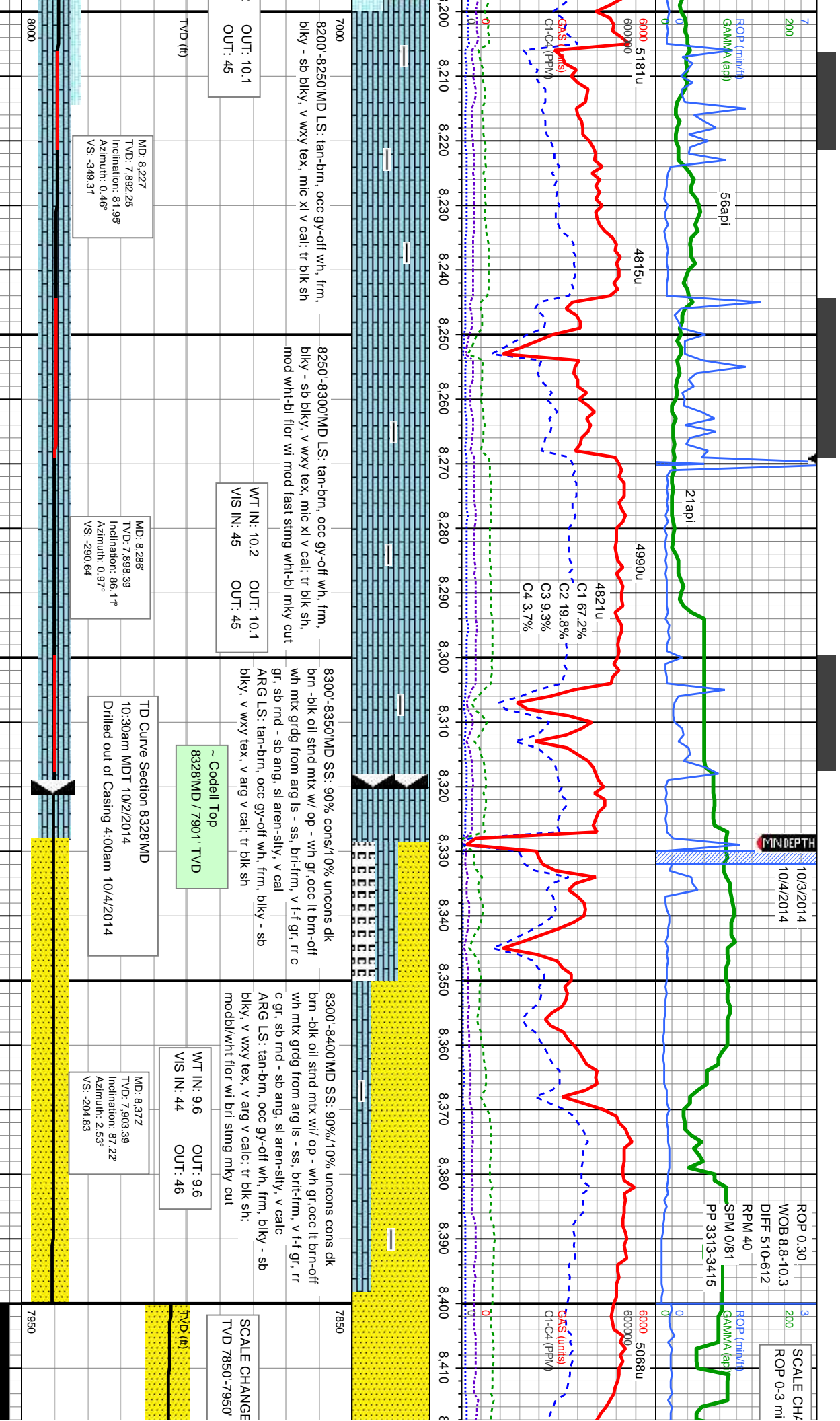
MD: 8.039'
TVD: 7.842.29
Inclination: 66.4°
Azimuth: 357.49°
VS: -529.83

MD: 8.086'
TVD: 7.859.57
Inclination: 70.44°
Azimuth: 358.05°
VS: -486.17

MD: 8.133'
TVD: 7.873.63
Inclination: 74.75°
Azimuth: 357.88°
VS: -441.36

MD: 8.180'
TVD: 7.884.39
Inclination: 78.78°
Azimuth: 359.65°
VS: -395.64





ANGE
n/ft

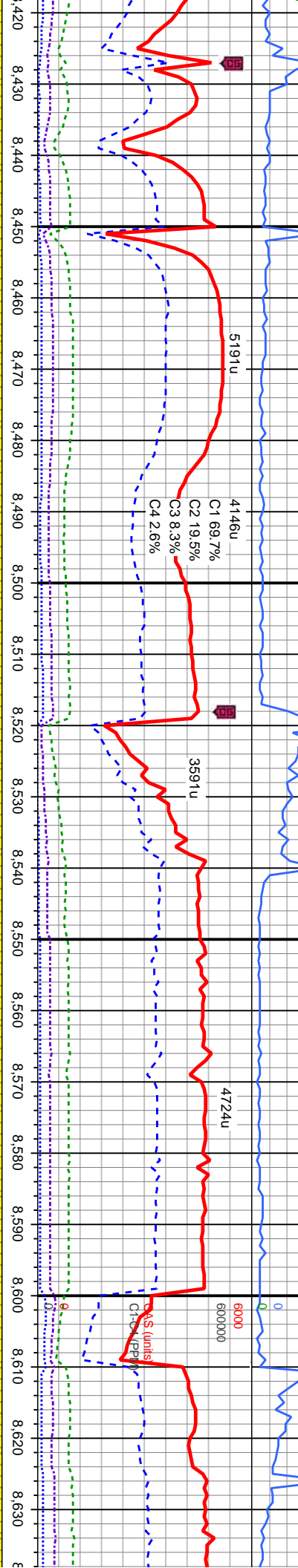
On Buster

112api

3-8' fair

ROP: 1
WOB 20.9-21.2
DIF 934-980
RPM 70
SPM 0/81
PP 3797-3805

ROD (ft)
GAMMA (api)



8400'-8500MD SS: cons dk brn -blk oil stnd mtx
w/ op - wh gr, brit-frm, v f gr, sb rnd - sb ang, sl
aren-sily, sl calc; tr blk sh; bri bl/wht flr wi mod
stmg mky cut

MD: 8,464'
TVD: 7,907.88
Inclination: 87.19°
Azimuth: 2.77°
VS: -13.02

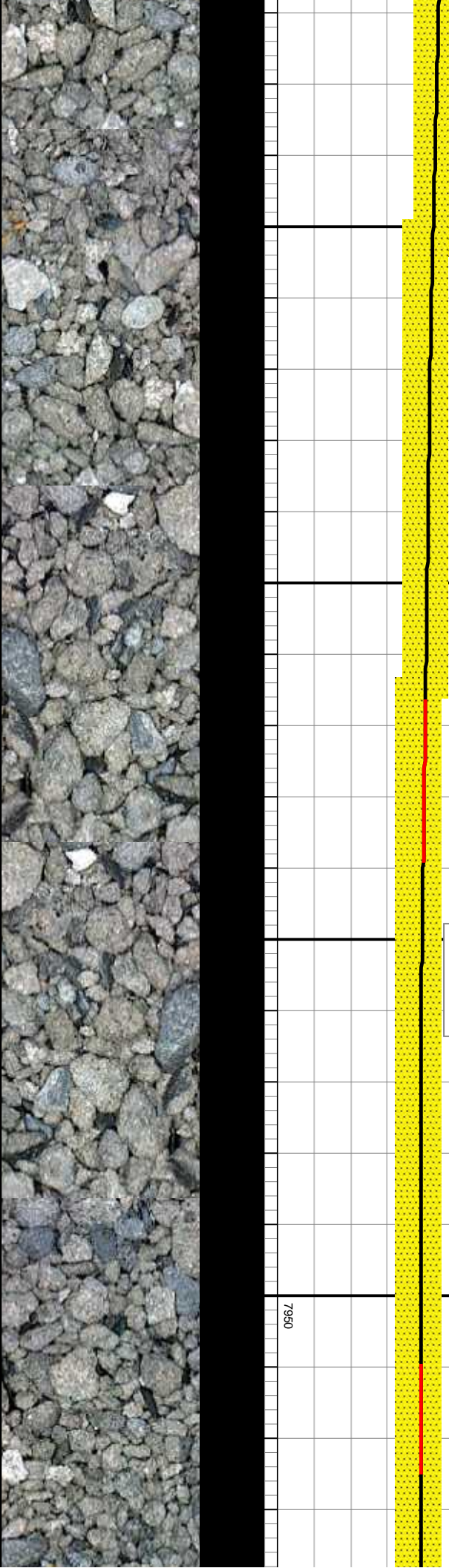
W/ IN: 9.5 OUT: 9.5
V/ IN: 43 OUT: 45

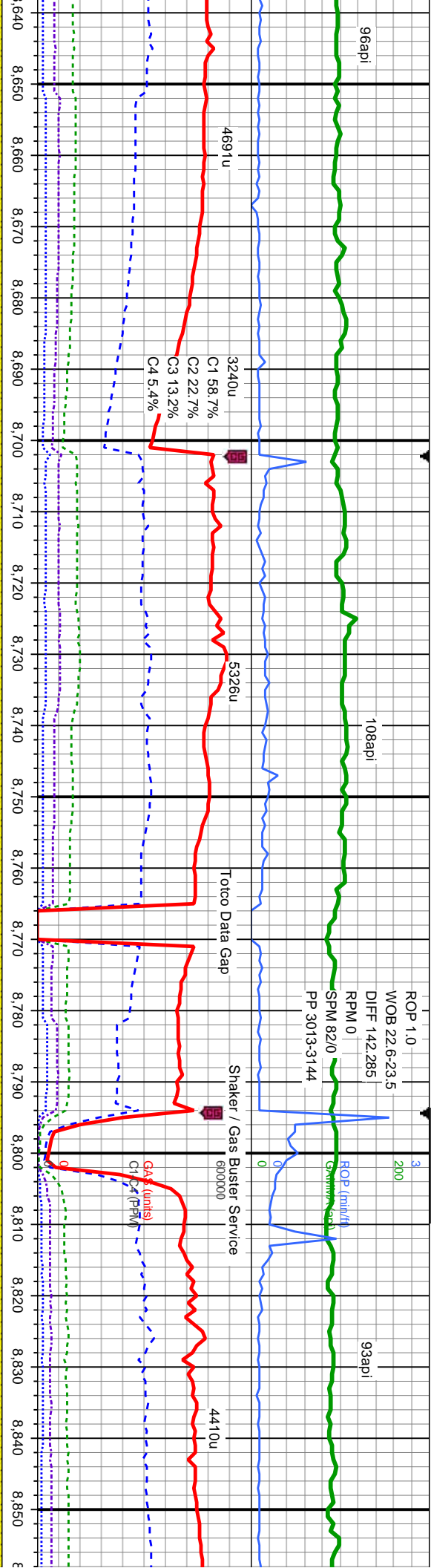
8500'-8600MD SS cons dk brn -blk oil stnd mtx
w/ op - wh gr, brit-frm, v f gr, sb rnd - sb ang, sl
aren-sily, sl calc; occ blk sh, tr OTS; bri bl/wht
flr wi mod stmg mky cut

MD: 8,556'
TVD: 7,910.41
Inclination: 89.66°
Azimuth: 2.91°
VS: -21.16

TVD (ft)

8600'-8700
w/ op - wh
aren-sily, s
mod stmg r





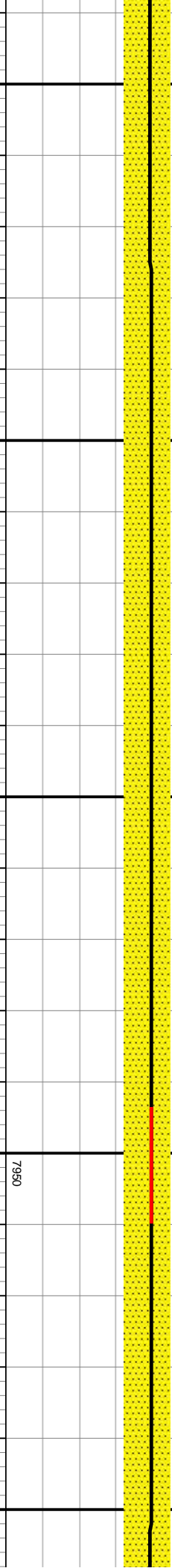
MD SS cons dk brn -blk oil stnd mtx
gr, brit-frm, v f gr, sb rnd - sb ang, sl
i calc; occ blk sh; bri bl/wht flr wi
mky cut

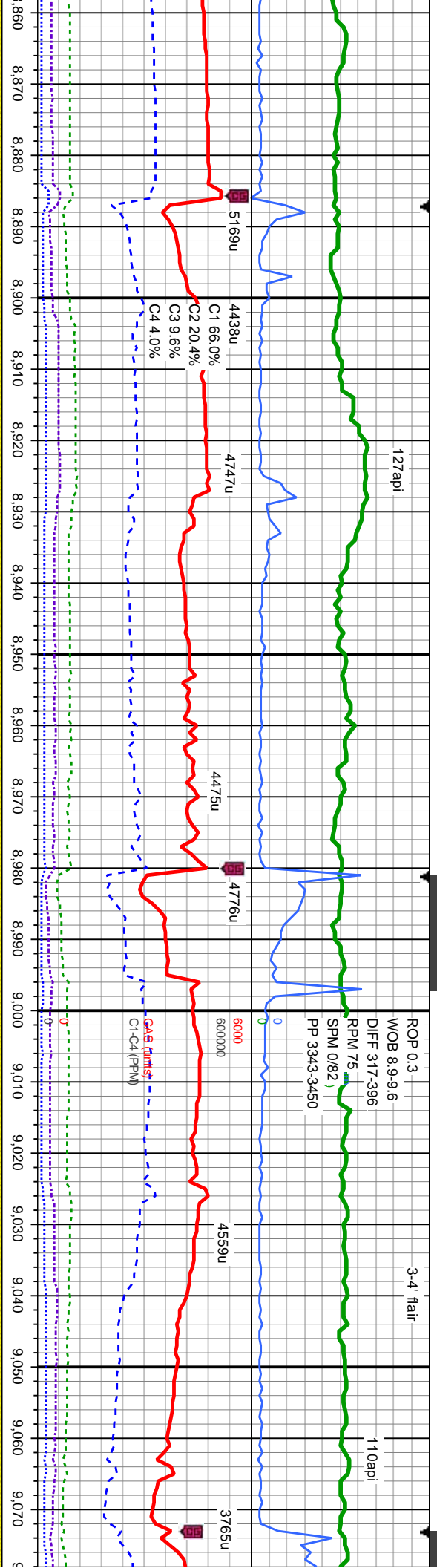
WT IN: 9.4 OUT: 9.5
VIS IN: 42 OUT: 40

8700'-8800' MD SS cons dk brn -blk oil stnd mtx
w/ op - wh gr, brit-frm, v f gr, sb rnd - sb ang, sl
aren-sily, sl calc; tr blk sh; fnt bl/wht flr wi mod
stimg mky cut

8800'-8900' MD SS cons dk brn -blk oil stnd mtx
w/ op - wh gr, brit-frm, v f gr, sb
aren-sily, sl calc; occ blk sh; fnt
mod stimg mky cut

MD: 8.648'	MD: 8.739'	MD: 8.832'
TVD: 7.910.49	TVD: 7.910.03	TVD: 7.910.17
Inclination: 90.24°	Inclination: 90.33°	Inclination: 89.5°
Azimuth: 1.93°	Azimuth: 2.11°	Azimuth: 1.06°
VS: 70.77	VS: 161.72	VS: 254.69





WT IN: 9.4 OUT: 9.4
VIS IN: 43 OUT: 40

MD: 8.925'
TVD: 7.911.01
Inclination: 89.47°
Azimuth: 1.38°
VS: 347.67

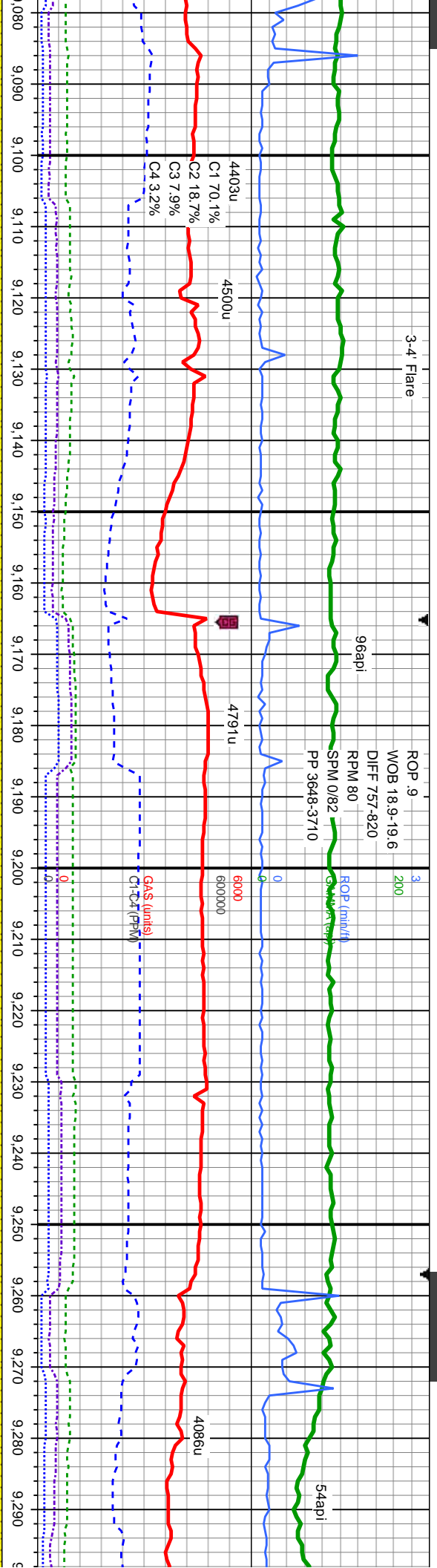
8900'-9000' MD SS cons dk brn -blk oil stnd mtx
w/ op - wh gr, brit-frn, v f gr, sb rnd - sb ang, sl
aren-sily, sl calc; occ blk sh; fnt bl/wht flr wi
mod stmg mky cut

MD: 9.018'
TVD: 7.911.82
Inclination: 89.53°
Azimuth: 0.16°
VS: 440.66

9000'-9100' MD SS cons dk brn -blk oil stnd mtx
w/ op - wh gr, brit-frn, v f gr, sb rnd - sb ang, sl
aren-sily, sl calc; tr blk sh; dul bl/wht flr wi
mod stmg mky cut

7950





WT IN: 9.3
VIS IN: 42

OUT: 9.3+
OUT: 40

MD: 9.111'
TVD: 7.911.28
Inclination: 91.13°
Azimuth: 0.3°
VS: 533.68

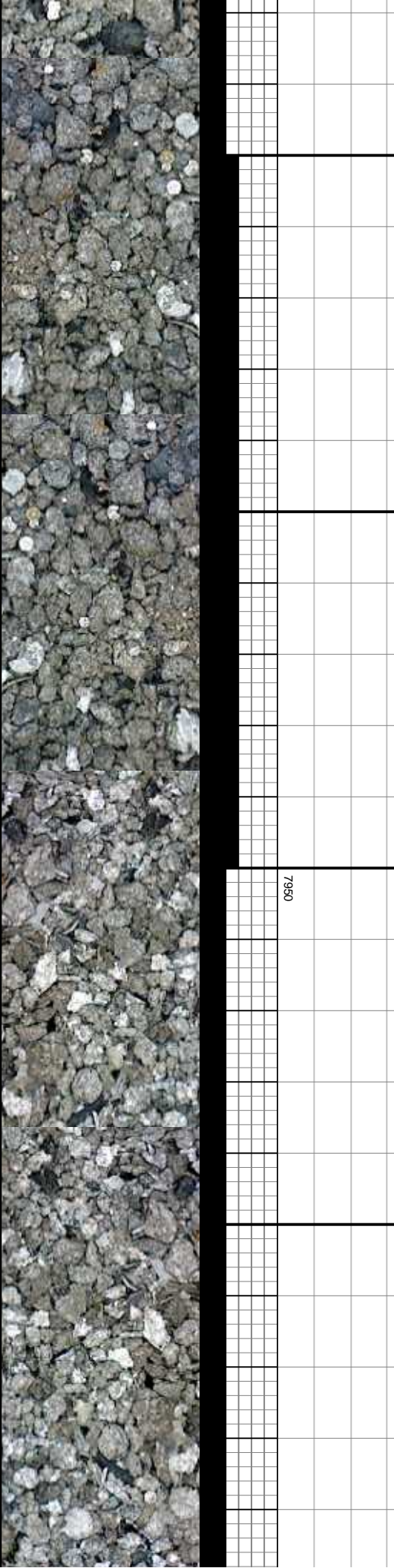
9100'-9200' MD SS cons dk brn -blk oil stnd mtx
w/ op - wh gr, brit-frm, v f gr, sb rnd - sb ang, sl
aren-sily, sl calc; tr blk sh; bri bl/wht flr wi
slow stmg mky cut

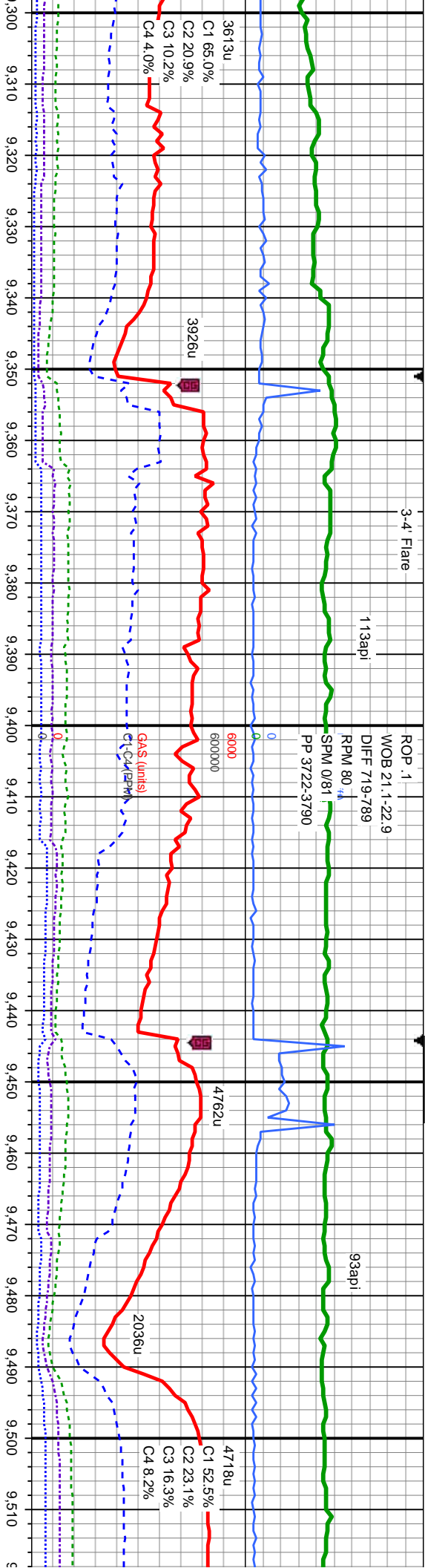
MD: 9.204'
TVD: 7.909.22
Inclination: 91.41°
Azimuth: 0.36°
VS: 626.63

9200'-9300' MD SS cons dk brn -blk oil stnd mtx
w/ op - wh gr, occ lt brn-off wh mtx grdg from
arg ls - ss, brit-frm, v f f gr, tr c gr, sb rnd - sb
ang, sl aren-sily, v calc
ARG LS: tan-brn, occ gy-off wh, frm, blk - sb
blk, v wxy tex, v arg v calc; tr blk sh, du yel
flr wi mod stmg mky cut

MD: 9.298'
TVD: 7.90
Inclination:
Azimuth:
VS: 720.5

WT IN:
VIS IN:





9.3 OUT: 9.3
43 OUT: 40

9300'-9400' MD SS cons dk brn -blk oil stnd mix
w/ op - wh gr, brit-frn, v f gr, sb rnd - sb ang, sl
aren-sily, sl calc; tr blk sh; modbl/wht flr wi
mod sting mky cut

MD: 9.389
TVD: 7.907.34
Inclination: 90.43
Azimuth: 357.52
VS: 811.5

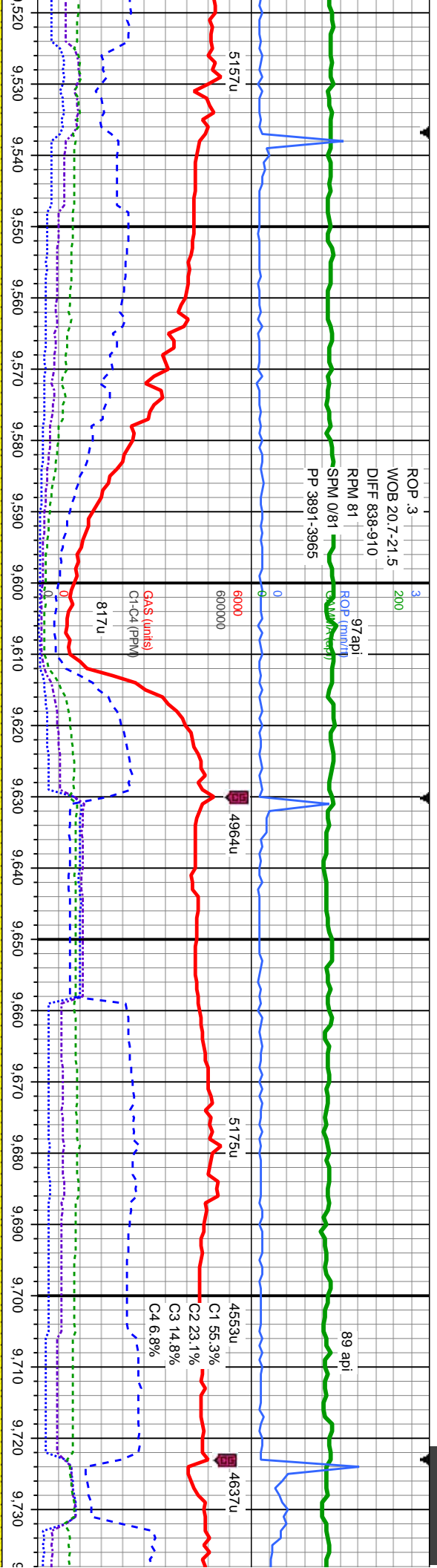
TVD (ft)

9400'-9500' MD SS cons dk brn -blk oil stnd mix
w/ op - wh gr, brit-frn, v f gr, sb rnd - sb ang, sl
aren-sily, sl calc; tr blk sh; modbl/wht flr wi
mod sting mky cut

MD: 9.483
TVD: 7.907.32
Inclination: 89.59
Azimuth: 358.62
VS: 905.44

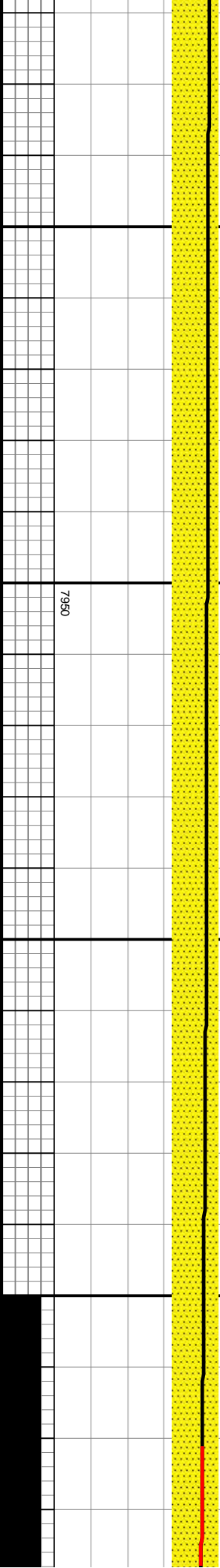
TVD (ft)

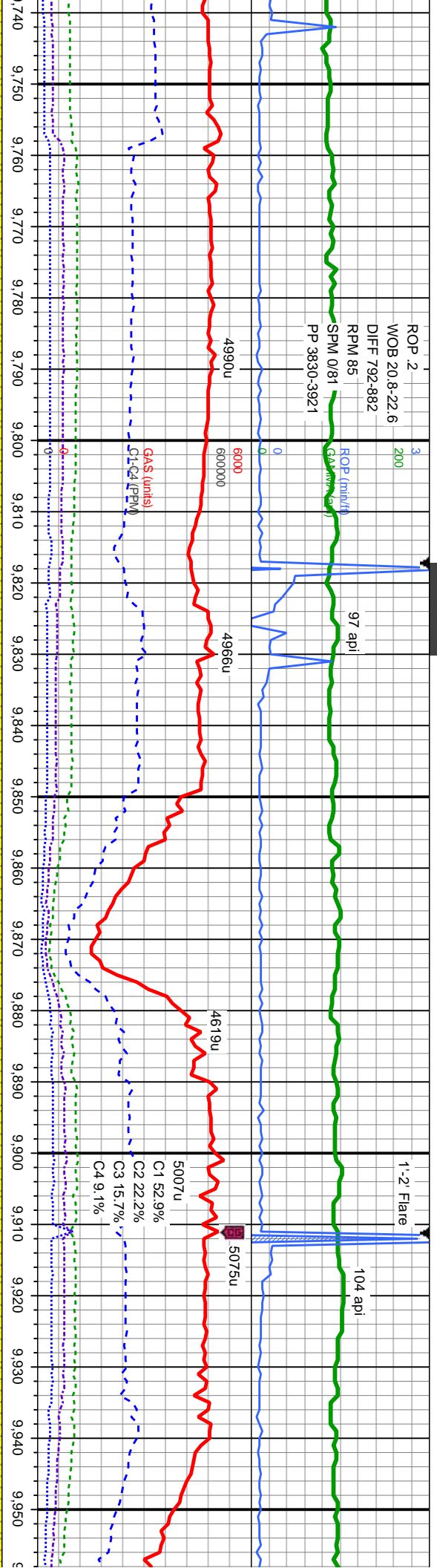




MD: 9.575'
TVD: 7.907.83
Inclination: 89.78°
Azimuth: 358.33°
VS: 997.39

MD: 9.668'
TVD: 7.908.44
Inclination: 89.47°
Azimuth: 357.31°
VS: 1.090.31





ID SS v unconcs dk brn -blk, occ wh mtX,
md - sb ang, sl aren-sily, mod cal; tr
whl flr wi mod sting mky cut

MD: 9.763'
TVD: 7.910.05
Inclination: 88.58°
Azimuth: 358.77°
VS: 1.185.23

TVD (ft)

9800'-9900' MD SS v unconcs dk brn -blk, occ wh
mtX, frm, v f gr, sb rnd - sb ang, sl aren-sily, mod
cal; tr blk sh; bri bl/whl flr wi mod sting mky cut

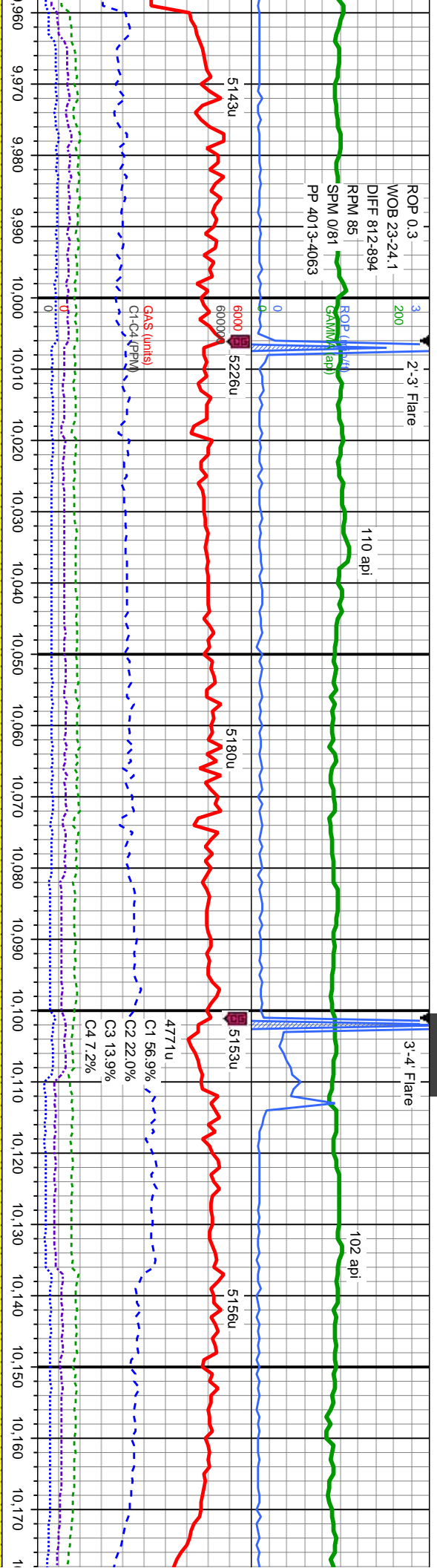
MD: 9.857'
TVD: 7.911.5
Inclination: 89.68°
Azimuth: 0.31°
VS: 1.279.21

9900'-10000' MD SS v unconcs brn -dl
frm, v f gr, sb rnd - sb ang, sl aren-s
sh; bri bl/whl flr wi mod sting mky

MD: 9.951'
TVD: 7.911.83
Inclination: 89.93°
Azimuth: 0.04°
VS: 1.373.21

7950





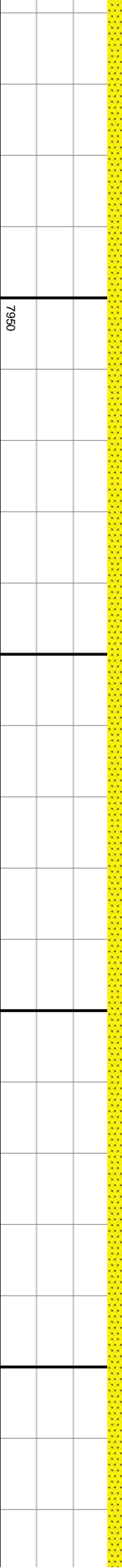
WT IN: 9.3+ OUT: 9.3
VIS IN: 50 OUT: 43

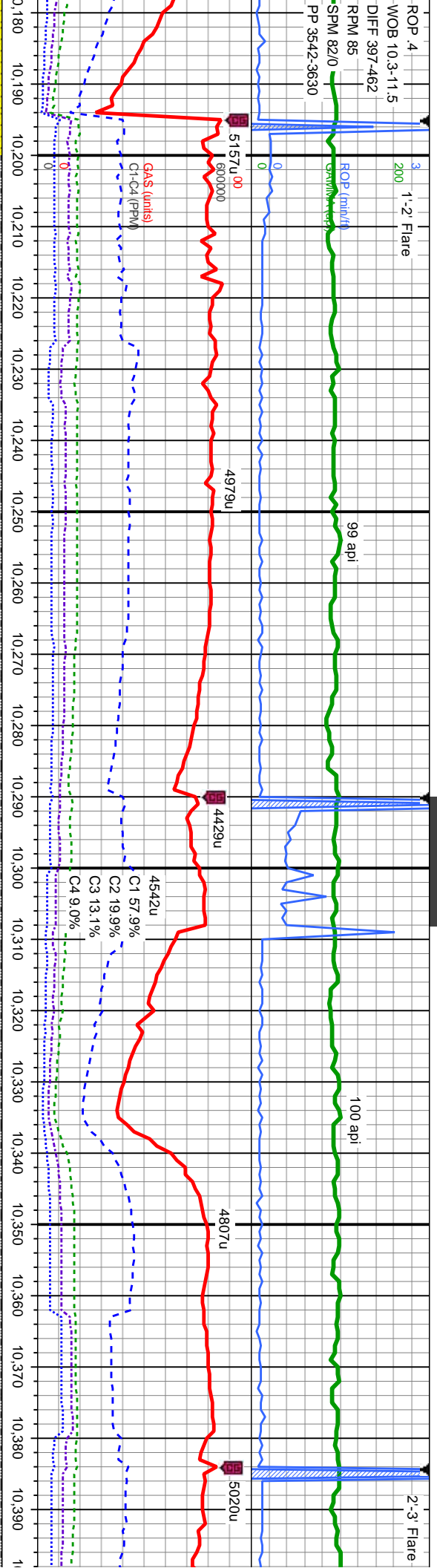
10000'-10100' MD SS v unconc brn -dk brn, occ wh
mtx, frm, v f gr, sb rnd - sb ang, sl aren-sily, occ
cal: tr blk sh; modbl/whl flr wí mod sting mky cut

10100'-10200' MD SS v unconc brn -dk brn, occ
wh mtx, frm, v f gr, sb rnd - sb ang, sl aren-sily,
tr cal: tr blk sh; modbl/whl flr wí mod sting mky
cut

MD: 10.046'
TV/D: 7.911.95
Inclination: 89.93°
Azimuth: 359.61°
VS: 1.468.2

MD: 10.140'
TV/D: 7.912.09
Inclination: 89.9°
Azimuth: 1.01°
VS: 1.562.2





10200'-10300'MD SS: v uncons brn -dk brn, occ wh
mtx, frm, v f gr, sb rnd - sb ang, sl aren-sily; SH: dk
brn-blk, sl hd, gfsy tex, sb pily, non-calc; rr pyr;
modbl/whl flr wi mod string mky cut

WT IN: 9.3 OUT: 9.3
VIS IN: 44 OUT: 42

10300'-10400'MD SS: cons brn -dk brn, occ wh
mtx, frm, v f gr, sb rnd - sb ang, sl aren-sily; SH:
dk brn-blk, sl hd, gfsy tex, sb pily, non-calc;
modbl/whl flr wi mod string mky cut

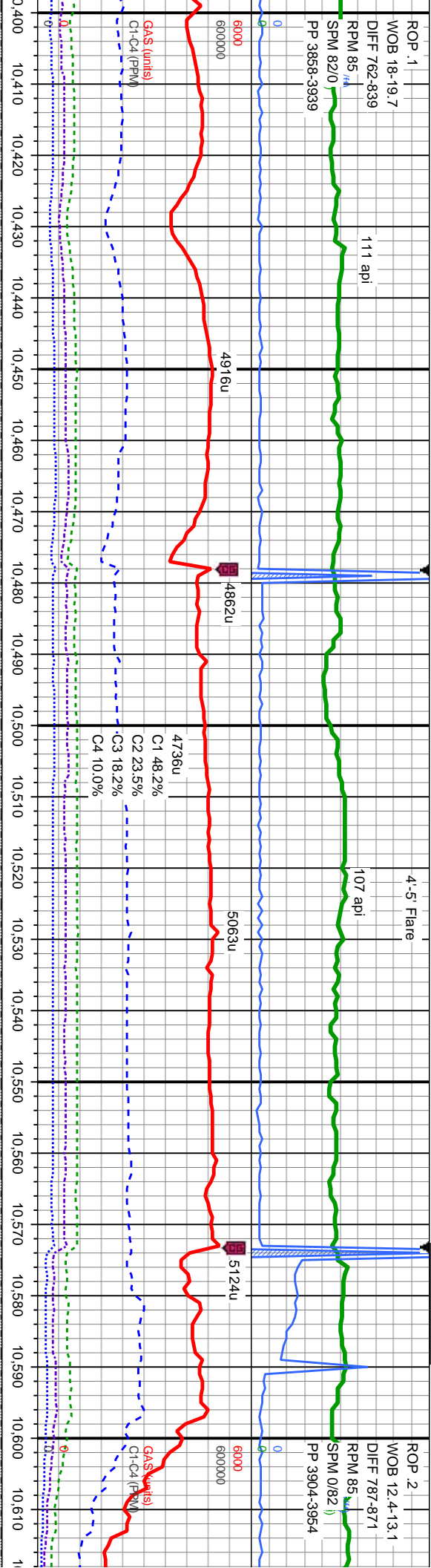
MD: 10.235'
TVD: 7.911.79
Inclination: 90.46°
Azimuth: 1.47°
VS: 1.657.18

MD: 10.329'
TVD: 7.911.92
Inclination: 89.38°
Azimuth: 1.26°
VS: 1.751.16

TVD (ft)

7950





10400'-10500' MD SS: cons brn -dk brn, occ wh mtx, frm, v f gr, sb md - sb ang, sl aren-sily; SH: blk-gly, sl hd, sily tex, sb pily, non-calc; modbl/wht flr wi mod sting mky cut

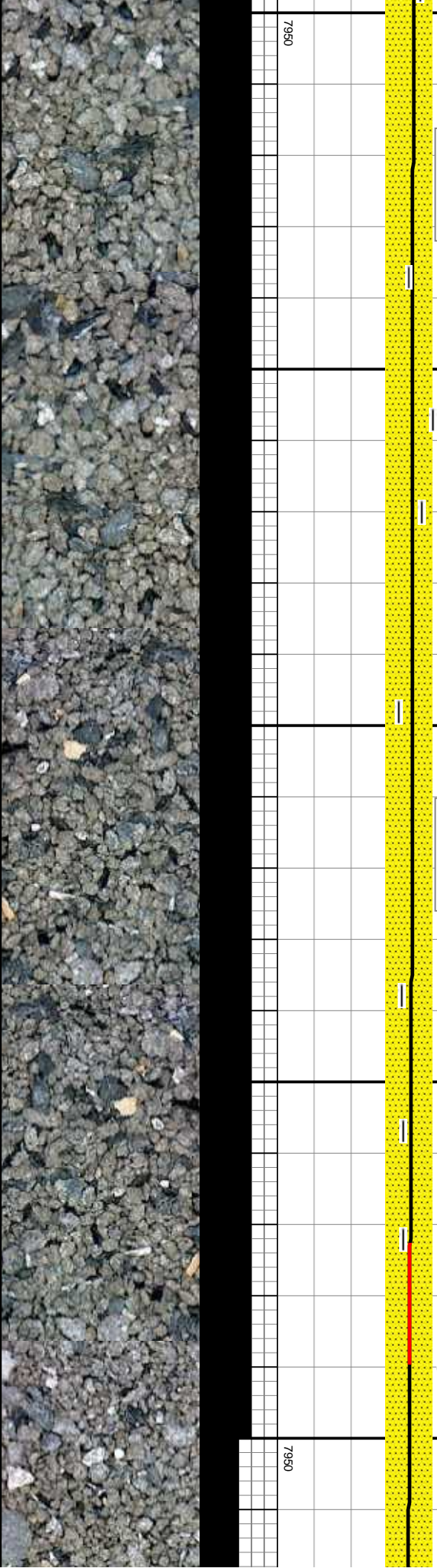
WT IN: 9.3 OUT: 9.3
VIS IN: 47 OUT: 45

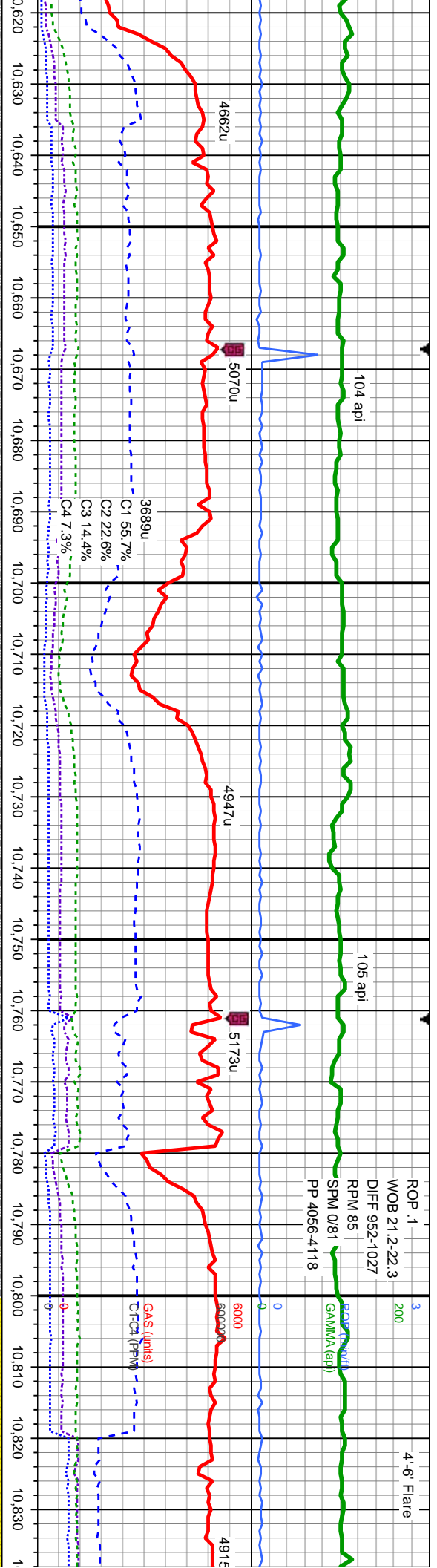
10500'-10600' MD SS: cons brn -dk brn, occ wh mtx, frm, v f gr, sb md - sb ang, sl aren-sily; SH: blk-gly, sl hd, sily tex, sb pily, non-calc; modbl/wht flr wi mod sting mky cut

MD: 10.424
TVD: 7.912.72
Inclination: 89.66°
Azimuth: 1.25°
VS: 1.846.14

MD: 10.518
TVD: 7.912.9
Inclination: 90.12°
Azimuth: 2.07°
VS: 1.940.11

MD: 10.612
TVD: 7.913.89
Inclination: 88.67°
Azimuth: 0.67°
TVD VS: 2.034.08





10600'-10700' MD SS: cons brn -dk brn, occ wh mtx, frm, v f gr, sb rnd - sb ang, sl aren-sily; SH: blk-gry, sl hd, sily tex, sb pily-spl, non-calc; fnt bl/wht flr wi mod string mky cut

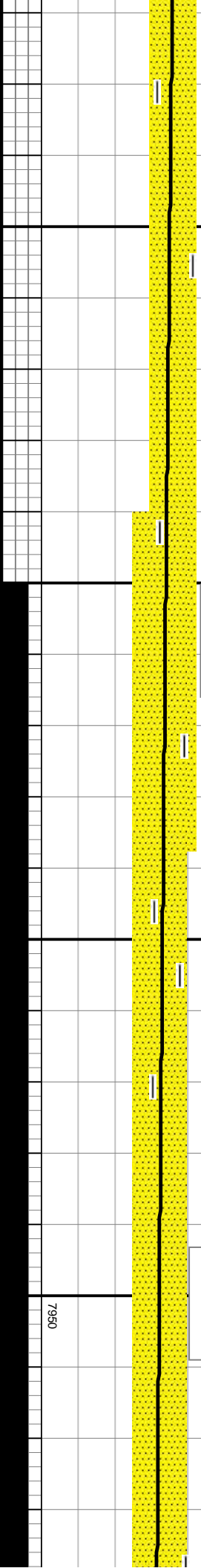
MD: 10,707'
TVD: 7,915.91'
Inclination: 88.89°
Azimuth: 0.89°
VS: 2,129.05

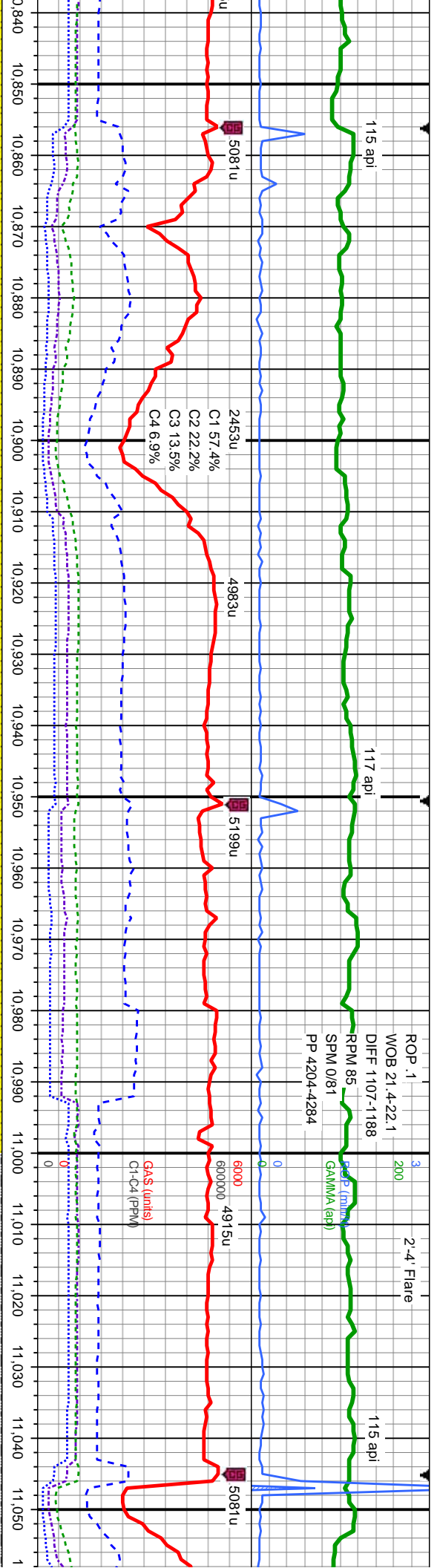
10700'-10800' MD SS: cons brn -dk brn, occ wh mtx, frm, v f gr, sb rnd - sb ang, sl aren-sily; SH: blk-gry, sl hd, sily tex, sb pily-spl, non-calc; brl bl/wht flr wi mod string mky cut

WT IN: 9.4 OUT: 9.4
VIS IN: 47 OUT: 45

MD: 10,801'
TVD: 7,917.61'
Inclination: 89.04°
Azimuth: 0.23°
VS: 2,223.03

10800'-10900' MD SS: cons brn -dk brn, occ wh mtx, frm, v f gr, sb rnd - sb ang, sl aren-sily; SH: blk-gry, sl hd, sily tex, sb pily-spl, non-calc; fnt bl/wht flr wi mod string mky cut





MD SS: cons brn -dk brn, occ wh mtx,
rmd - sb ang, sl aren-sily; tr sh; bri
mod stmg mky cut

10900'-11000' MD SS: cons brn -dk brn, occ wh mtx,
frm, v f gr, sb rmd - sb ang, sl aren-sily; tr sh;
modb/wht flr wi mod stmg mky cut

11000'-11100' MD SS: cons brn -dk
mtx, frm, v f gr, sb rmd - sb ang, sl
blk-gry, sl hd, sily tex, sb pily, non
flr wi mod stmg mky cut

MD: 10.896'
TVD: 7.919.13
Inclination: 89.13°
Azimuth: 0.06°
VS: 2.31802

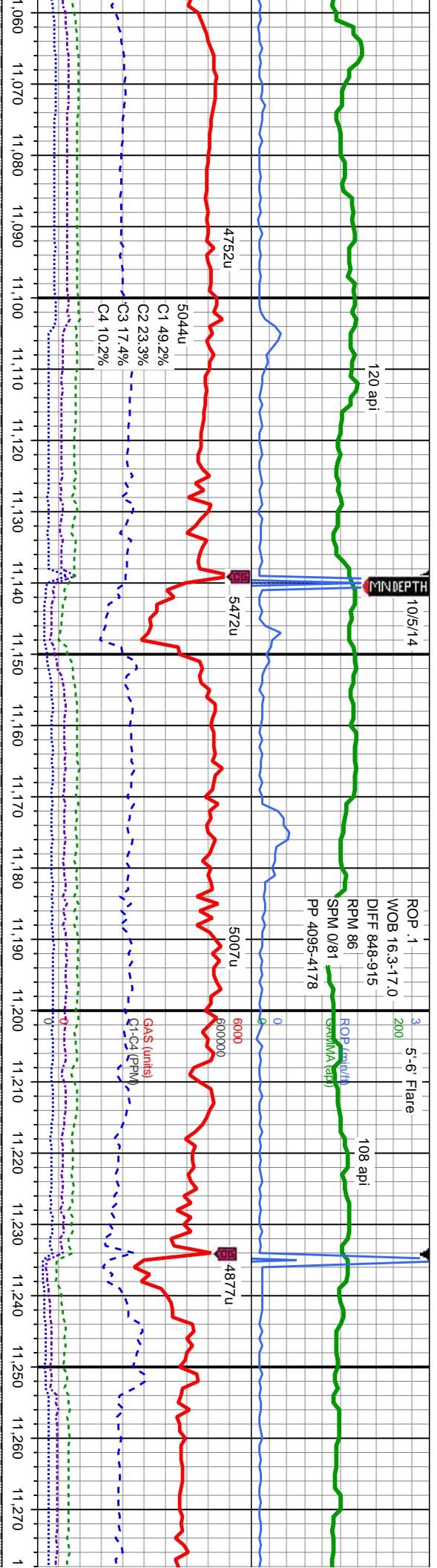
MD: 10.990'
TVD: 7.920.32
Inclination: 89.4°
Azimuth: 0.39°
VS: 2.41201

WT IN: 9.4 OUT: 9.4
VIS IN: 47 OUT: 45

TVD (ft)

7950





brn, occ wh
aren-sily: SH:
-calc: modbl/wh

11100'-11200 MD SS: cons brn -dk brn, occ wh mix,
frm, v f gr, sb md - sb ang, sl aren-sily: SH: blk-gry,
sl hd, sily tex, sb ply-ply, non-calc: modbl/wh flr
wi mod sting mky cut

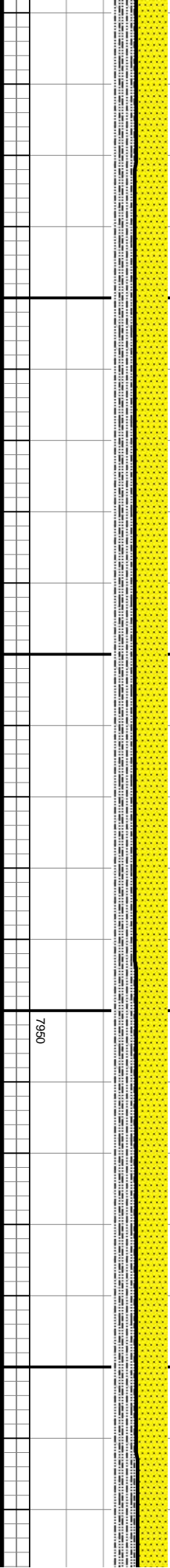
11200'-11300 MD SS: cons brn -dk brn, occ wh mix,
frm, v f gr, sb md - sb ang, sl aren-sily: SH: blk-gry,
sl hd, sily tex, sb ply-ply, non-calc: modbl/wh flr
wi mod sting mky cut

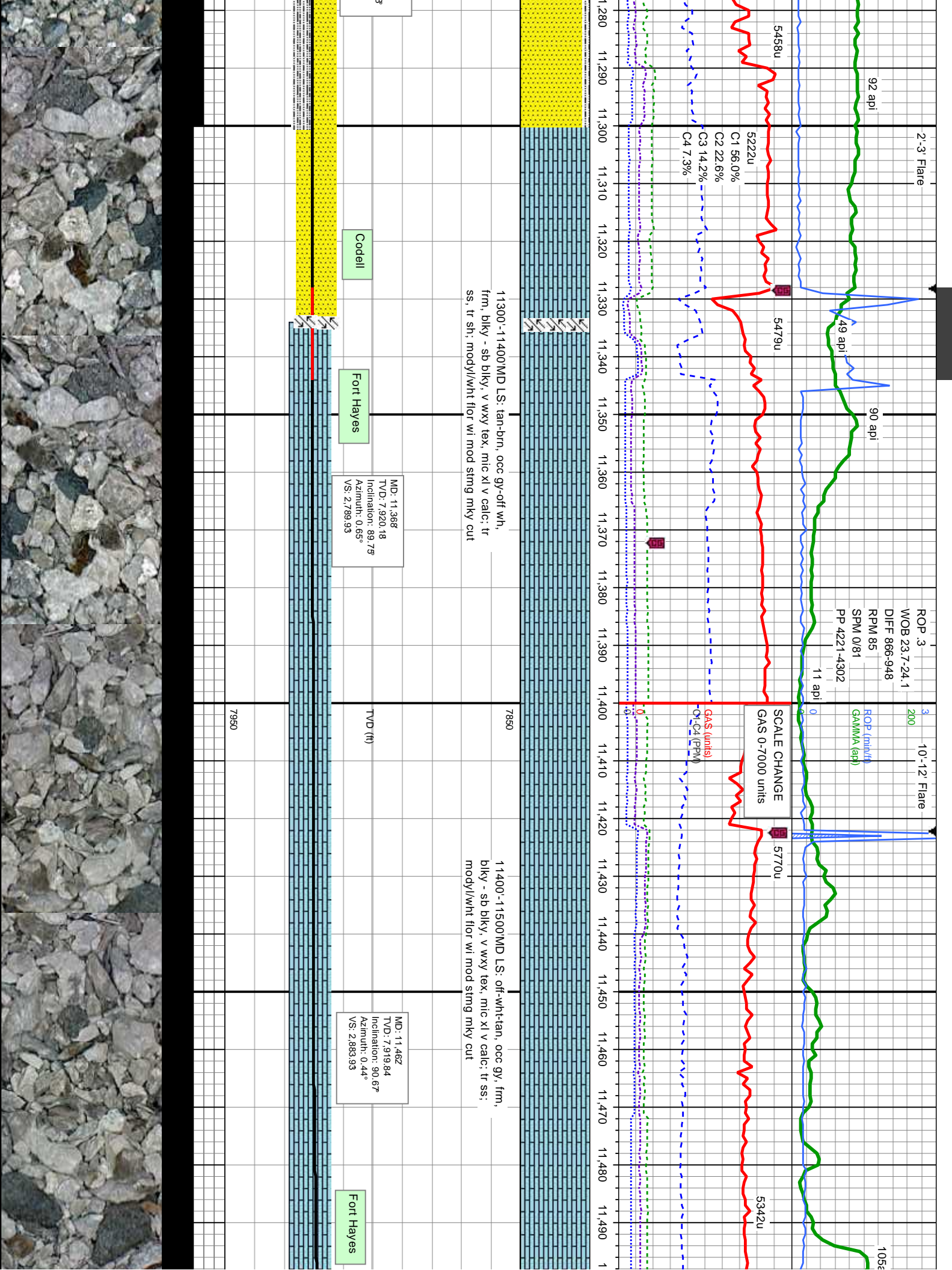
MD: 11,085
TVD: 7,920.92
Inclination: 89.87°
Azimuth: 0.97°
VS: 2,507.01

MD: 11,179
TVD: 7,920.98
Inclination: 90.08°
Azimuth: 1.39°
VS: 2,600.99

WT IN: 9.4 OUT: 9.4
VIS IN: 47 OUT: 45

MD: 11,273
TVD: 7,920.45
Inclination: 90.5°
Azimuth: 2.03°
VS: 2,694.96





12-15 Flare

ROP 4
WOB 19.2-20.8
DIFF 1027-1136

135api

45api
SPM 0/81
PP 4376-4591

ROP (mbl/h)
GAMMA

7000
7000000

5938u

5825u

5178u

C1 50.0%

C2 22.8%

C3 17.2%

C4 10.0%

GAS (units)
C1-C4 (PPM)

4781u

C1 63.4%

C2 19.8%

C3 10.7%

C4 6.1%

11500'-11600'MD LS: brn-tan occ off wh, occ
gy, frm, blk-y - sb blk-y, wxy tex, mic xl v calc
occ arg
CHK: lt gy-gy, sft-sl frm, sb blk-y, sl wxy tex abnt
mexln wl grtly tex, v calc
SH: blk-dk gry, frm, silty tex, sb pily-pily,
non-calc; abnt lse inoc; fnt y/wht flor wl mod
stmg mky cut

11600'-11700'MDCHK: lt gy-gy, sft-sl frm, sb
blk-y, sl wxy tex abnt mexln wl grtly tex, v calc
LS: brn-tan occ off wh, occ gy, frm, blk-y - sb
blk-y, wxy tex, mic xl v calc occ arg
SH: blk-dk gry, frm, silty tex, sb pily-pily,
non-calc; dui yel flor wl mod stmg mky cut

WT IN: 9.3 OUT: 9.4
VIS IN: 46 OUT: 44

Niobrara C

Niobrara C

Codell

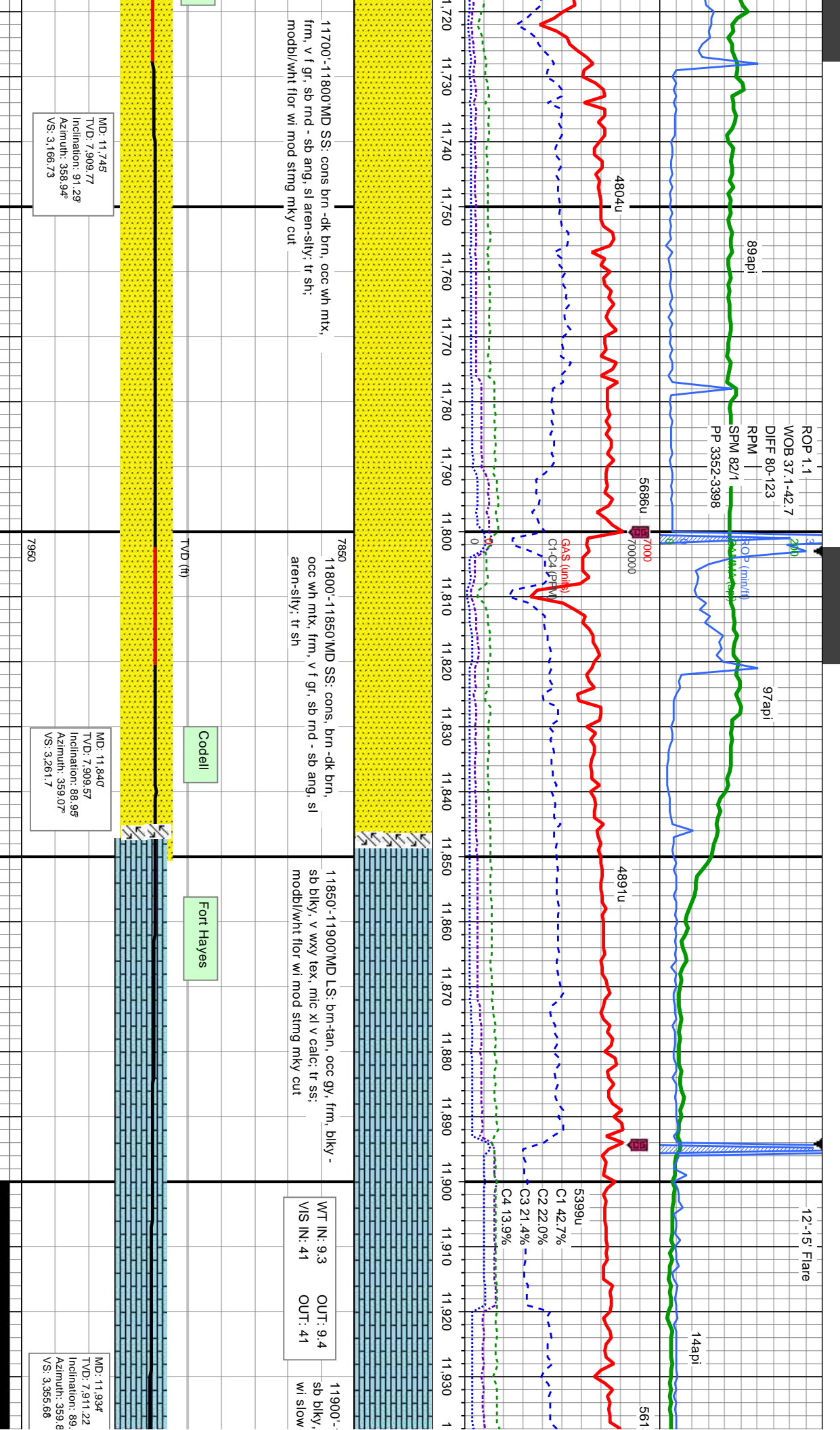
MD: 11,556'
TVD: 7,917.38
Inclination: 92.33°
Azimuth: 0.29°
VS: 2.977.89

MD: 11,651'
TVD: 7,913.12
Inclination: 92.8°
Azimuth: 359.92°
VS: 3.072.8

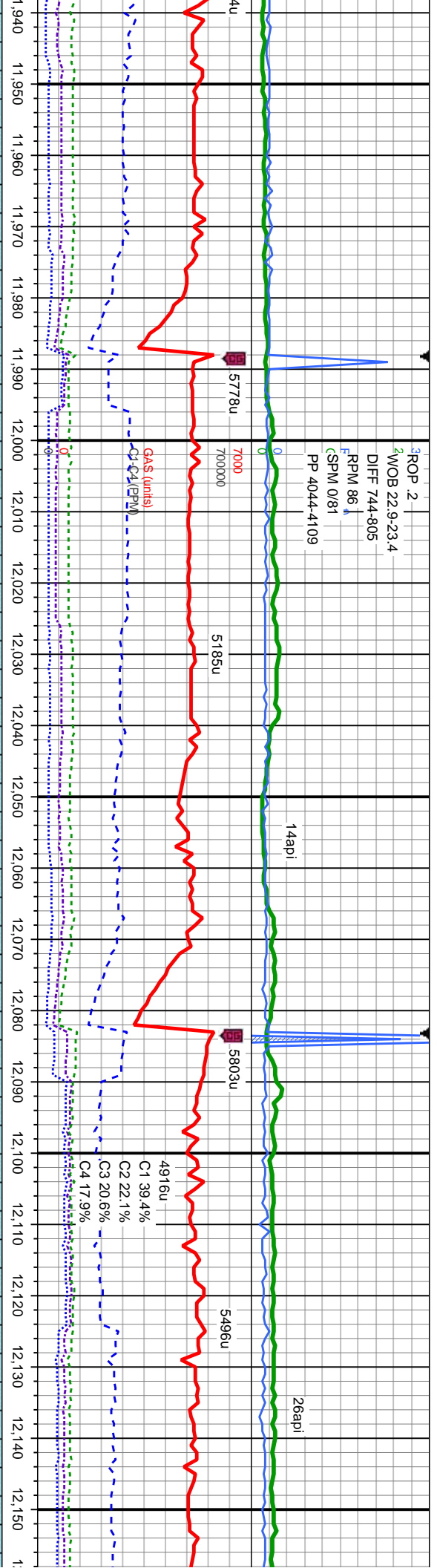
TVD (ft)

7850

7950



ROP 2
WOB 22.9-23.4
DIFF 744-805
RPM 86
SPM 0/81
PP 4044-4109



12000MD LS: brn-tan, occ gy, frm, blk -
v wxy tex, mic xl v calc; bri bl/wht flor
sting mky cut

12000-12100MD LS: brn-tan-lt gy, frm, blk - sb
blk, v wxy tex, mic xl v calc; bri bl/wht flor wi
mod sting mky cut

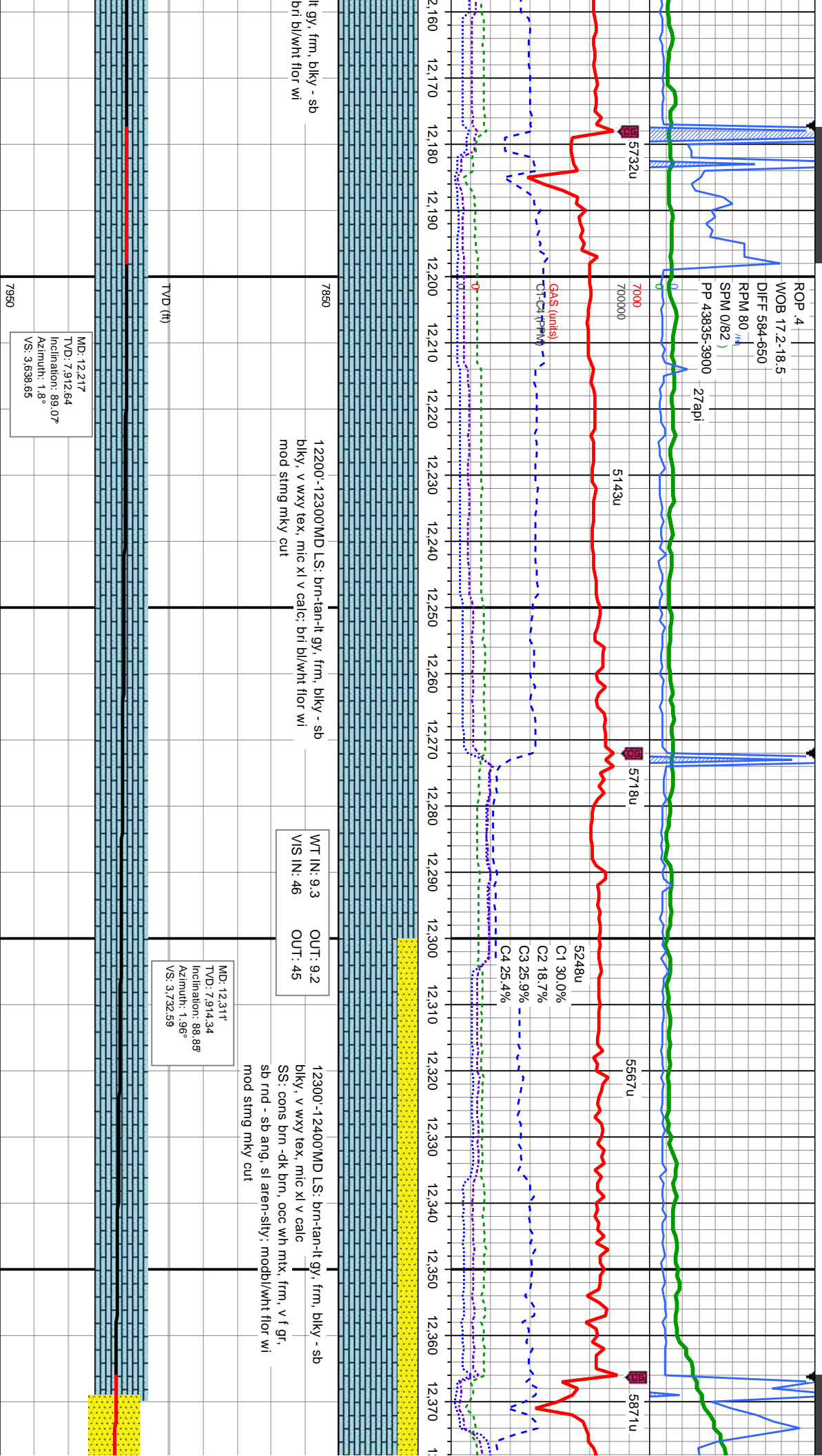
12100-12200MD LS: brn-tan-
blk, v wxy tex, mic xl v calc;
mod sting mky cut

TVD (ft)

MD: 12.028
TVD: 7,912.19
Inclination: 89.78°
Azimuth: 0.36°
VS: 3.449.67

MD: 12.123
TVD: 7,912.12
Inclination: 90.3°
Azimuth: 0.69°
VS: 3.544.67



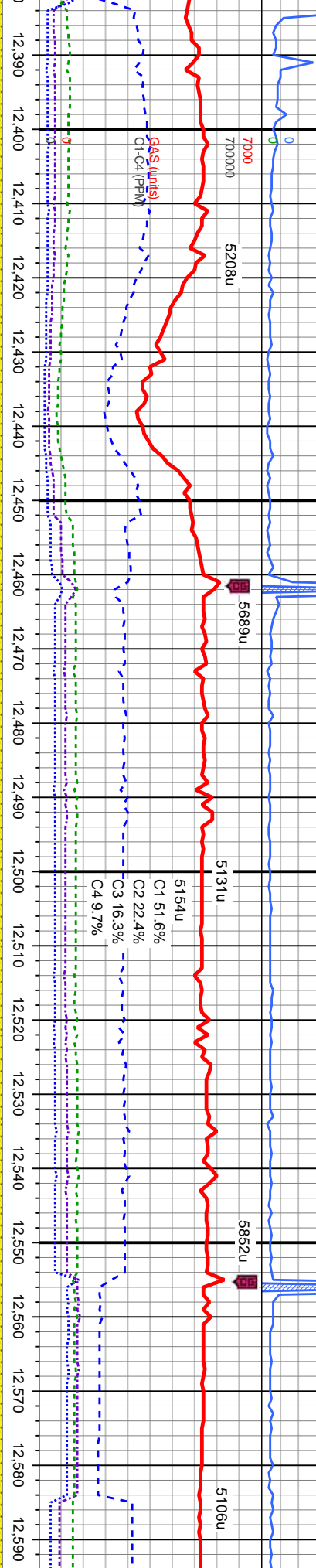


ROP 2
WOB 12.5-14.4
DIFF 830-897

ROP 1
WOB 18.9-19.1
DIFF 932-987

SPM 81
RPM 81
PP 4147-4276

SPM 820
RPM 80
PP 4339-4413



94api

2-4' Flare

94api

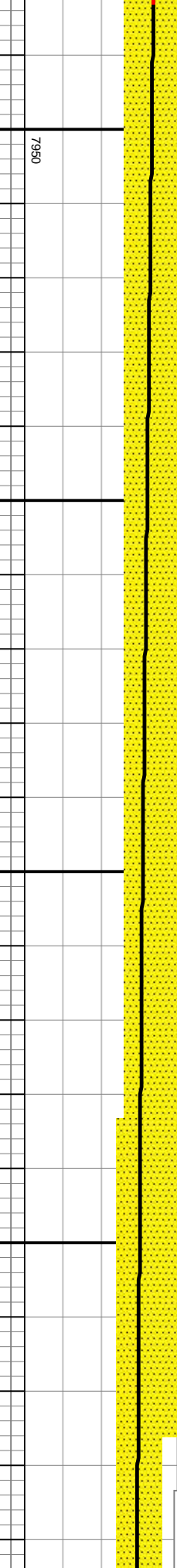
12400'-12500' MD SS: cons brn -dk brn, occ wh mix, frm, v f gr, sb rnd - sb ang, sl aren-sily, modbl/whit flr wi mod sting mky cut

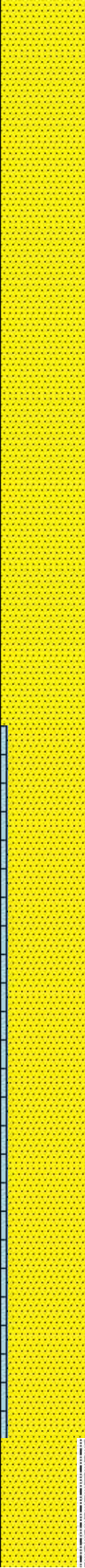
12500'-12600' MD SS: cons brn -dk brn occ wh, frm, v f gr, sb rnd - sb ang, sl aren-sily, tr sh, modbl/whit flr wi mod sting mky cut

MD: 12.406
TVD: 7.916.58
Inclination: 88.49
Azimuth: 0.01°
VS: 3.827.55

MD: 12.500
TVD: 7.918.87
Inclination: 88.78
Azimuth: 0.31°
VS: 3.921.52

MD: 12.594
TVD: 7.920.35
Inclination: 89.44
Azimuth: 0.48°
VS: 4.015.51

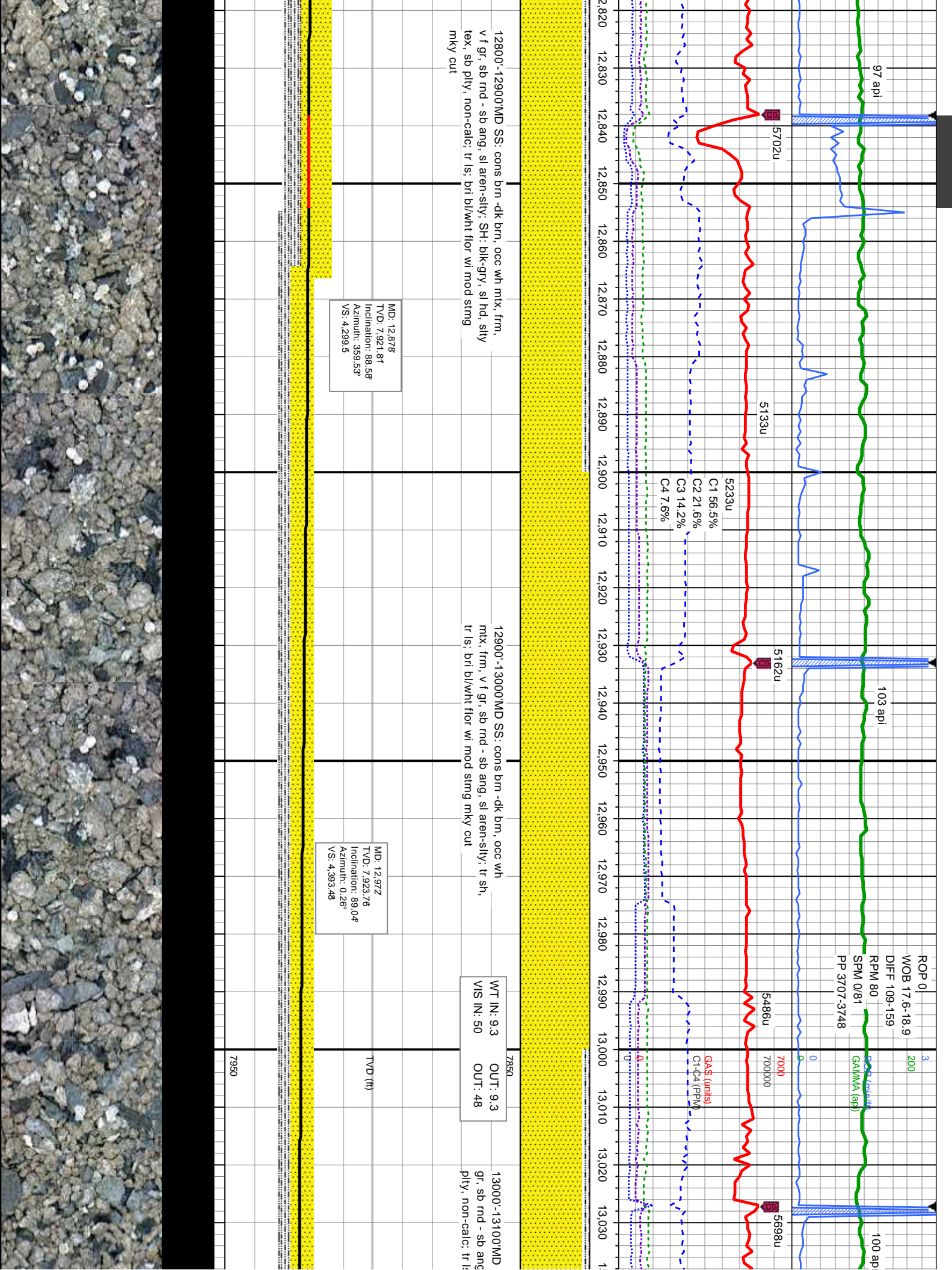


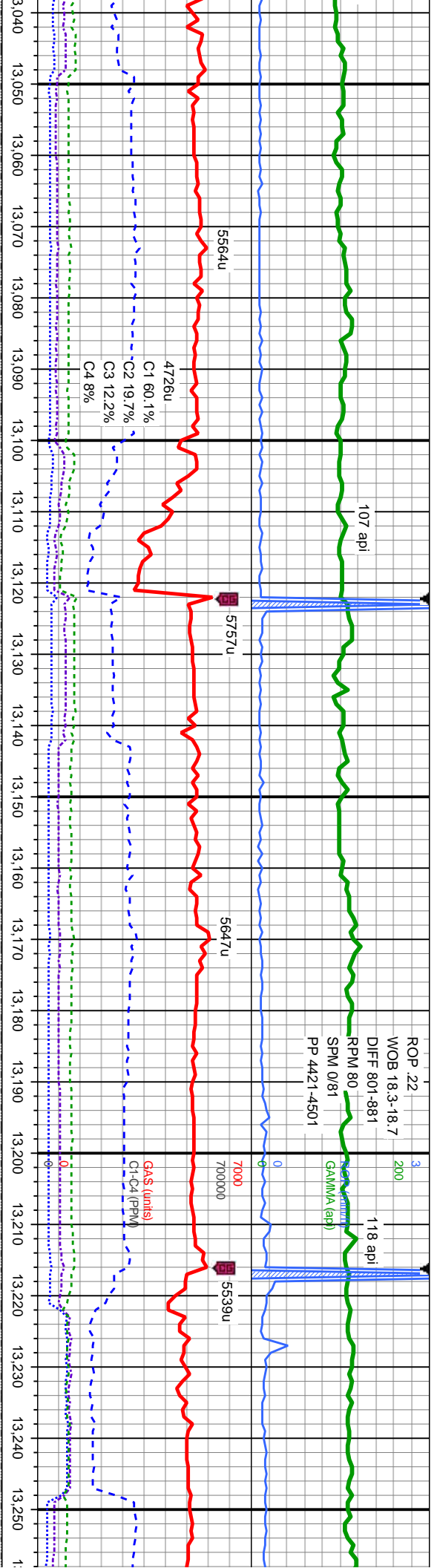


arg, v calc, fnt bl/wht flr wi mod string mky cut	
MD: 12.689 TVD: 7,920.97 Inclination: 89.8° Azimuth: 0.01° VS: 4,110.51	TVD (ft)
MD: 12.783 TVD: 7,920.88 Inclination: 90.3 Azimuth: 0.5° VS: 4,204.51	TVD (ft)

MD: 12,783
TVD: 7,920.88
Inclination: 90.3°
Azimuth: 0.5°
VS: 4,204.51







SS: cons brn -dk brn, ooc wh mtx, frm, v f
i, sl aren-sily; SH: blk-gry, sl hd, sily tex, sb
s; bri bl/wht flr wi mod stng mky cut

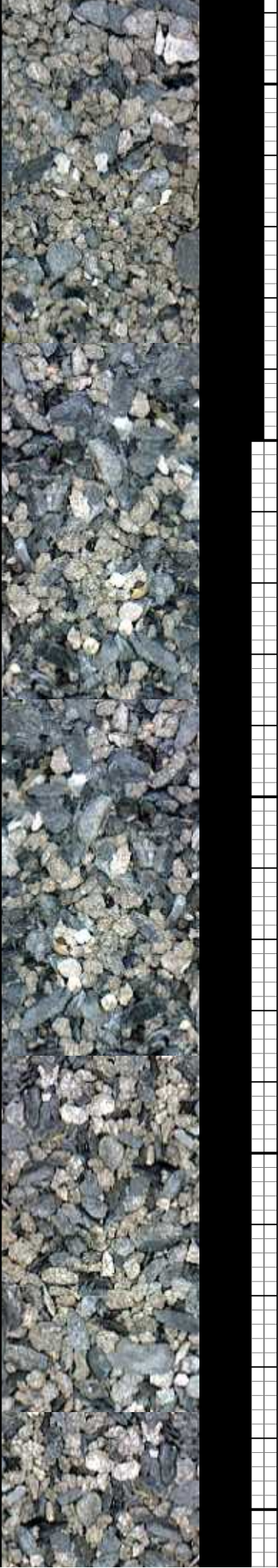
13100'-13200'MD SS: cons lt brn -dk brn, ooc wh mtx, frm, v
f gr, sb md - sb ang, sl aren-sily; SH: blk-gry, sl hd, sily tex,
sb pily, non-calc; modbl/wht flr wi mod stng mky cut

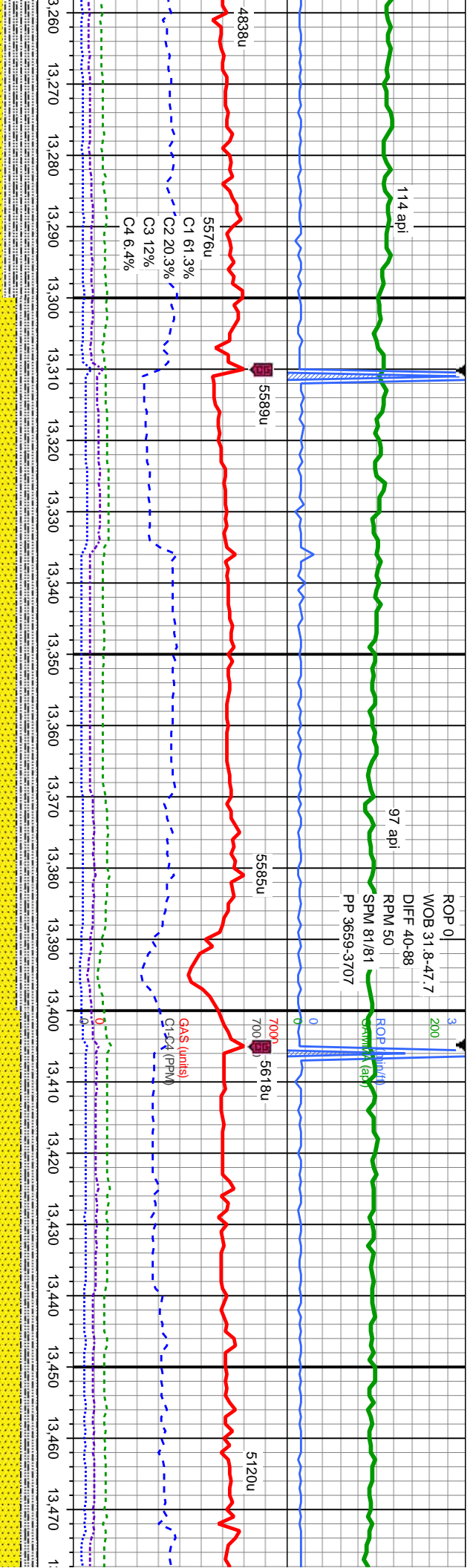
13200'-13300'MD SS: cons lt brn -dk
v f gr, sb md - sb ang, sl aren-sily; SH
sily tex, sb pily, non-calc; modbl/wht
mky cut

MD: 13,067
TVD: 7,925.2
Inclination: 89.22
Azimuth: 0.18°
VS: 4,488.46

MD: 13,161
TVD: 7,926.28
Inclination: 89.47°
Azimuth: 0.08°
VS: 4,582.46

MD: 13,266
TVD: 7,927
Inclination:
Azimuth: 0
VS: 4,677.4





13300'-13400' MD SS: cons lt brn -dk brn, occ wh mtx, frm, v f gr, sb rnd - sb ang, sl aren-sily, SH: blk-gry, sl hd, sily tex, sb pily, non-calc; brl bl/whl flr wl mod string mky cut

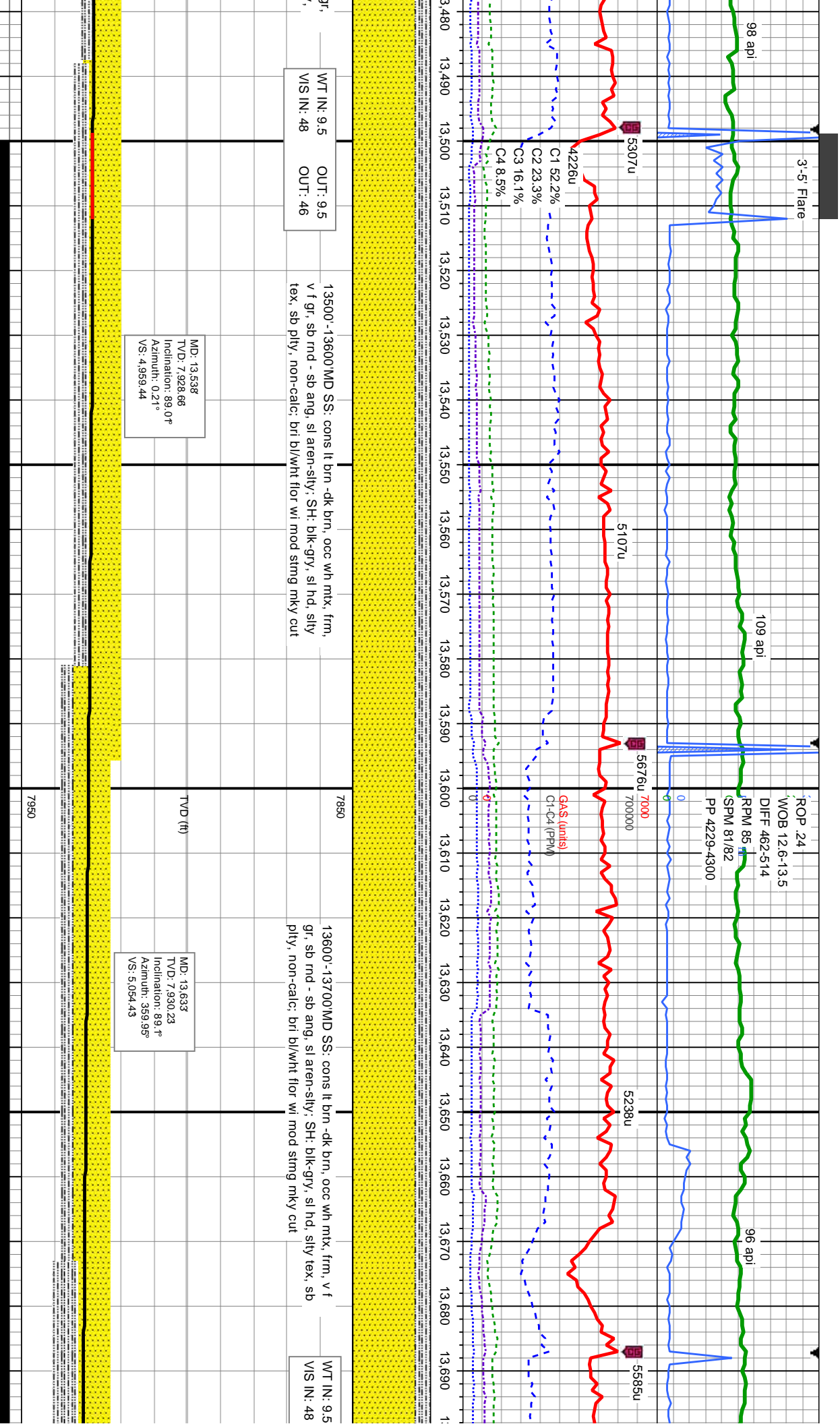
13400'-13500' MD SS: cons lt brn -dk brn, occ wh mtx, frm, v f gr, sb rnd - sb ang, sl aren-sily, SH: blk-gry, sl hd, sily tex, sb pily, non-calc; modbl/whl flr wl mod string mky cut

MD: 13.350'
TVD: 7.927.75
Inclination: 89.7°
Azimuth: 0.66°
VS: 4.771.45

MD: 13.444'
TVD: 7.927.9
Inclination: 90.0°
Azimuth: 0.5°
VS: 4.865.45

WT IN: 9.5	OUT: 9.5
VIS IN: 50	OUT: 48
TVD (ft)	
7950	





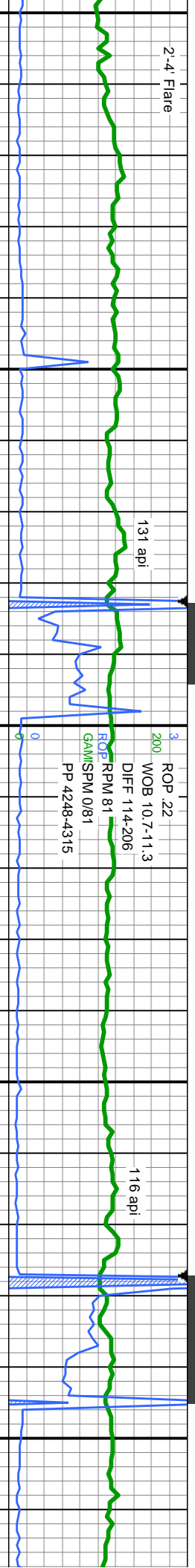
2-4" Flare

131 api

116 api

ROP .22
WOB 10.7-11.3
DIF 114-206

ROP RPM 81
GAMSPM 0/81
PP 4248-4315



4738u

C1 51.7%

C2 23.6%

C3 16.5%

C4 8.2%

5221u

5539u

5050u

5671u

4738u

C1 62.4%

C2 20%

C3 11.4%

C4 6.2%

GAS (units)
C1-G4 (PPM)

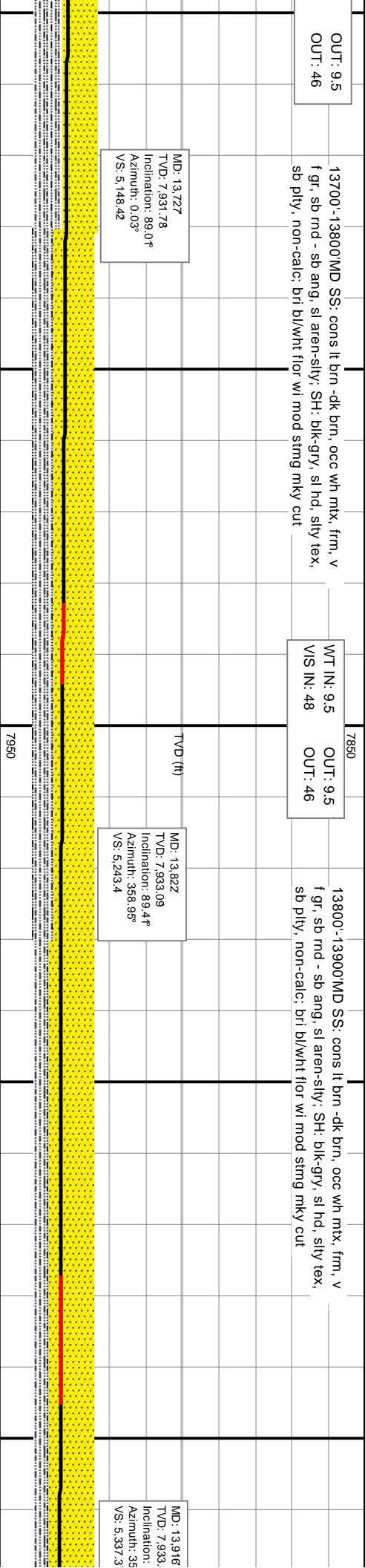
13700-13800 MD SS: cons lt brn -dk brn, occ wh mtx, frm, v
f gr, sb rnd - sb ang, sl aren-sily; SH: blk-gry, sl hd, sily tex,
sb pily, non-calc; bri bl/wht flr wi mod string mky cut

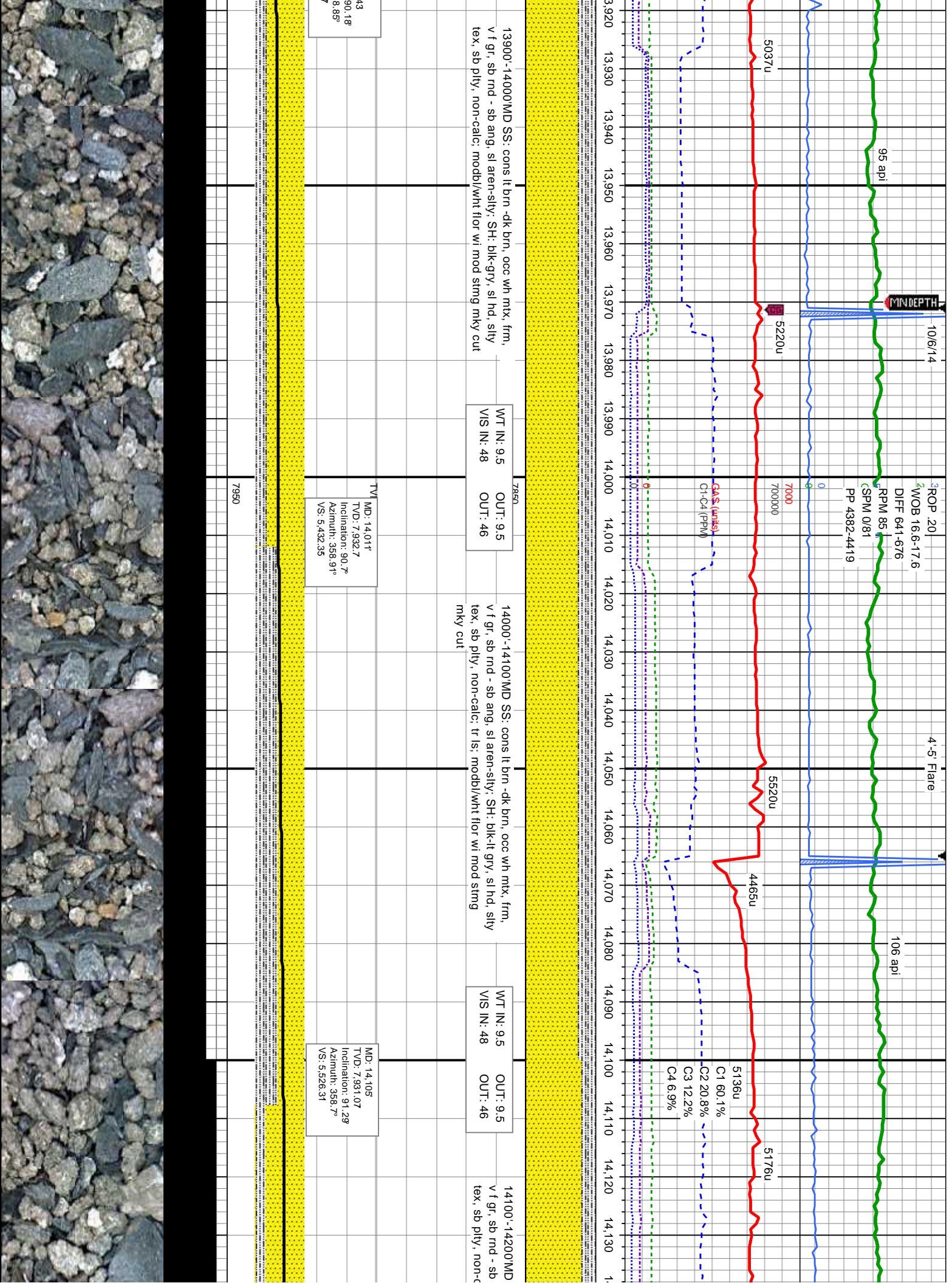
13800-13900 MD SS: cons lt brn -dk brn, occ wh mtx, frm, v
f gr, sb rnd - sb ang, sl aren-sily; SH: blk-gry, sl hd, sily tex,
sb pily, non-calc; bri bl/wht flr wi mod string mky cut

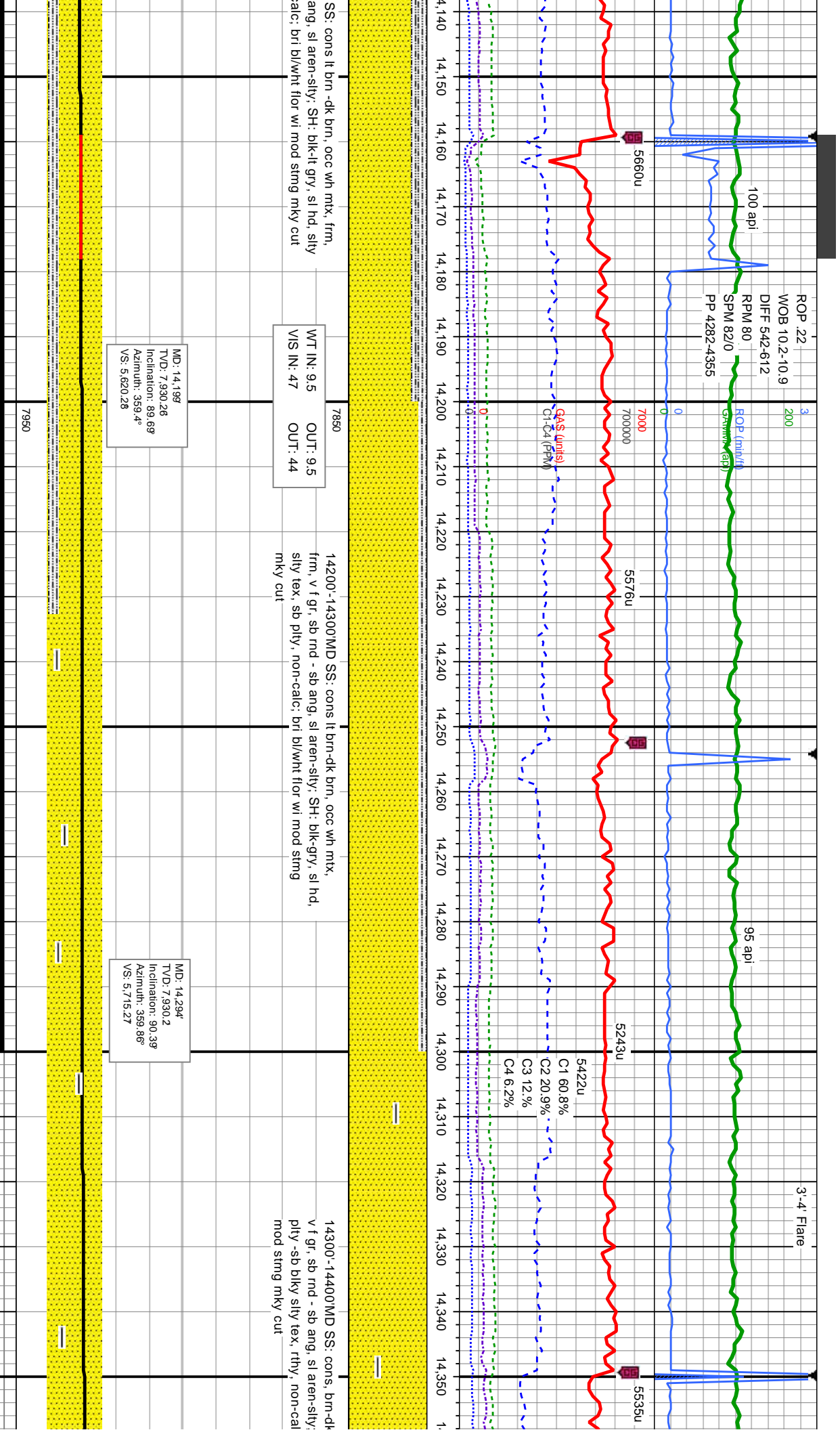
MD: 13.727
TVD: 7.931.78
Inclination: 89.0°
Azimuth: 0.03°
VS: 5.148.42

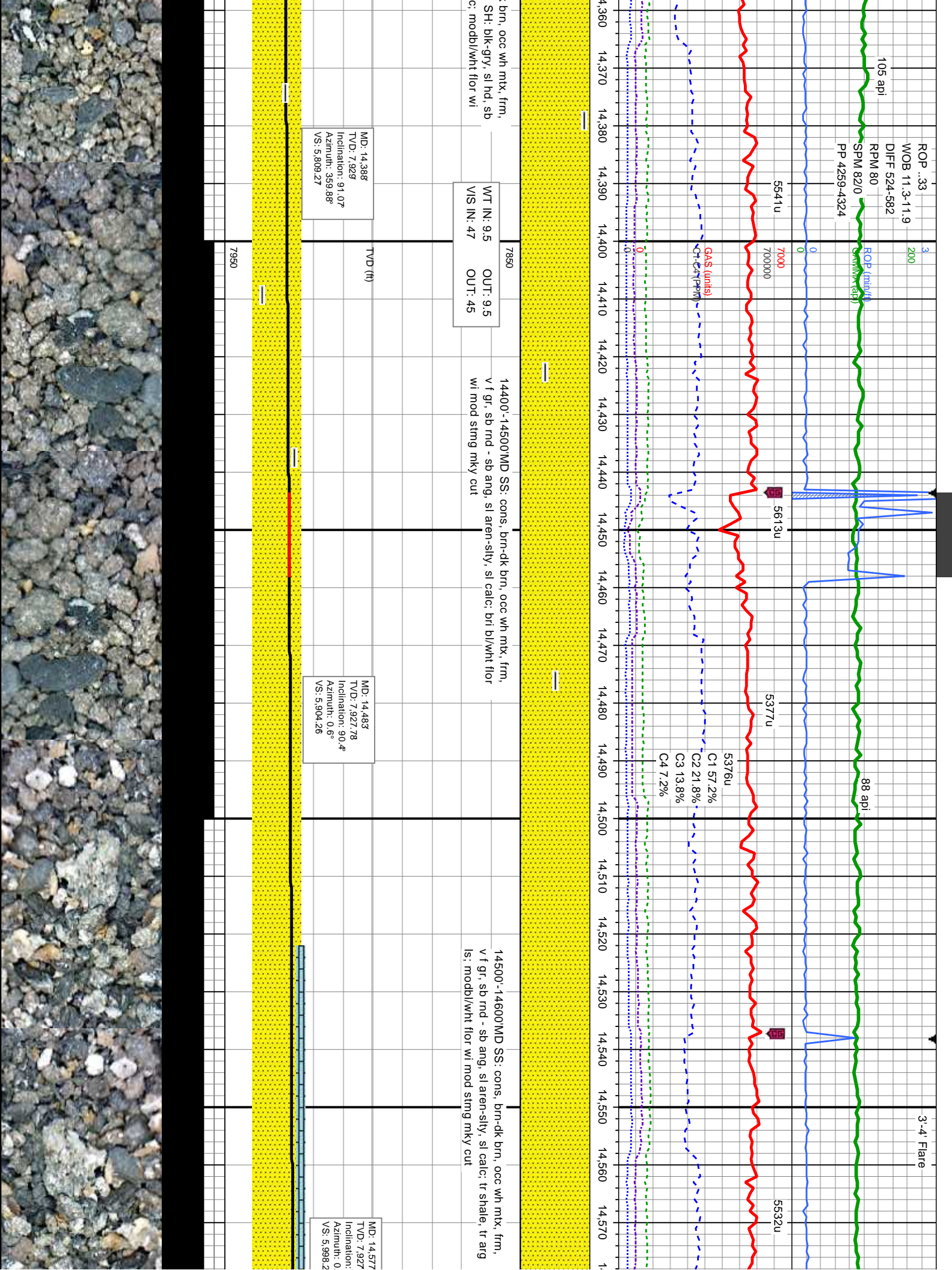
MD: 13.822
TVD: 7.933.09
Inclination: 89.4°
Azimuth: 358.95°
VS: 5.243.4

MD: 13.916
TVD: 7.933.
Inclination:
Azimuth: 35
VS: 5.337.3









ROP .31

WOB 12.1-12.5

DIFF 681-753

RPM 72

SPM 82/0

PP 4422-4497

ROP .18

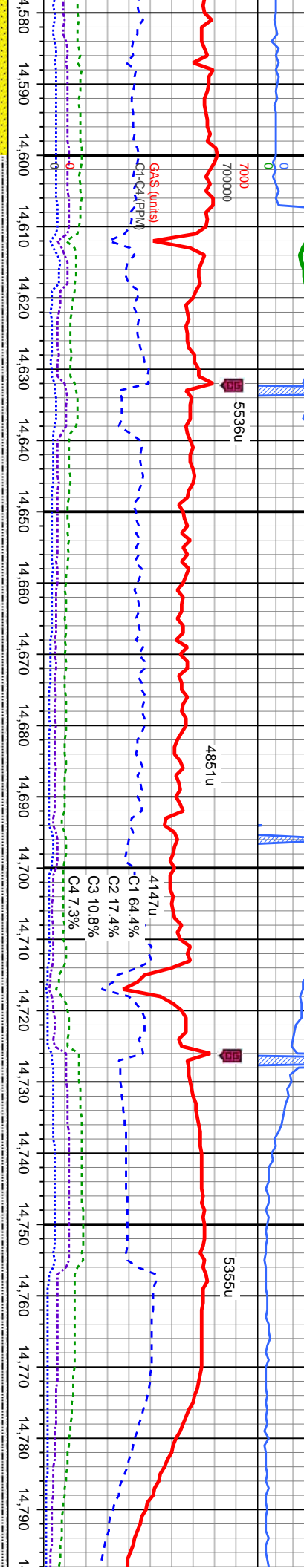
WOB 21.0-21.5

DIFF 871-913

RPM 80

SPM 82/0

PP 4593-4633



WT IN: 9.5 OUT: 9.5
VIS IN: 47 OUT: 45

14600'-14700'MD SS: pred cons, brn-dk brn, occ wh mtx, frm, v f gr, sb rnd - sb ang, sl aren-sily; SH: dk-lt gy, frm, sb pily -sb blkyy occ pily, sl sily tex, rthy, sl calc; modbl/whi flr wi mod string mky cut

WT IN: 9.5 OUT: 9.5+
VIS IN: 48 OUT: 50

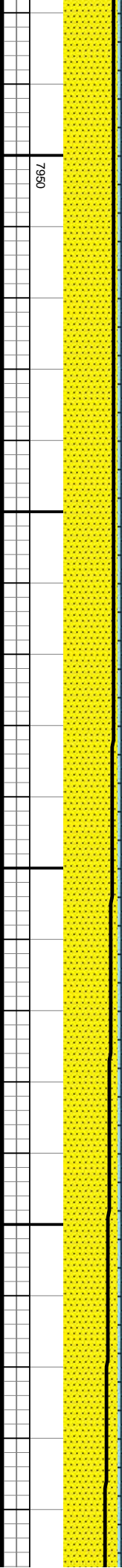
14700'-14800'MD SS: pred cons, brn-dk brn, occ wh mtx, frm, v f gr, sb rnd - sb ang, sl aren-sily; SH: dk-lt gy, frm, sb pily -sb blkyy occ pily, sl sily tex, rthy, sl calc; modbl/whi flr wi mod string mky cut

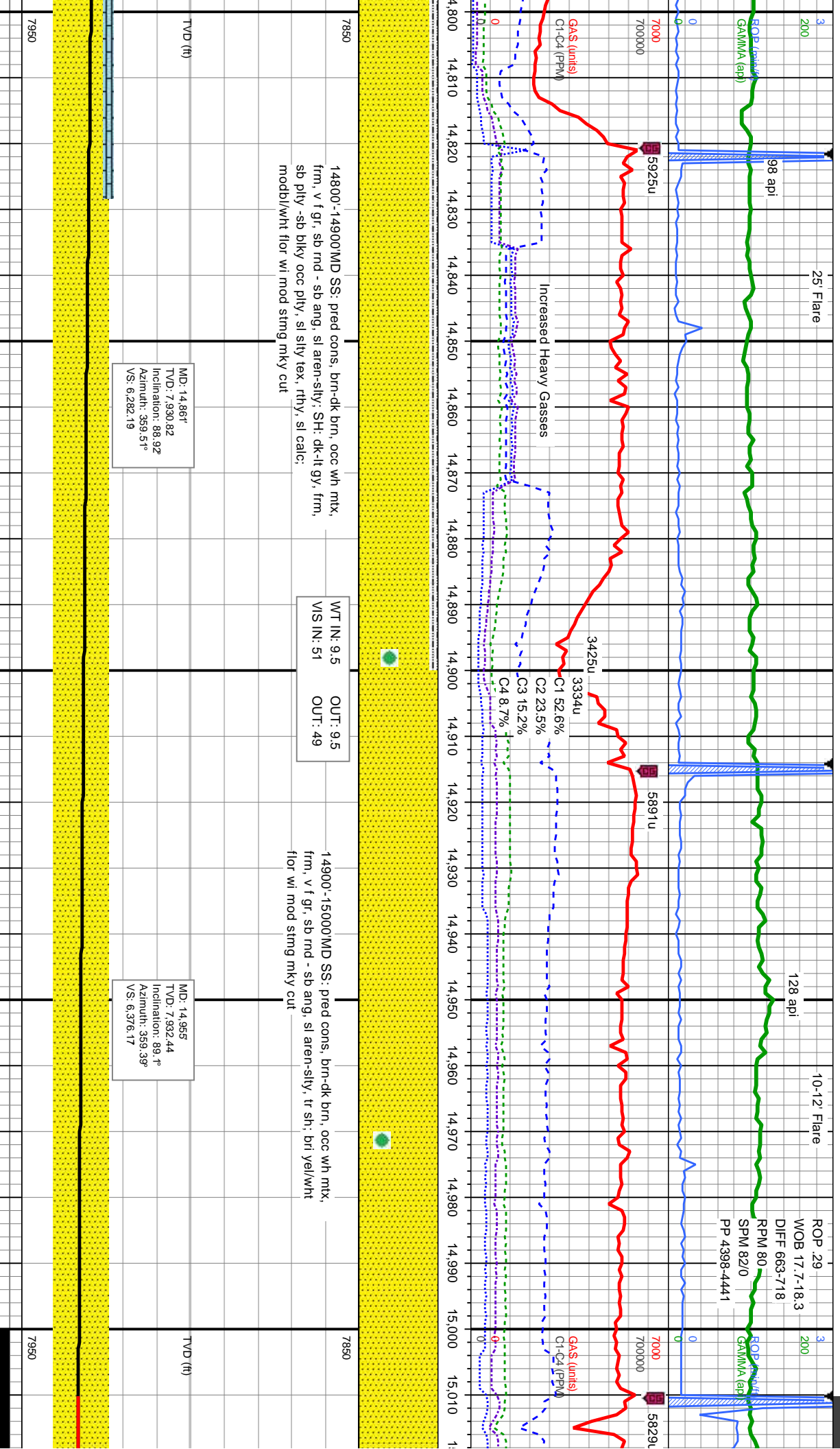
MD: 14.672
TVD: 7,926.96
Inclination: 89.8°
Azimuth: 359.98°
VS: 6.093.25

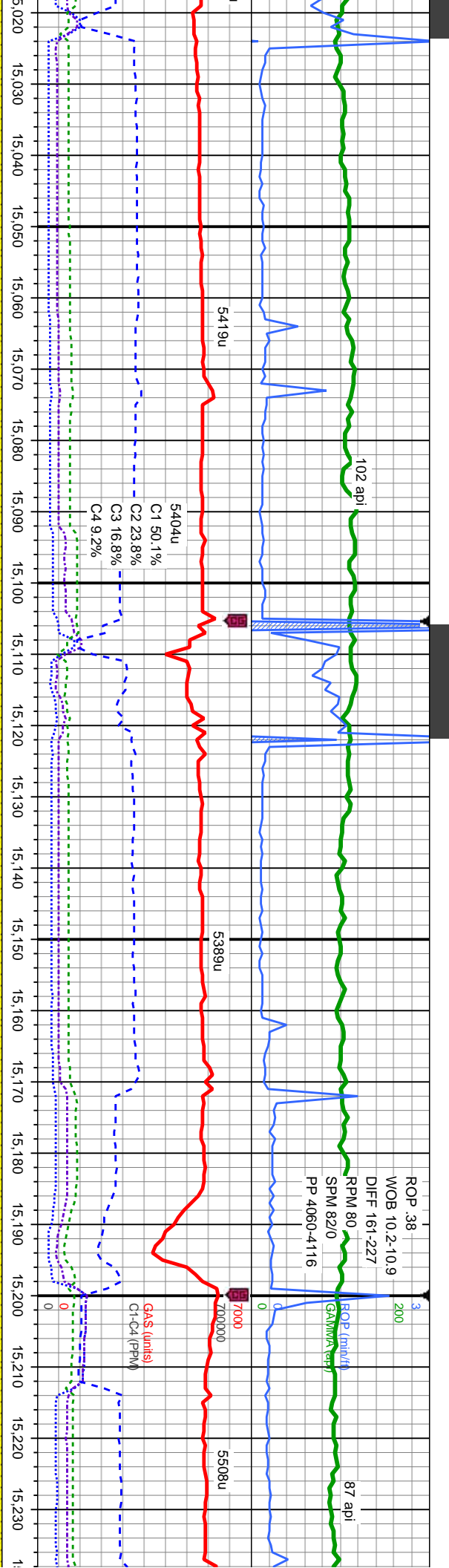
90.55°
26°
5

MD: 14.766°
TVD: 7,928.64
Inclination: 88.45°
Azimuth: 359.15°
VS: 6.187.23

90.55°
26°
5







15000'-15100' MD SS: pred cons, brn-dk brn, occ wh mtk, frm, v f gr, sb rnd - sb ang, sl aren-sltly, tr sh, bri yel/wht flor wi mod sting mky cut

MD: 15,060'
TVD: 7,933.58
Inclination: 89.53°
Azimuth: 358.27°
VS: 6.471,14

WT IN: 9.5
VIS IN: 50
OUT: 9.6+
OUT: 48

15100'-15200' MD SS: pred cons, brn-dk brn, frm, v f gr, sb rnd - sb ang, sl aren-sltly, occ sh, bri yel/wht flor wi mod sting mky cut

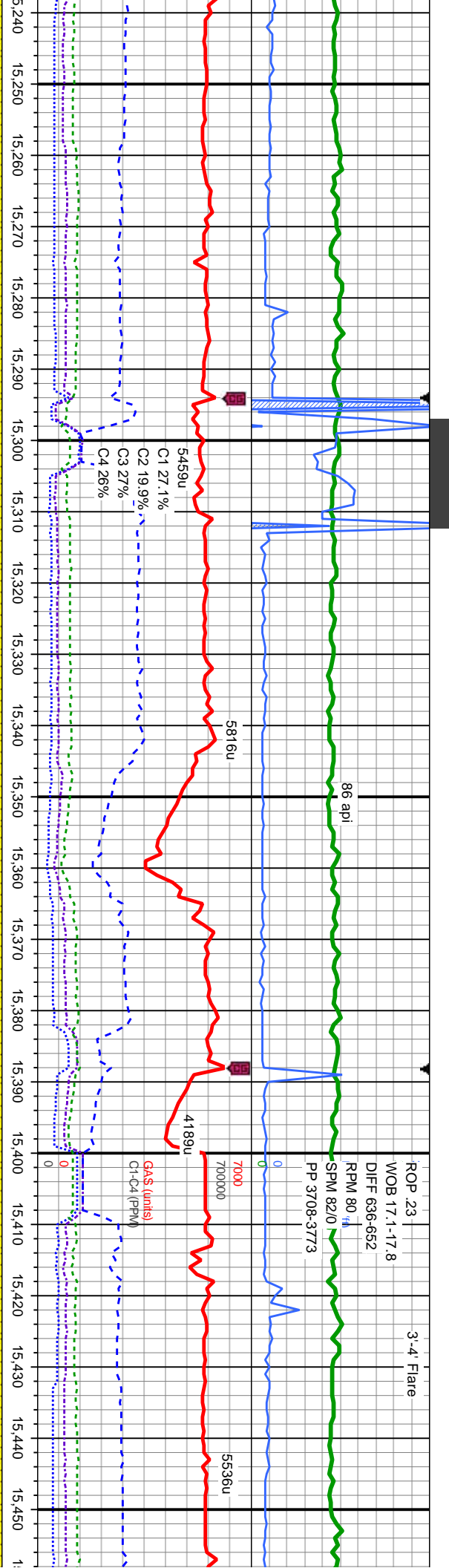
MD: 15,144'
TVD: 7,932.98
Inclination: 91.2°
Azimuth: 358.06°
VS: 6.565,07

WT IN: 9.5+
VIS IN: 47
OUT: 9.5
OUT: 48

MD: 15,150'
TVD: 7,932.98
Inclination: 91.2°
Azimuth: 358.06°
VS: 6.565,07

15200'-15200' MD SS: pred cons, brn-dk brn, frm, v f gr, sb rnd - sb ang, sl aren-sltly, occ sh, bri yel/wht flor wi mod sting mky cut





15300MD SS: pred cons, brn-dk brn, frm, v f gr, sb ang, sl aren-sily, tr sh, bri bl/wht flr wi mod v cut

15300-15400MD SS: pred cons, brn-dk brn, frm, v f gr, sb rnd - sb ang, sl aren-sily, tr sh, bri bl/wht flr wi mod stm mky cut

15400-15500MD SS: pred cons, br sb rnd - sb ang, sl aren-sily, tr sh, l stm mky cut

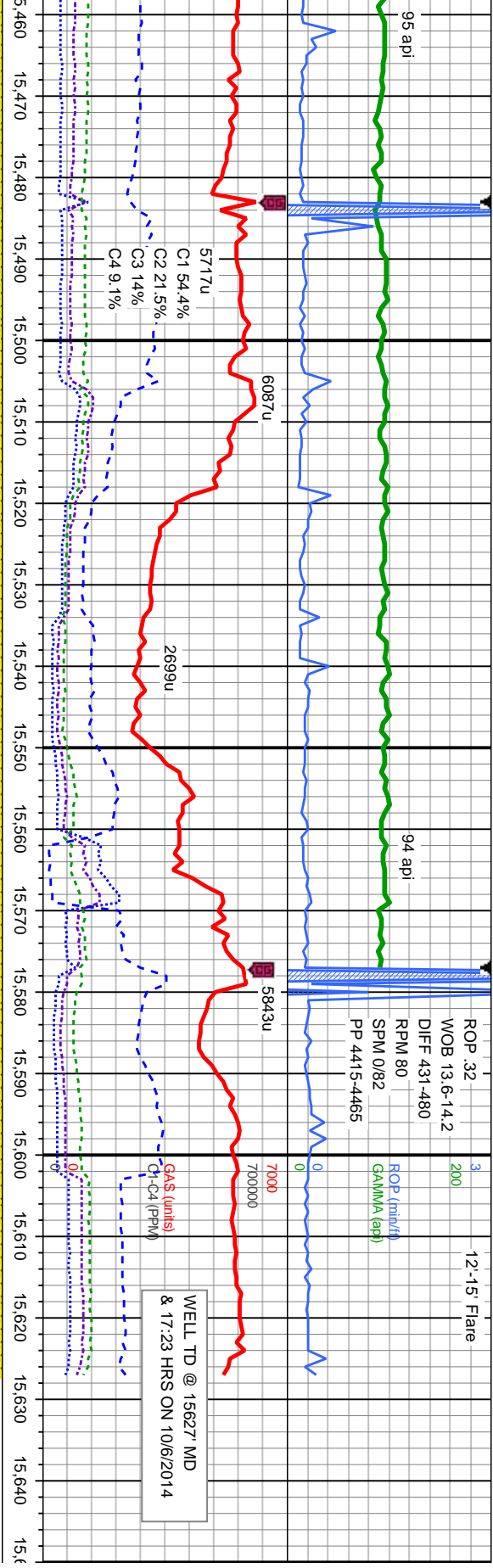
239
830.66
lon: 91.6°
n: 357.77°
559.97

MD: 15.333
TVD: 7.929.03
Inclination: 90.38°
Azimuth: 358.53°
VS: 6.753.89

TVD (ft)

MD: 15.428
TVD: 7.928.04
Inclination: 90.8°
Azimuth: 358.05°
VS: 6.848.84





15500'-15600' MD SS: pred cons, brn-dk brn, frm, v f gr, sb rnd - sb ang, sl aren-sily, tr sh; brl b/wht flr wi mod sting mky cut

MD: 15.522
TVD: 7.926.66
Inclination: 90.89
Azimuth: 357.76°
VS: 6.942.75

MD: 15.572
TVD: 7.926.03
Inclination: 90.58
Azimuth: 357.3°
VS: 6.992.69

TVD (ft)

MD: 15.627
TVD: 7.926.5
Inclination: 90.58
Azimuth: 357.3°
VS: 0

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