QUAD NEUTRON

Thru Casing

Company EMBER RESOURCES
Well EMBER ENTICE 8-16-24-25
Field ENTICE
Country CANADA
Province ALBERTA

Company EMBER RESOURCES

Well EMBER ENTICE 8-16-24-25

Field ENTICE

Country CANADA **Province** ALBERTA

UWI	100/08-16-024-25W4/00	Other Services
Surface Location	08-16-024-25W4	None
Well License	0166096	

Permanent Datum	Ground Level	Elevation 983.80 m	Elevation
Log Measured From	Kelly Bushing	4.7 m above P.D.	K.B. 988.50 m
Drilling Measured From	Kelly Bushing		G.L. 983.80 m

Date	15-Jul-2019	CWI	
Job Code #	190715-VB1	Third Party Ref. #	
AFE #		Cement Top	N/A
Depth Driller	982.60 m	Type Fluid	DRY
PBTD Logger	925.00 m	Fluid Level	916.00 m
Btm Log Interval	925.00 m	Wellhead Pressure	12 kPa
Top Log Interval	25.00 m	Max. Temp.	34 °C
Date / Time RIH	15-Jul-2019	Maximum Deviation	
Rig Time (hh:mm)	4:00	Hoist Unit #	Unit 3
Recorded By	Vince Benoit	Unit Location	Calgary
Witnessed By	JAMES	Latitude/Longitude	

Wellbore Information

Type	Size (mm)	WT (kg/m)	From (m)	To (m)	Grade
Surface Casing	219.10	35.7	0.00	195.00	J-55
Production Casing	114.30	14.14	0.00	982.86	J-55

Comments

Log is depth correlated to OH GR provided by customer.

Correlation Log Name:
Correlation Log Date:

Correlation Type:
Correlation Point:

QUAD NEUTRON

TOOL DIAGRAM

EMBER ENTICE 8-16-24-25

Sensor	Offset (m)	Schematic	Description	Len (m)	OD (mm)	Wt (kg)
UHT UBRM	4.68 4.68		CableHeadSub QuadV2 to BOI Cable Head Sub	0.23	43.00	1.36
GR	4.26					
FGR	3.73		QUADV2_TCA23 QuadV2 Telemetry Combo A	1.97	43.00	12.70
CCL	2.87					
LNG SNG SNN LNN			QUADV2_MNA25 QuadV2 MN Section	2.13	43.00	14.51
BBRM BHT	0.13 0.13		QUADV2_BHTA08 Sensors For Processing	0.48	43.00	2.72

Dataset:	QuadV2
Total Length:	4.81 m
Total Weight:	31.29 kg
O.D.:	43.00 mm

Roke

Quad Neutron

Thru Casing

MD Main Pass

EMBER ENTICE 8-16-24-25

Measured Depth

25.0 - 925.0 m

Database File:	D:\WORK\CANADA\190715-VB1 EMBER 8-16-24-25W4\190715-VB1 EMBER 8-16-24-25W4 AK - COPY	Primary Pass:	main norm.las
Presentation Format:	QN GAS WATER FLAG.prs	Processing:	QN-1
Dataset Printed:	2019-07-22 1:21:20 PM	Charted by:	akalistratov@roke.ca
Depth in Meters scaled	1:240	Software Version:	5.4.94

Gamma Ray [GR] 0 (API) 150

Filtered GR [FGR] 0 (API) 150

0 BRM 55000

Casing Collar Locator 0 [CCL] 70000

High Permeability

100 QEP 0

Shale

Silt

Sand

Coal

High Bulk Density Material

Depth

Bound Oil | Coal

Oil

Gas

Water

Bound Water

1 GA 0 | 3 WA 0

60 Total Porosity [QTP] (pu) 0

60 Dual Neutron [DDN] (pu) 0

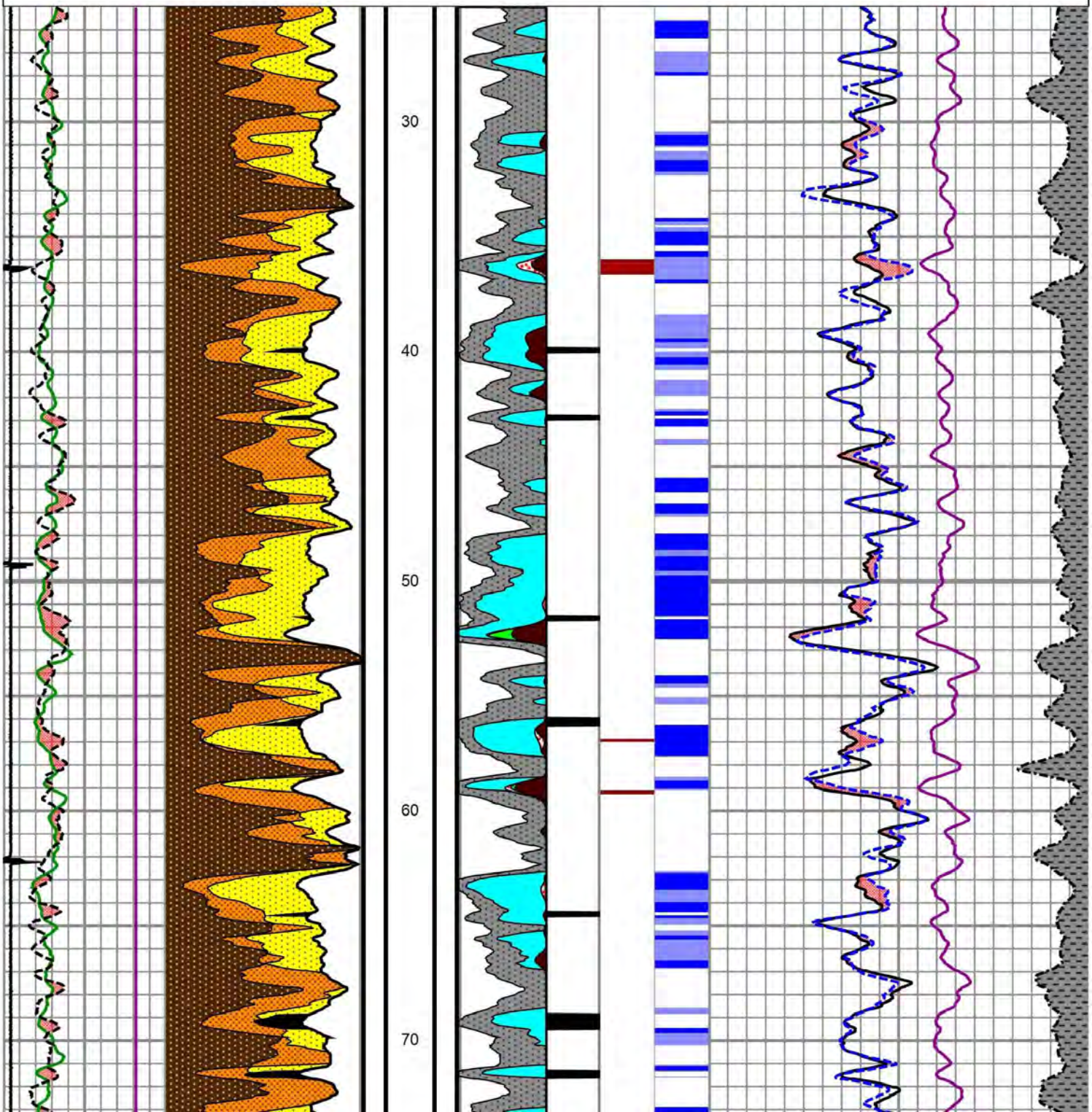
60 Relative Density Porosity [NDPOR] (pu) 0

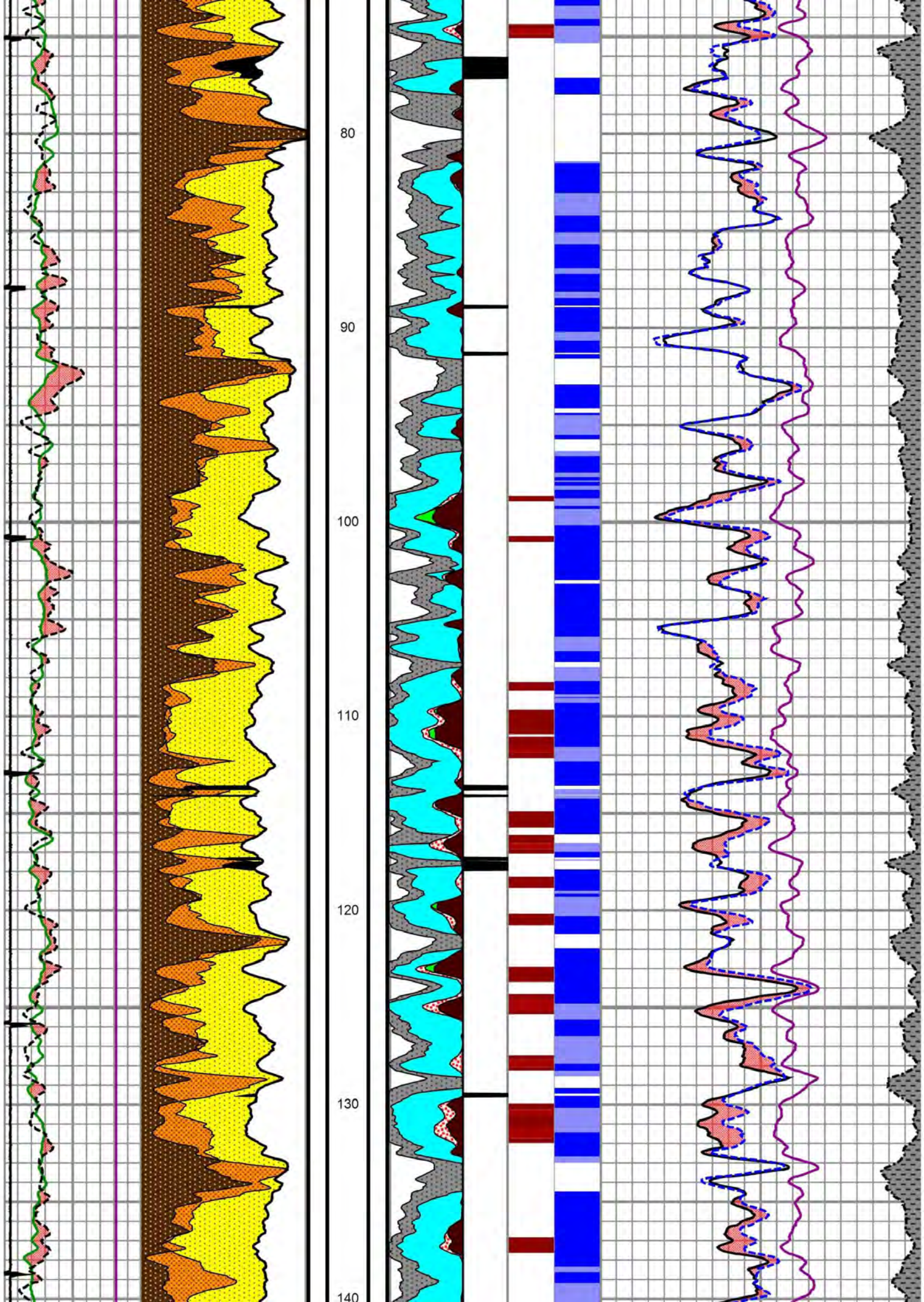
60 Quad Clay [QC] (pu) 0

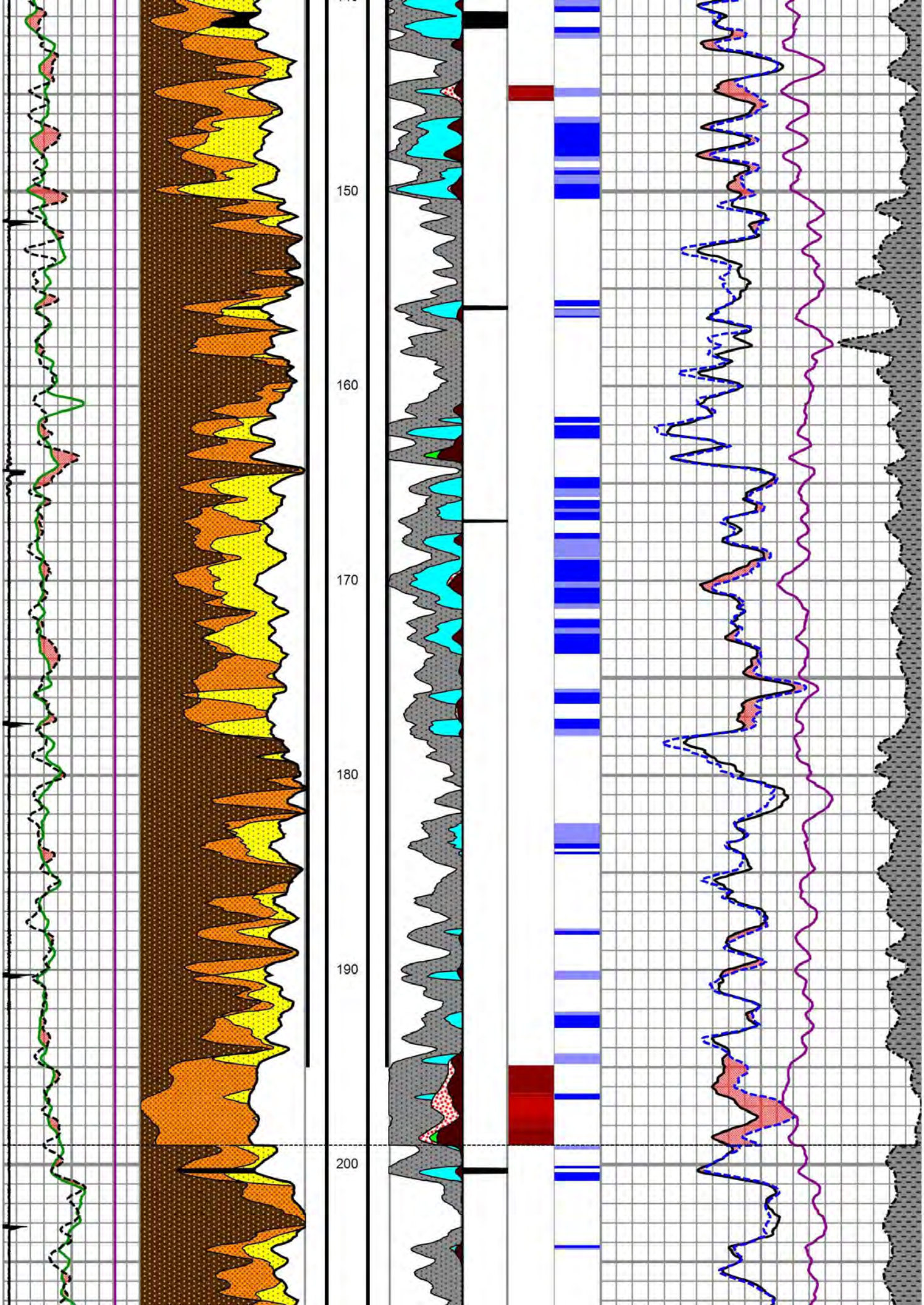
Clay

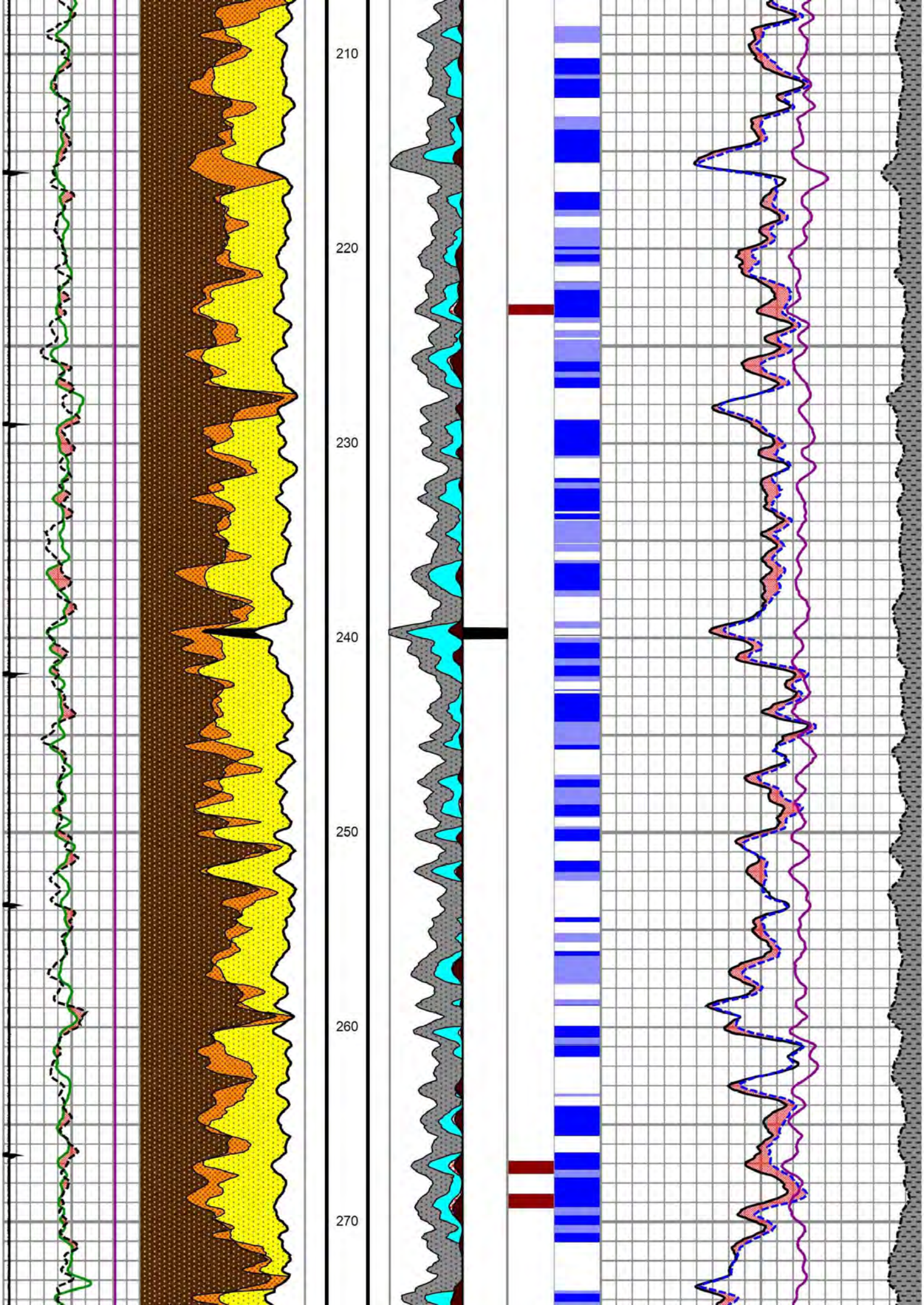
Light Hydrocarbon

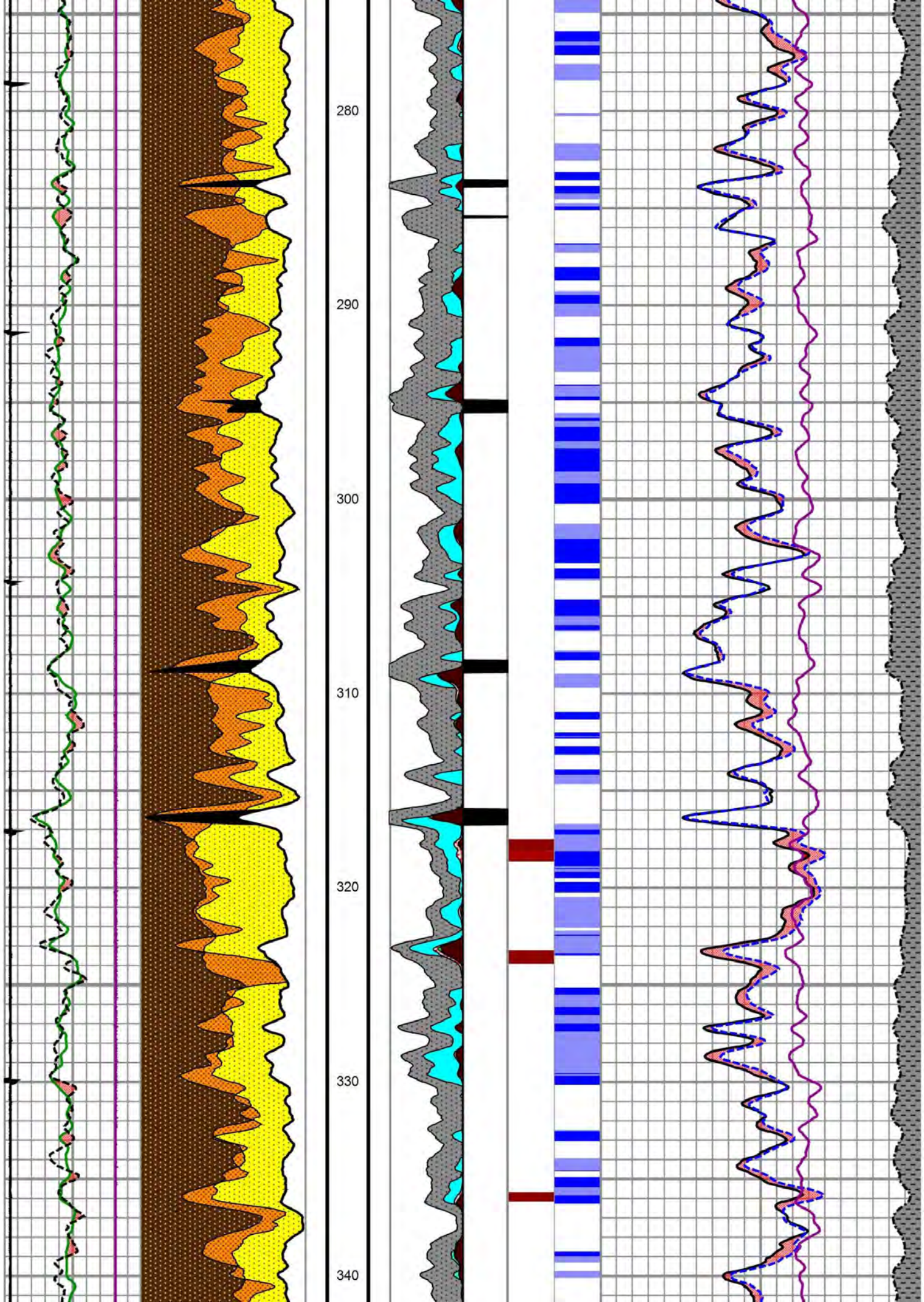
Light Bulk Density

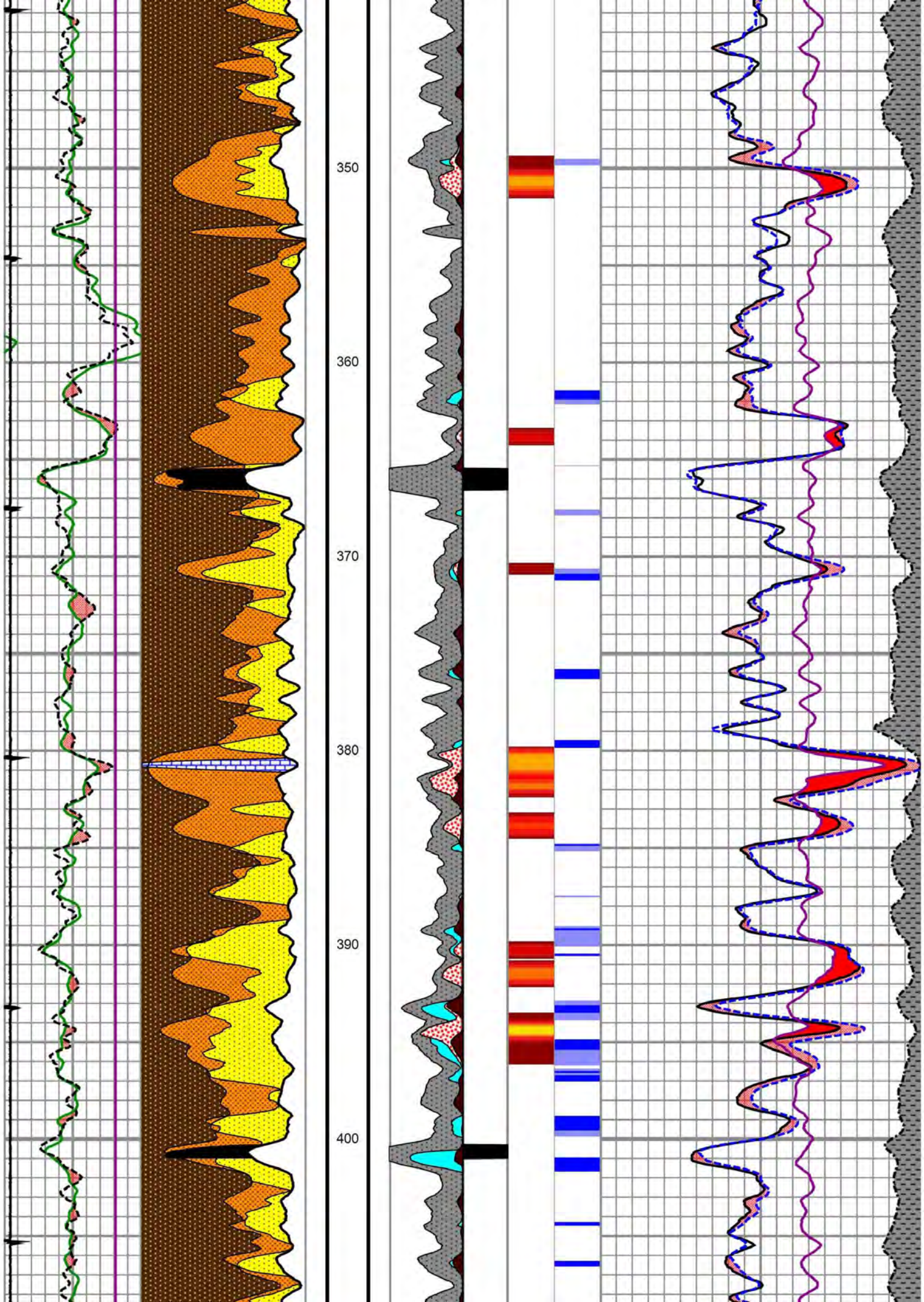


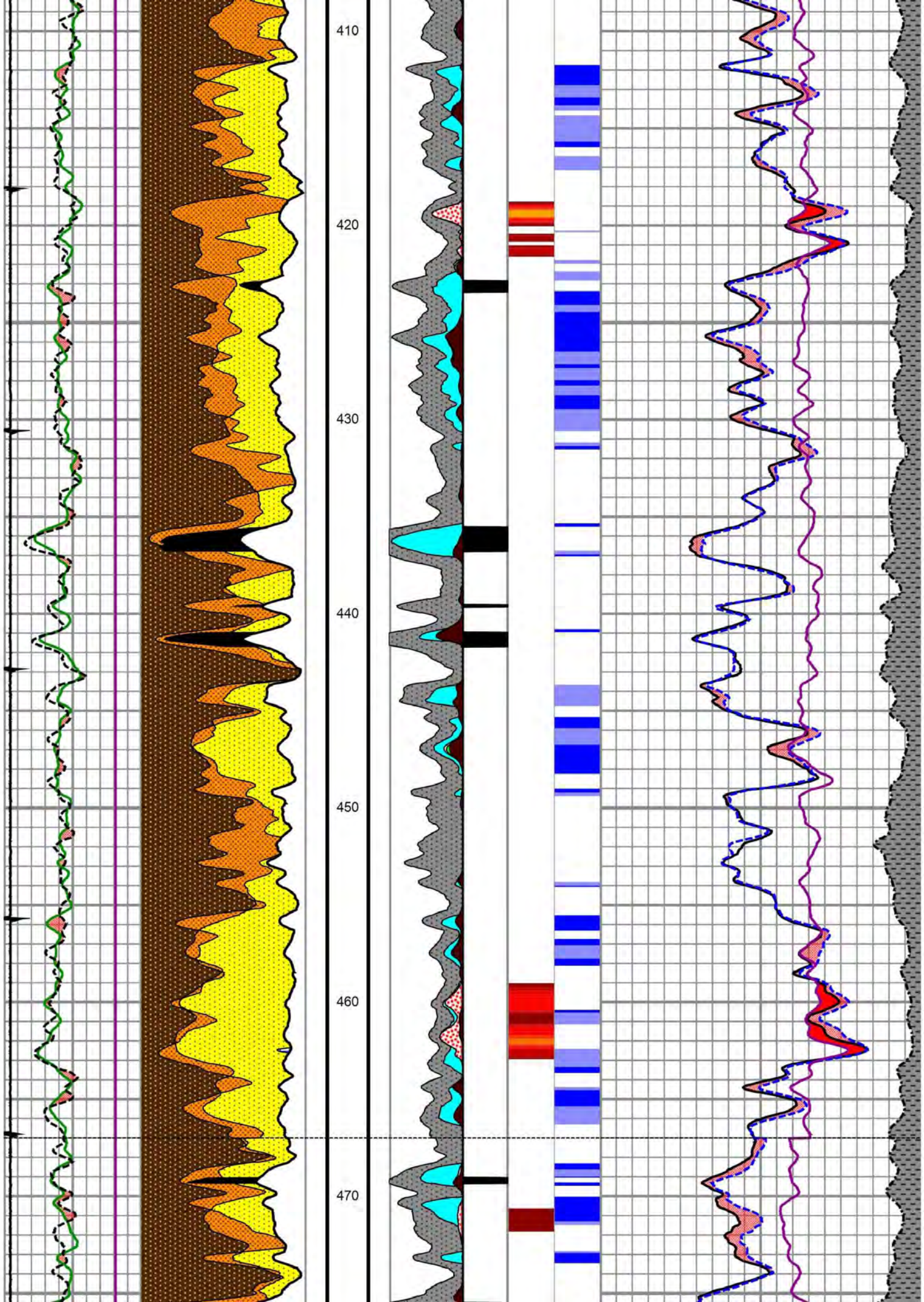

80
90
100
110
120
130
140

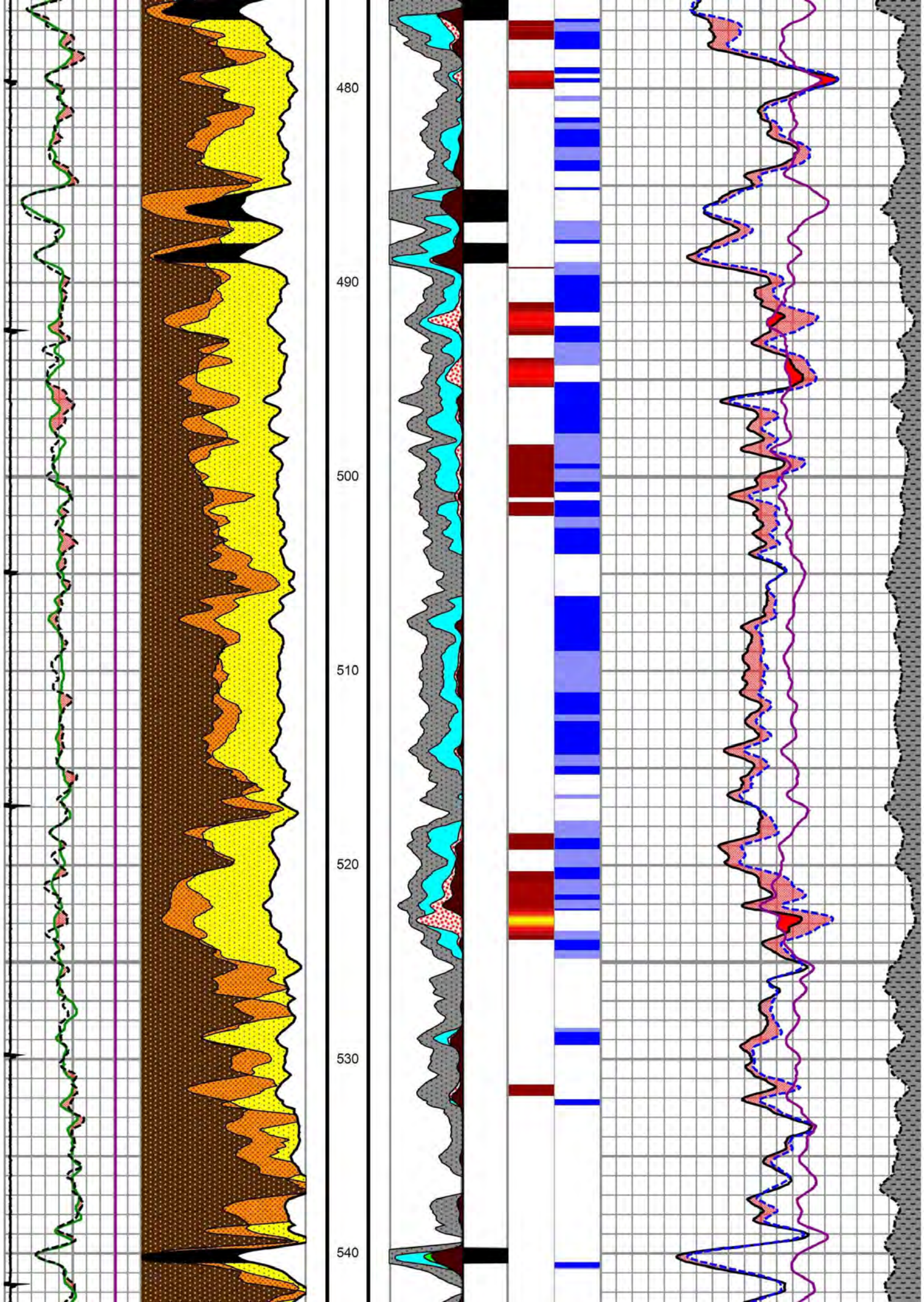

150
160
170
180
190
200

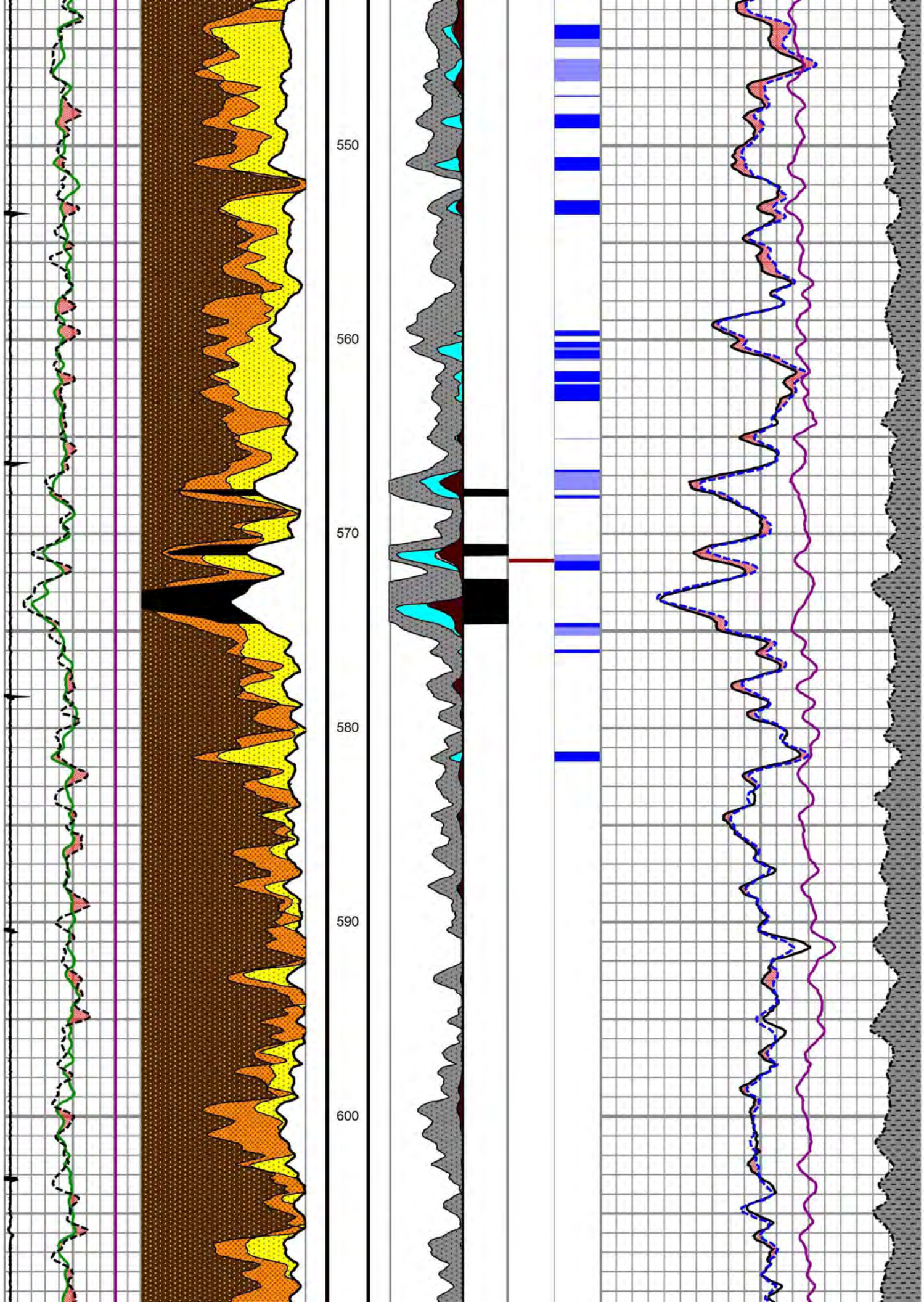

210
220
230
240
250
260
270

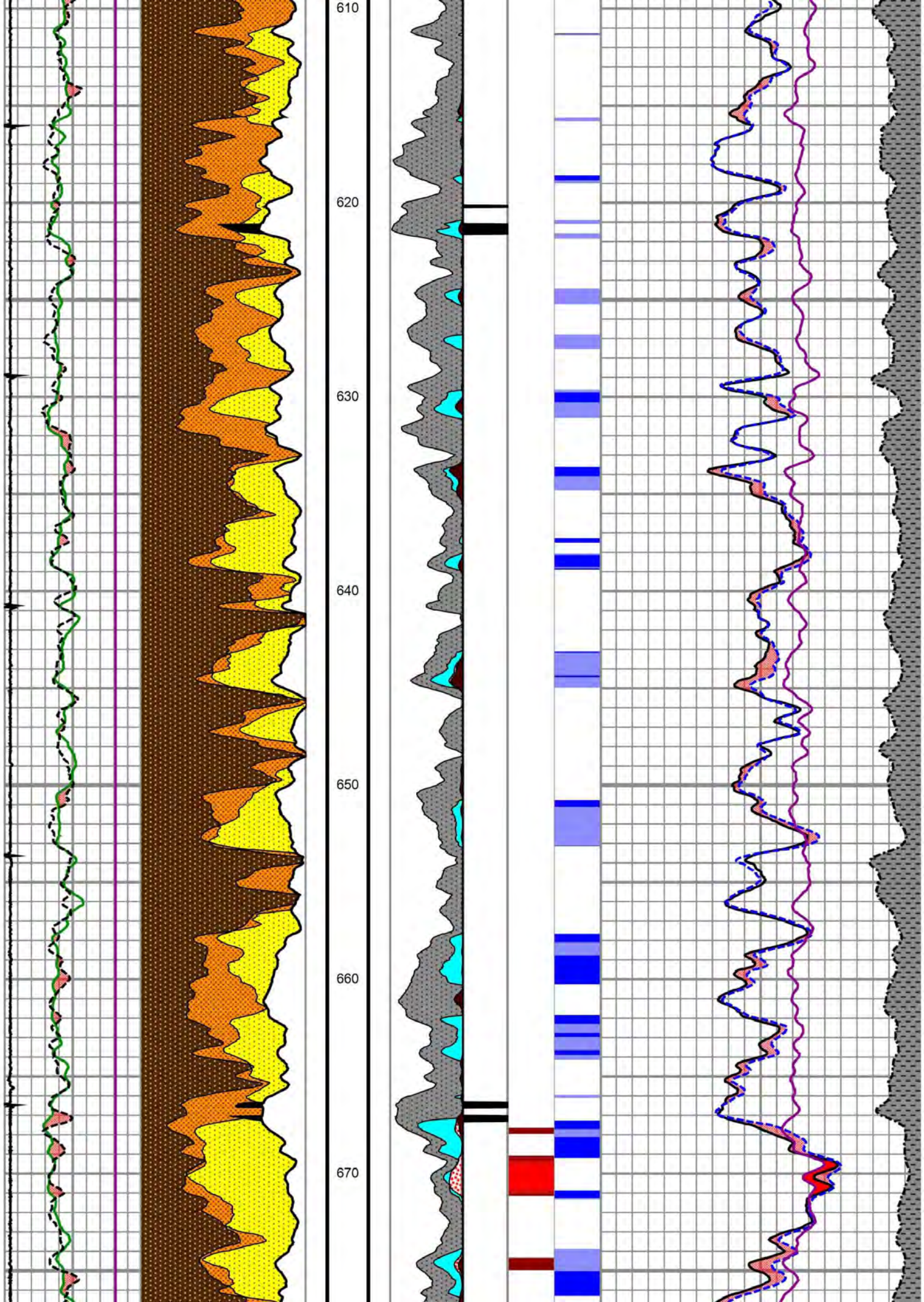

280
290
300
310
320
330
340

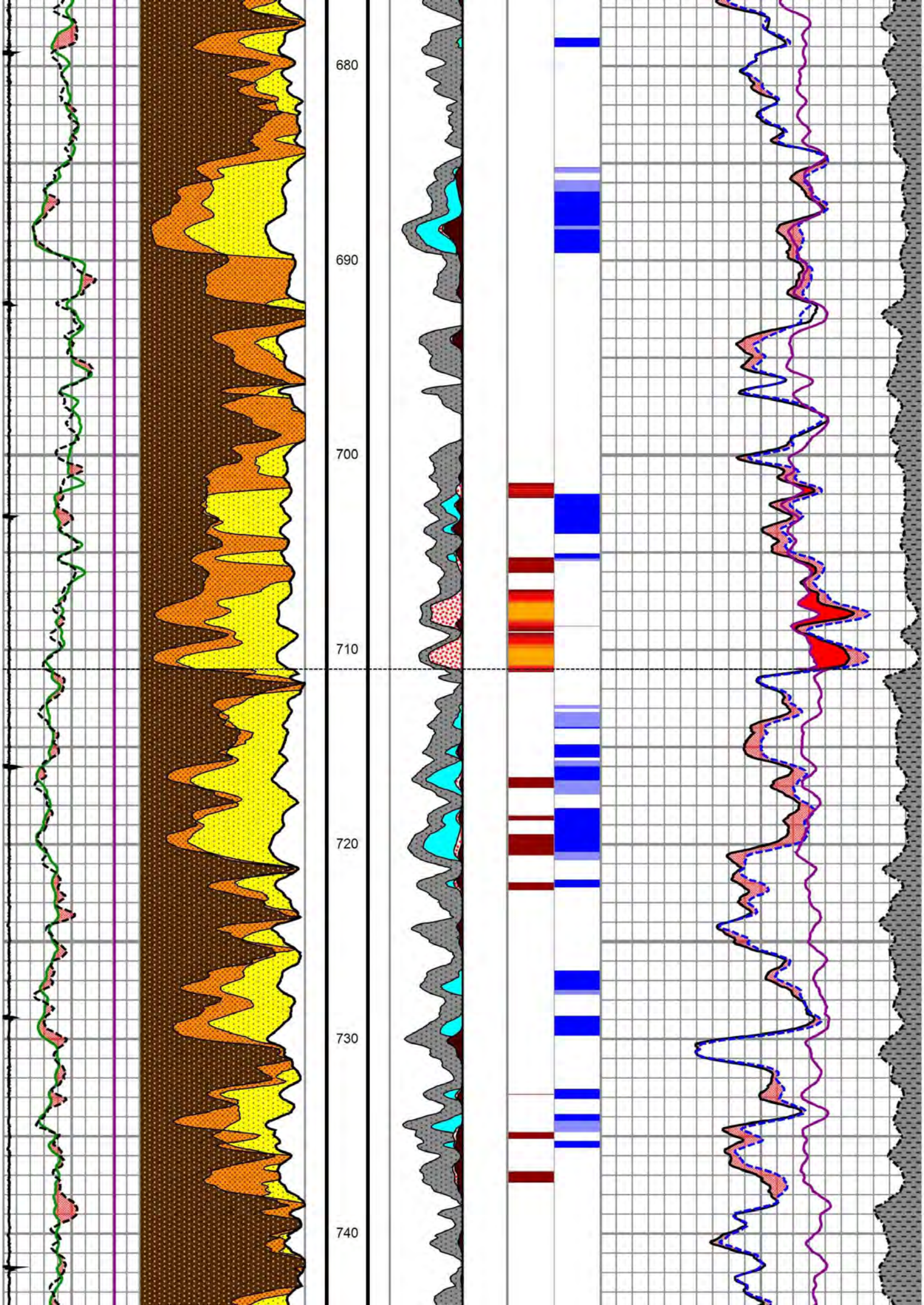

350
360
370
380
390
400

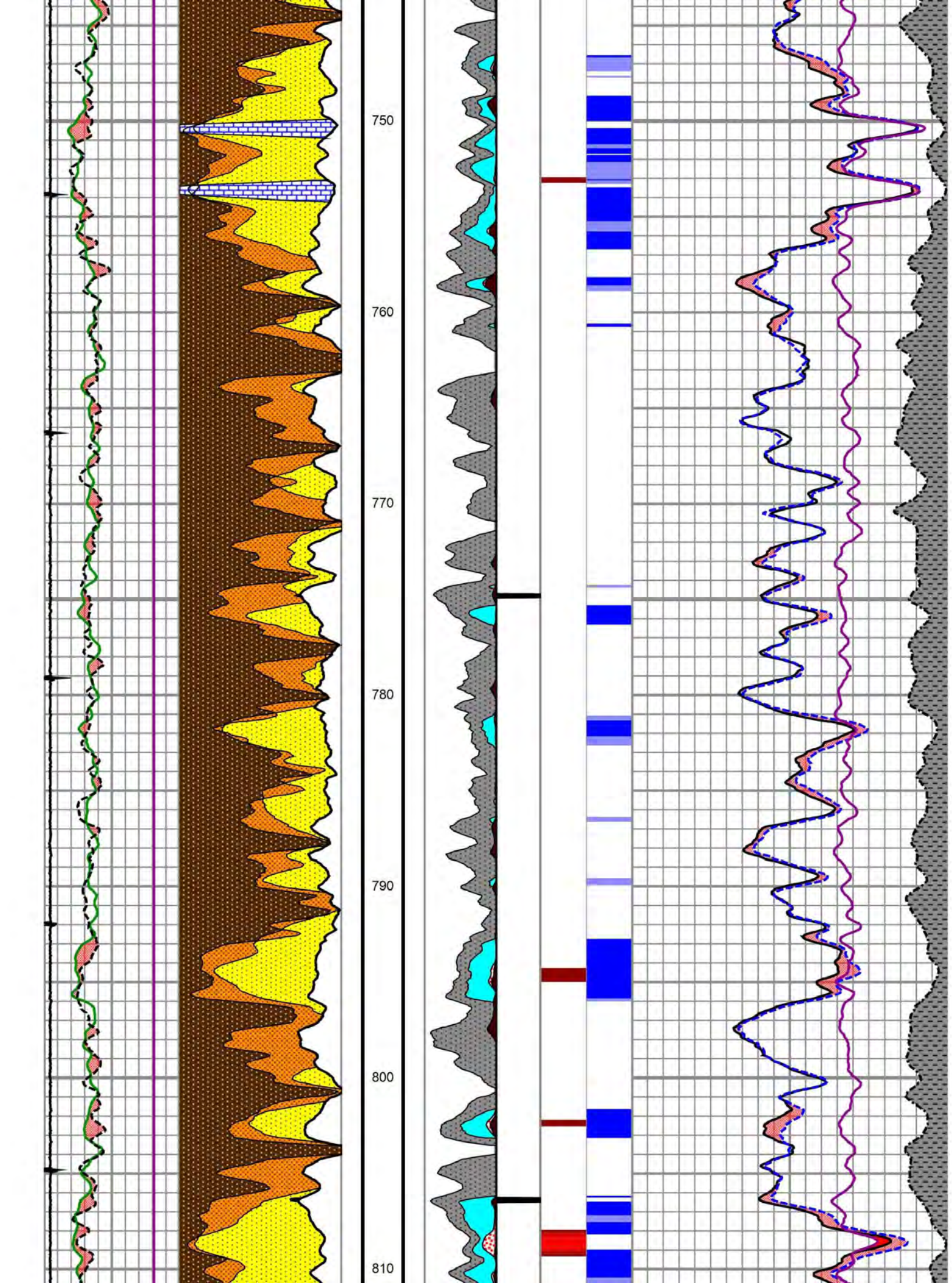

410
420
430
440
450
460
470

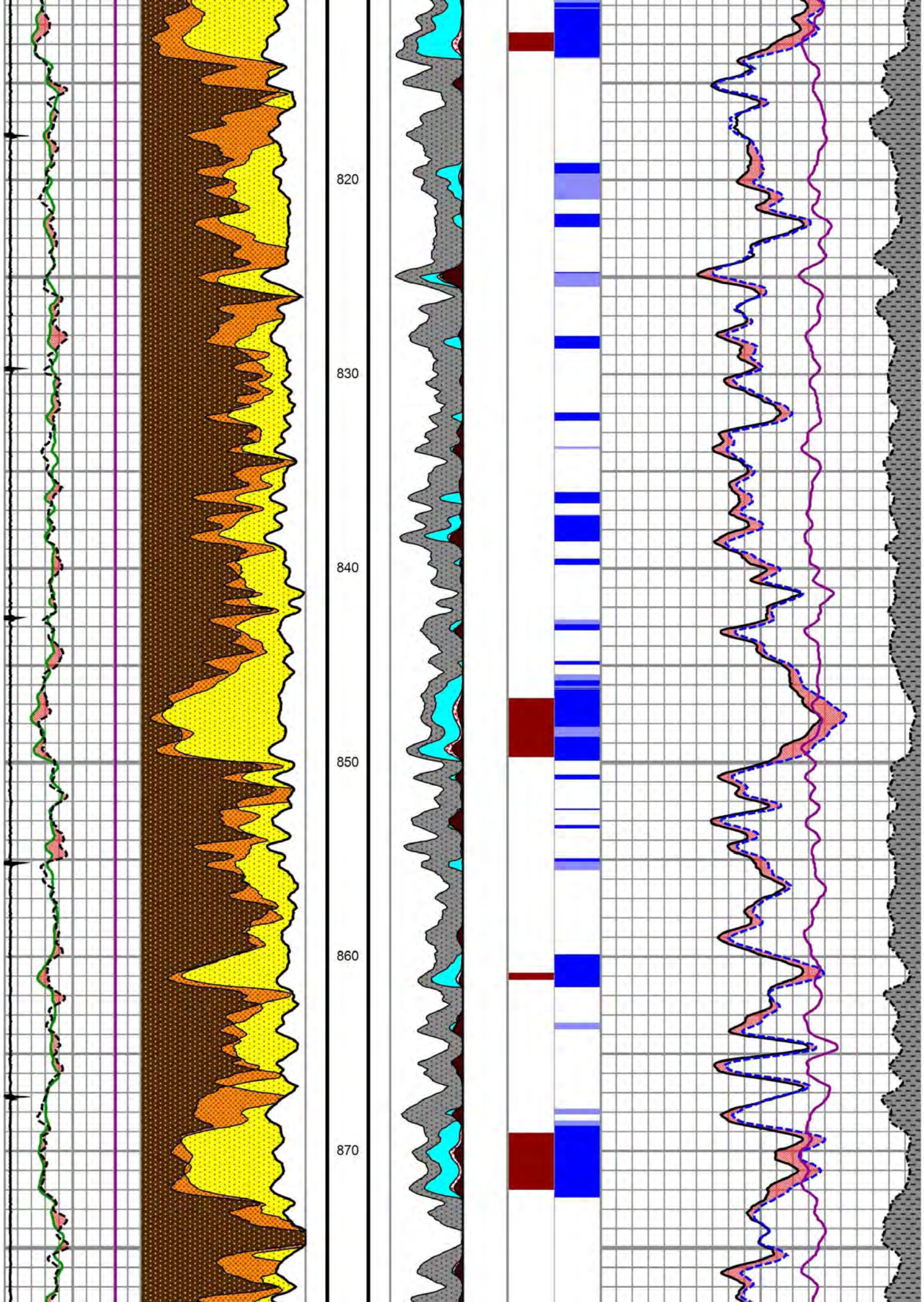

480
490
500
510
520
530
540

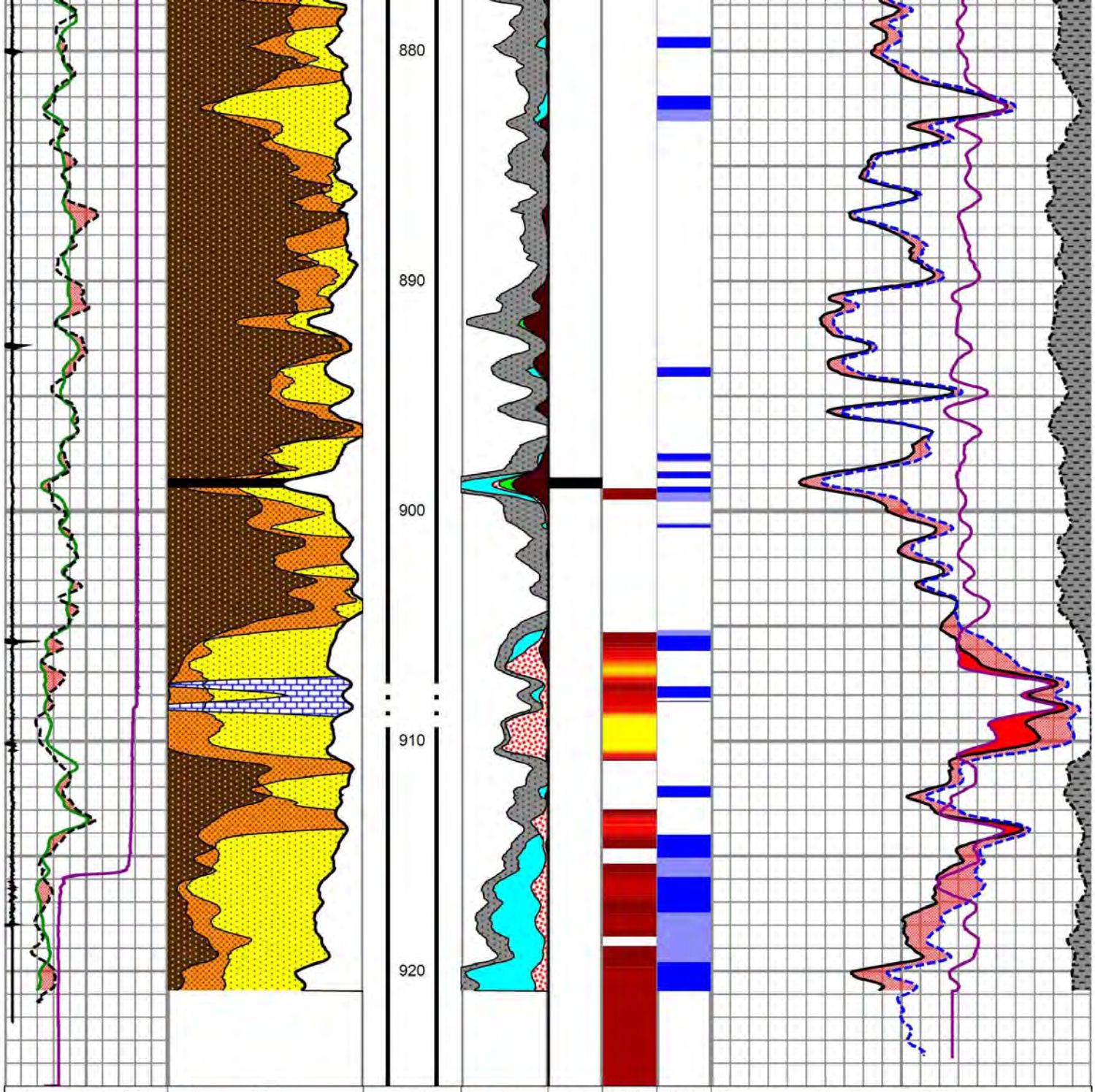

550
560
570
580
590
600


610
620
630
640
650
660
670


680
690
700
710
720
730
740


750
760
770
780
790
800
810


820
830
840
850
860
870



Roke

Quad Neutron

Thru Casing

MD Main Pass

EMBER ENTICE 8-16-24-25

Measured Depth

25.0 - 925.0 m

Calibrations

Curve	Gain	Shift	Filter
BBRM	0.972973	0	0
CCL	1	0	0

Curve	Gain	Shift	Filter
BHT	0.002385	-88.48	1
FGR	1.5	0	1

Curve	Gain	Min	Max	Filter
LNG	1.0252	1.012	1.156	1.5
LNN	1.118	1.006	1.177	1.2

SNN	1.0144	0.938	1.135	1.5						

CASING 219.1 - mm

Top: 25.00 m	Bottom: 199.00 m	low compaction		nuclear caliper gain:1	water:30 kppm	oil:15 API	f-factor:23	ce gain:0	clay tie:49
Curve	A	B	Gain	Shift	Curve	WT	Cutoff	Min	Max
QTP	65	-11	1	-5	DGR	0	10	0	65
QL	33	-40	1.2	-10	GR	0	20	0	60
DDN	2.4	-34.5	1	-13.5	DDN	35	8	0	60
QC	0.0008	-2.5	0.2	-2.5	QC	0	2	0	100
SNNp	-174	56	-174	56	PROP	0	0	0	60
LNNp	-13	45.9239	-13	45.9239	CE	0	3	0	60
SNGp	-109	106.798	-109	106.798	COAL	1	42	0	60
LNGp	-22	61.6229	-22	61.6229	calcite	1	15	0	60
FGR	1	0	1.8	0	CEp	65	4	0	100
CEp	1	0	2.2	23					
SNNpost	1	0	1	0					
SNGpost	1	0	1	0					
CNL	1	0	1	3					
IntCounts	1	0	1	0					
Saturation	QLce	ddn:0	clay:20	boundwater:0	waterfreeoil:0	boundoil:0	filter:0.3	swak:False	
	coll maxclay:False	coll swqcfp:True	use snnp-lnnp:False	snnp-lnnp:0	swoilcor:120827-HK				
Lithology	shale:7	silt (bliquid):6	sand:0	collector:7	calcite min:-4	calcite max:-7	coal porosity:35	hcoal:45	
	use:qc	lgrshale:50	lgrsand:20	lgrcollcut:1	carbonate:False	dolasmud:False	minclayfe:20	qtpqlfe:20	
	fe100:20	nofe:20	Hlsh:30	Larionov:old					
Effective Porosity	SH	lithology:gr shale/qc silt							

CASING 219.1 - mm

Top: 199.00 m	Bottom: 467.00 m	low compaction		nuclear caliper gain:1	water:43 kppm	oil:15 API	f-factor:23	ce gain:0	clay tie:290
Curve	A	B	Gain	Shift	Curve	WT	Cutoff	Min	Max
QTP	65	-11	1	-5	DGR	0	10	0	65
QL	30.25	-30	1.1	-2.5	GR	0	20	0	60
DDN	2.16	-23.9	0.9	-5	DDN	35	8	0	60
QC	0.0011	0	0.28	0	QC	0	2	0	100
SNNp	-174	56	-174	56	PROP	0	0	0	60
LNNp	-15	44.2312	-15	44.2312	CE	0	3	0	60
SNGp	-159	83.1141	-159	83.1141	COAL	1	42	0	60
LNGp	-21	63.2516	-21	63.2516	calcite	1	15	0	60
FGR	1	0	1.8	0	CEp	65	4	0	100
CEp	1	0	2.2	23					
SNNpost	1	0	1	0					
SNGpost	1	0	1	0					
CNL	1	0	1	3					
IntCounts	1	0	1	0					
Saturation	QLce	ddn:0	clay:20	boundwater:0	waterfreeoil:0	boundoil:0	filter:0.3	swak:False	
	coll maxclay:False	coll swqcfp:True	use snnp-lnnp:False	snnp-lnnp:0	swoilcor:120827-HK				
Lithology	shale:7	silt (bliquid):6	sand:0	collector:7	calcite min:-4	calcite max:-7	coal porosity:35	hcoal:45	
	use:qc	lgrshale:80	lgrsand:25	lgrcollcut:1	carbonate:False	dolasmud:False	minclayfe:20	qtpqlfe:20	
	fe100:20	nofe:20	Hlsh:30	Larionov:old					
Effective Porosity	SH	lithology:gr shale/qc silt							

CASING 219.1 - mm

Top: 467.00 m	Bottom: 711.00 m	low compaction		nuclear caliper gain:1	water:43 kppm	oil:15 API	f-factor:25	ce gain:0	clay tie:644
Curve	A	B	Gain	Shift	Curve	WT	Cutoff	Min	Max
QTP	65	-11	1	-5	DGR	0	10	0	65
QL	30.25	-28.5	1.1	-1	GR	0	20	0	60
DDN	2.16	-25.9	0.9	-7	DDN	35	8	0	60
QC	0.0011	-1	0.28	-1	QC	0	2	0	100
SNNp	-174	56	-174	56	PROP	0	0	0	60
LNNp	-15	42.5507	-15	42.5507	CE	0	3	0	60
SNGp	-159	82.1447	-159	82.1447	COAL	1	42	0	60
LNGp	-21	60.7042	-21	60.7042	calcite	1	15	0	60
FGR	1	0	1.8	0	CEp	65	4	0	100
CEp	1	0	2.2	25					
SNNpost	1	0	1	0					
SNGpost	1	0	1	0					
CNL	1	0	1	3					
IntCounts	1	0	1	0					
Saturation	QLce	ddn:0	clay:20	boundwater:0	waterfreeoil:0	boundoil:0	filter:0.3	swak:False	
	coll maxclay:False	coll swqcfp:True	use snnp-lnnp:False	snnp-lnnp:0	swoilcor:120827-HK				
Lithology	shale:7	silt (bliquid):6	sand:0	collector:7	calcite min:-4	calcite max:-7	coal porosity:35	hcoal:45	
	use:qc	lgrshale:77	lgrsand:25	lgrcollcut:1	carbonate:False	dolasmud:False	minclayfe:20	qtpqlfe:20	
	fe100:20	nofe:20	Hlsh:30	Larionov:old					
Effective Porosity	SH	lithology:gr shale/qc silt							

Zone 4

Top: 711.00 m	Bottom: 925.00 m	low compaction		nuclear caliper gain:1	water:43 kppm	oil:15 API	f-factor:22	ce gain:0	clay tie:735
Curve	A	B	Gain	Shift	Curve	WT	Cutoff	Min	Max
QTP	65	-11	1	-5	DGR	0	10	0	65
QL	30.25	-28.5	1.1	-1	GR	0	20	0	60
DDN	2.16	-25.9	0.9	-7	DDN	35	8	0	60
QC	0.0012	-1	0.3	-1	QC	0	1	0	100
SNNp	-174	60	-174	60	PROP	0	0	0	60
LNNp	-15	47.2151	-15	47.2151	CE	0	3	0	60
SNGp	-159	85.6835	-159	85.6835	COAL	1	42	0	60
LNGp	-22	64.2605	-22	64.2605	calcite	1	15	0	60
FGR	1	0	1.8	0	CEp	65	4	0	100
CEp	1	0	2.2	22					
SNNpost	1	0	1	0					
SNGpost	1	0	1	0					
CNL	1	0	1	3					
IntCounts	1	0	1	0					
Saturation	QLce	ddn:0	clay:20	boundwater:0	waterfreeoil:0	boundoil:0	filter:0.3	swak:False	
	coll maxclay:False	coll swqcfp:True	use snnp-lnnp:False	snnp-lnnp:0	swoilcor:120827-HK				
Lithology	shale:7	silt (bliquid):6	sand:0	collector:7	calcite min:-4	calcite max:-7	coal porosity:35	hcoal:45	
	use:qc	lgrshale:60	lgrsand:25	lgrcollcut:1	carbonate:False	dolasmud:False	minclayfe:20	qtpqlfe:20	
	fe100:20	nofe:20	Hlsh:30	Larionov:old					
Effective Porosity	SH	lithology:gr shale/qc silt							