

**- MRIL -
MAGNETIC RESONANCE
IMAGING ANALYSIS**

COMPANY	SANDRIDGE ENERGY
WELL	SHELBY 1-3 SWD
FIELD	WHARTON SOUTH
COUNTY	HARPER
STATE	KANSAS

Location: 285 FSL & 180' FWL

3-355-7W

Elevations: K.B.: 1335.0000 R.T.: 1335.0000 G.L.: 1315.0000

Date Processed	19 MAY 2012	Logs Processed	MRIL
Job Number	9505733	Date Logged	18 MAY 2012
Interval Processed	SEE REMARKS	Type Fluid In Hole	WBM 9.4 ppg
Processed By	L. HAMILTON	Location	LIB KS
Processed At	OKC FRS		

Fold Here

Service Ticket No.:	9505733	API Serial No.:	15-077-21839	PGM Version:	
DIRECTIONAL INFORMATION					
Maximum Deviation		deg. @		KOP	
Remarks:					
T1 AND T2 DATA SIMULTANEOUSLY ACQUIRED VIA OKIE ACTIVATION					
INTERVALS REQUESTED AND PROCESSED: TD-4700'; 4635'-4440'; 4380'-4150'; 3940'-3840'; 3530'-3490'					
CUTOFFS ARE DISPLAYED IN PARAMETER FILE					
PROCESSED AT OKC FORMATION AND RESERVOIR SOLUTIONS BY LAYNE HAMILTON Ph. 405-231-1873					
HALLIBURTON DOES NOT GUARANTEE THE ACCURACY OF ANY INTERPRETATION OF THE LOG DATA, CONVERSION OF LOG DATA TO PHYSICAL ROCK PARAMETERS OR RECOMMENDATIONS WHICH MAY BE GIVEN BY HALLIBURTON PERSONNEL OR WHICH APPEAR ON THE LOG OR IN ANY OTHER FORM. ANY USER OF SUCH DATA, INTERPRETATIONS, CONVERSIONS, OR RECOMMENDATIONS AGREES THAT HALLIBURTON IS NOT RESPONSIBLE EXCEPT WHERE DUE TO GROSS NEGLIGENCE OR WILLFUL MISCONDUCT, FOR ANY LOSS, DAMAGES, OR EXPENSES RESULTING FROM THE USE THEREOF. HALLIBURTON					

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nmrStudio Processing Parameters
  Studio File: Merged_MDS.stu
    Date: 19-May-2012 19:17:57
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SHARED PARAMETERS

NAME	UNIT	PARAMETER DESCRIPTION	VALUE
DEPINC	FEET	DEPTH INCREMENT	0.250
DEPTHBOT	FEET	BOTTOM DEPTH	5686.000
DEPTHTOP	FEET	TOP DEPTH	3476.000
MEANDEPTHINC	FEET	MEAN DEPTH INCREMENT	-0.200
NULLVALUE	UNKNOWN	UNKNOWN	-999.250
NUMLEVEL	UNKNOWN	UNKNOWN	11051.000
TEMPGRADC	UNKNOWN	UNKNOWN	0.694
CALTEMP	UNKNOWN	UNKNOWN	19.444,19.444,19.444, 19.444,19.444,19.444
FILTLEN	UNKNOWN	UNKNOWN	1.000,1.000,1.000,1.000, 1.000,1.000
FREQAVG	UNKNOWN	UNKNOWN	646.477,646.477,770.638, 770.638,770.638,770.638
MINRA	UNKNOWN	UNKNOWN	12.000,12.000,8.000,8.000, 8.000,8.000
NE	UNKNOWN	UNKNOWN	400.000,400.000,10.000, 10.000,10.000,10.000
TE	UNKNOWN	UNKNOWN	1.200,1.200,0.600,0.600, 0.600,0.600
TW	UNKNOWN	UNKNOWN	8028.000,2130.000,10.000, 30.000,100.000,300.000
ACTSETNAME	UNKNOWN	UNKNOWN	OKIE
DEPUNIT	UNKNOWN	UNKNOWN	FEET
TOOLTYPE	UNKNOWN	UNKNOWN	MRIL PRIME
GROUPID	UNKNOWN	UNKNOWN	A,B,C,D,E,F
GROUPIDPTOT	UNKNOWN	UNKNOWN	A,B,C,D,E,F

ZONED PARAMETERS

NAME	UNIT	PARAMETER DESCRIPTION	2Top-2Bot VALUE
OILVISCOSITY	CP	OIL VISCOSITY	3476.000-5686.000 2.000
MICROPOROSITYT2	MS	MICRO-POROSITY CUTOFF T2	3476.000-5686.000 3.000
BT2	UNITLESS	SPECTRAL BVI T2 OFFSET	3476.000-5686.000 1.000
T2STARTSB	UNITLESS	SB T2 START	3476.000-5686.000 0.500
T2ENDSB	UNITLESS	SB T2 END	3476.000-5686.000 3000.000
MICROPOROSITYT1	MS	MICRO-POROSITY CUTOFF T1	3476.000-5686.000 6.000
BT1	UNITLESS	SPECTRAL BVI T1 OFFSET	3476.000-5686.000 1.000
COATESPERMA	UNITLESS	COATES PERM. A	3476.000-5686.000 4.000
COATESPERMB	UNITLESS	COATES PERM. B	3476.000-5686.000 2.000
COATESPERMC	UNITLESS	COATES PERM. C	3476.000-5686.000 10.000
THRESHFACTOR	DECP	THRESHHOLD FACTOR	3476.000-5686.000 0.050
SBCOEF	UNITLESS	SB PERM. COEFFICIENT	3476.000-5686.000 0.000
SBEXP	UNITLESS	SB PERM. EXPONENT	3476.000-5686.000 2.300
CUMSUMTHRESHHOLD	UNITLESS	CUMULATIVE SUM THRESHHOLD	3476.000-5686.000 0.500
LOGMEANPERMA	UNITLESS	LOG MEAN PERM. A	3476.000-5686.000 4.000
LOGMEANPERMB	UNITLESS	LOG MEAN PERM. B	3476.000-5686.000 2.000
LOGMEANPERMC	UNITLESS	LOG MEAN PERM. C	3476.000-5686.000 4.000
RWREF	OHMM	FORMATION WATER RESISTIVITY	3476.000-5686.000 0.040
TWREF	DEGF	RWREF REFERENCE TEMPER.	3476.000-5686.000 140.000
RMFREF	OHMM	MUD FILTRATE RESISTIVITY	3476.000-5686.000 0.480
TMFREF	DEGF	RMFREF REFERENCE TEMPER.	3476.000-5686.000 100.000
ARCHIE	UNITLESS	ARCHIE'S CONSTANT (A)	3476.000-5686.000 1.000
EXPHI	UNITLESS	CEMENTATION EXPONENT	3476.000-5686.000 2.050
RHOFL	G/C3	FLUID DENSITY (-1=FROM RMF)	3476.000-5686.000 1.000
DMA	G/C3	APPARENT MATRIX DENSITY	3476.000-5686.000 2.710

RHOSAN	G/C3	SANDSTONE MATRIX DENSITY	3476.000-5686.000 2.650
RHOLIM	G/C3	LIMESTONE MATRIX DENSITY	3476.000-5686.000 2.710
RHODOL	G/C3	DOLOMITE MATRIX DENSITY	3476.000-5686.000 2.851
DTMA	USPF	APP. MATRIX SONIC (COMPRESSIONAL) TRAVEL TIME	3476.000-5686.000 47.600
IRREDUCIBLET2	MS	IRREDUCIBLE CUTOFF T2	3476.000-3850.000 70.000, 3850.000-3930.000 33.000, 3930.000-5084.000 70.000, 5084.000-5210.000 55.000, 5210.000-5349.000 70.000, 5349.000-5686.000 33.000
AT2	UNITLESS	SPECTRAL BVI T2 COEFFICIENT	3476.000-3850.000 0.009, 3850.000-3930.000 0.062, 3930.000-5084.000 0.009, 5084.000-5210.000 0.020, 5210.000-5349.000 0.009, 5349.000-5686.000 0.062
IRREDUCIBLET1	MS	IRREDUCIBLE CUTOFF T1	3476.000-3850.000 140.000, 3850.000-3930.000 60.000, 3930.000-5084.000 140.000, 5084.000-5210.000 110.000, 5210.000-5349.000 140.000, 5349.000-5686.000 60.000
AT1	UNITLESS	SPECTRAL BVI T1 COEFFICIENT	3476.000-3850.000 0.045, 3850.000-3930.000 0.031, 3930.000-5084.000 0.004, 5084.000-5210.000 0.010, 5210.000-5349.000 0.004, 5349.000-5686.000 0.031
TEMPERATURE	DEGF	FORMATION TEMPERATURE	3476.000-0.000 70.000, 5692.000-5686.000 140.000
PRESSURE	PSIG	FORMATION PRESSURE	3476.000-0.000 0.000, 5692.000-5686.000 2780.000

CURVE LIST

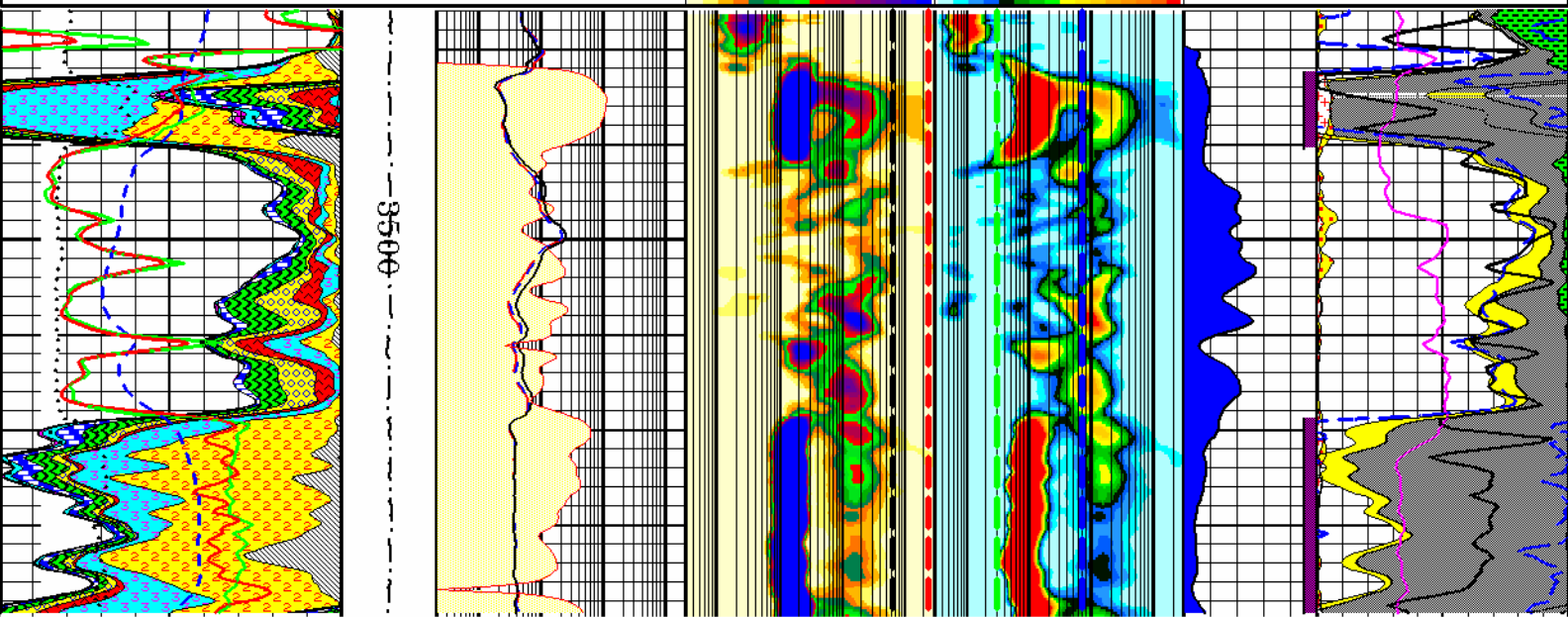
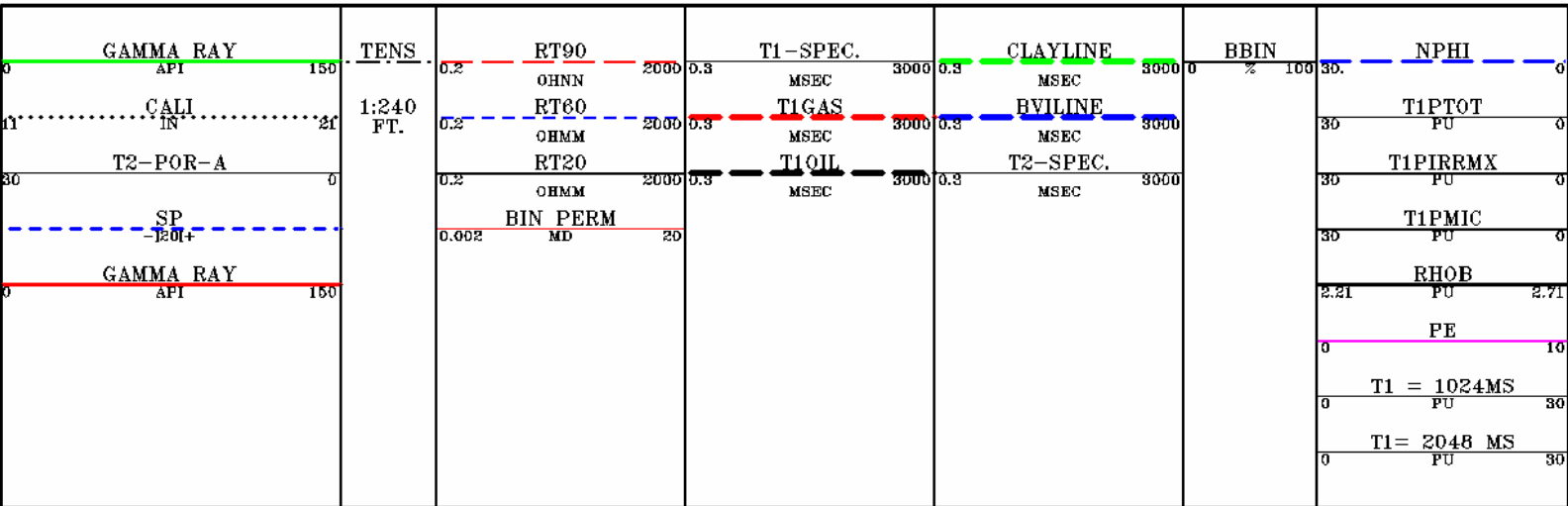
NAME	UNIT	PARAMETER DESCRIPTION
GAMM	API	GAMMA RAY
TENS	LBS	CABLE TENSION
TMP3	DEGC	PROBE TEMPERATURE
GAINA	UNITLESS	GAIN
GAINC	UNITLESS	GAIN
D0GAS	1E-5 CM2/S	G DIFFUSION COEFFICIENT FOR GAS (METHANE)
D0OIL	1E-5 CM2/S	G DIFFUSION COEFFICIENT FOR OIL
DIAM	IN	DIAMETER OF INVESTIGATION
FPRES	PSIA	FORMATION PRESSURE
HIGAS	UNITLESS	HYDROGEN INDEX FOR GAS
RHOGAS	G/CC	GAS DENSITY (METHANE)
T1GAS	MS	T1 FOR GAS (METHANE)
T1OIL	MS	T1 FOR OIL
T2GAS	MS	T2 FOR GAS (METHANE)
T2OIL	MS	T2 FOR OIL
T1DIST	PU	T1 DISTRIBUTION
T2KBENS	MD	T2 DIST. SB PERMEABILITY
T2KLOGM	MD	T2 DIST. LOG MEAN PERMEABILITY
VOIL	PU	T1T2 LIQUID SATURATION
CHIT1	PU	RMS FIT ERROR - T1- FOR THE FIRST GROUP
MBVIT1	PU	T1 IRREDUCIBLE POROSITY MAX(CUT-OFF, SPECTRAL) .
MCBWT1	PU	T1 MICRO-POROSITY
MPERMT1	MD	PERMEABILITY - FROM T1-DISTRIBUTION - USING COATS METHOD
MPHIT1	PU	T1 EFFECTIVE POROSITY
MSIGT1	PU	T1 TOTAL POROSITY
P01T1F	PU	T1-GROUP BIN# 01 POROSITY T1BIN TIME=1)
P02T1F	PU	T1-GROUP BIN# 02 POROSITY T1BIN TIME=2)
P05T1F	PU	T1-GROUP BIN# 0.5 POROSITY T1BIN TIME=0.5)
P10T1F	PU	T1-GROUP BIN# 10 POROSITY T1BIN TIME=2048)
P1T1F	PU	T1-GROUP BIN# 1 POROSITY T1BIN TIME=4)
P2T1F	PU	T1-GROUP BIN# 2 POROSITY T1BIN TIME=8)
P3T1F	PU	T1-GROUP BIN# 3 POROSITY T1BIN TIME=16)
P4T1F	PU	T1-GROUP BIN# 4 POROSITY T1BIN TIME=32)
P5T1F	PU	T1-GROUP BIN# 5 POROSITY T1BIN TIME=64)
P6T1F	PU	T1-GROUP BIN# 6 POROSITY T1BIN TIME=128)

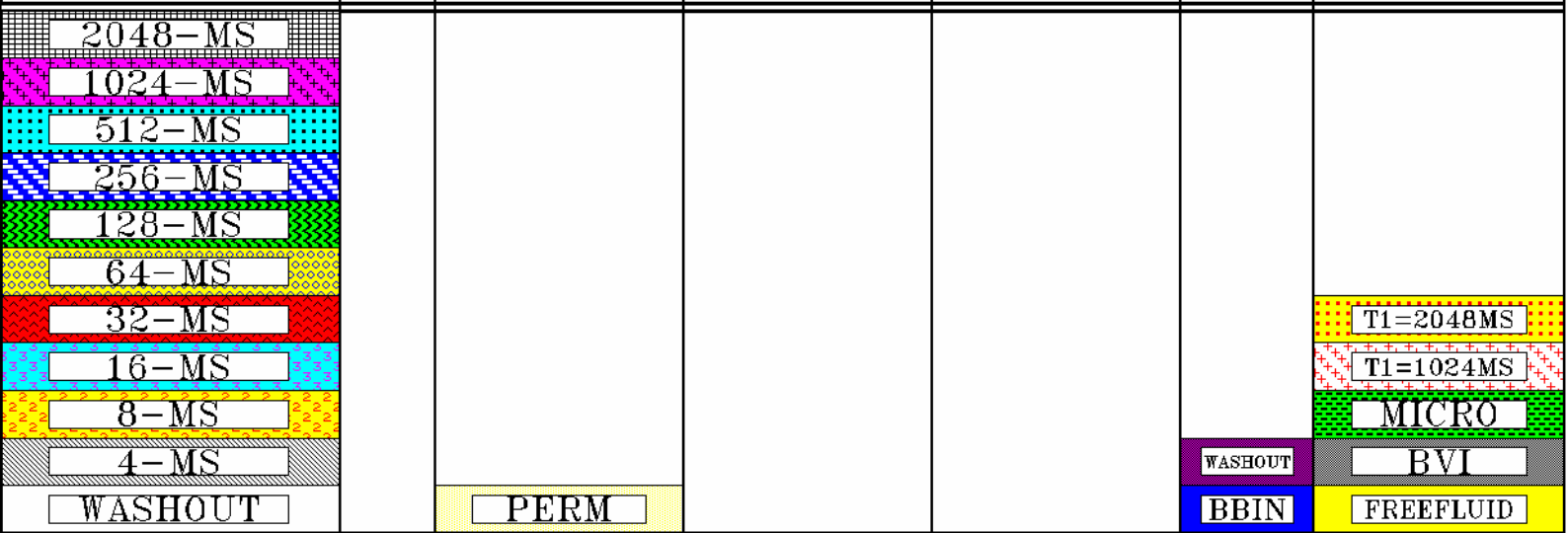
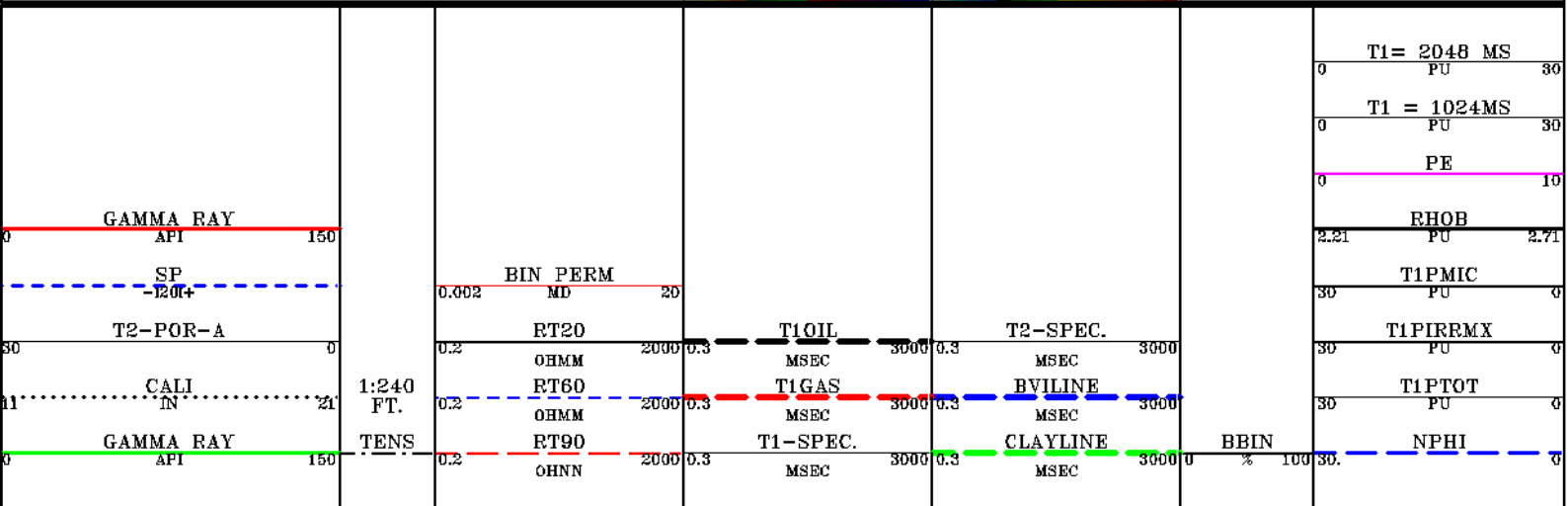
P7T1F	PU	T1-GROUP BIN# 7 POROSITY T1BIN TIME=256)
P8T1F	PU	T1-GROUP BIN# 8 POROSITY T1BIN TIME=512)
P9T1F	PU	T1-GROUP BIN# 9 POROSITY T1BIN TIME=1024)
T1SPEC	PU	T1-GRP POR-T1-DISTRIBUTION
CHIA	PU	RMS FIT ERROR FOR GROUP A INVERSION
CHIB	PU	RMS FIT ERROR FOR GROUP B INVERSION
MBVITA	PU	MAXIMUM BOUND POROSITY VOLUME (MAX(CBVI, SBVI)) FOR TA-GROUP
MCBW	PU	MICROPOROSITY VOLUME FROM PR06
MPERM	MD	PERMEABILITY COMPUTED USING COATES MODEL
MPHITA	PU	SUM-TOTAL-EFFECTIVE-POROSITY FOR GROUP TA
MPHITB	PU	SUM-TOTAL-EFFECTIVE-POROSITY FOR GROUP TB
MSIGTA	PU	SUM-TOTAL-POROSITY FOR GROUP TA (PR06+A T2-DOMAIN-SPLICED)
MSIGTB	PU	SUM-TOTAL-POROSITY FOR GROUP TB (PR06+A T2-DOMAIN-SPLICED)
P01AF	PU	A-GROUP BIN# 01 POROSITY T2BIN TIME=1)
P01BF	PU	B-GROUP BIN# 01 POROSITY T2BIN TIME=1)
P02AF	PU	A-GROUP BIN# 02 POROSITY T2BIN TIME=2)
P02BF	PU	B-GROUP BIN# 02 POROSITY T2BIN TIME=2)
P10AF	PU	A-GROUP BIN# 10 POROSITY T2BIN TIME=2048)
P10BF	PU	B-GROUP BIN# 10 POROSITY T2BIN TIME=2048)
P1AF	PU	A-GROUP BIN# 1 POROSITY T2BIN TIME=4)
P1BF	PU	B-GROUP BIN# 1 POROSITY T2BIN TIME=4)
P1PRF	PU	PR06 GRP BIN#1 POROSITY (T2BIN TIME=0.5)
P2AF	PU	A-GROUP BIN# 2 POROSITY T2BIN TIME=8)
P2BF	PU	B-GROUP BIN# 2 POROSITY T2BIN TIME=8)
P2PRF	PU	PR06 GRP BIN#2 POROSITY (T2BIN TIME=1)
P3AF	PU	A-GROUP BIN# 3 POROSITY T2BIN TIME=16)
P3BF	PU	B-GROUP BIN# 3 POROSITY T2BIN TIME=16)
P3PRF	PU	PR06 GRP BIN#3 POROSITY (T2BIN TIME=2)
P4AF	PU	A-GROUP BIN# 4 POROSITY T2BIN TIME=32)
P4BF	PU	B-GROUP BIN# 4 POROSITY T2BIN TIME=32)
P4PRF	PU	PR06 GRP BIN#4 POROSITY (T2BIN TIME=4)
P5AF	PU	A-GROUP BIN# 5 POROSITY T2BIN TIME=64)
P5BF	PU	B-GROUP BIN# 5 POROSITY T2BIN TIME=64)
P6AF	PU	A-GROUP BIN# 6 POROSITY T2BIN TIME=128)
P6BF	PU	B-GROUP BIN# 6 POROSITY T2BIN TIME=128)
P7AF	PU	A-GROUP BIN# 7 POROSITY T2BIN TIME=256)
P7BF	PU	B-GROUP BIN# 7 POROSITY T2BIN TIME=256)
P8AF	PU	A-GROUP BIN# 8 POROSITY T2BIN TIME=512)
P8BF	PU	B-GROUP BIN# 8 POROSITY T2BIN TIME=512)
P9AF	PU	A-GROUP BIN# 9 POROSITY T2BIN TIME=1024)
P9BF	PU	B-GROUP BIN# 9 POROSITY T2BIN TIME=1024)
PRSPEC	PU	PR06 T2-DISTRIBUTION 7-BINS (T2TIME=0.5,1,2,4,8,16,256)
TASPEC	PU	A-GRP TOTAL-POR-T2-DISTRIBUTION (T2-DOMAIN-SPLICED)
TBSPEC	PU	B-GRP TOTAL-POR-T2-DISTRIBUTION (T2-DOMAIN-SPLICED)
FTEMP	DEGF	FORMATION TEMPERATURE
BN	%	BOUND NEUTRON POROSITY
CALI	IN	CALIPER
CWA	MO/M	APPARENT WATER CONDUCTIVITY (TPOR, RT)
DPDM	%	DIFFERENTIAL POROSITY DENSITY-MPHITA
DPND	%	DIFFERENTIAL POROSITY NEUTRON-DENSITY
DPTD	%	DIFFERENTIAL POROSITY SONIC-DENSITY
DRHO	G/C3	BULK DENSITY CORRECTION
GR	GAPI	GAMMA RAY
MFFI	%	TOTAL FREE FLUID INDEX
PE	B/E	PHOTOELECTRIC FACTOR
PHID	%	DENSITY POROSITY
PHIN	%	NEUTRON POROSITY
PHIS	%	SONIC POROSITY
PHIX	%	DENSITY-NEUTRON XPLOT POROSITY
RHOB	G/C3	BULK DENSITY
RHOBR	G/C3	BULK DENSITY COMPUTED FROM DPOR
RHOMA	G/C3	APPARENT MATRIX DENSITY (X-PLOT)
RHOMF	G/C3	MUD FILTRATE DENSITY
RHOW	G/C3	FORMATION WATER DENSITY
RMFAT	OHMM	MUD-FILTRATE RESISTIVITY AT FORMATION TEMPERATURE
RPND	UNITLESS	NEUTRON-DENSITY POROSITY RATIO
RT	OHMM	TRUE RESISTIVITY
RWA	OHMM	APPARENT WATER RESISTIVITY (TPOR, RT)
RWAT	OHMM	FORMATION WATER RESISTIVITY AT FORMATION TEMPERATURE
SALMF	KPPM	MUD FILTRATE SALINITY
SALW	KPPM	FORMATION WATER SALINITY
SP	MV	SPONTANEOUS POTENTIAL
SWBMRI	DECP	BOUND WATER SATURATION FROM MPHITA
TPOR	%	TOTAL POROSITY
UMA	B/C3	APPARENT MATRIX PE ABSORPTION INDEX
VCAL	%	APPARENT MATRIX CALCITE FRACTION
VDOL	%	APPARENT MATRIX DOLOMITE FRACTION
VQTZ	%	APPARENT MATRIX QUARTZ FRACTION

OKIE T1 & T2 ACTIVATION

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T2-POROSITY, CALIPER GAMMA RAY, SP	DEPTH	RESISTIVITY PERMEABILITY	T1 SPECTRA	T2 SPECTRA LONG TW	T2 BIN	MRIAN T2 POROSITY BULK VALUE
2048-MS						
1024-MS						
512-MS						
256-MS						
128-MS						
64-MS						
32-MS						T1=2048MS
16-MS						T1=1024MS
8-MS						MICRO
4-MS						BVI
WASHOUT		PERM			WASHOUT	FREEFLUID
					BBIN	





T2-POROSITY, CALIPER GAMMA RAY, SP	DEPTH	RESISTIVITY PERMEABILITY	T1 SPECTRA	T2 SPECTRA LONG TW	T2 BIN	MRIAN T2 POROSITY BULK VALUE
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Version No: | hc:3.0

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Plot Time: 2012-05-19 20:46:30

Database Time: 19:23:00

Top Depth: 3476.00

Bottom Depth: 3540.00



Version No: | hc:3.0

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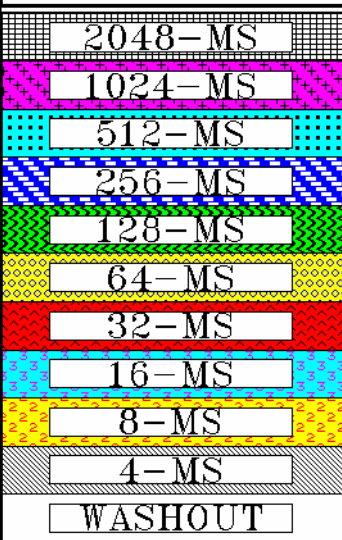
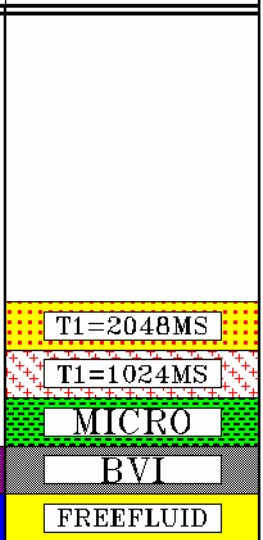
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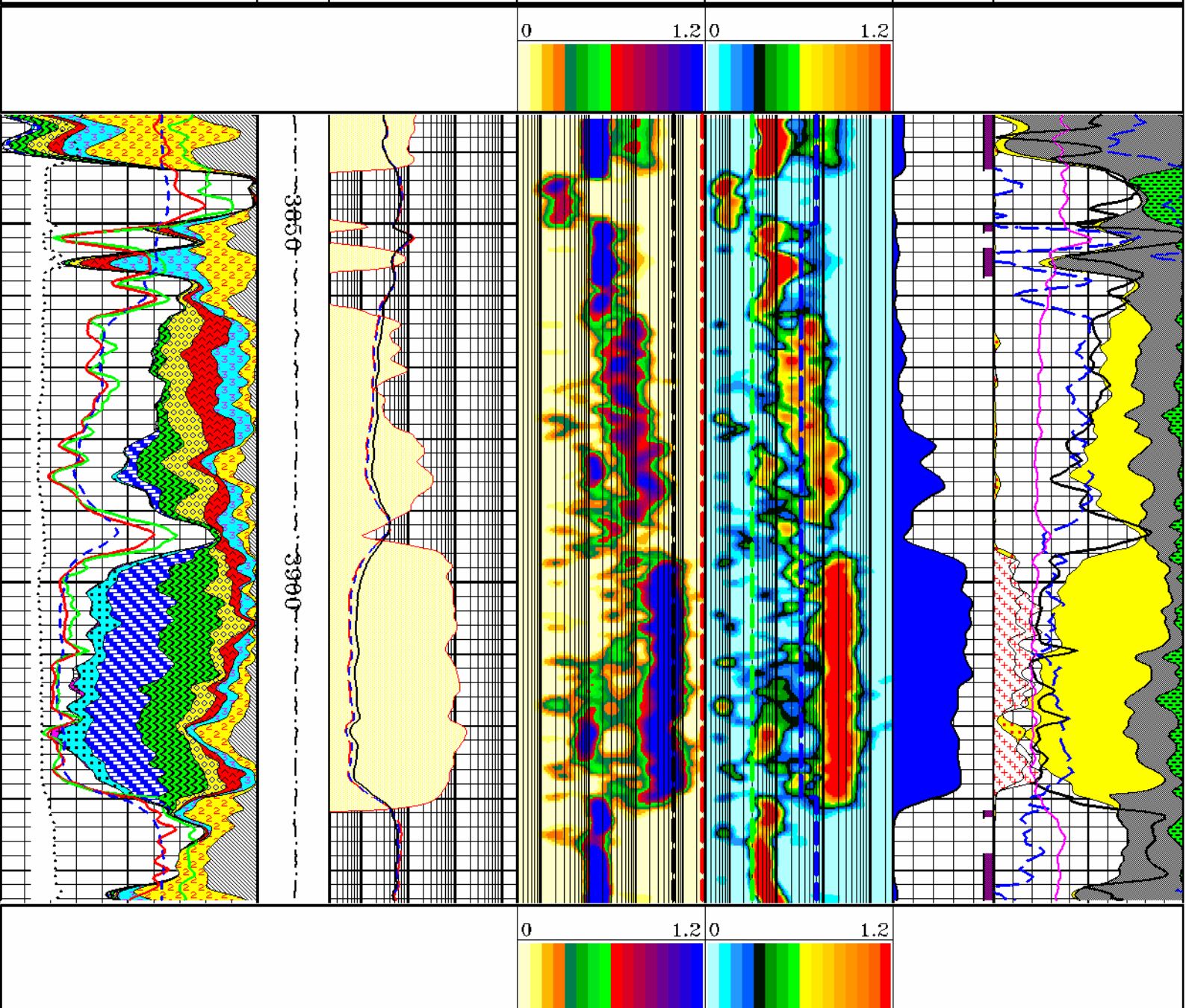
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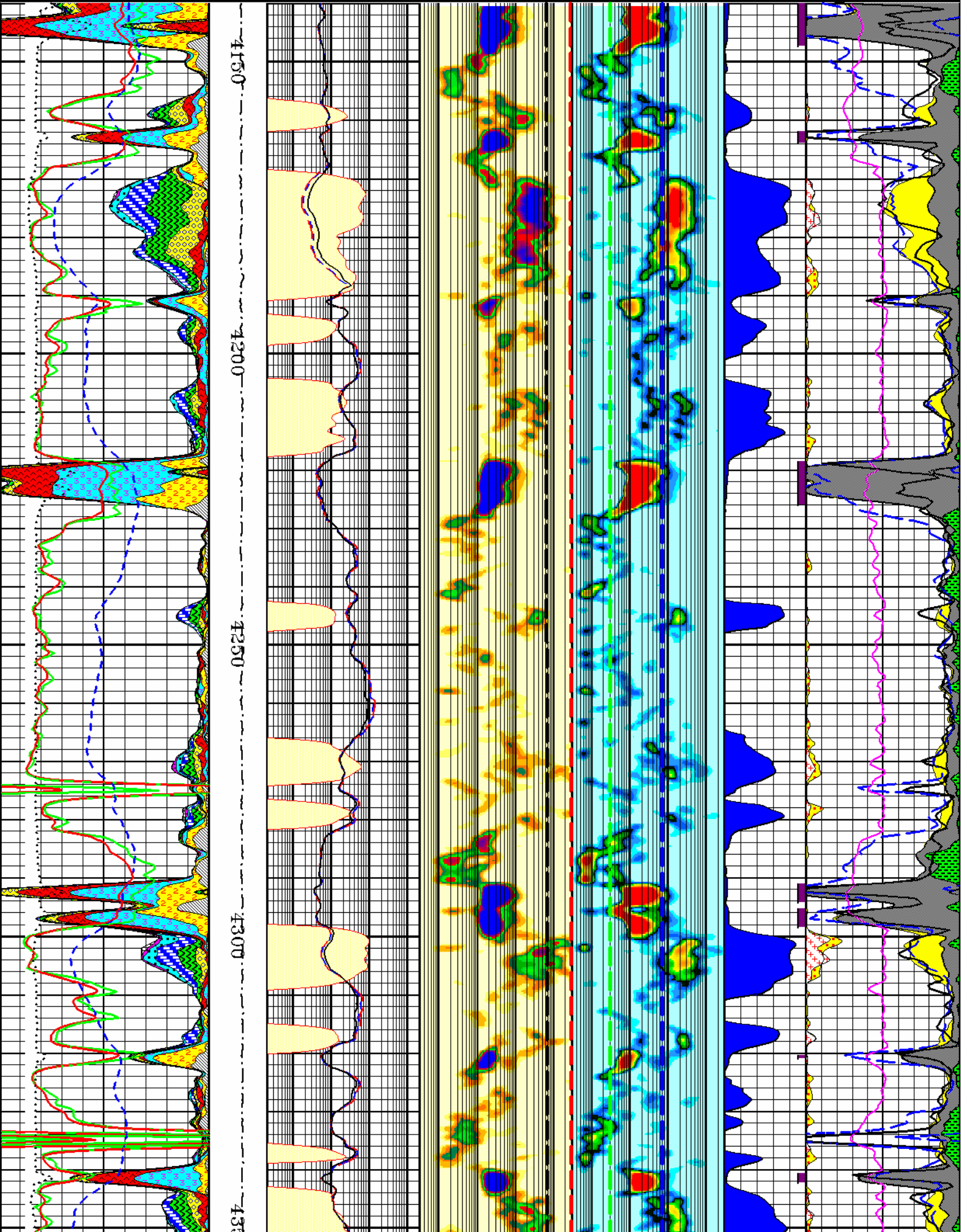
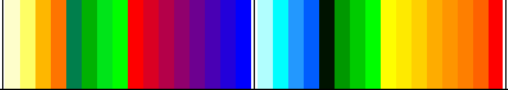
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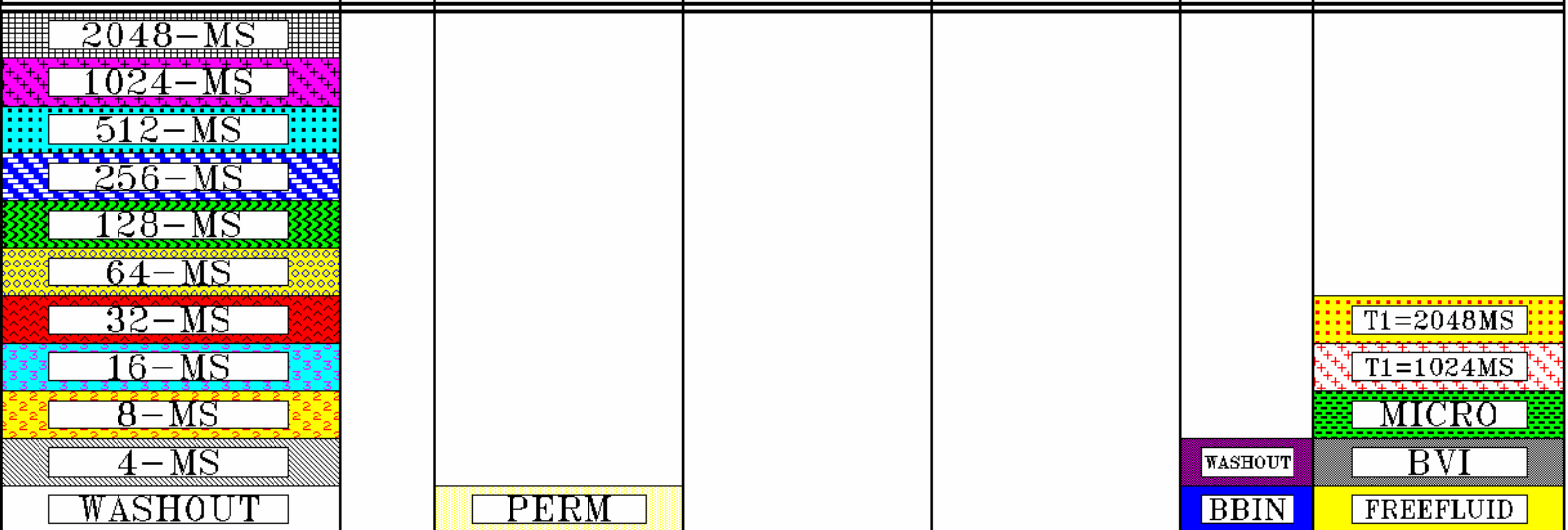
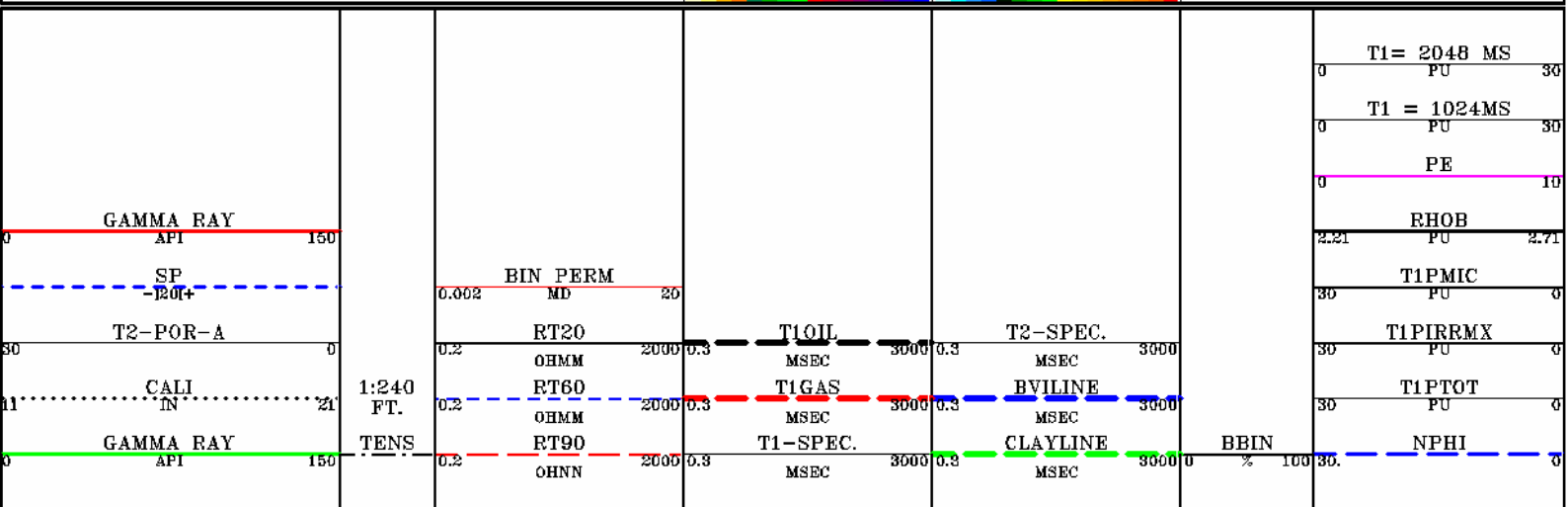
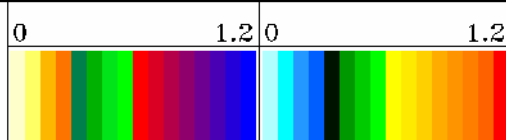
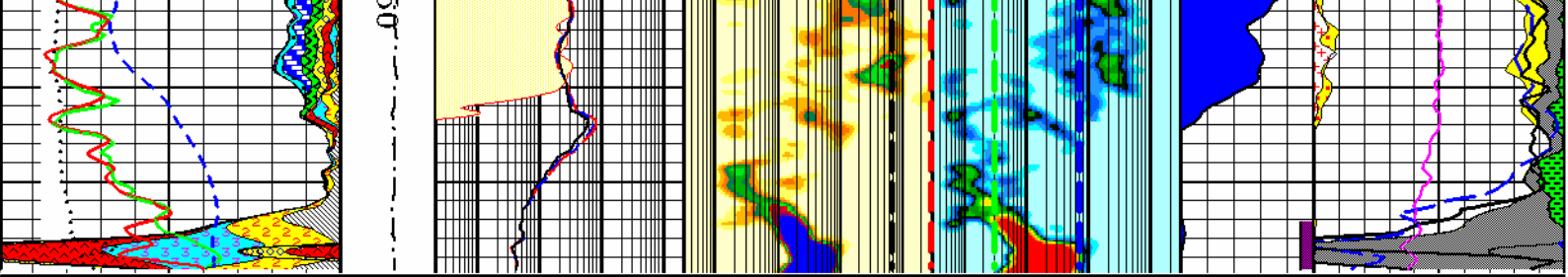
Bottom Depth: 3945.00

T2-POROSITY, CALIPER GAMMA RAY, SP	DEPTH	RESISTIVITY PERMEABILITY	T1 SPECTRA	T2 SPECTRA LONG TW	T2 BIN	MRIAN T2 POROSITY BULK VALUE
						



0 1.2 0 1.2





T2-POROSITY, CALIPER GAMMA RAY, SP	DEPTH	RESISTIVITY PERMEABILITY	T1 SPECTRA	T2 SPECTRA LONG TW	T2 BIN	MRIAN T2 POROSITY BULK VALUE
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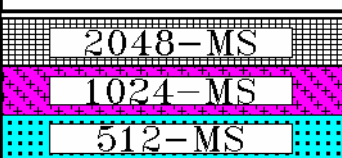
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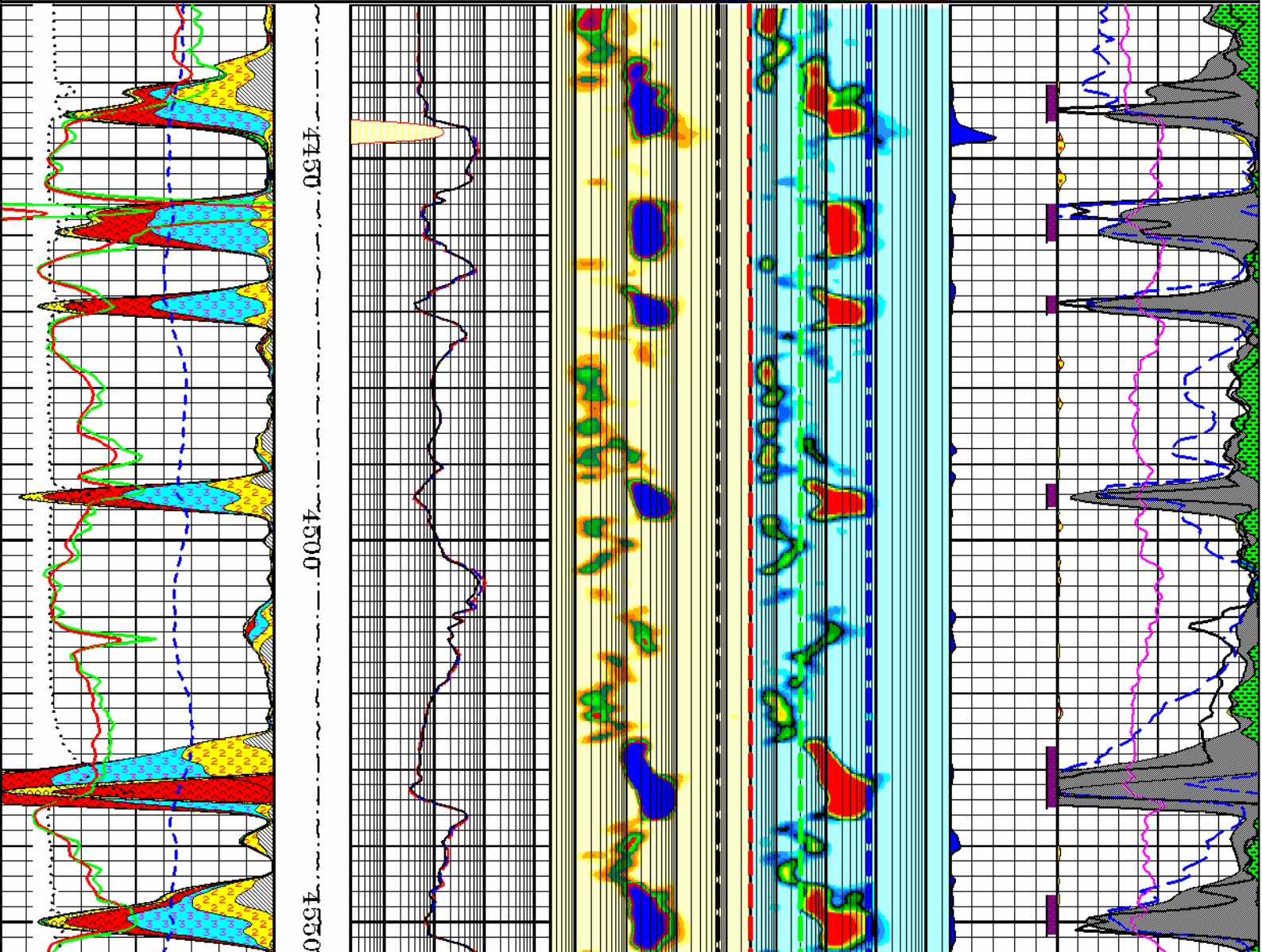
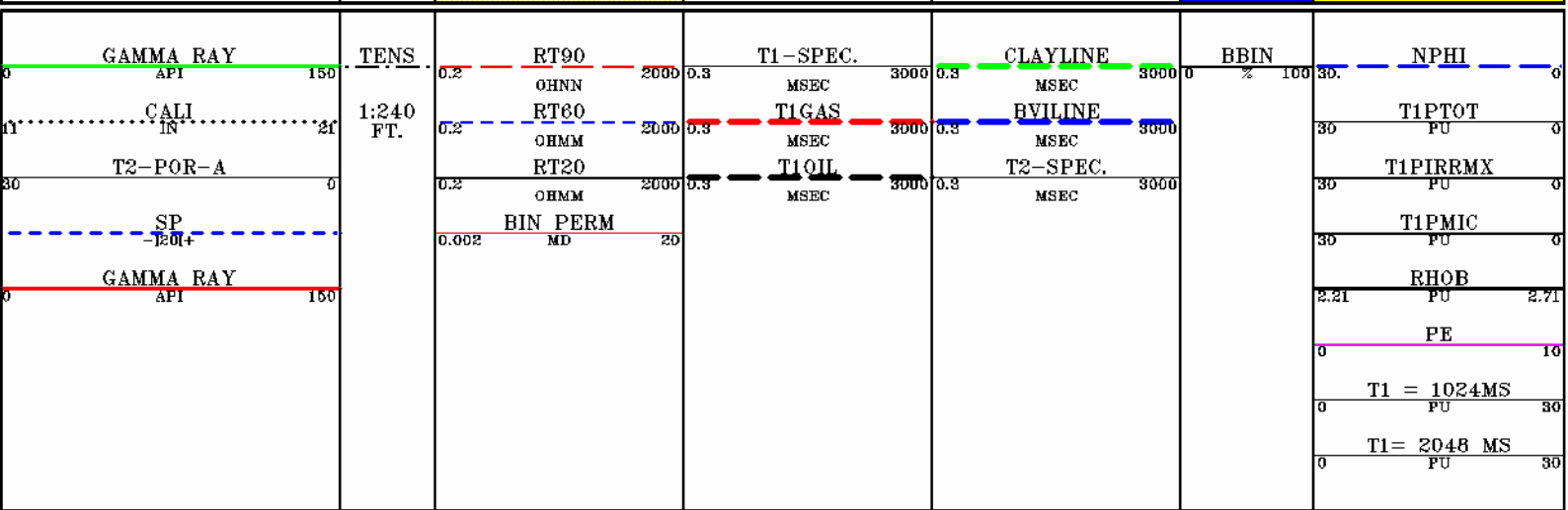
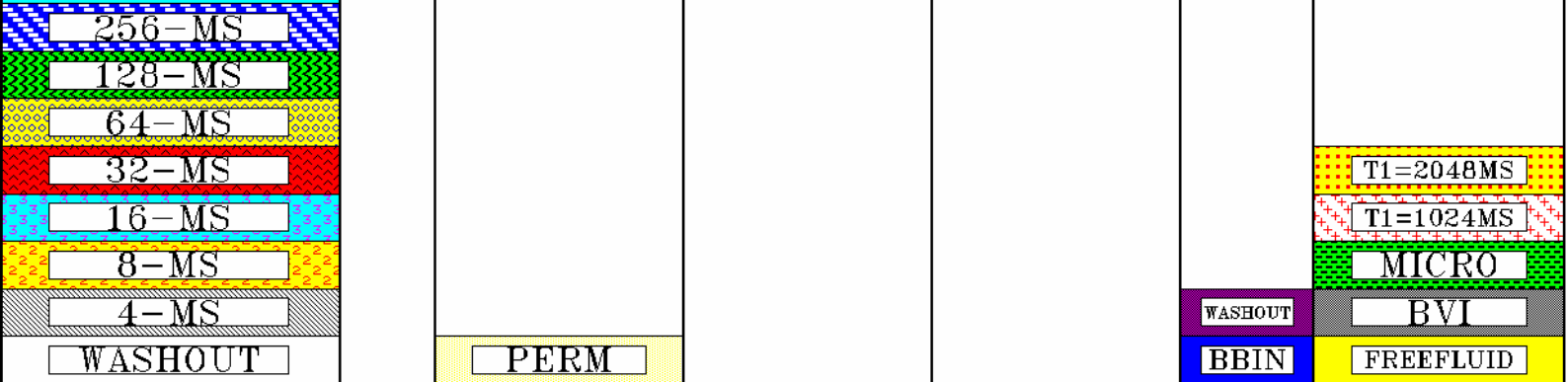
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 Top Depth: 4140.00
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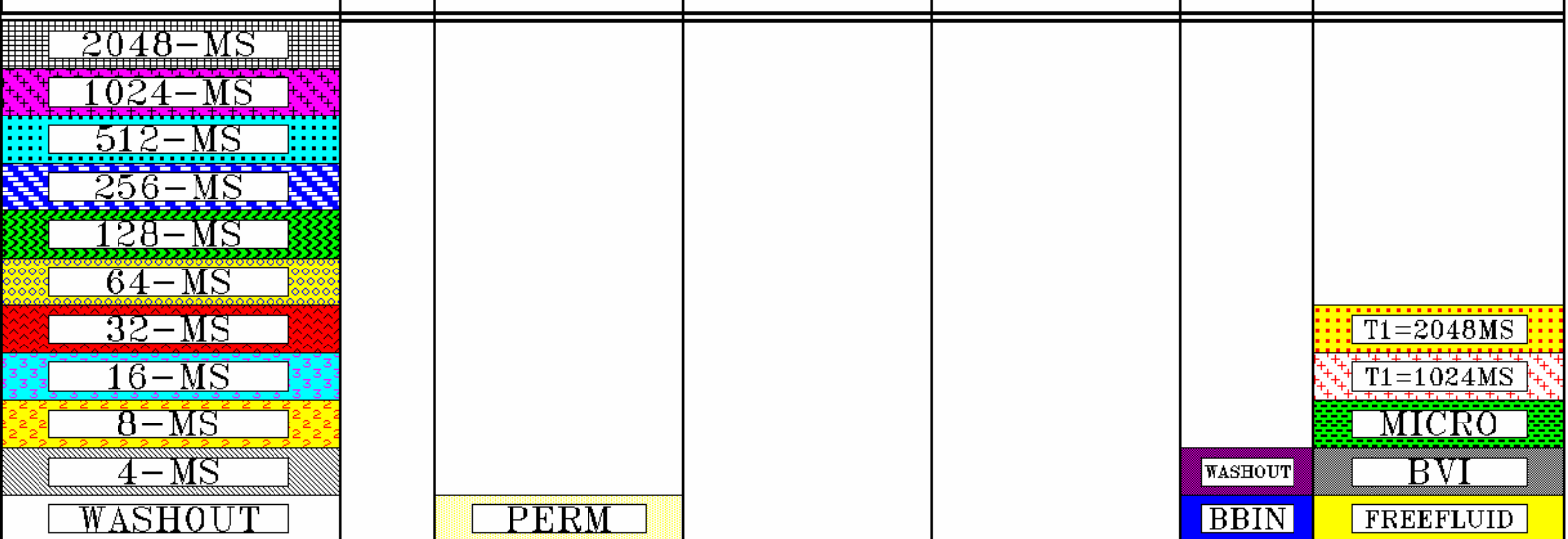
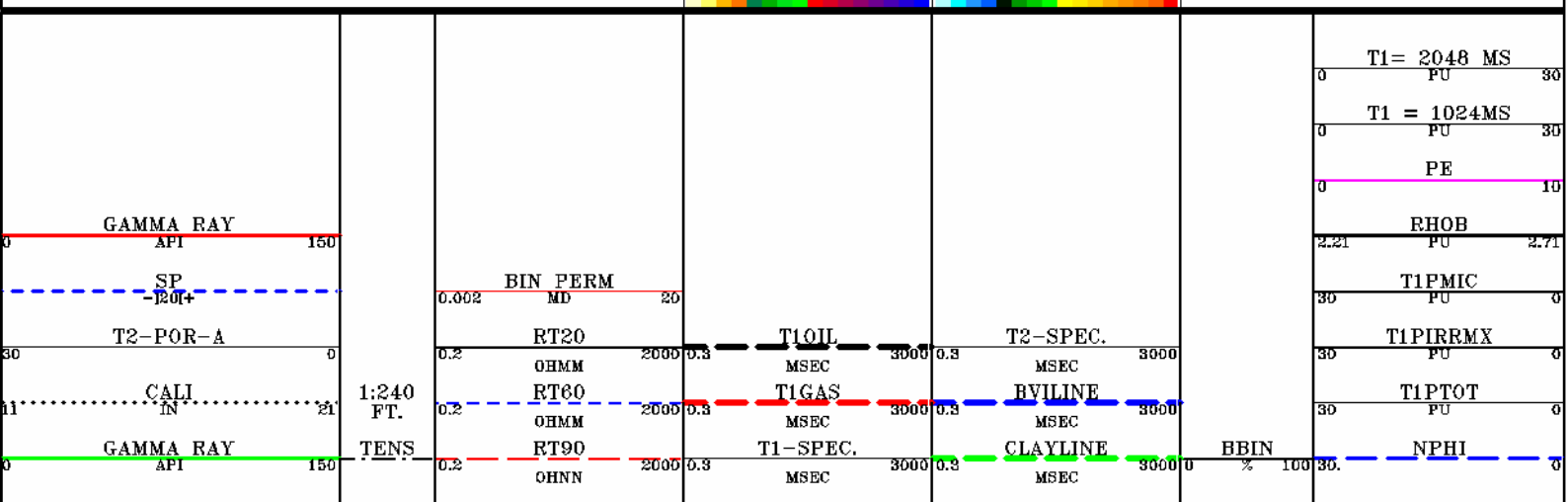
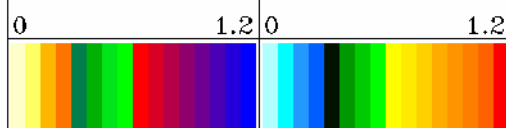
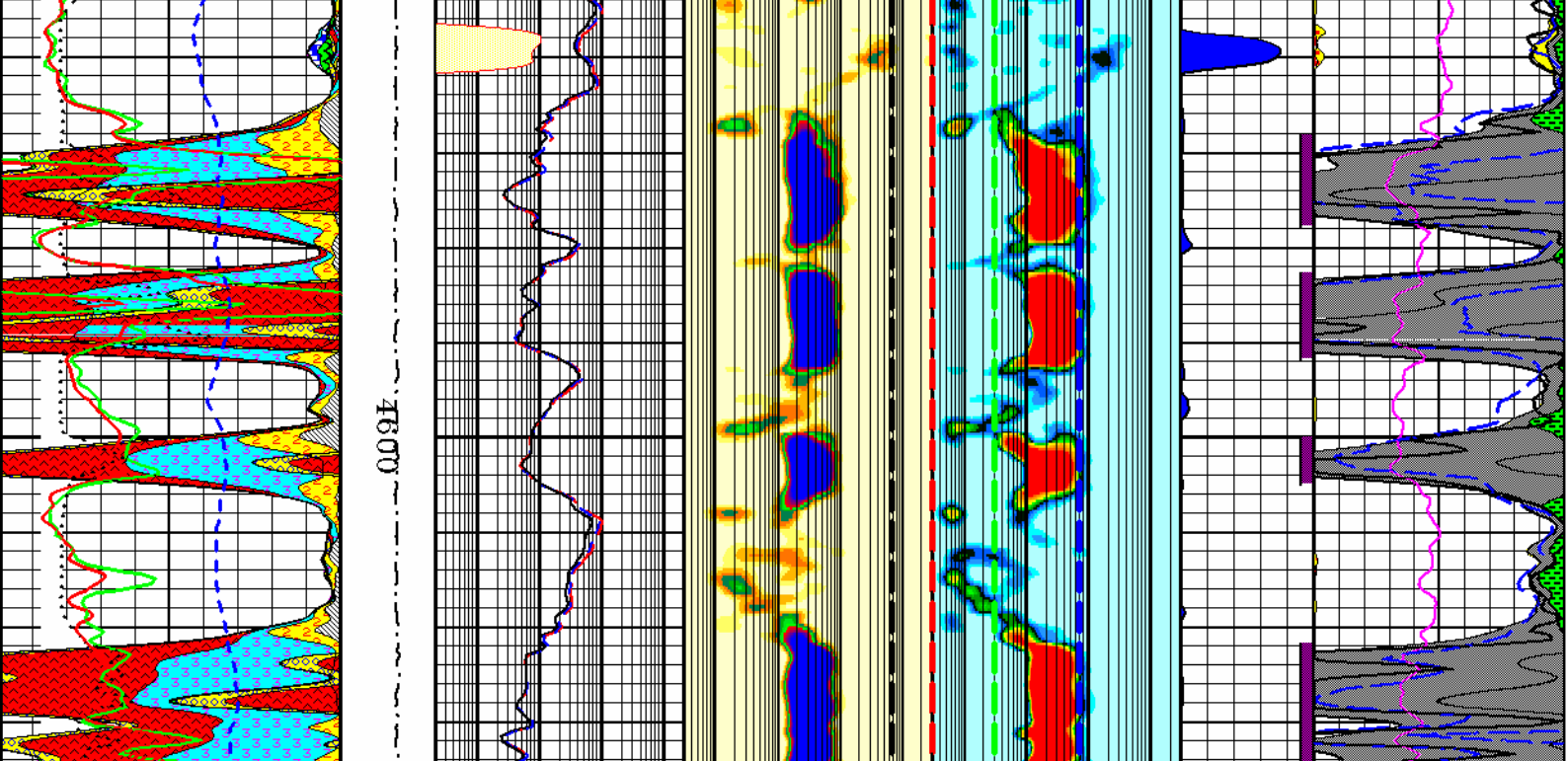
HALLIBURTON

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 Top Depth: 4430.00
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T2-POROSITY, CALIPER GAMMA RAY, SP	DEPTH	RESISTIVITY PERMEABILITY	T1 SPECTRA	T2 SPECTRA LONG TW	T2 BIN	MRIAN T2 POROSITY BULK VALUE
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T2-POROSITY, CALIPER GAMMA RAY, SP	DEPTH	RESISTIVITY PERMEABILITY	T1 SPECTRA	T2 SPECTRA LONG TW	T2 BIN	MRIAN T2 POROSITY BULK VALUE
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HALLIBURTON

Version No: 1 hc:3.0

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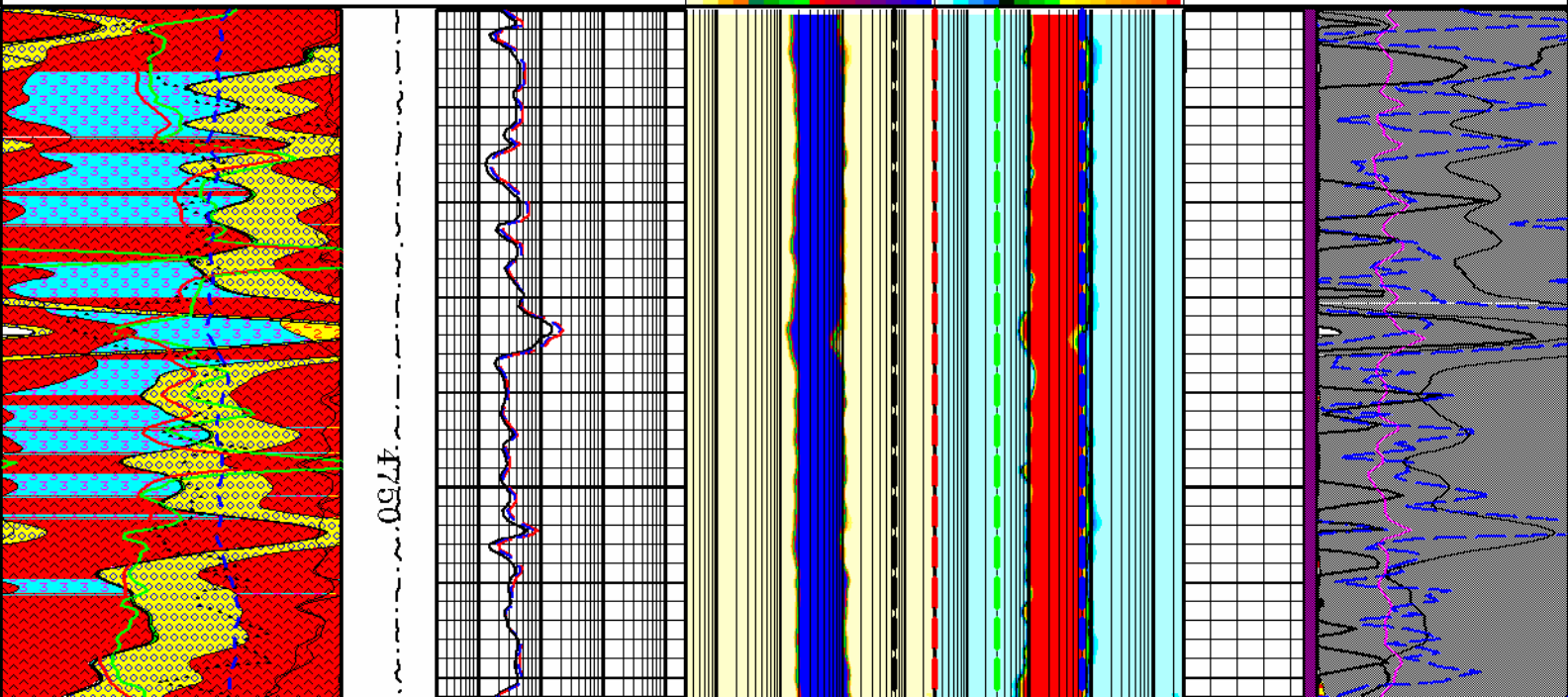
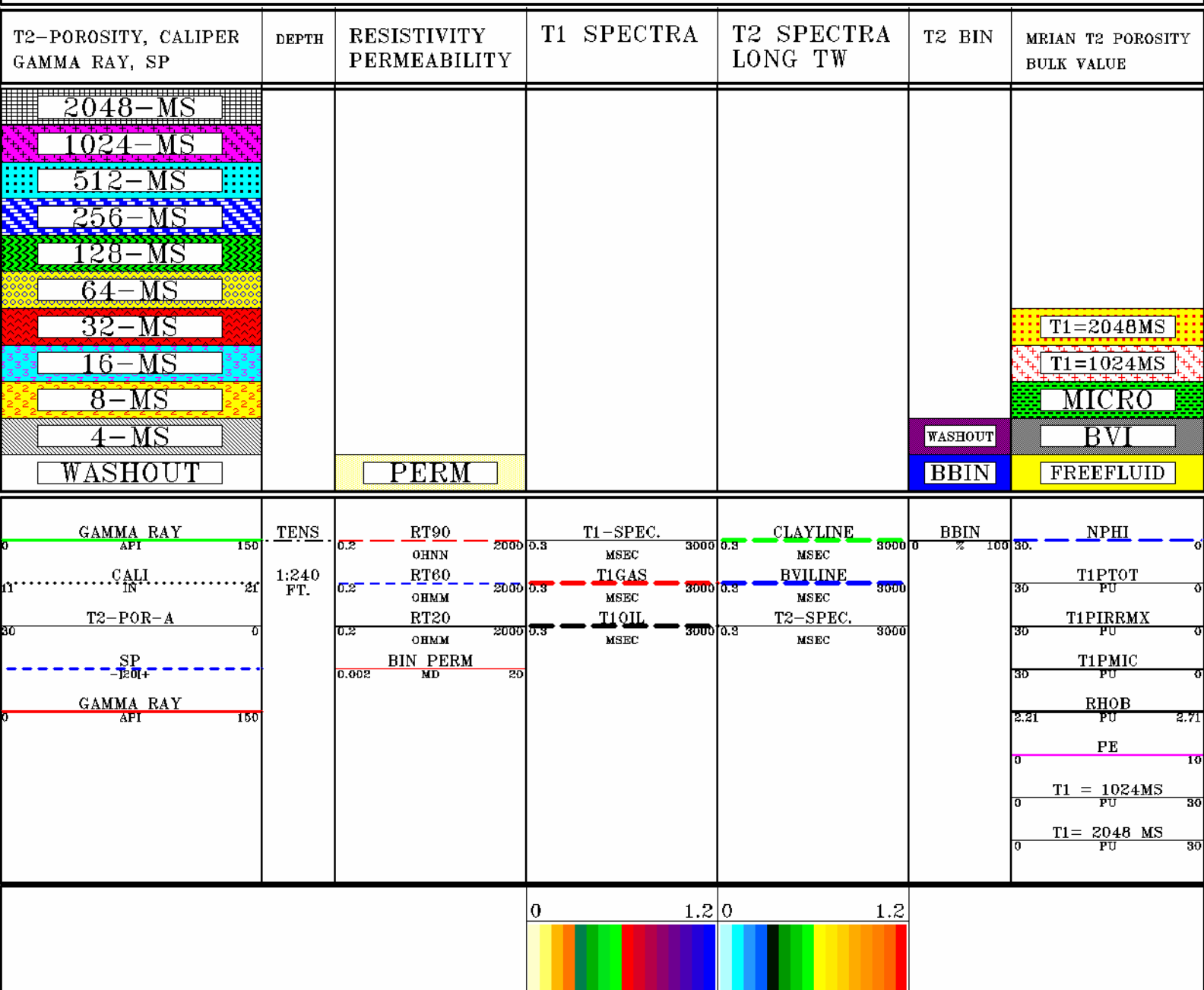
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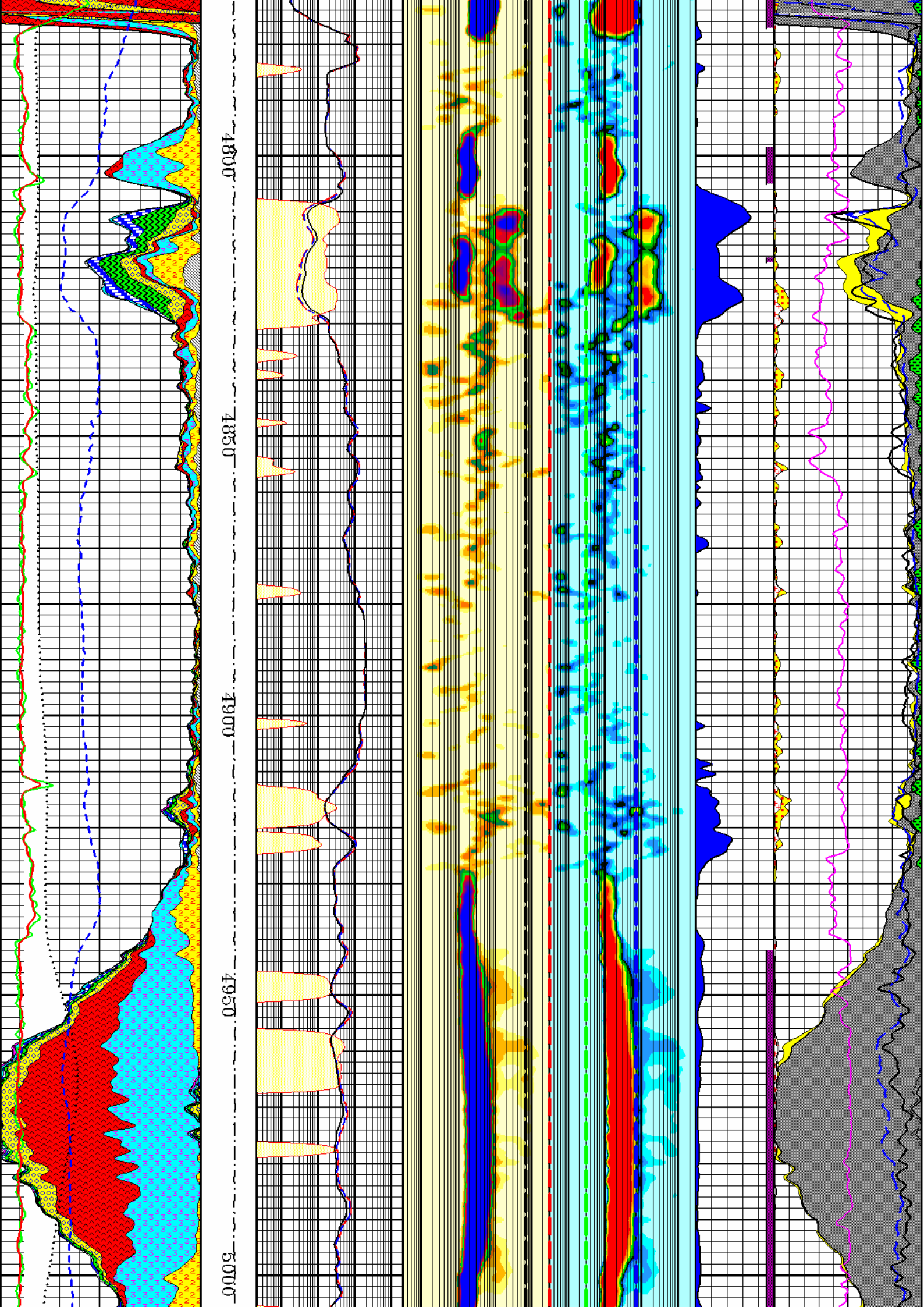
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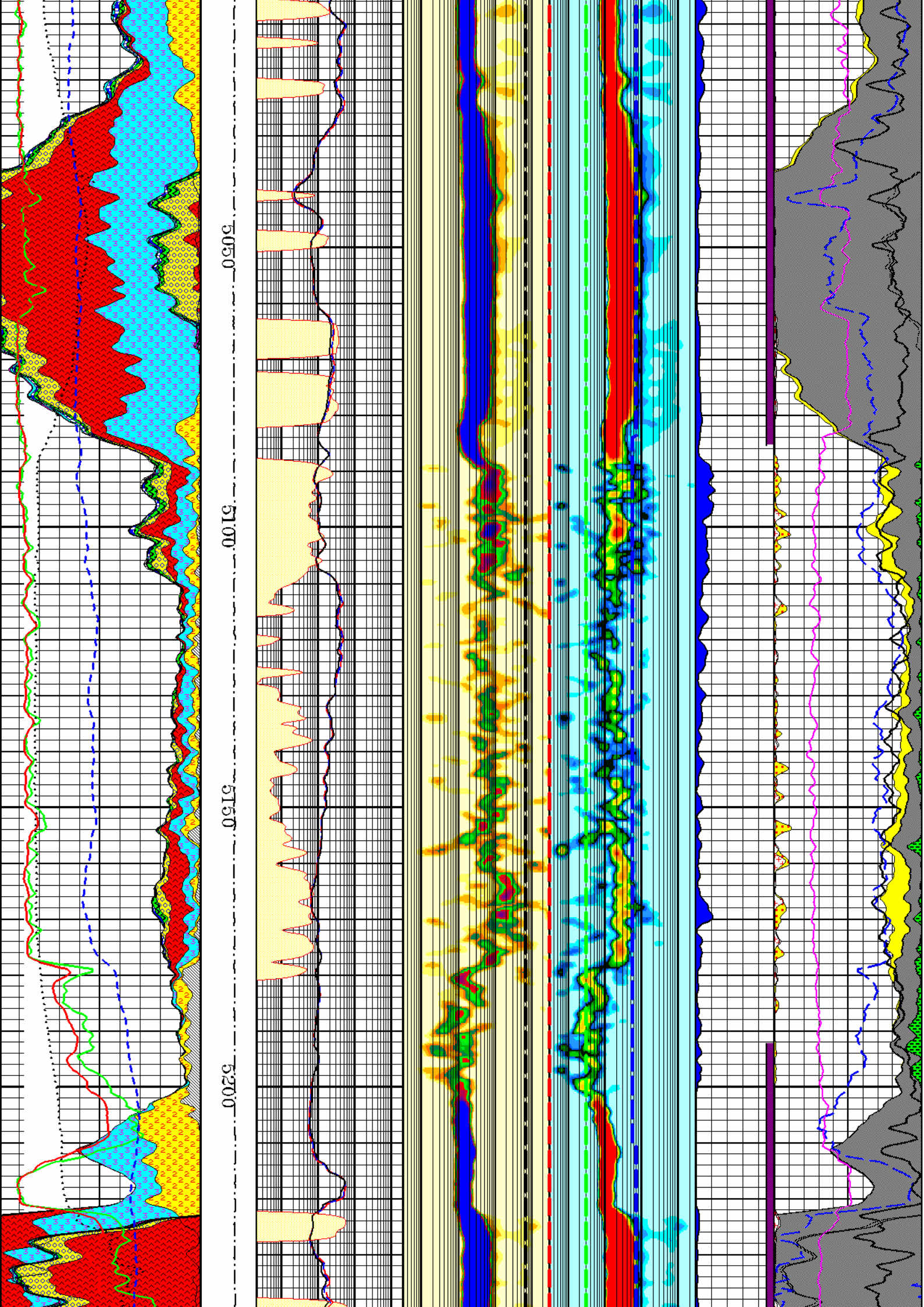
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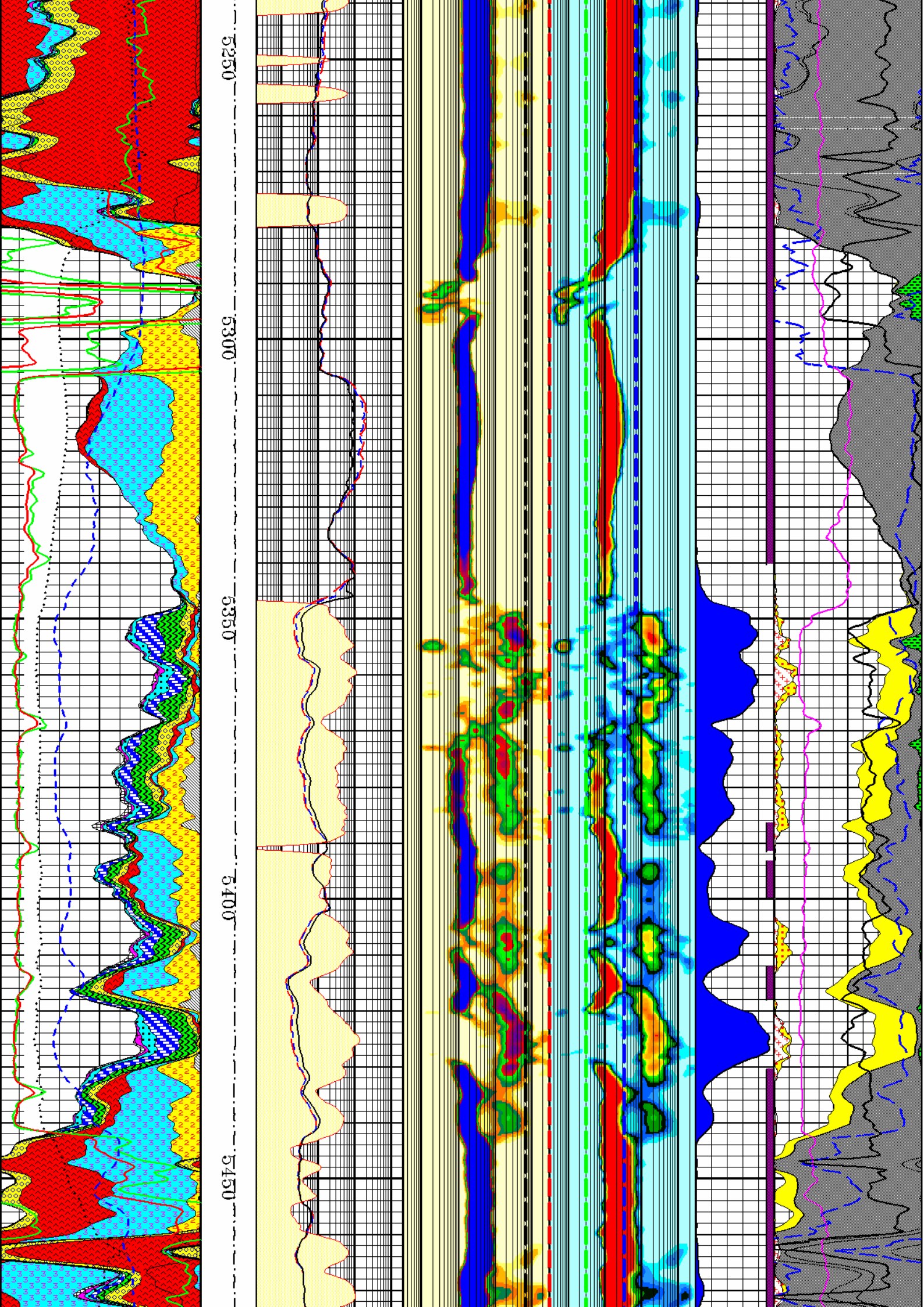
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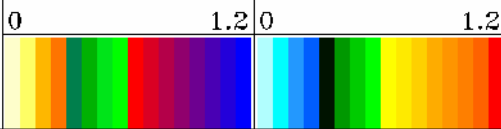
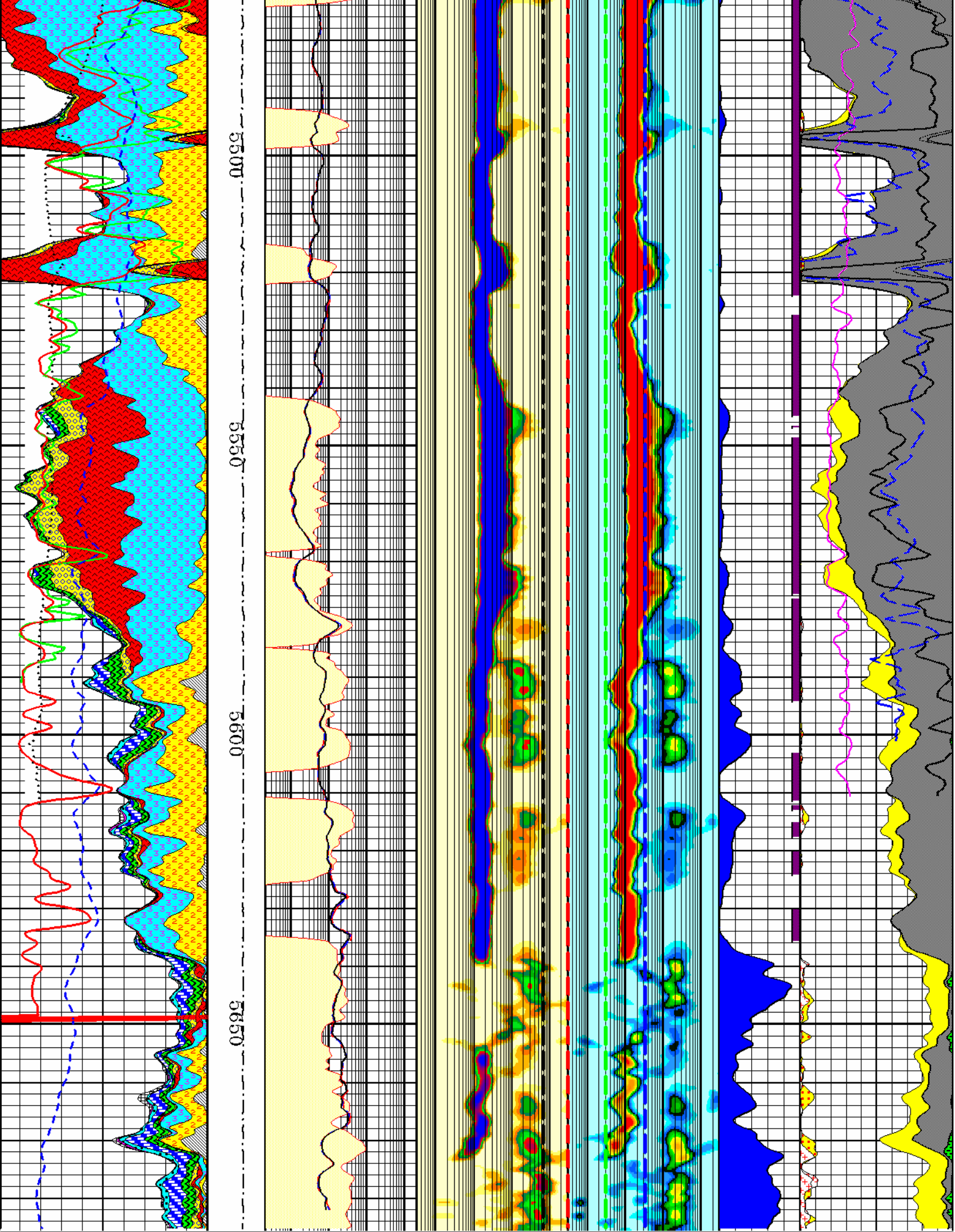
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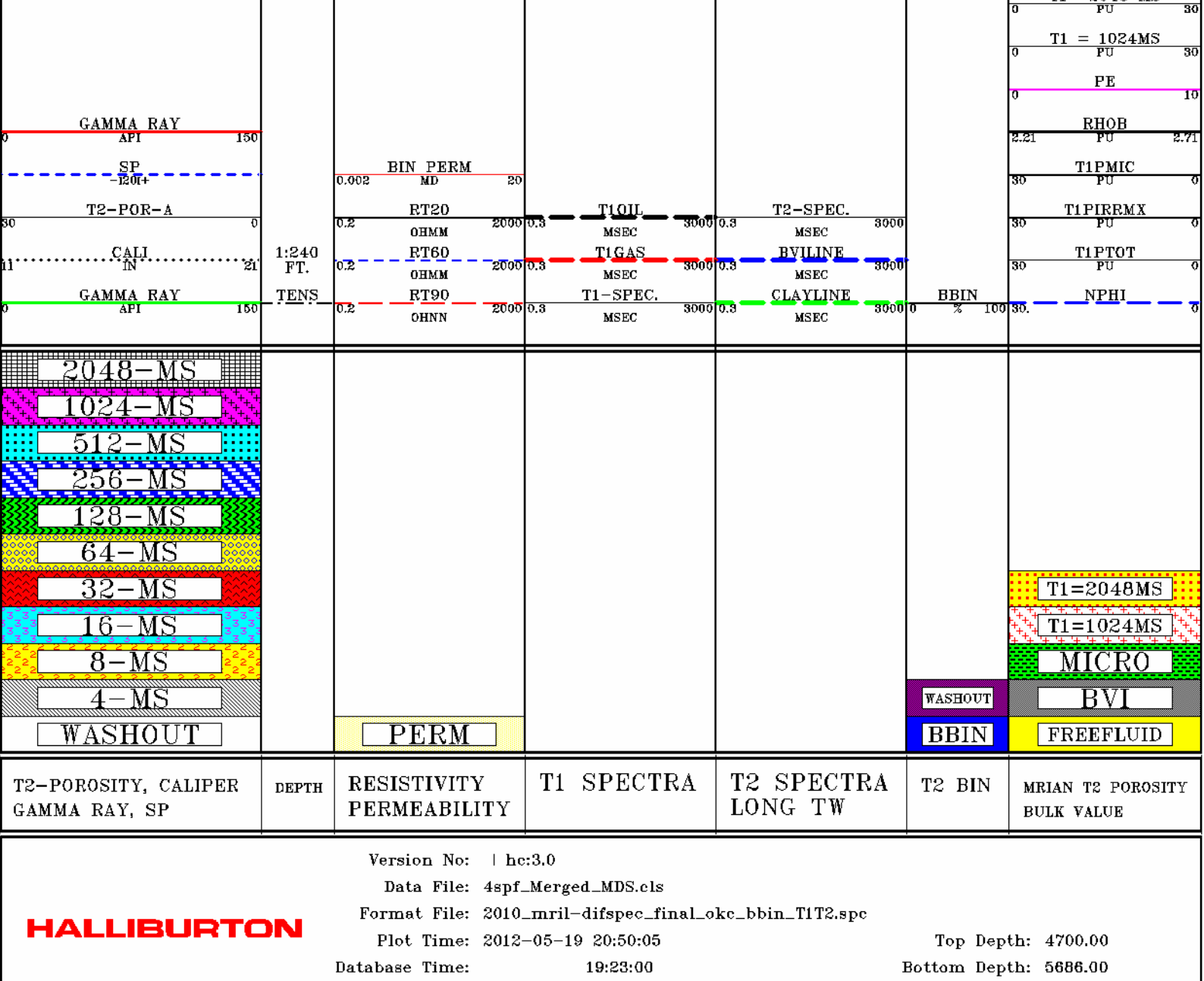












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