



FORMATION EVALUATION LOG

PRELUDE P1 ST1

FROM (m): 250

TO (m): 5145

SCALE: 1/ 200

Country : AUSTRALIA

Region : BROWSE BASIN

Field : PRELUDE

Permit : WA-44-L

Well Type : DEVELOPMENT

Rig Name : CLYDE BOUDREAUX

POSITION

Latitude : 13° 49' 00.96"S

Longitude : 123° 19' 37.68"E

X (m) : E 535355.40

Y (m) : N 8 472 495.66

DATUM/ZONE : GDA94

PROJECTION : MGA94,UTM51S,CM123øS

CASING

36" Shoe at (mMDRT) : 332.8

26" Shoe at (mMDRT) : 609.5

18 5/8" Shoe at (mMDRT) : 1359.7

13 3/8" Shoe at (mMDRT) : 2397.4

9 5/8" Shoe at (mMDRT) : 4301.7

7" Shoe at (mMDRT) : 5135.0

Spud Date : 11-09-2013

Total Depth Date : 27-09-2014

Total Depth (mMDRT) : 5139.0

T.V.D. (mTVDRT) : 4104.9

Status : GAS PRODUCER

RT-LAT (m) : 21.9

RT-Seabed (m) : 259.3

ABBREVIATIONS

MW MUD WEIGHT	NB NEW BIT
FV FUNNEL VISCOSITY	RR RERUN BIT
PV PLASTIC VISCOSITY	CB CORE BIT
YP YIELD POINT	WOB WEIGHT ON BIT
FC FILTER CAKE	RPM REVS PER MINUTE
SOL SOLIDS	FLC FLOW CHECK
WL FILTRATE	CR CIRCULATE RETURNS
SD SAND - %	PR POOR RETURNS
S SALINITY - PPM	NR NO RETURNS
RM MUD RESISTIVITY	BG BACKGROUND GAS
RMF MUD FILTRATE	TG TRIP GAS
C CARBIDE TEST	STG SHORT TRIP GAS
LAT LOGGED AFTER TRIP	CG CONNECTION GAS
DS DEVIATION SURVEY	SG SWAB GAS
FG FORMATION GAS	SVG SURVEY GAS

LITHOLOGY LEGEND

	Claystone		Sandstone 1		Calcarenite		Calcareous
	Silty Claystone		Sandstone 2		Calclrudite		Dolomitic
	Sandy Claystone		Arg Sandstone		Arg Calcilutite		Fossils
	Calc Claystone		Silty Sandstone		Dolomite		Foraminiferae
	Siltstone		Calc Sandstone		Cement		Lignitic shale
	Arg Siltstone		Dolo Sandstone		Calcite		Sidewall core
	Sandy Siltstone		Calcilutite		Mica		Pyrite
	Calc Siltstone		Calcisiltite		Glauconite		

ENGINEERING

	Core
	Mud gain
	Mud loss
	Sidewall core
	Survey
	FIT
	Casing shoe

MWD Gamma Ray (api)

DEPTH

mMDRT

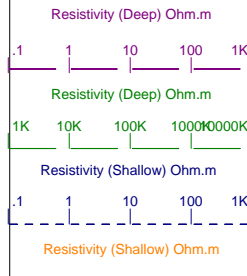
WOB (Klbs)

ROP Backup (m/h)

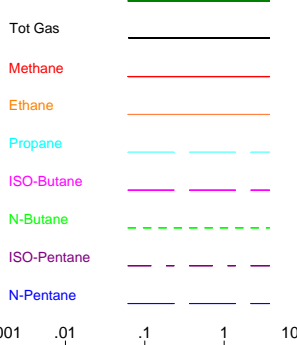
ROP (m/h)

Bit #1: BH GTX-CG1
S/N: 5217191
SIZE: 30"x42"
JETS: 4x22
IN: 259.3m OUT: 333.1m
RUN: 73.85 HRS:1.34
COND:1-1-WT-A-E-I-NO-TD

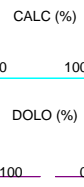
RESISTIVITY



CO2



HYDROCARBON FLUORESCENCE



LITHOLOGICAL DESCRIPTIONS

AND REMARKS

SPUD PRELUDE P1 on 11-09-2013
@ 08:30 hrs

DRILL WITH SEAWATER AND
PHG SWEEPS

SURVEY @ 259.25mMDRT
INC:0.00° AZI:0.00°

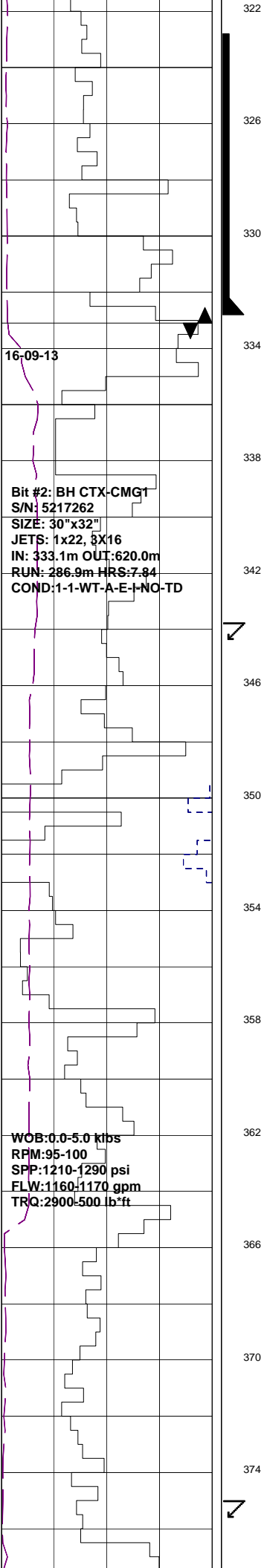
Returns to Sea-bed From
259.3mMDRT to 620.0mMDRT

WOB:0.0-3.0 klbs
RPM:40-105
SPP:250-1300 psi
FLW:500-1180 gpm
TRQ:1400-4600 lb*ft

MW:1.06
FV:120
PV:9
YP:50
Gel:33/35/
pH:10.0

SURVEY @ 301.66mMDRT
INC:1.12° AZI:268.86°

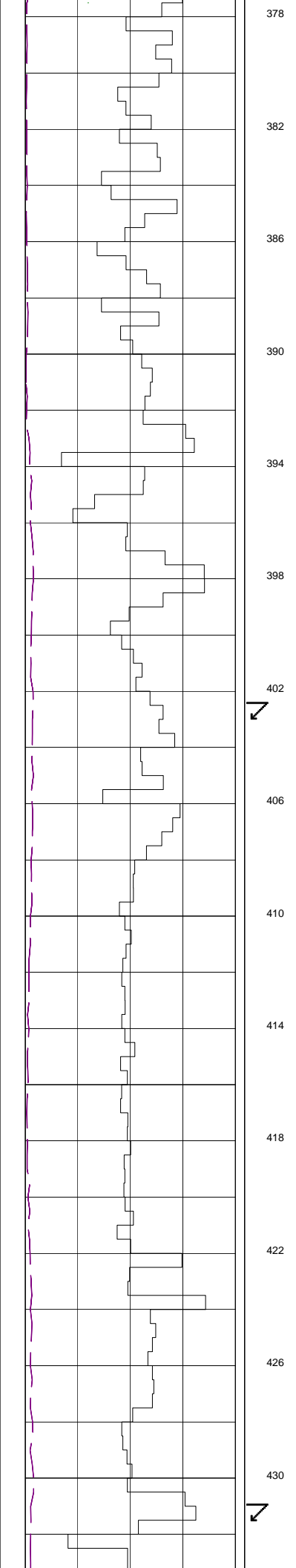
DRILL WITH SEAWATER AND
PHG SWEEPS



36" CASING @ 332.8mMDRT

SURVEY @ 343.76mMDRT
INC: 0.51° AZI: 334.66°

SURVEY @ 375.00mMDRT
INC: 0.39° AZI: 309.43°



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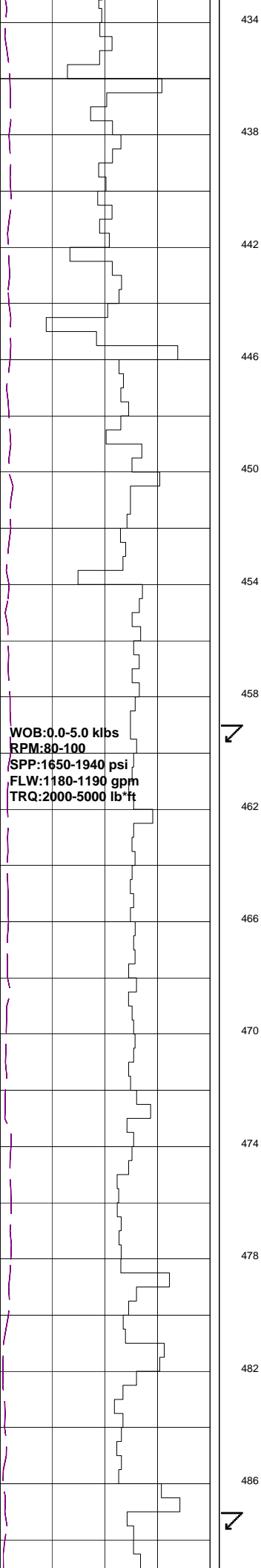
426

430

DRILL WITH SEAWATER AND
PHG SWEEPS

SURVEY @ 402.39mMDRT
INC:0.16° AZI:330.15°

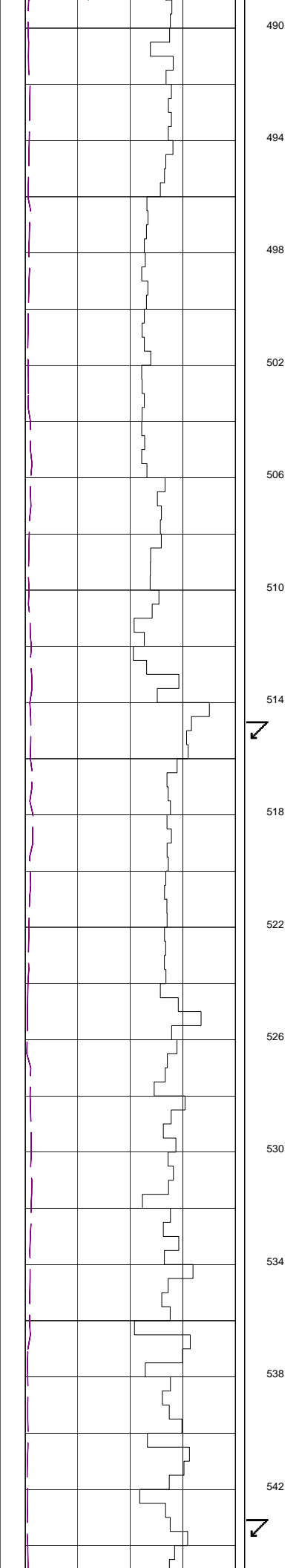
SURVEY @ 430.92mMDRT
INC:0.16° AZI:1.93°



DRILL WITH SEAWATER AND
PHG SWEEPS

SURVEY @ 459.00mMDRT
INC: 0.45° AZI: 340.51°

SURVEY @ 487.02mMDRT
INC: 0.49° AZI: 17.62°



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DRILL WITH SEAWATER AND
PHG SWEEPS

SURVEY @ 514.68mMDRT
INC:0.43° AZI:5.65°

SURVEY @ 543.07mMDRT
INC:0.40° AZI:4.99°

MW:1.06
FV:120
PV:8
YP:51
pH:10.0

546

550

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574



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582

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598

DRILL WITH SEAWATER AND
PHG SWEEPS

SURVEY @ 575.42mMDRT
INC:0.44° AZI:35.25°

SURVEY @ 600.70mMDRT
INC:0.69° AZI:16.07°

17-09-2013

WOB:0.0-3.0 klbs
RPM:70-85
SPP:2150-22500 psi
FLW:1180-1190 gpm
TRQ:2000-6000 lb*ft

Bit #3: BH VG-03M
S/N: 5203804
SIZE: 24"
JETS: 1x24, 3X18
IN: 620.0m OUT:1370.0m
RUN: 750.0m HRS:29.02
COND:1-1-BT-M-E-I-PN-TD

WOB:0.0-7.0 klbs
RPM:130-170
SPP:1280-1800 psi
FLW:1000-1017 gpm
TRQ:1600-7300 lb*ft

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26" CASING @ 609.5mMDRT

30" Section TD @ 620.0mMDRT

BIOCLASTIC CALCILUTITE:yelsh
gy-wh,hd frm,crpxln-calcarenitic
sbbky-blky,30% lse shell frag,
coral,ammonites,nautiloids,tr
dk gy cly,tr pyr.

CALCILUTITE:yelsh gy,gnsh
gy,med lt gy,gnsh blk,10%
gysh org,frm-hd,tr chl,10%
lmn stng,10% shell & coral frag.

SURVEY @ 661.95mMDRT
INC:0.63° AZI:13.70°

25-09-2013

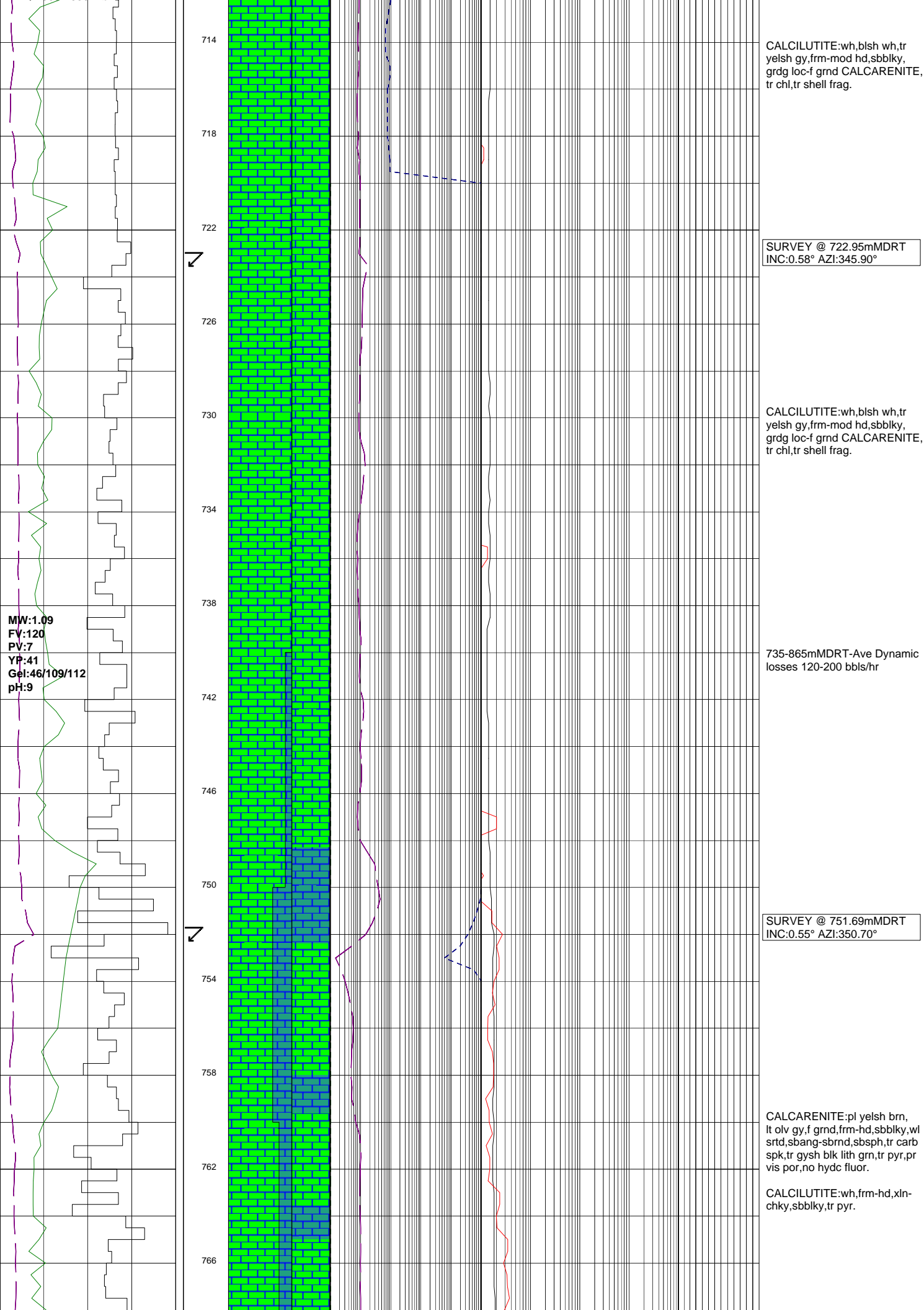
MW:1.09
FV:120
PV:10
YP:40
Gel:45/80/95
pH:9.1

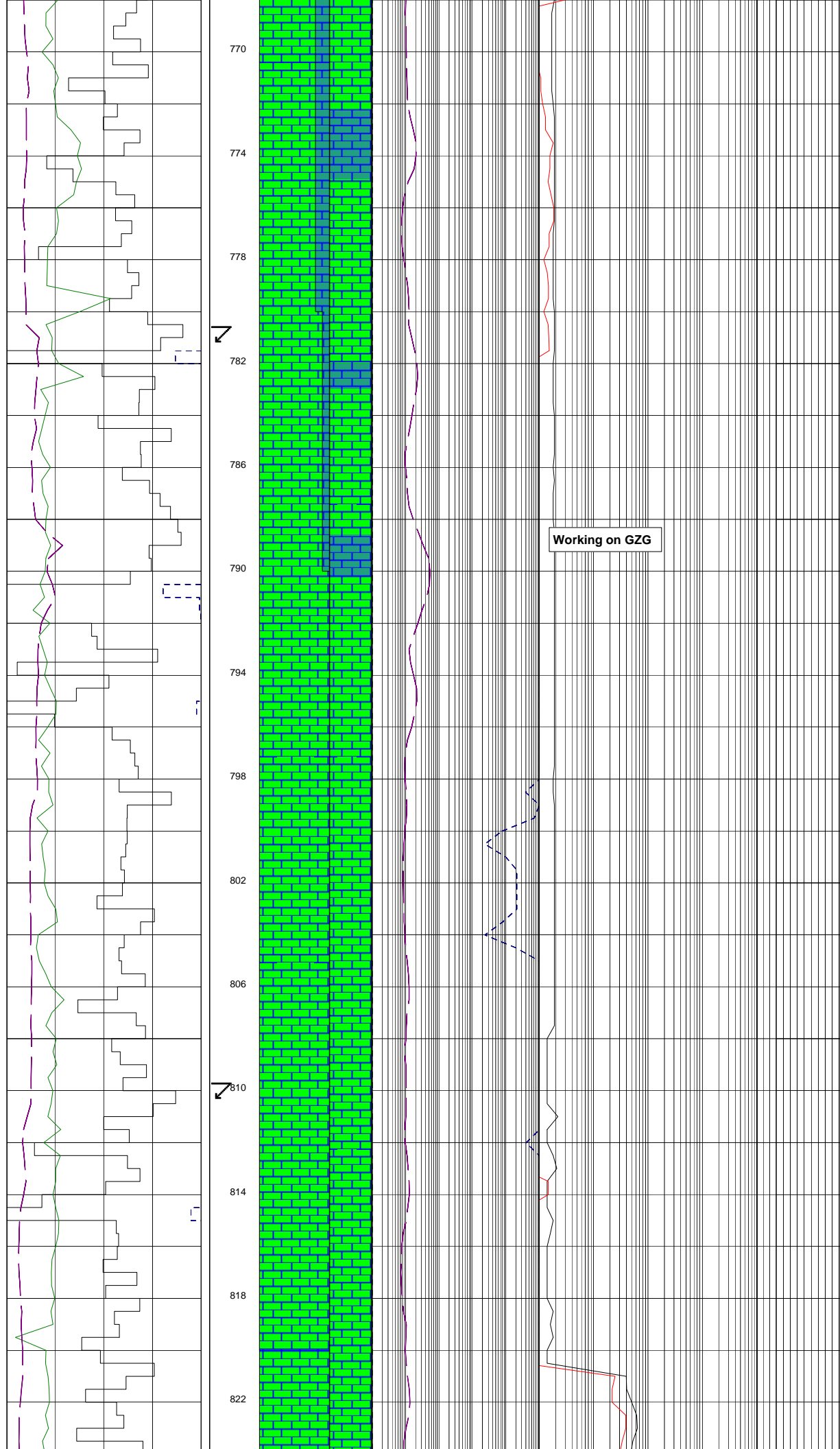
662m-Dynamic mud loss 310
bbls/hr,decr to 110 bbls/hr

CALCARENITE:yelsh gy,sft frm,
f grnd,pr srted,sbang-sbrnd,sbsph,
15% calc cly mtx,tr dk gy cly,
tr lith frag,pr vis por,no hydc fluor.

WOB:0.0-16.0 klbs
RPM:128-178
SPP:1131-2110 psi
FLW:812-1053 gpm
TRG:1085-10861 lb/ft

690-720mMDRT-Ave Dynamic
losses 50 bbls/hr





SURVEY @ 780.57mMDRT
INC:0.04° AZI:101.56°

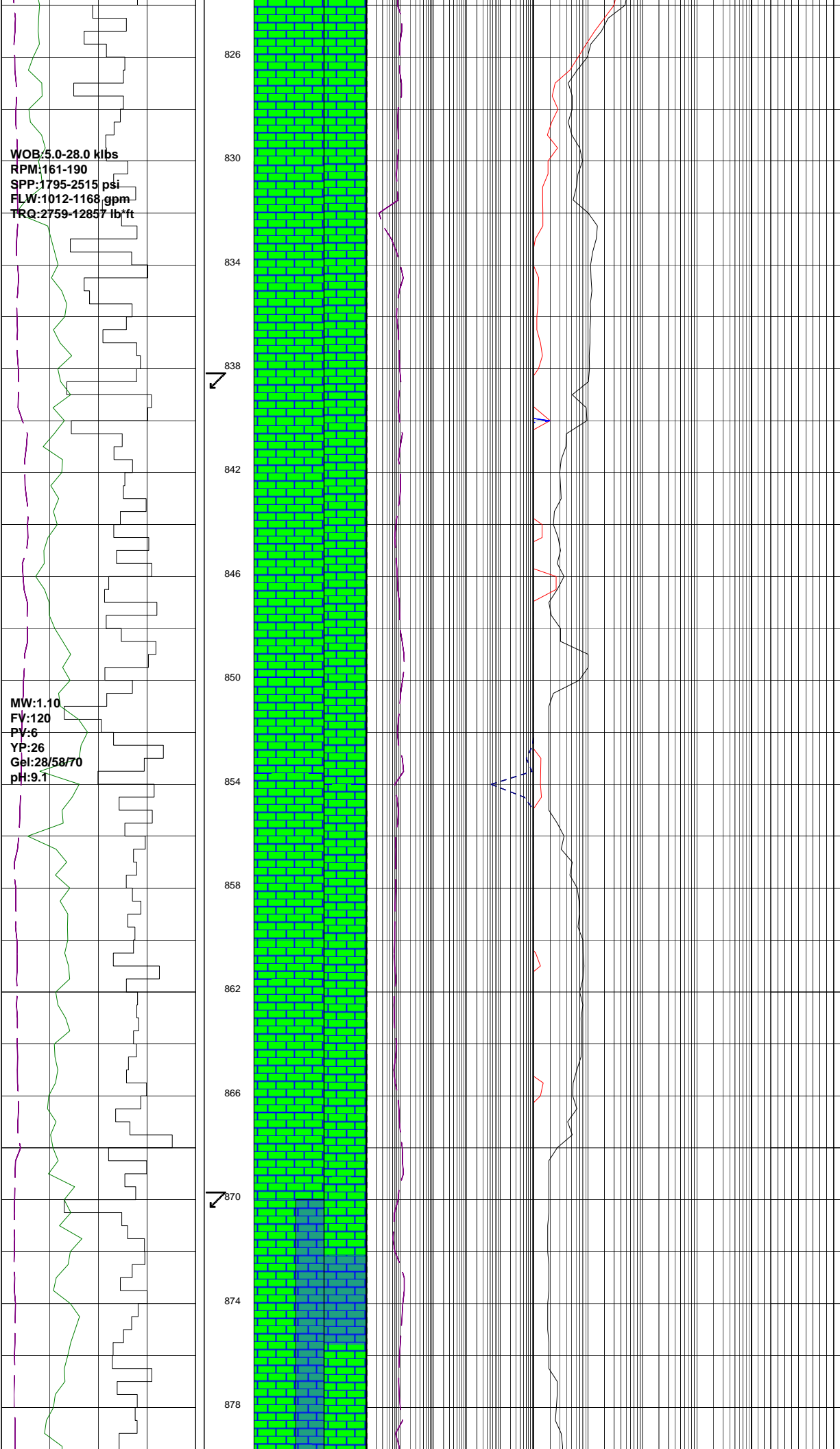
Working on GZG

CALCILUTITE:wh,tr pl pnk,
pl yelsh org stng,frm-hd,
xln-chky,sbbiky,tr chl,
tr bioclastic frag,including
ammonites & corals.

SURVEY @ 809.70mMDRT
INC:0.20° AZI:61.70°

WOB:5.0-28.0 kibs
RPM:161-190
SPP:1795-2515 psi
FLW:1012-1168 gpm
TRQ:2759-12857 lb*ft

MW:1.10
FV:120
PV:6
YP:26
Gel:28/58/70
pH:9.1



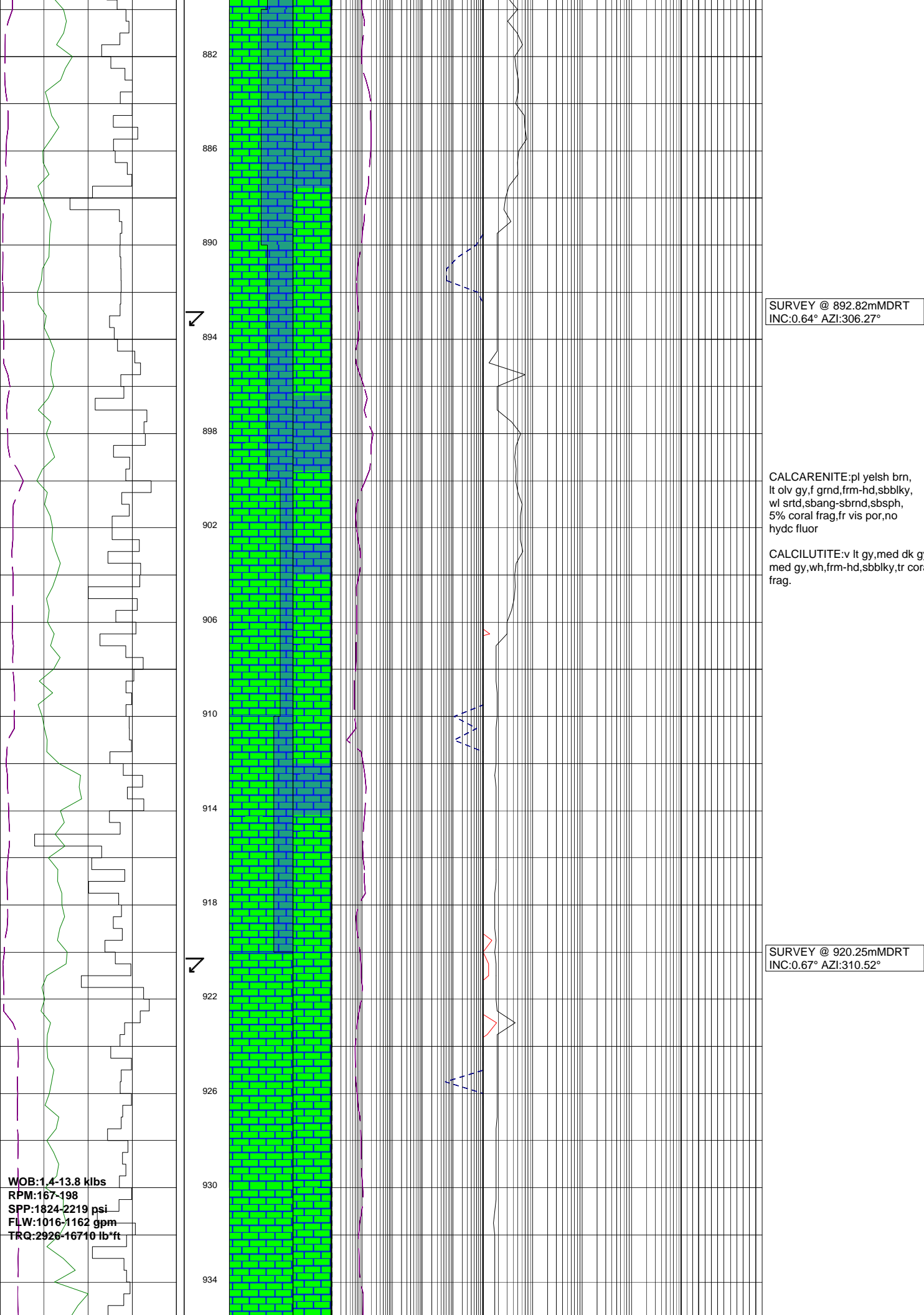
SURVEY @ 838.15mMDRT
INC:0.36° AZI:51.22°

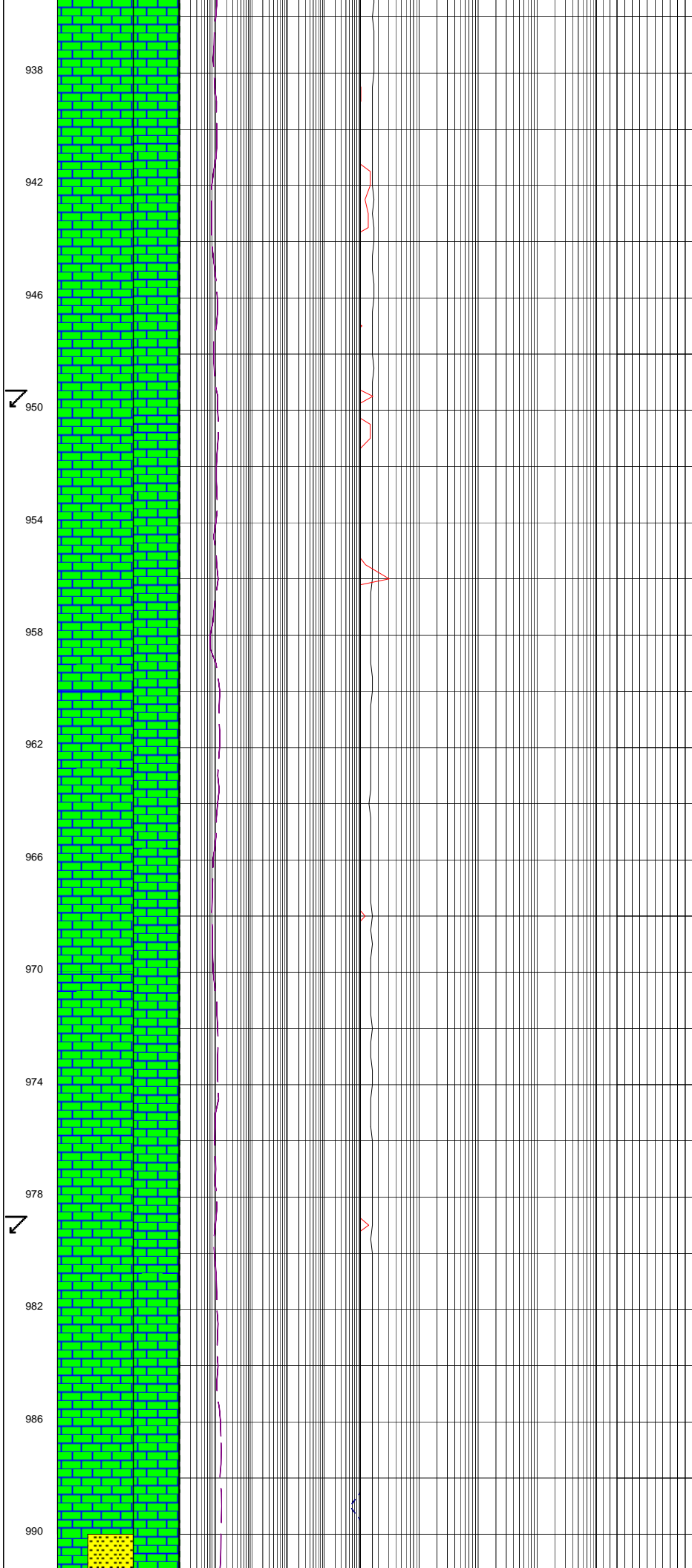
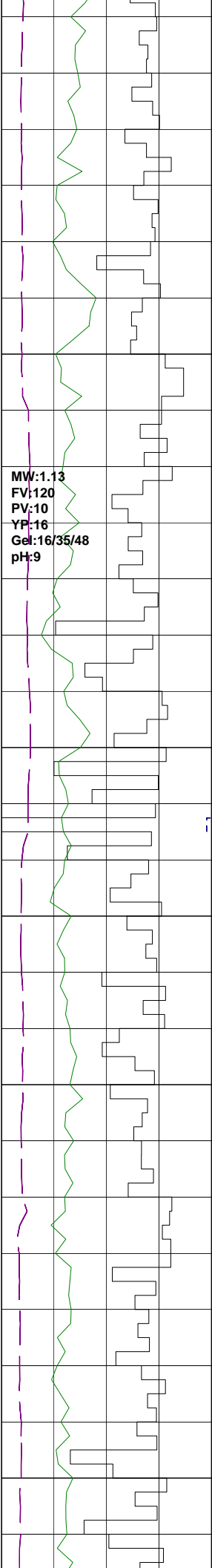
CALCILUTITE:wh,frm-hd,xln-chky,
sbbiky,tr chl,tr bioclastic frag,
including ammonites & coral.

865-1010mMDRT-Ave Dynamic
losses 45 bbls/hr

SURVEY @ 869.89mMDRT
INC:0.35° AZI:89.92°

CALCILUTITE:wh,sft-frm,amor
i/p,sbbiky,tr pl yelsh org & mod
rdsh brn lith frag (lmn?/hem?),
tr carb mat.



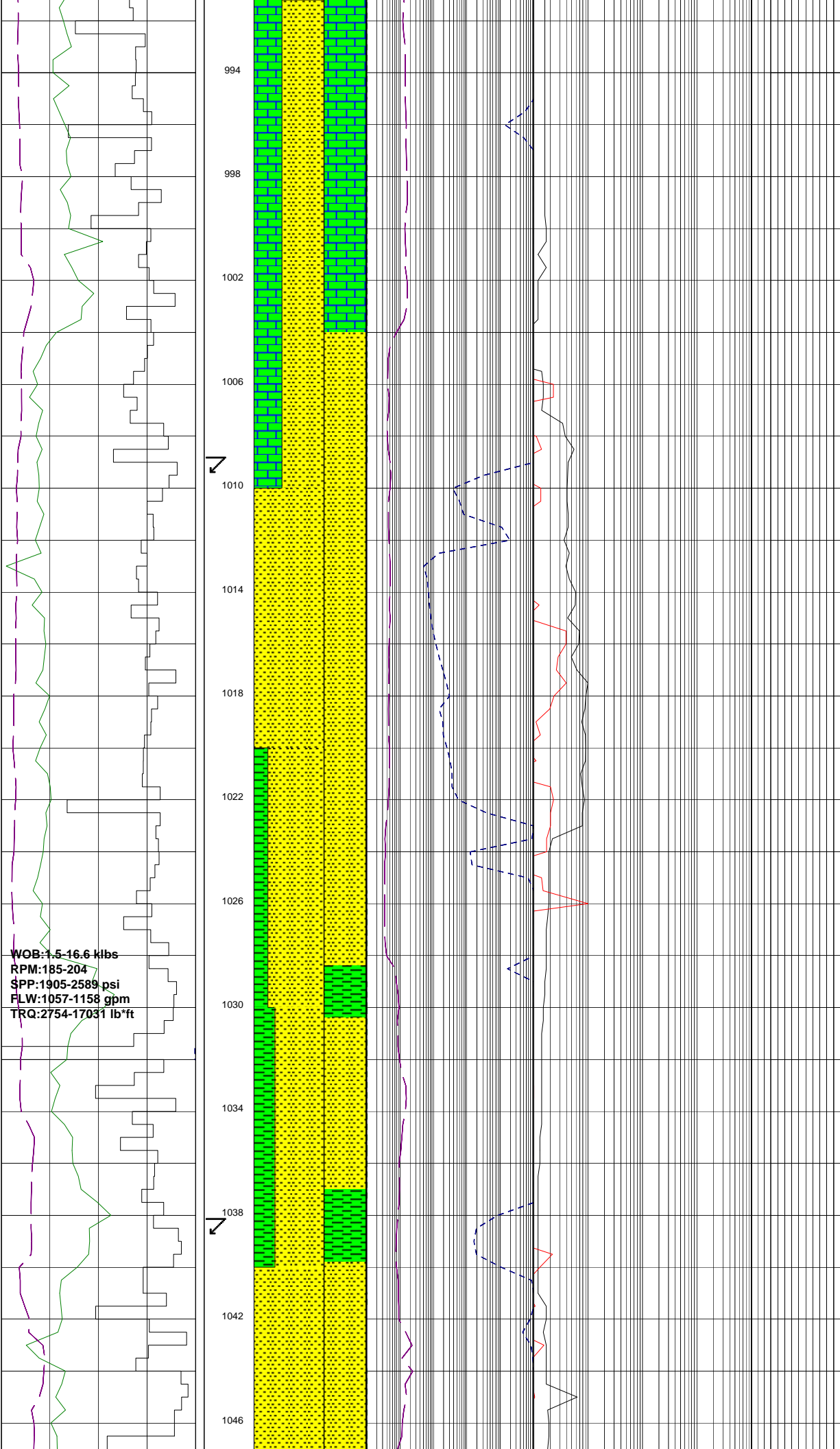


SURVEY @ 949.28mMDRT
INC:0.58° AZI:282.27°

CALCILUTITE:v lt gy,med dk gy,
yelsh gy,frm-hd,sbblky,15% coral
& shell bioclastic mat.

SURVEY @ 978.68mMDRT
INC:0.41° AZI:270.58°

CALCILUTITE:v lt gy,med
dk gy,med gy,yelsh gy,
frm-hd,sbblky,15% coral
& shl bioclastic mat.



WOB:1.5-16.6 klbs
RPM:185-204
\$PP:1905-2589 psi
FLW:1057-1158 gpm
TRQ:2754-17031 lb*ft

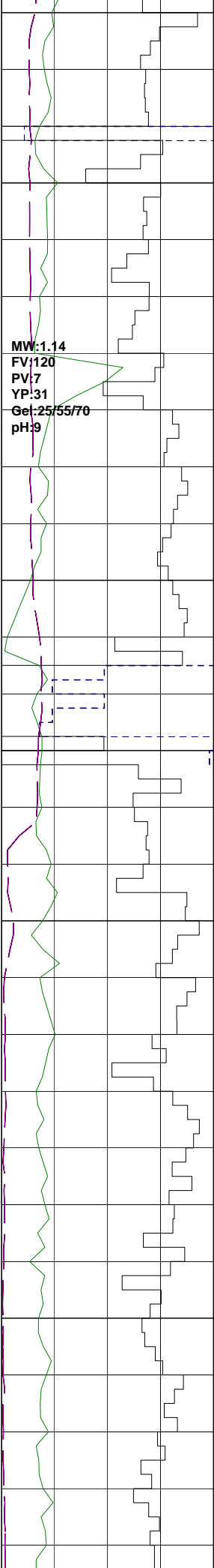
SURVEY @ 1008.80mMDRT
INC:0.31° AZI:182.59°

SANDSTONE:lt brnsh gy,clr,
opq,lse qtz gm,f grnd,10% med,
tr crs,mod srted,sbang-sbrnd,
sbsph-sbelng,brnsh gry cly mtx
washed out,fr inf por,no hydc fluor.

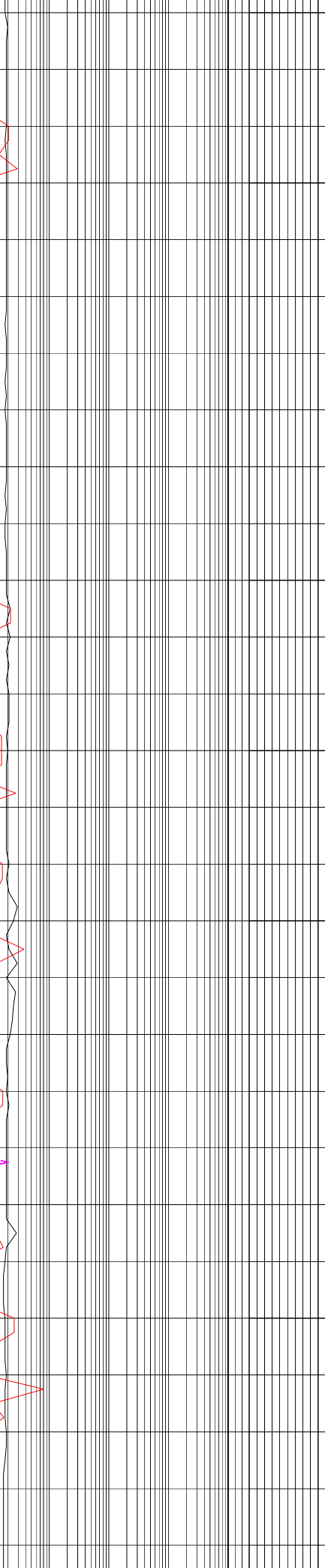
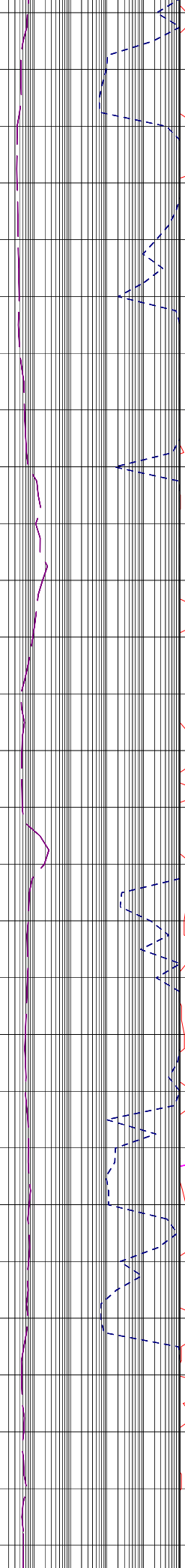
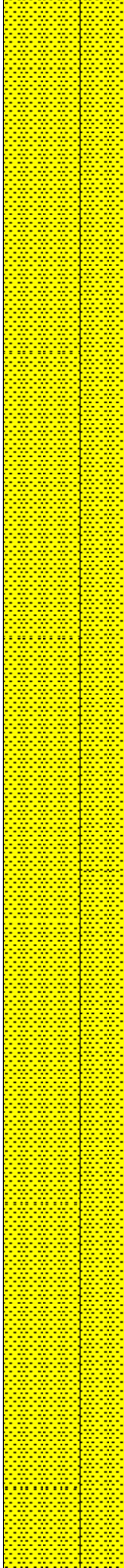
1017-1023mMDRT-Ave Dynamic
losses 280 bbls/hr

CLAYSTONE:med lt gy,sft amor.

SURVEY @ 1038.12mMDRT
INC:0.34° AZI:159.98°



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1094
1098
1102

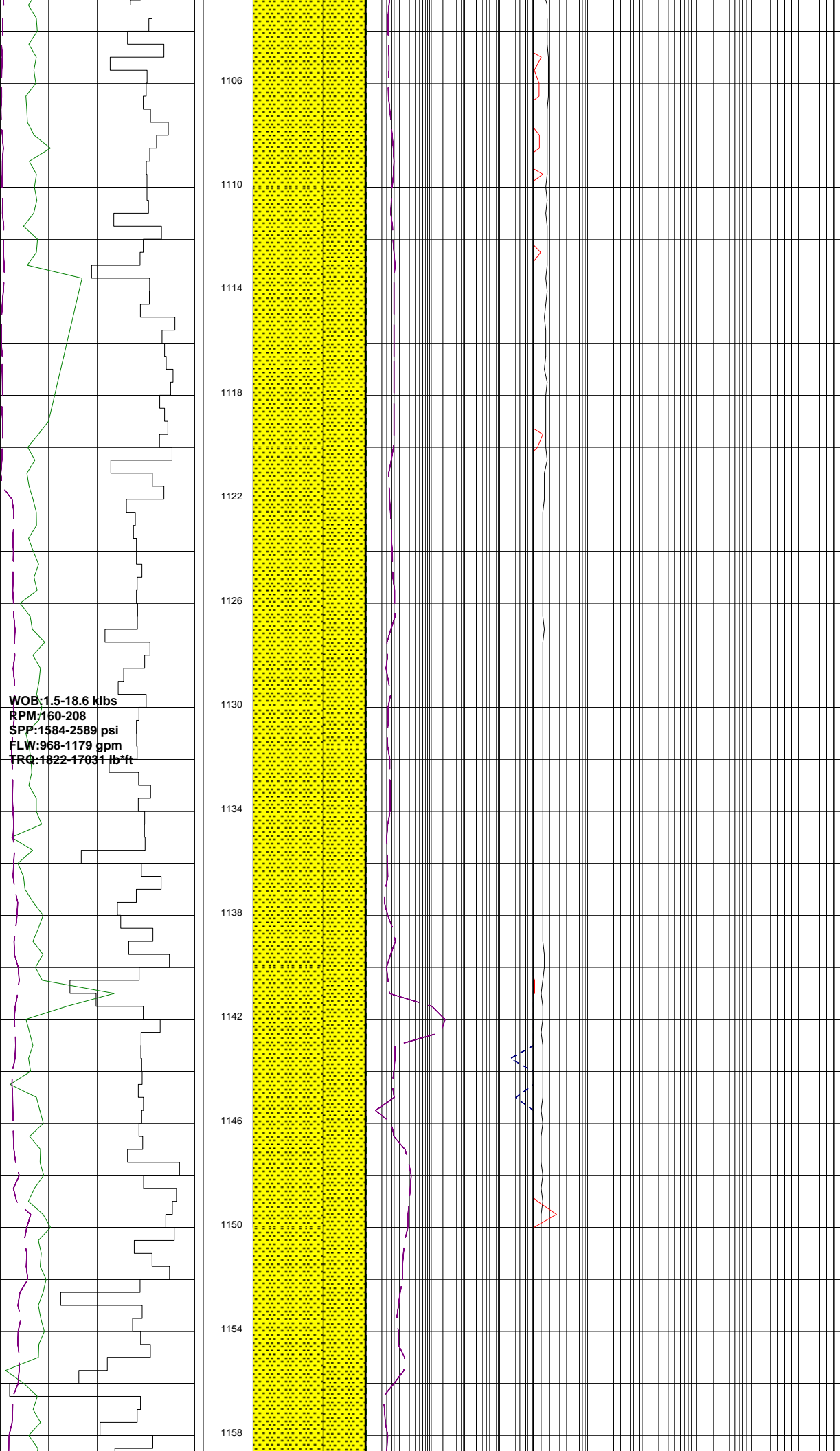


1023-1088mMDRT-Ave Dynamic losses 30-160 bbls/hr

SANDSTONE:lt gy,yelsh gy,clr,opq,lse qtz grn,f grnd,5% med,mod wl srted,sbang-sbrnd,sbsph-sbelng,v lt gy cly mtx washed out,fr inf por,no hydc fluor.

SURVEY @ 1075.99mMDRT
INC:0.17° AZI:125.98°

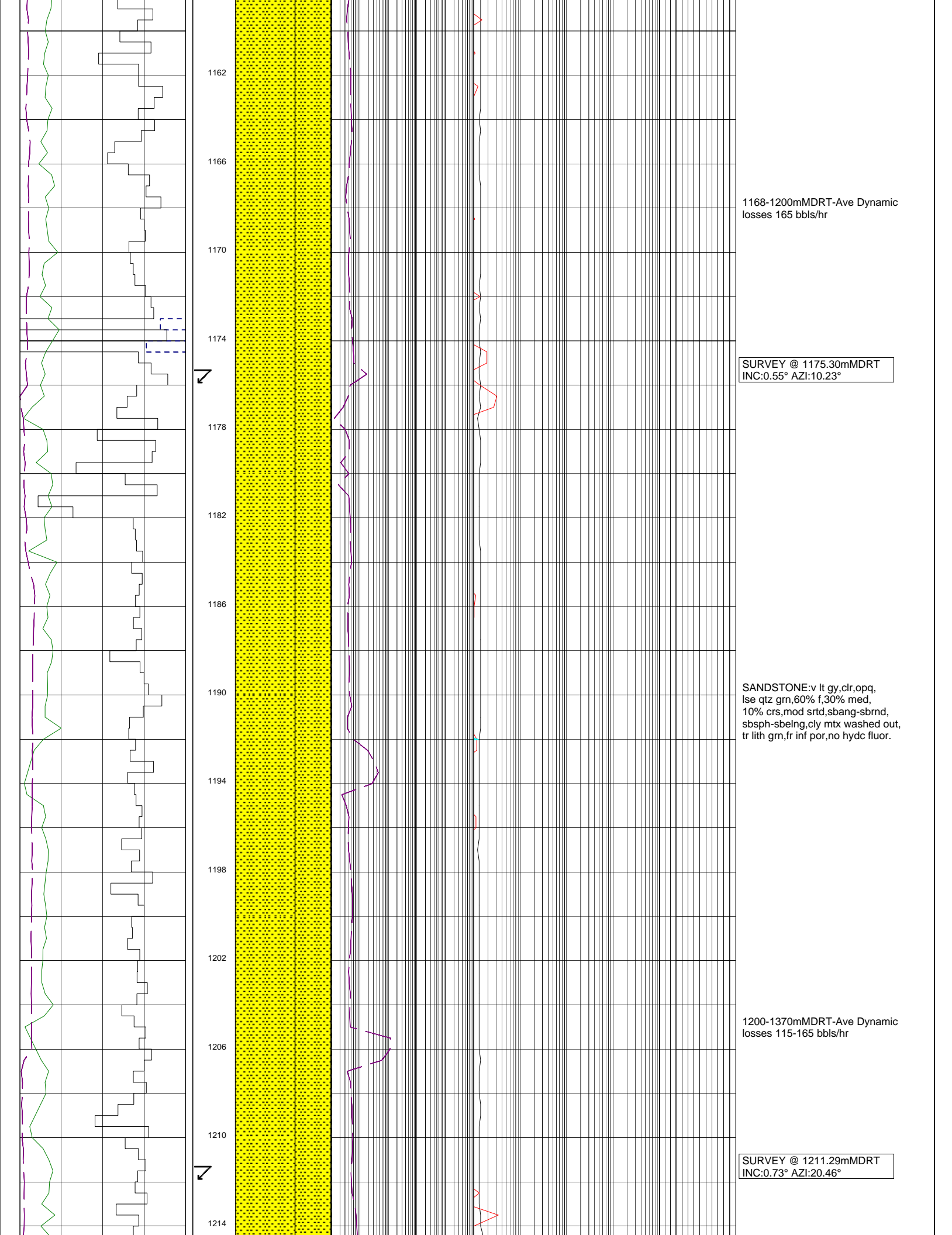
WOB:1.5-18.6 klbs
RPM:160-208
SPP:1584-2589 psi
FLW:968-1179 gpm
TRQ:1822-17031 lb*ft



SANDSTONE:v lt gy,clr,opq,
lse qtz gm,60% f,30% med,
10% crs,tr v crs,pr srted,
sbang-sbrnd,sbsph-sbelng,cly
mtx washed out,tr pyr,tr lith grn,
pr inf por,no hydc fluor.

1109-1160mMDRT-Ave Dynamic
losses 90 bbls/hr

SANDSTONE:lt gy,clr,opq,qtz gm
40% f,60% med,mod srted,sbang-
sbrnd,sbsph-sbelng,cly mtx
washed out,tr lith grn,fr inf por,
no hydc fluor.



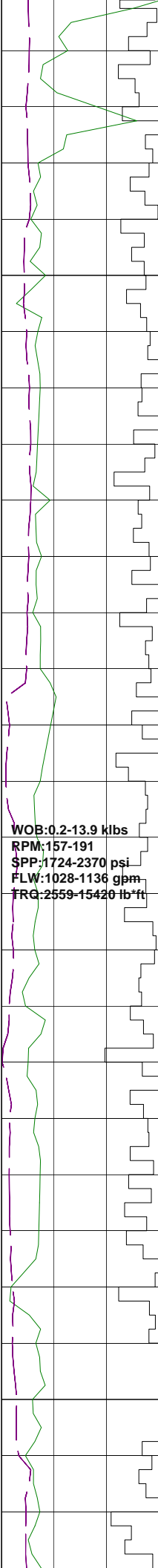
WOB:0.0-15.7 klbs
RPM:154-191
SPP:1862-2338 psi
FLW:1002-1130 gpm
TRQ:2322-13199 lb*ft

MW:1.11
FV:120
PV:10
YP:30
Gel:20/61/61
pH:9.65

SURVEY @ 1238.76mMDRT
INC:0.83° AZI:32.02°

SANDSTONE:v lt gy,clr,opq,lse
qtz grn,10% f,20% med,40% crs,
20% v crs,10% gran,v pr srtd,
sbang-sbrmd,sbsph-sbelng,clt mtz
washed out,tr lith grn,pr inf por,
no hydc fluor.

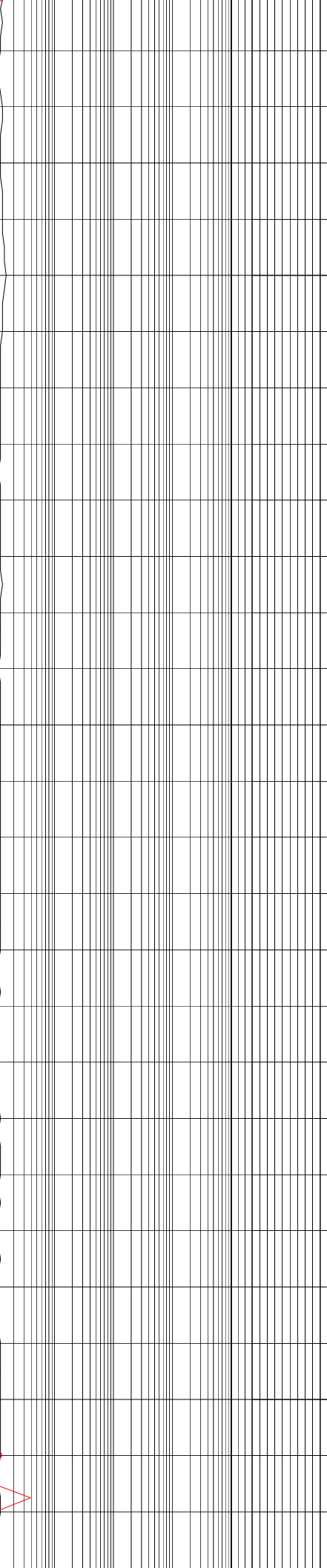
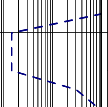
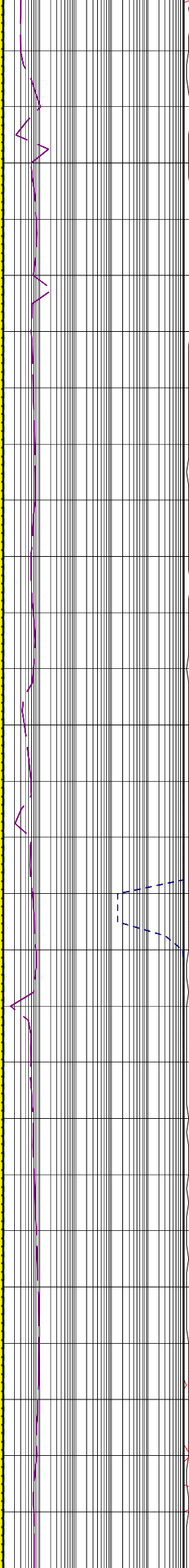
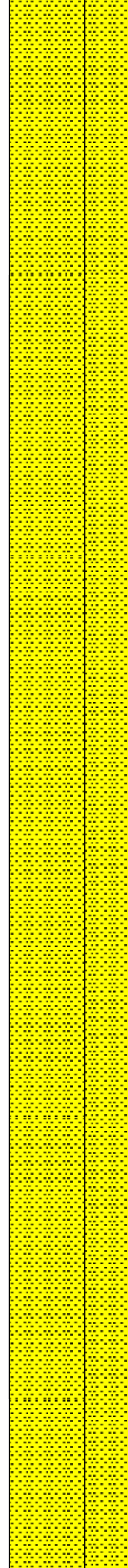
SURVEY @ 1265.08mMDRT
INC:0.56° AZI:337.6°



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1282
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1306
1310
1314
1318
1322
1326



WOB:0.2-13.9 klbs
RPM:157-191
\$PP:1724-2370 psi
FLW:1028-1136 gpm
TRG:2559-15420 lb*ft



SURVEY @ 1292.32mMDRT
INC:0.58° AZI:35.21°

SANDSTONE:v lt gy,clr,opq,
lse qtz grn,20% f,30% med,
20% crs,20% v crs,10% gran,
v pr srted,sbang-rnd,sph-sbsph
-sbelng,clt mtx washed out,
tr lith grn,tr glauc grn,pr inf por,
no hydc fluor.

SANDSTONE:lt gy,lt brnsh gy,clr,
opq,20% brnsh gy stn,20% f,30%
med,20% crs,20% v crs,10% oran.

MW:1.09
FY:120
PV:9
YP:31
Gel:28/59/66
pH:9.4

23-02-14

Bit #1RR: SMITH TCI GS30
S/N: PW7895
SIZE: 17.5"
JETS: 3x18, 3x10
IN: 1362.0m OUT:1470.0m
RUN: 108.0m HRS:10.59
COND:1-1-WT-A-X-I-NO-BHA

1330

1334

1338

1342

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SURVEY @ 1339.18mMDRT
INC:0.78° AZI:36.09°

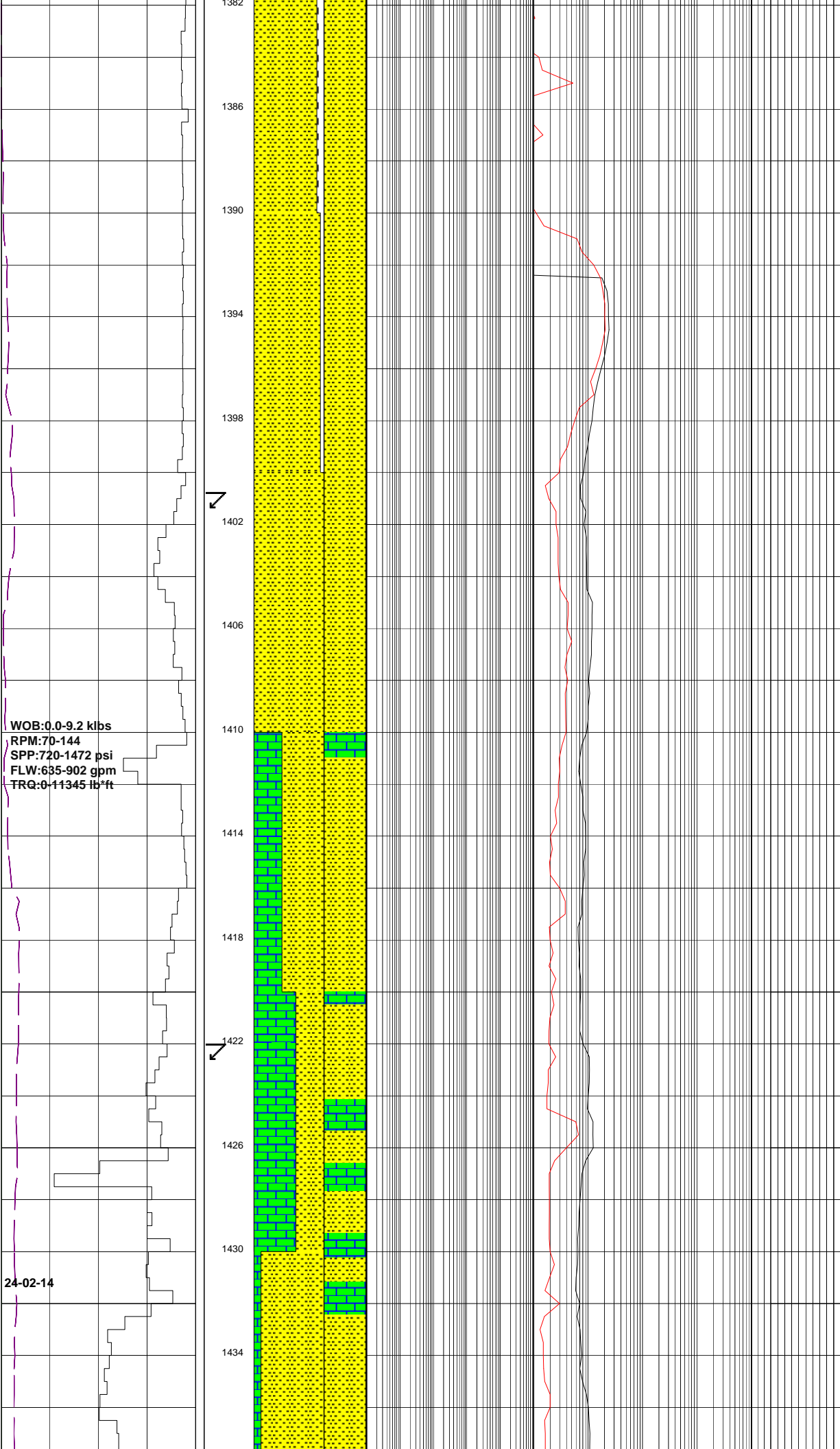
SANDSTONE:v lt gy,clr,opq,lse qtz
grn,10% f,40% med,30% crs,20% v
crs,pr srted,sbang-rnd,sbsph-sbelng,
cly mtx washed out,tr lith grn,pr inf
por,no hydc fluor.

18 5/8" LINER @ 1359.7mMDRT

SURVEY @ 1366.73mMDRT
INC:2.01° AZI:64.37°

24" Section TD @ 1370.0mMDRT

KICK OFF P1 ST1 @ 1387.0mMDRT



WOB:0.0-9.2 klbs
RPM:70-144
SPP:720-1472 psi
FLW:635-902 gpm
TRQ:0-11345 lb*ft

24-02-14

SANDSTONE:clr-transl,lt gy,lse qtz grn,
20% f,40% med,20% crs,10% v crs,
10% gran,pr srted,sbang-rnd,sbsph-sph,
tr lith frag,tr dk carb grn,inf fr por,
no hydc fluor.

SURVEY @ 1400.76mMDRT
INC:2.70° AZI:71.06°

CALCILUTITE:gysh org-pl yel brn,hd,
sbbiky-blky,xln,20% chky,tr shell frag.

SURVEY @ 1422.51mMDRT
INC:3.18° AZI:74.80°

SANDSTONE-2:clr-transl,pl yelsh brn,
lt olv-olv gy,hd,f grnd,wl srted,sbang-
sbrnd,sbsph-sph,no vis mtx,tr calc
& sil cmt,tr lith,pr por,no hydc fluor.

MW:1.06
FV:46
PV:8
YP:18
Gel:11/13/
pH:9.5

24-02-14

25-02-14

Bit #2: KYMERA HP633F
S/N: 7038286
SIZE: 17.5"
JETS: 9x12
IN: 1470.0m OUT:2407.0m
RUN: 937.0m HRS:44.98
COND:2-3-BT-S-X-1/16-NO-TD

SURVEY @ 1449.25mMDRT
INC:2.82° AZI:79.39°

SURVEY @ 1477.44mMDRT
INC:3.07° AZI:82.14°

SANDSTONE:clr.opq,lse qtz grn,
20% f,70% med,10% crs,tr v crs,
mod srtd,sbang-rnd,sbsph-sph,tr
lith frag,tr dk carb grn,inf fr por,
no hydc fluor.

WOB:6.2-16.4 klbs
RPM:79-89
SPP:1104-1216 psi
FLW:778-783 gpm
TRQ:0 lb*ft

MW:1.06
FV:51
PV:7
YP:22
Gel:18/24/27
pH:11.0

SURVEY @ 1500.98mMDRT
INC:3.31° AZI:88.12°

SANDSTONE:clr,opq,lse qtz grn,
20% f,70% med,10% crs,tr v crs,
mod srted,sbang-rnd,sbsph-sph,tr
gnsh gy & dk gy qtze grn,tr lith frag,
tr dk carb grn,inf fr por,no hydc fluor.

SURVEY @ 1535.54mMDRT
INC:4.72° AZI:91.20°



SURVEY @ 1564.36mMDRT
INC:5.05° AZI:96.60°

SANDSTONE-2:clr.opq,pl yelsh brn,
lt olv gy,fri frm,f grnd,wl srt d,sbang
-sbrnd,sbsph-sph,tr calc cmt,tr lith
frag,tr dk carb grn,pr-fr vis por,
no hydc fluor.

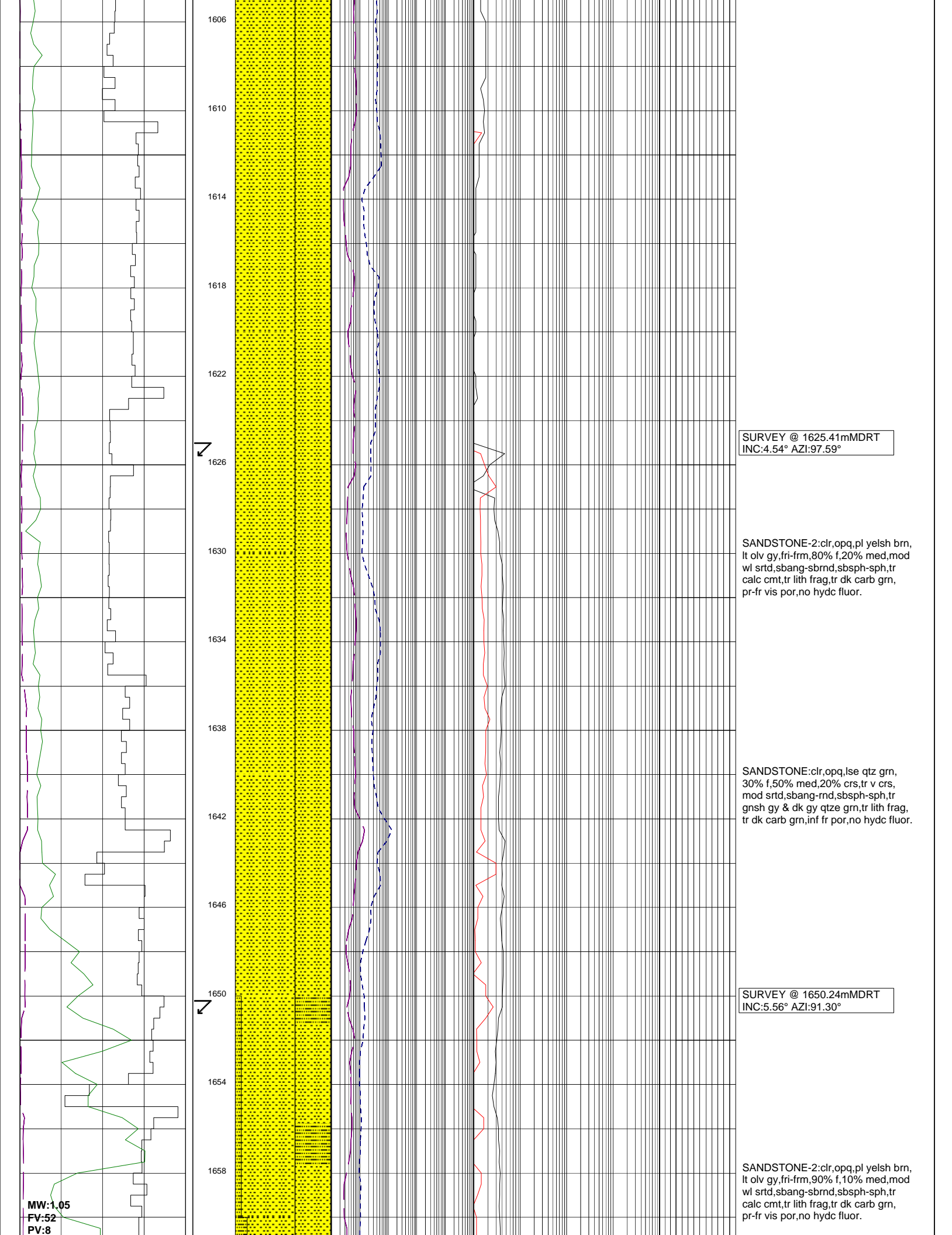


SURVEY @ 1593.68mMDRT
INC:4.88° AZI:99.28°

26-02-14

WOB:0.0-3.3 klbs
RPM:148-150
SPP:1623-1877 psi
FLW:947-986 gpm
TRQ:2912-4912 lb*ft

SANDSTONE:clr.opq,lse qtz grn,



YP:21
Gel:17/21/34
pH:9.8

1662

1666

1670

1674

1678

1682

1686

1690

1694

1698

1702

1706

1710

1714

WOB:0.0-3.0 kips
RPM:148-167
SPP:1525-1878 psi
FLW:934-1061 gpm
TRQ:3367-10398 lb*ft

SANDSTONE-3:med dk gy,brn gy-olv
gy,fri,v f-f grnd,wl srtld,sbang-sbrnd,
sbsph,tr-5% dk cly mtx,5-10% lith &
carb mat,nl-v pr vis por,no hydc fluor.

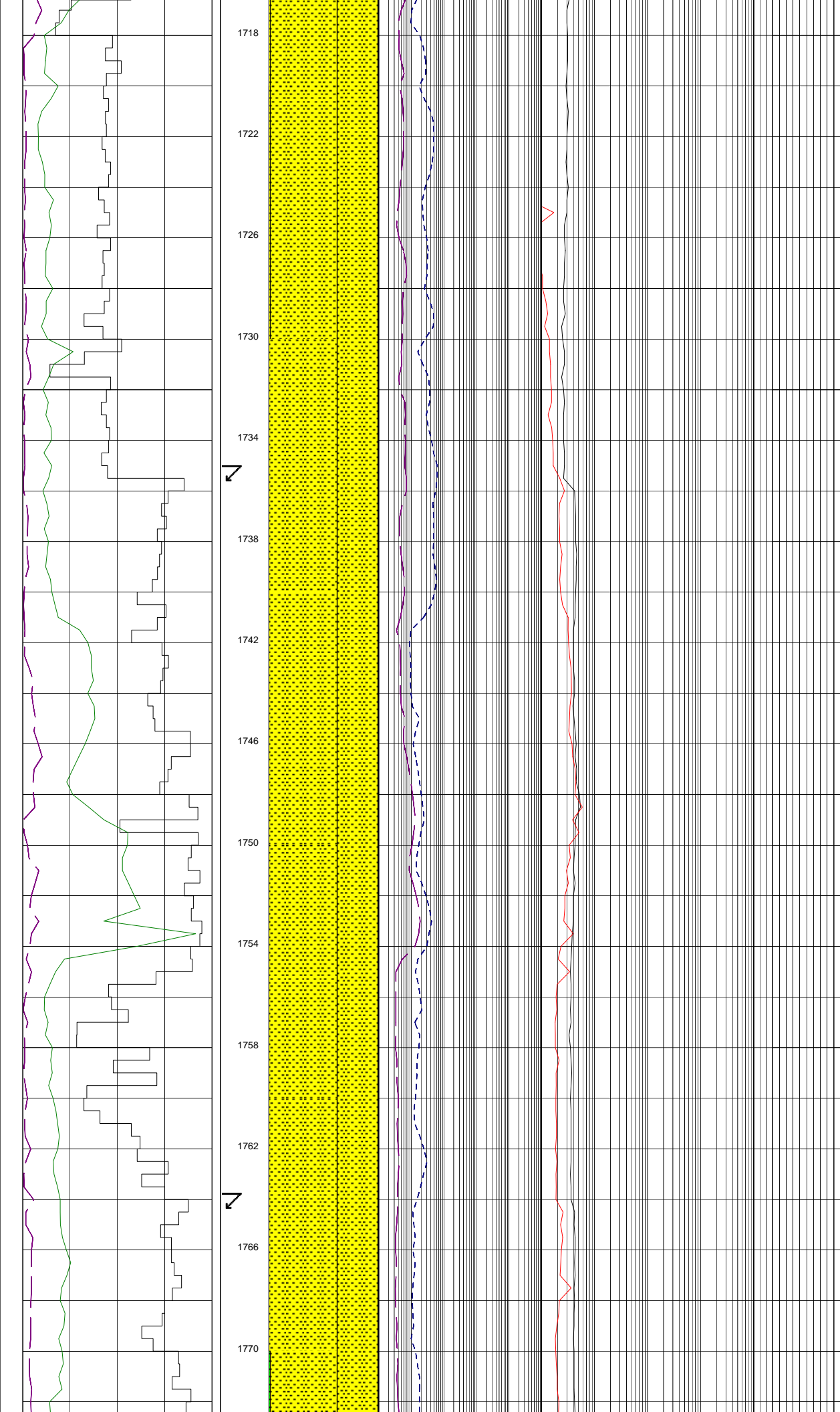
SURVEY @ 1678.18mMDRT
INC:4.79° AZI:86.77°

SANDSTONE:clr,opq,lse qtz grn,
10% f,30% med,35% crs,20% v crs,
5% gran,pr srtld,sbang-rnd,sbsph-
sph,tr gnsh gy & dk gy qtze grn,tr lith
frag,tr dk carb grn,tr dism & nod pyr,
inf fr por,no hydc fluor.

SANDSTONE-2:clr,opq,pl yelsh brn,
lt olv gy,fri-frn,90% f,10% med,mod
wl srtld,sbang-sbrnd,sbsph-sph,
tr calc cmt,tr lith frag,tr dk carb grn,
pr-fr vis por,no hydc fluor.

SURVEY @ 1706.44mMDRT
INC:4.36° AZI:90.56°

SANDSTONE-3:med dk gy,brnsh gy-olv
av fri v f-f grnd wl srtld sbang-sbrnd



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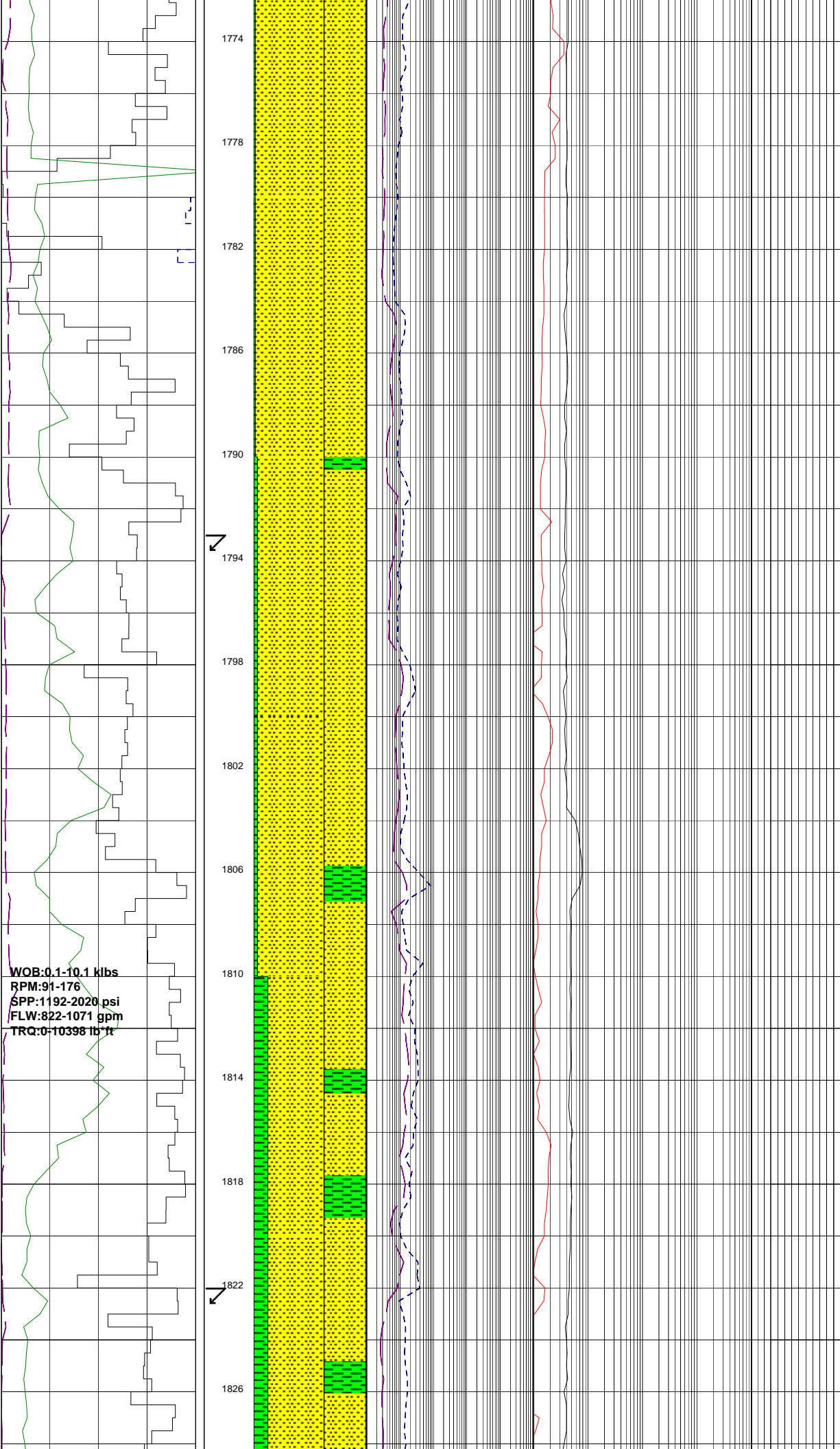
1770

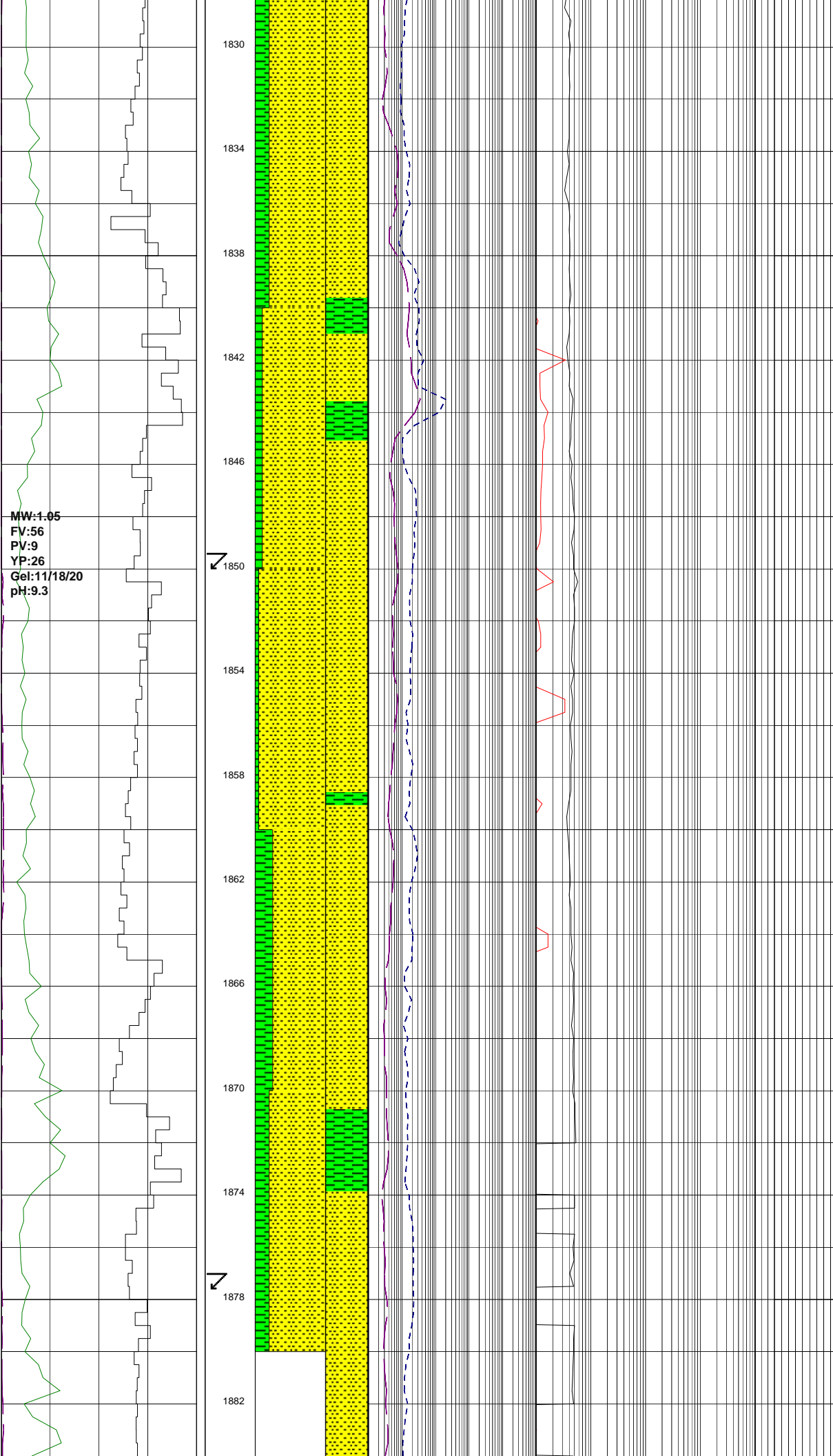
SURVEY @ 1735.75mMDRT
INC:4.73° AZI:90.49°

SANDSTONE:clr,opq,lse qtz gm,
20% f,50% med,30% crs,tr v crs,
pr-mod srted,sbang-rnd,sbsph-sph,
tr gnsh gy & dk gy qtze gm,tr lith
frag,tr dk carb gm,tr dism & nod
pyr,inf fr por,no hydc fluor.

SURVEY @ 1763.25mMDRT
INC:6.50° AZI:88.73°

SANDSTONE:clr,opq,transl,gysh org-
pl yelsh brn,lse qtz gm,20% f,50%
med,20% crs,30% tr,mod srted





MW:1.05
FV:56
PV:9
YP:26
Gel:11/18/20
pH:9.3

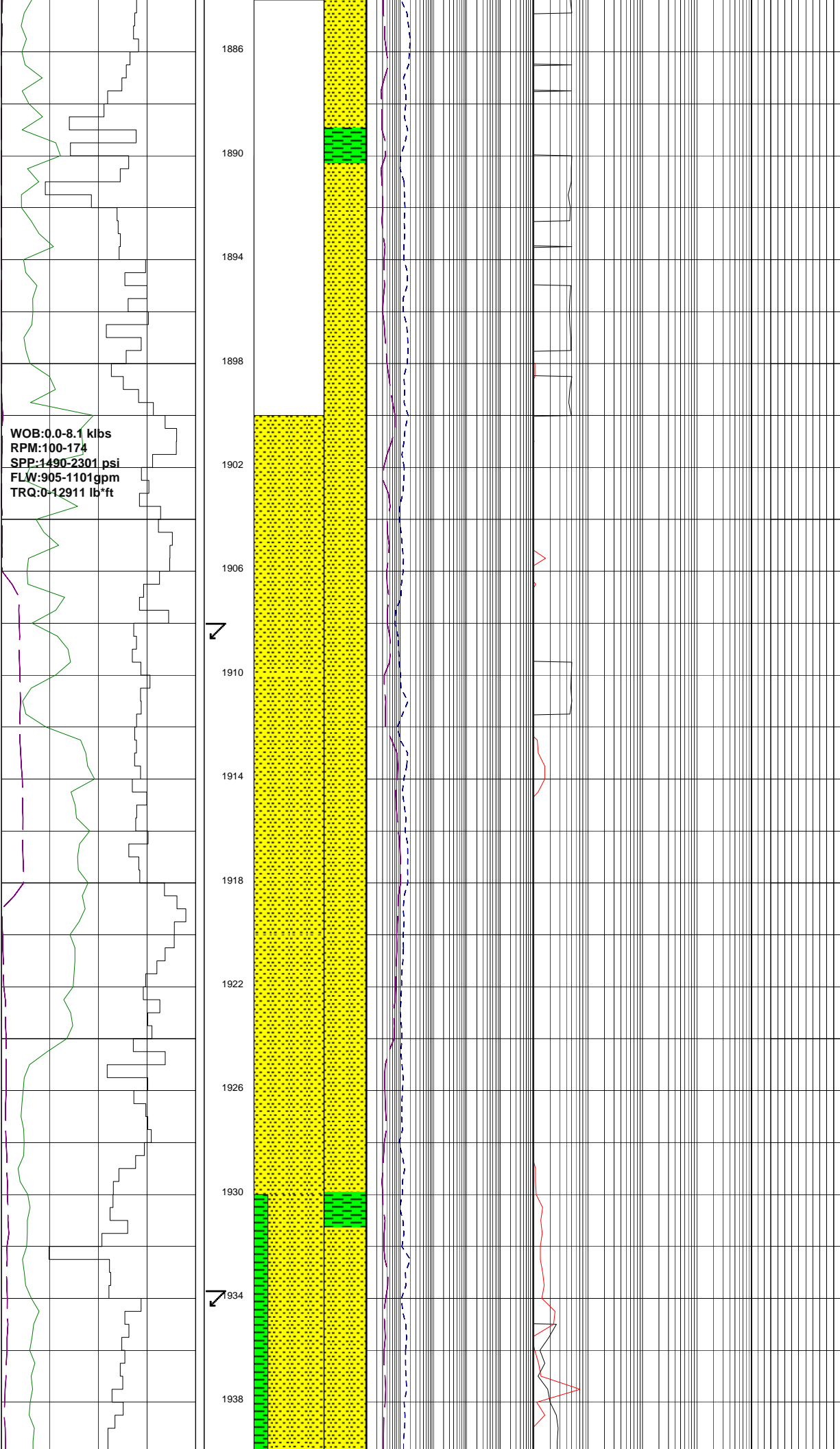
SANDSTONE:clr,opq,transl gysh org
-pl yelsh brn,lse qtz grns,10% f,50%
med,30% crs,10% v crs,tr gran,pr
srted,sbang-rnd,sbsph-sph,tr gnsh gy
& dk gy qtz grn,tr lith frag,tr dk carb
grn,tr-1% dism & nod pyr,inf fr por,
no hydc fluor.

SURVEY @ 1849.35mMDRT
INC:9.05° AZI:92.49°

SANDSTONE-2:pl yelsh brn,lt olv gy,
fri-frn,v f-f grnd,wl srted,sbang-sbrnd,
sbsph,tr-5% wh cly mtx,tr lith & carb
mat,nl-v pr vis por,no hydc fluor.

CLAYSTONE:tr pl-dk yelsh brn,med
dk-dk gy,olv blk,sft-frn,amor,sbblky-
blky,stky,v disp,tr mica flk,tr carb
mat,tr alt fld.

SURVEY @ 1877.24mMDRT
INC:9.66° AZI:97.18°



WOB:0.0-8.1 klbs
RPM:100-174
SPP:1490-2301 psi
FLW:905-1101gpm
TRQ:0-12911 lb*ft

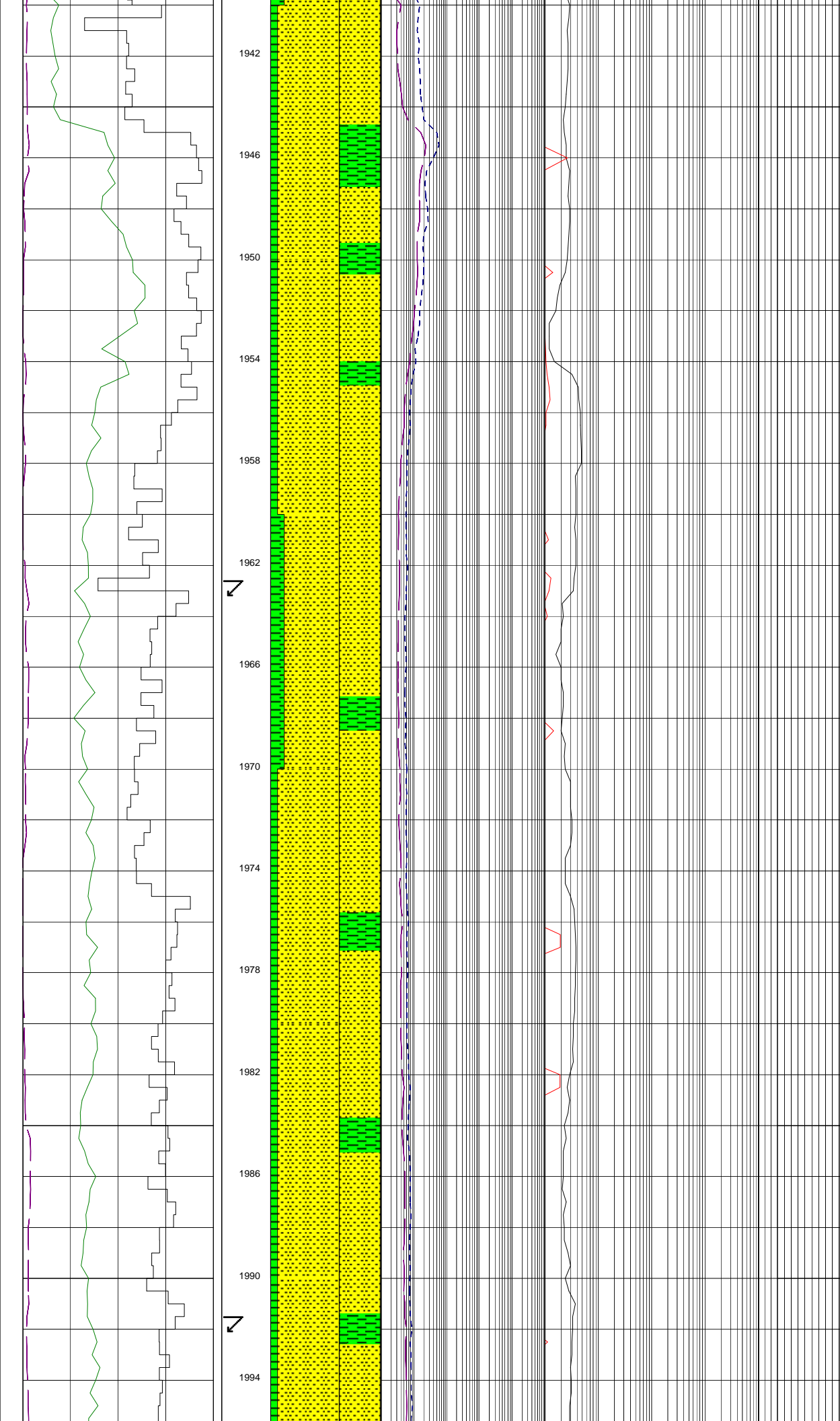
Samples 1890 & 1900m missed
No access to shakers while
pressure testing cement line.

SANDSTONE:clr.opq,transl gysh org-
pl yelsh brn,lse qtz grn,20% f,70%
med,10% crs,tr v crs,pr srtd,sbang-
rnd,sbsph-sph,tr gnsh gy & dk gy
qtze grn,tr lith frag,tr dk carb grn,tr
nod pyr,inf fr por,no hydc fluor.

SURVEY @ 1907.73mMDRT
INC:9.84° AZI:99.51°

SANDSTONE-2:pl yelsh brn,lt olv gy,
lse,frm-hd agg,v f-f grnd,wl srtd,sbang-
sbrnd,sbsph-sph,tr-10% wh cly mtx,tr
lith & carb mat,nl-pr vis por,no hydc
fluor.

SURVEY @ 1933.73mMDRT
INC:8.98° AZI:99.38°



CLAYSTONE:tr pl-dk yelsh brn,med
dk-dk gy,olv blk,sft frm,amor,sbbiky
-blky,stky,v disp,tr mica flk,tr carb
mat,tr alt fld.

SANDSTONE:clr,opq,transl gysh org-
pl yelsh brn,lse qtz grn,20% f,70%
med,10% crs,tr v crs,tr gran,pr srted,
sbang-rnd,sbsph-sph,tr gnsh gy & dk
gy qtze grn,tr lith frag,tr dk carb grn,
tr nod pyr,inf fr por,no hydc fluor.

SURVEY @ 1962.59mMDRT
INC:9.82° AZI:93.22°

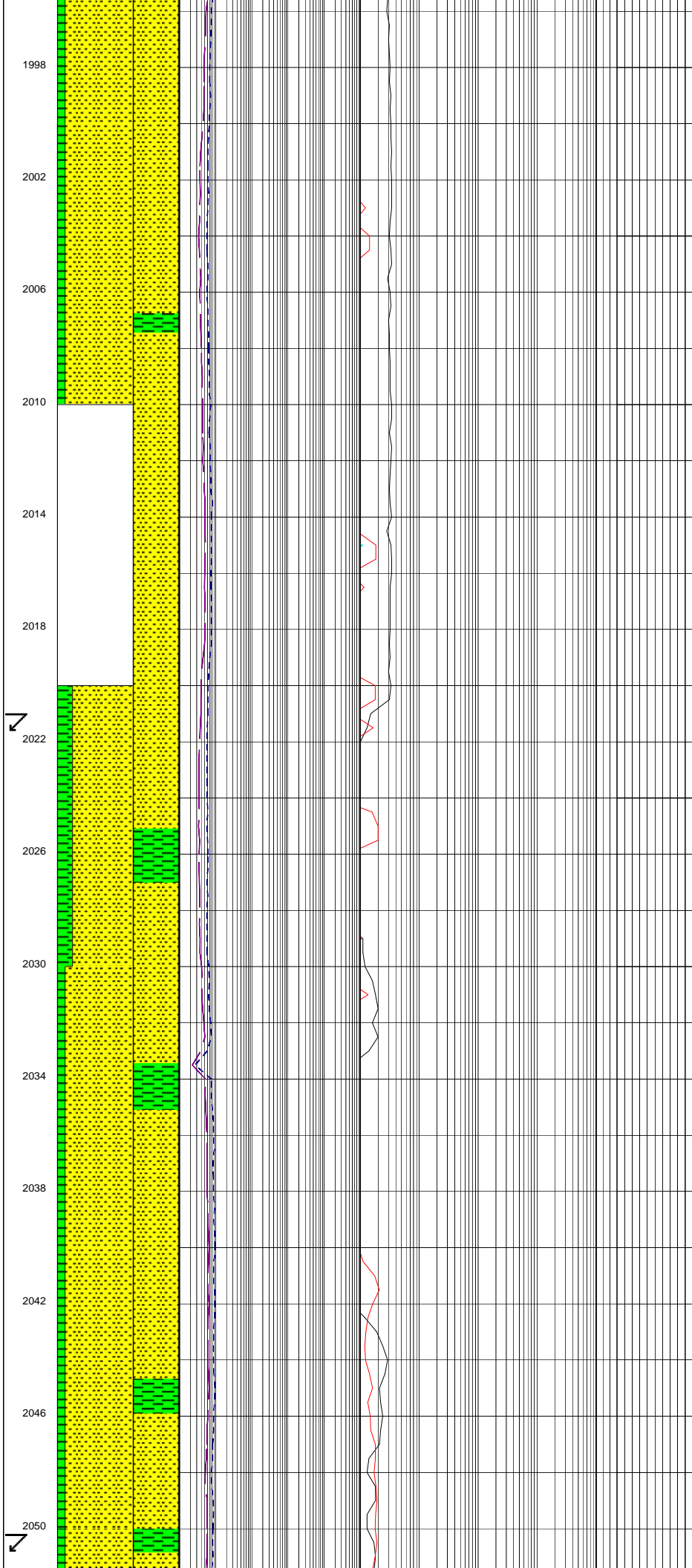
SANDSTONE-2:pl yelsh brn,lt olv gy,
lse,40% vf,60% f,wl srted,sbang-sbrnd,
sbsph-sbelng i/p,tr dk cly mtx,tr blk
& dk rd lith grn,tr carb mat,tr nod &
dism pyr,nl-pr vis por,no hydc fluor.

SURVEY @ 1991.52mMDRT
INC:10.86° AZI:79.55°

WOB:0.0-16.3 klbs
RPM:99-171
SPP:1363-1827 psi
FLW:902-1016 gpm
TRQ:0-10250 lb*ft

27-02-14

MW:1.05
FV:56
PV:9
YP:26
Gel:11/18/20
pH:9.3



CLAYSTONE:tr pl-dk yelsh brn,med
dk-dk gy,olv blk,sft frm,amor,sbblky
-blky,stky,v disp,tr mica flk,tr carb
mat,tr alt fld.

Samples Washed away at shakers.

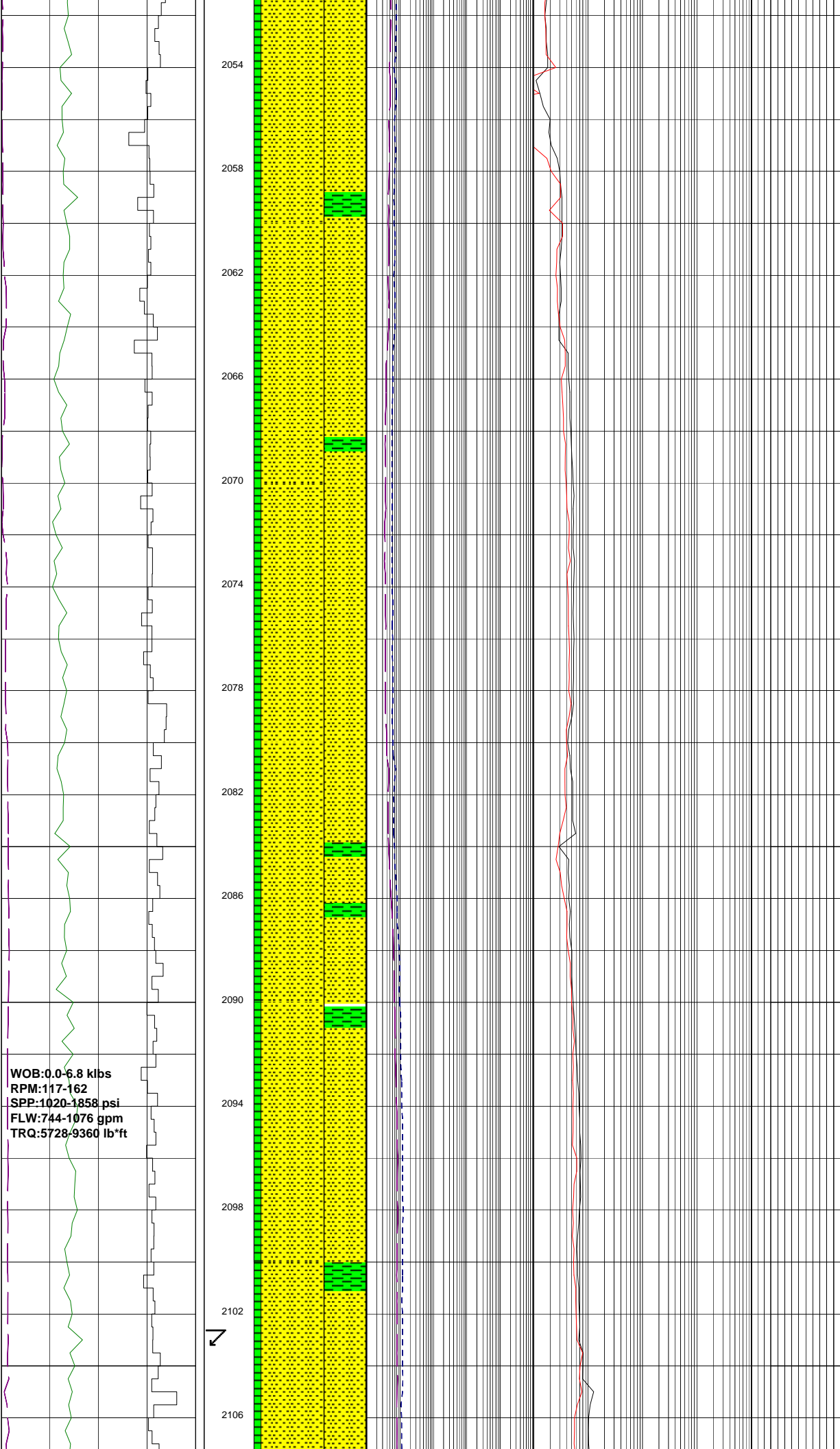
SURVEY @ 2020.98mMDRT
INC:11.40° AZI:79.05°

SANDSTONE-2:clr,opq,dk-pl yelsh brn,
lt olv gy,lse,40% v f,60% f,wl srtd,
sbang-sbrnd,sbsph-sbelng i/p,tr dk cly
mtx,tr blk & dk rd lith grn,tr carb mat,
tr nod & dism pyr,nl-v pr vis por,no hydc
fluor.

CLAYSTONE:tr pl-dk yelsh brn,med
dk-dk gy,olv blk,sft frm,amor,sbblky
-blky,stky,v disp,tr mica flk,tr carb
mat,tr alt fld.

SURVEY @ 2050.25mMDRT
INC:11.56° AZI:79.44°

WOB:0.0-6.8 klbs
RPM:117-162
SPP:1020-1858 psi
FLW:744-1076 gpm
TRQ:5728-9360 lb*ft



SANDSTONE-2:clr.opq,dk-pl yelsh brn,
lt olv gy,lse,40% v f,60% f,wl srtd,
sbang-sbrnd,sbsph-sbelng i/p,tr dk cly
mtx,tr blk & dk rd lith grn,tr carb mat,
tr nod & dism pyr,ni-v pr vis por,no hydc
fluor.

CLAYSTONE:tr pl-dk yelsh brn,med
dk-dk gy,olv blk,sft-frm,amor,sbblky
-blky,stky,v disp,tr mica flk,tr carb
mat,tr alt fld.

CLAYSTONE:olv blk-brn blk,sft-frm,
amor,v disp,10% calc cly,occ tr mic
flk,tr micmica,tr carb mat,tr alt fld.

SURVEY @ 2106.46mMDRT
INC:12.59° AZI:81.56°

SANDSTONE:clr,tr pl brn,olv gy,brn
blk-olv blk,fri-mod hd,lse i/p,v f-f grnd,
tr med-crs grn,wl srtd,sbang-sbrnd,
sbsph-sbelng,tr-10% dk disp arg mtx,
tr dk lith grn,tr-2% glauc grn,tr-1% nod
& dism pyr,inf pr-fr por,no hydc fluor,
grdg i/p-ARGILLACEOUS SANDSTONE

SURVEY @ 2134.14mMDRT
INC:13.06° AZI:82.07°

SANDSTONE:clr,tr pl brn,olv gy,brn
blk-olv blk,fri-mod hd,lse i/p,v f-f,
tr med-crs,wl srtd,sbang-sbrnd,
sbsph-sbelng,tr-10% dk disp arg mtx,
tr dk lith grn,tr-2% glauc grn,tr-1% nod
& dism pyr,inf pr-fr por,no hydc fluor,
grdg i/p-ARGILLACEOUS SANDSTONE

SURVEY @ 2162.35mMDRT
INC:13.53° AZI:81.43°

WOB:0.3-8.4 klbs
RPM:117-182
SPP:1292-2242 psi
FLW:850-1139 gpm
TRQ:0-11634 lb*ft

2166

2170

2174

2178

2182

2186

2190

2194

2198

2202

2206

2210

2214

2218

CLAYSTONE:olv blk-brnsh blk,sft-frm,
amor,v disp,10% calc cly,occ tr mica
flk,tr micmica,tr carb mat,tr alt fld.

Sample missed due to high pressure
testing near the shakers.

SURVEY @ 2190.94mMDRT
INC:13.42° AZI:93.70°

SANDSTONE:clr,pl brn tr,olv gy,brnsh
blk-olv blk,fri-mod hd,lse i/p,v f-f,
tr med-crs grn,wl srted,sbang-sbrnd,
sbsph-sbelng,tr-10% dk disp arg mtx,
tr dk lith grn,tr-2% glauc grn,tr-1% nod
& dism pyr,inf pr vis por,no hydc fluor,
grdg i/p-ARGILLACEOUS SANDSTONE.

CLAYSTONE:olv blk-brnsh blk,sft-frm,
amor,v disp,10% calc cly,occ tr mica
flk,tr micmica,tr carb mat,tr alt fld.

MW:1.06
FV:48
PV:8
YP:23
Gel:10/14/16
pH:9.6

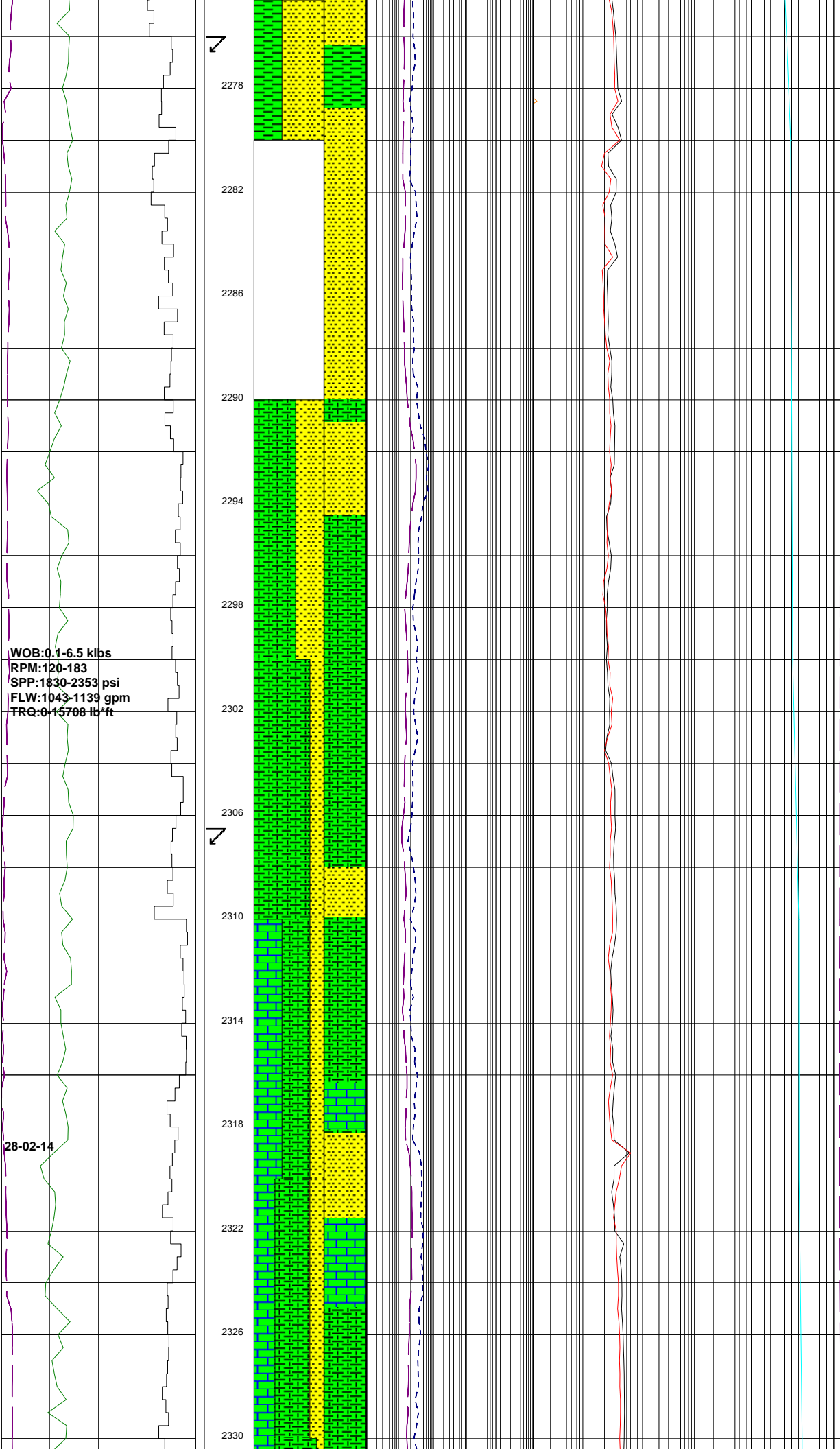
SURVEY @ 2220.63mMDRT
INC:13.86° AZI:95.23°

SANDSTONE:clr,olv gy tr,brnsh blk-olv
blk,fri-mod hd,lse i/p,v f-f,tr med
-crs,wl srted,sbang-sbrnd,sbsph-
sbelng,tr-10% dk disp arg mtx,tr dk
lith grn,tr-2% glauc grn,tr-1% nod &
dism pyr,inf pr vis por,no hydc fluor.

SURVEY @ 2248.30mMDRT
INC:13.44° AZI:90.60°

CLAYSTONE:dk gy,olv gy-olv blk,v
sft-sft,tr amor & stky,sblky-sbfis,
10%-15% calc cly,tr carb mat,
tr glauc grn,tr micmica,tr alt fld.

Samples washed away at shakers.



SURVEY @ 2276.41mMDRT
INC:14.03° AZI:90.17°

Samples washed away at shakers.

SANDSTONE:clr,olv gy,brnsh blk-olv blk,
fri-mod hd,lse i/p,v f-f,tr med & crs,
wl srted, sbang-sbrnd,sbsph-sbelng,tr-
10% dk disp arg mtx,tr dk lith grn,tr-
2% glauc grn,tr-1% nod & dism pyr,
inf pr vis por,no hydc fluor.

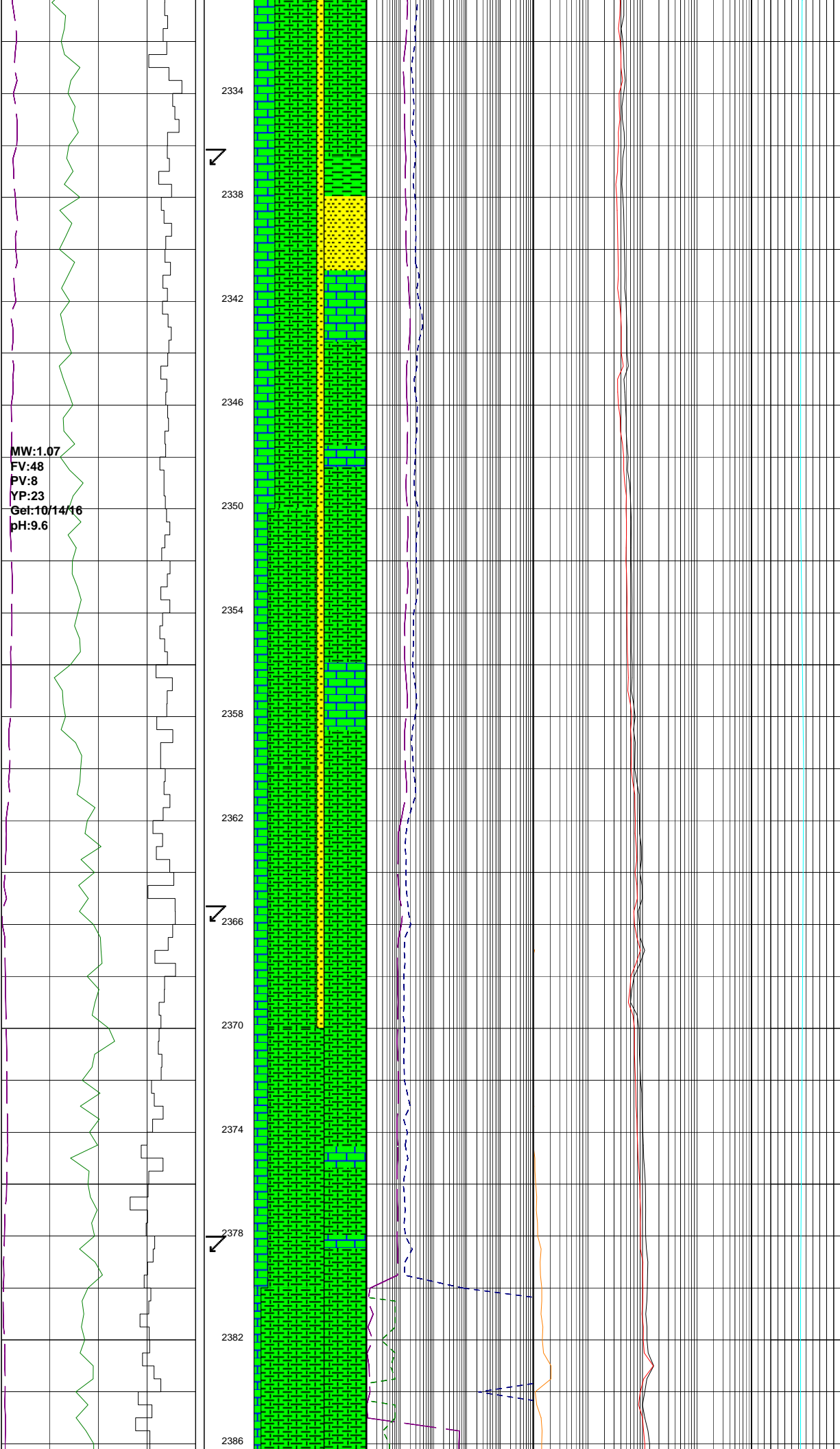
WOB:0.1-6.5 klbs
RPM:120-183
SPP:1830-2353 psi
FLW:1043-1139 gpm
TRQ:0-15708 lb*ft

SURVEY @ 2306.52mMDRT
INC:14.71° AZI:90.48°

CALCAREOUS CLAYSTONE:
med dk gy-dk gy,brnsh blk-olv blk,
v sft-frm,amor & stky,sbbiky,20-25%
calc cly,tr micmica,tr carb mat,tr
glauc grn,tr alt fld.

28-02-14

CALCILUTITE:med gy,lt brnsh gy,
wh,sft,amor,stky,5% cly.



MW:1.07
FV:48
PV:8
YP:23
Gel:10/14/16
pH:9.6

SURVEY @ 2336.14mMDRT
INC:14.34° AZI:87.42°

CALCAREOUS CLAYSTONE:
med dk gy-dk gy,brnsh blk-olv blk,
v sft-frn,amor & stky,sbblky,20-25%
calc cly,tr micmica,tr carb mat,tr
glauc grn,tr alt fld.

SURVEY @ 2365.28mMDRT
INC:14.72° AZI:87.20°

CALCAREOUS CLAYSTONE:
med dk gy-dk gy,brnsh blk-olv blk,
v sft-frn,amor & stky,sbblky,25-30%
calc cly,tr micmica,tr carb mat,tr
glauc grn,tr alt fld.

SURVEY @ 2378.45mMDRT
INC:15.11° AZI:87.40°

WOB:0.0-8.4 klbs
RPM:99-176
SPP:1474-2187 psi
FLW:901-1124 gpm
TRQ:0-14564 lb*ft

28-02-14

28-08-14

Bit #3: MSi713 HLBPX
S/N: JJ6086
SIZE: 12.25"
JETS: 3x13, 7x14
IN: 2407.0m OUT:4312.0m
RUN: 1905.0m HRS:77.40
COND:1-2-BT-G-X-1/16-CT-TD

MW:1.40
FV:100
PV:31
YP:15
Gel: 9/11/14

2390

2394

2398

2402

2406

2410

2414

2418

2422

2426

2430

2434

2438

2442

CALCILUTITE:med gy,lt brnsh gry,
wh,sft,amor,stk,5% cly.

13 3/8" CSG SHOE @ 2397.4mMDRT.

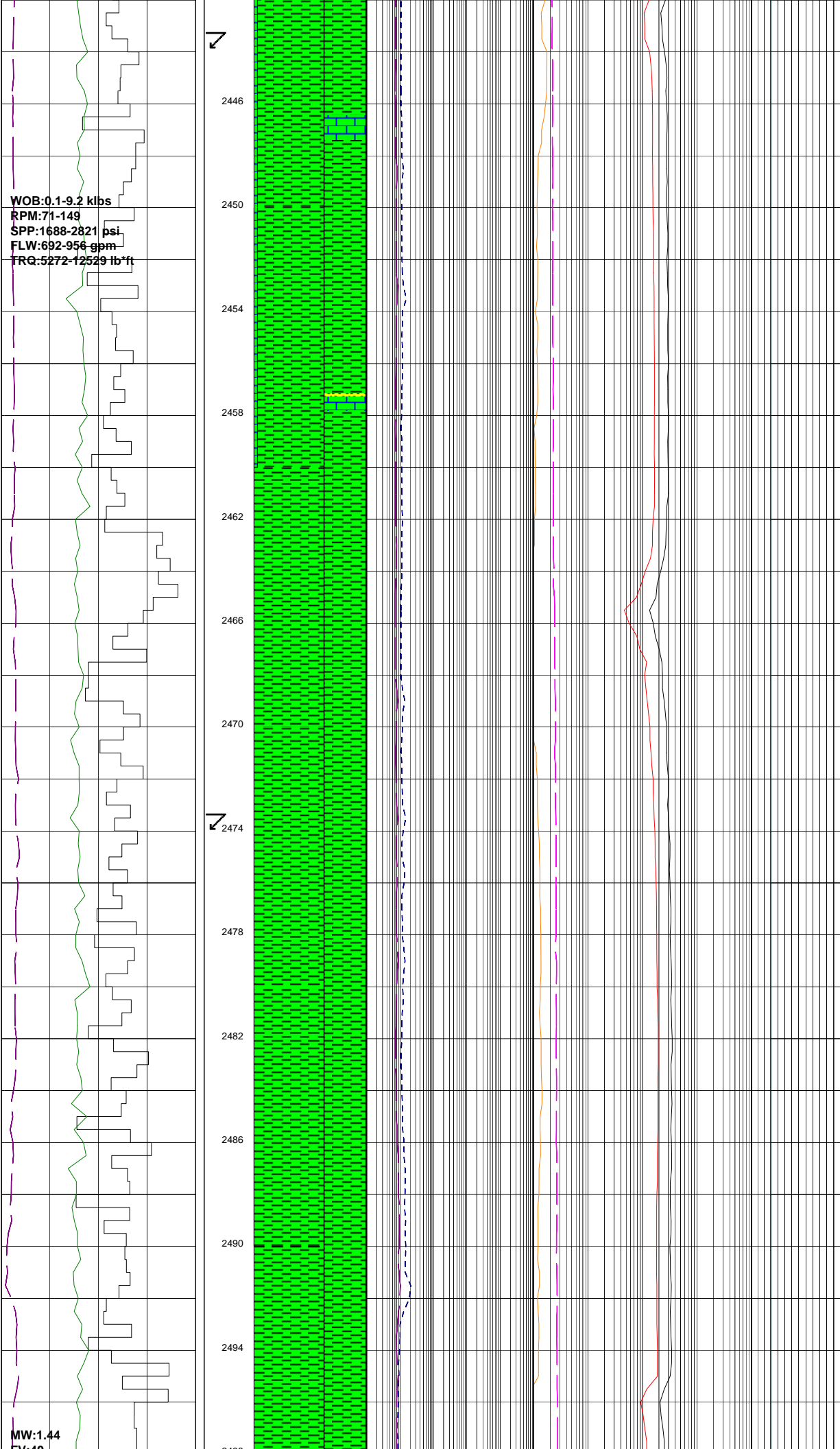
17 1/2" Section TD @ 2407.0mMDRT.

SURVEY @ 2414.66mMDRT
INC:14.84° AZI:87.56°

CLAYSTONE:gysh blk-olv blk,med
dk gy,tr brnsh blk,frm-mod hd,sft i/p,
blky-sbblky,i/p amor,tr-5% slt,10-i/p
20% calc cly,tr carb spk,tr micmica,i/p
bcmg CALCAREOUS CLAYSTONE.

CLAYSTONE:gysh blk-olv blk,
med dk gy,tr brnsh blk,frm
-mod hd,sft i/p,blky-sbblky,
i/p amor,tr-5% slt,5-10%
calc cly,tr carb spk,
tr micmica.

SURVEY @ 2443.25mMDRT
INC:15.49° AZI:89.39°



FV:40
PV:20
YP:80
Gel:10/17/17

2498



2502

2506

2510

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2542

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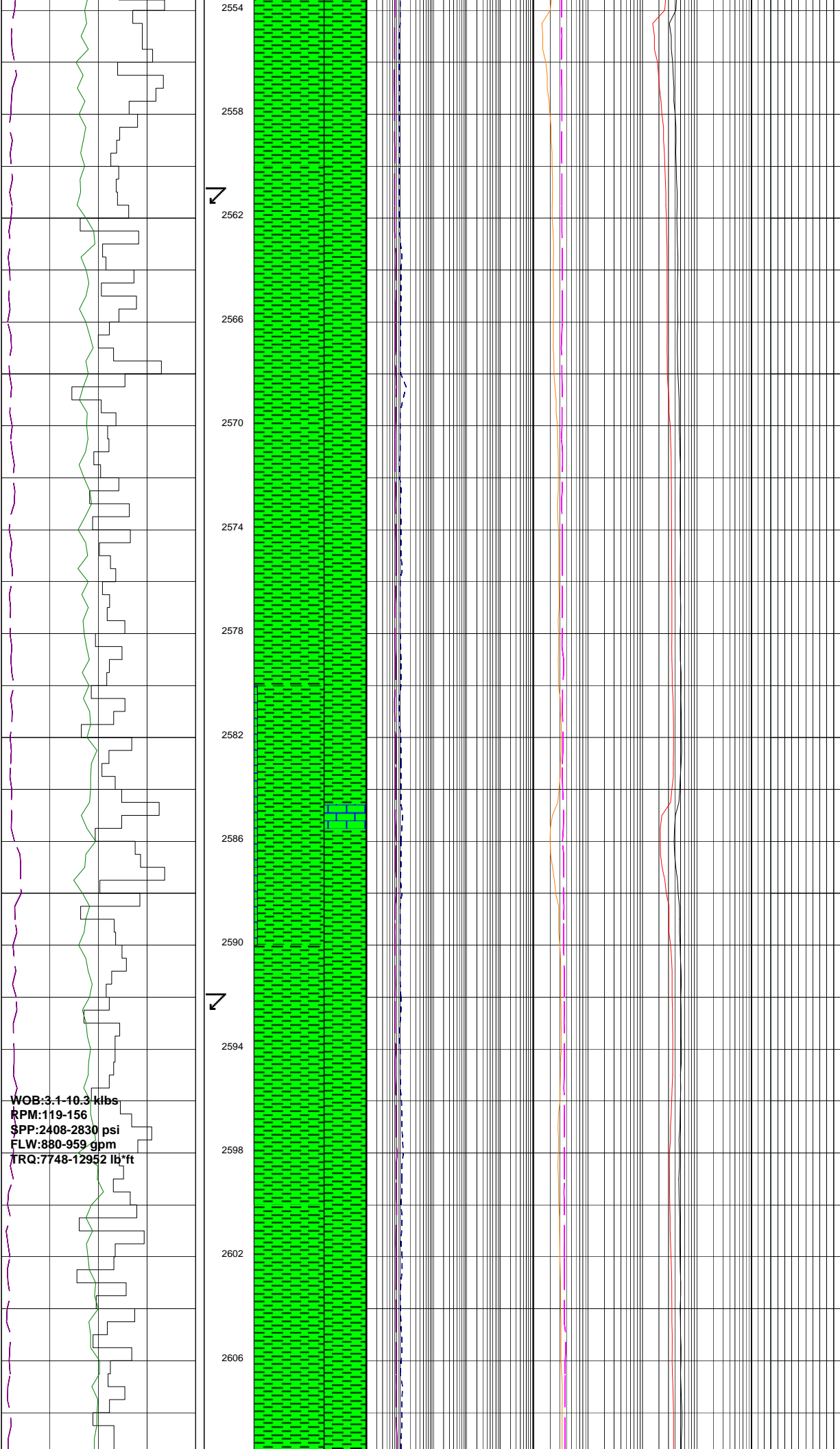
SURVEY @ 2503.98mMDRT
INC:17.14° AZI:88.88°

CLAYSTONE:gysh blk-olv blk,med
dk gy,frm-mod hd,sft i/p,sbblky,i/p
amor,blky,tr-5% slt & tr v f sd grn,
10-15% calc cly,tr carb spk,tr
micmica.

CALCILUTITE:med gy-med lt gy,
wh,lt brnsh gy,frm-mod hd,sbblky,
5% cly.

SURVEY @ 2534.02mMDRT
INC:17.11° AZI:89.25°

CLAYSTONE:gysh blk-olv blk,med dk
gy,frm-mod hd,sft i/p,sbblky,i/p amor,
blky,tr-5% slt & tr v f sd grns,10-15%
calc cly,tr carb spk,tr micmica.



CALCILUTITE:med gy-med lt gy,
wh,lt brnsh gy,frm-mod hd,sbblky,tr
calc slt,5% cly.

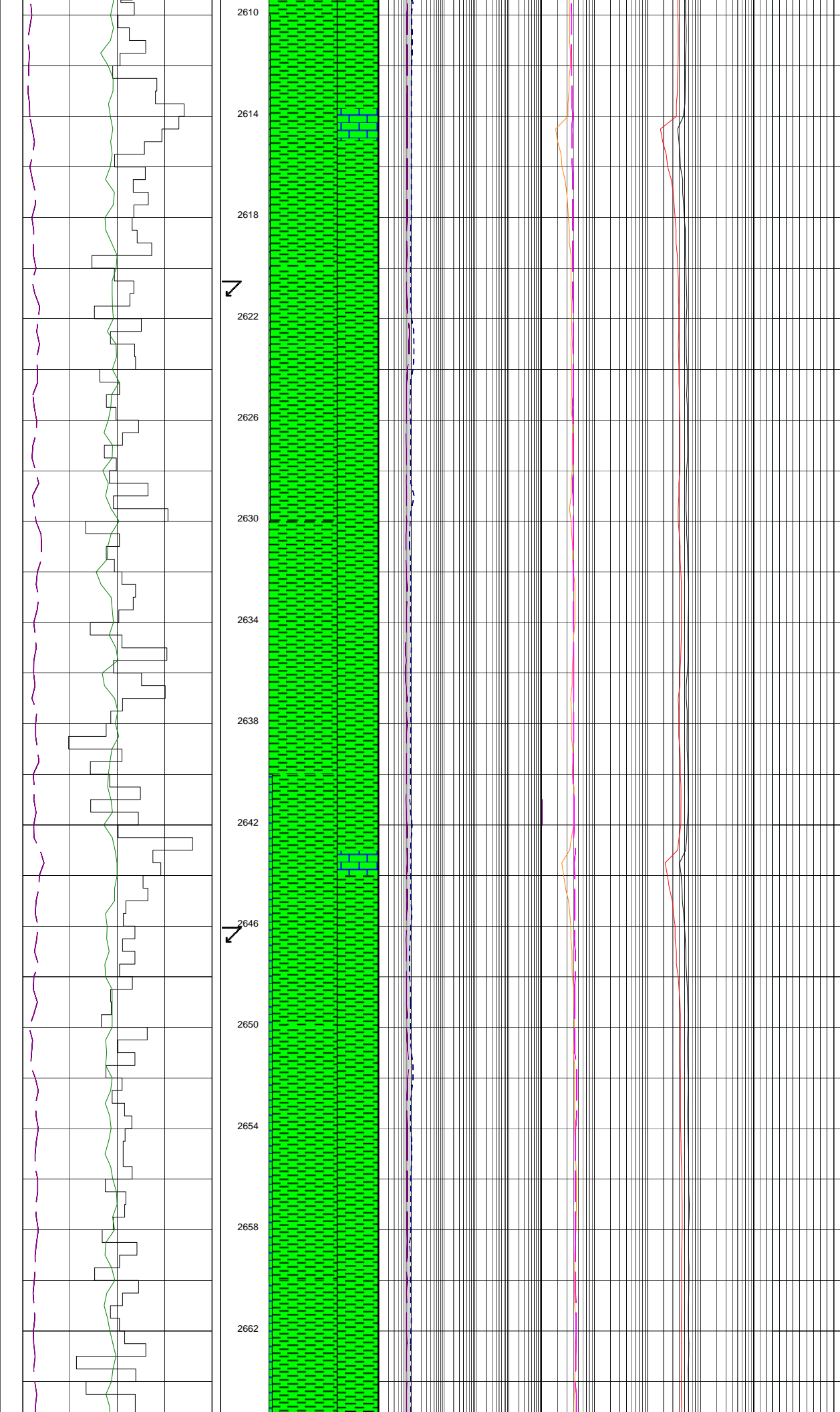
SURVEY @ 2563.48mMDRT
INC:17.39° AZI:89.07°

CALCILUTITE:med gy-med lt gy,lt
brnsh gy,frm-mod hd,sbblky,tr calc
slt,5%-i/p 20% cly & grdg-
ARGILLACEOUS CALCILUTITE.

SURVEY @ 2591.87mMDRT
INC:17.02° AZI:89.73°

CLAYSTONE:gysh blk-olv blk,med dk
gy,frm-mod hd,sft i/p,sbblky,i/p amor,
blk,y,tr-5% slt,10-15% calc cly,tr carb
spk,tr fos frag,tr micmica.

WOB:3.1-10.3 klbs
RPM:119-156
SPP:2408-2830 psi
FLW:880-959 gpm
TRQ:7748-12952 lb*ft



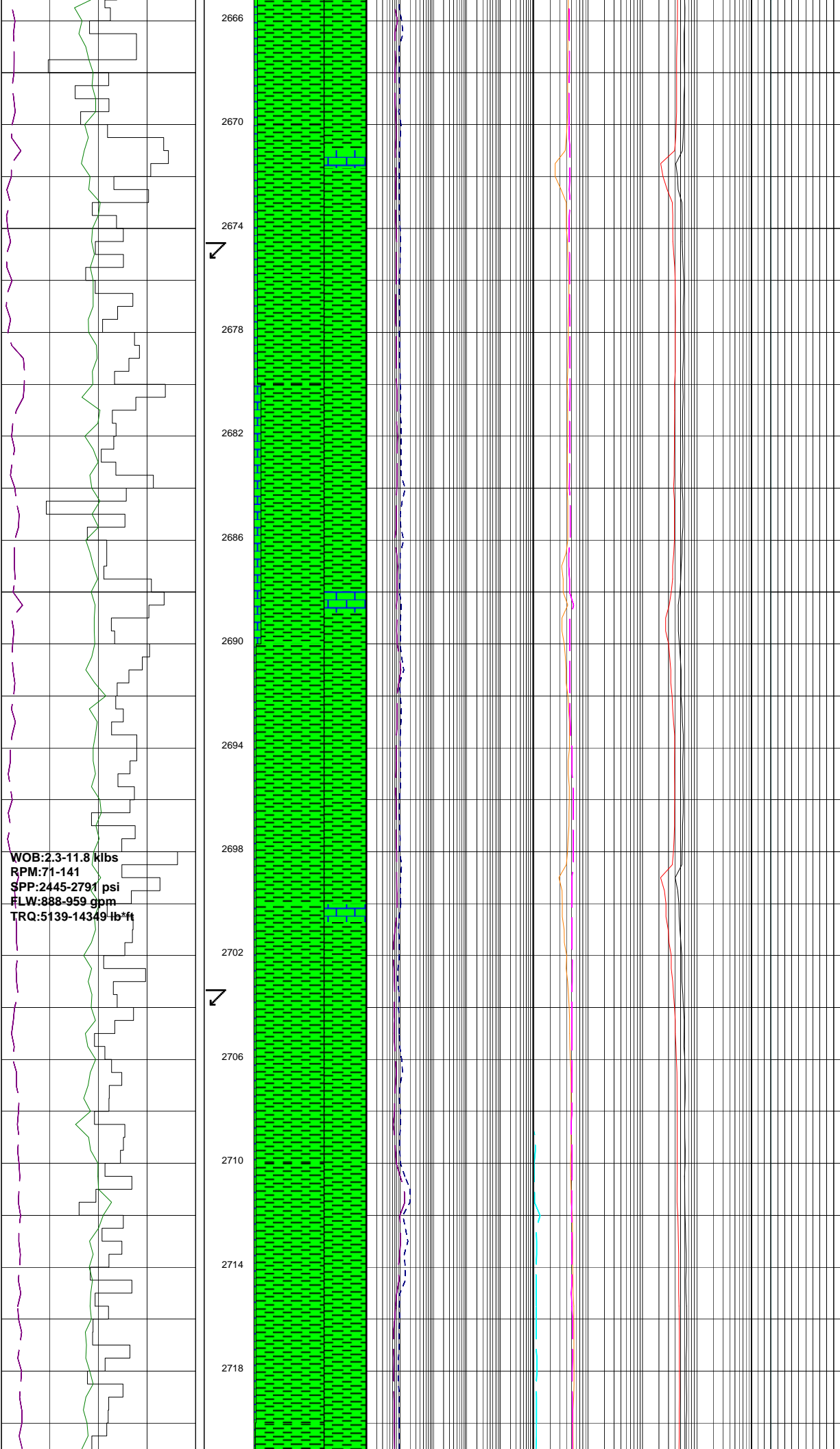
SURVEY @ 2620.48mMDRT
INC:17.47° AZI:90.86°

CLAYSTONE:gysh blk-olv blk, med dk
gy,frm-mod hd,sft i/p,sbblky,i/p amor,
blky,tr-5% slt,5-10% calc cly,tr carb
spk,tr micmica.

SURVEY @ 2648.35mMDRT
INC:17.35° AZI:91.15°

CALCILUTITE:med gy-med lt gy,lt brnsh
gy,frm-mod hd,sbblky,tr-5% calc slt,tr
carb mat,5% i/p 20% cly grdg
-ARGILLACEOUS CALCILUTITE.

CLAYSTONE:gysh blk-olv blk, med dk



Z

SURVEY @ 2675.79mMDRT
INC:17.21° AZI:92.00°

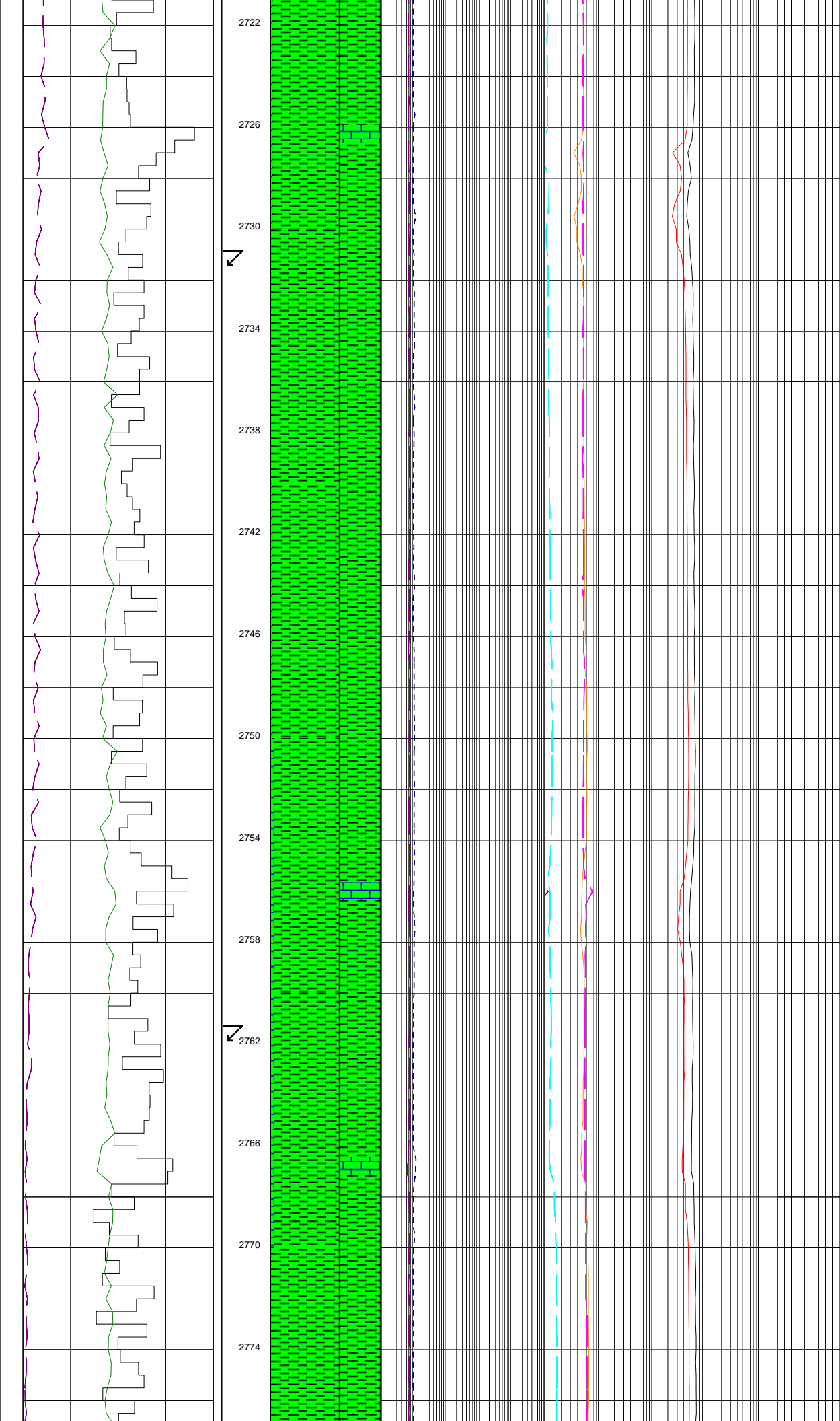
Z

SURVEY @ 2704.54mMDRT
INC:17.30° AZI:91.34°

WOB:2.3-11.8 klbs
RPM:71-141
SPP:2445-2791 psi
FLW:888-959 gpm
TRQ:5139-14349 lb*ft

CALCILUTITE:med gy-med lt gy,lt
brnsh gy,frm-mod hd,sbblky,tr-5%
calc slt,tr carb mat 10%-i/p 20%
cly grdg-ARGILLACEOUS
CALCILUTITE.

CLAYSTONE:gysh blk-olv blk,med dk
gy,i/p brnsh blk,frm-mod hd,sft i/p,
sbblky-blky,i/p amor,tr-5% slt,5-10%
calc cly,tr carb spk,tr micmica.



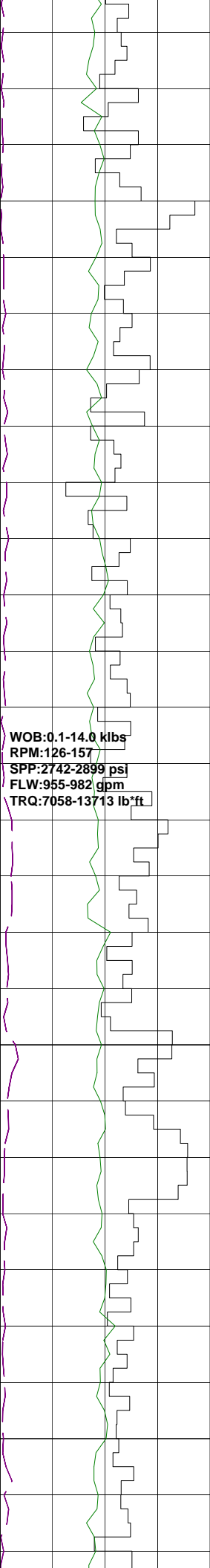
SURVEY @ 2732.94mMDRT
INC:17.30° AZI:90.76°

CLAYSTONE:gysh blk-olv blk,med dk
gy,i/p brnsh blk,frm-mod hd,sft i/p,
sbbiky-blky,i/p amor,tr-5% slt,5-10%
calc cly,tr carb spk,tr micmica.

CALCILUTITE:med gy-med lt gy,lt
brnsh gy,i/p wh,frm-mod hd,sbbiky,
tr-5% calc slt,tr carb mat,10-15%
cly.

SURVEY @ 2762.65mMDRT
INC:17.36° AZI:90.50°

CLAYSTONE:gysh blk-olv blk,med dk
gy,i/p brnsh blk,frm-mod hd,sft i/p ,
sbbiky-blky,i/p amor,tr-5% slt,5-10%
calc cly,tr carb spk,tr micmica.



2778

2782

2786

2790

2794

2798

2802

2806

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2814

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2830

SURVEY @ 2792.73mMDRT
INC:17.12° AZI:89.74°

CALCILUTITE: med gy-med lt gy, lt
brnsh gy, i/p wh, frm-mod hd, sbblky,
tr-5% calc slt, tr carb mat, 10-15%
cly.

CLAYSTONE: gysh blk-olv blk, med
dk gy, i/p brnsh blk, frm-mod hd, sft i/p,
sbblky-blky, i/p amor, tr-5% slt, 5-10%
calc cly, tr carb spk, tr micmica.

SURVEY @ 2822.44mMDRT
INC:17.02° AZI:90.21°

CLAYSTONE: gysh blk-olv blk, med
dk gy, i/p brnsh blk, frm-mod hd, sft i/p,
sbblky-blky, i/p amor, tr-5% slt, 10-15%
calc cly, tr carb spk, tr micmica.

MW:1.44
FV:39
PV:22
YP:71
Gel:11/16/17

2834

2838

2842

2846

2850

2854

2858

2862

2866

2870

2874

2878

2882

2886

CLAYSTONE:gysh blk-olv blk,med
dk gy,frm-mod hd,sft i/p,sbblky-blky,
i/p amor,tr-5% silt,10-15% calc cly,tr
carb spk,tr micmica.

SURVEY @ 2853.16mMDRT
INC:17.16° AZI:89.58°

CLAYSTONE:gysh blk-olv blk,med
dk gy,rr yeish gy,frm-mod hd,sbblky
-blky,tr-5% silt,10-15% calc cly,tr
carb spk,tr micmica.

SURVEY @ 2882.11mMDRT
INC:17.31° AZI:91.05°

WOB:0.0-9.2 klbs
RPM:127-162
\$PP:2555-2956 psi
FLW:906-993 gpm
TRQ:7910-17599 lb*ft

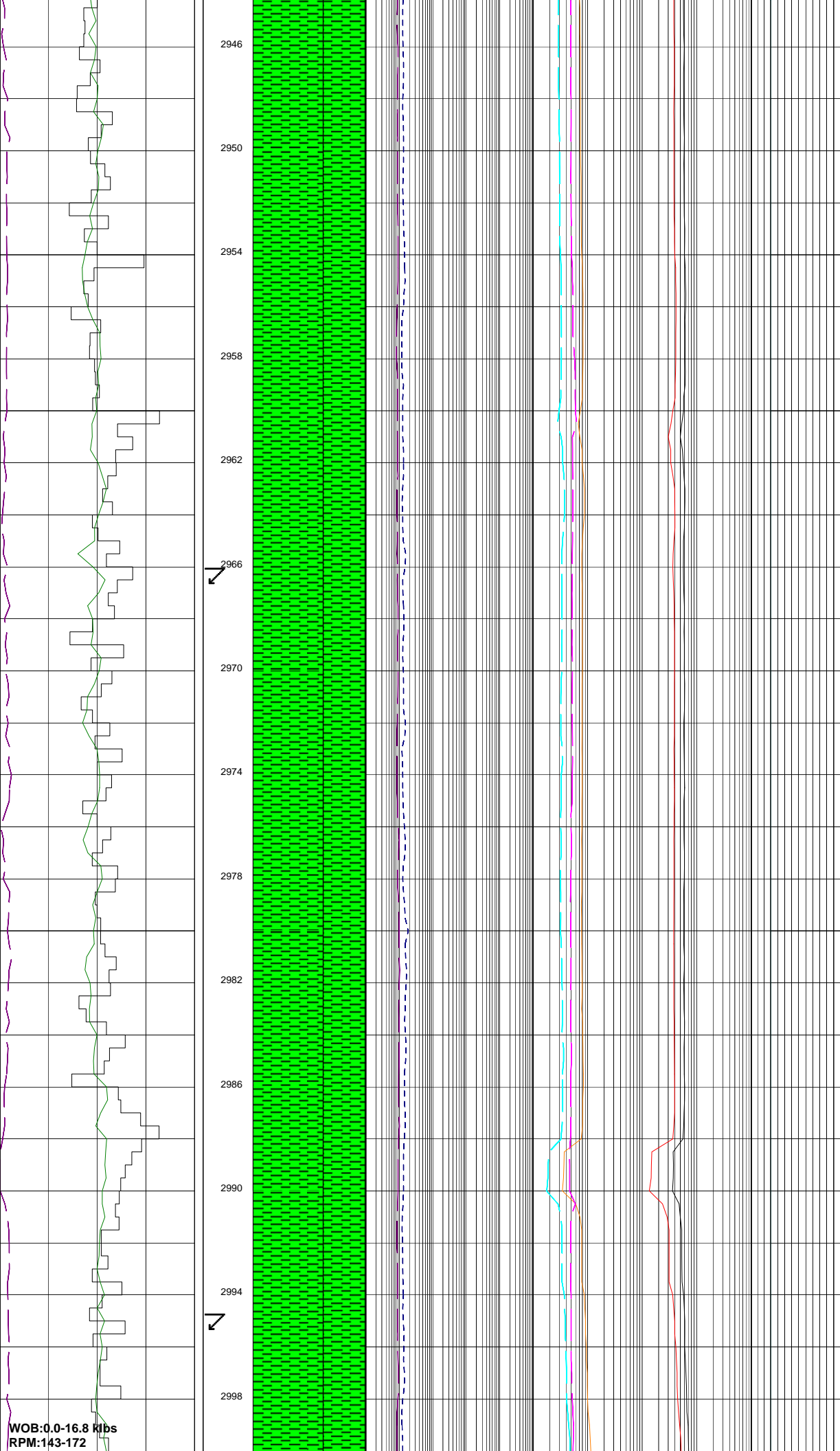
MW:1.44
FV:36
PV:19
YP:78
Gel:11/19/17

CLAYSTONE:gysh blk-olv blk,med
dk gy,rr yelsh gy,frm-mod hd,sbblky
-blky,tr-5% silt,10-15% calc cly,tr
carb spk,tr micmica.

SURVEY @ 2910.08mDRT
INC:17.49° AZI:92.21°

CLAYSTONE:gysh blk-olv blk,med
dk gy,rr yelsh gy,frm-mod hd,sft i/p,
sbblky-blky,i/p amor,tr-5% silt,10-15%
calc cly,tr carb spk,tr micmica.

SURVEY @ 2938.41mDRT
INC:17.50° AZI:93.03°



WOB:0.0-16.8 klbs
RPM:143-172

CLAYSTONE:gysh blk-olv blk,med
dk gy,tr yelsh gy,frm-mod hd,sft i/p,
sbblky-blky,i/p amor,tr-i/p 10% slt,
10-15% calc cly,tr carb spk,tr micmica.

SURVEY @ 2966.05mMDRT
INC:17.01° AZI:92.24°

CLAYSTONE:gysh blk-olv blk,med
dk gy,tr yelsh gy,frm-mod hd,sft i/p,
sbblky-blky,i/p amor,tr-i/p 10% slt,
10-15% calc cly,tr carb spk,tr micmica.

SURVEY @ 2994.73mMDRT
INC:17.34° AZI:93.41°

SPP:2544-2966 psi
FLW:895-987 gpm
TRQ:6416-20143 lb*ft

30-08-14

3002

3006

3010

3014

3018



3022

3026

3030

3034

3038

3042

3046



3050

3054

CLAYSTONE:gysh blk-olv blk,med
dk gy,tr yelsh gy,frm-mod hd,sft i/p,
sbblky-blky,i/p amor,tr-i/p 10% slit,
10-15% calc cly,tr carb spk,tr
micmica.

SURVEY @ 3022.93mMDRT
INC:17.21° AZI:91.94°

CALCILUTITE:lt brnsh gy,yelsh gy,
frm,sbblky,5% calc slit,tr carb mat,
15-20% cly & grdg-ARGILLACEOUS
CALCILUTITE.

SURVEY @ 3051.75mMDRT
INC:17.21° AZI:89.86°

WOB:0.0-9.5 kips
RPM:119-165
SPP:2585-3057/psi
FLW:899-992 gpm
TRQ:6195-17493 lb*ft

3058

3062

3066

3070

3074

3078

3082

3086

3090

3094

3098

3102

3106

3110

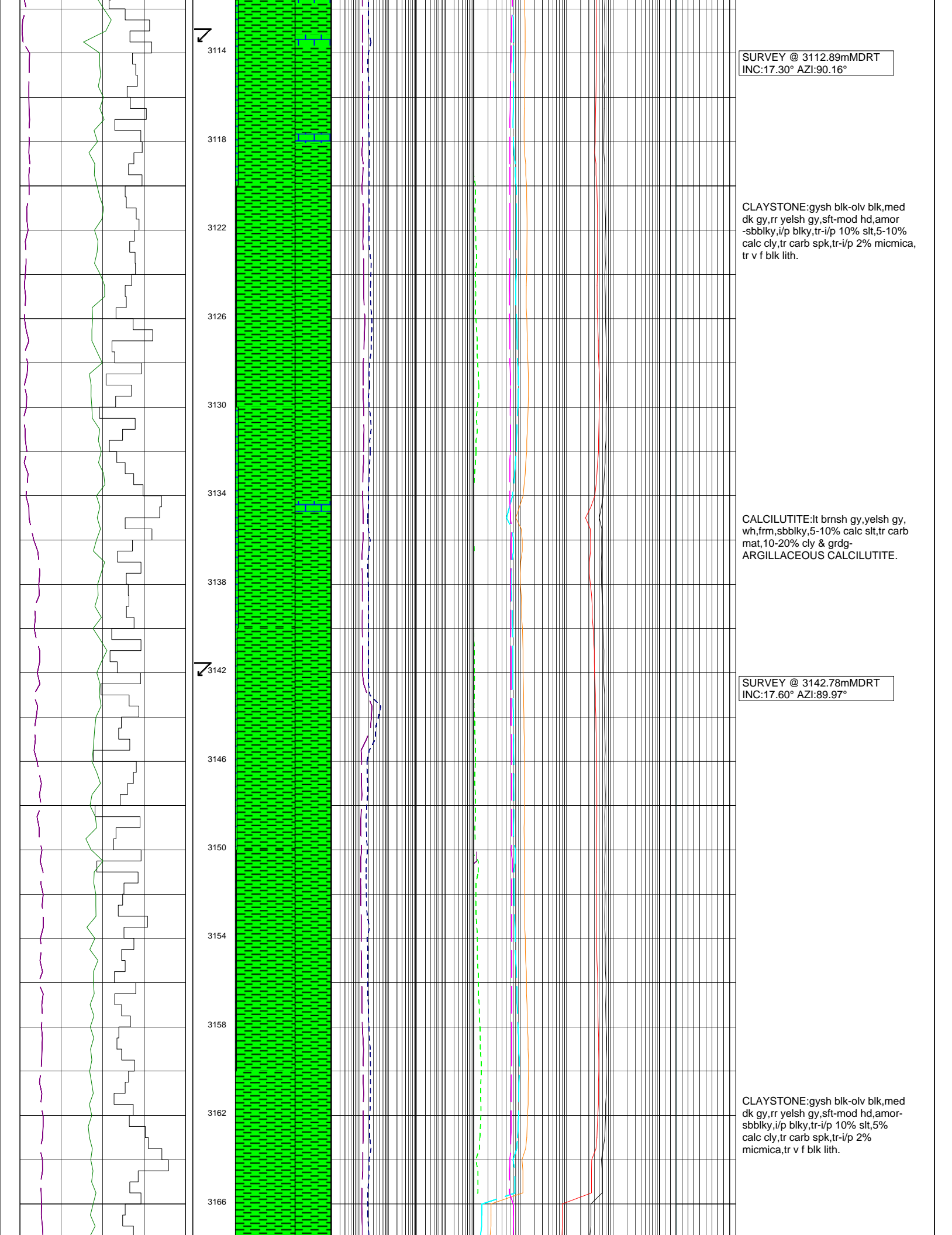
CLAYSTONE:gysh blk-olv blk,med
dk gy,rr yelsh gy,sft-mod hd,amor
-sbbiky,i/p blk,5-10% slt,10-15%
calc cly,tr carb spk,tr micmica.

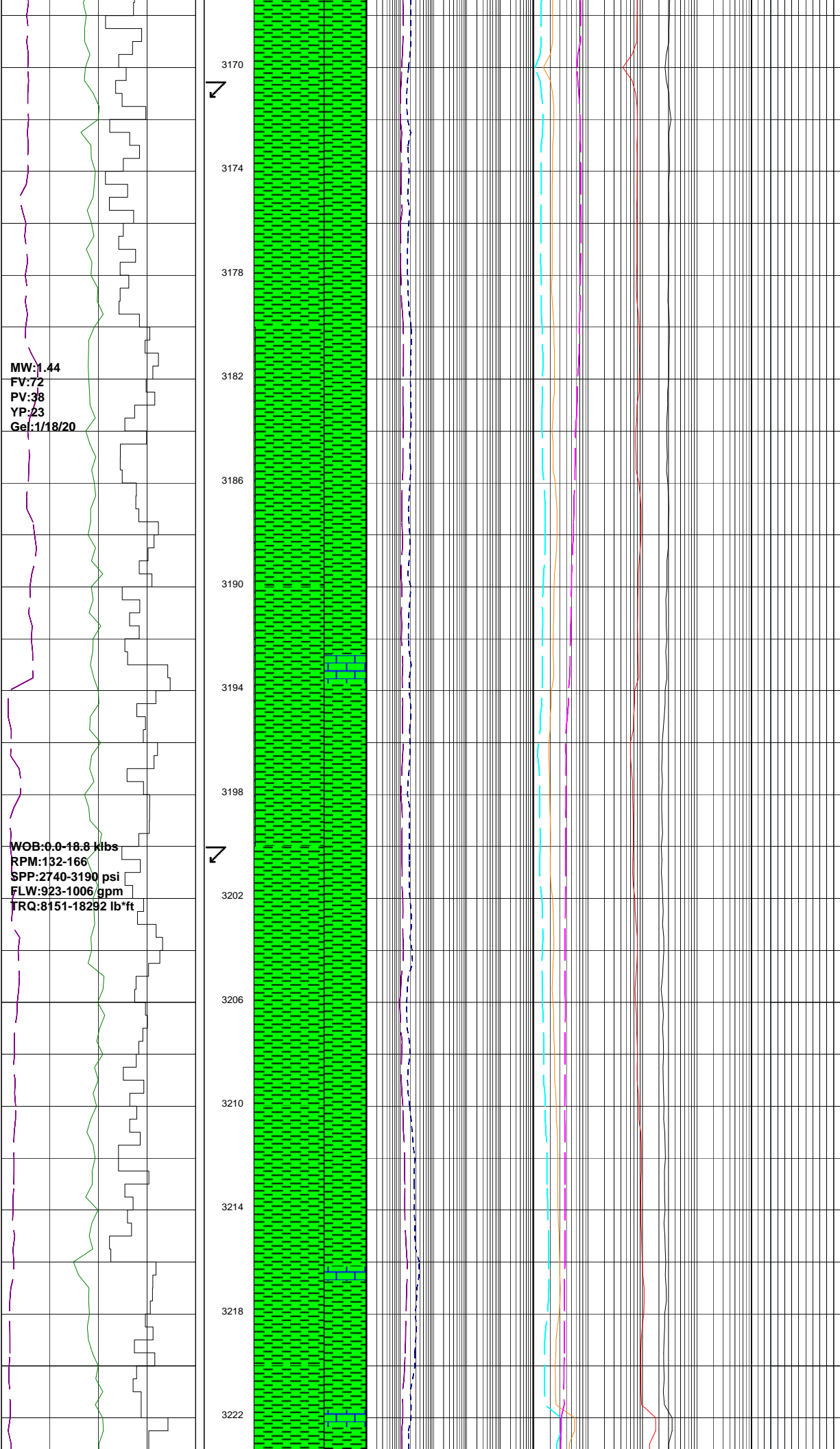
CALCILUTITE:lt brnsh gy,yelsh gy,frm,
sbbiky,5% calc slt,tr carb spk,15-20%
cly & grdg-ARGILLACEOUS
CALCILUTITE.

SURVEY @ 3082.36mMDRT
INC:16.97° AZI:90.62°

CLAYSTONE:gysh blk-olv blk,med
dk gy,rr yelsh gy,sft-mod hd,amor-
sbbiky,i/p blk,5-10% slt,5-10%
calc cly,tr carb spk,tr micmica.

CALCILUTITE:lt brnsh gy,yelsh gy,
frm,sbbiky,5-10% calc slt,tr carb mat,
15-20% cly & grdg-ARGILLACEOUS
CALCILUTITE.





MW:1.44
FV:72
PV:38
YP:23
Ge:1/18/20

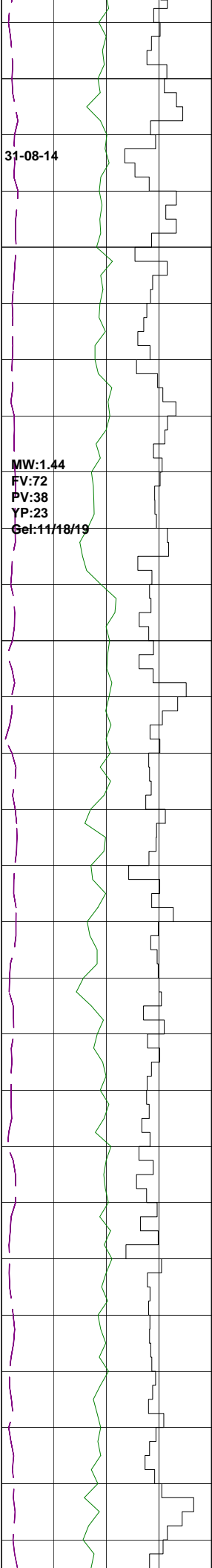
WOB:0.0-18.8 kibs
RPM:132-166
SPP:2740-3190 psi
FLW:923-1006 gpm
TRQ:8151-18292 lb*ft

SURVEY @ 3171.68mMDRT
INC:17.54° AZI:88.13°

CALCILUTITE:lt brnsh gy,yelsh gy,
frm,sbblky,5-10% calc slit,tr carb mat,
10-20% cly & grdg-ARGILLACEOUS
CALCILUTITE.

SURVEY @ 3200.36mMDRT
INC:17.39° AZI:87.76°

CLAYSTONE:gysh blk-olv blk,med
dk gy,rr yelsh gy,sft-mod hd,amor-
sbblky,i/p blk,tr-i/p 10% slit,5%
calc cly,tr carb spk,tr-i/p 2% micmica,
tr v f blk lith.



3226

3230

3234

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3242

3246

3250

3254

3258

3262

3266

3270

3274

3278

SURVEY @ 3225.37mMDRT
INC:17.46° AZI:90.13°

CLAYSTONE:gysh blk-olv blk,med dk gy,frm-mod hd,sbblky,i/p blky,tr-5% slt, tr-5% calc cly,tr carb spk,tr micmica, tr v f blk lith.

CALCILUTITE:yelsh gy,lt brnsh gy frm,sbblky,5-10% cly,tr carb mat.

SURVEY @ 3254.66mMDRT
INC:16.95° AZI:91.28°

ARGILLACEOUS SILTSTONE:lt gy-med lt gy,frm,sbblky,5% calc cly,20-30% cly, tr carb spk.

CLAYSTONE:gysh blk-olv blk,med dk gy,frm-mod hd,sft i/p,sbblky,i/p amor, 10-15% slt,tr-5% calc cly,tr carb spk, tr micmica,tr v f blk lith.

WOB:0.6-11 klbs
RPM:132-165
SPP:2803-3299 psi
FLW:925-1008 gpm
TRQ:10158-19303 lb*ft

3282

3286

3290

3294

3298

3302

3306

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3318

3322

3326

3330

3334

SURVEY @ 3286.11mMDRT
INC:17.23° AZI:92.13°

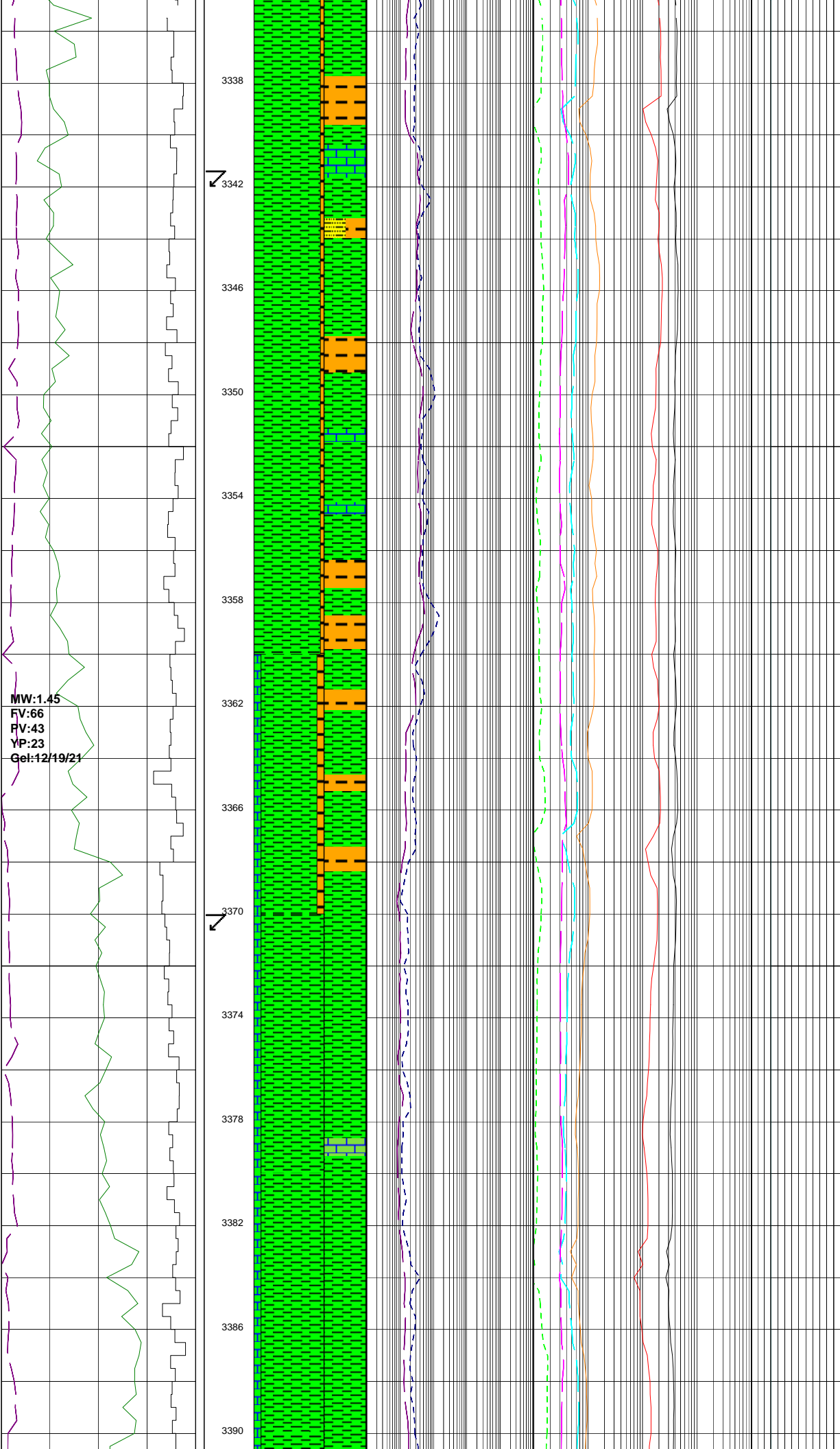
CLAYSTONE:gysh blk-olv blk,med dk
gy,frm-mod hd,hd i/p,sbbiky,i/p blk-
ang,10-15% slt,tr-5% calc cly,tr carb
spk,tr micmica.

SURVEY @ 3316.61mMDRT
INC:17.36° AZI:92.61°

ARGILLACEOUS SILTSTONE:pl yelsh
brn,med lt gy,hd,sbbiky-ang,tr-5% calc,
15-20% cly,5-10% v f qtz grn,tr carb/lith
spk,i/p grdg-SILTSTONE & grdg-v f
SANDSTONE.

ARGILLACEOUS CALCILUTITE:yelsh
gy,med gy,hd,sbbiky-ang,tr-5% calc slt,

MW:1.45
FV:66
PV:42
YP:22
Gel:11/18/21



3338

3342

3346

3350

3354

3358

3362

3366

3370

3374

3378

3382

3386

3390

MW:1.45
FV:66
RV:43
YP:23
Gel:12/19/21

SURVEY @ 3343.30mMDRT
INC:17.60° AZI:91.62°

CLAYSTONE:gysh blk-olv blk,med dk gy,frm-mod hd,hd i/p,sbblky,i/p blk-ang,10-i/p 20% slt,tr-5% calc cly,tr carb spk,tr micmica,tr pyr vn?,anhed,i/p grdg-SILTY CLAYSTONE.

ARGILLACEOUS SILTSTONE:pl yelsh brn,med lt gy,hd,sbbky-ang,tr-5% calc,15-20% cly,5-10% v f qtz gm,tr carb/liith spk,i/p grdg-SILTSTONE & grdg-v f SANDSTONE.

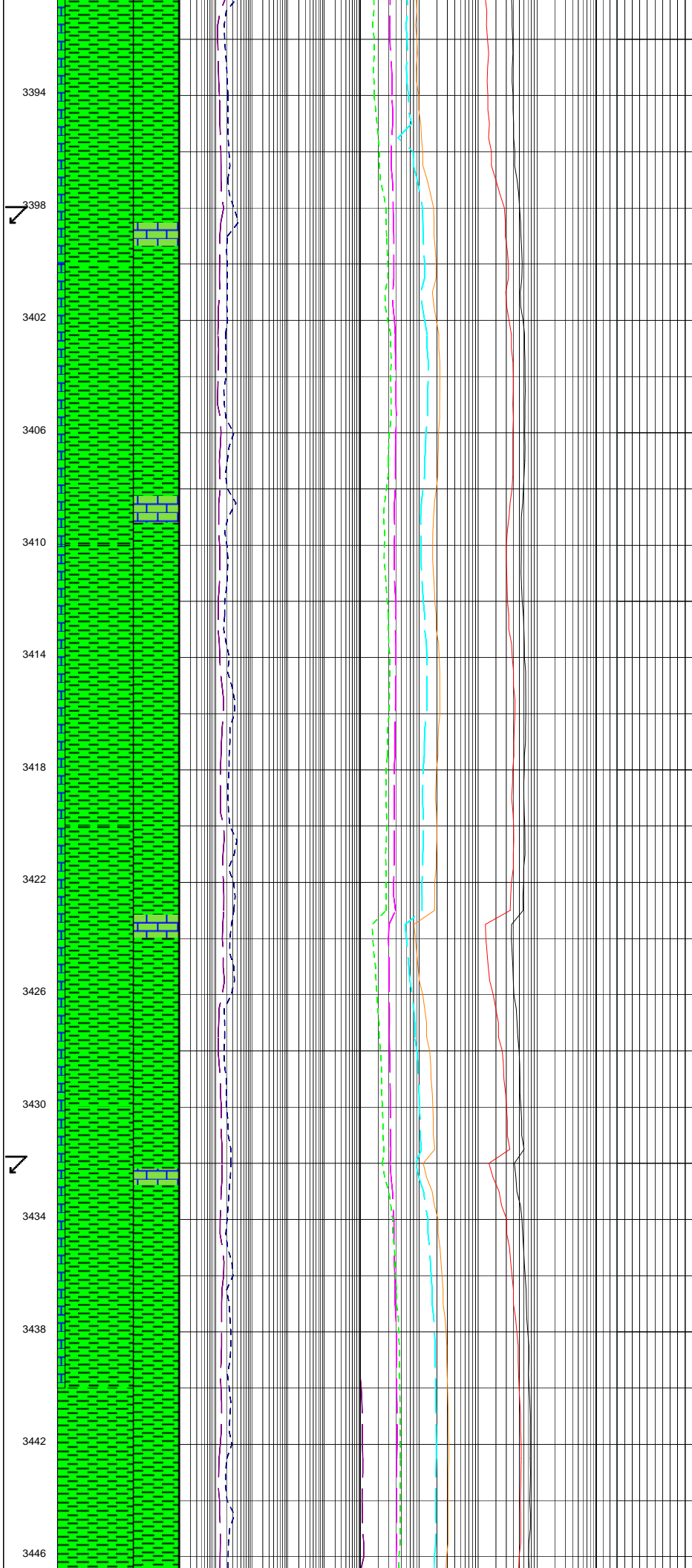
SURVEY @ 3371.29mMDRT
INC:17.24° AZI:90.51°

CLAYSTONE:olv blk-brnsh blk,tr med dk gy,frm-mod hd,sbblky,i/p blk,tr-5% calc cly,5% slt,tr carb spk,tr micmica.

ARGILLACEOUS CALCILUTITE:pl yelsh brn,yelsh gy,frm-mod hd,sbblky,tr-5% calc slt,10-20% cly,tr carb spk,grdg-CALCILUTITE.

WOB:0.0-14.8
RPM:120-162
SPP:2867-3282 psi
FLW:939-1010 gpm
TRQ:8309-16308 lb*ft

MW:1.45
FV:63
PV:46
YP:17
Gel:11/17/20



CLAYSTONE:olv blk-brnsh blk,frm-mod
hd,sbblky,i/p blk, tr-5% calc cly,5% slt,
tr carb spk,tr micmica.

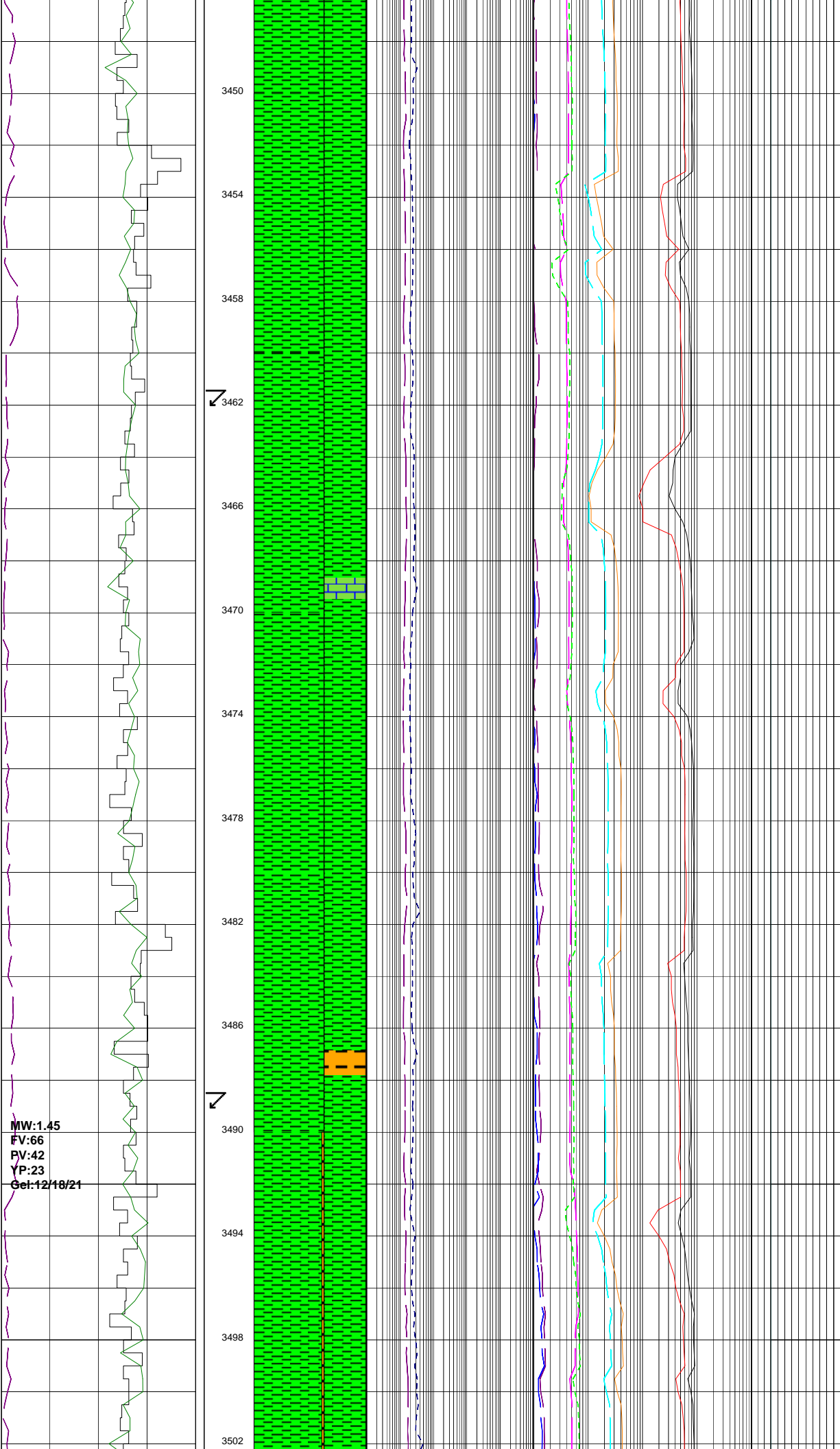
SURVEY @ 3401.43mMDRT
INC:17.76° AZI:90.79°

CLAYSTONE:olv blk-brnsh blk,frm-
mod hd,sft i/p,sbblky,i/p blk,amor,
tr-3% calc cly,10-20% slt w/ tr v f qtz
grn,tr-i/p 5% glauc,tr micmica,i/p
grdg-SILTY CLAYSTONE.

ARGILLACEOUS CALCILUTITE:pl
yelsh brn,yelsh gy,frm-mod hd,sbblky,
tr-5% calc slt,10-20% cly,tr carb spk,
grdg-CALCILUTITE.

SURVEY @ 3431.74mMDRT
INC:17.60° AZI:90.75°

CLAYSTONE:brnsh blk-olv blk,frm-mod
hd,sft i/p,sbblky,i/p blk,amor,tr calc cly,
10-20% slt w/ tr v f qtz grn,tr glauc,tr
micmica,i/p grdg-SILTY CLAYSTONE.



SURVEY @ 3461.42mMDRT
INC:17.18° AZI:88.13°

CLAYSTONE:brnsh blk-olv blk,frm-mod
hd,sft i/p,sbbkly,i/p blk,amor,tr calc cly
10-15% slt w/ tr v f qtz grn,nl-tr glauc,tr
micmica.

SURVEY @ 3488.47mMDRT
INC:15.92° AZI:89.00°

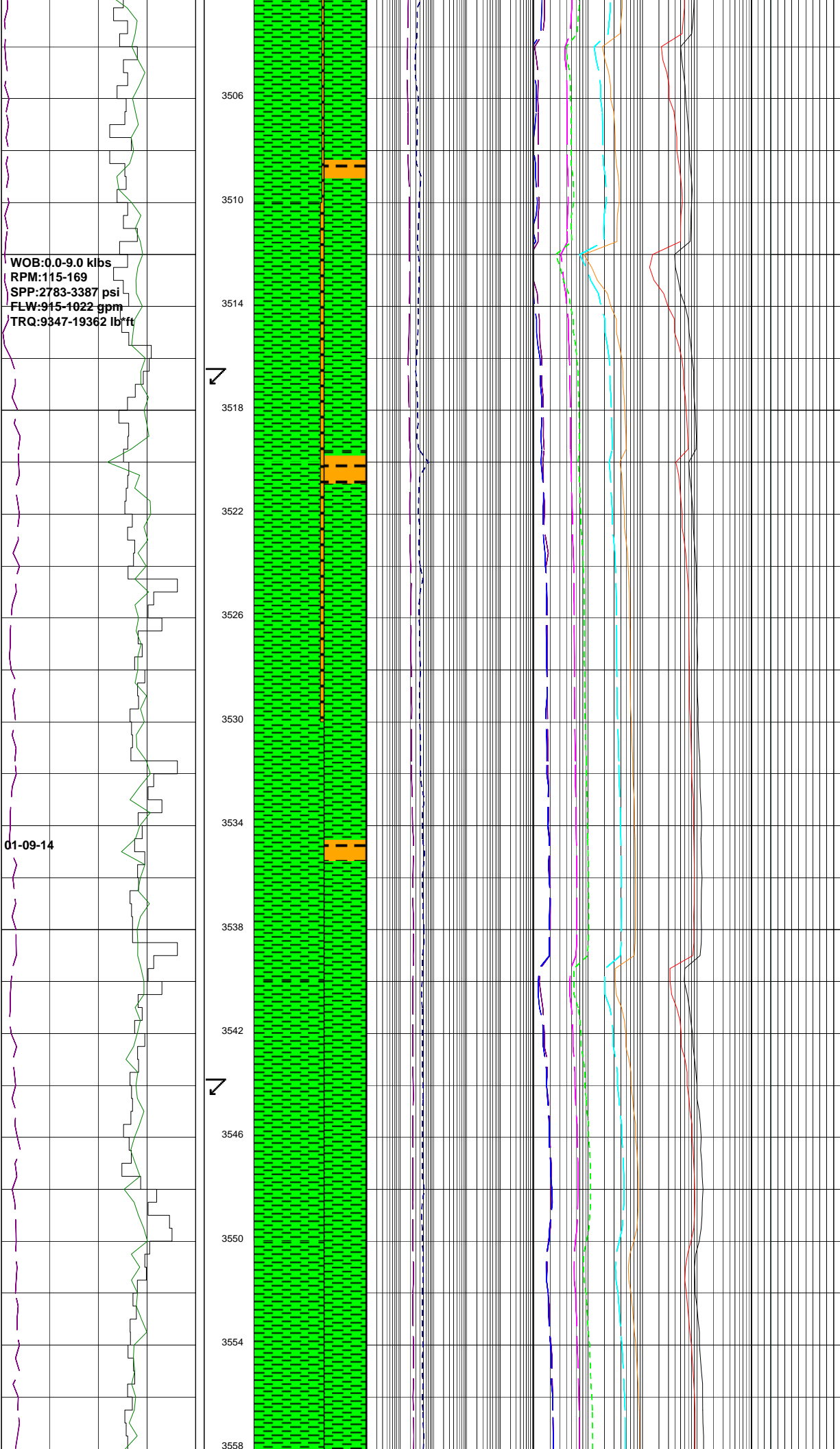
ARGILLACEOUS SILTSTONE:pl yelsh
brn,yelsh gy-lt gy,frm-mod hd,sbbkly,tr
calc cly,15-20% cly,tr carb spk.

MW:1.45
FV:66
RV:42
YP:23
Gel:12/18/21

CLAYSTONE:brnsh blk-olv blk,frm-mod
hd,sft i/p,sbbkly,i/p blk,amor,tr calc cly,
10-15% slt w/ tr v f qtz grn,nl-tr glauc,tr

WOB:0.0-9.0 kips
RPM:115-169
SPP:2783-3387 psi
FLW:915-1022 gpm
TRQ:9347-19362 lb*ft

01-09-14

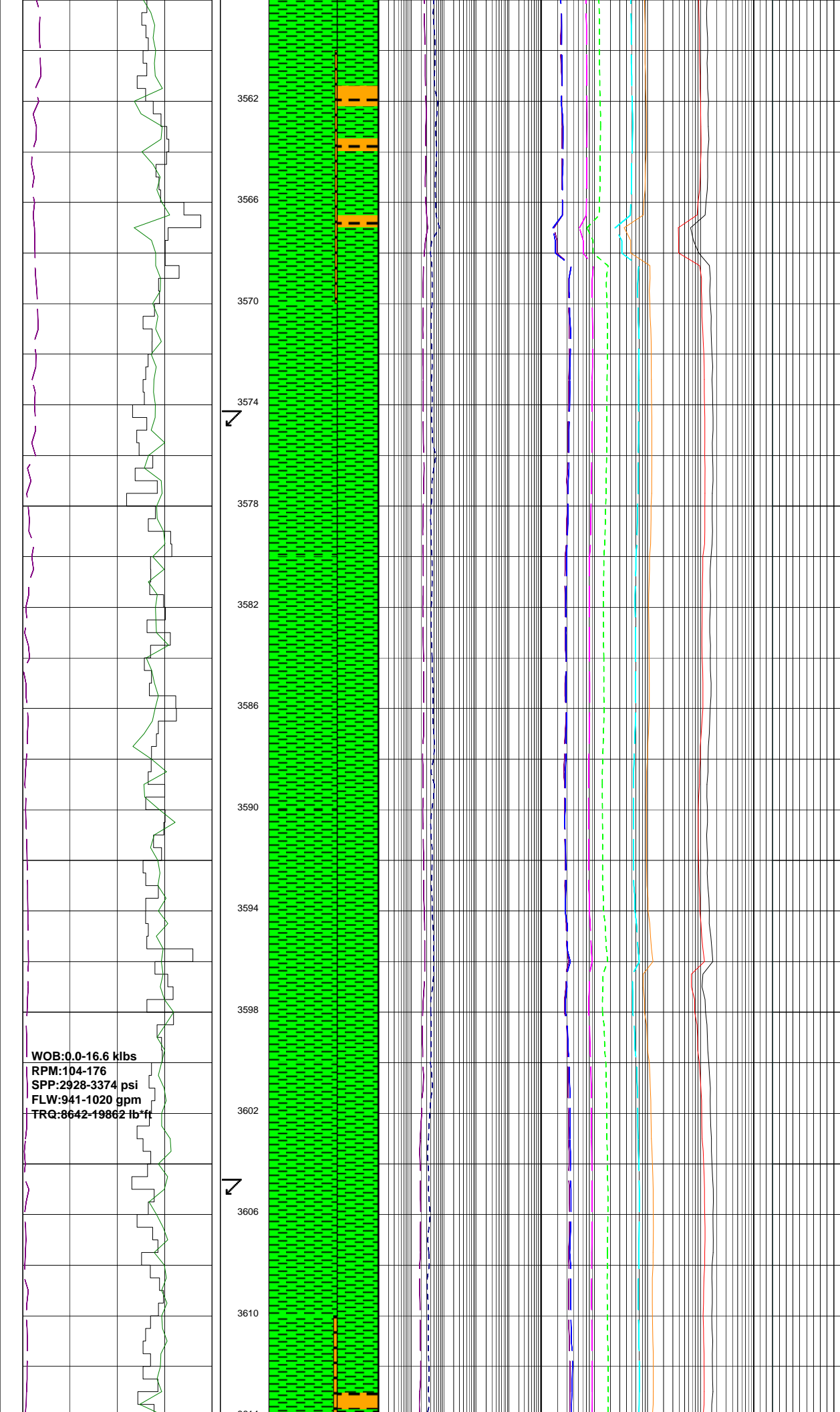


SURVEY @ 3516.39mMDRT
INC:17.36° AZI:93.36°

ARGILLACEOUS SILTSTONE:pl yelsh
brn,yelsh gy-lt gy,frm-mod hd,sbblky,tr-
5% calc cly,15-20% cly,tr carb spk/lam,
tr v f blk lith.

SURVEY @ 3543.75mMDRT
INC:17.54° AZI:90.36°

CLAYSTONE:brnsh blk-olv blk,frm-mod
hd,sft i/p,sbblky,i/p blk,amor,tr calc cly,
10-20% slt w/ tr v f qtz grn,nl-rr glauc,
tr micmica,i/p grdg-SILTY CLAYSTONE.



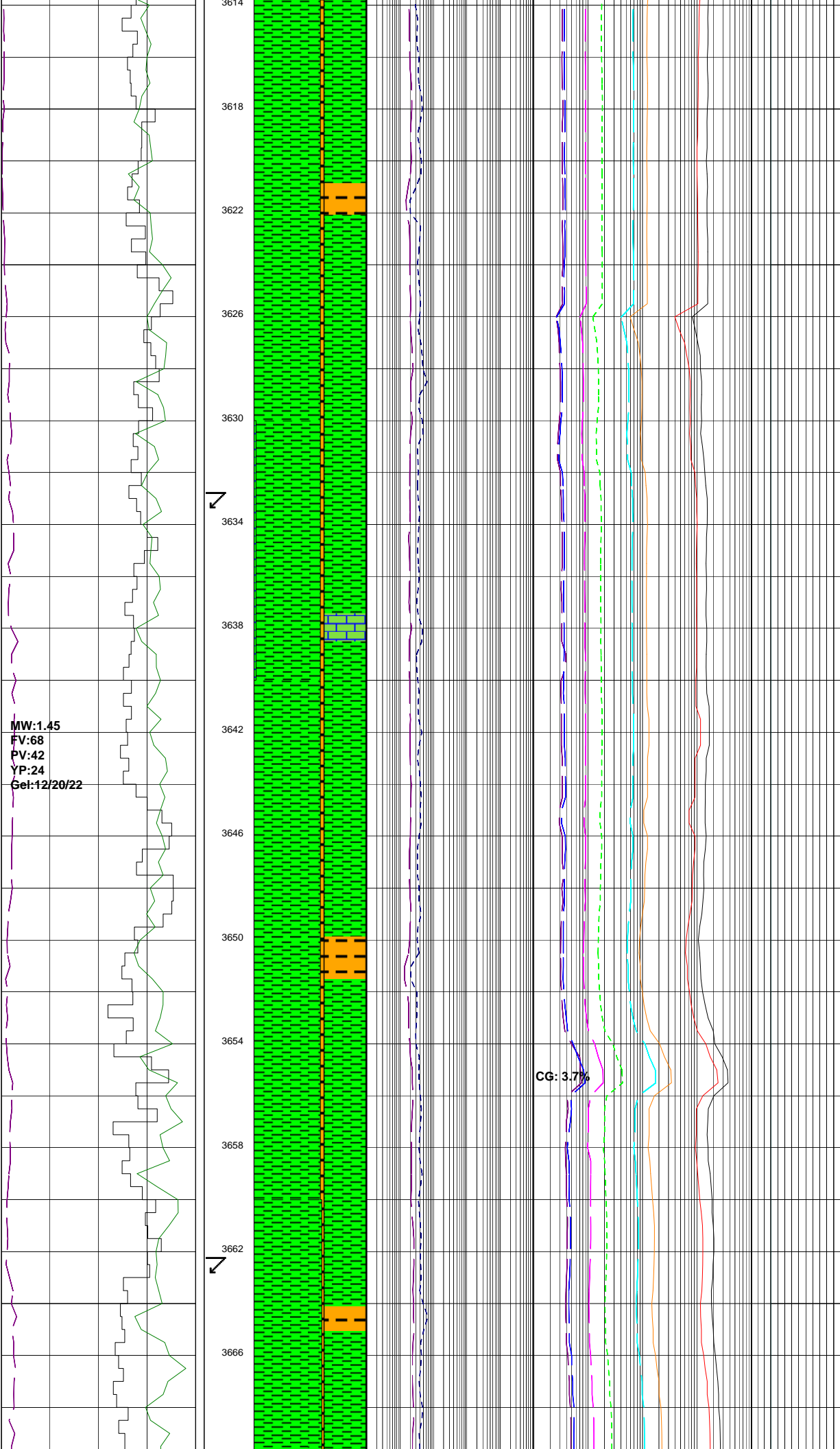
WOB:0.0-16.6 klbs
RPM:104-176
SPP:2928-3374 psi
FLW:941-1020 gpm
TRQ:8642-19862 lb*ft

SURVEY @ 3574.23mMDRT
INC:17.52° AZI:90.98°

CLAYSTONE:brnsh blk-olv blk,frm-mod
hd,sft i/p,sbblky,i/p blk,amor,tr calc cly,
10-20% slt w/ tr v f qtz grn,nl-rr glauc,
tr micmica,i/p grdg-SILTY CLAYSTONE.

SURVEY @ 3604.60mMDRT
INC:17.19° AZI:91.59°

ARGILLACEOUS SILTSTONE:pl yelsh
brn,yelsh gy-lt gy,frm-mod hd,sft i/p,



MW:1.45
FV:68
PV:42
YP:24
Gel:12/20/22

CG: 3.7%

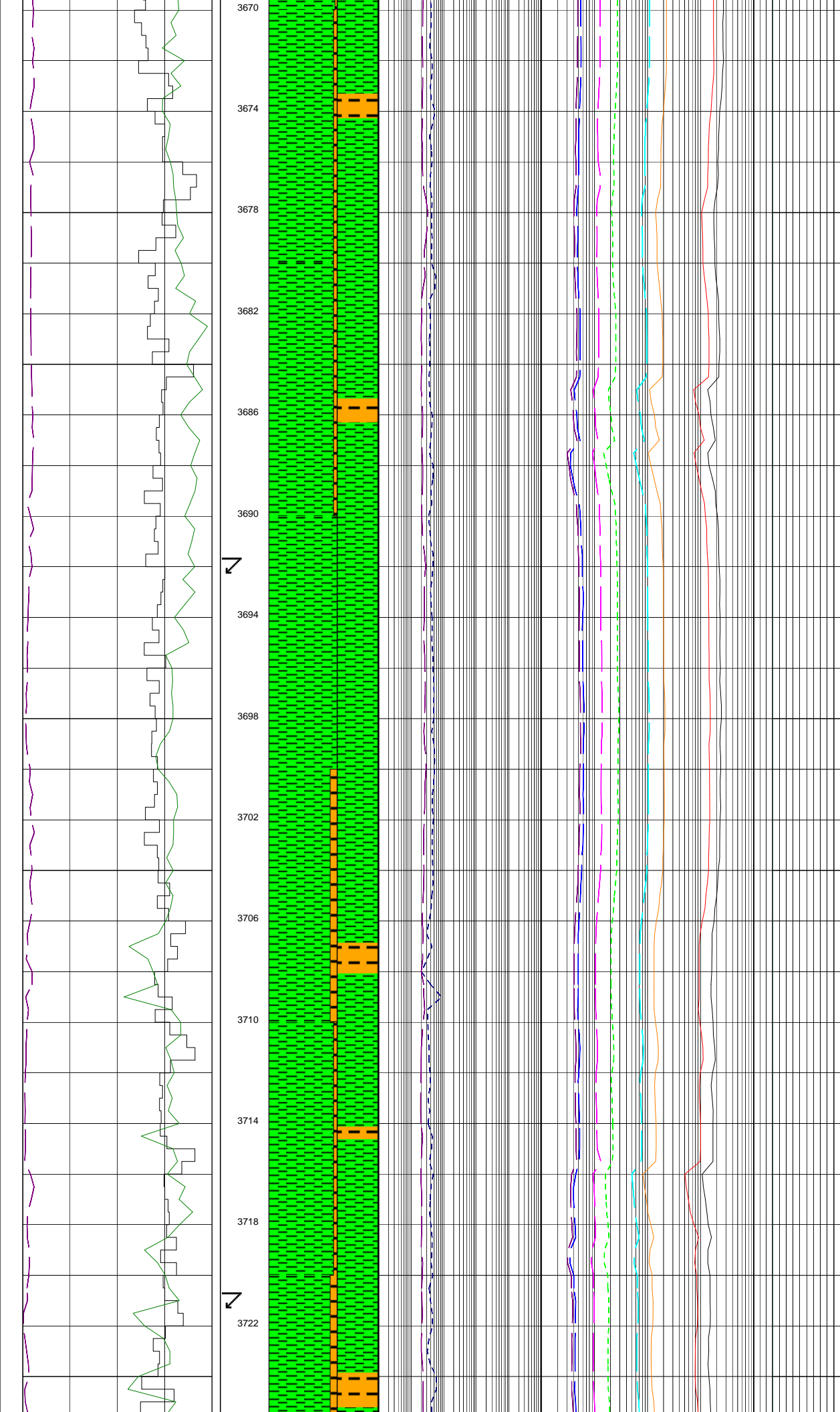
CLAYSTONE:brnsh blk-olv blk,med dk gy,frm-mod hd,sft i/p,sbblky,i/p blk,y, amor,tr calc cly,10-15% slt wth tr v f qtz grn,tr micmica.

SURVEY @ 3635.28mMDRT
INC:18.39° AZI:90.56°

CALCILUTITE:yelsh gy,wh,frm-hd, sbblky-ang,5% calc slt,10% cly, tr carb mat.

CLAYSTONE:brnsh blk-olv blk,med dk gy,frm-mod hd,sft i/p,sbblky,i/p blk,y, amor,tr calc cly,10-15% slt wth tr v f qtz grn,tr micmica, tr pyr nod,i/p grdg- SILTY CLAYSTONE.

SURVEY @ 3664.65mMDRT
INC:20.51° AZI:90.53°



CALCULUTITE:wh,frm-hd,sbblky-ang,
5% calc slt,10% cly,tr carb mat.

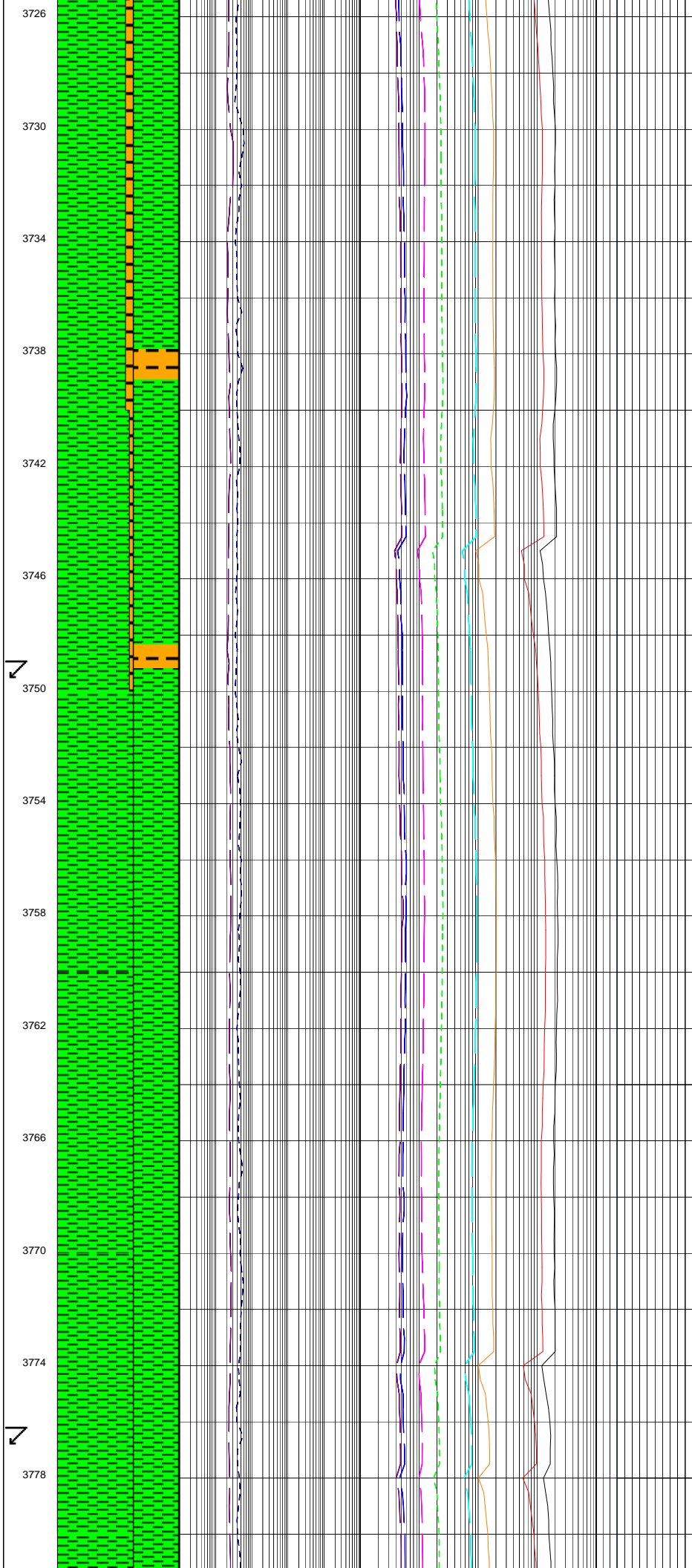
SURVEY @ 3693.74mMDRT
INC:22.96° AZI:89.81°

ARGILLACEOUS SILTSTONE:pl yelsh
brn,yelsh gy-lt gy,frm-mod hd,hd i/p,
sbblky,ang,5-10% calc cly,20-30% cly,
tr carb mat,tr v f blk lith,tr pyr frag,
anhed.

CLAYSTONE:brnsh blk-olv blk,frm-mod
hd,sbblky,i/p blk,tr calc cly,10-15% slt
w/ tr v f qtz grn,tr micmica,i/p grdg-
SILTY CLAYSTONE.

SURVEY @ 3722.13mMDRT
INC:24.24° AZI:90.58°

MW:1.45
FV:67
PV:44
YP:25
Gel:14/21/25



ARGILLACEOUS SILTSTONE:pl yelsh
brn,yelsh gy-lt gy,tr brnsh blk,frm-mod
hd,hd i/p,sbblky-ang,5-10% calc cly,
20-30% cly,tr carb mat,tr v f blk lith.

SURVEY @ 3750.18mMDRT
INC:26.21° AZI:92.44°

CLAYSTONE:brnsh blk-olv blk,tr med dk
gy,frm-mod hd,sbblky-blky,nl-tr calc cly,
10-20% slt w/ tr v f qtz grn,tr micmica,i/p
grdg-SILTY CLAYSTONE.

ARGILLACEOUS SILTSTONE:pl yelsh
brn,yelsh gy,frm-mod hd,hd i/p,sbblky-
ang,5% calc cly,20-30% cly,tr carb mat,
tr v f blk lith.

SURVEY @ 3777.95mMDRT
INC:28.55° AZI:91.22°

WOB:0.0-6.0 klbs
RPM:136-173
SPP:2956-3471 psi
FLW:921-1016 gpm
TRQ:10141-22447 lb*ft

MW:1.45
FV:70
PV:43
YP:25
Gel:14/22/25

3782

3786

3790

3794

3798

3802



3806

3810

3814

3818

3822

3826

3830

3834

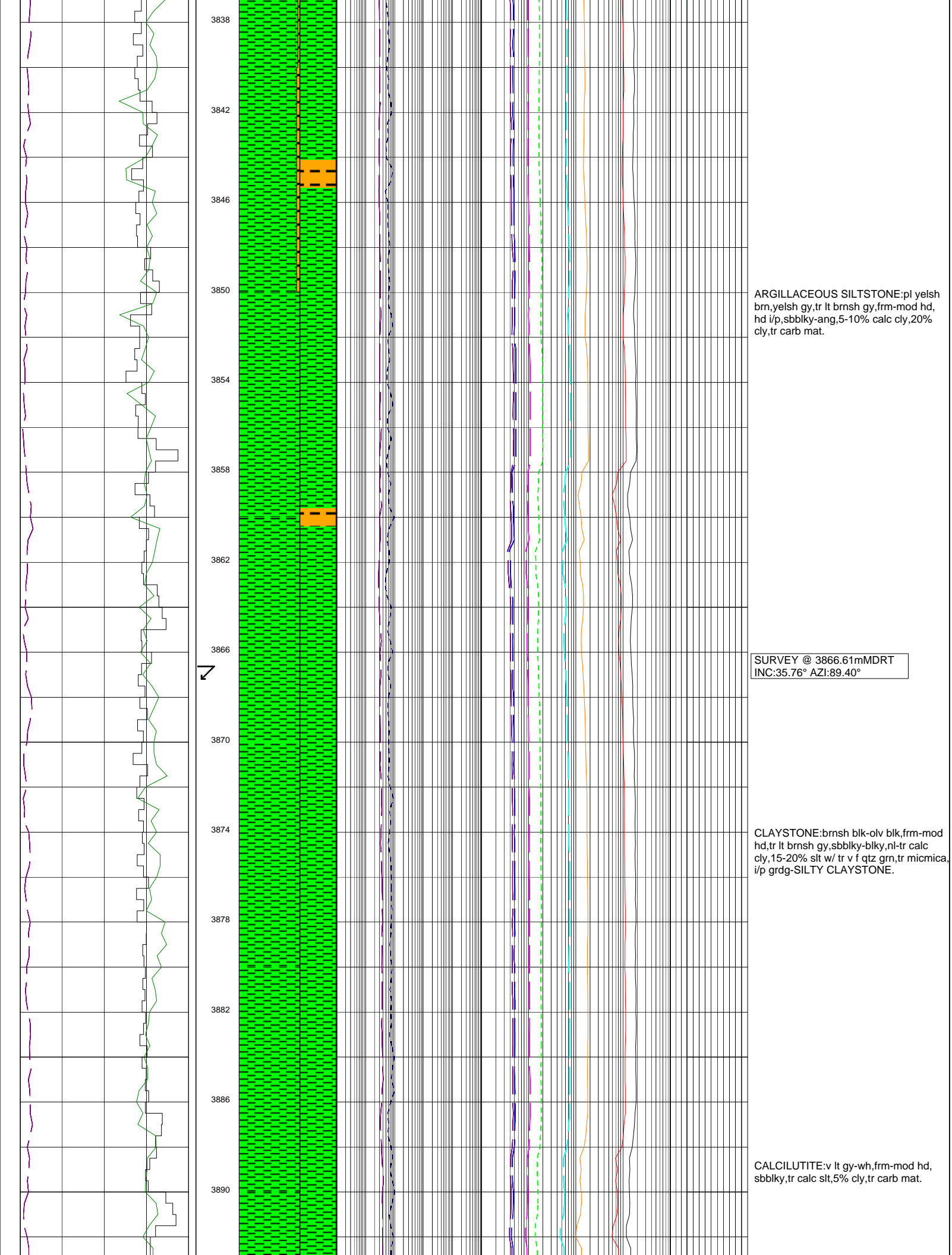
CLAYSTONE:brnsh blk-olv blk,frm-mod
hd,sbbky-blky,nl-tr calc cly,15-20% slt
w/ tr v f qtz grn,tr micmica,i/p grdg-
SILTY CLAYSTONE.

SURVEY @ 3806.74mMDRT
INC:31.19° AZI:91.60°

ARGILLACEOUS SILTSTONE:pl yelsh
brn,yelsh gy,frm-mod hd,hd i/p,sbbky-
ang,5% calc cly,20-30% cly,tr carb mat,
tr v f blk lith.

CLAYSTONE:brnsh blk-olv blk,frm-mod
hd,sbbky-blky,nl-tr calc cly,15-20% slt
w/ tr v f qtz grn,tr micmica,i/p grdg-
SILTY CLAYSTONE.

SURVEY @ 3836.17mMDRT
INC:33.49° AZI:90.63°



WOB:1.1-7.5 klbs
RPM:136-175
SPP:3200-3642 psi
FLW:965-1049 gpm
TRQ:10253-22156 lb*ft

3894



3898

3902

3906

3910

3914

3918

3922



3926

3930

MW:1.45
FV:77
PV:43
YP:25
Gel:13/20/23

3934

3938

3942

3946

SURVEY @ 3896.18mMDRT
INC:37.93° AZI:91.07°

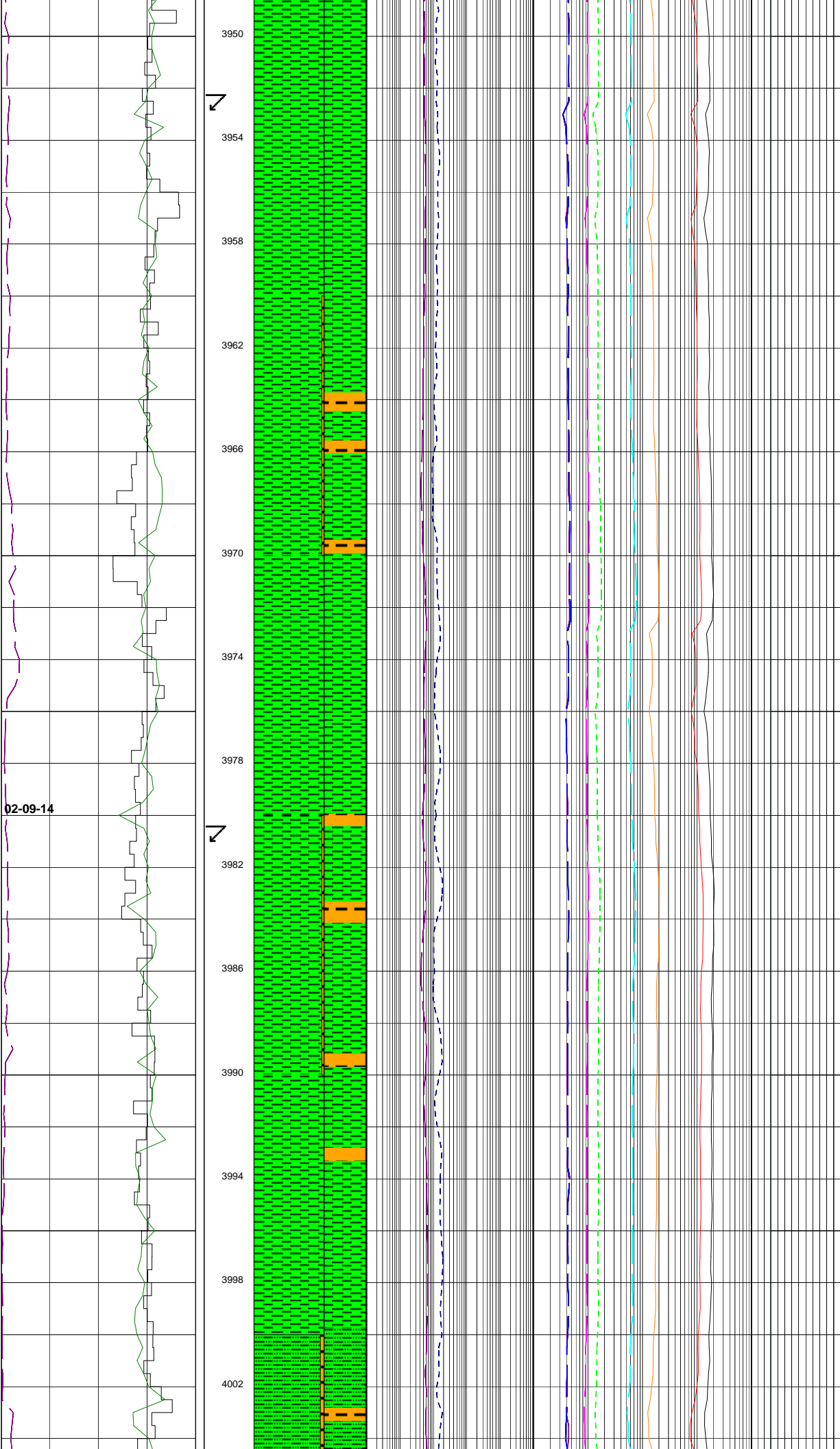
CLAYSTONE:brnsh blk-olv blk,frm-mod
hd,tr lt brnsh gy,sbblky-blky,nl-tr calc
cly,15-20% slt w/ tr v f qtz gm,tr
micmica,i/p grdg-SILTY CLAYSTONE.

CALCILUTITE:v lt gy-wh,frm-mod hd,
sbblky,tr calc slt,5% cly,tr carb mat.

SURVEY @ 3924.80mMDRT
INC:40.05° AZI:90.81°

CALCILUTITE:wh,frm-hd,sbblky-ang,
5% calc slt,10% cly,tr carb mat.

ARGILLACEOUS SILTSTONE:pl yelsh
brn,tr lt brnsh gy,frm-mod hd i/p,sbblky
i/p ang,5-10% calc cly,20% cly,tr carb
mat.



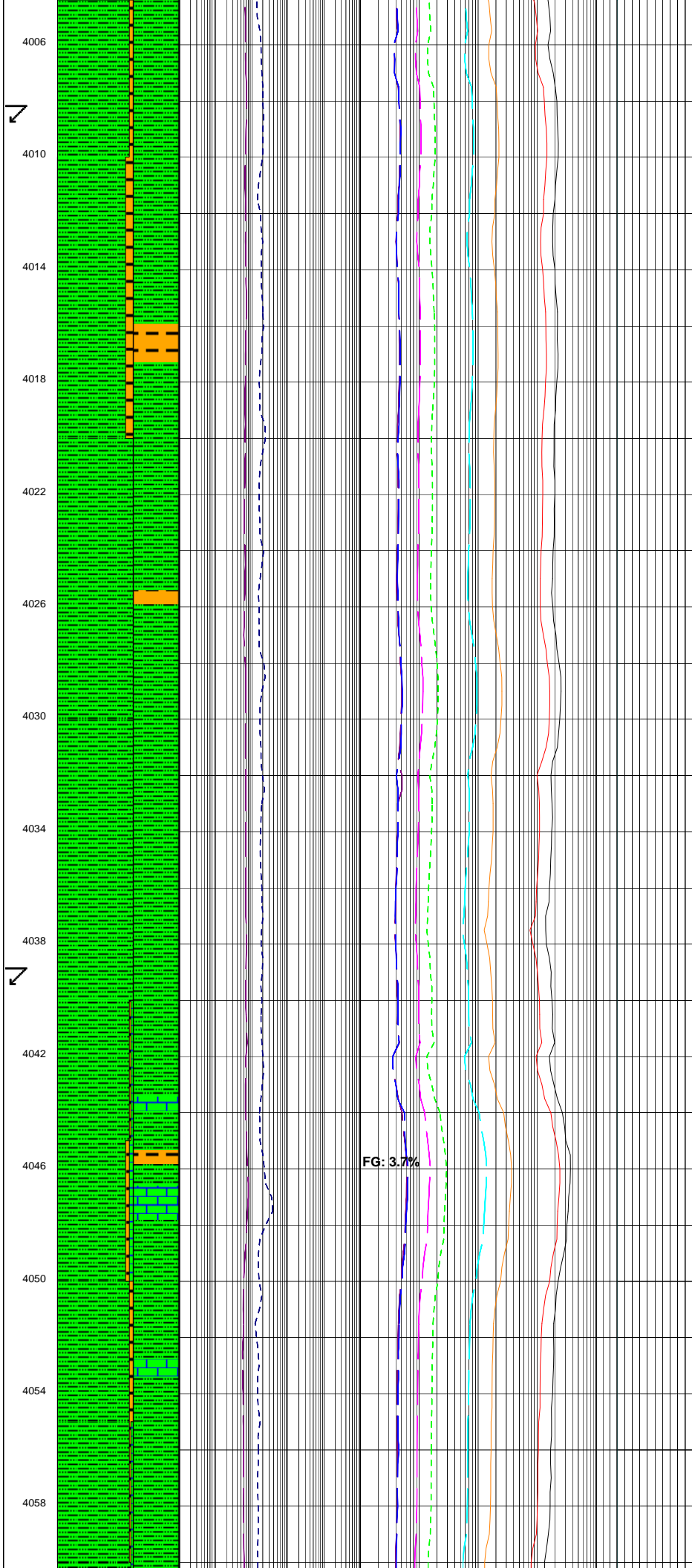
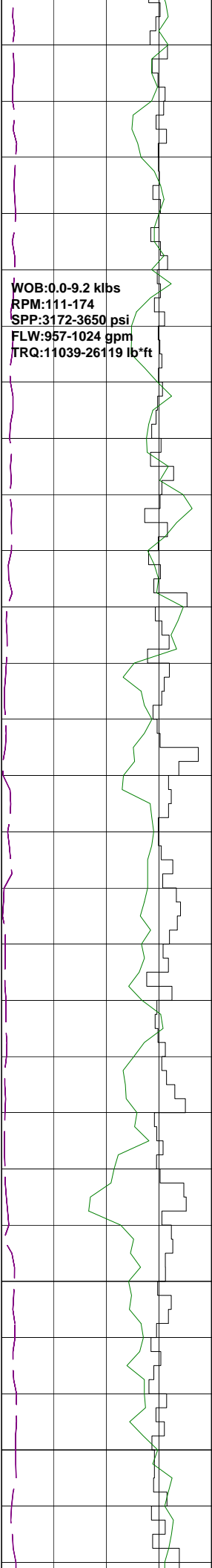
SURVEY @ 3952.24mMDRT
INC:42.42° AZI:90.68°

ARGILLACEOUS SILTSTONE:pl yelsh
brn,yelsh gy,tr lt brnsh gy,frm-mod hd,
sbbiky,5% calc cly,20% cly,tr carb mat,
tr v f lith,i/p grdg-v f SANDSTONE.

SURVEY @ 3980.41mMDRT
INC:45.21° AZI:90.87°

CLAYSTONE:brnsh blk-olv blk,frm-mod
hd,tr lt brnsh gy,sbbiky-blky,nl-tr calc
cly,10-20% slt w/ tr v f qtz grn,tr micmica,
i/p grdg-SILTY CLAYSTONE.

SILTY CLAYSTONE:brnsh blk,olv gy,tr
olv blk,frm-mod hd,sbbiky,i/p fri,blky,
nl-tr calc cly,20-30% slt,tr-i/p 5% v f qtz
grn,tr micmica.



SURVEY @ 4008.15mMDRT
INC:47.92° AZI:90.88°

ARGILLACEOUS SILTSTONE:pl yelsh
brn,lt brnsh gy,frm-mod hd,sbblky,5%
calc cly,20% cly,tr carb mat.

SILTY CLAYSTONE:brnsh blk,olv gy,tr
olv blk,frm-mod hd,sbblky,i/p fri,blky,
nl-tr calc cly,20-30% slt,tr-i/p 5% v f qtz
grn,tr micmica.

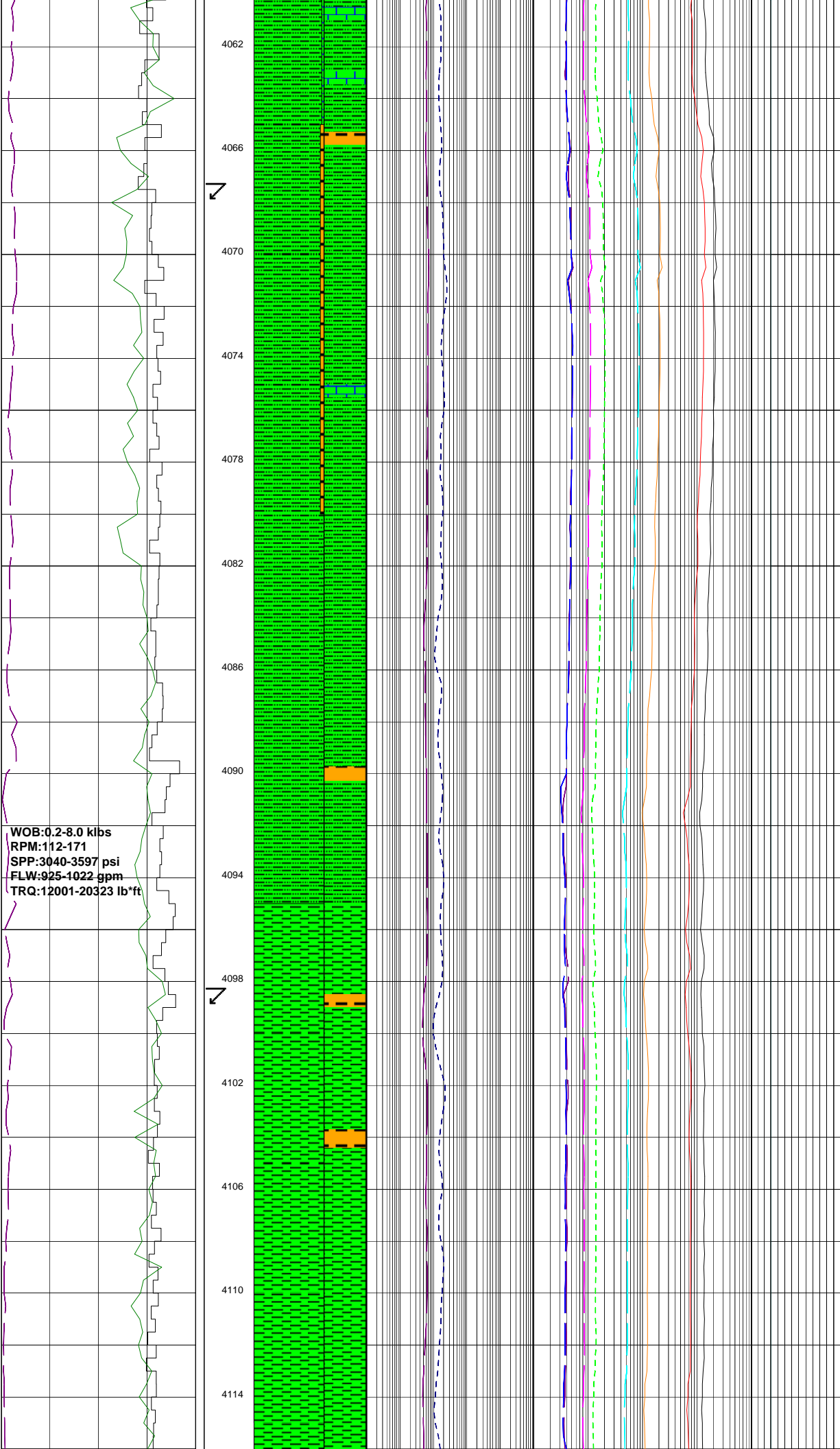
SURVEY @ 4038.84mMDRT
INC:51.33° AZI:90.62°

CALCILUTITE:v lt gy-wh,frm-mod
hd,sbblky,tr calc slt,5% cly,tr carb mat.

ARGILLACEOUS SILTSTONE:pl yelsh
brn,tr lt brnsh gy,frm-mod hd,sbblky,5%
calc cly,20% cly,tr carb mat.

SILTY CLAYSTONE:brnsh blk,olv gy,tr
olv blk,frm-mod hd,sbblky,i/p fri,blky,nl-
tr calc cly,20-30% slt,tr-i/p 5% v f qtz
grn tr micmica

FG: 3.7%



WOB: 0.2-8.0 kips
RPM: 112-171
SPP: 3040-3597 psi
FLW: 925-1022 gpm
TRQ: 12001-20323 lb*ft

SURVEY @ 4068.89mMDRT
INC: 54.62° AZI: 90.63°

SILTY CLAYSTONE: olv gy, brnsh blk, tr
olv blk, frm-mod hd, sbblky, i/p fri, blk, nl-
tr calc cly, 20-30% silt, tr-i/p 5% v f qtz
grn, tr micmica.

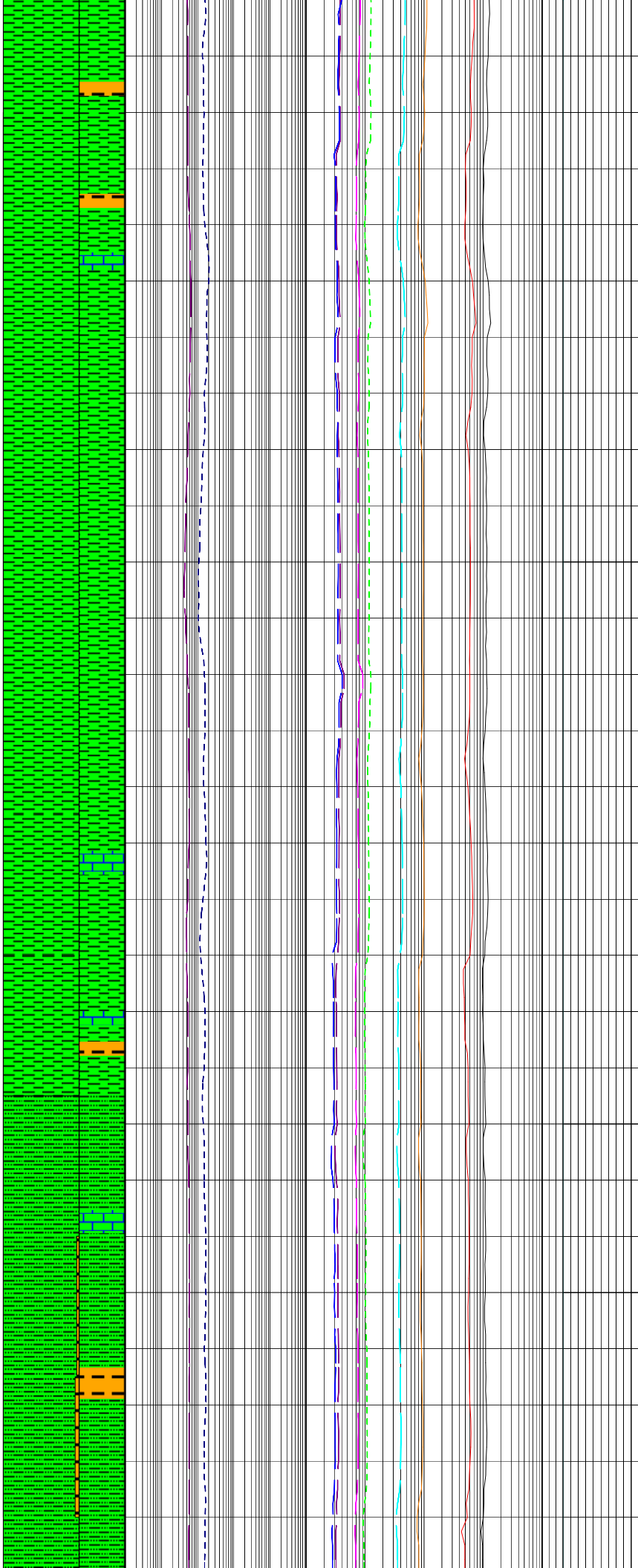
SURVEY @ 4099.07mMDRT
INC: 57.45° AZI: 90.26°

ARGILLACEOUS SILTSTONE: pl yelsh
brn, tr lt brnsh gy, frm, sbblky, 5% calc cly,
20% cly, tr carb mat.

CLAYSTONE: brnsh blk-olv blk, mnrv olv
gy, frm-mod hd, sbblky-blky, nl-tr calc cly,
15% silt, tr v f qtz grn, tr micmica, grdg-
SILTY CLAYSTONE.

MW:1.46
FV:66
PV:47
YP:30
Gel:14/22/26

4118
4122
4126
4130
4134
4138
4142
4146
4150
4154
4158
4162
4166
4170



CALCILUTITE:v lt gy-wh,frm-mod hd,
sbbiky,tr calc slt,5% cly,tr v f lith.

SURVEY @ 4127.19mMDRT
INC:59.76° AZI:90.04°

7" LINER TOP @ 4144.6mMDRT

CLAYSTONE:brnsh blk-olv blk,mnr olv
gy,frm-mod hd,sbbiky-blky,nl-tr calc cly,
15% slt,tr v f qtz grn,tr micmica,grdg-
SILTY CLAYSTONE.

CALCILUTITE:v lt gy-wh,frm-mod hd,
sbbiky,tr calc slt,5% cly,tr v f lith.

SURVEY @ 4155.20mMDRT
INC:62.51° AZI:90.19°

SILTY CLAYSTONE:olv gy,brnsh blk,tr
olv blk,frm-mod hd,sbbiky,i/p fri,blky,nl-
tr calc cly,30% slt,tr-i/p 5% v f qtz
grn,tr micmica,tr dk gy-blk lith.

ARGILLACEOUS SILTSTONE:pl yeish
brn,tr brnsh gy,frm,hd,sbbiky,tr calc cly,
20% cly,tr carb mat.

4174

CLAYSTONE:lt blsh gy,wh,frm,i/p mod
hd,sbblky,non calc,rr micmica & blk lith
spk.

4178

SURVEY @ 4183.74mMDRT
INC:65.36° AZI:90.25°

4182

4186

CLAYSTONE:brnsh blk-olv blk,mnr olv
gy,frm-mod hd,sbblky-blky,nl-tr calc cly,
15-20% slt,tr v f qtz grn,tr micmica,grdg-
SILTY CLAYSTONE.

4190

4194

CALCILUTITE:yelsh gy-wh,frm-mod
hd,sbblky,tr calc slt,tr cly,tr v f lith.

4198

4202

ARGILLACEOUS SILTSTONE:pl yelsh
brn,brnsh gy,frm,sbblky,tr-5% calc cly,
20-30% cly,tr carb mat.

4206

4210

SURVEY @ 4212.97mMDRT
INC:68.17° AZI:90.04°

4214

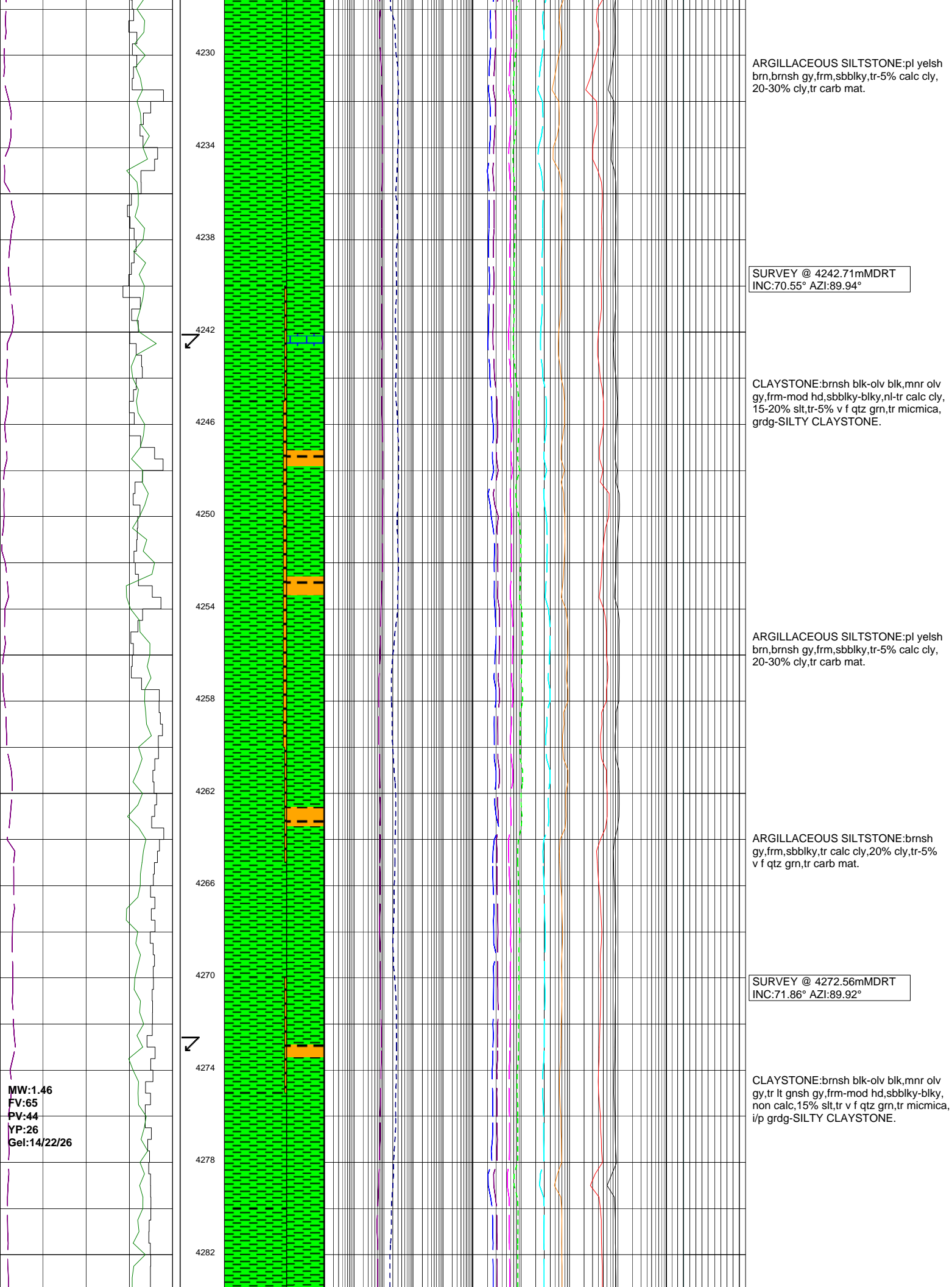
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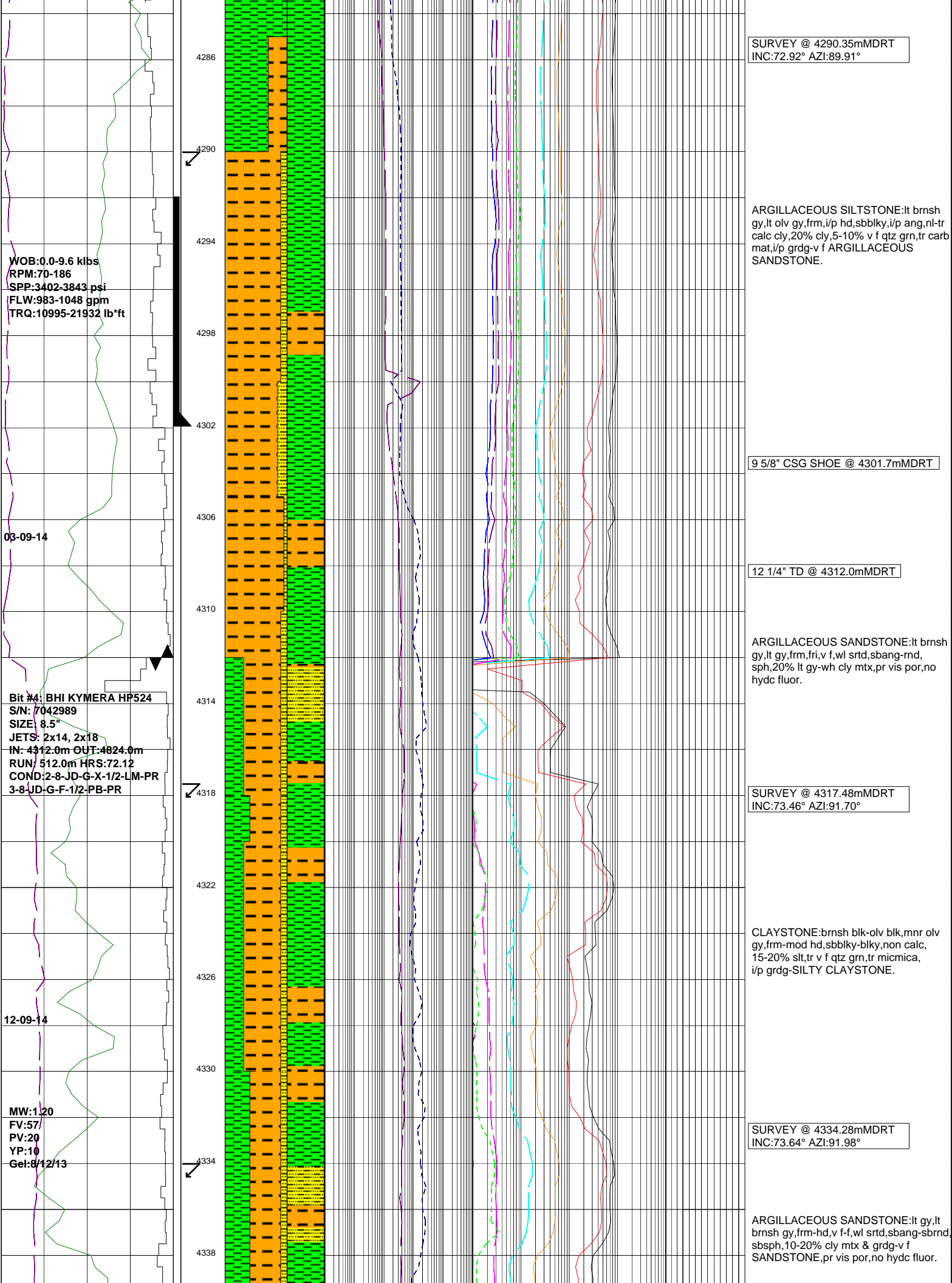
CLAYSTONE:brnsh blk-olv blk,mnr olv
gy,frm-mod hd,sbblky-blky,tr calc cly,
15-20% slt,tr v f qtz grn,tr micmica,grdg-
SILTY CLAYSTONE.

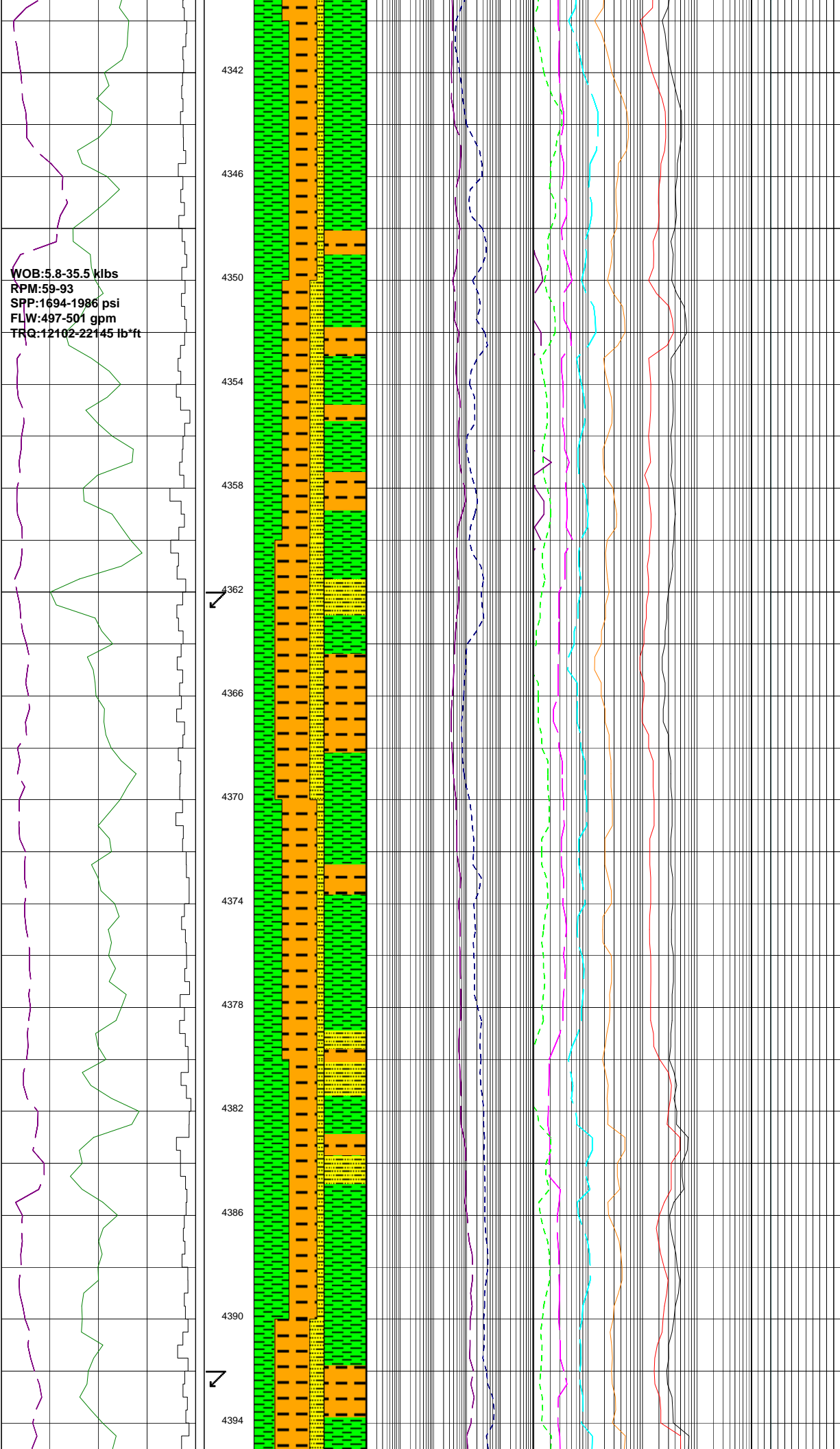
4222

4226

WOB:0.1-9.3 klbs
RPM:150-177
SPP:3402-3673 psi
FLW:979-1024 gpm
TRQ:12051-20353 lb*ft







WOB:5.8-35.5 klbs
RPM:59-93
SPP:1694-1986 psi
FLW:497-501 gpm
TRQ:12102-22145 lb*ft

ARGILLACEOUS SILTSTONE:brnsh gy,
olv gy,mod hd-hd,sbbiky,tr calc cly,20%
cly,5-10% v f qtz grn,tr carb mat,i/p grdg-
v f ARGILLACEOUS SANDSTONE.

SURVEY @ 4362.28mMDRT
INC:76.31° AZI:92.15°

CLAYSTONE:brnsh blk-olv blk,frm-mod
hd,sbbiky-blky,tr calc cly,20% slt,tr v f
qtz grn,tr micmica,com grdg-
SILTY CLAYSTONE.

ARGILLACEOUS SANDSTONE:lt gy,
olv gy,frm-hd,v f,occ f,wl srtld,sbang-
sbrnd,sbsph,sil cmt,pr vis por,no hydc
fluor.

SURVEY @ 4392.63mMDRT
INC:78.28° AZI:92.80°

ARGILLACEOUS SILTSTONE:brnsh gy,

13-09-14

WOB:5.7-33.6 kibs
RPM:55-119
SPP:1487-2025 psi
FLW:433-507 gpm
TRQ:11511-22145 lb*ft

MW:1.20
FV:57
PV:23
YP:12
Gel:9/14/17

4398

4402

4406

4410

4414

4418

4422

4426

4430

4434

4438

4442

4446

4450

FG: 1.5%

FG: 3.9%

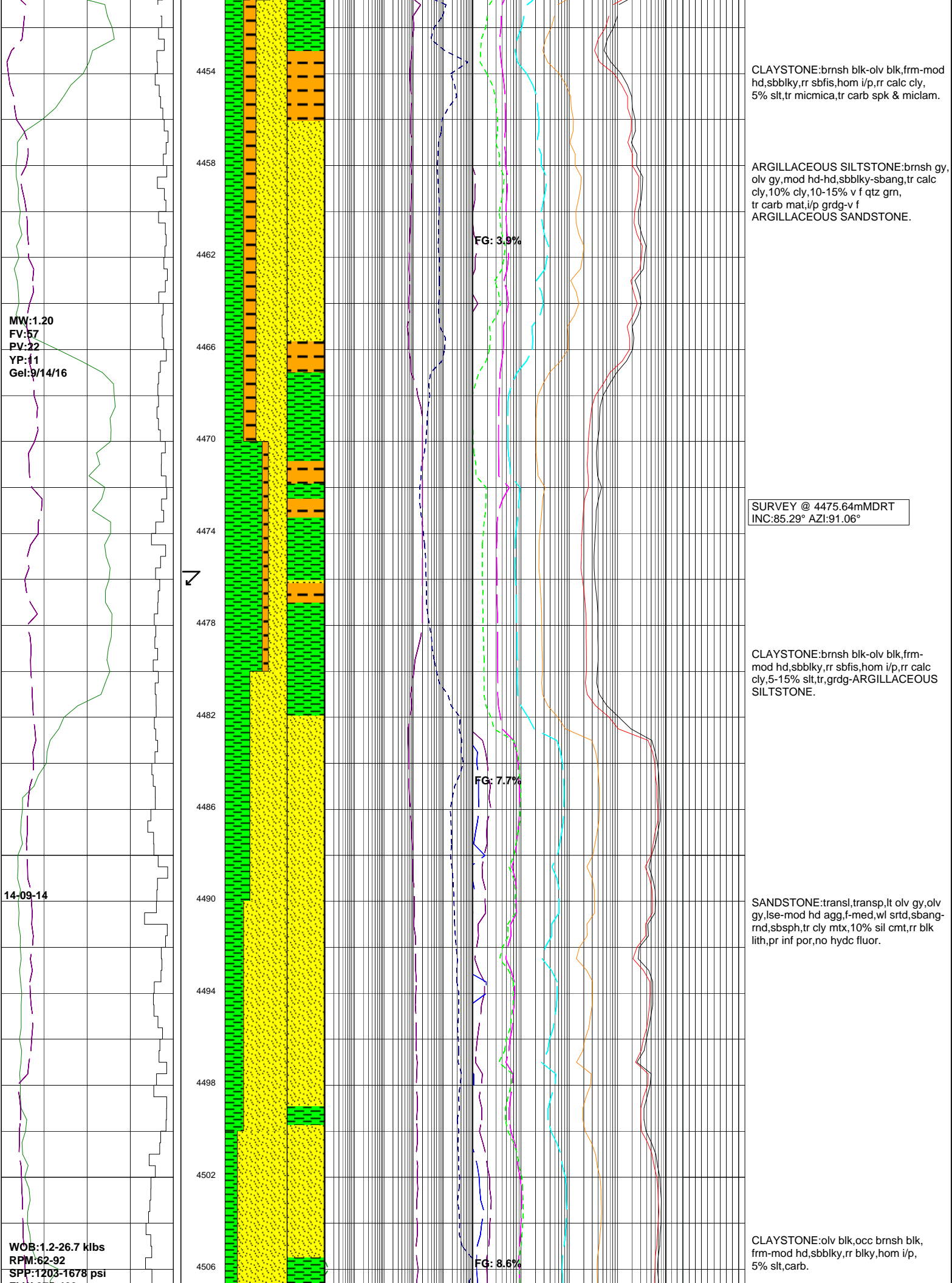
CLAYSTONE:brnsh blk-olv blk,frm-mod
hd,sbblky-blky,hom i/p,rr calc cly,5-10%
slt,tr micmica,tr carb mic lam.

SURVEY @ 4418.03mMDRT
INC:92.11° AZI:81.08°

ARGILLACEOUS SILTSTONE:brnsh
gy,olv gy,mod hd-hd,sbblky-sbang,tr
calc cly,10% cly,10-15% v f qtz grn,tr
carb mat,i/p grdg-v f ARGILLACEOUS
SANDSTONE.

SANDSTONE:transl,lt olv gy,olv
gy,mod hd agg,occ v f,occ med,mod
wl srtld,sbang-rnd,sbsph,tr cly mtx,
5-10% sil cmt,tr blk volc lith,pr inf por,
no hydc fluor.

SURVEY @ 4447.46mMDRT
INC:84.83° AZI:92.16°



FLW:375-460 gpm
TRQ:11000-20064 lb*ft



4510

4514

4518

4522

4526

4530

4534



4538

4542

4546

4550

4554

4558

4562

SURVEY @ 4508.25mMDRT
INC:84.89° AZI:89.13°

SANDSTONE:transl,transp,
occ lt olv gy,off wh,lse-mod
hd agg,f-med,wl srted,sbang-
rnd,sbsph-sph,tr cly mtx,
15% sil cmt,rr blk lith,
pr inf por,no hydc fluor.

SURVEY @ 4535.20mMDRT
INC:84.80° AZI:89.79°

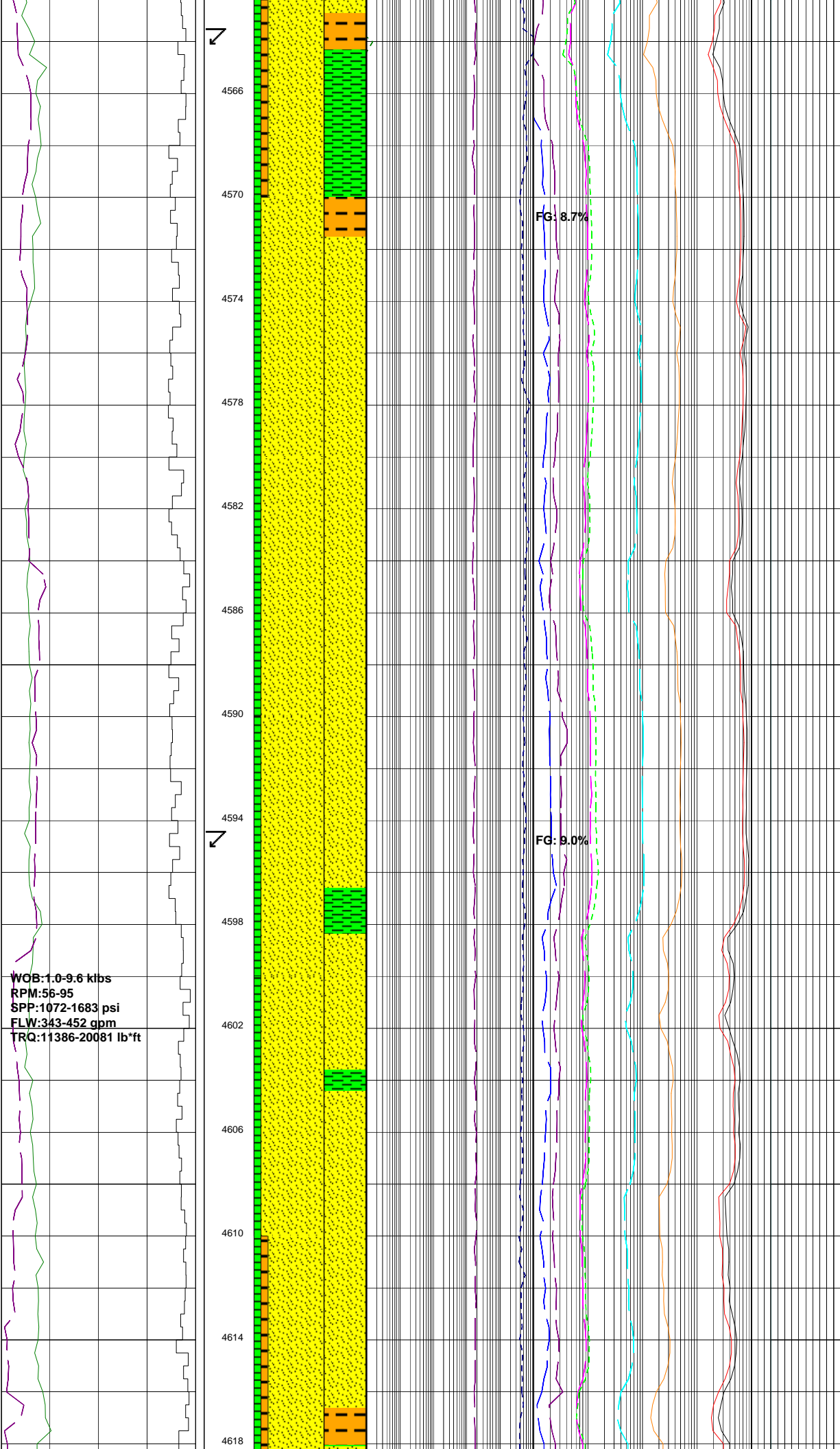
SANDSTONE:transl,transp,
occ olv gy,lse agg,f-med,
occ v f,rr med,wl srted,sbrnd-
rnd,sbsph-sph,5% cly mtx,
tr-5% sil cmt,rr blk lith,
pr inf por,no hydc fluor.

SURVEY @ 4563.93mMDRT
INC:85.44° AZI:89.84°

ARGILLACEOUS SILTSTONE:olv

MW:1.20
FV:56
PV:25
YP:14
Gel:10/18/21

FG: 5.9%



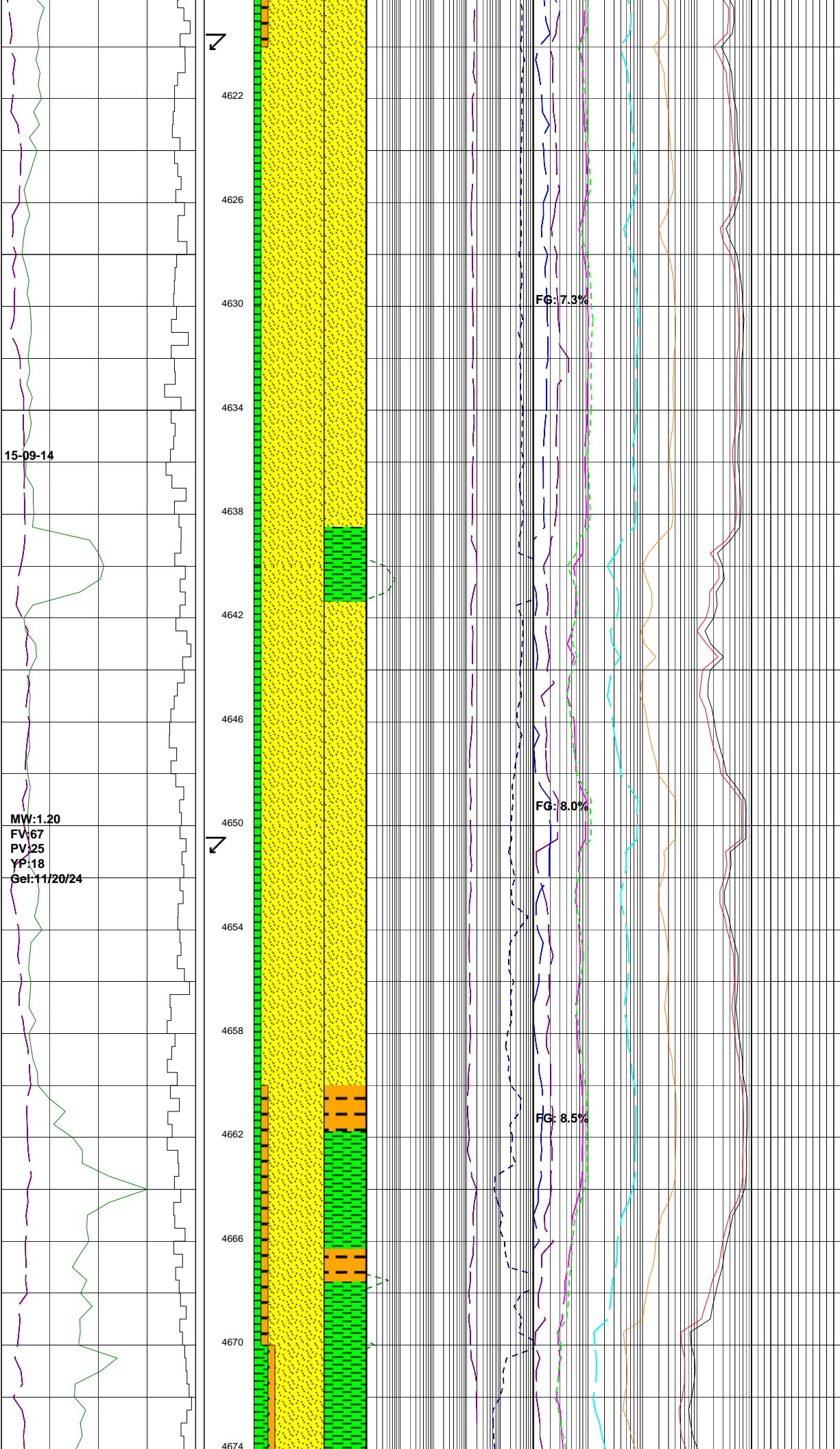
SANDSTONE:transl,transp,rr org,
lse qtz,f-med,occ crs,wl srt,
sbrnd-rnd,sbsph,occseen as sft
off wh rk flour,rr blk lith,pr inf por,
no hydc fluor.

SANDSTONE:transl,transp,rr org,lse
qtz,v f-med,dom f,occ med,mod
wl srt,sbrnd-rnd,sbsph,occ seen as
sft off wh rk flour,rr blk lith,pr inf por,
no hydc fluor.

SURVEY @ 4594.41mMDRT
INC:85.70° AZI:89.18°

CLAYSTONE:olv blk,brnsh blk,sft-
mod hd,sbblky-blky,tr micmica,
10% sit,carb mat.

SURVEY @ 4619.51mMDRT
INC:84.98° AZI:89.05°



SANDSTONE:transl,transp,lse qtz,
f-med,dom med,occ crs,mod
wl srted,sbrnd-rnd,sbsph,dom
seen as sft off wh rk flour,
tr sil cmt,rr blk lith,
pr inf por,no hydc fluor.

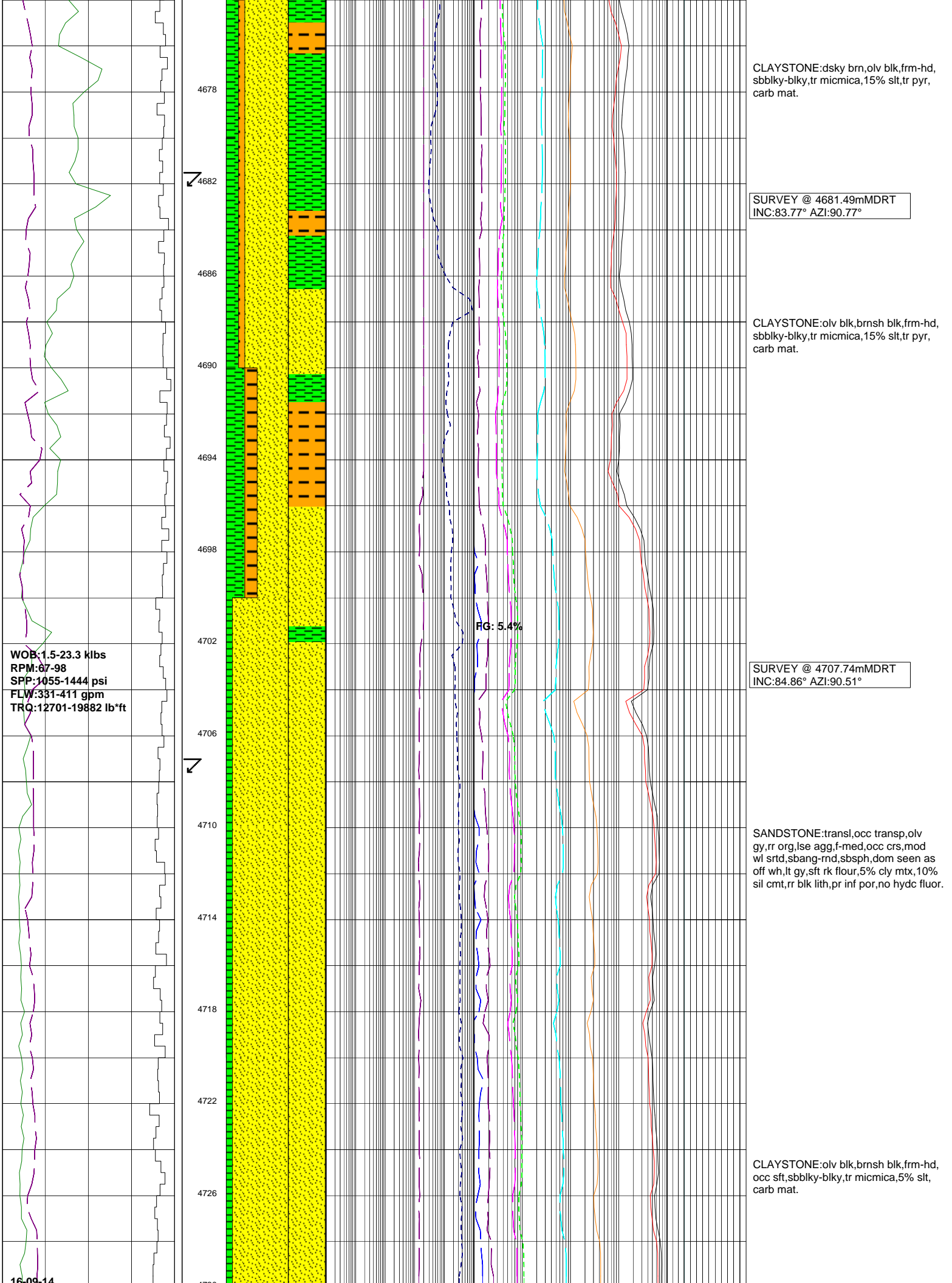
CLAYSTONE:dsky brn,olv blk,sft-frn,
sbbiky-amor,tr micmica,15% slt.

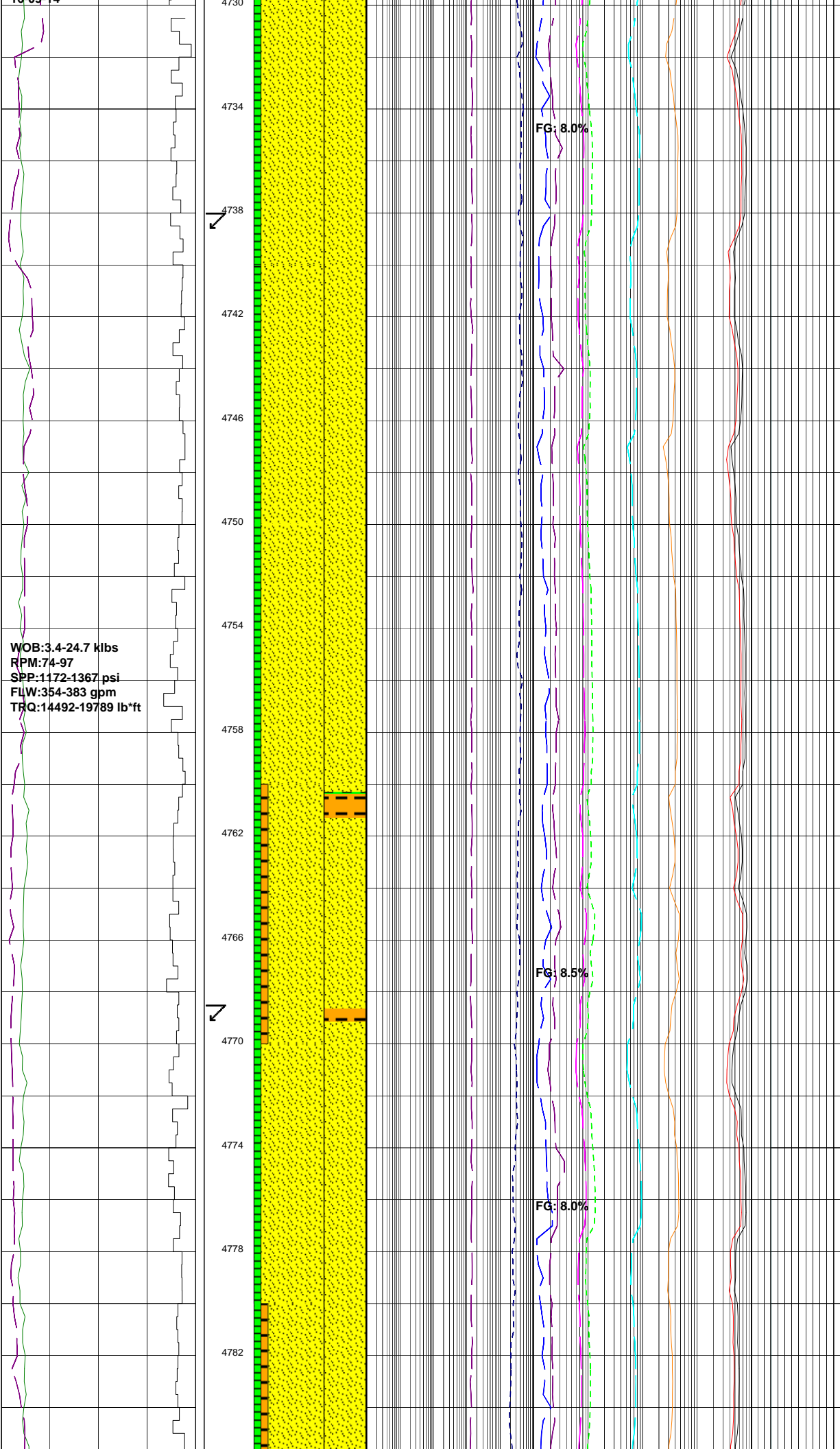
SANDSTONE:transl,transp,occ
olv gy,mod hd agg,f-med,rr crs,
mod srted,sbang-rnd,sbsph-sph,
dom seen as off wh sft rk flour,
5% cly mtx,10% sil cmt,rr blk lith,
pr inf por,no hydc fluor.

SURVEY @ 4650.44mMDRT
INC:84.40° AZI:90.21°

SANDSTONE:transl,transp,
occ olv gy,rr org,lse-mod
hd agg,med,occ f,mod wl
srted,sbang-rnd,sbsph-sph,
dom seen as off wh,sft rk
flour,5% cly mtx,5% sil
cmt,rr blk lith,pr inf
por,no hydc fluor.

ARGILLACEOUS SILTSTONE:olv
blk,brnsh blk,frm-hd,sbbiky-
blky,tr micmica,5% cly,tr
pyr,carb mat.





WOB:3.4-24.7 klbs
RPM:74-97
SPP:1172-1367 psi
FLW:354-383 gpm
TRQ:14492-19789 lb*ft

FG: 8.0%

FG: 8.5%

FG: 8.0%

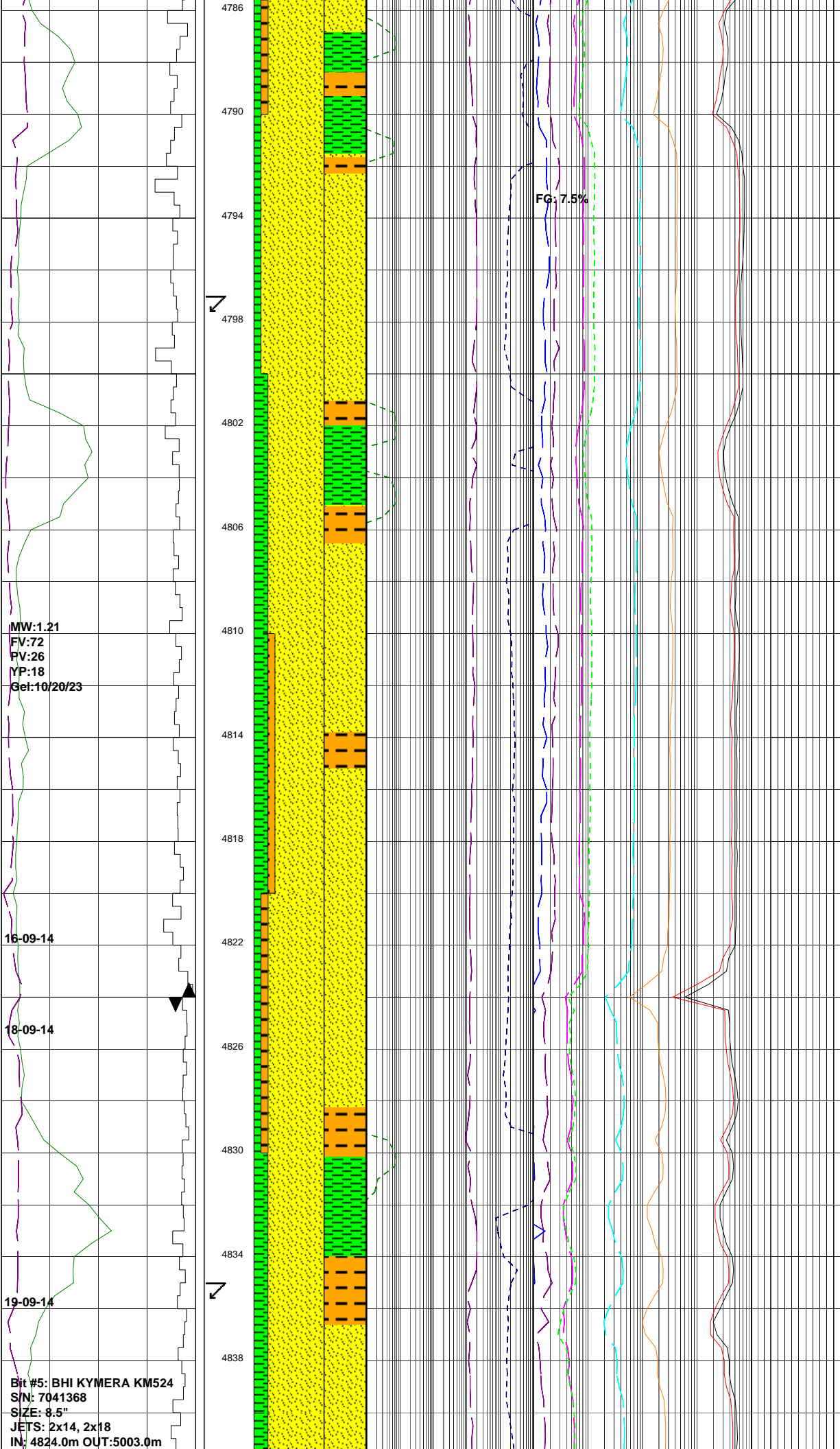
SURVEY @ 4738.00mMDRT
INC:85.49° AZI:89.58°

SANDSTONE:transl,occ transp,olv gy,
rr org,lse-mod hd agg,f-med,mod
srted,sbang-rnd,sbsph,dom seen as
off wh,lt gy,sft rk flour,5% cly mtx,5%
sil cmt,rr blk lith,pr inf por,no hydc flour.

CLAYSTONE:olv blk,brnsh blk,frm-hd,
sbbiky-blky,tr micmica,15% slt,tr pyr,
carb mat.

SURVEY @ 4768.47mMDRT
INC:85.21° AZI:89.67°

SANDSTONE:transl,occ transp,olv gy,
rr org,lse-frm agg,f-med,mod
srted,sbang-rnd,sbsph,rr sbeing,dom
seen as off wh,wh,sft rk flour,10% cly
mtx,5% sil cmt,rr blk lith,pr inf por,
no hydc flour.



MW:1.21
FV:72
PV:26
YP:18
Gel:10/20/23

16-09-14

18-09-14

19-09-14

Bit #5: BHI KYMERA KM524
S/N: 7041368
SIZE: 8.5"
JETS: 2x14, 2x18
IN: 4824.0m OUT:5003.0m

SURVEY @ 4796.96mMDRT
INC:84.46° AZI:89.89°

CLAYSTONE:olv blk,brnsh blk,frm-hd,
occ sft,sbblky-blky,tr micmica,10% slt,
carb mat.

SANDSTONE:transl-transp,olv
gy,rr org,lse agg,f-med,dom
med,occ crs,mod wl srted,sbang-
rnd,sbsph,rr sbelng,dom seen as
off wh,wh sft rk flour,5% cly mtx,
5% sil cmt,rr blk lith,pr inf por,
no hydc fluor.

CLAYSTONE:olv blk,brnsh blk,frm-hd,
sbblky-blky,tr micmica,5% slt,
carb mat.

SURVEY @ 4835.42mMDRT
INC:84.72° AZI:88.83°

RUN: 179.0m HRS:19.27
COND:1-4-BT-S-X-I-JD-HP
1-8-BT-G-E-I-JD-HP

4842

4846

4850

4854

4858

4862

4866

4870

4874

4878

4882

4886

4890

4894

FG: 7.4%

FG: 9.7%

SANDSTONE:transp,occ transl,olv gy,
lss-occ mod hd agg,f-med,mod srtd,
sbang-rnd,sbsph,occ seen as off wh,
wh,sft rk flour,tr-5% cly mtx,5% sil
cmt,rr blk lith,pr inf por,no hydc flour.

SURVEY @ 4865.24mMDRT
INC:84.63° AZI:88.91°

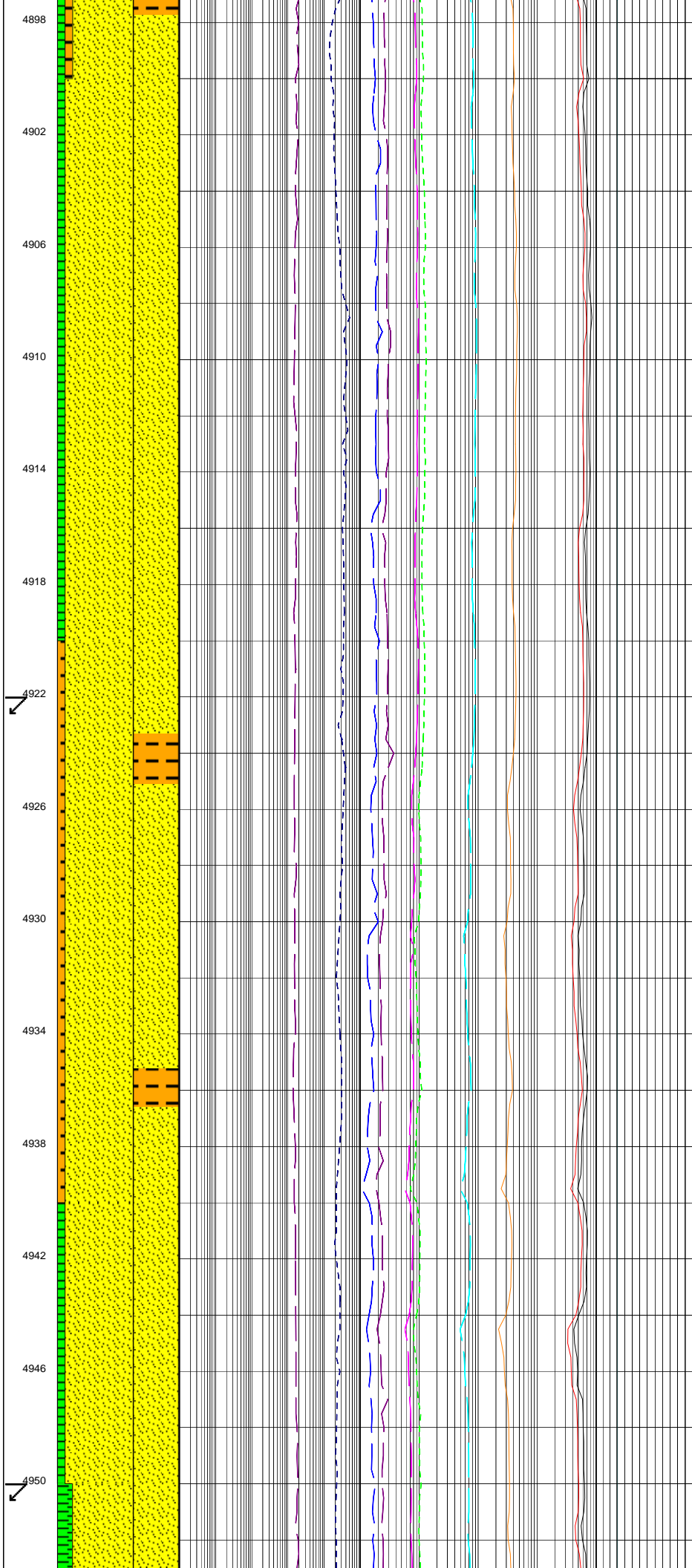
SANDSTONE:transp,occ lt olv gy,
lse-frm agg,f-med,occ vf,crs,
mod wl srtd,sbrnd-rnd,sbsph,occ
seen as off wh,sft rk flour,tr-5% cly
mtx,5% sil cmt,rr blk lith,pr inf por,
no hydc flour.

SURVEY @ 4893.63mMDRT
INC:83.99° AZI:89.10°

CLAYSTONE:olv blk,dk gy,frm-hd,
occ sft shblky,blkv tr micpica 15%

WOB:0.2-14.1 klbs
RPM:73-89
SPP:1372-1530 psi
FLW:374-398 gpm
TRQ:15489-20750 lb*ft

MW:1.205
FV:73
PV:29
YP:17
Gel:11/22/25

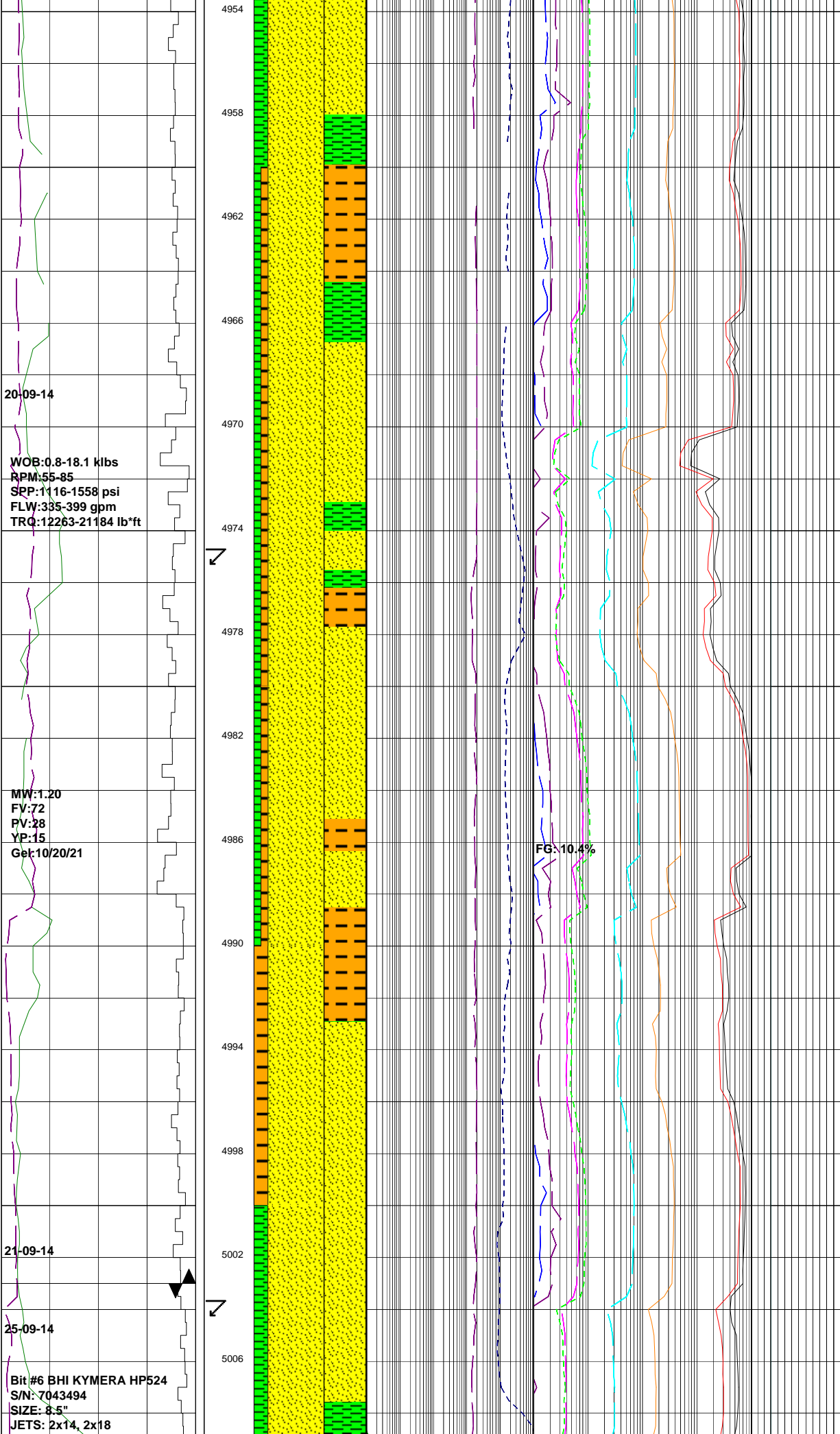


SANDSTONE:transp,occ transl,
lse frm agg,f-med,tr crs,mod
-pr srted,sbang-rnd,sbsph-sph,tr
seen as off wh,sft rk flour,tr-5%
cly mtx,5% sil cmt,rr blk lith,
pr inf por,no hydc fluor.

SURVEY @ 4922.0mMDRT
INC:84.43° AZI:89.35°

SANDSTONE:transp,occ transl,
olv gy,lse frm agg,f-med,
occ crs,wl srted,sbrnd-rnd,
sbsph-sph,tr seen as off wh,
sft rk flour,tr-5% cly mtx,
tr-5% sil cmt,rr blk lith,
pr inf por,no hydc fluor.

SURVEY @ 4950.40mMDRT
INC:84.75° AZI:89.51°

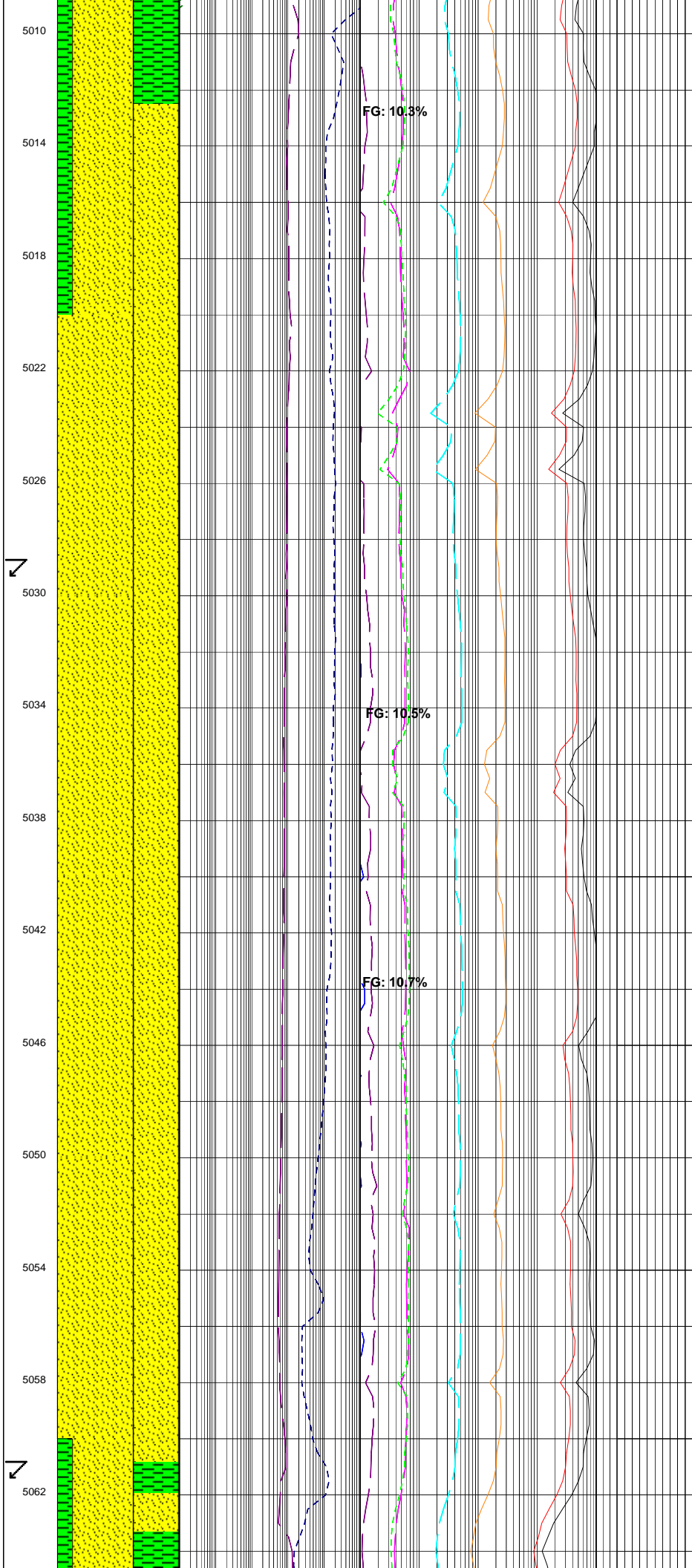


IN: 5003.0m OUT: 5139.0m
RUN: 136.0m HRS: 19.20
COND: 1-1-WT-S-A-I-NO-TD
1-2-BT-S-E-I-NO-TD

WOB: 0.7-8.1 klbs
RPM: 69-85
SPP: 1140-1407 psi
FLW: 305-354 gpm
TRQ: 15672-20411 lb*ft

MW: 1.18
FV: 79
PV: 31
YP: 17
Gel: 13/22/28

27-09-14



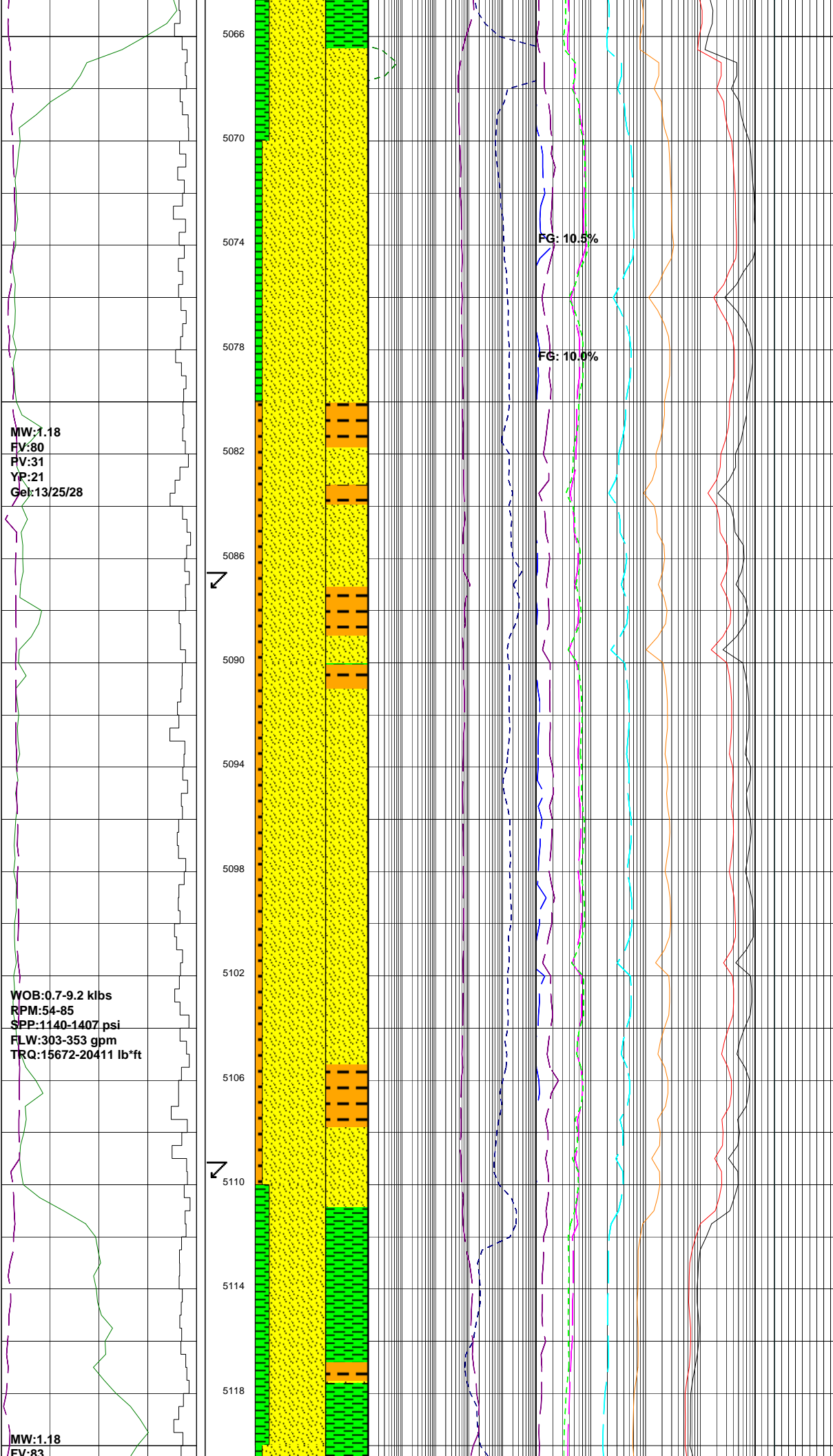
CLAYSTONE: olv blk, dk gy,
frm-mod hd, tr sft, occ plas, sbblky,
tr amor, rr micmica, 15-20% slt.

SANDSTONE: transp, occ transl, olv
gy, brn, rr org, lse-frm agg, f-med, rr crs,
mod srtd, sbang-rnd, sbsph-sph,
tr-5-10% cly mtx, tr-5% sil cmt,
5% blk lith, pr inf por, no
hydc fluor.

SURVEY @ 5028.67mMDRT
INC: 84.95° AZI: 90.89°

SANDSTONE: transp, occ transl, olv gy,
rr org, lse-frm agg, f-med, rr crs, mod srtd,
sbang-rnd, sbsph-sph, tr-5% cly mtx, tr-
10% sil cmt, tr blk lith, rr DOLOMITE,
pr inf por, no hydc fluor.

SURVEY @ 5060.78mMDRT
INC: 84.83° AZI: 91.13°



MW:1.18
FV:80
YP:31
Ge:13/25/28

WOB:0.7-9.2 klbs
RPM:54-85
SPP:1140-1407 psi
FLW:303-353 gpm
TRQ:15672-20411 lb*ft

MW:1.18
FV:83

CLAYSTONE: olv blk, dk gy,
frm-hd, hom i/p, sbbly, tr sbfis,
rr carb mat, 10% slt.

ARGILLACEOUS SILTSTONE:
dk gysh brn, brnsh blk, dk brn, frm-sft,
crmbly, occ sbbly, tr-5% cly, tr v f-f
qtz grn incl.

SURVEY @ 5086.53mMDRT
INC:86.04° AZI:90.56°

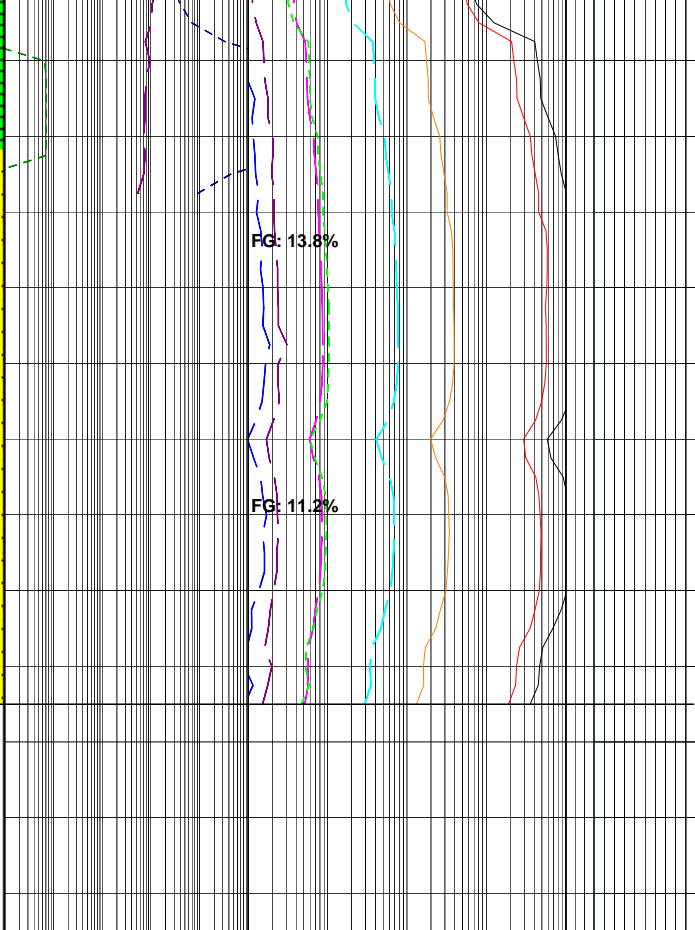
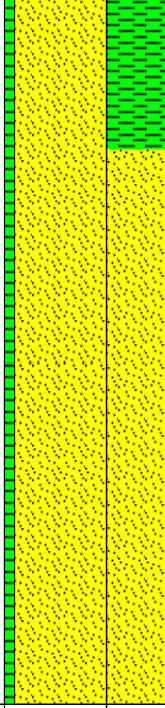
SANDSTONE: transp, occ transl,
org, rdsh org, lse-frm agg, f-med,
rr crs, v f, mod srted, sbang-sbrnd,
sbsph-sph, tr-5% cly mtx, 10-5%
sil cmt, tr blk lith, rr glauc, pr inf por,
no hydc fluor.

SURVEY @ 5109.13mMDRT
INC:85.49° AZI:90.40°

CLAYSTONE: olv blk, dk gy, dk brn
frm-hd, hom i/p, sbbly, occ sbfis,
rr carb mat, 10% slt.

PV:31
YP:22
Gel: 14/24/27

5122
5126
5130
5134
5138
5142



7" LINER SHOE @ 5135.0mMDRT

SANDSTONE:transp,occ transl,
org,lse frm agg,f-med,rr crs,v f,
mod srted,sbang-sbrnd,sbsph-sph,
5% cly mtx,10-5% sil cmt,tr blk lith,
rr glauc,pr inf por,no hydc fluor.

PRELUDE P1 ST1 Total Depth of
5139.0mMDRT, 4104.9mTVDRT
@ 17:15 hrs on 27-09-2014