Schlumberger

GEOFRAME PROCESSED INTERPRETATION

FMI Image 2000 – 4100’

25" Scale – True Dip

*A Mark of Schlumberger

Using the following logs:

COMPANY:	Battelle Pacific Northwest Lab				
WELL:	Wallula Basalt Pilot #1				
FIELD:	Wildcat				
County:	Walla Walla				
State:	Washington				
COUNTRY:	USA				
Date Logged:	18–Apr–2009	Date Processed:	12–October–2009		
Well Location:	Sec 10, T7N, R31E				
Elevations:	KB: –304.571m	DF: –304.571m	GL: –304.571m		
API Number:		Job Number:			

FOLD HERE

The well name, location and borehole reference data were furnished by the customer.

All interpretations are opinions based on inferences from electrical or other measurements and we cannot, and do not guarantee the accuracy or correctness of any interpretation, and we shall not, except in the case of gross or willful negligence on our part, be liable or responsible for any loss, costs, damages or expenses incurred or sustained by anyone resulting from any interpretations made by any of our officers, agents or employees. These interpretations are also subject to Clause 4 of our General Terms and Conditions as set out in our current Price Schedule.

Field Recording:	Location: SACRAMENTO	Software Version: 17C0–154	Engineer: BEN GRAU
Office Recording:	ICS Center: Denver DCS	Baseline: GF 4.4	Log Analyst: A. Mioduchowski/Koepsell

Mud and Borehole Measurements:

Rm @ Measured Temperature: 23.1ohm.m @	BHT: 100.5degF	Bitsize: 12.25in	
Rmf @ Measured Temperature: @	Type Fluid in Hole:	FRESH WATER	
Rmc @ Measured Temperature: @	Mud Density: 8.4lbm/gal		

Remarks:

Rm for aperture = 15.7 ohmm

PEX log curves are depth adjusted to match FMI image

Segment tracing employed to measure joint/polyganal fracture texture (pink curves)

Bed_Boundary
(Sinusoid)
Orientation North

GR.WELLEDIT GR@LDM–RHOZ;6 .WE
0 (gAPI) 150

GR_EDTC GR_EDTC@FMI_CAL_MAXS_
0 (gAPI) 150

TOPS

Open_LithBound_Fracture
(Trace)
Reference : North
Apertures
(10^N in)
–5 –4 –3 –2 –1 0 1

Shear_Induced_Fracture
(Trace)
Reference : North

Open_PartiallyHealed_Fracture
(Trace)
Reference : North

BoreHole_Breakout
(Trace)
Reference : North

Healed_Continuous_Fracture

Healed_Fracture_Terminated_Fracture
(Sinusoid)
Orientation North

Healed_LithBound_Fracture
(Sinusoid)
Orientation North

Healed_Continuous_Fracture
(Sinusoid)
Orientation North

Open_Fracture_Terminated_Fracture
(Sinusoid)
Orientation North

Open_PartiallyHealed_Fracture
(Sinusoid)
Orientation North

BoreHole_Breakout
True Dip
–5 (Deg) 95

Shear_Induced_Fracture
True Dip
–5 (Deg) 95

Tensile_Induced_Fracture
True Dip
–5 (Deg) 95

Open_LithBound_Fracture
True Dip
–5 (Deg) 95

Open_Continuous_Fracture
True Dip
–5 (Deg) 95

Open_PartiallyHealed_Fracture
True Dip
–5 (Deg) 95

Open_Fracture_Terminated_Fracture
True Dip
–5 (Deg) 95

Healed_Continuous_Fracture
True Dip
–5 (Deg) 95

Fault
True Dip
–5 (Deg) 95

(Trace)

Reference : North

Healed_LithBound_Fracture

(Trace)

Reference : North

Shear_Set2

(Trace)

Reference : North

Tensile–Set2

(Trace)

Reference : North

Open_LithBound_Set2

(Trace)

Reference : North

Apertures

(10^N in)

−5 −4 −3 −2 −1 0 1

Open_Continuous_Fracture

(Trace)

Reference : North

Apertures

(10^N in)

−5 −4 −3 −2 −1 0 1

DATA.SEGMENTTRACELENGTH_ITT D

−5000 ( ) 5000

Net Segment Trace Length

( )

Net Segment Porosity

( )

AHT10.WELLED

0.1 (ohm.m) 1000

AHT20.WELLED

0.1 (ohm.m) 1000

AHT30.WELLED

0.1 (ohm.m) 1000

AHT60.WELLED

0.1 (ohm.m) 1000

AHT90.WELLED

0.1 (ohm.m) 1000

SRES@FMI_CAL

0.1 (ohm.m) 1000

)pen_LithBound_Fracture

Mean Aperture

0.0001 (in) 1

DPHZ.WELLEDI

0.4 (ft3/ft3) −0.1

Open_Continuous_Fracture

(Sinusoid)

Orientation North

Erosional_Scour

(Sinusoid)

Orientation North

Sedimentary_Bedding

(Sinusoid)

Orientation North

Bed_Boundary

(Sinusoid)

Orientation North

Open_LithBound_Fracture

(Sinusoid)

Orientation North

Open_LithBound_Set2

(Sinusoid)

Orientation North

Shear_Induced_Fracture

(Trace)

Reference : North

Tensile_Induced_Fracture

(Trace)

Reference : North

Shear_Set2

(Trace)

Reference : North

Healed_Fracture_Terminated_Fracture

True Dip

−5 (Deg) 95

Healed_LithBound_Fracture

True Dip

−5 (Deg) 95

Tensile–Set2

True Dip

−5 (Deg) 95

Open_LithBound_Set2

True Dip

−5 (Deg) 95

Open Fracture Trace L

0 (1/ft) 10

Healed Fracture Trace

10 (1/ft) 0

Open Fracture

Healed Fracture

Annotations

P33 Segment Porosity

0 ( ) 0.01

P21 Segment TL

0 ( ) 10

P21–Fracture TraceLen

Bed_Boundary

True Dip

−5 (Deg) 95

Erosional_Scour

True Dip

−5 (Deg) 95

MD
1 : 48
ft

INCLINOME
Borehole drift
0 Deg 10

HCAL.WELL
10 (in) 20

Breakout

Open_PartiallyHealed_Fracture
(Trace)
Reference : North
Apertures
(10^N in)
−5 −4 −3 −2 −1 0 1

Open_LithBound_Set3
(Trace)
Reference : North
Apertures
(10^N in)
−5 −4 −3 −2 −1 0 1

FMI_CAL_MAXS_MAPC_052PUP FMI
Horizontal Scale: 1 : 12.828
Orientation North
0 120 240 360
Resistive FMI Image Conductive

PartiallyHealed_Fracti
Mean Aperture
0.0001 (in) 1

PartiallyHealed_Fracti
Mean Aperture
0.0001 (in) 1

Open_LithBound_Set2
Mean Aperture
0.0001 (in) 1

NetFracPoro
( )

Open_LithBound_Set3
Mean Aperture
0.0001 (in) 1

Shale
Water
Halite
cial Minera
cial Minera
Siderite
Albite
ELAN_
1 (V/V) 0

MD
1 : 48
ft

NPOR.WELLEDI
0.4 (ft3/ft3) −0.1

PEFZ.WELLEDI
0 ( ) 10

X Over

Induced Frac
10 (1/ft) 0

Breakout TL
0 (1/ft) 10

Induced

Breakout TL

NetHealTL
( )

NetOpenTL
( )

Tensile−Set2
(Trace)
Reference : North

Open_LithBound_Set3
(Sinusoid)
Orientation North

FMI_CAL_MAXS_MAPC_052PUP FMI .SCA
Horizontal Scale: 1 : 10.996
Orientation North
0 120 240 360
Resistive FMI Image Conductive

Sedimentary_Bedding
True Dip
−5 (Deg) 95

Shear_Set2
True Dip
−5 (Deg) 95

Tensile−Set2
True Dip
−5 (Deg) 95

Fracture Porosity
0 (ft3/ft3) 0.01

Open_LithBound_Set3
True Dip
−5 (Deg) 95

#Open
( )

#Heale
( )

2000
2010
2020

2.886
2.875

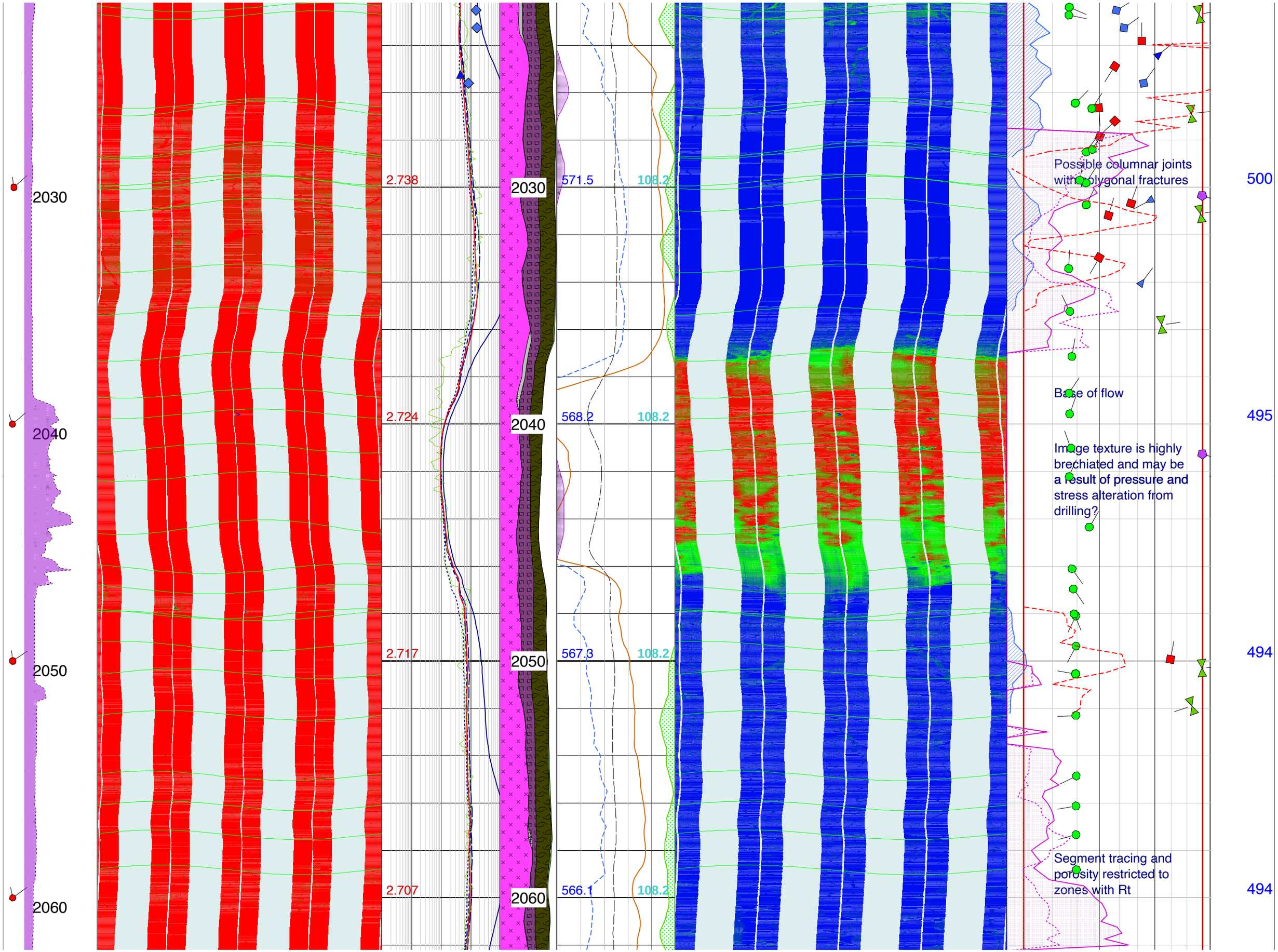
2010
2020

585.8 108.2
583.1 108.2

Possible columnar jointe
with polygonal fractures

Base of flow
Image texture is highly
brechiated and may be
a result of pressure and
stress alteration from
drilling?

514
511


2030
2040
2050
2060
2.738
2030
2.724
2040
2.717
2050
2.707
2060
571.5
108.2
568.2
108.2
567.3
108.2
566.1
108.2
Possible columnar joints with polygonal fractures
Base of flow
Image texture is highly brechiated and may be a result of pressure and stress alteration from drilling?
Segment tracing and porosity restricted to zones with Rt
500
495
494
494

2070

2080

2090

2100

2.694

2070

563.7

108.2

2.662

2080

557.6

108.2

2.629

2090

547.9

108.2

2.629

2100

547.9

107.8

492

488

83 477

83 477

Base of flow
Image texture is highly brechiated and may be a result of pressure and stress alteration from drilling?

2110

2120

2130

2140

2.613

2.613

2.608

2.603

2110

2120

2130

2140

546.2 107.8

546.2 107.8

545.4 107.8

542.1 107.8

83 476

83 476

83 474

83 472

Possible columnar joints
with polygonal fractures

2150

2160

2170

2180

2.598

2.591

2.587

2.587

2150

2160

2170

2180

540.8 107.8

539.9 107.8

539.0 107.8

539.0 107.8

Base of flow

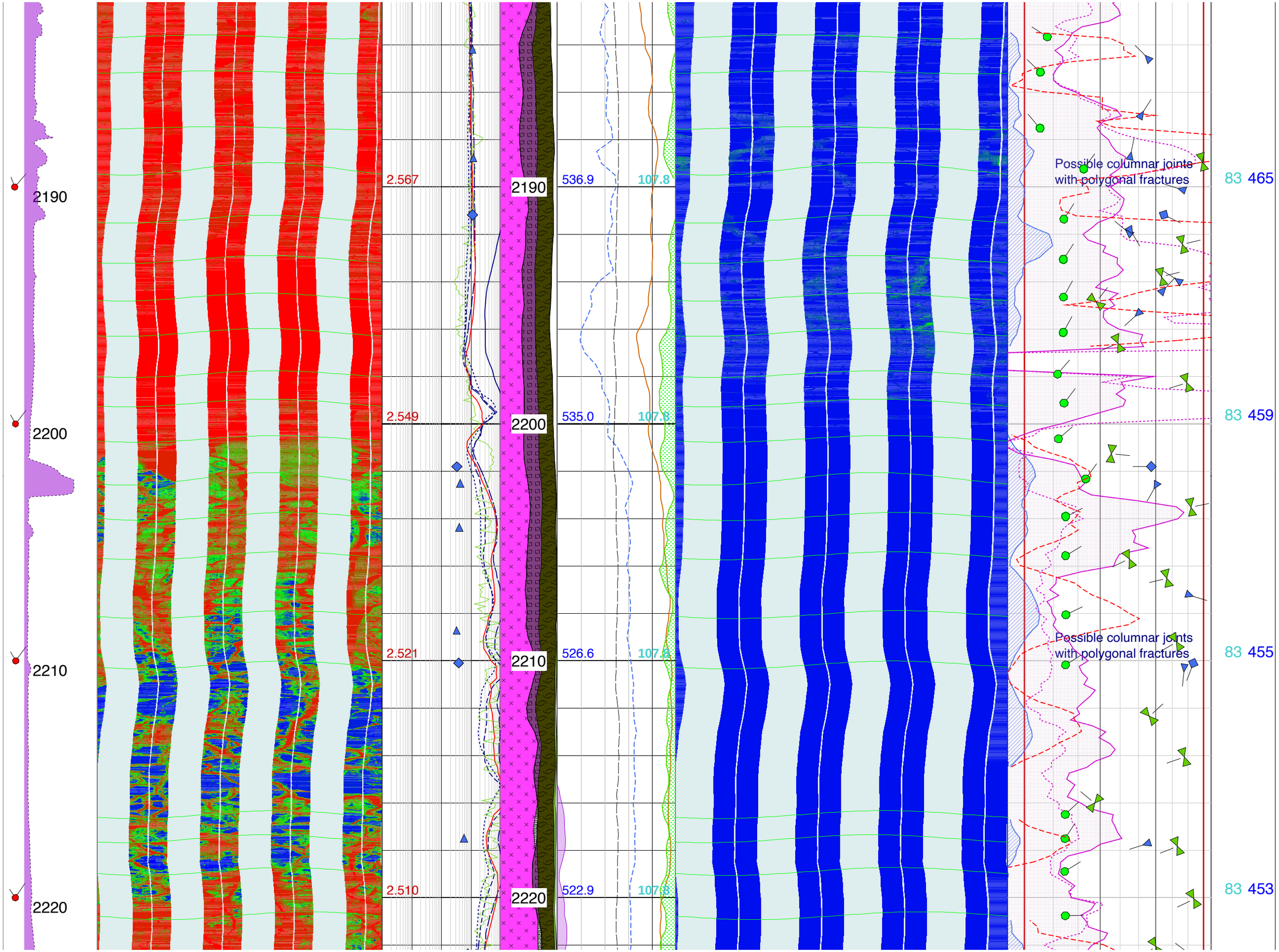
Base of flow

83 472

83 471

83 469

83 469


2190
2200
2210
2220
2.567
2190
2.549
2200
2.521
2210
2.510
2220
536.9
107.8
535.0
107.8
526.6
107.8
522.9
107.8
Possible columnar joints
with polygonal fractures
83 465
83 459
Possible columnar joints
with polygonal fractures
83 455
83 453

2230

2240

2250

2260

2.472

2230

516.6

107.8

83 449

2.467

2240

515.1

107.8

83 449

2.447

2250

510.3

107.8

83 446

2.403

2260

508.4

107.8

83 444

Base of flow

Image texture is highly brechiated and may be a result of pressure and stress alteration from drilling?

2270

2280

2290

2300

2.403

2270

508.4

107.8

83 444

2.398

2280

506.4

107.8

83 442

2.390

2290

497.8

107.8

83 437

2.371

2300

486.7

107.8

83 430

2310

2320

2330

2340

2.345

2310

482.6

107.8

2.227

2320

478.8

107.8

2.118

2330

476.9

107.8

2.118

2340

476.9

107.8

Base of flow

Image texture is highly brechiated and may be a result of pressure and stress alteration from drilling?

83 426

83 424

Image texture is highly brechiated and may be a result of pressure and stress alteration from drilling?

83 423

83 423

2350

2360

2370

2380

2.118

2350

476.9

107.8

2.118

2360

476.9

107.8

2.118

2370

476.9

107.8

2.098

2380

474.7

107.8

83 423

83 423

High angle, possibly
columar jointing

83 423

83 422

2390

2400

2410

2420

2.098

2390

474.7

107.8

2.098

2400

474.7

107.8

2.098

2410

474.7

107.8

2.098

2420

474.7

107.8

Possible columnar joints
with polygonal fractures

83 422

83 422

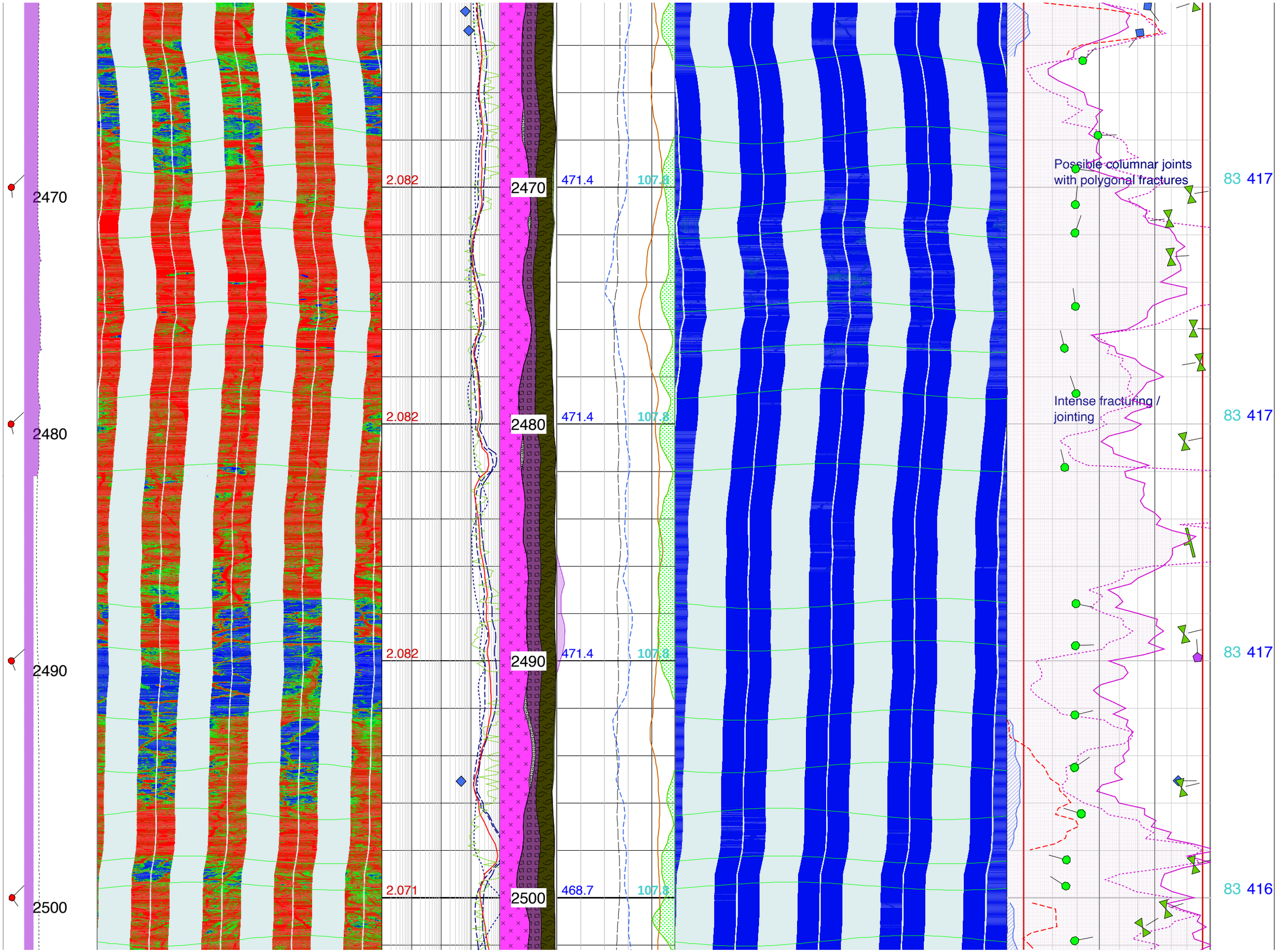
Base of flow

83 422

Image texture is highly
brechiated and may be
a result of pressure and
stress alteration from
drilling?

83 422

2430
2440
2450
2460
2.098
2430
2.098
2440
2.093
2450
2.082
2460
474.7
107.8
474.7
107.8
473.5
107.8
471.4
107.8
83 422
83 422
83 422
83 419


2470
2480
2490
2500
2.082
2470
471.4
107.8
2.082
2480
471.4
107.8
2.082
2490
471.4
107.8
2.071
2500
468.7
107.8
Possible columnar joints
with polygonal fractures
83 417
Intense fracturing /
jointing
83 417
83 417
83 416

2510

2520

2530

2540

2.059

2510

465.4

107.8

2.059

2520

465.4

107.8

2.059

2530

465.4

107.8

2.059

2540

465.4

107.8

83 415

83 415

Possible columnar joints
with polygonal fractures

Intense fracturing /
jointing

83 415

Possible columnar joints
with polygonal fractures

83 415

2550

2560

2570

2580

2.054

2550

450.4

107.8

2.052

2560

448.7

107.8

2.049

2570

443.7

107.8

2.048

2580

441.9

107.8

83 409

83 409

Possible columnar joints with polygonal fractures

Intense fracturing / jointing

83 407

83 406

2590

2600

2610

2620

2.043

2590

2.043

2600

2.043

2610

2.043

2620

440.0

107.8

440.0

107.8

440.0

107.8

440.0

107.8

Base of flow

83 404

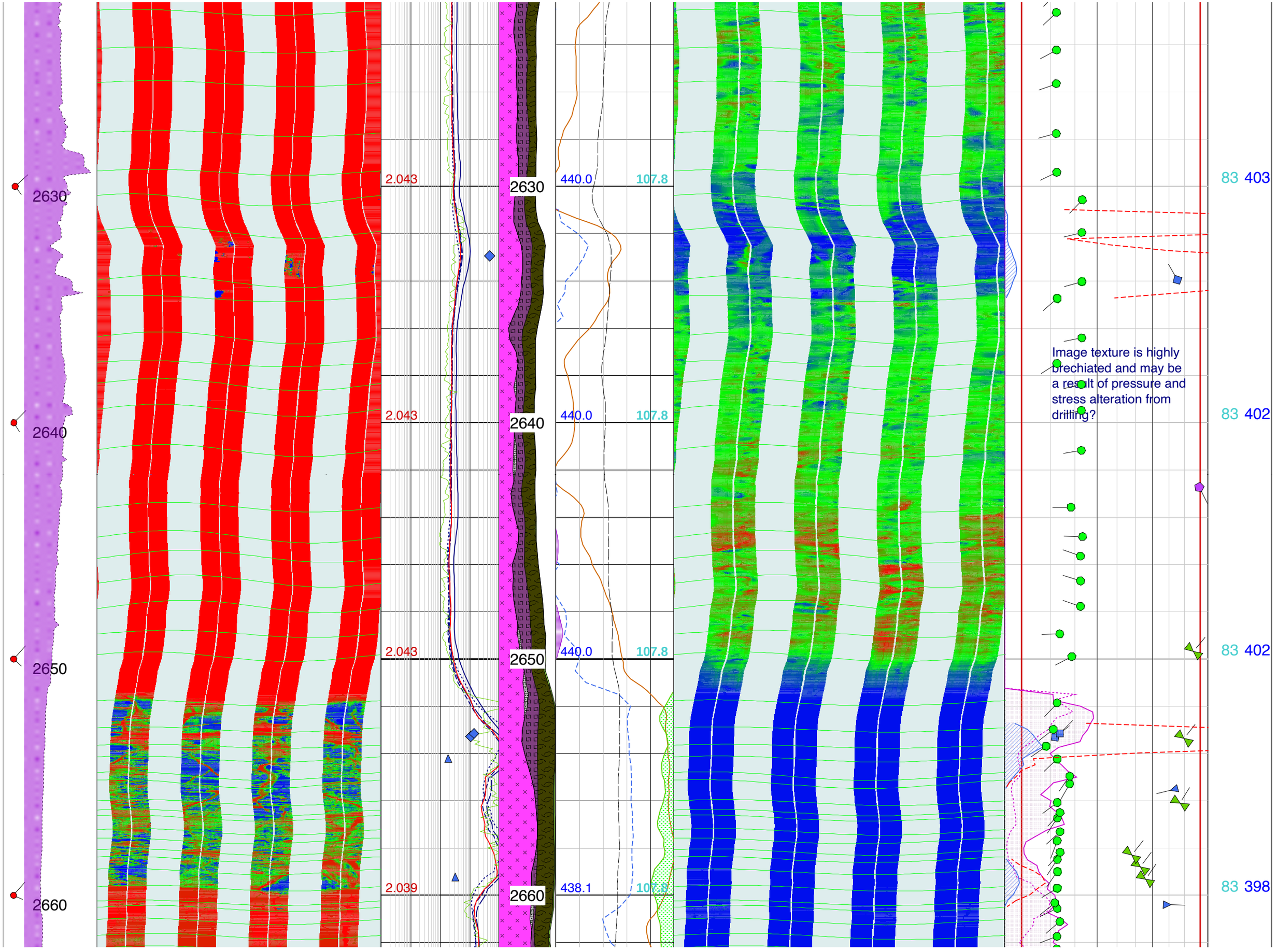
Image texture is highly brechiated and may be a result of pressure and stress alteration from drilling?

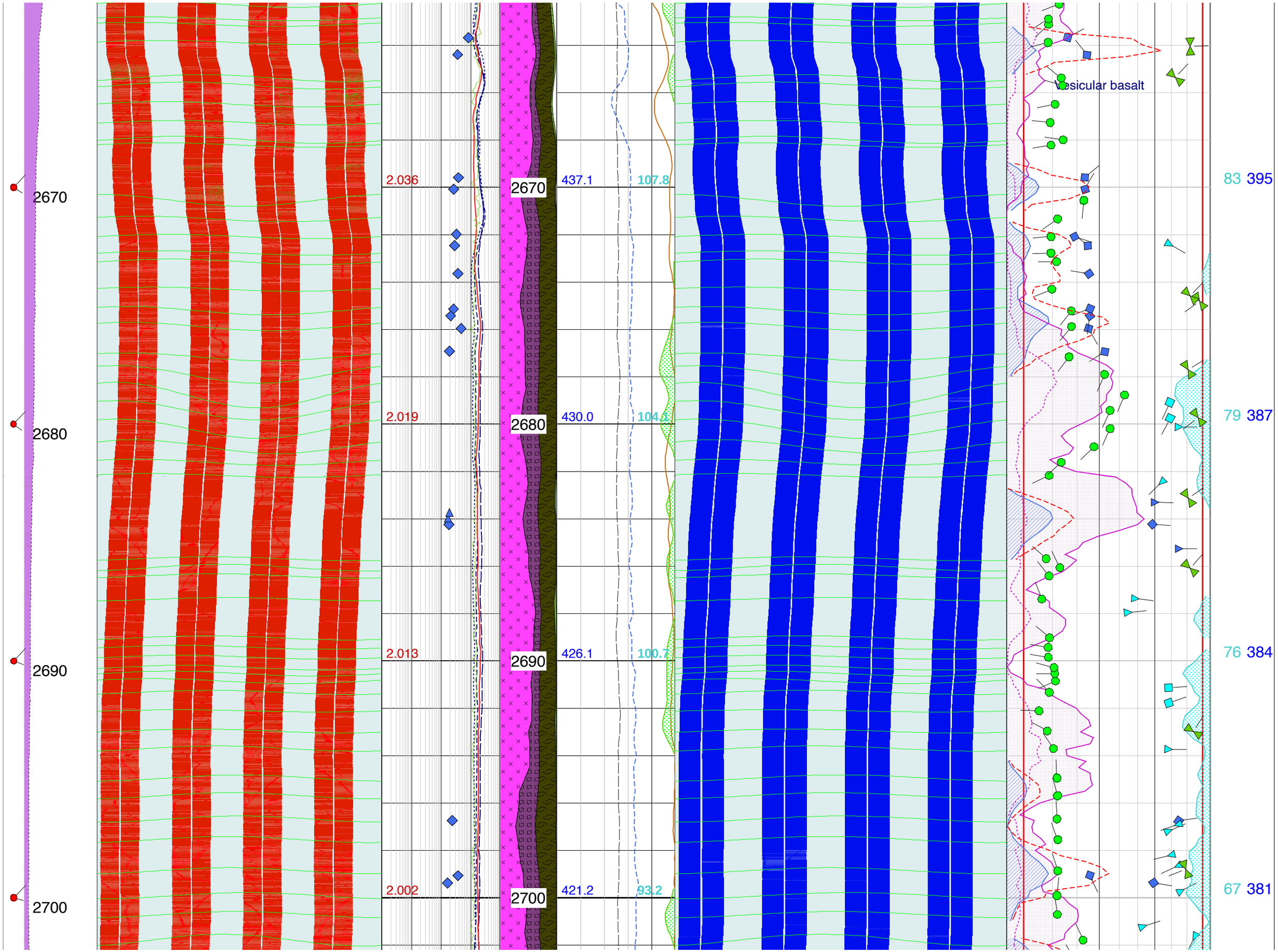
83 404

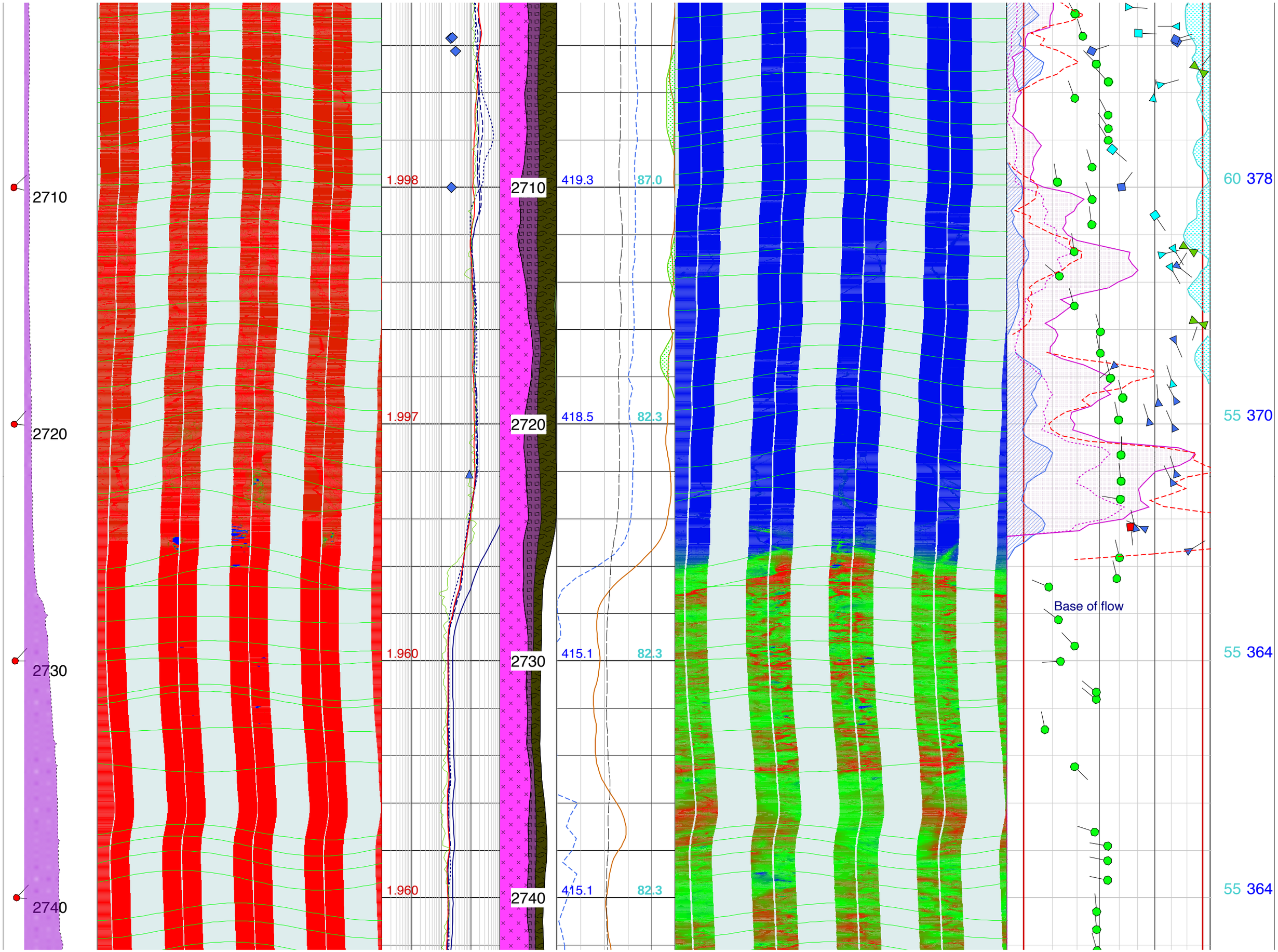
Image texture is highly brechiated and may be a result of pressure and stress alteration from drilling?

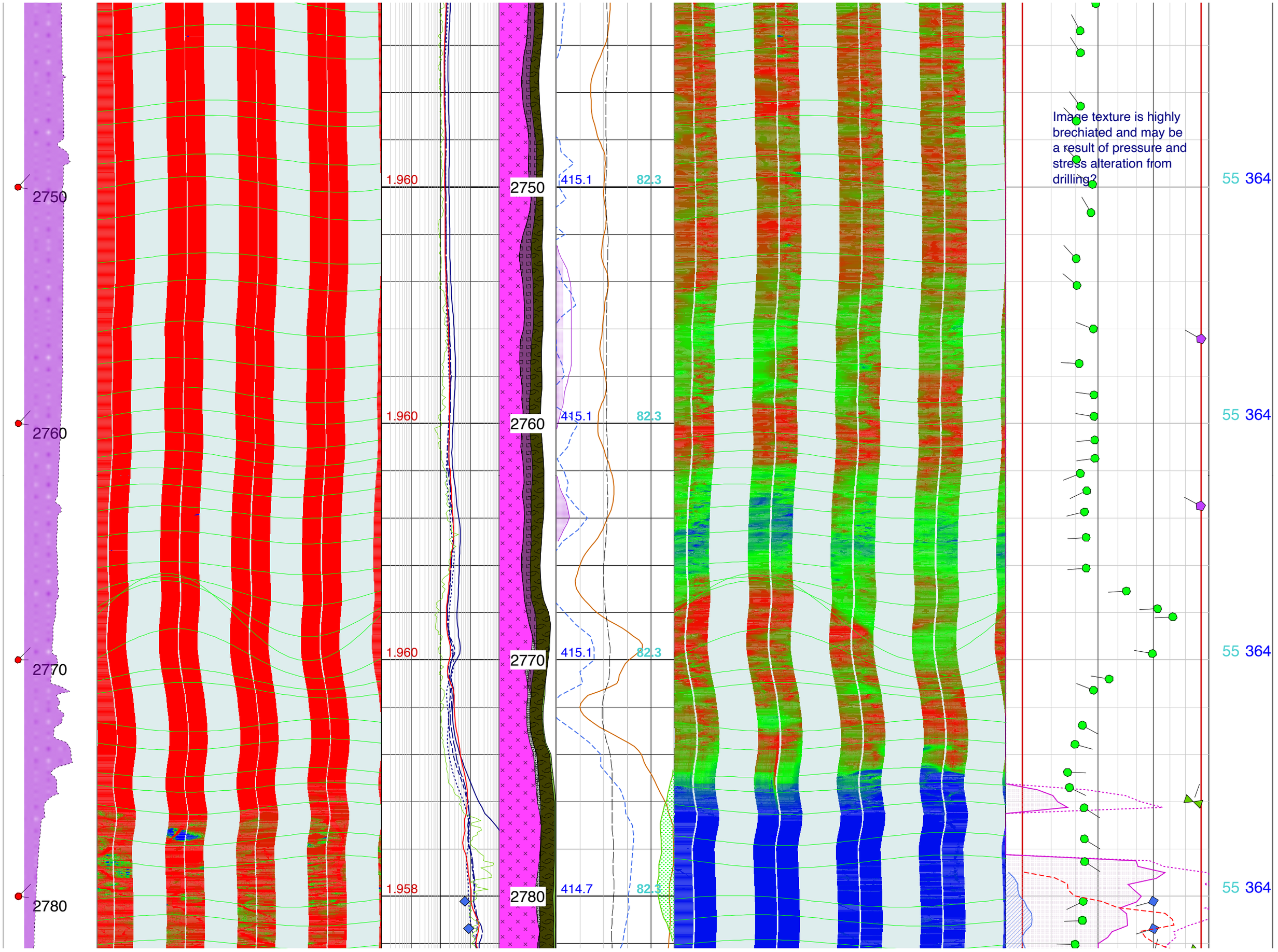
83 403

83 403


2630
2640
2650
2660
2.043
2630
2.043
2640
2.043
2650
2.039
2660
440.0
107.8
440.0
107.8
440.0
107.8
438.1
107.8
83 403
83 402
83 402
83 398
Image texture is highly brechiated and may be a result of pressure and stress alteration from drilling?


2670
2680
2690
2700
2.036
2670
437.1
107.8
2.019
2680
430.0
104.1
2.013
2690
426.1
100.7
2.002
2700
421.2
93.2
vesicular basalt
83 395
79 387
76 384
67 381


2710
2720
2730
2740
1.998
1.997
1.960
1.960
2710
2720
2730
2740
419.3
87.0
418.5
82.3
415.1
82.3
415.1
82.3
60 378
55 370
Base of flow
55 364
55 364


2750
2760
2770
2780
1.960
2750
1.960
2760
1.960
2770
1.958
2780
415.1
82.3
415.1
82.3
415.1
82.3
414.7
82.3
Image texture is highly brechiated and may be a result of pressure and stress alteration from drilling?
55 364
55 364
55 364
55 364

2790

2800

2810

2820

Slack Canyon #1 flow/lob porosity zone

1.929

2790

410.4

82.3

1.929

2800

410.4

82.3

1.929

2810

410.4

82.3

1.840

2820

406.9

81.8

55 360

55 360

Base of flow

55 360

54 357

Bedding like, possible flow features

2830

2840

2850

2860

1.830

1.826

1.822

1.822

2830

2840

2850

2860

406.5 80.3

404.7 80.3

402.2 80.3

402.2 80.3

53 357

53 356

53 355

53 355

Base of flow

Image texture is highly brechiated and may be a result of pressure and stress alteration from drilling?

2870

2880

2890

2900

1.822

2870

402.2

80.3

1.822

2880

402.2

80.3

1.820

2890

401.6

80.3

1.817

2900

399.5

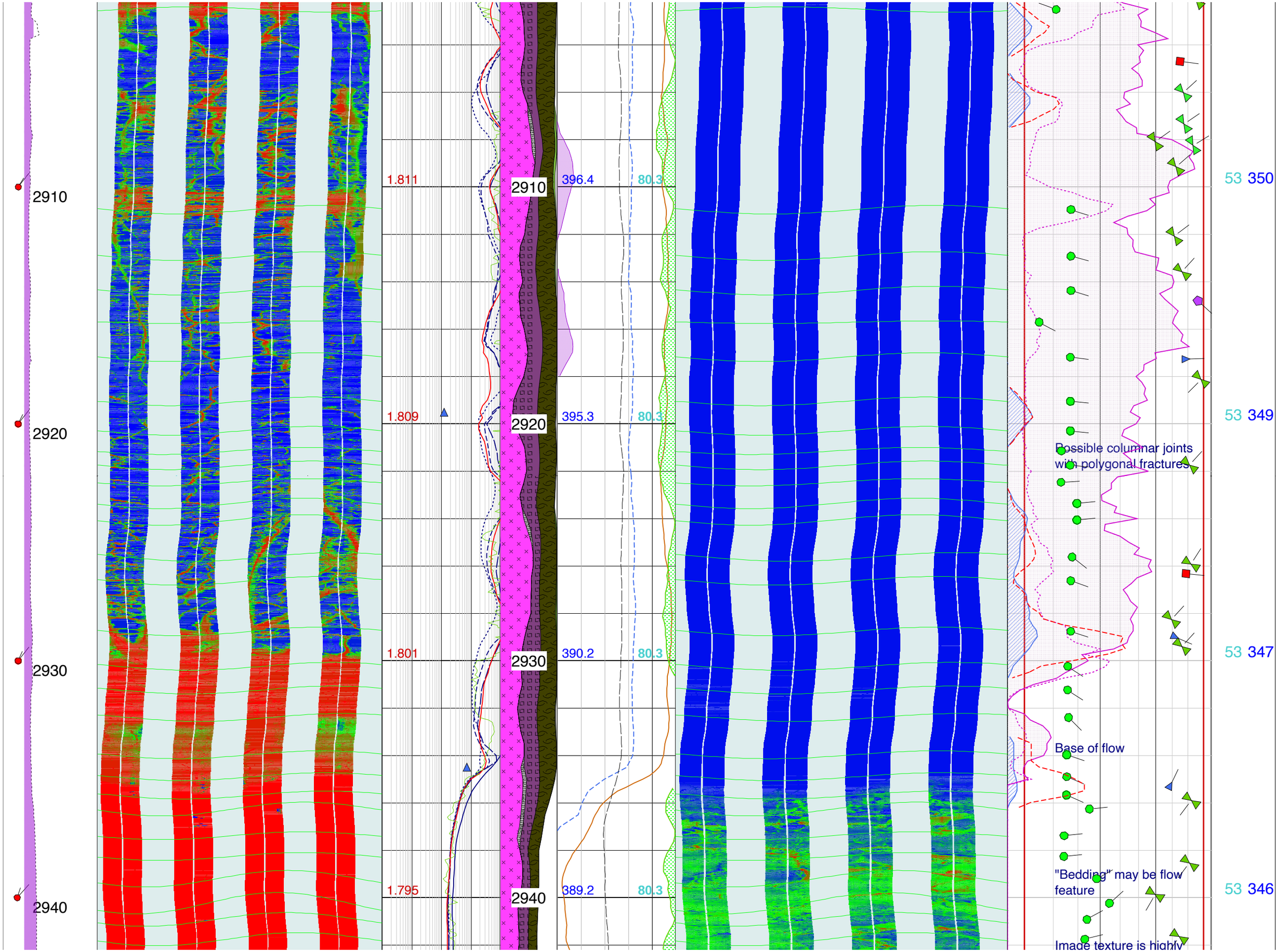
80.3

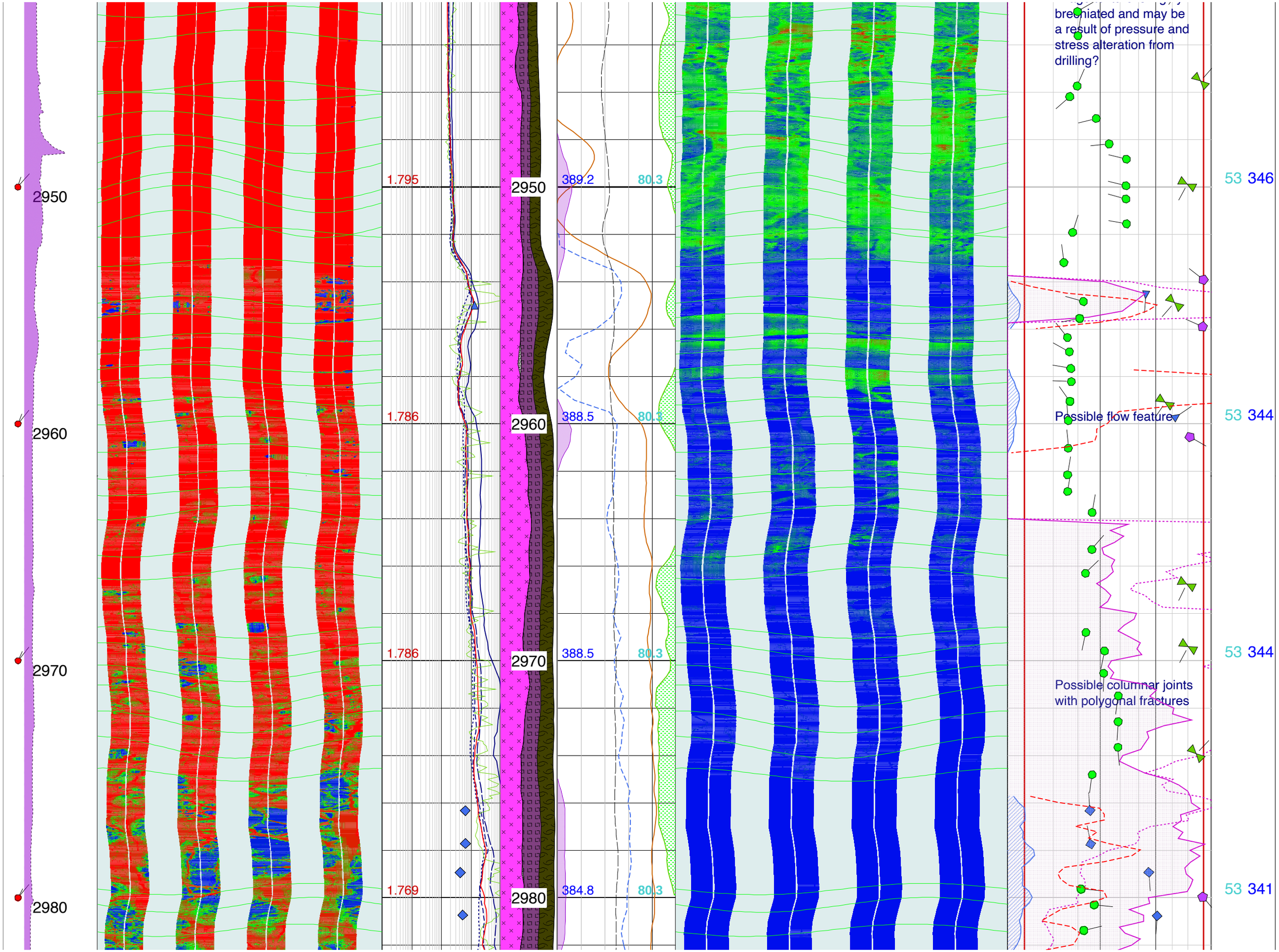
53 355

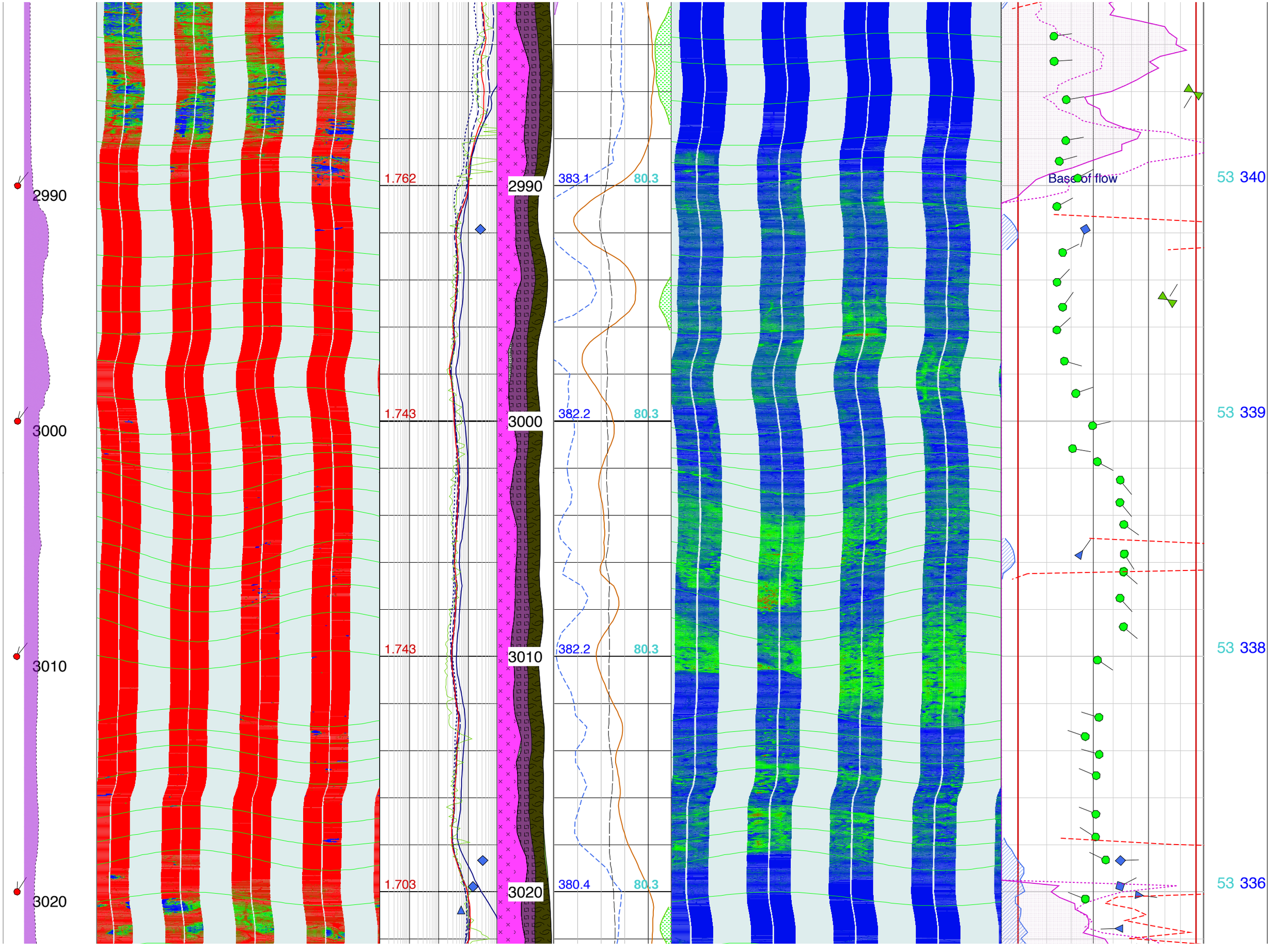
53 354

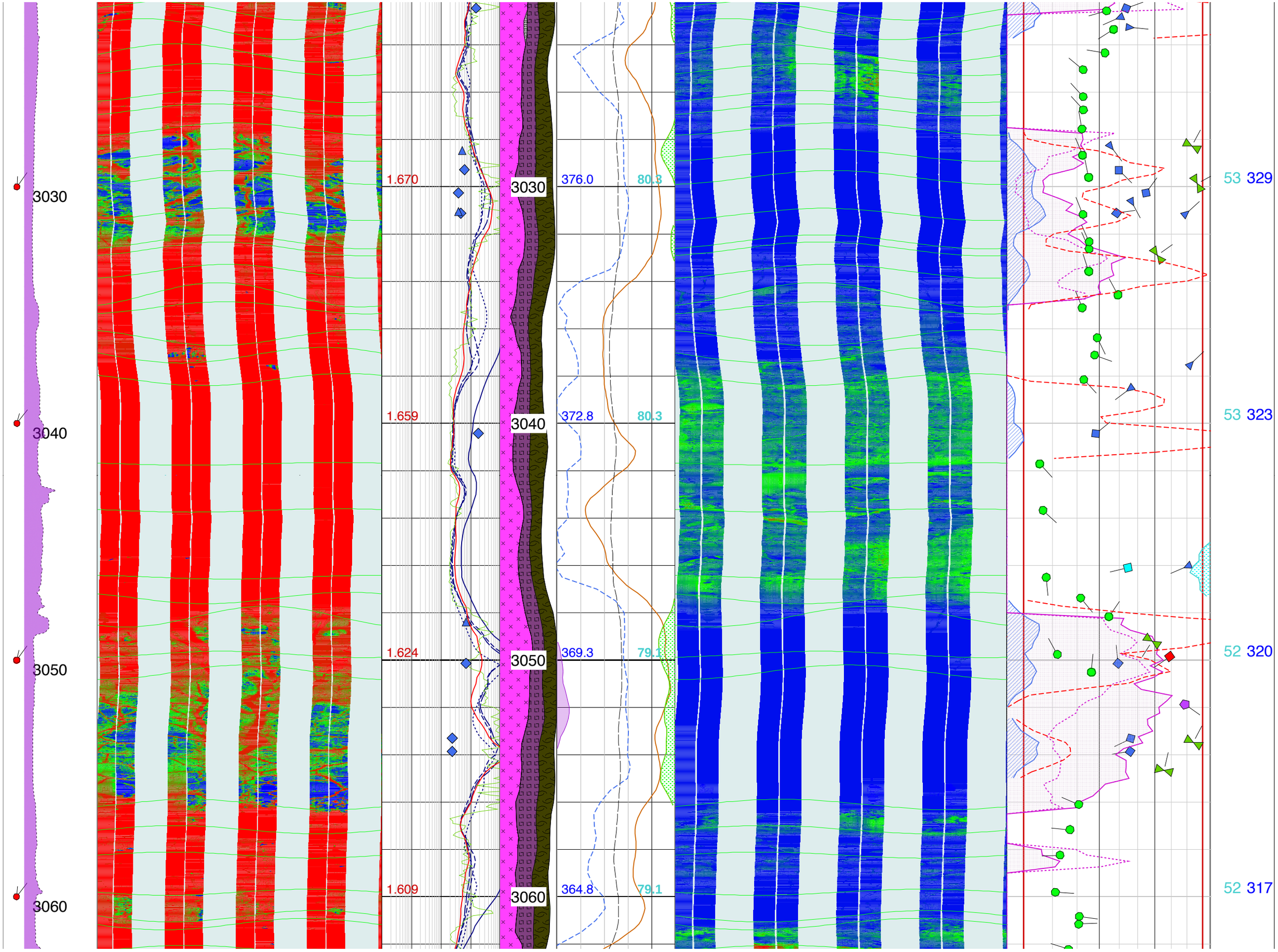
53 353

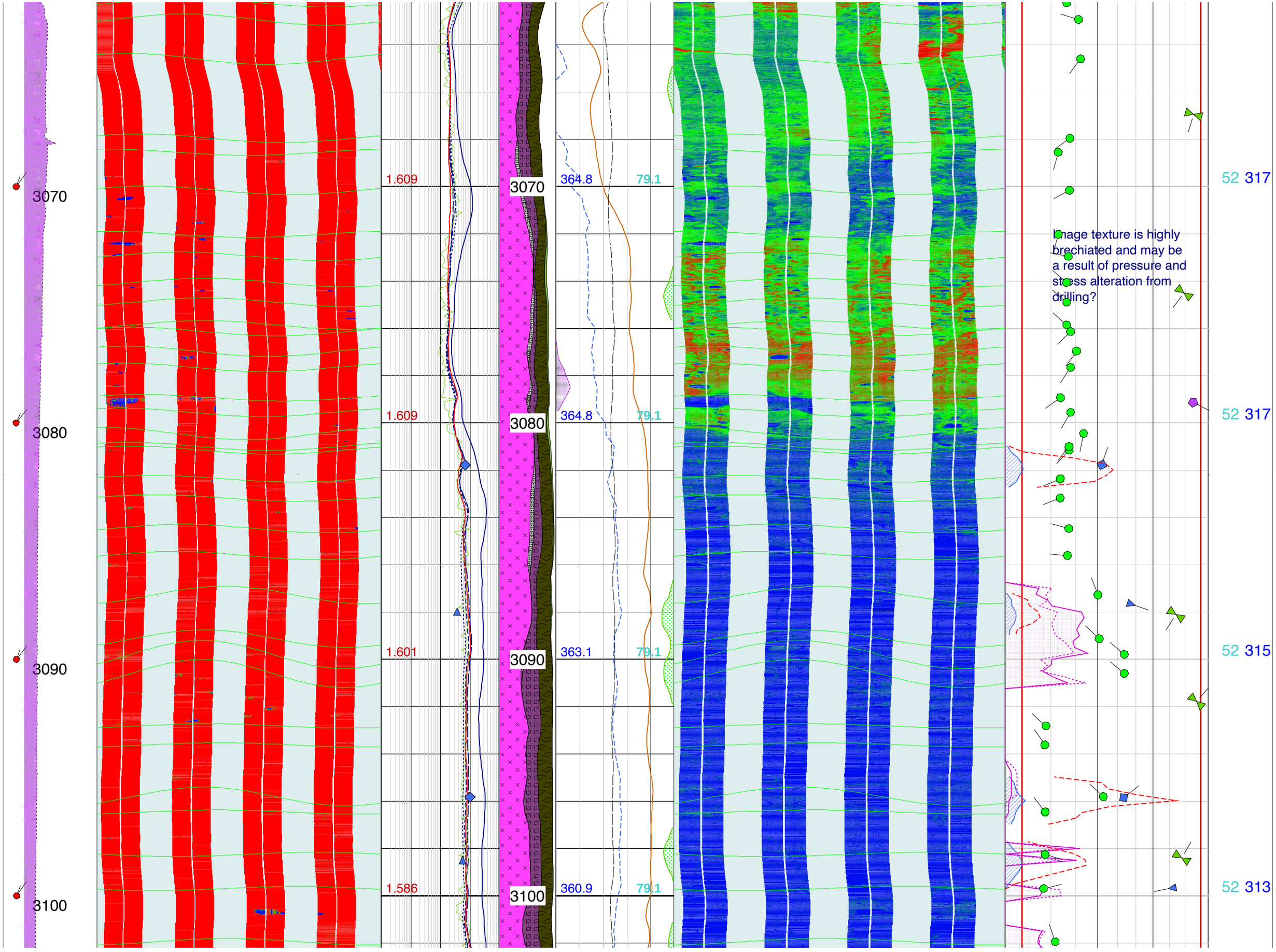
53 351

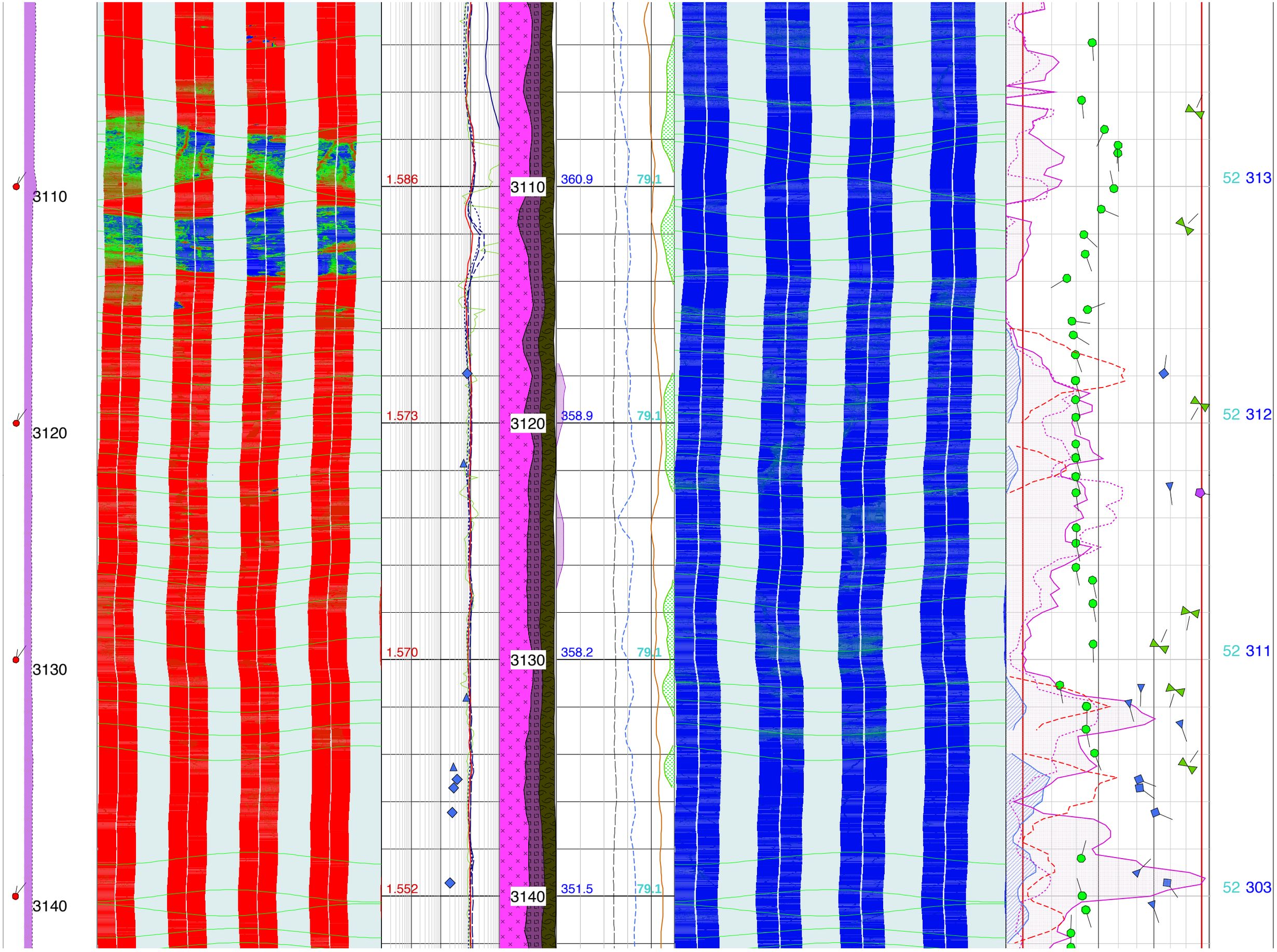

2910
2920
2930
2940
1.811
2910
396.4
80.3
1.809
2920
395.3
80.3
1.801
2930
390.2
80.3
1.795
2940
389.2
80.3
53 350
53 349
53 347
53 346
Possible columnar joints with polygonal fractures
Base of flow
"Bedding" may be flow feature
Image texture is highly

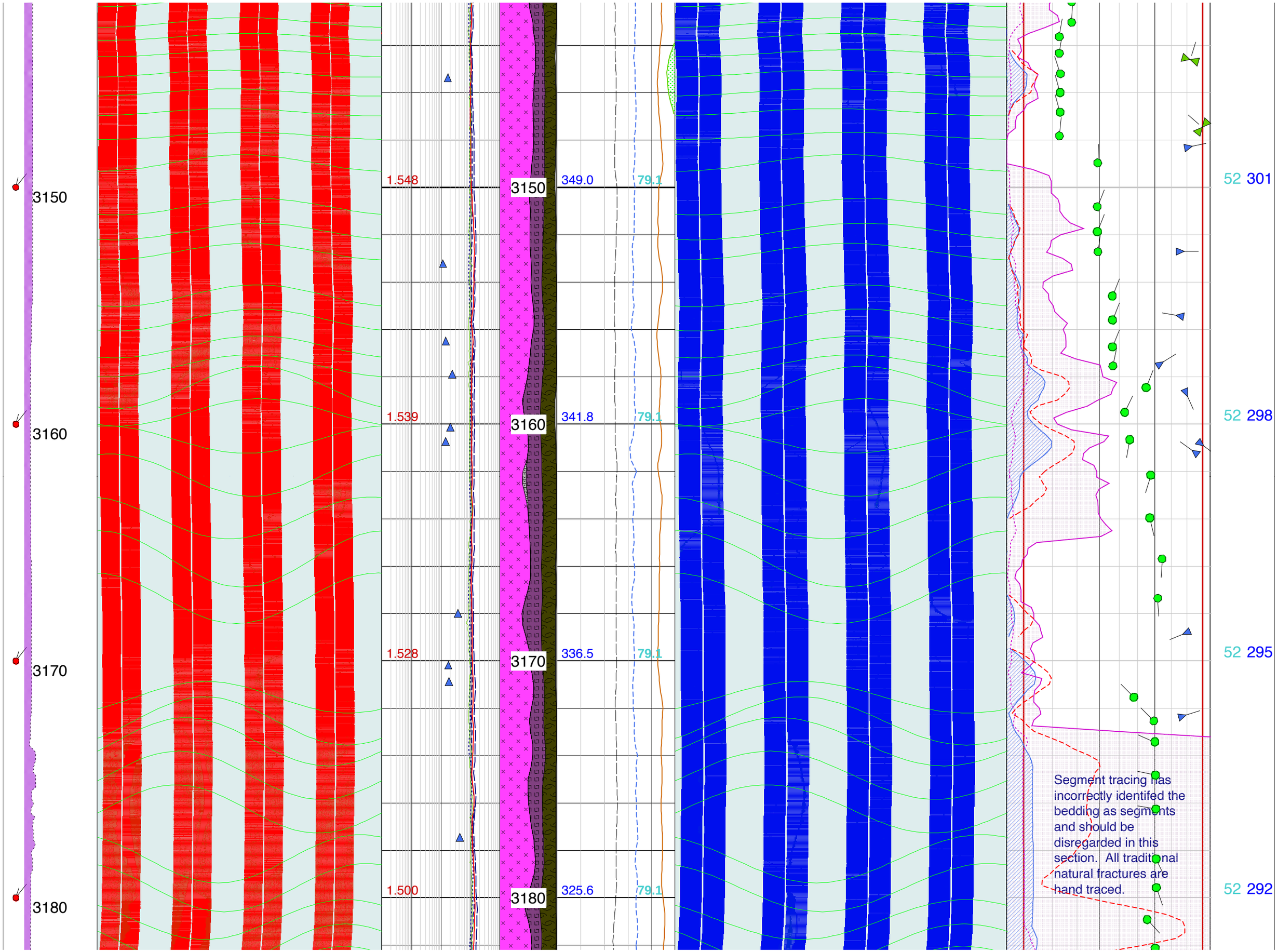

2950
2960
2970
2980
1.795
1.786
1.769
2950
2960
2970
2980
389.2
80.3
388.5
80.3
384.8
80.3
breciated and may be
a result of pressure and
stress alteration from
drilling?
53 346
Possible flow feature
53 344
Possible columnar joints
with polygonal fractures
53 344
53 341

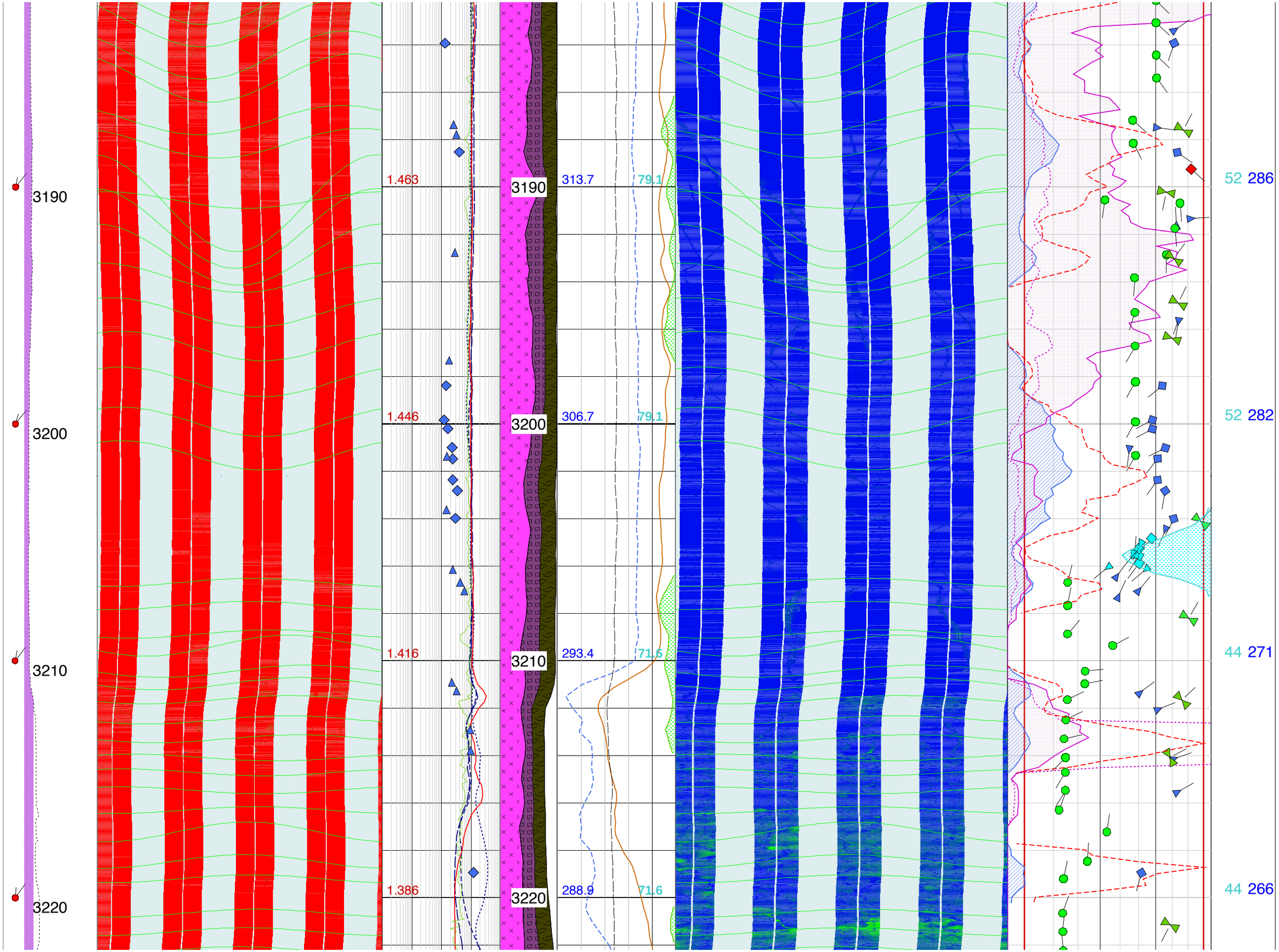

2990
3000
3010
3020
1.762
1.743
1.743
1.703
2990
3000
3010
3020
383.1
80.3
382.2
80.3
382.2
80.3
380.4
80.3
Base of flow
53 340
53 339
53 338
53 336


3030
3040
3050
3060
1.670
1.659
1.624
1.609
3030
3040
3050
3060
376.0
80.3
372.8
80.3
369.3
79.1
364.8
79.1
53 329
53 323
52 320
52 317


3070
3080
3090
3100
1.609
3070
364.8
79.1
1.609
3080
364.8
79.1
1.601
3090
363.1
79.1
1.586
3100
360.9
79.1
52 317
Image texture is highly brechiated and may be a result of pressure and stress alteration from drilling?
52 317
52 315
52 313


3110
3120
3130
3140
1.586
3110
360.9
79.1
1.573
3120
358.9
79.1
1.570
3130
358.2
79.1
1.552
3140
351.5
79.1
52 313
52 312
52 311
52 303


3150
3160
3170
3180
1.548
3150
349.0
79.1
1.539
3160
341.8
79.1
1.528
3170
336.5
79.1
1.500
3180
325.6
79.1
52 301
52 298
52 295
52 292
Segment tracing has incorrectly identifed the bedding as segments and should be disregarded in this section. All traditional natural fractures are hand traced.


3190
3200
3210
3220
1.463
3190
313.7
79.1
1.446
3200
306.7
79.1
1.416
3210
293.4
71.6
1.386
3220
288.9
71.6
52 286
52 282
44 271
44 266

3230

3240

3250

3260

1.372

3230

285.6 71.6

Base of flow

44 263

1.372

3240

285.6 71.6

44 263

1.370

3250

285.3 71.6

"Bedding" may be flow feature

44 262

1.369

3260

285.0 69.2

Image texture is highly brechiated and may be a result of pressure and stress alteration from drilling?

43 262

3270

3280

3290

3300

1.369

1.152

1.088

1.088

3270

3280

3290

3300

285.0 69.2

278.2 67.5

272.9 67.5

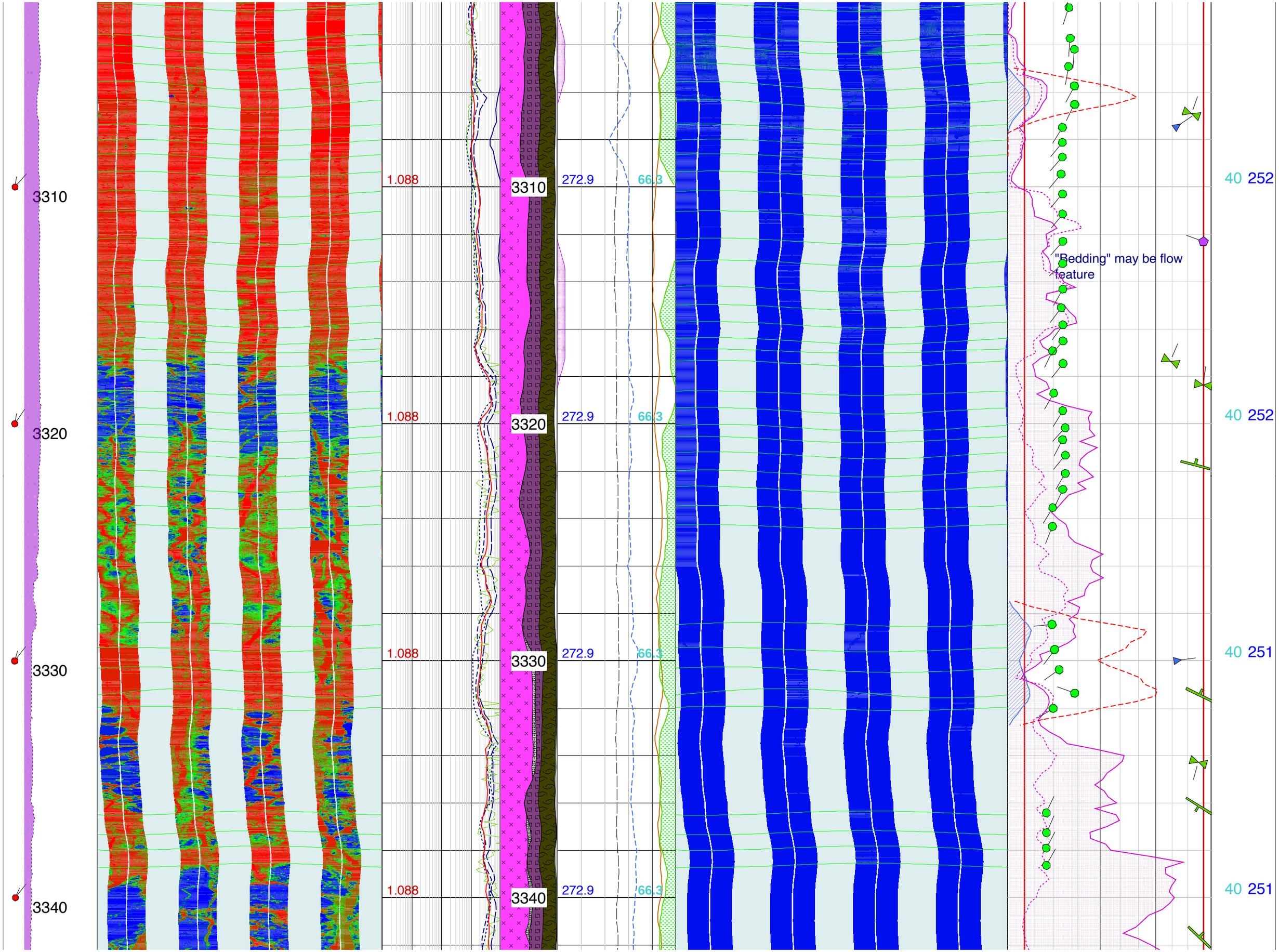
272.9 66.3

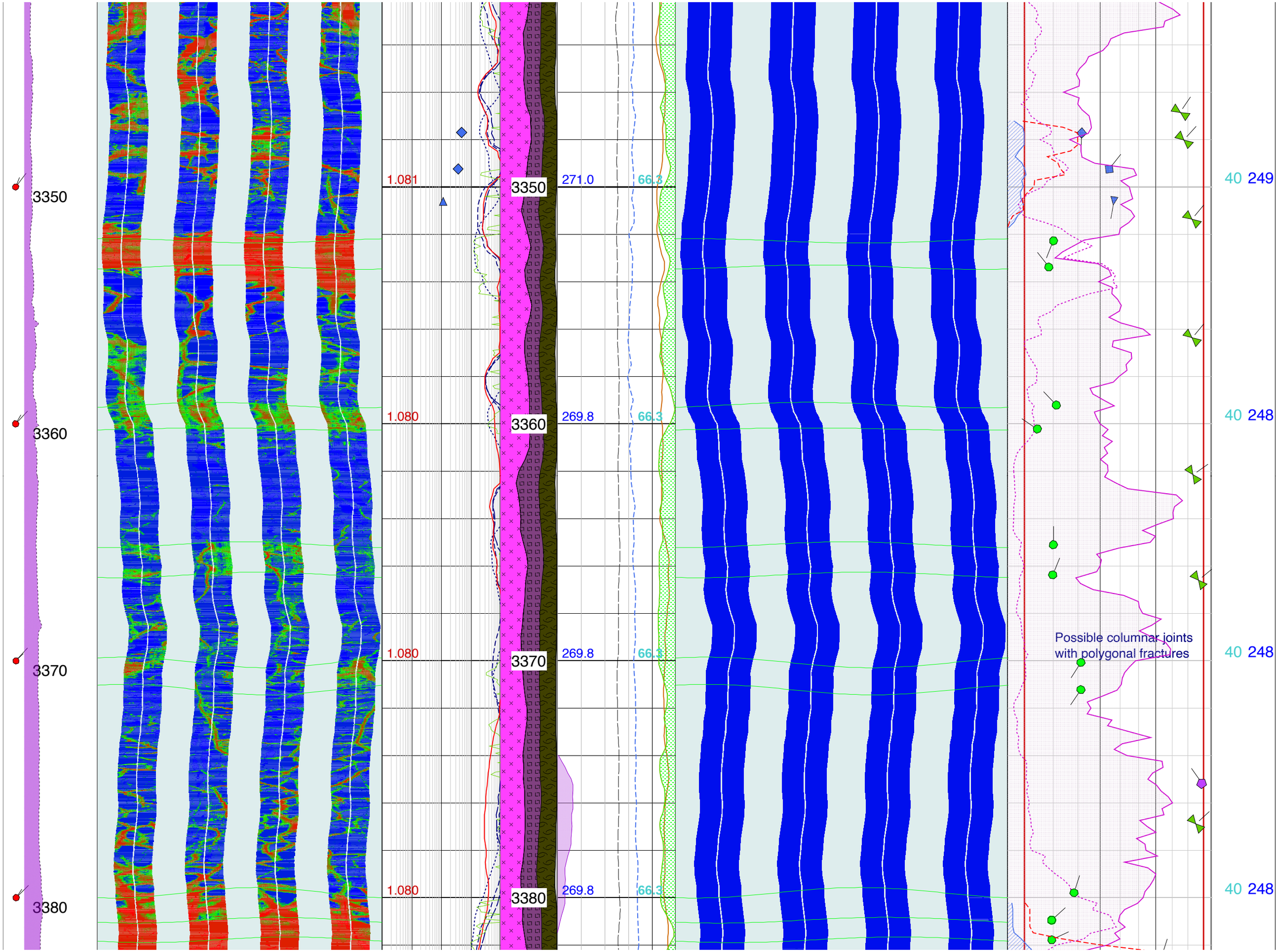
43 262

41 257

41 253

40 253


3310
3320
3330
3340
1.088
3310
272.9
66.3
1.088
3320
272.9
66.3
1.088
3330
272.9
66.3
1.088
3340
272.9
66.3
40 252
40 252
40 251
40 251
"Bedding" may be flow feature


3350
3360
3370
3380
1.081
3350
271.0
66.3
1.080
3360
269.8
66.3
1.080
3370
269.8
66.3
1.080
3380
269.8
66.3
40 249
40 248
40 248
40 248
Possible columnar joints
with polygonal fractures

3390

3400

3410

3420

1.072

3390

268.0

66.3

1.072

3400

268.0

66.3

1.072

3410

268.0

64.4

1.072

3420

268.0

64.4

40 245

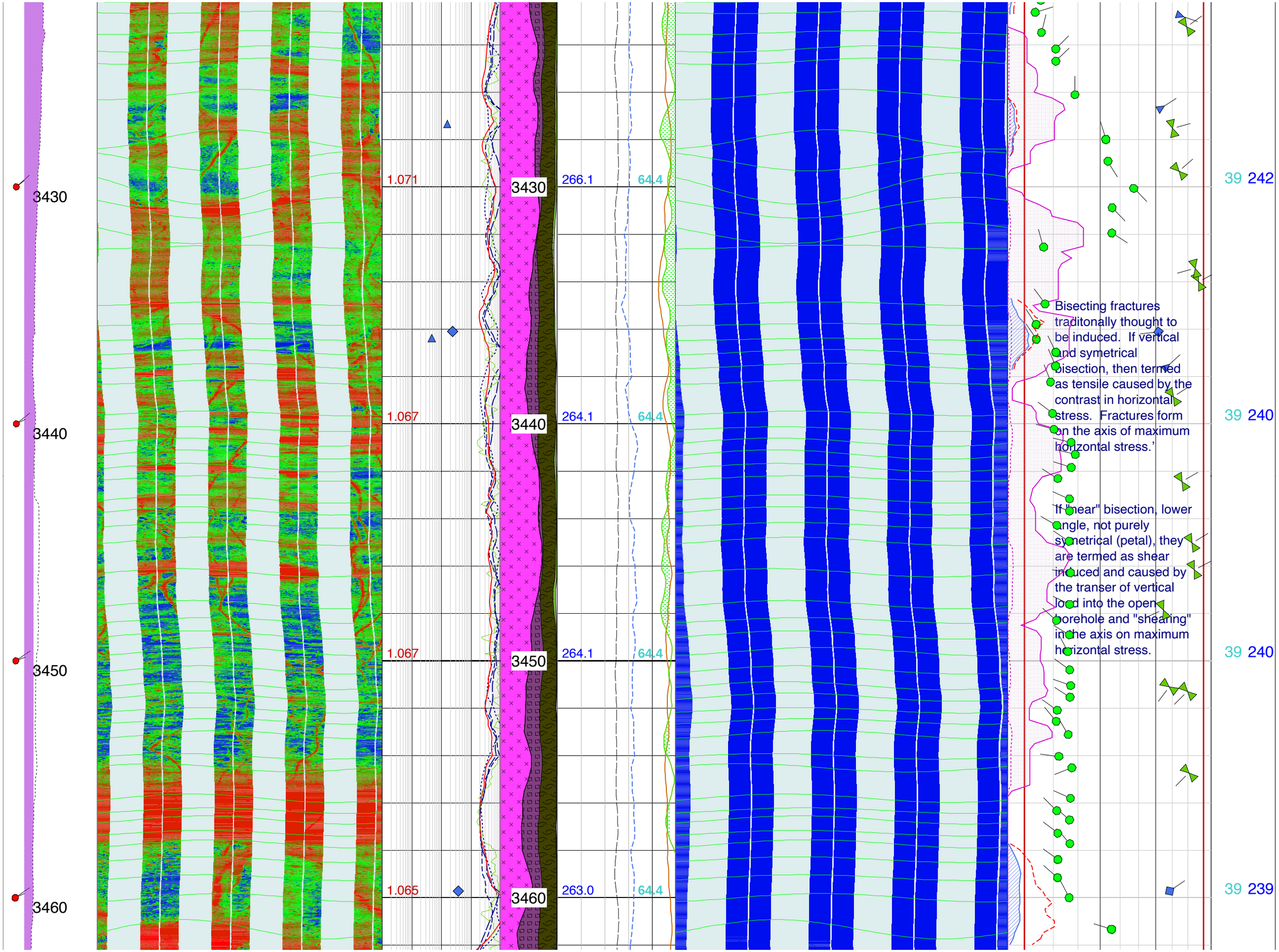
Base of flow

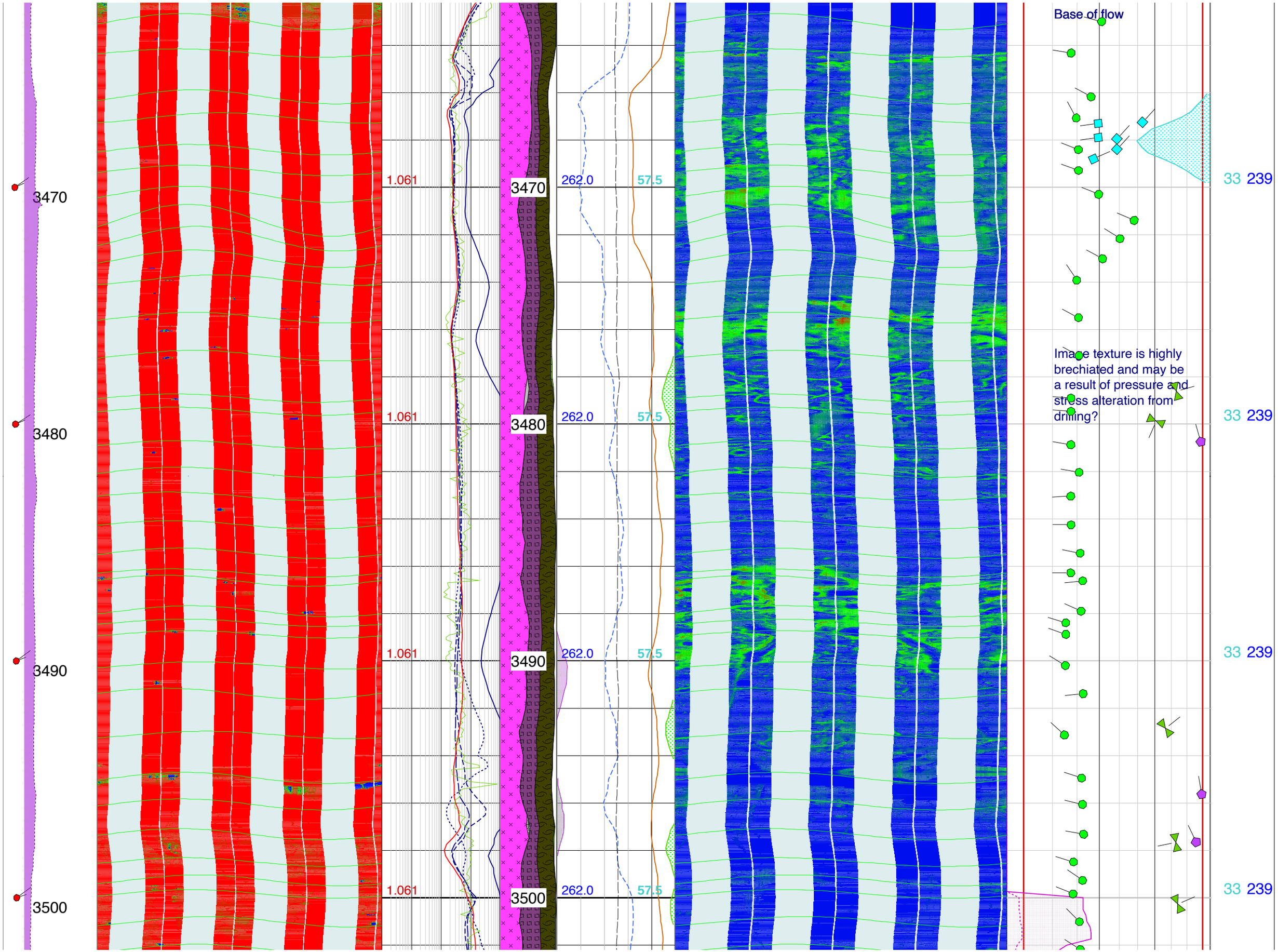
Image texture is highly brechiated and may be a result of pressure and stress alteration from drilling?

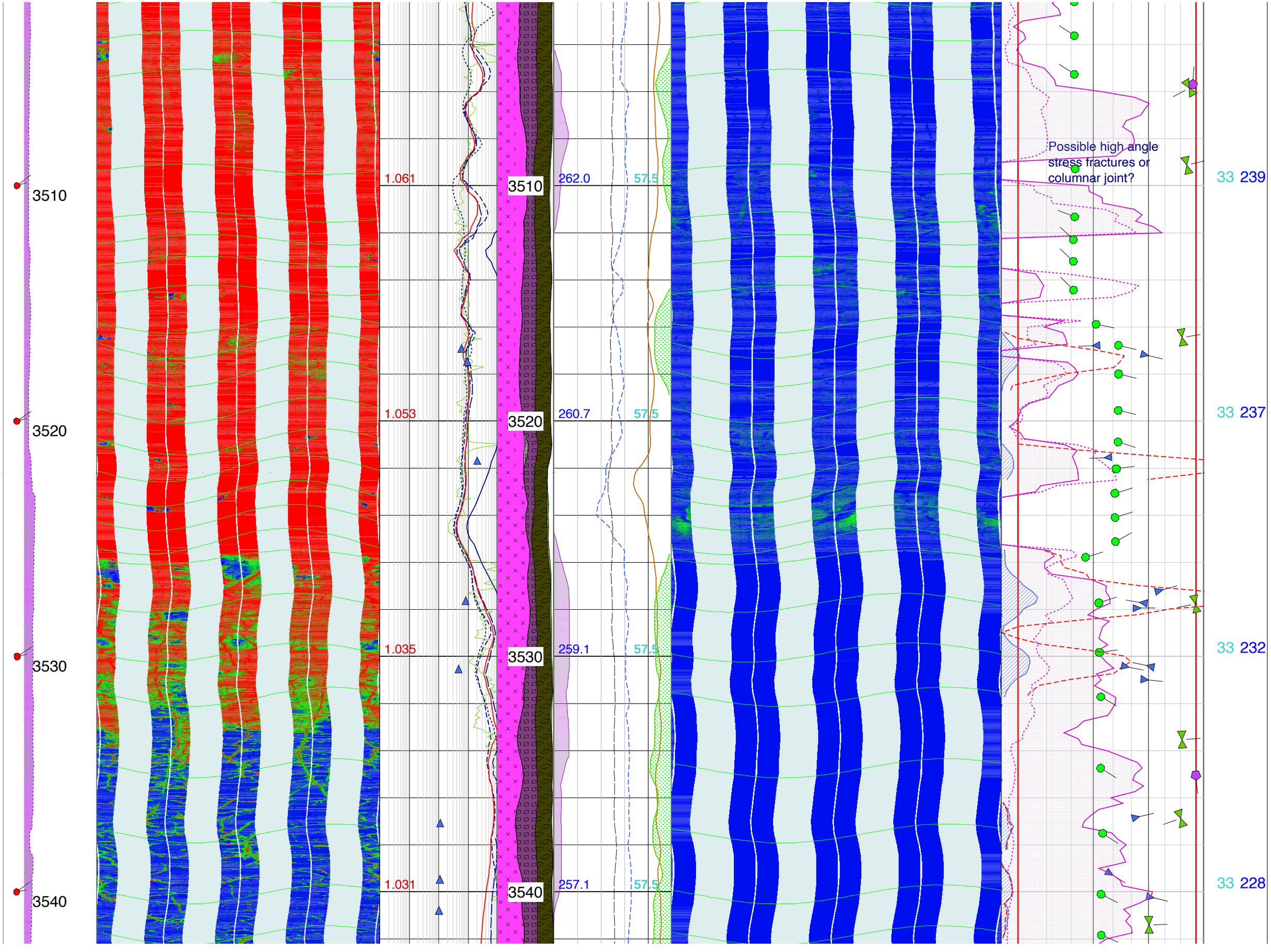
40 245

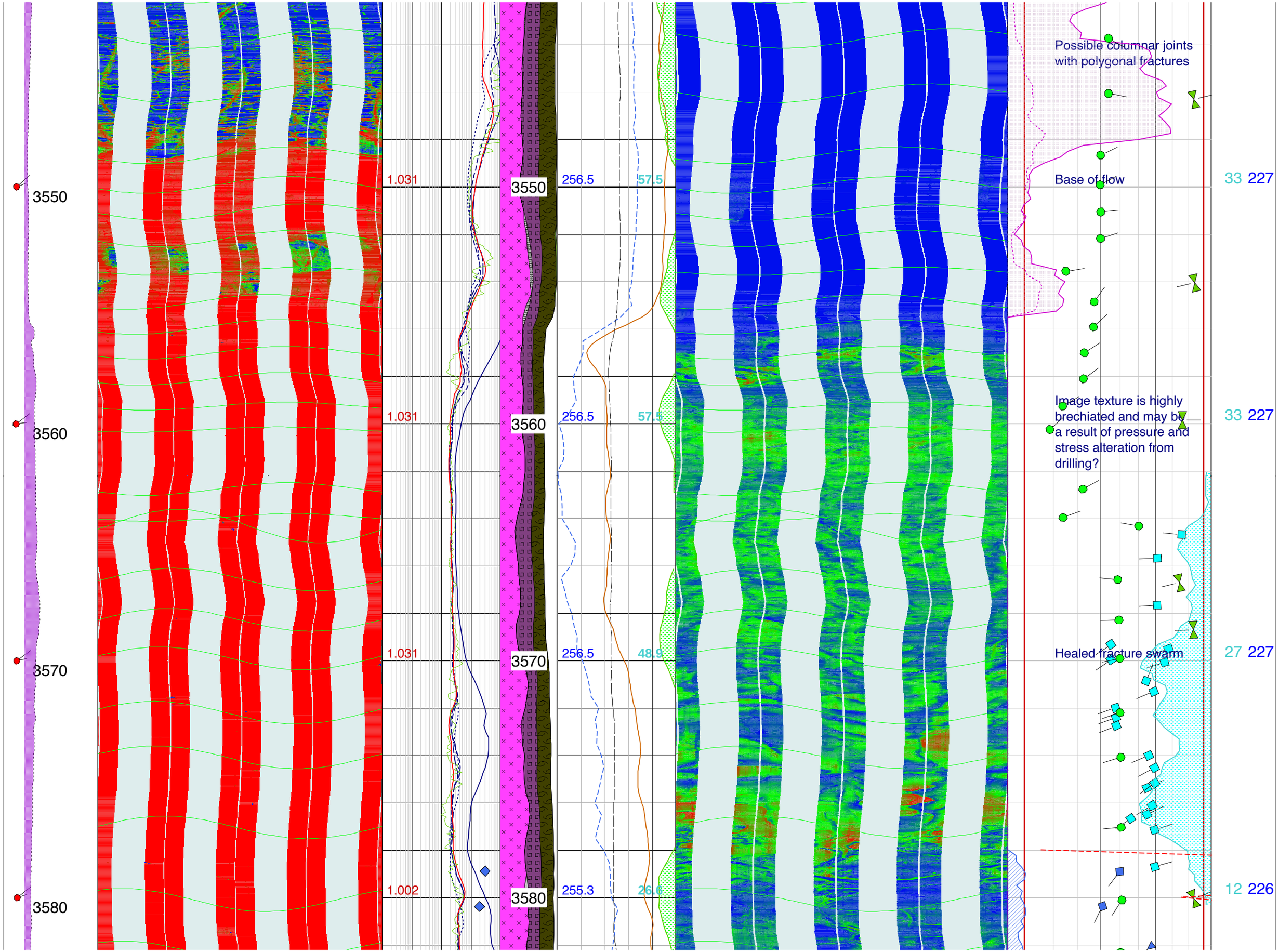
39 245

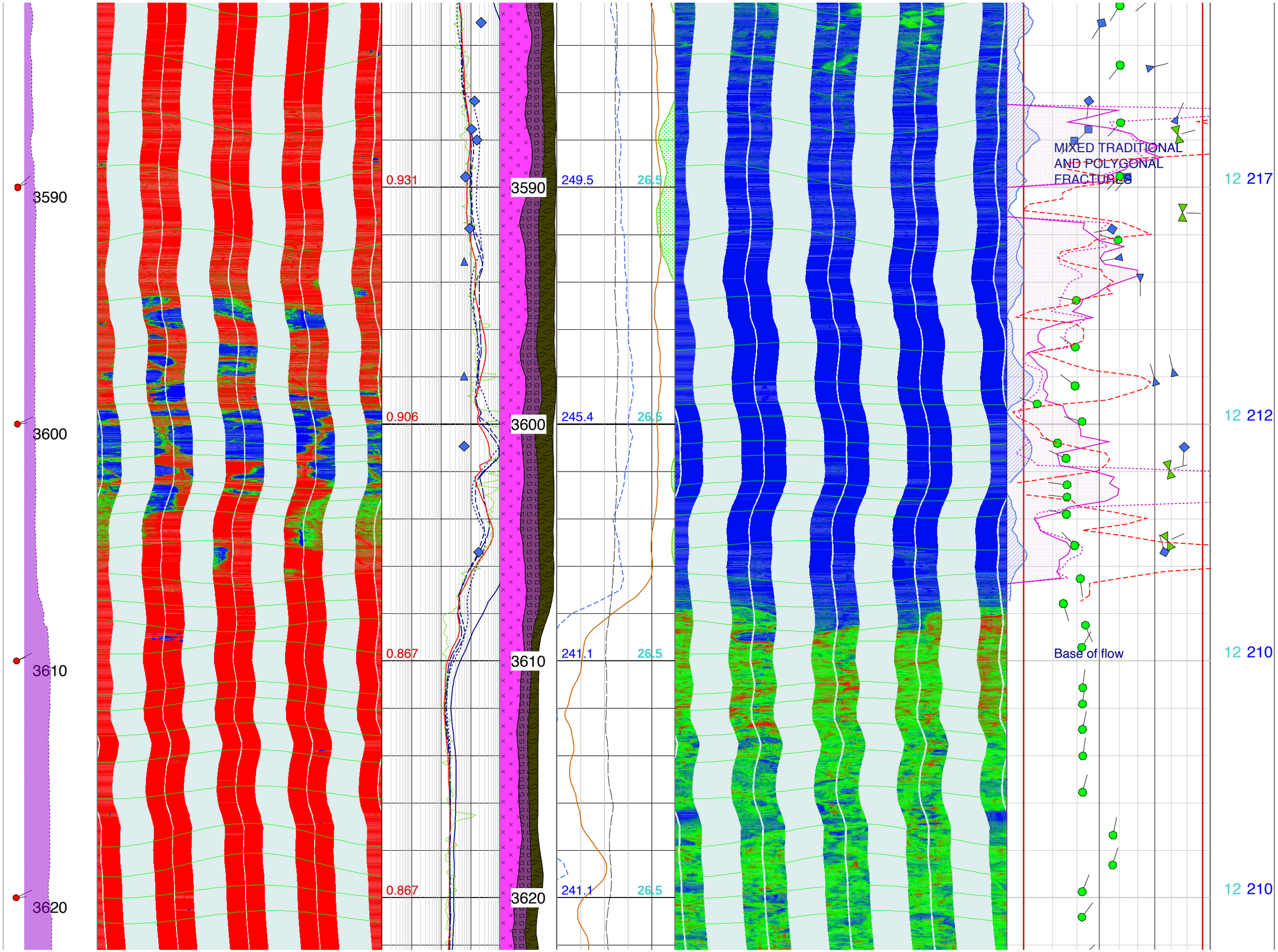
39 245

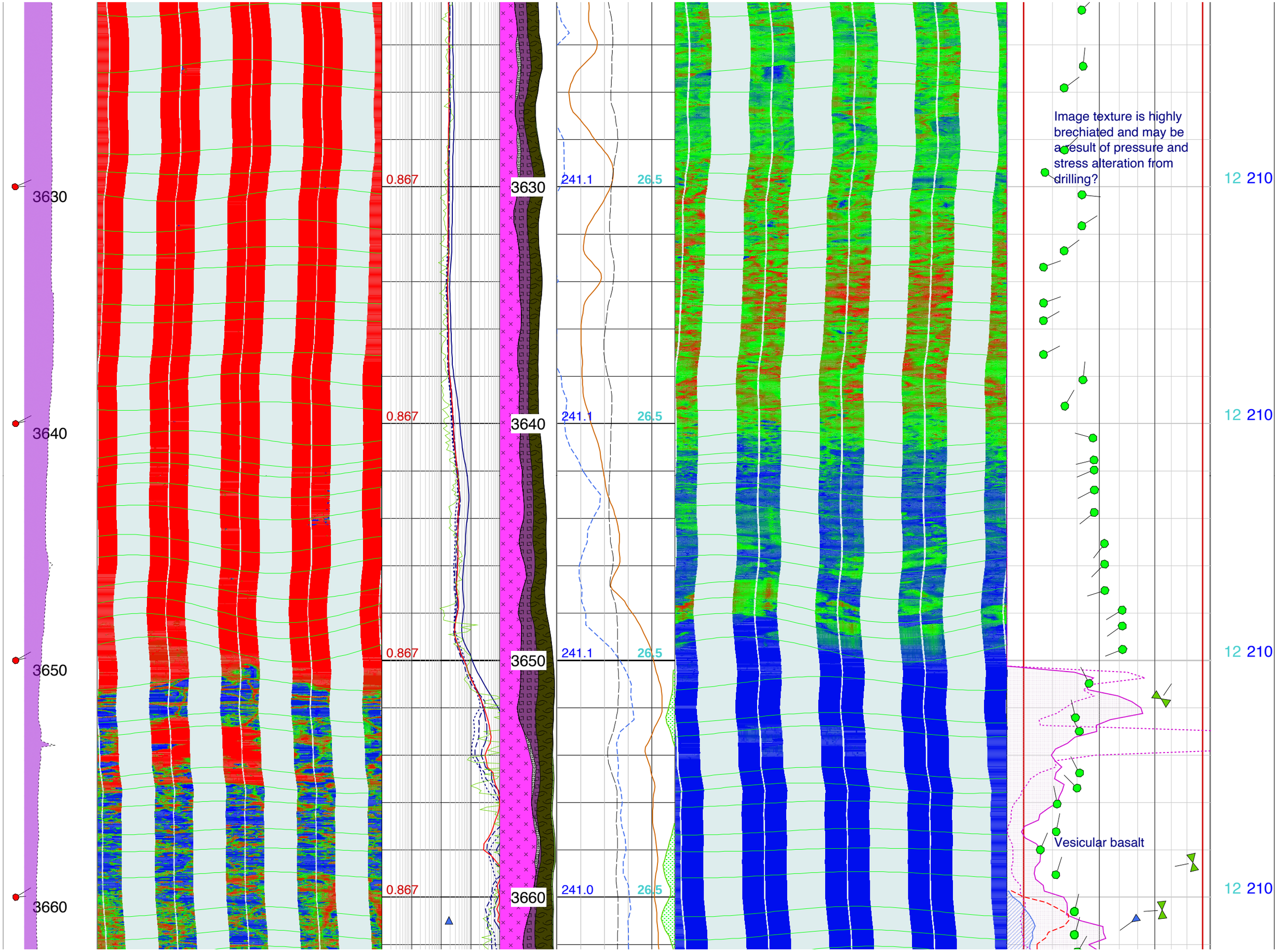

3430
3440
3450
3460
1.071
3430
266.1
64.4
1.067
3440
264.1
64.4
1.067
3450
264.1
64.4
1.065
3460
263.0
64.4
39 242
39 240
39 240
39 239
Bisecting fractures traditonally thought to be induced. If vertical and symetrical bisection, then termed as tensile caused by the contrast in horizontal stress. Fractures form on the axis of maximum horizontal stress.'
If "near" bisection, lower angle, not purely symetrical (petal), they are termed as shear induced and caused by the transer of vertical load into the open borehole and "shearing" in the axis on maximum horizontal stress.


3470
3480
3490
3500
1.061
262.0
57.5
Base of flow
33 239
Image texture is highly brechiated and may be a result of pressure and stress alteration from drilling?


3510
3520
3530
3540
1.061
3510
262.0
57.5
1.053
3520
260.7
57.5
1.035
3530
259.1
57.5
1.031
3540
257.1
57.5
Possible high angle
stress fractures or
columnar joint?
33 239
33 237
33 232
33 228


3550
3560
3570
3580
1.031
1.031
1.002
3550
3560
3570
3580
256.5
57.5
256.5
57.5
256.5
48.9
255.3
26.6
Possible columnar joints with polygonal fractures
Base of flow
33 227
Image texture is highly brechiated and may be a result of pressure and stress alteration from drilling?
33 227
Healed fracture swarm
27 227
12 226


3590
3600
3610
3620
0.931
3590
249.5
26.5
0.906
3600
245.4
26.5
0.867
3610
241.1
26.5
0.867
3620
241.1
26.5
MIXED TRADITIONAL
AND POLYGONAL
FRACTURES
12 217
12 212
Base of flow
12 210
12 210


3630
3640
3650
3660
0.867
0.867
0.867
3630
3640
3650
3660
241.1
26.5
241.1
26.5
241.1
26.5
241.0
26.5
Image texture is highly brechiated and may be a result of pressure and stress alteration from drilling?
Vesicular basalt
12 210
12 210
12 210
12 210

3670

3680

3690

3700

0.856

3670

234.5

26.5

0.856

3680

234.5

26.5

0.856

3690

234.5

26.5

0.853

3700

233.5

26.5

Possible columnar joints
with polygonal fractures

12 206

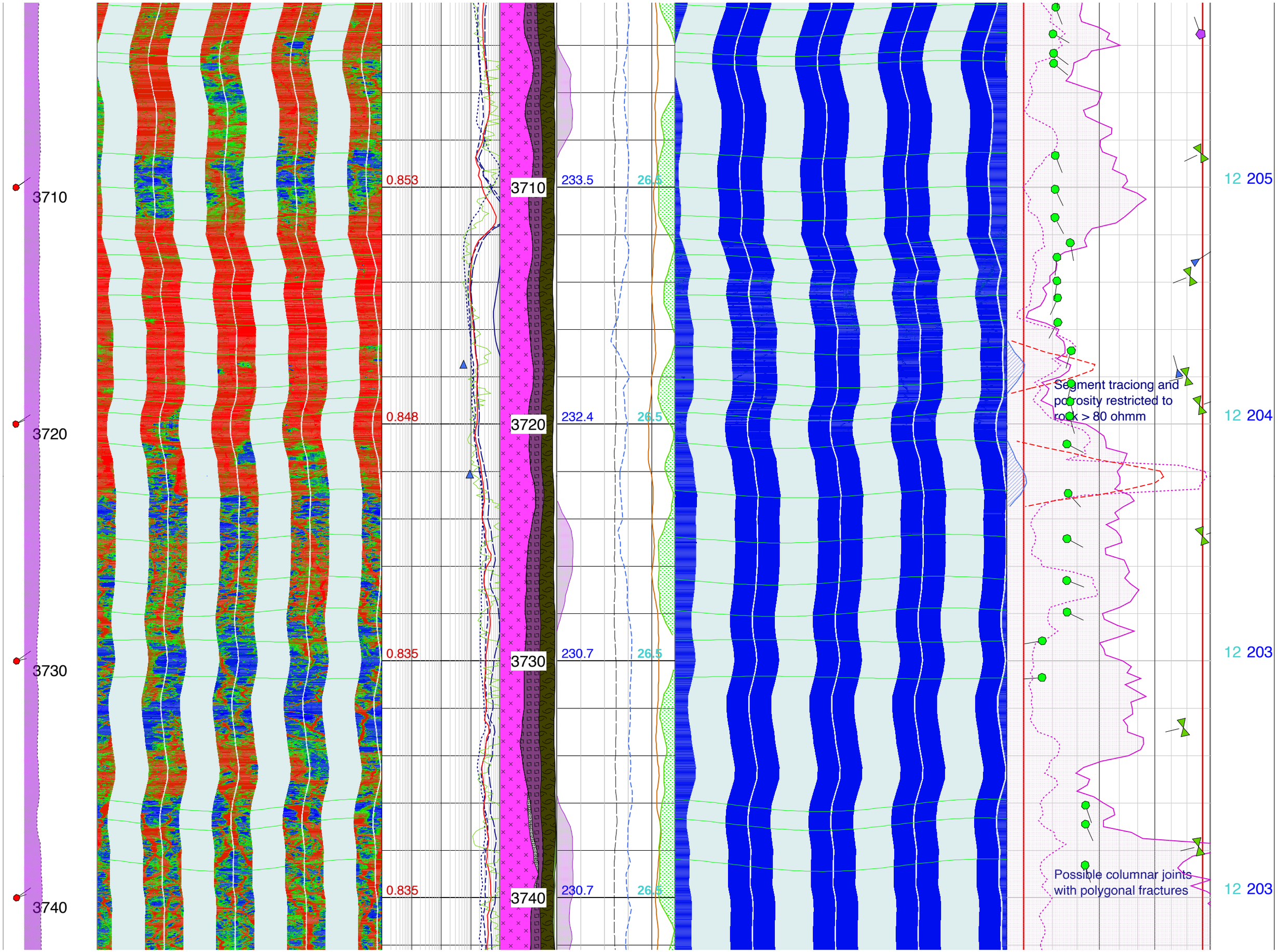
Vesicular basalt

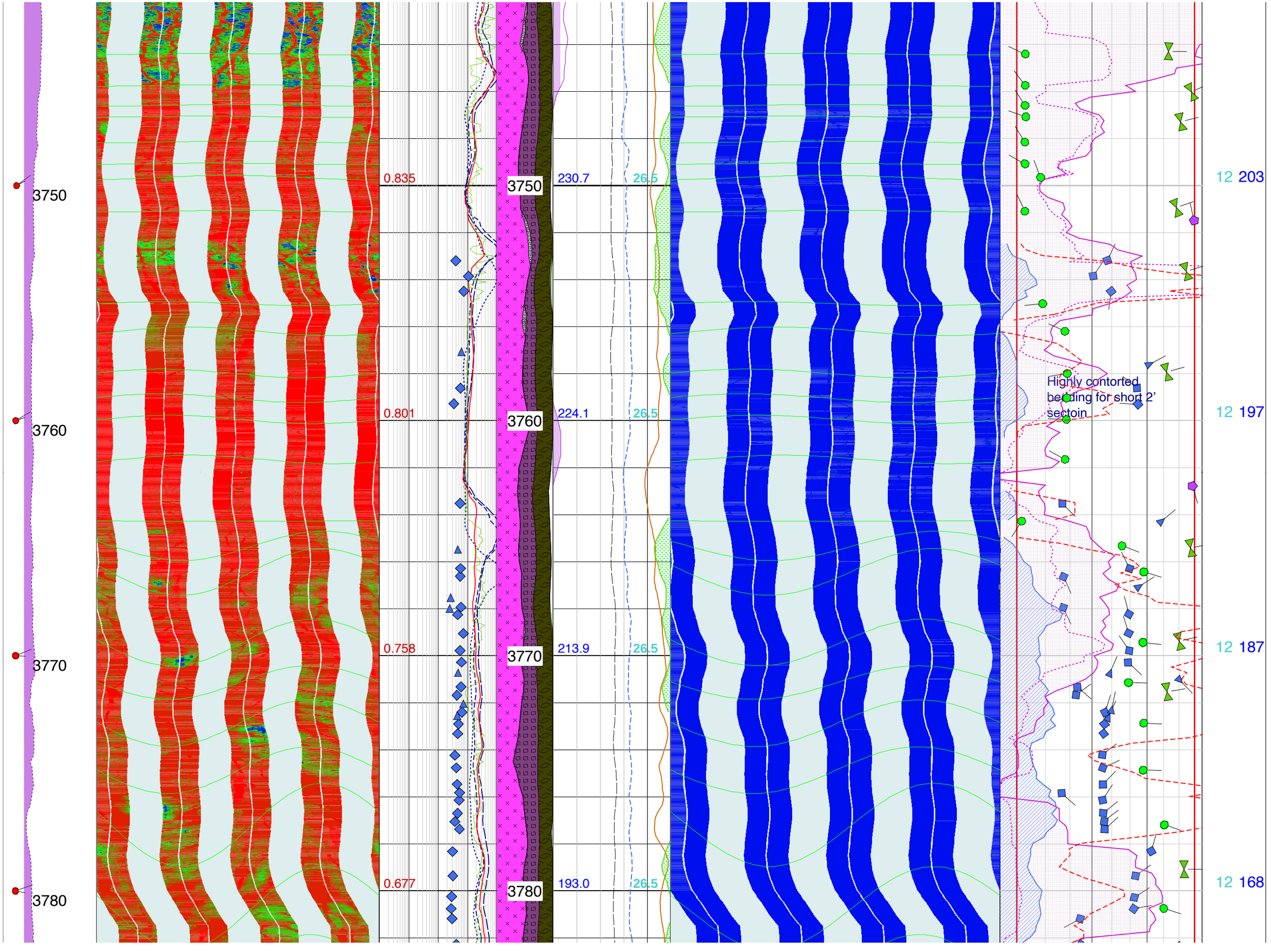
12 206

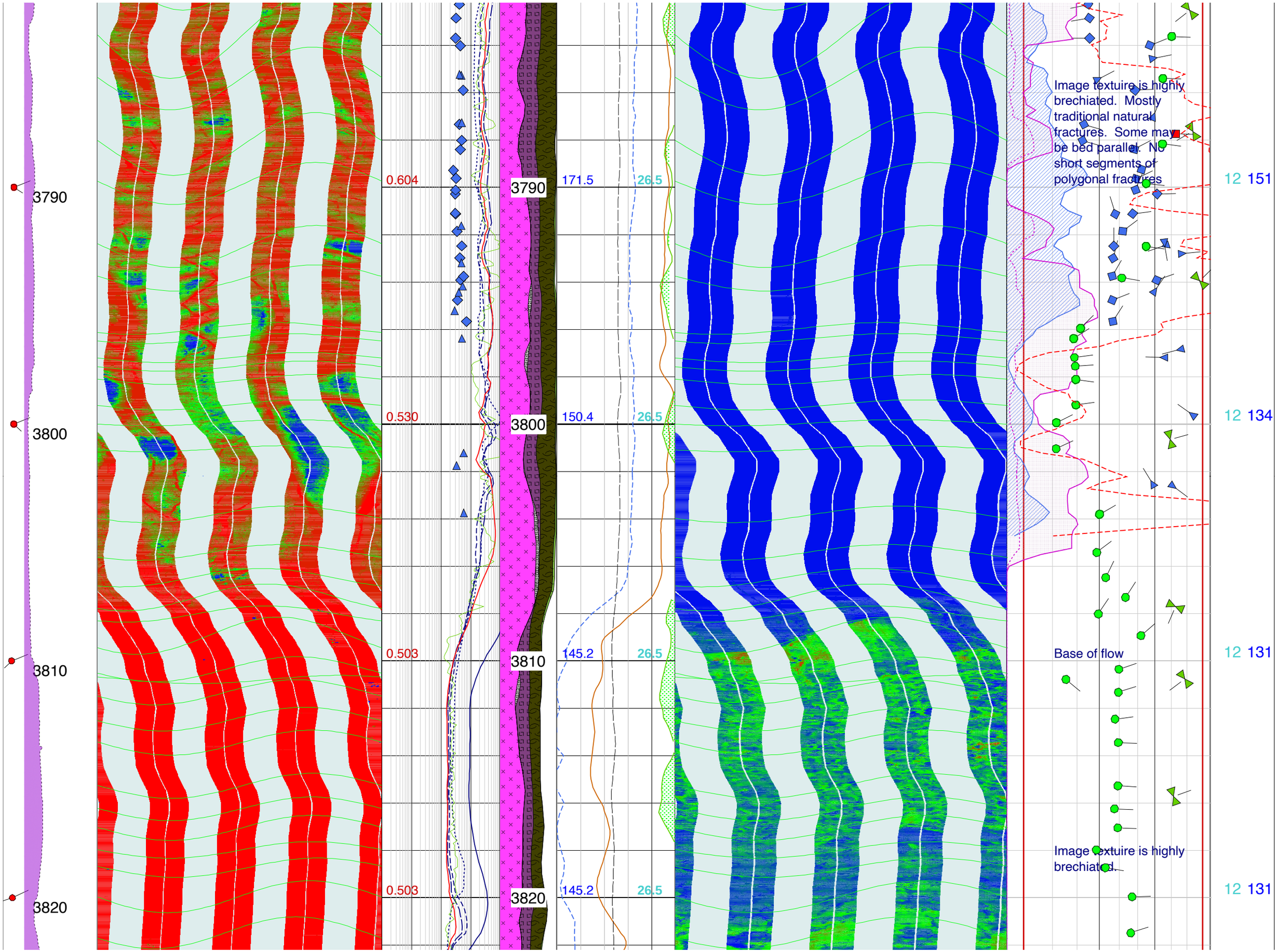
Possible columnar joints
with polygonal fractures

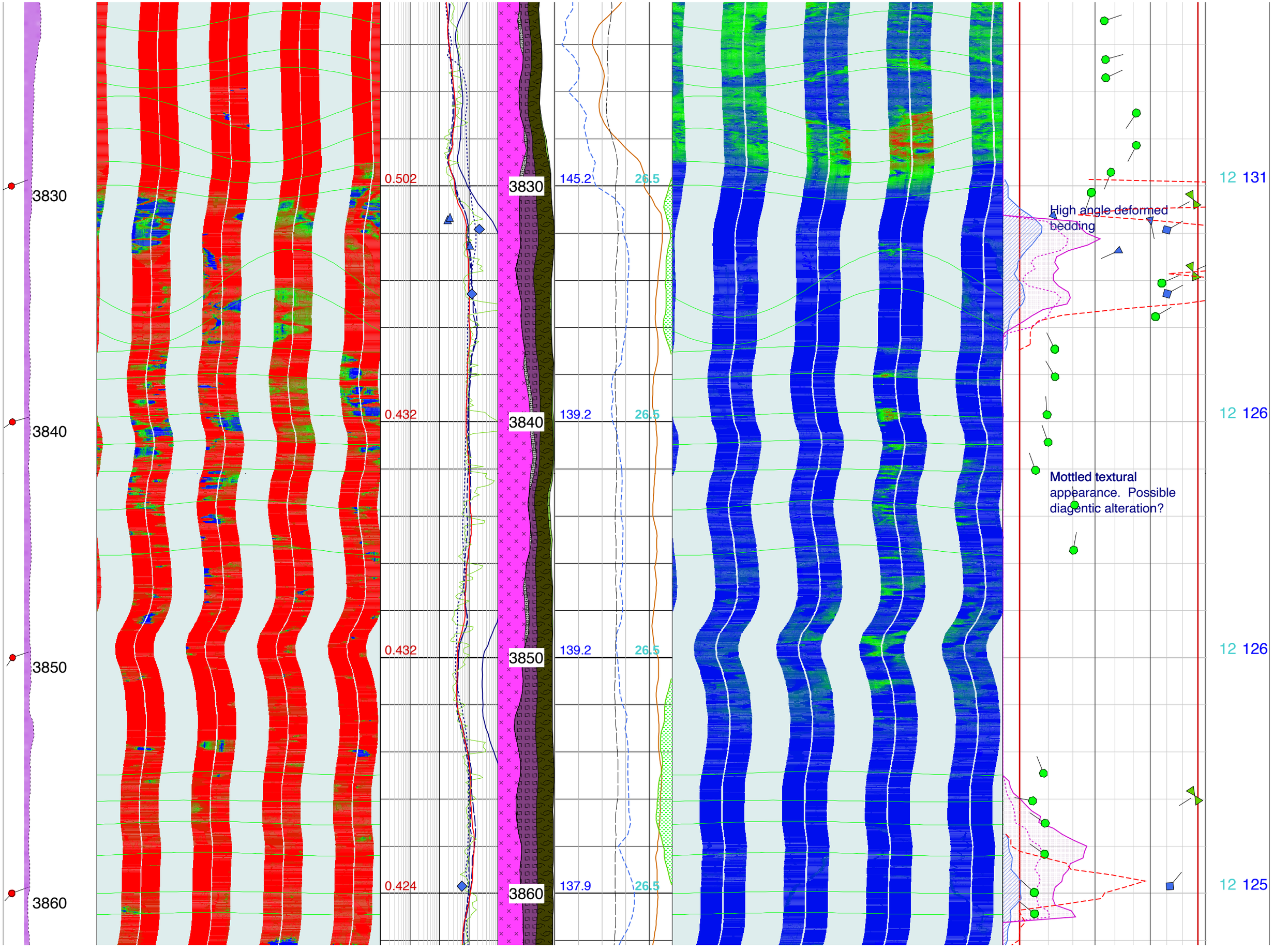
12 206

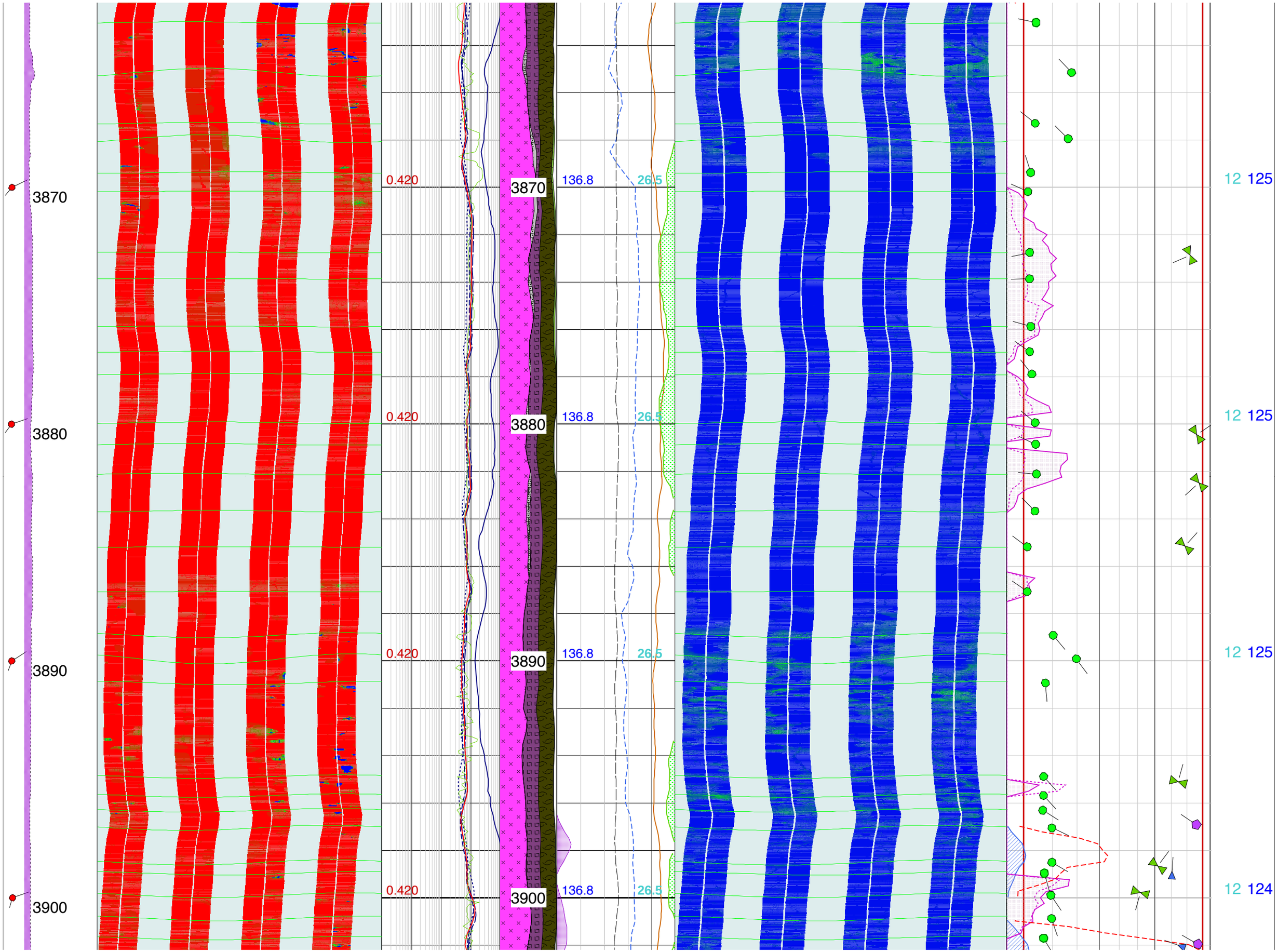
12 205

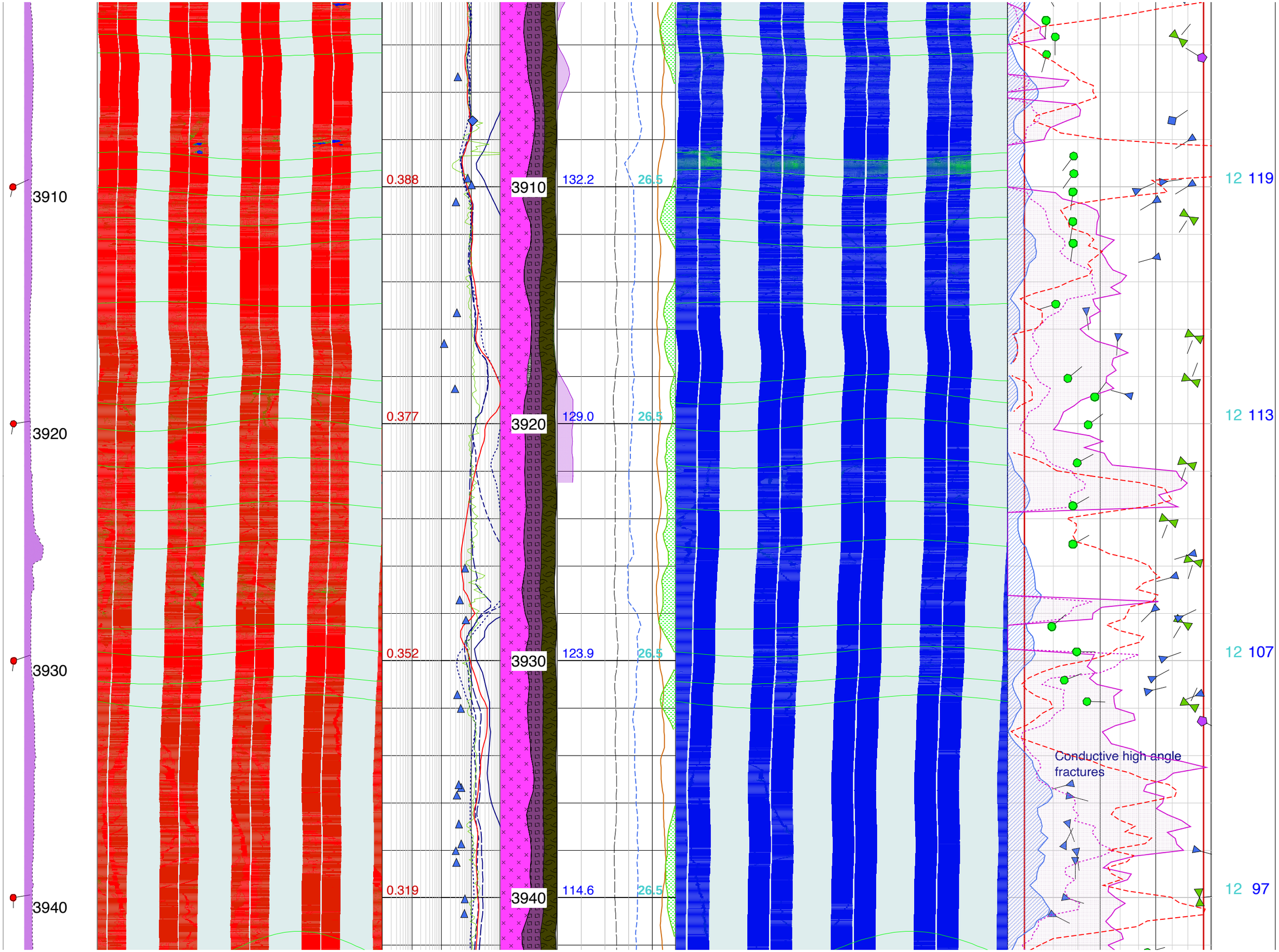

3710
3720
3730
3740
0.853
3710
233.5
26.5
0.848
3720
232.4
26.5
0.835
3730
230.7
26.5
0.835
3740
230.7
26.5
12 205
12 204
12 203
12 203
Segment traciong and
porosity restricted to
rock > 80 ohmm
Possible columnar joints
with polygonal fractures

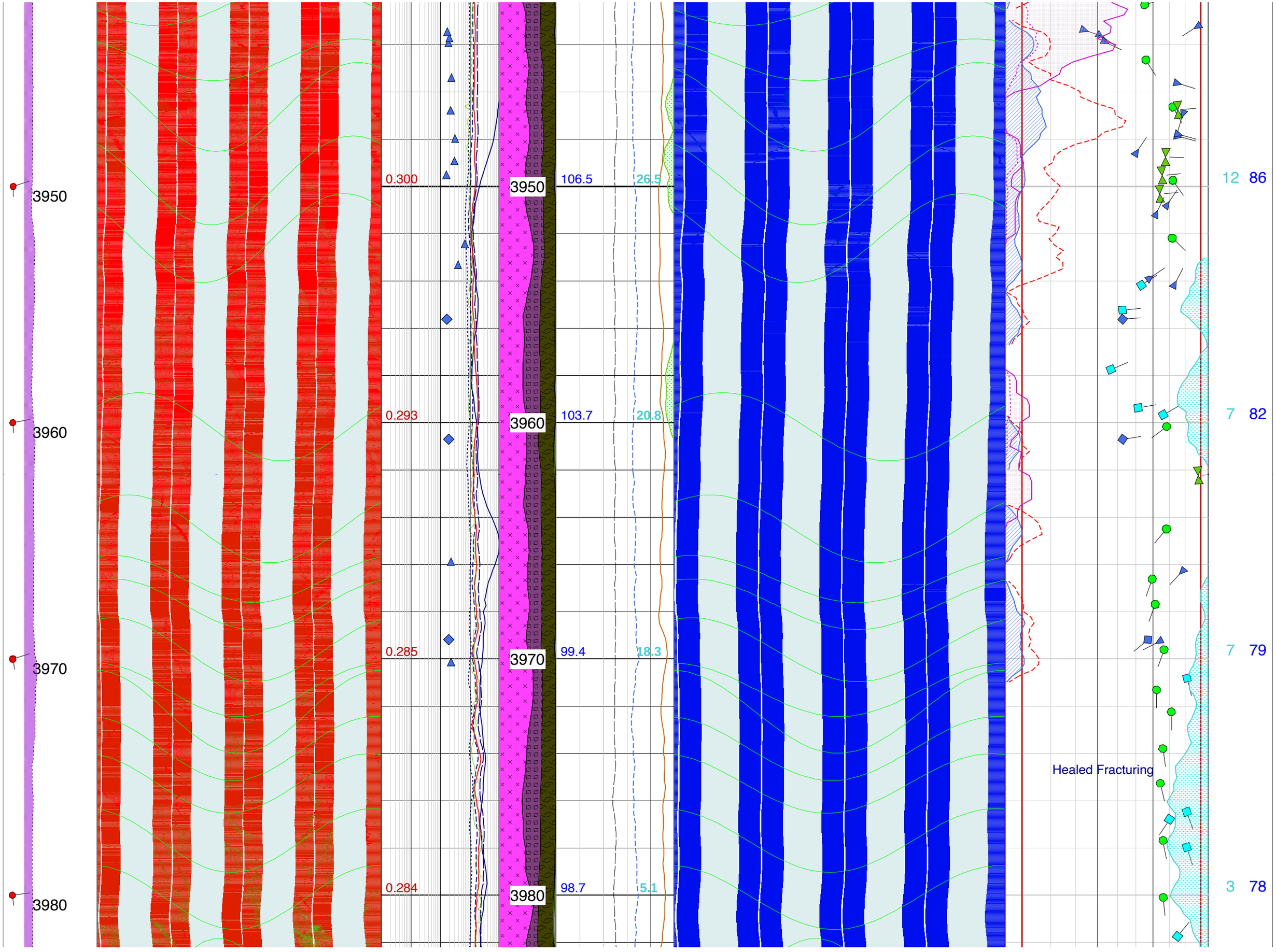

3750
3760
3770
3780
0.835
3750
230.7
26.5
12 203
0.801
3760
224.1
26.5
12 197
Highly contorted bedding for short 2' sectoin
0.758
3770
213.9
26.5
12 187
0.677
3780
193.0
26.5
12 168


3790
3800
3810
3820
0.604
3790
171.5
26.5
0.530
3800
150.4
26.5
0.503
3810
145.2
26.5
0.503
3820
145.2
26.5
Image textuire is highly brechiated. Mostly traditional natural fractures. Some may be bed parallel. No short segments of polygonal fractures
12 151
12 134
Base of flow
12 131
Image textuire is highly brechiated.
12 131


3830
3840
3850
3860
0.502
3830
145.2
26.5
0.432
3840
139.2
26.5
0.432
3850
139.2
26.5
0.424
3860
137.9
26.5
12 131
12 126
12 126
12 125
High angle deformed bedding
Mottled textural appearance. Possible diagentic alteration?


3870
3880
3890
3900
0.420
136.8
26.5
12 125
12 124


3910
3920
3930
3940
0.388
3910
132.2
26.5
0.377
3920
129.0
26.5
0.352
3930
123.9
26.5
0.319
3940
114.6
26.5
12 119
12 113
12 107
12 97
Conductive high angle
fractures


3950
3960
3970
3980
0.300
3950
106.5
26.5
0.293
3960
103.7
20.8
0.285
3970
99.4
18.3
0.284
3980
98.7
5.1
12 86
7 82
7 79
3 78
Healed Fracturing

3990

4000

4010

4020

0.284

3990

98.7

0.8

0.280

4000

96.8

0.8

0.272

4010

91.9

0.8

0.208

4020

71.4

0.8

2 78

2 77

2 72

Open Fracture Swarm

2 59

4030

4040

4050

4060

0.165

4030

54.4

0.8

0.126

4040

39.6

0.8

0.096

4050

25.1

0.8

0.071

4060

13.5

0.8

2 43

2 32

2 20

2 13

Bedding features
corelated by hand using
textural pattern on
resistivity image

Fractures forming
parallel to bedidng

Open Fracture Swarm

4070

4080

4090

0.043

0.030

0.030

0.000

4070

4080

4090

3.3

0.8

0.7

0.8

0.7

0.0

0.0

0.0

2 5

2 2

2

Scour Surface likely base of flow

Formation texture is crechiating at borehole wall. Possible reaction to stress

"Bedding" may be flow feature

Breakout

FMI_CAL_MAXS_MAPC_052PUP FMI
Horizontal Scale: 1 : 12.828
Orientation North

)pen_LithBound_Set3
Mean Aperture

MD
1 : 48
ft

NetOpenTL
( )

FMI_CAL_MAXS_MAPC_052PUP FMI .SCA
Horizontal Scale: 1 : 10.996
Orientation North

Open_LithBound_Set3
True Dip

#Heale
( )

HCAL.WELL
10 (in) 20

INCLINOME
Borehole drift
0 Deg 10

MD
1 : 48
ft

0 120 240 360
Resistive FMI Image Conductive

Open_LithBound_Set3
(Trace)
Reference : North
Apertures
(10^N in)
−5 −4 −3 −2 −1 0 1

Open_PartiallyHealed_Fracture
(Trace)
Reference : North
Apertures
(10^N in)
−5 −4 −3 −2 −1 0 1

Net Segment Porosity
( )

Net Segment Trace Length
( )

DATA.SEGMENTTRACELENGTH_ITT D
−5000 ( ) 5000

Open_Continuous_Fracture
(Trace)
Reference : North
Apertures
(10^N in)
−5 −4 −3 −2 −1 0 1

Open_LithBound_Set2
(Trace)
Reference : North
Apertures
(10^N in)
−5 −4 −3 −2 −1 0 1

Tensile−Set2

(Trace)

Reference : North

0.0001 (in) 1

NetFracPoro
( )

Open_LithBound_Set2
Mean Aperture
0.0001 (in) 1

en_PartiallyHealed_Fract
Mean Aperture
0.0001 (in) 1

en_PartiallyHealed_Fracti
Mean Aperture
0.0001 (in) 1

)pen_LithBound_Fracture
Mean Aperture
0.0001 (in) 1

SRES@FMI_CAL
0.1 (ohm.m) 1000

AHT90.WELLED
0.1 (ohm.m) 1000

AHT60.WELLED
0.1 (ohm.m) 1000

AHT30.WELLED
0.1 (ohm.m) 1000

AHT20.WELLED
0.1 (ohm.m) 1000

AHT10.WELLED
0.1 (ohm.m) 1000

Water

Halite

cial Minera

cial Minera

Siderite

Albite

FLAN_
1 (V/V) 0

Shale

NetHealTL
( )

Breakout TL

Induced

Breakout TL
0 (1/ft) 10

Induced Frac
10 (1/ft) 0

X Over

PEFZ.WELLEDI
0 ( ) 10

NPOR.WELLEDI
0.4 (ft3/ft3) −0.1

DPHZ.WELLEDI
0.4 (ft3/ft3) −0.1

0 120 240 360
Resistive FMI Image Conductive

Open_LithBound_Set3
(Sinusoid)
Orientation North

Tensile−Set2

(Trace)

Reference : North

Shear_Set2

(Trace)

Reference : North

Tensile_Induced_Fracture

(Trace)

Reference : North

Shear_Induced_Fracture

(Trace)

Reference : North

Open_LithBound_Set2
(Sinusoid)
Orientation North

Open_LithBound_Fracture
(Sinusoid)
Orientation North

−5 (Deg) 95

Fracture Porosity
0 (ft3/ft3) 0.01

Tensile−Set2
True Dip
−5 (Deg) 95

Shear_Set2
True Dip
−5 (Deg) 95

Sedimentary_Bedding
True Dip
−5 (Deg) 95

Erosional_Scour
True Dip
−5 (Deg) 95

Bed_Boundary
True Dip
−5 (Deg) 95

P21−Fracture TraceLen

P21 Segment TL
0 ( ) 10

P33 Segment Porosity
0 ( ) 0.01

Annotations

Healed Fracture

Open Fracture

Healed Fracture Trace
10 (1/ft) 0

Open Fracture Trace L
0 (1/ft) 10

#Open
( )

Shear_Set2

(Trace)

Reference : North

Healed_LithBound_Fracture

(Trace)

Reference : North

Healed_Continuous_Fracture

(Trace)

Reference : North

BoreHole_Breakout

(Trace)

Reference : North

Open_PartiallyHealed_Fracture

(Trace)

Reference : North

Shear_Induced_Fracture

(Trace)

Reference : North

Open_LithBound_Fracture

(Trace)

Reference : North

Apertures

(10^N in)

−5 −4 −3 −2 −1 0 1

Bed_Boundary

(Sinusoid)

Orientation North

Sedimentary_Bedding

(Sinusoid)

Orientation North

Erosional_Scour

(Sinusoid)

Orientation North

Open_Continuous_Fracture

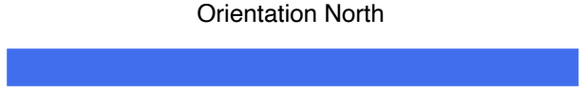
(Sinusoid)

Orientation North

Open_PartiallyHealed_Fracture

(Sinusoid)

Orientation North



Open_Fracture_Terminated_Fracture

(Sinusoid)

Orientation North

Healed_Continuous_Fracture

(Sinusoid)

Orientation North

Healed_LithBound_Fracture

(Sinusoid)

Orientation North

Healed_Fracture_Terminated_Fracture

(Sinusoid)

Orientation North

Open_LithBound_Set2

True Dip

−5 (Deg) 95

Tensile−Set2

True Dip

−5 (Deg) 95

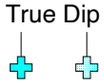
Healed_LithBound_Fracture

True Dip

−5 (Deg) 95

Healed_Fracture_Terminated_Fracture

True Dip



−5 (Deg) 95

Fault

True Dip

−5 (Deg) 95

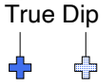
Healed_Continuous_Fracture

True Dip

−5 (Deg) 95

Open_Fracture_Terminated_Fracture

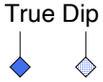
True Dip



−5 (Deg) 95

Open_PartiallyHealed_Fracture

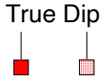
True Dip



−5 (Deg) 95

Open_Continuous_Fracture

True Dip

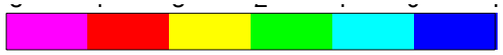


−5 (Deg) 95

Open_LithBound_Fracture

True Dip

−5 (Deg) 95



TOPS

GR_EDTC GR_EDTC@FMI_CAL_MAXS_

0 (gAPI) 150

GR.WELLEDIT GR@LDM–RHOZ;6 .WE

0 (gAPI) 150

Bed_Boundary
(Sinusoid)
Orientation North

Tensile_Induced_Fracture
True Dip

–5 (Deg) 95

Shear_Induced_Fracture
True Dip

–5 (Deg) 95

BoreHole_Breakout
True Dip

–5 (Deg) 95