

HALLIBURTON

WAVE SONIC
SEMBLANCE
PROCESSED LOG

COMPANY GRYNBERG PETROLEUM
WELL HIAWATHA DEEP #4-36
FIELD SUGAR LOAF
COUNTY MOFFAT
STATE CO

Location: SURFACE HOLE LOCATION:

0707' FSL, 0639' FWL

Elevations: K.B.: 6921.0' R.T.: 6920.0' G.L.: 6900.0'

Date Processed	MAY 21, 2009	Logs Processed	WAVE SONIC
Job Number	6636403	Date Logged	MAY 20, 2009
Interval Processed	SEE REMARKS	Type Fluid In Hole	LSND
Processed By	R.DENTON	Location	ROCK S
Processed At	DENVER RES		

--- COMPUTER PROCESSED PRODUCT ---

Fold Here

Service Ticket No.:		API Serial No.:		PGM Version:		XL v5.1	
DIRECTIONAL INFORMATION							
Maximum Deviation		deg. @		KOP			
Remarks:							
INTERVALS PROCESSED: T.D.-12000', 11720'-11600', 11320'-11050', 10400'-10330', 7700'-7200', 6700'-6350', 5950'-5820', 5760'-5700'							
LATITUDE: 40.95141 N							
LONGITUDE: 108.70364 W							
CHLORIDES REPORTED AT 400 mg/L.							
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							

WAVE SONIC DATA OF THE FOLLOWING CURVES:

CURVE UNIT DESCRIPTION

CURVE UNIT DESCRIPTION

GR GAPI NATURAL GAMMA
 DTC uS/FT COMPRESSIONAL SLOWNESS
 DTS uS/FT REFRACTED SHEAR SLOWNESS - FROM MP_KFBS
 DSTX uS/FT FLEXURAL SHEAR SLOWNESS - FROM XX_KFBS
 DTSY uS/FT FLEXURAL SHEAR SLOWNESS - FROM YY_KFBS
 VPVS VELOCITY RATIO - DTS/DTC
 VPVSX VELOCITY RATIO - DTSX/DTC
 VPVSY VELOCITY RATIO - DTSY/DTC

PROCESSED LOG FROM 5760' - 5700'

Version No: | hc:3.0

Data File: Wavesonic.cls

Format File: insite_diagnostic.spc

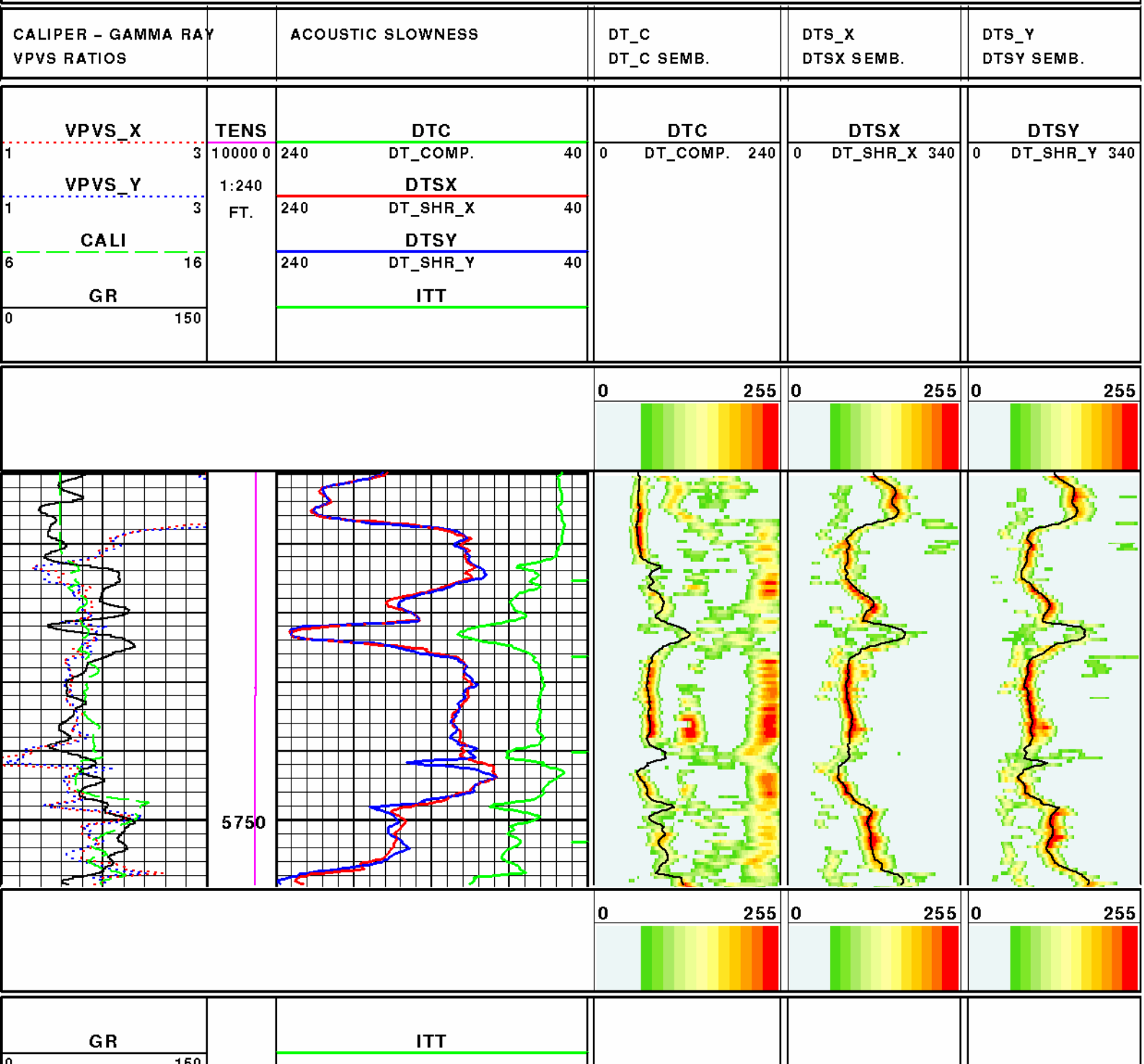
Plot Time: 2009-05-22 09:41:36

Database Time: 06:21:56

Top Depth: 5700.00

Bottom Depth: 5760.00

HALLIBURTON



<div>150</div> <div>CALI</div> <div>6 16</div> <div>VPVS_Y</div> <div>1 3</div> <div>VPVS_X</div> <div>1 3</div>	<div>1:240</div> <div>FT.</div> <div>TENS</div> <div>10000 0</div>	<div>DTSY</div> <div>240 DT_SHR_Y 40</div>		
		<div>DTSX</div> <div>240 DT_SHR_X 40</div>		
		<div>DTC</div> <div>240 DT_COMP. 40</div>	<div>DTC</div> <div>0 DT_COMP. 240</div>	<div>DTSX</div> <div>0 DT_SHR_X 340</div>
				<div>DTSY</div> <div>0 DT_SHR_Y 340</div>

CALIPER - GAMMA RAY VPVS RATIOS	ACOUSTIC SLOWNESS	DT_C DT_C SEMB.	DTS_X DTSX SEMB.	DTS_Y DTSY SEMB.
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HALLIBURTON

Version No: | hc:3.0
 Data File: Wavesonic.cls
 Format File: insite_diagnostic.spc
 Plot Time: 2009-05-22 09:41:38
 Database Time: 06:21:56

Top Depth: 5700.00
 Bottom Depth: 5760.00

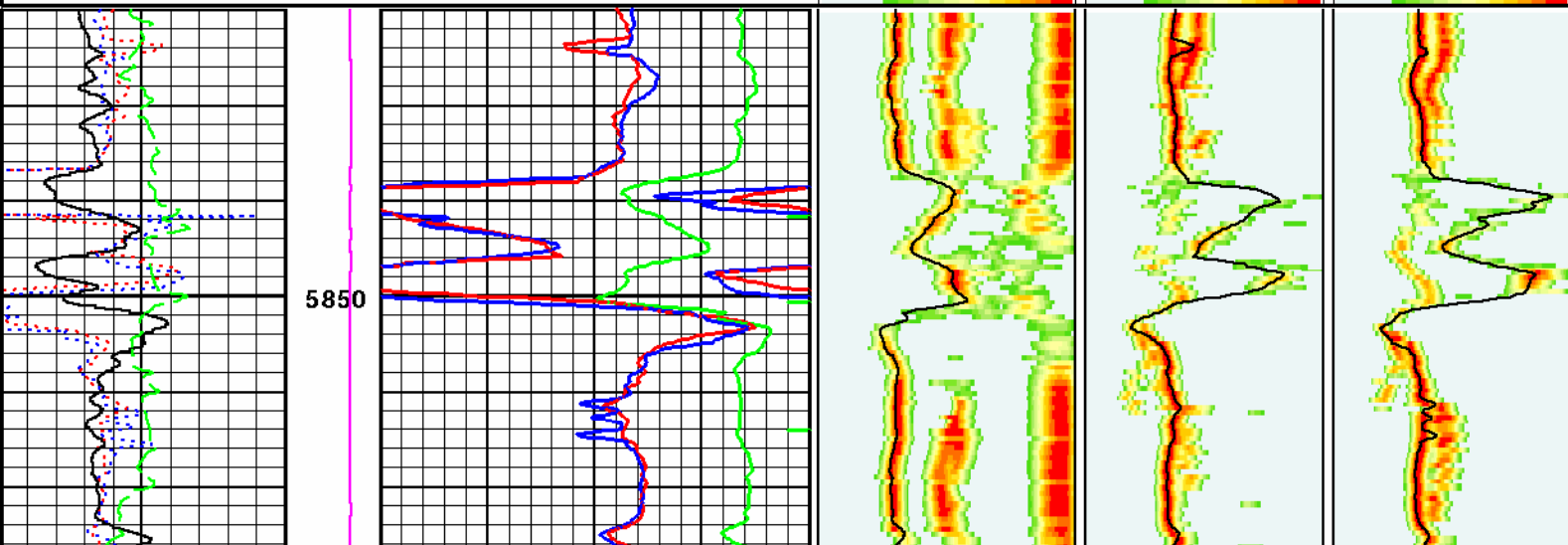
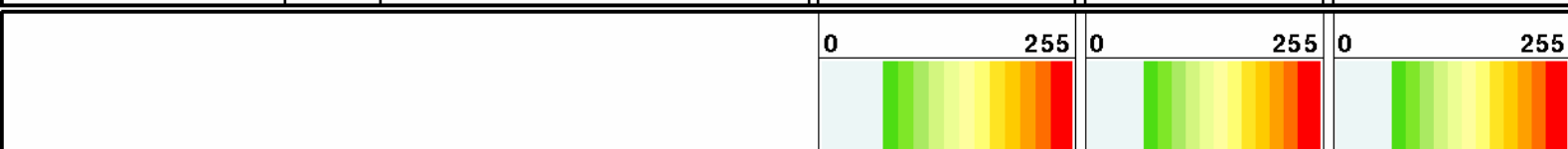
PROCESSED LOG FROM 5950' - 5820'

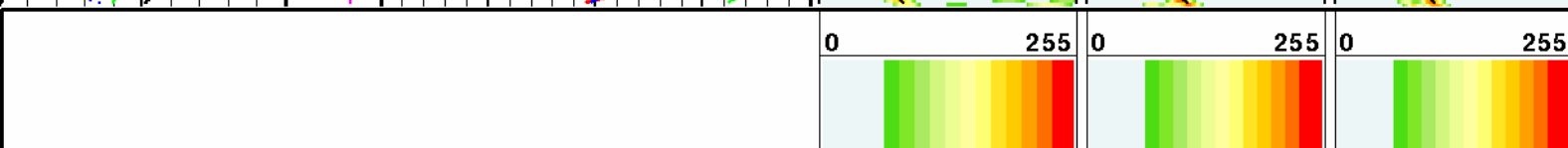
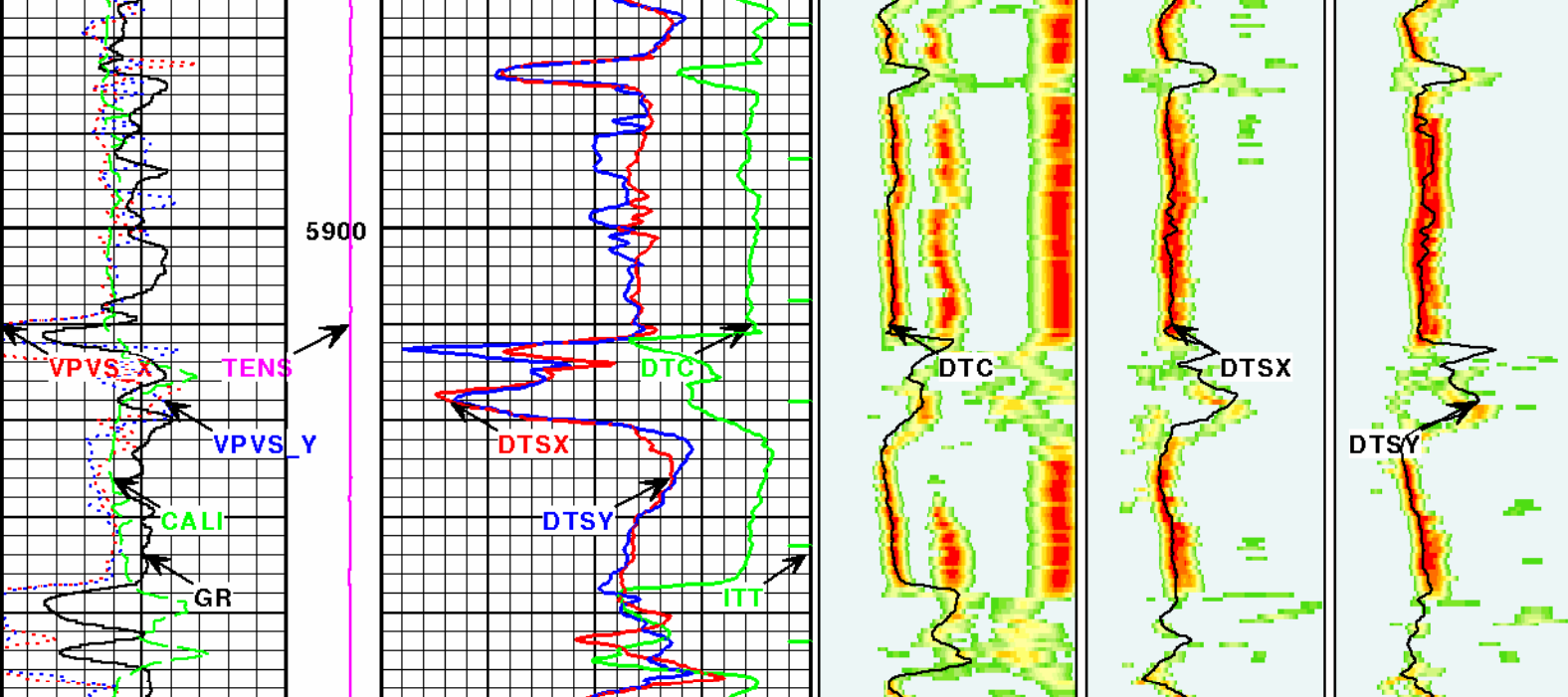
HALLIBURTON

Version No: | hc:3.0
 Data File: Wavesonic.cls
 Format File: insite_diagnostic.spc
 Plot Time: 2009-05-22 09:41:00
 Database Time: 06:21:56

Top Depth: 5820.00
 Bottom Depth: 5950.00

CALIPER - GAMMA RAY VPVS RATIOS		ACOUSTIC SLOWNESS		DT_C DT_C SEMB.	DTS_X DTSX SEMB.	DTS_Y DTSY SEMB.								
VPVS_X		TENS	DTC		DTC	DTSX	DTSY							
1	3	10000 0	240	DT_COMP.	40	0	DT_COMP.	240	0	DT_SHR_X	340	0	DT_SHR_Y	340
VPVS_Y		1:240	DTSX											
1	3	FT.	240	DT_SHR_X	40									
CALI			DTSY											
6	16		240	DT_SHR_Y	40									
GR			ITT											
0	150													





GR		ITT							
0	150								
CALI		DTSY							
6	16	240	DT_SHR_Y 40						
VPVS_Y		DTSX							
1	3	240	DT_SHR_X 40						
VPVS_X		DTC							
1	3	240	DT_COMP. 40	0	DT_COMP. 240	0	DT_SHR_X 340	0	DT_SHR_Y 340
TENS									
10000	0								

CALIPER - GAMMA RAY VPVS RATIOS	ACOUSTIC SLOWNESS	DT_C DT_C SEMB.	DTS_X DTSX SEMB.	DTS_Y DTSY SEMB.
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Version No: hc:3.0 Data File: Wavesonic.cls Format File: insite_diagnostic.spc Plot Time: 2009-05-22 09:41:02 Database Time: 06:21:56				
HALLIBURTON			Top Depth: 5820.00 Bottom Depth: 5950.00	

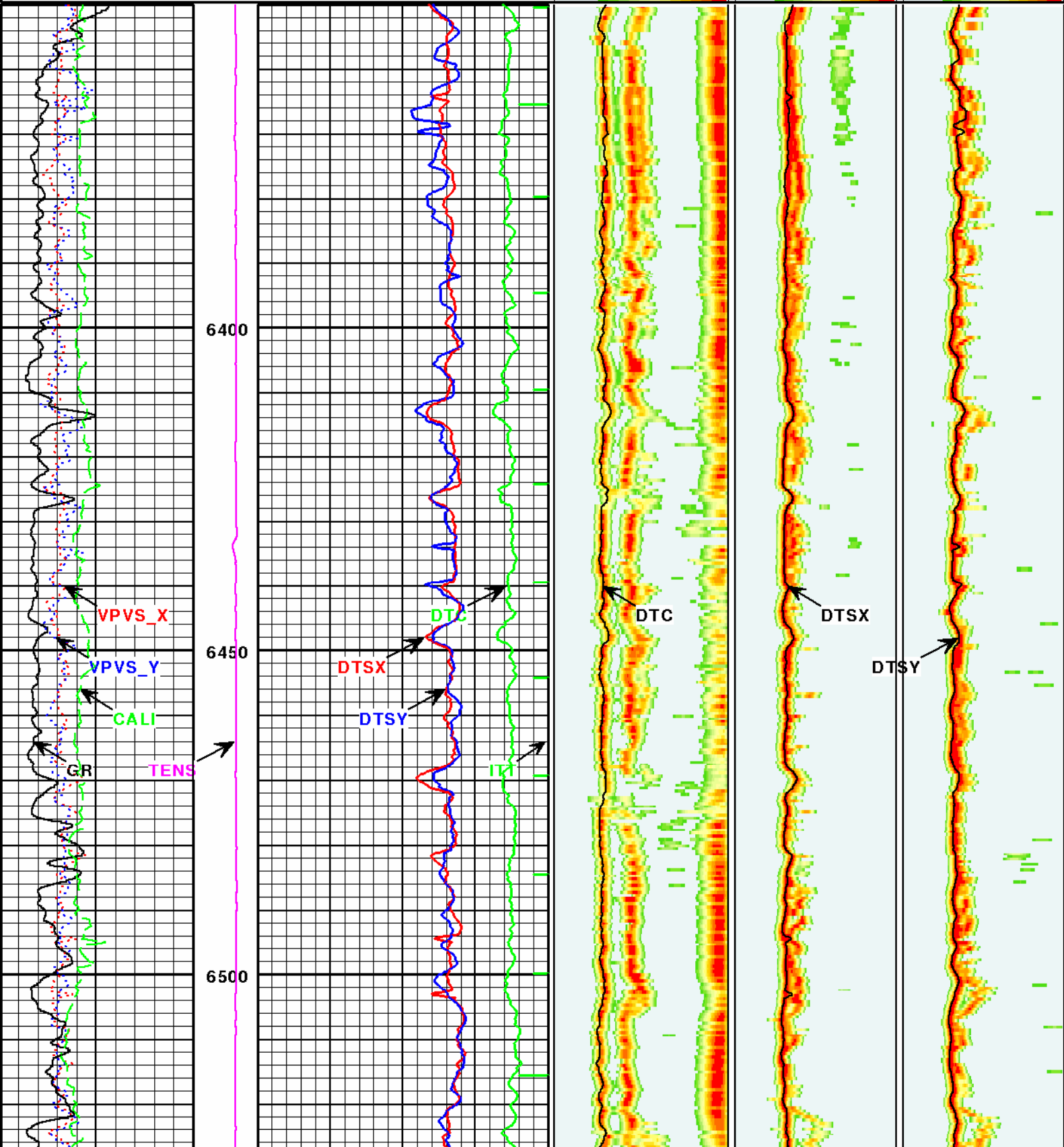
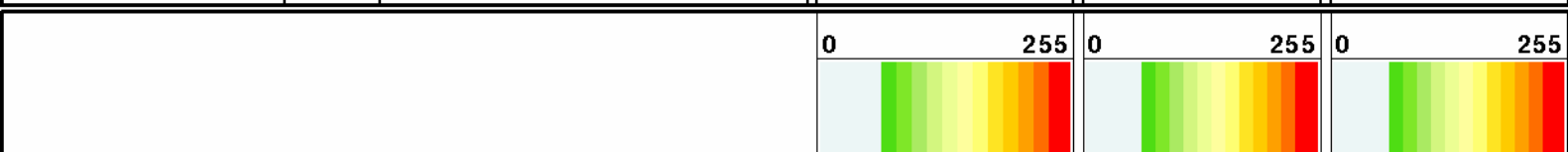
PROCESSED LOG FROM 6700' - 6350'

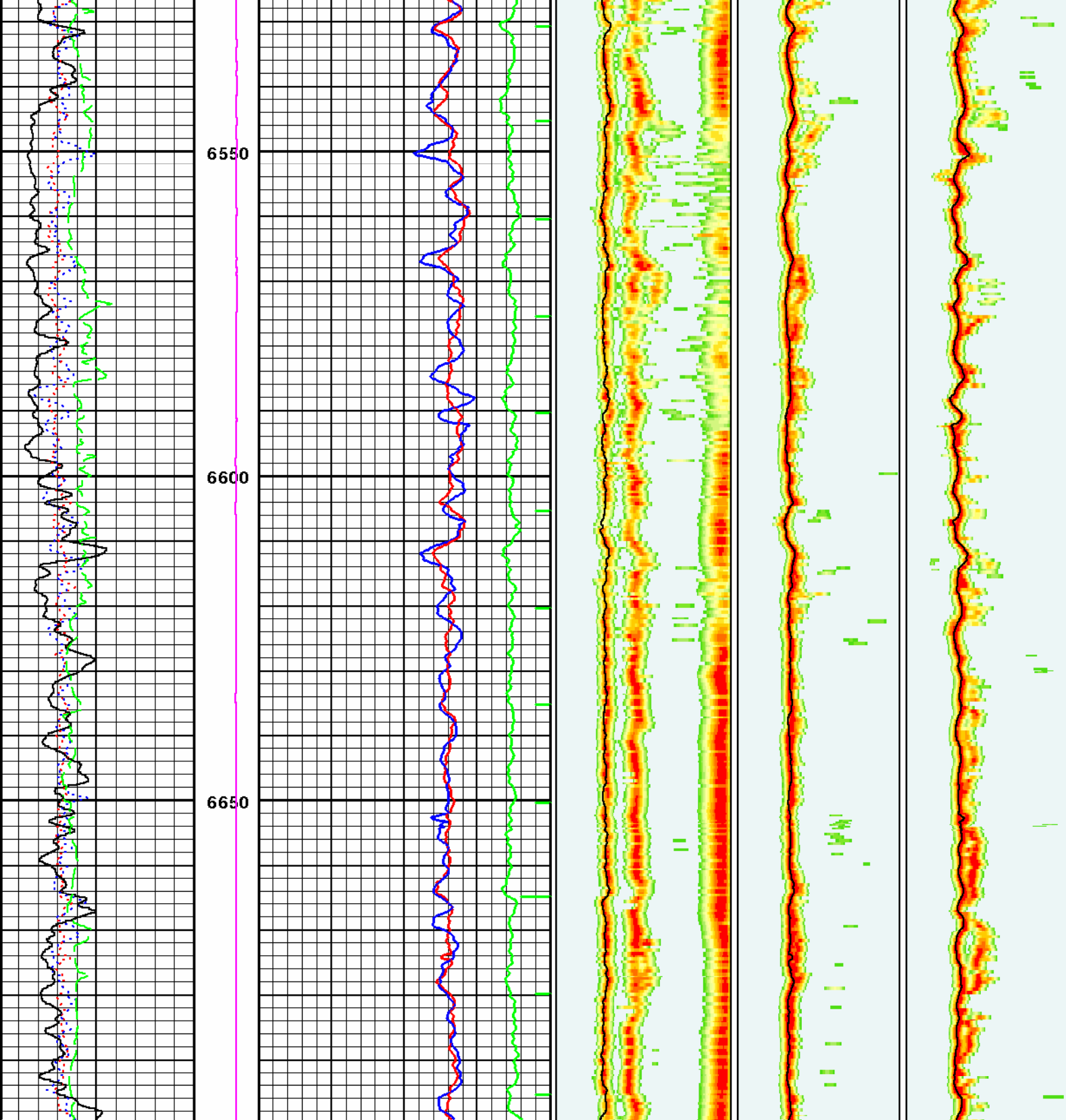
Version No: hc:3.0 Data File: Wavesonic.cls Format File: insite_diagnostic.spc Plot Time: 2009-05-22 09:40:34 Database Time: 06:21:56				
HALLIBURTON			Top Depth: 6350.00 Bottom Depth: 6700.00	

CALIPER - GAMMA RAY VPVS RATIOS	ACOUSTIC SLOWNESS	DT_C DT_C SEMB.	DTS_X DTSX SEMB.	DTS_Y DTSY SEMB.
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VPVS_X		TENS	DTC		DTC		DTSX		DTSY			
1	3	10000 0	240	DT COMP.	40	0	DT COMP.	240	0	DT SHR X 340	0	DT SHR Y 340

VPVS_Y		1:240	DTSX				
1	3	FT.	240	DT_SHR_X	40		
CALI			DTSY				
6	16		240	DT_SHR_Y	40		
GR			ITT				
0	150						





GR		ITT		DTSY		DTSX		DTC	
0	150			240	40	240	40		
CALI		DTSY		DTSX		DTC		DTSY	
6	16	DT_SHR_Y	40	DT_SHR_X	40				
VPVS_Y		DTSX		DTC		DTSY		DTSX	
1	3	DT_SHR_Y	40	DT_SHR_X	40				
VPVS_X		DTC		DTSY		DTSX		DTC	
		DT_SHR_Y	40	DT_SHR_X	40				
TENS		DTSY		DTSX		DTC		DTSY	
		DT_SHR_Y	40	DT_SHR_X	40				

1	3	10000 0	240	DT_COMP.	40	0	DT_COMP.	240	0	DT_SHR_X	340	0	DT_SHR_Y	340
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CALIPER - GAMMA RAY VPVS RATIOS		ACOUSTIC SLOWNESS		DT_C DT_C SEMB.		DTS_X DTSX SEMB.		DTS_Y DTSY SEMB.
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HALLIBURTON

Version No: | hc:3.0
Data File: Wavesonic.cls
Format File: insite_diagnostic.spc
Plot Time: 2009-05-22 09:40:38
Database Time: 06:21:56

Top Depth: 6350.00
Bottom Depth: 6700.00

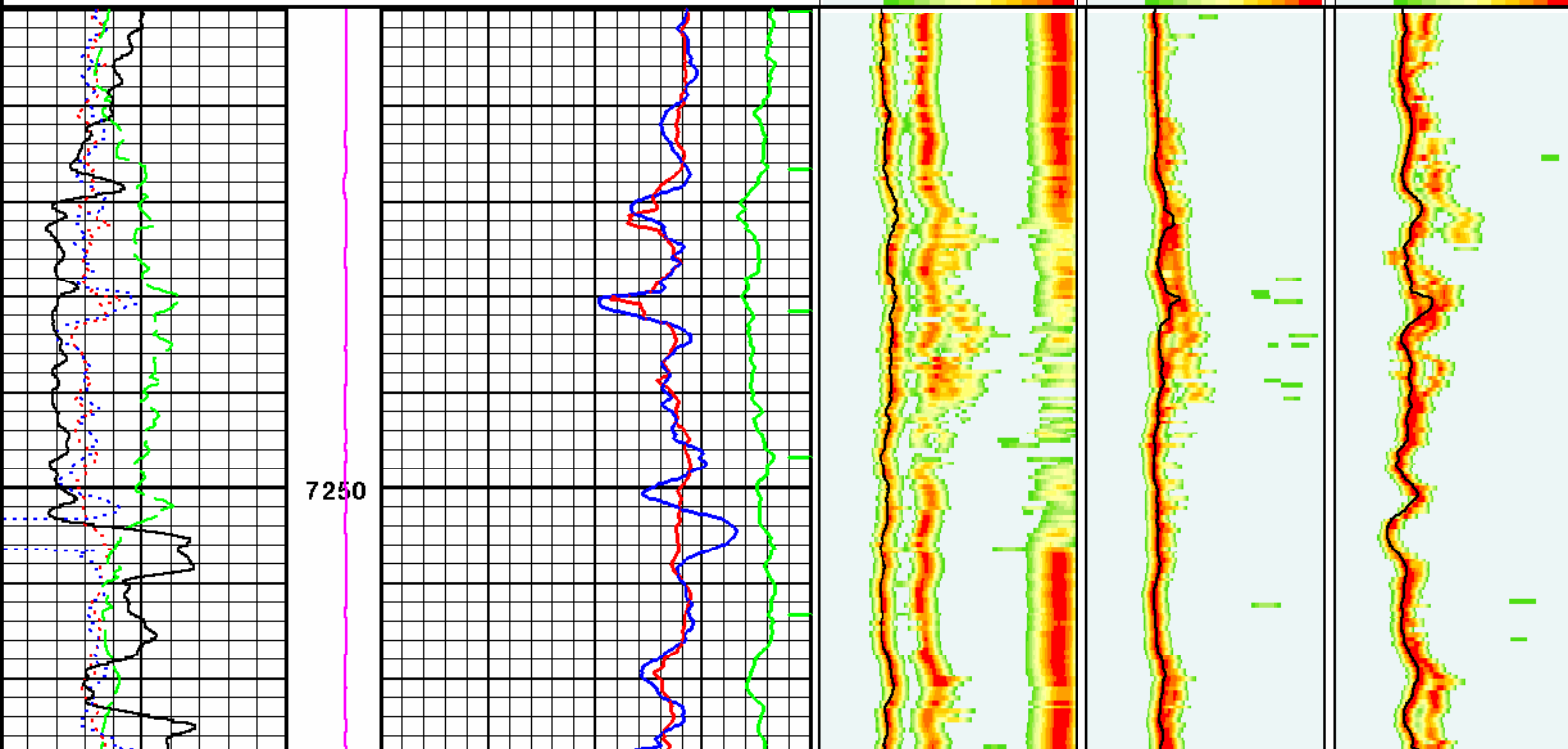
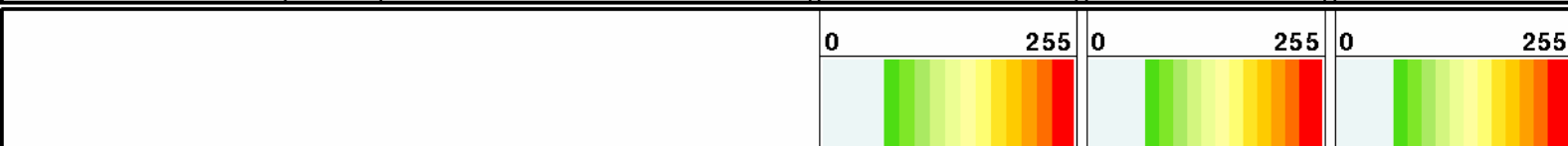
PROCESSED LOG FROM 7700' - 7200'

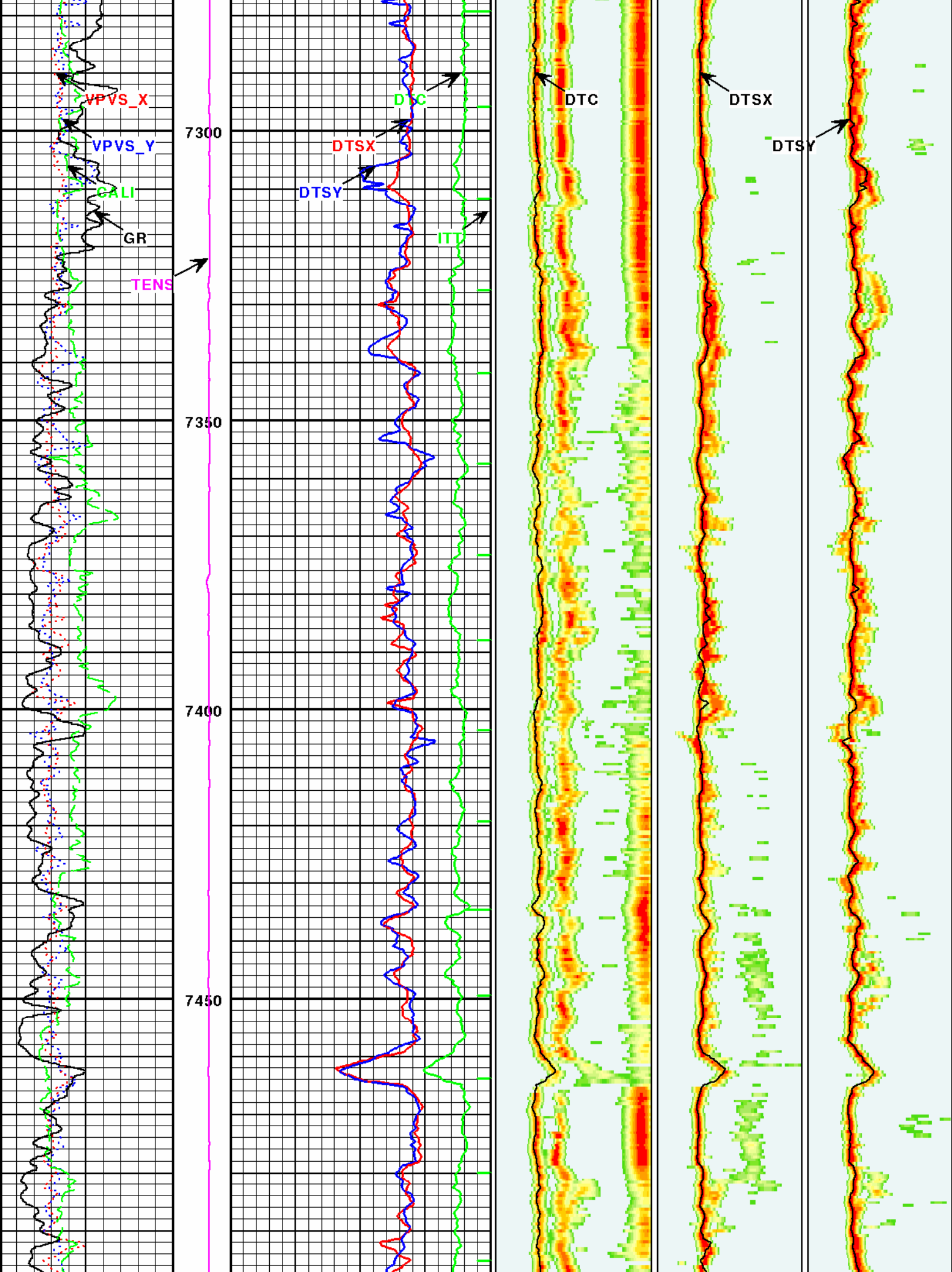
HALLIBURTON

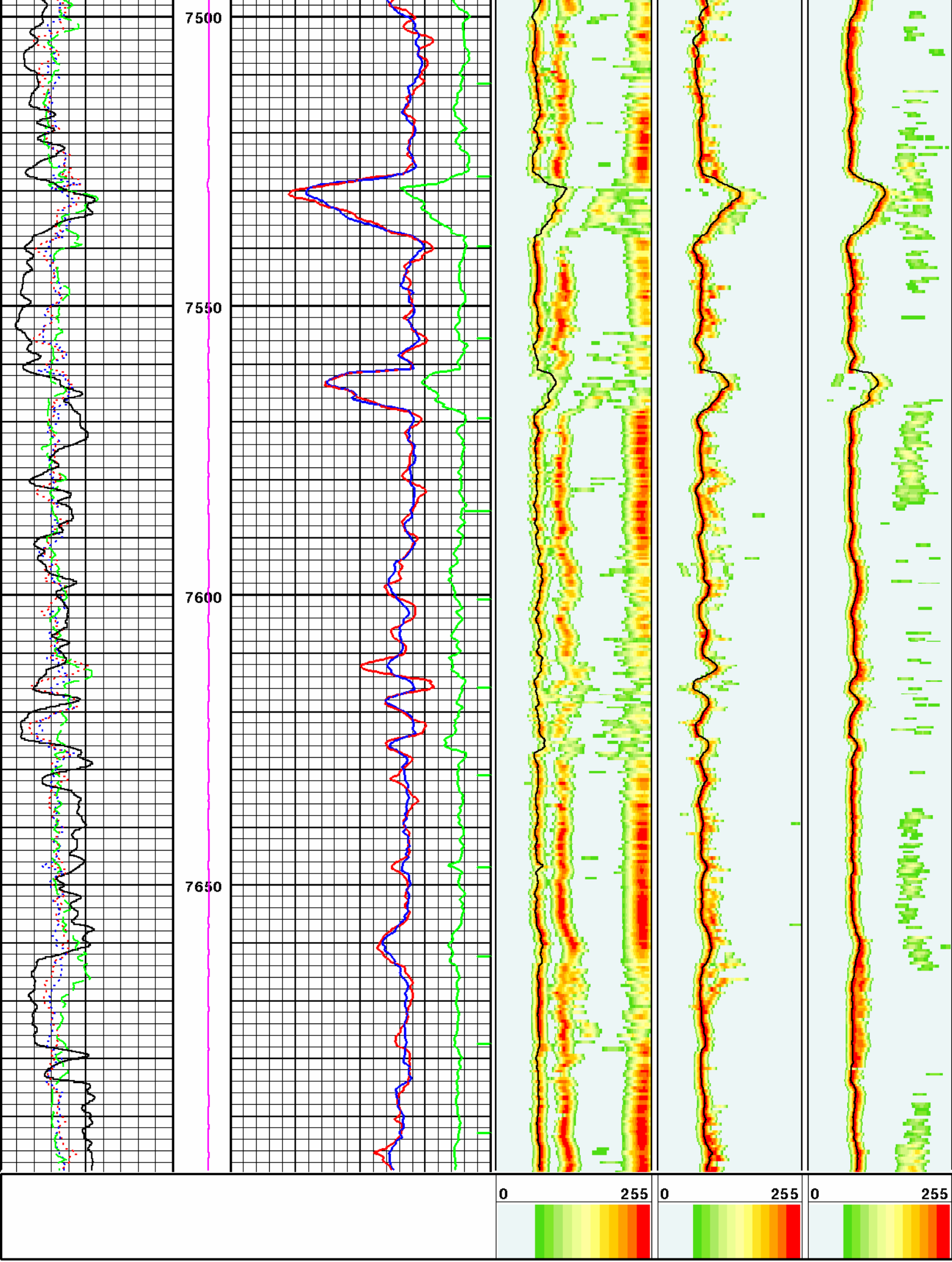
Version No: | hc:3.0
Data File: Wavesonic.cls
Format File: insite_diagnostic.spc
Plot Time: 2009-05-22 09:40:07
Database Time: 06:21:56

Top Depth: 7200.00
Bottom Depth: 7700.00

CALIPER - GAMMA RAY VPVS RATIOS			ACOUSTIC SLOWNESS			DT_C DT_C SEMB.			DTS_X DTSX SEMB.			DTS_Y DTSY SEMB.		
VPVS_X		TENS	DTC			DTC			DTSX			DTSY		
1	3	10000 0	240	DT_COMP.	40	0	DT_COMP.	240	0	DT_SHR_X	340	0	DT_SHR_Y	340
VPVS_Y		1:240	DTSX											
1	3	FT.	240	DT_SHR_X	40									
CALI			DTSY											
6	16		240	DT_SHR_Y	40									
GR			ITT											
0	150													







GR		ITT			
0 150					
CALI		DTSY			
6 16		240 DT_SHR_Y 40			
VPVS_Y	1:240	DTSX			
1 3	FT.	240 DT_SHR_X 40			
VPVS_X	TENS	DTC	DTC	DTSX	DTSY
1 3	100000	240 DT_COMP. 40	0 DT_COMP. 240	0 DT_SHR_X 340	0 DT_SHR_Y 340

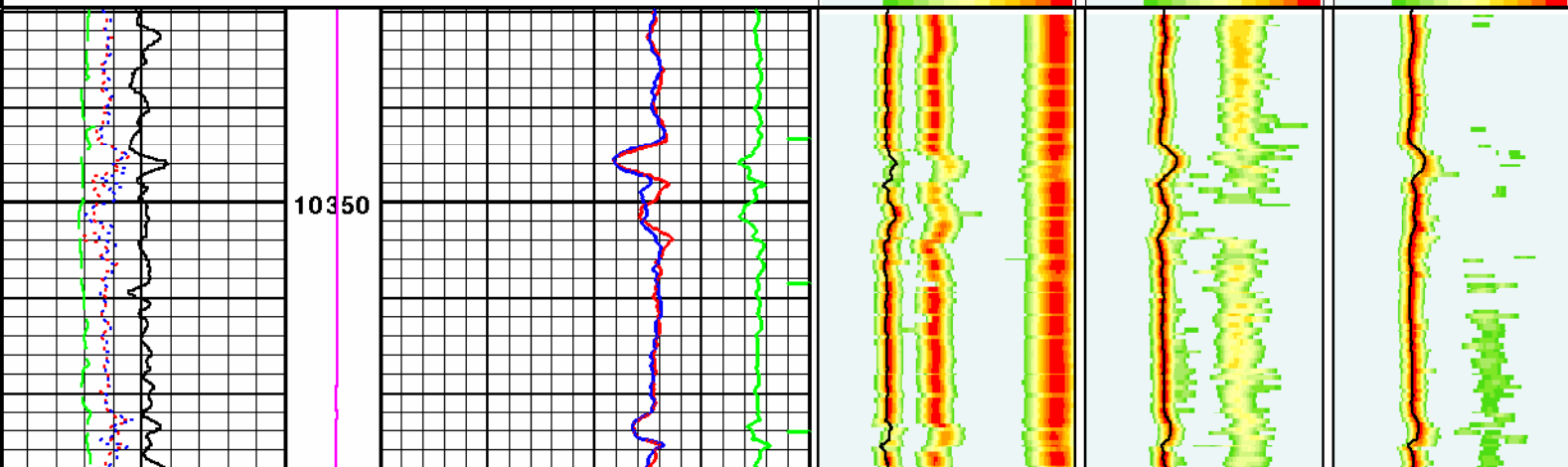
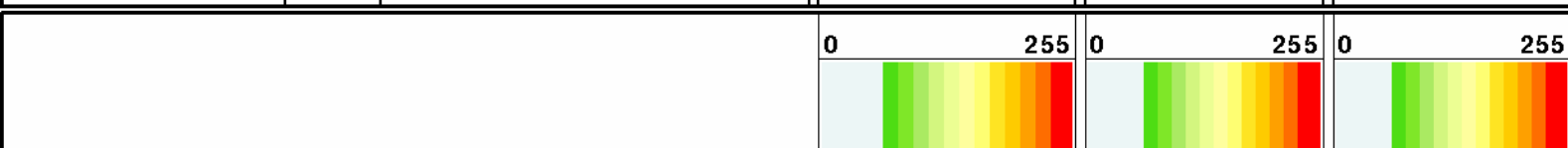
CALIPER - GAMMA RAY VPVS RATIOS	ACOUSTIC SLOWNESS	DT_C DT_C SEMB.	DTS_X DTSX SEMB.	DTS_Y DTSY SEMB.
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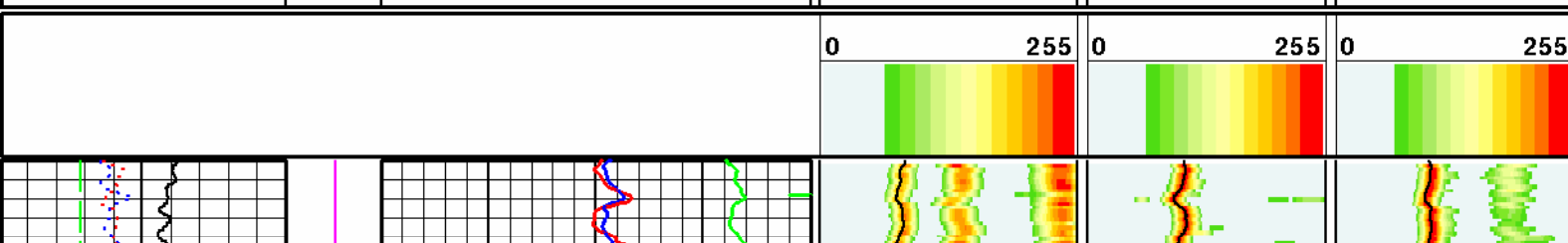
Version No: hc:3.0 Data File: Wavesonic.cls Format File: insite_diagnostic.spc Plot Time: 2009-05-22 09:40:11 Database Time: 06:21:56				
HALLIBURTON		Top Depth: 7200.00 Bottom Depth: 7700.00		

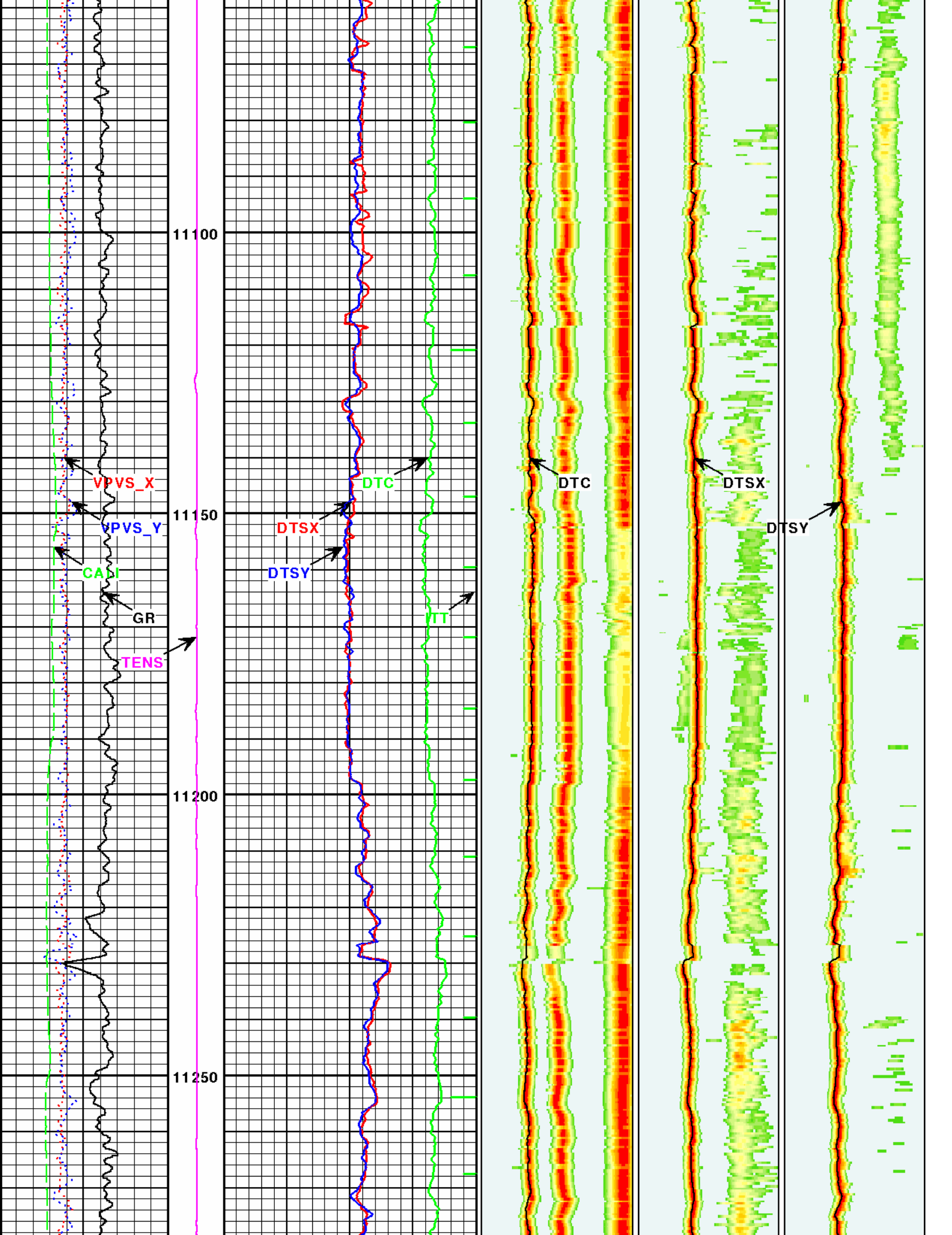
PROCESSED LOG FROM 10400' - 10330'

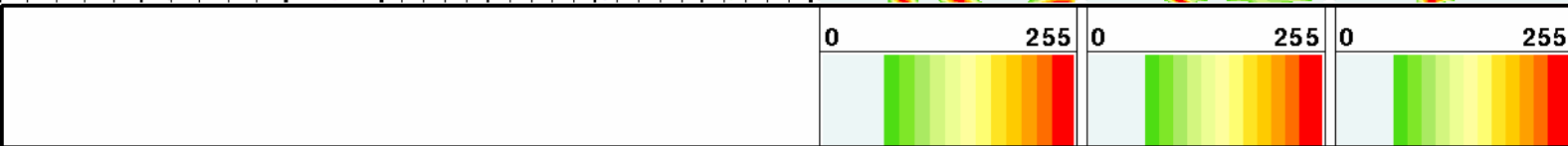
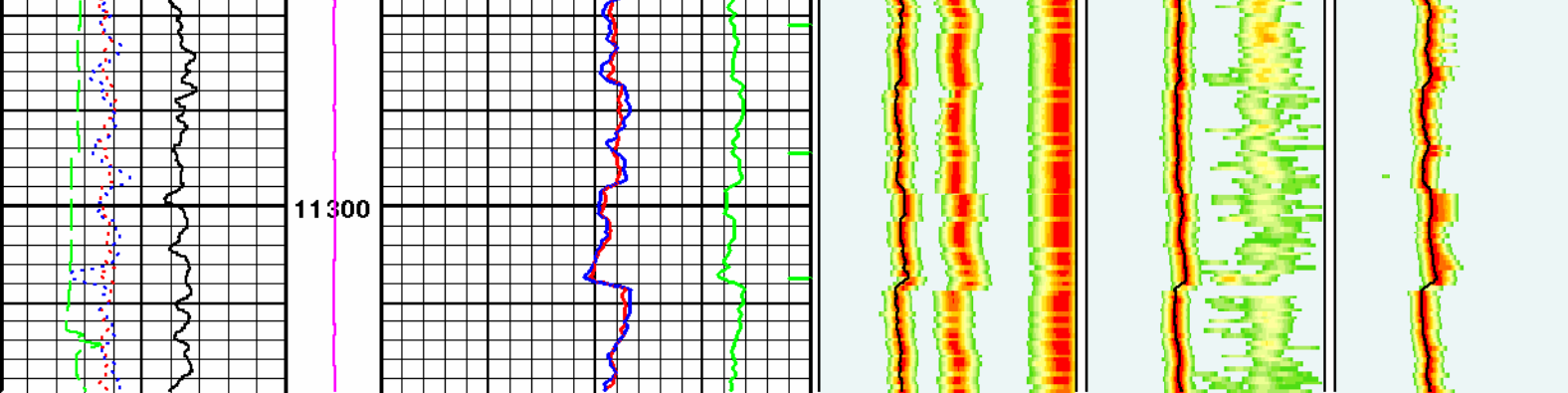
Version No: hc:3.0 Data File: Wavesonic.cls Format File: insite_diagnostic.spc Plot Time: 2009-05-22 09:39:42 Database Time: 06:21:56				
HALLIBURTON		Top Depth: 10330.00 Bottom Depth: 10400.00		

CALIPER - GAMMA RAY VPVS RATIOS		ACOUSTIC SLOWNESS	DT_C DT_C SEMB.	DTS_X DTSX SEMB.	DTS_Y DTSY SEMB.
VPVS_X	TENS	DTC	DTC	DTSX	DTSY
1 3	100000	240 DT_COMP. 40	0 DT_COMP. 240	0 DT_SHR_X 340	0 DT_SHR_Y 340
VPVS_Y	1:240	DTSX			
1 3	FT.	240 DT_SHR_X 40			
CALI		DTSY			
6 16		240 DT_SHR_Y 40			
GR		ITT			
0 150					









GR		1:240 FT. TENS	ITT				
0	150						
CALI			DTSY				
6	16		240	DT_SHR_Y 40			
VPVS_Y			DTSX				
1	3		240	DT_SHR_X 40			
VPVS_X			DTC		DTC	DTSX	DTSY
1	3	10000 0	240	DT_COMP. 40	0 DT_COMP. 240	0 DT_SHR_X 340	0 DT_SHR_Y 340

CALIPER - GAMMA RAY VPVS RATIOS	ACOUSTIC SLOWNESS	DT_C DT_C SEMB.	DTS_X DTSX SEMB.	DTS_Y DTSY SEMB.
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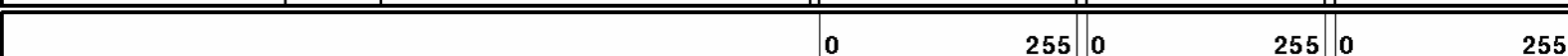
Version No: hc:3.0				
Data File: Wavesonic.cls				
Format File: insite_diagnostic.spc				
Plot Time: 2009-05-22 09:39:21				
Database Time: 06:21:56				
Top Depth: 11050.00			Bottom Depth: 11320.00	

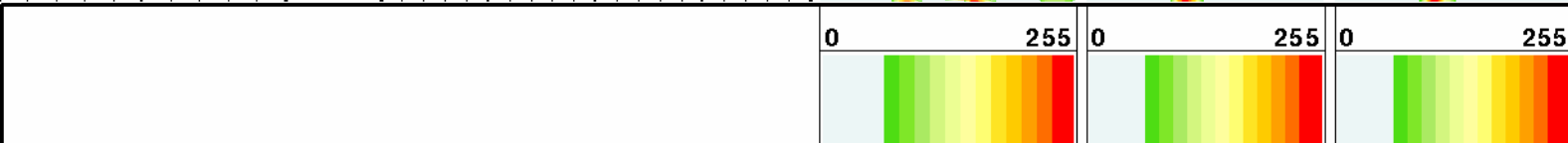
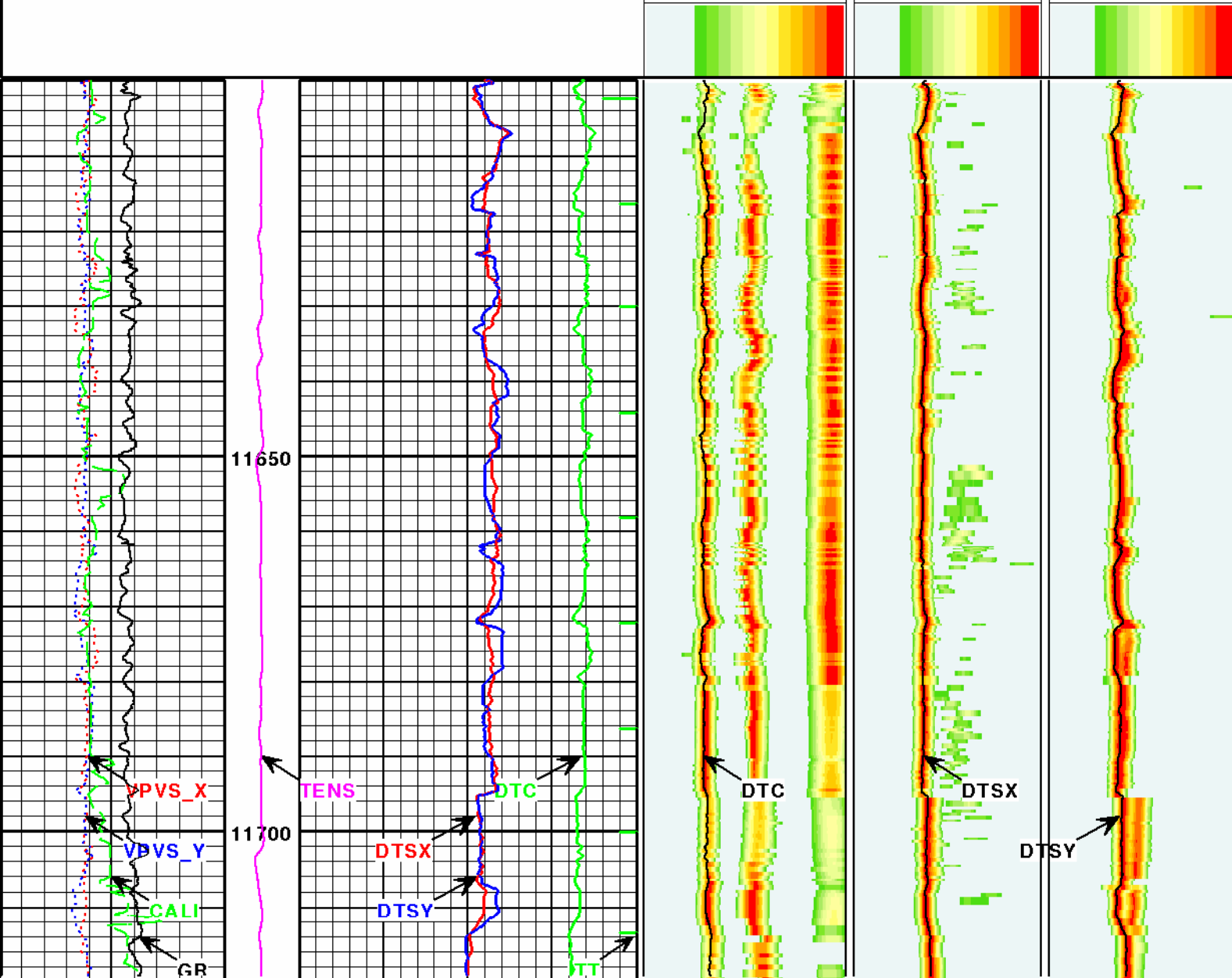
PROCESSED LOG FROM 11720' - 11600'

Version No: hc:3.0				
Data File: Wavesonic.cls				
Format File: insite_diagnostic.spc				
Plot Time: 2009-05-22 09:38:45				
Database Time: 06:21:56				
Top Depth: 11600.00			Bottom Depth: 11720.00	

CALIPER - GAMMA RAY VPVS RATIOS	ACOUSTIC SLOWNESS	DT_C DT_C SEMB.	DTS_X DTSX SEMB.	DTS_Y DTSY SEMB.
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VPVS_X		TENS 1:240 FT.	DTC		DTC		DTSX		DTSY						
1	3		10000 0	240	DT_COMP.	40	0	DT_COMP.	240	0	DT_SHR_X	340	0	DT_SHR_Y	340
VPVS_Y			DTSX												
1	3		240	DT_SHR_X	40										
CALI			DTSY												
6	16		240	DT_SHR_Y	40										
GR		ITT													
0	150														





GR		ITT				
0	150					
CALI		DTSY				
6	16	240	DT_SHR_Y 40			
VPVS_Y		DTSX				
1	3	240	DT_SHR_X 40			
VPVS_X		DTC				
1	3	240	DT_COMP. 40	0 DT_COMP. 240	0 DT_SHR_X 340	0 DT_SHR_Y 340
TENS						
10000	0					

CALIPER - GAMMA RAY VPVS RATIOS	ACOUSTIC SLOWNESS	DT_C DT_C SEMB.	DTS_X DTSX SEMB.	DTS_Y DTSY SEMB.
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Version No: | hc:3.0

Data File: Wavesonic.cls

Format File: insite_diagnostic.spc

Plot Time: 2009-05-22 09:38:47

Database Time: 06:21:56

Top Depth: 11600.00

Bottom Depth: 11720.00

HALLIBURTON

PROCESSED LOG FROM 14500' – 12000'

Version No: | hc:3.0

Data File: Wavesonic.cls

Format File: insite_diagnostic.spc

Plot Time: 2009-05-22 09:37:57

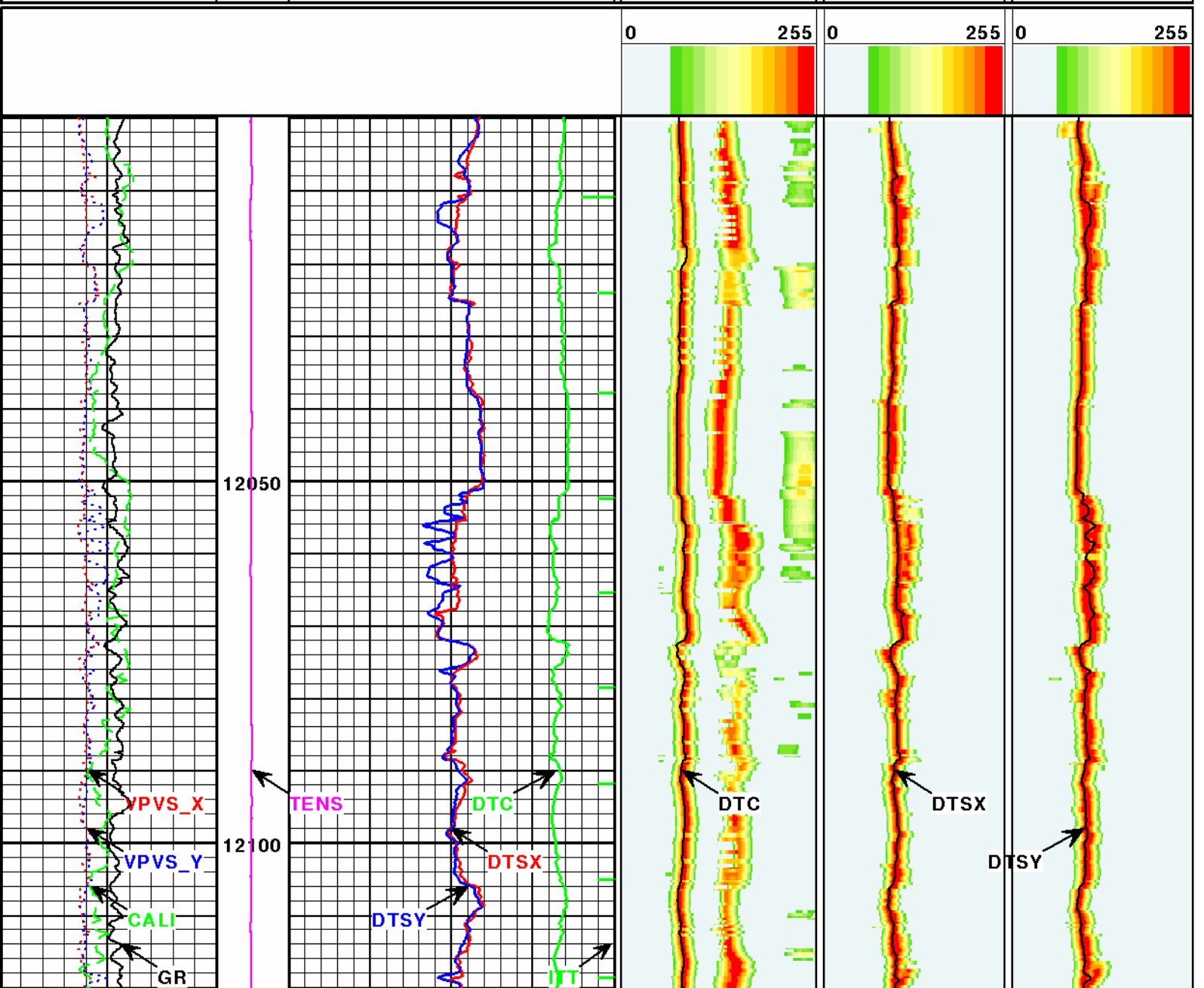
Database Time: 06:21:56

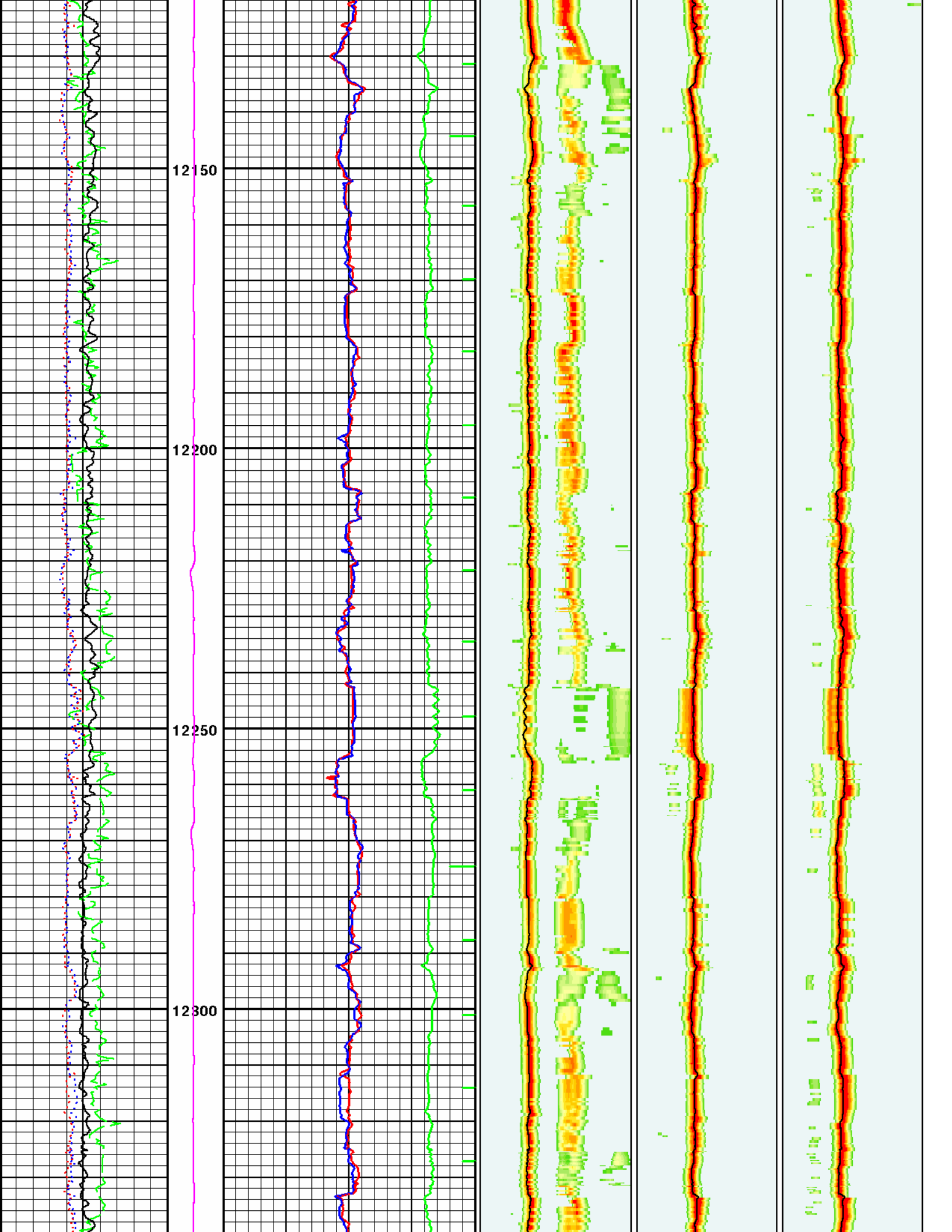
Top Depth: 12000.00

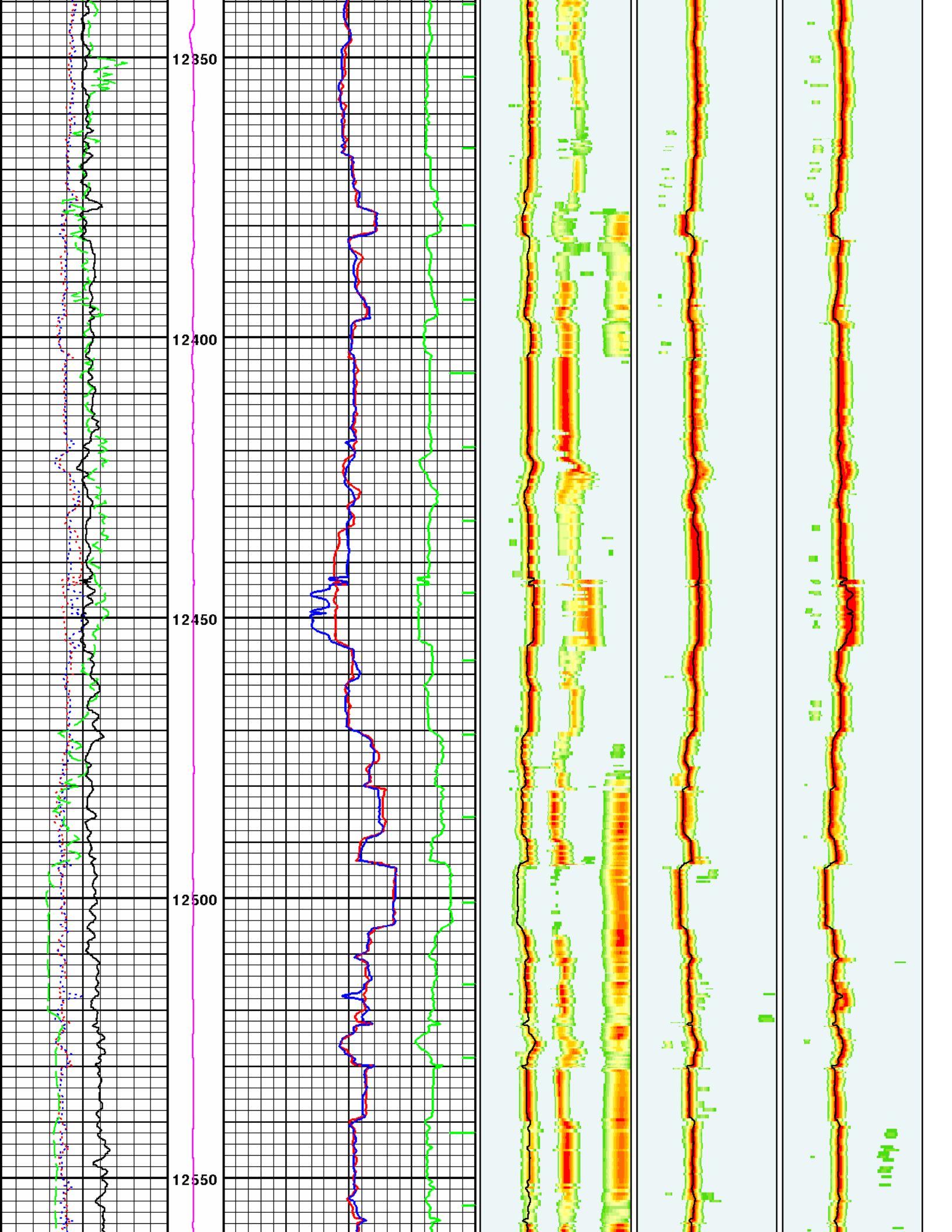
Bottom Depth: 14529.00

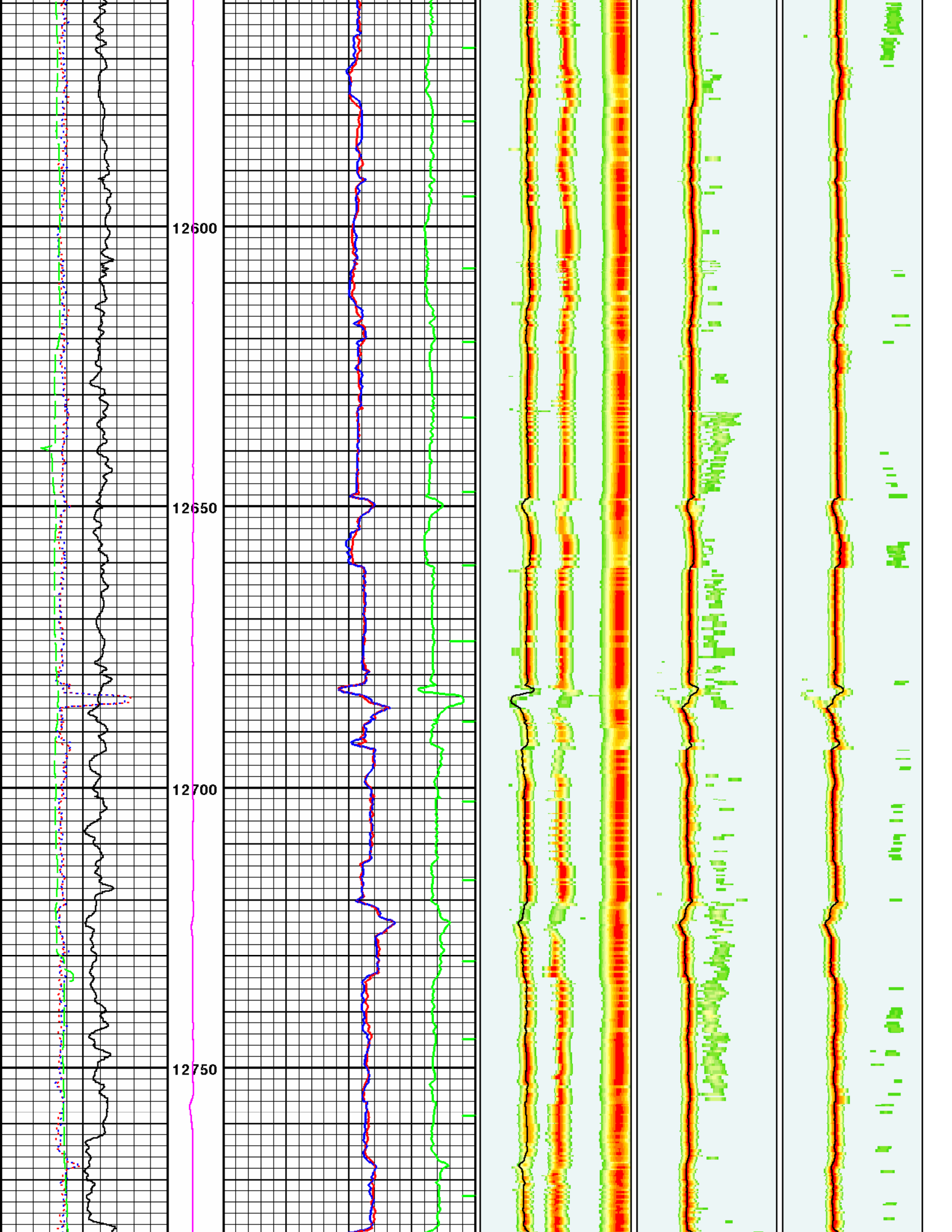
HALLIBURTON

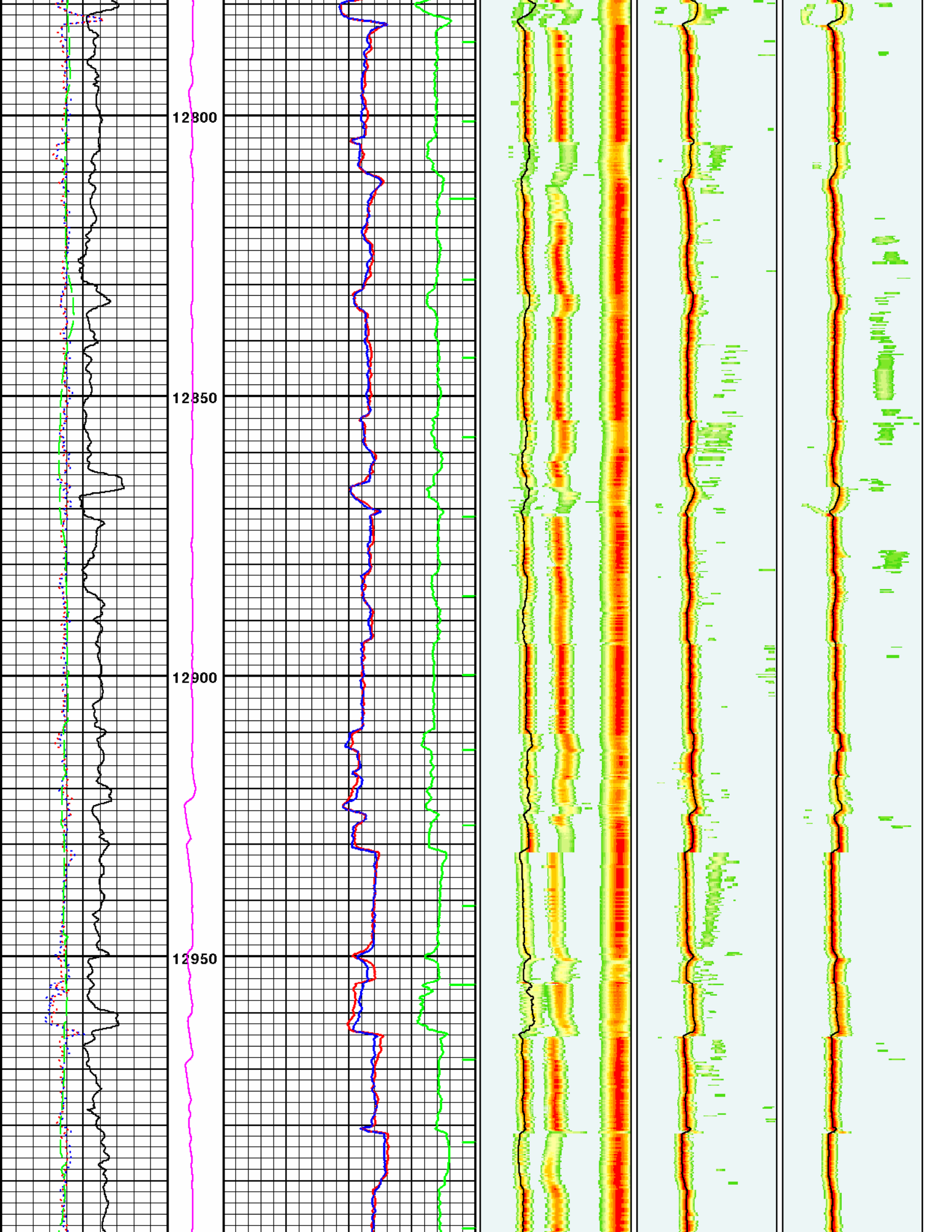
CALIPER - GAMMA RAY VPVS RATIOS		ACOUSTIC SLOWNESS		DT_C DT_C SEMB.	DTS_X DTSX SEMB.	DTS_Y DTSY SEMB.
VPVS_X	TENS	DTC		DTC	DTSX	DTSY
1	3	10000 0	240 DT_COMP. 40	0 DT_COMP. 240	0 DT_SHR_X 340	0 DT_SHR_Y 340
VPVS_Y	1:240	DTSX				
1	3	FT.	240 DT_SHR_X 40			
CALI	6	16	DTSY			
			240 DT_SHR_Y 40			
GR	0	150	ITT			

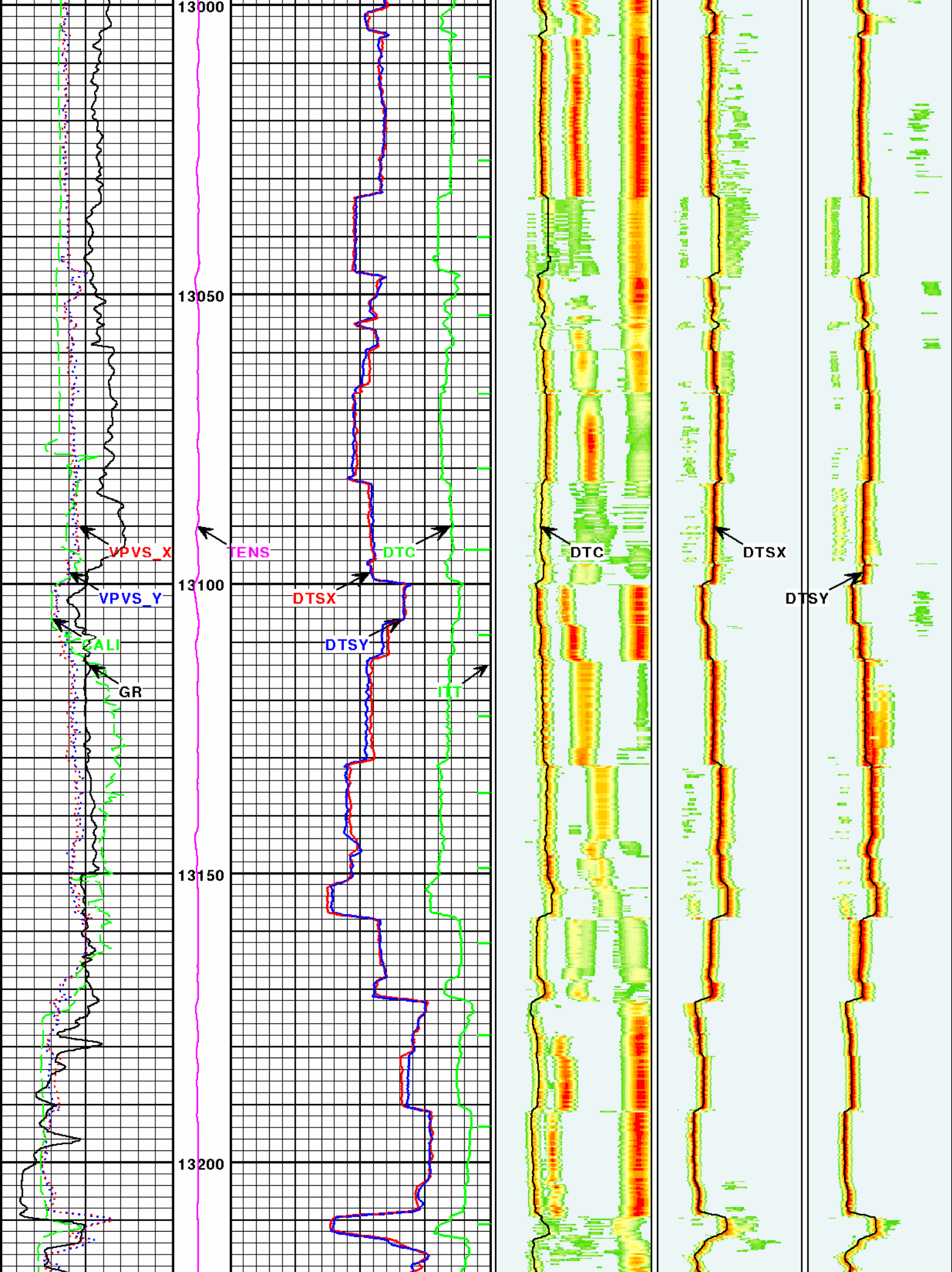


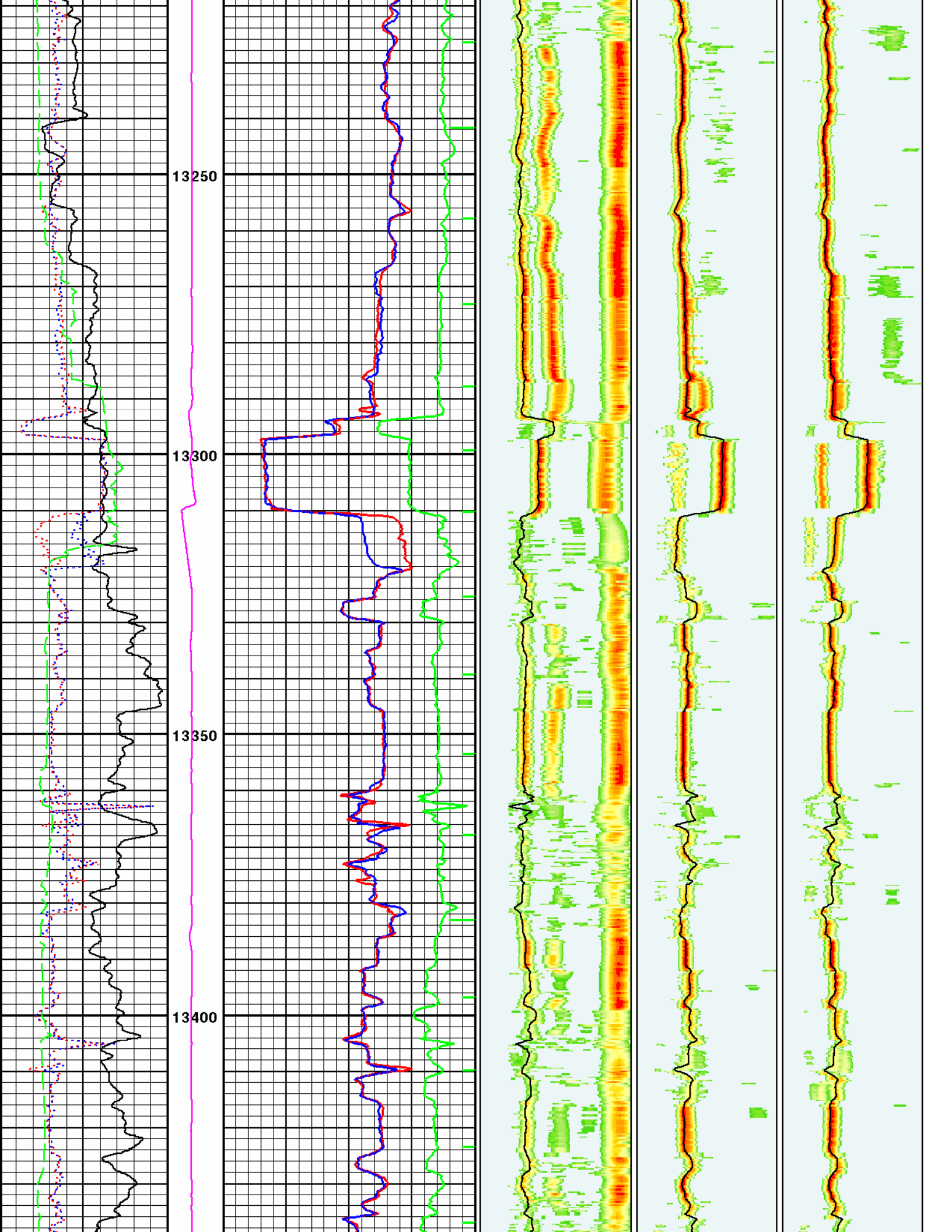


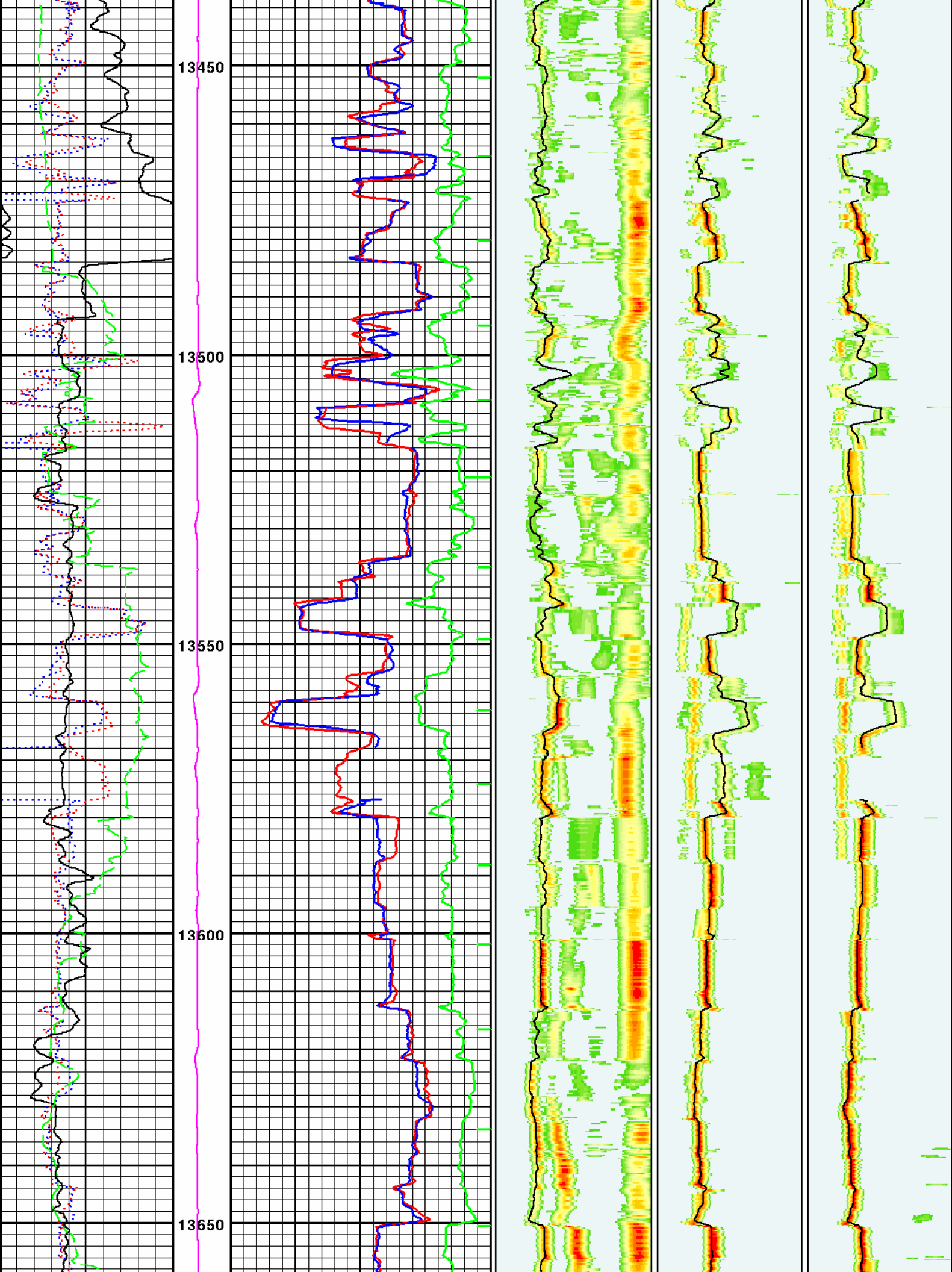


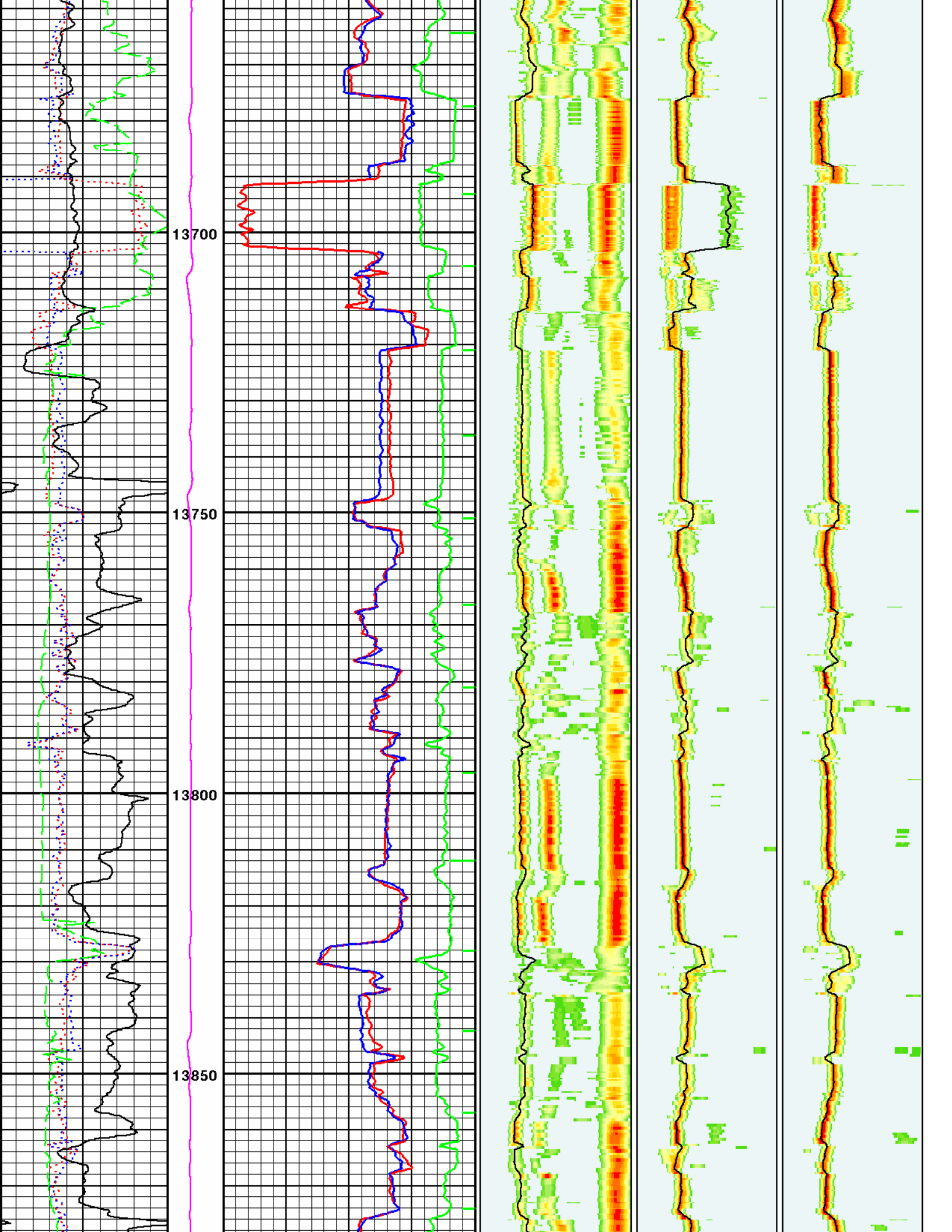


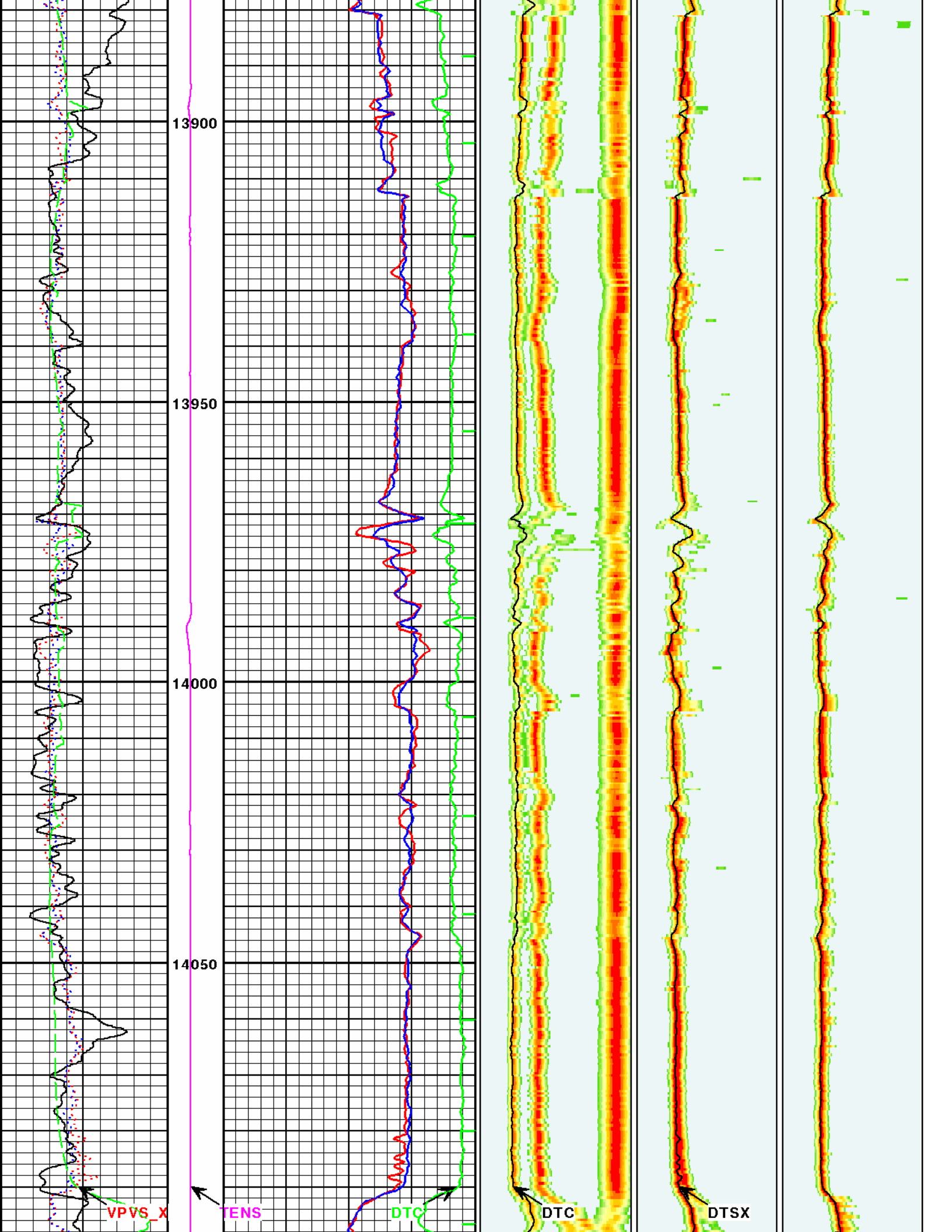


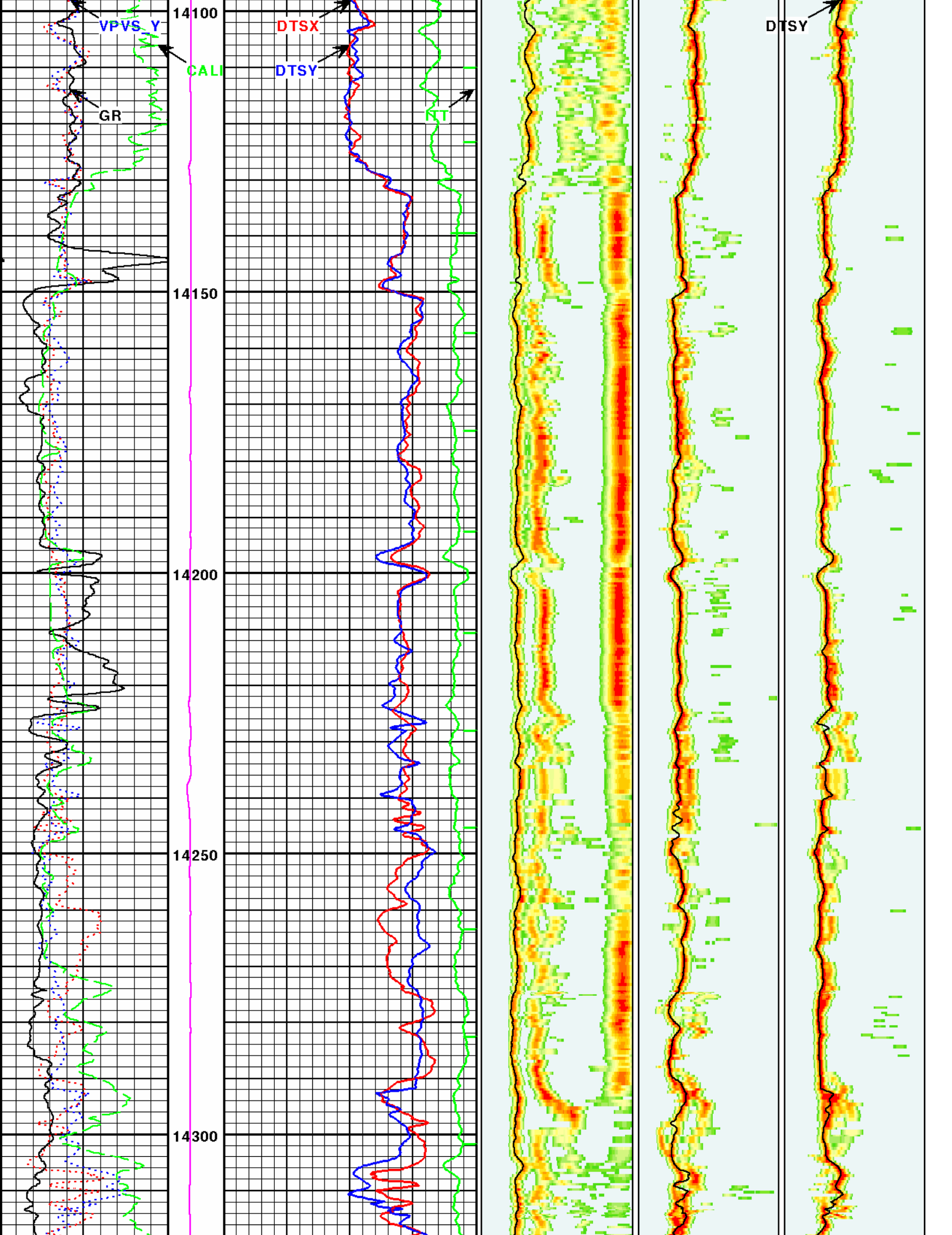


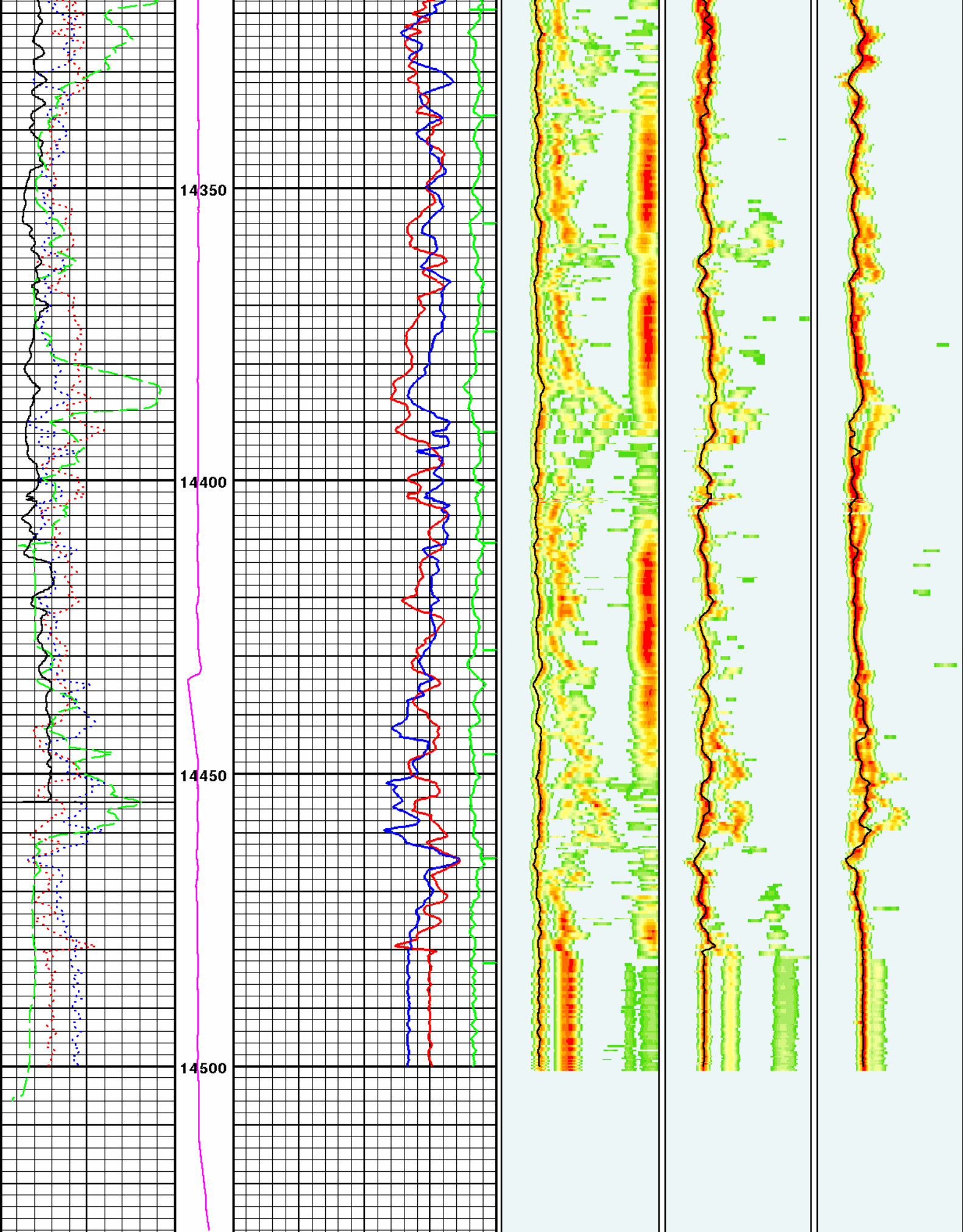













HALLIBURTON

Bottom Depth: 14529.00

COMPANY	GRYNBERG PETROLEUM		
WELL	HIAWATHA DEEP #4-36		
FIELD	SUGAR LOAF		
COUNTY	MOFFAT	STATE	CO
		ANISOTROPY ANALYSIS	