

HALLIBURTON

RADIAL CEMENT BOND LOG

SCALE 1:240

Company		CIMAREX ENERGY		Company		CIMAREX ENERGY	
Well		HAMMER 19-3		Well		HAMMER 19-3	
Field		WILDCAT		Field		WILDCAT	
County		HASKELL State KANSAS		County		HASKELL State KANSAS	
Permanent Datum		GROUND LEVEL		Elevation		2848	
Log Measured From		KB		11 Ft. above perm. datum		Elevation	
Drilling Measured From		KB				K.B. 2859 D.F. G.L. 2848	
Date @ Time Logged		5 JUL, 2013 @ 11:13		Type Fluid in Hole		WATER	
Run No.		TWO		Density of Fluid		8.4	
Depth - Driller		5750		Fluid Level		550	
Depth - Logger		5358		Cement Top Est. Logged		4359	
Bottom - Logged Interval		5355		Equipment / Location		10971687 / LIBERAL	
Top - Log Interval		4150		Recorded by		T HANSON	
Max. Recorded Temp.		134		Witnessed by			
CEMENTING DATA		Surface		Protection		Liner	
Date / Time Cemented		String		String		Production	
Primary / Squeeze		N/A		N/A			
Expected							
Compressive Strength		psi@		hrs		psi@	
Cement Volume							
Cement Type / Weight		/		/		/	
Formulation							
Mud Type / Mud Wgt.		/		/		/	
Run Number		Borehole Record		Casing & Tubing Record			
Bit		From		To		Size	
						5.5	
						Weight	
						15.5	
						SURFACE	
						From	
						To	
						5752	

Sec: 19 Twp:30S Rge: 31W

NONE

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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.

Comments

LOG CORRELATED TO HALLIBURTON RCBL LOG DATED 2 JULY, 2013

LOG IS TO VERIFY SQUEEZE JOB PERFORMED ON JULY 3, 2013

FREE PIPE PASS NOT CORRELATED

TOP OF CEMENT @ 4359
SHORT JOINT @ 4464 - 4477

THANK YOU FOR CHOOSING HALLIBURTON ENERGY SERVICES
YOUR CREW TODAY R GONZALEZ, J STROHM, T HANSON

The Well Name, Location, Borehole Description, and / or Cementing Data Furnished by Client								
EQUIPMENT DATA								
RCBL		GR/CCL						
Run No.	ONE	Run No.	ONE	Run No.		Run No.		
Serial No.	080454	Serial No.	060633	Serial No.		Serial No.		
Model No.	PRB_275	Model No.	PRB_275	Model No.		Model No.		
Diameter	2.75"	Diameter	2.75"	Diameter		Diameter		
LOGGING DATA								
General Data								
Pass	Depths		Well Head	Speed	Logging Run Comments			
No.	From	To	Pressure	Ft/Min				
9	5370	4150	0	45	MAIN PASS			
	GR		AMP		TT		MSG	
Pass	Scale		Scale		Scale		Scale	
No.	L	R	L	R	L	R	L	L
ALL PASSES	0	150	0	100	177	277	200	1200
	150	300	0	20				
DIRECTIONAL INFORMATION								
Maximum Deviation		deg. @		KOP				

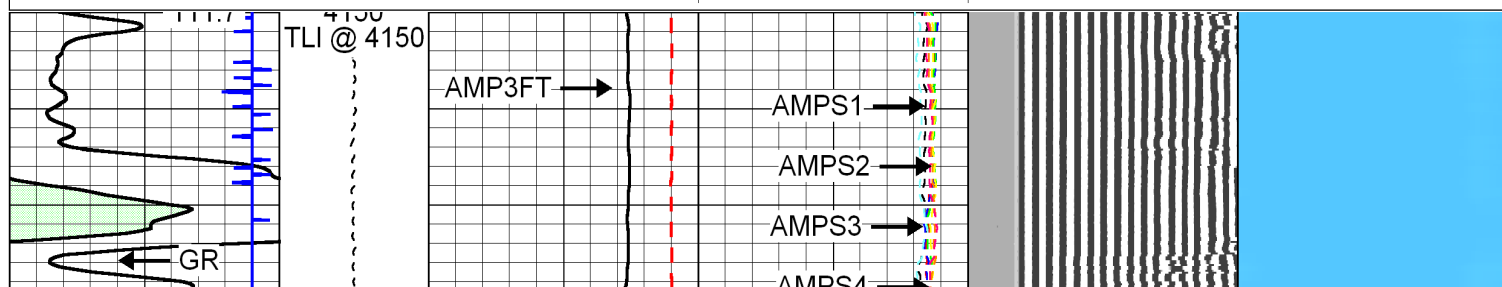
MAIN PASS

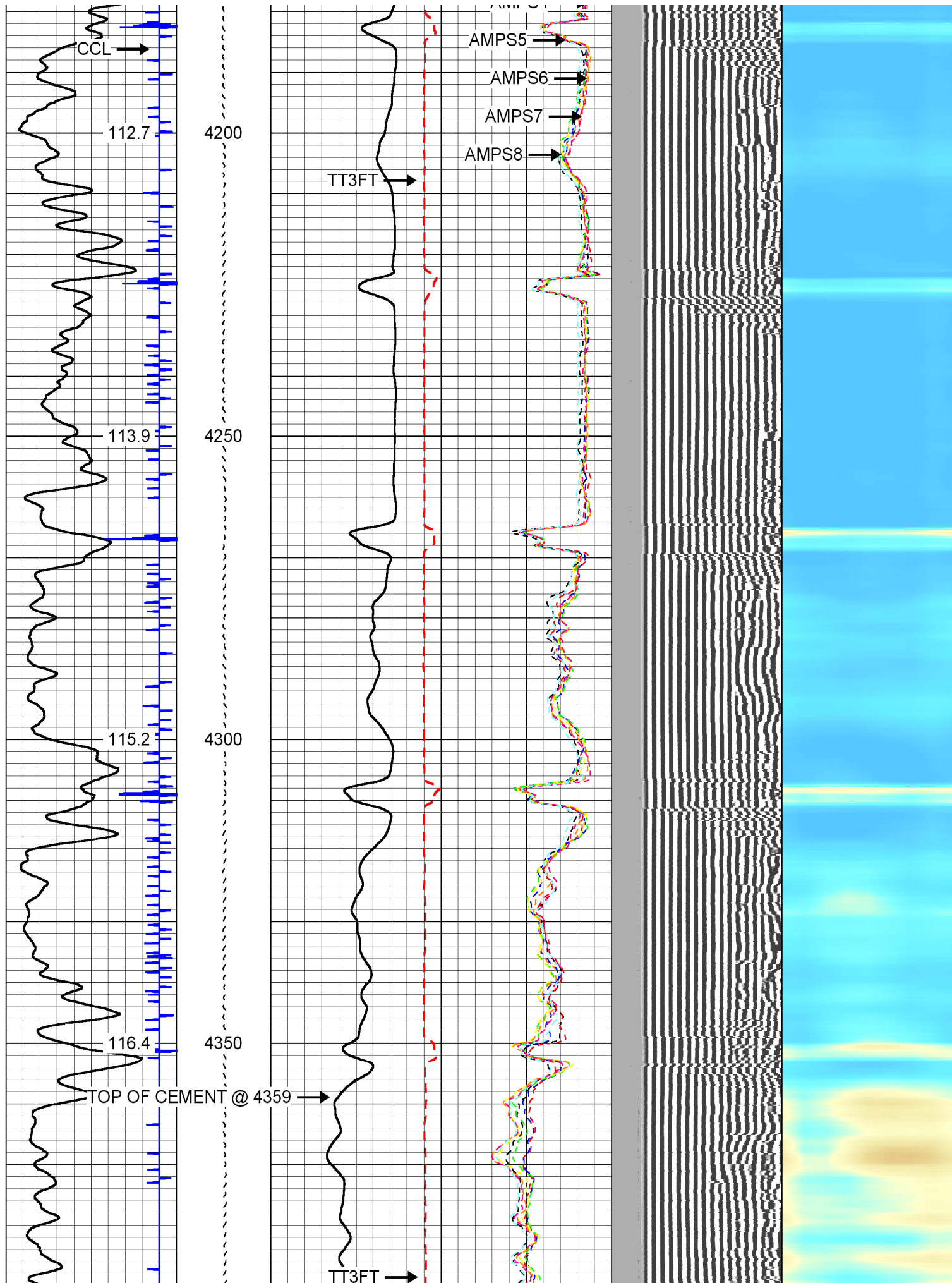
HALLIBURTON

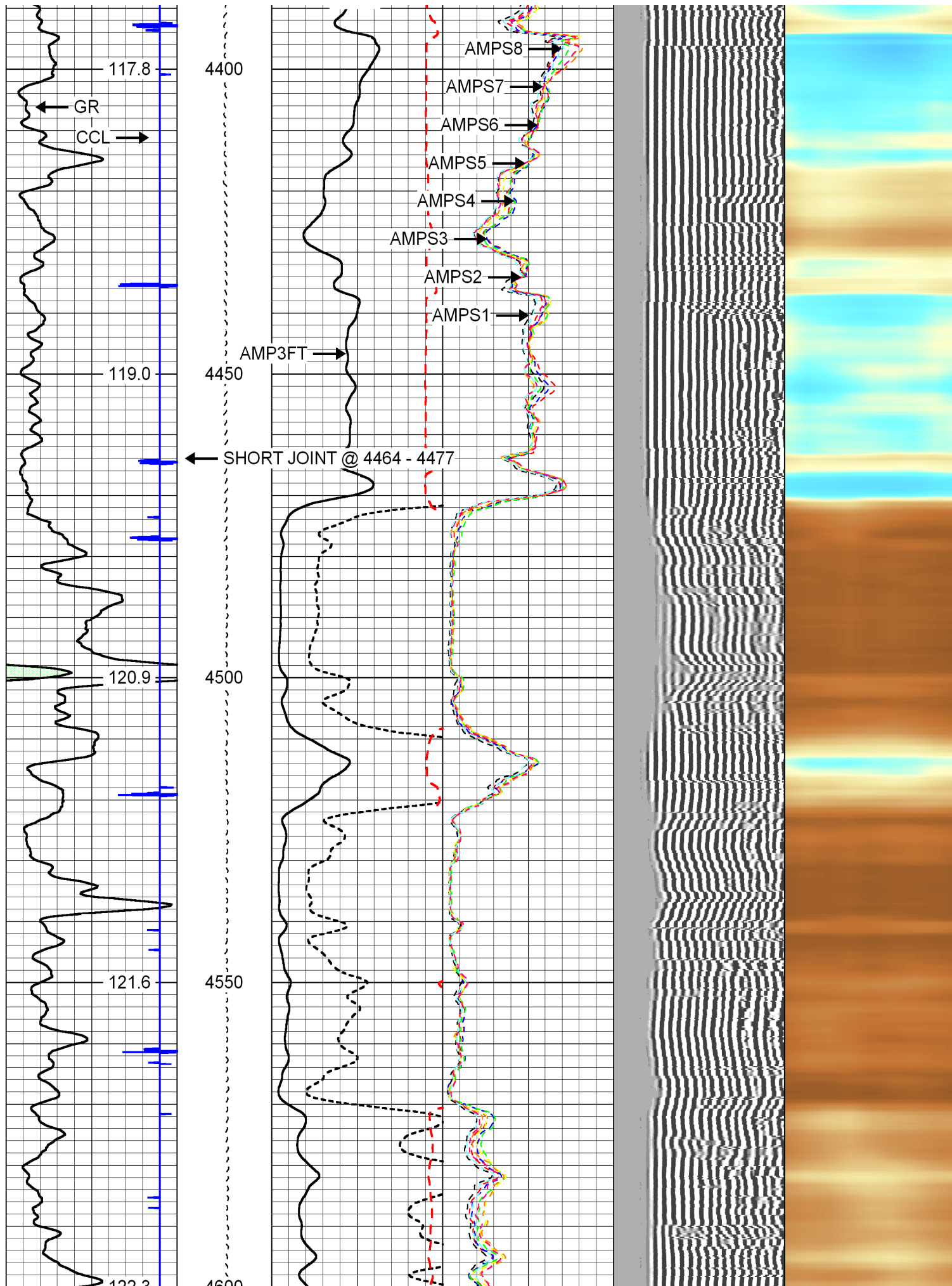
SCALE 1:240

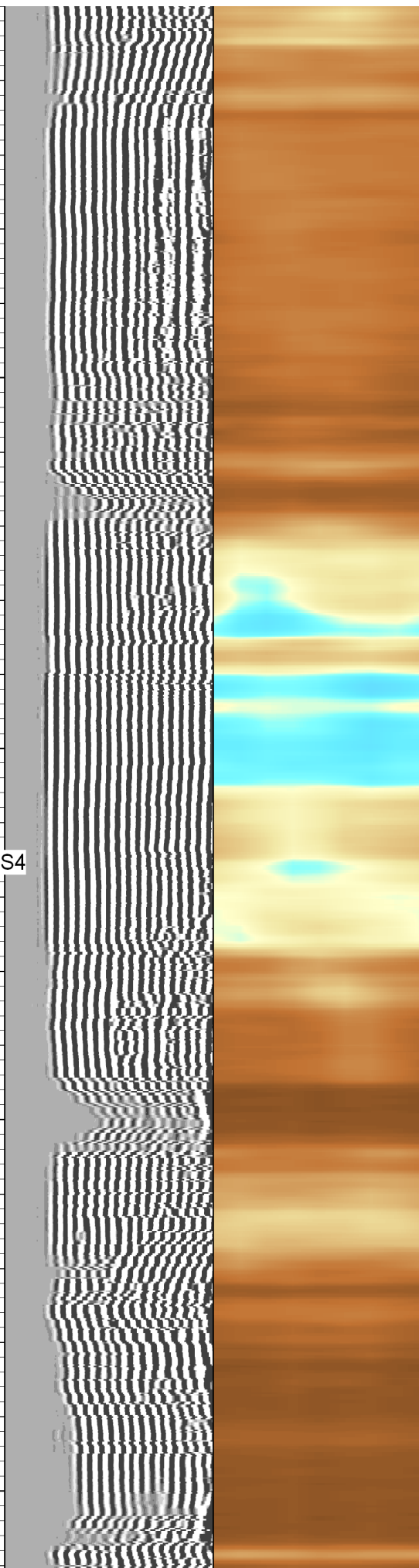
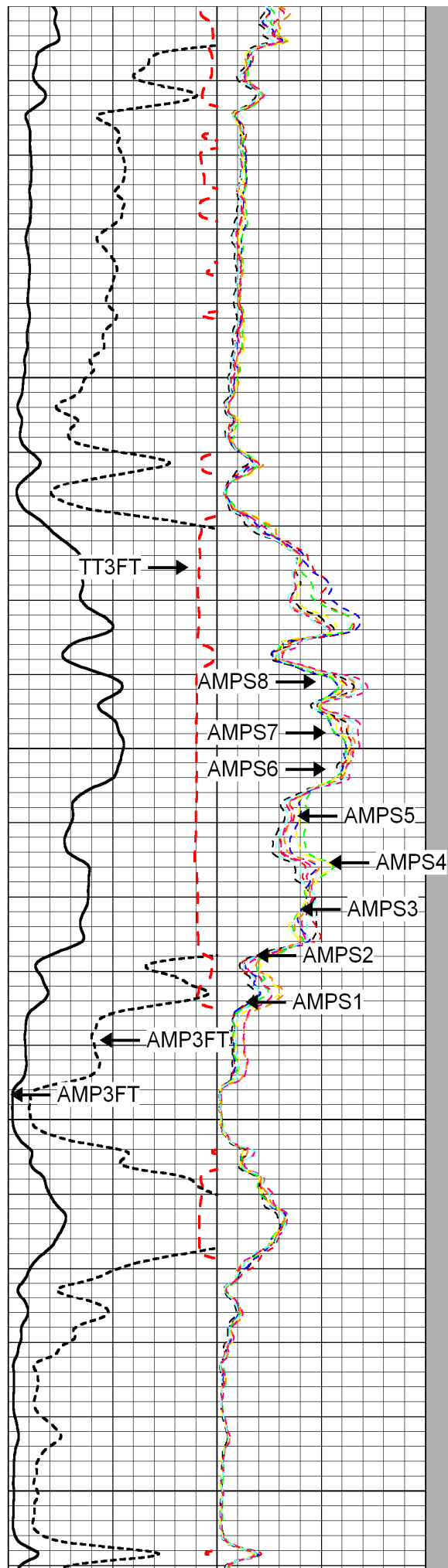
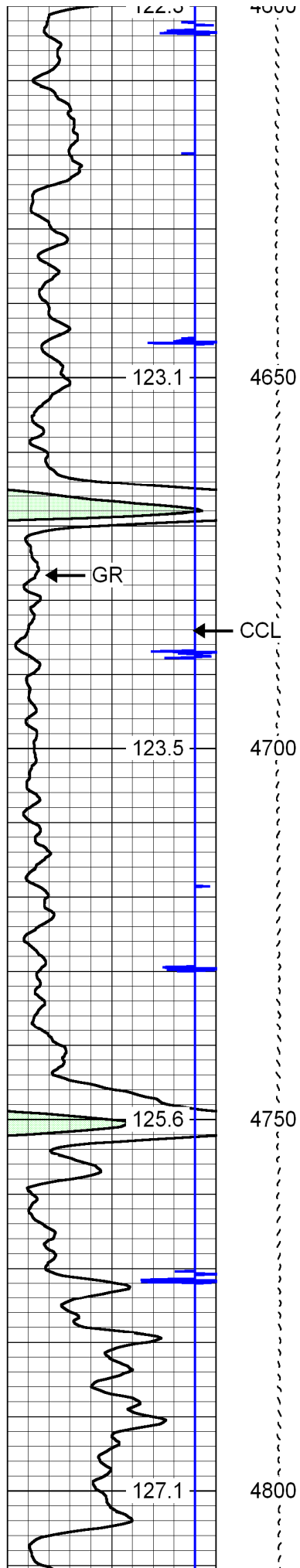
Database File: cimarex_hammer_19_3.db
Dataset Pathname: pass9
Presentation Format: rcbttemp
Dataset Creation: Fri Jul 05 11:13:45 2013 by Log Halliburton Casedho
Charted by: Depth in Feet scaled 1:240

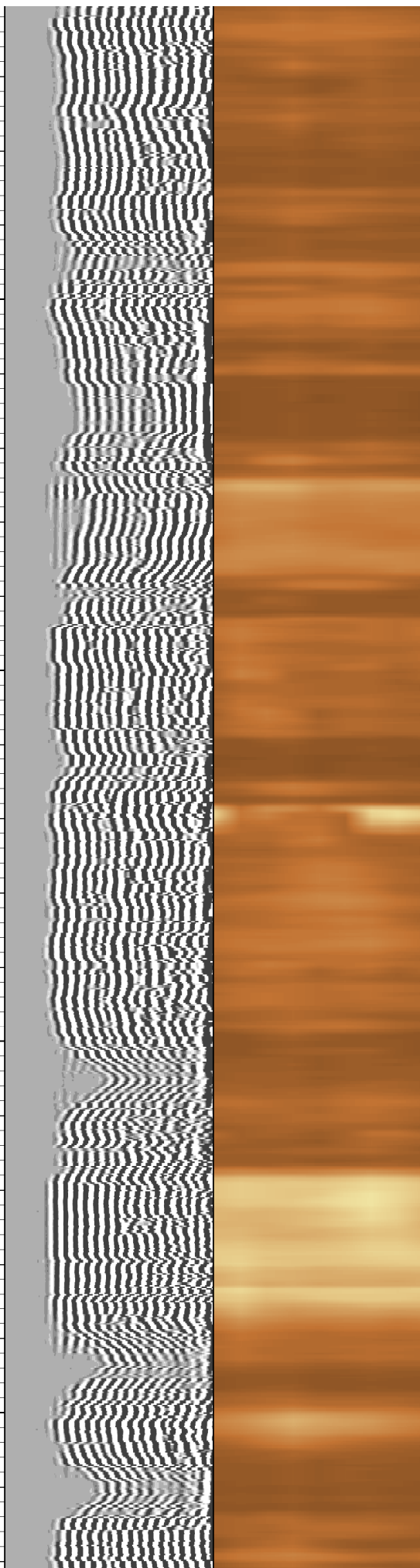
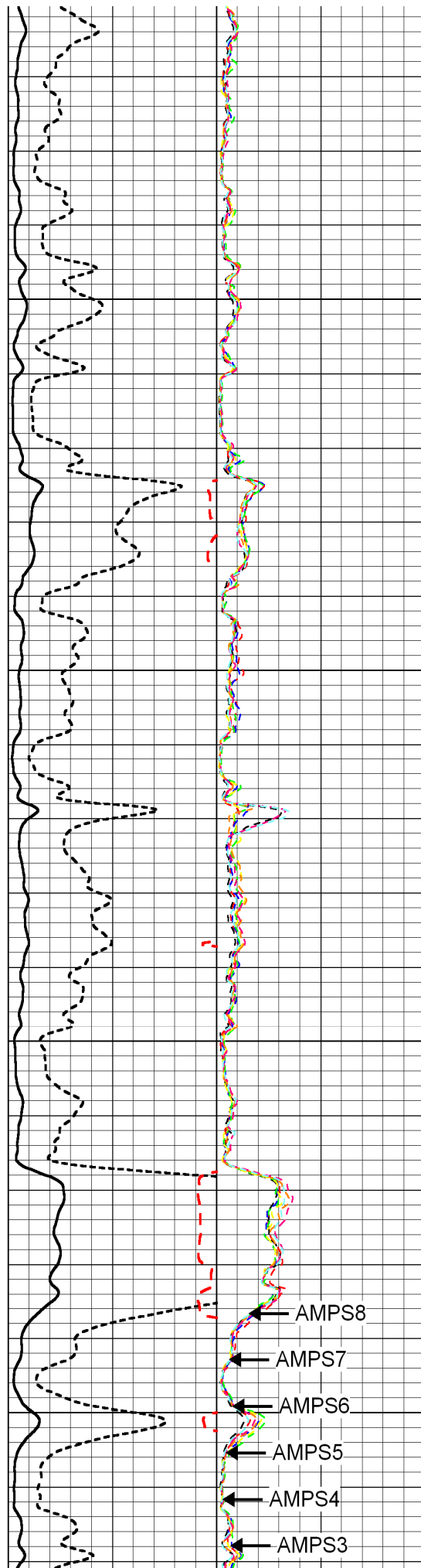
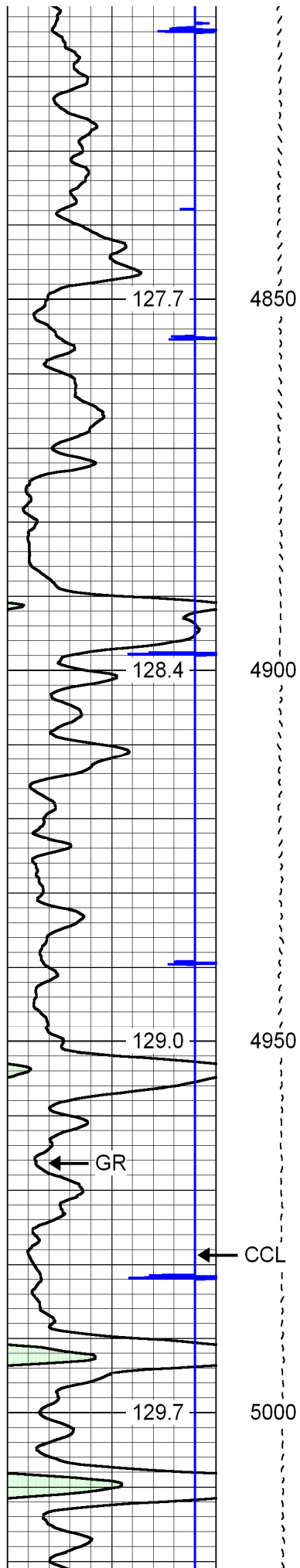
GAMMA RAY	LTEN	0	AMP (mV)	100	0	AMPS1	120	200	MSG	1200	1	SECTORS	8
0 (GAPI) 150	(lb)	0	AAMP (mV) 20	0	AMPS2	120					0		100
2.25 CCL -0.25	0 2000	177	TT (usec) 277	0	AMPS3	120							
				0	AMPS4	120							
				0	AMPS5	120							
				0	AMPS6	120							
				0	AMPS7	120							
				0	AMPS8	120							

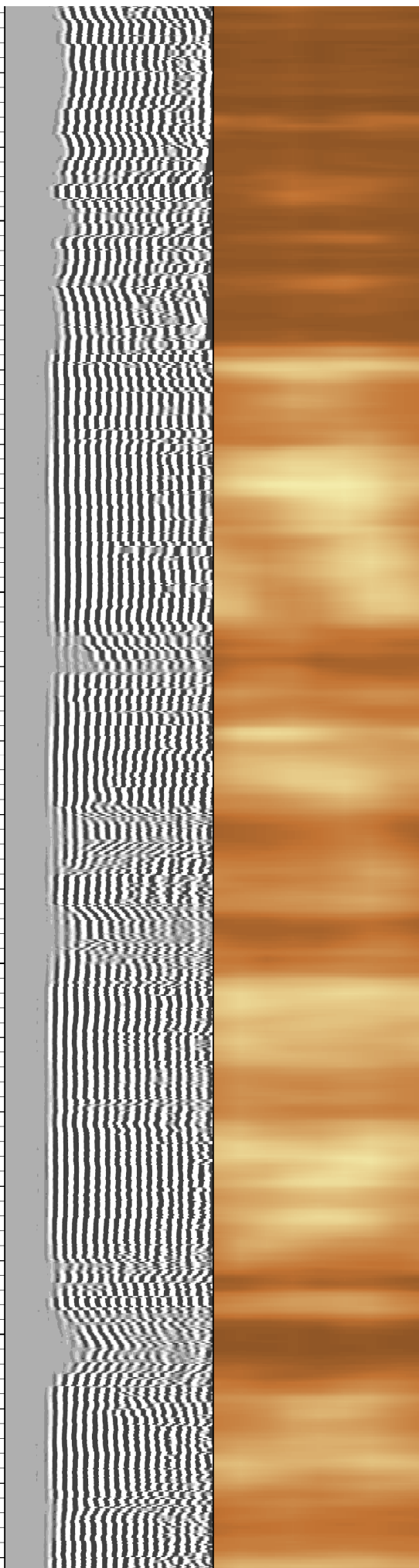
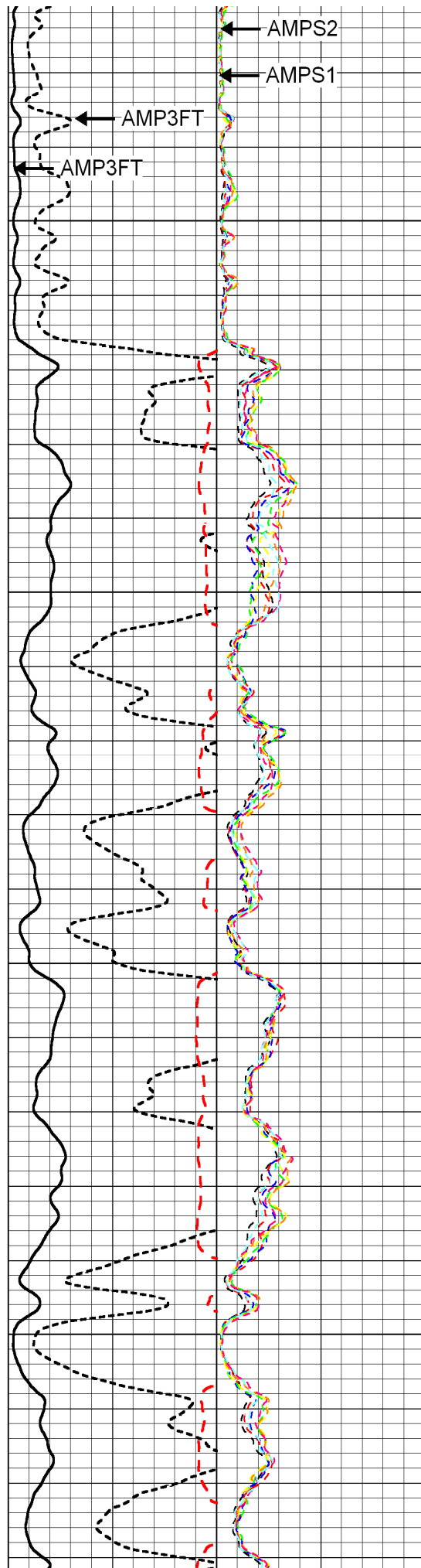
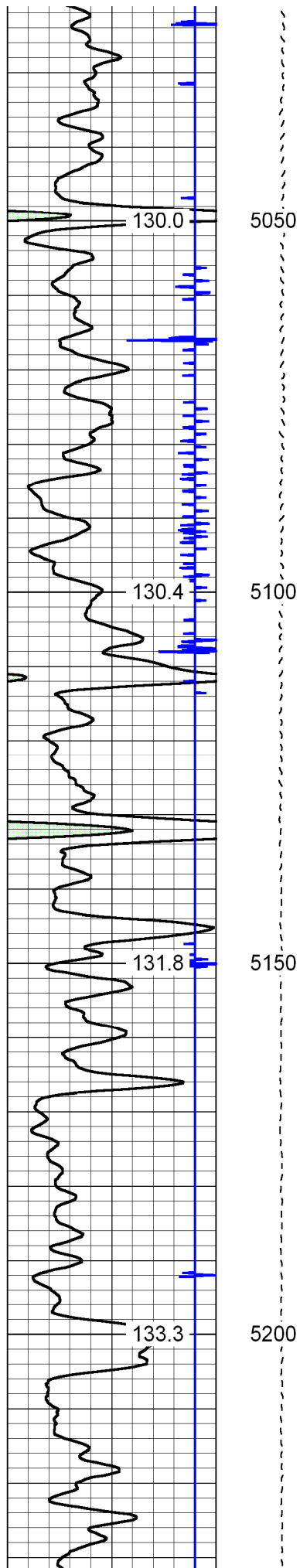


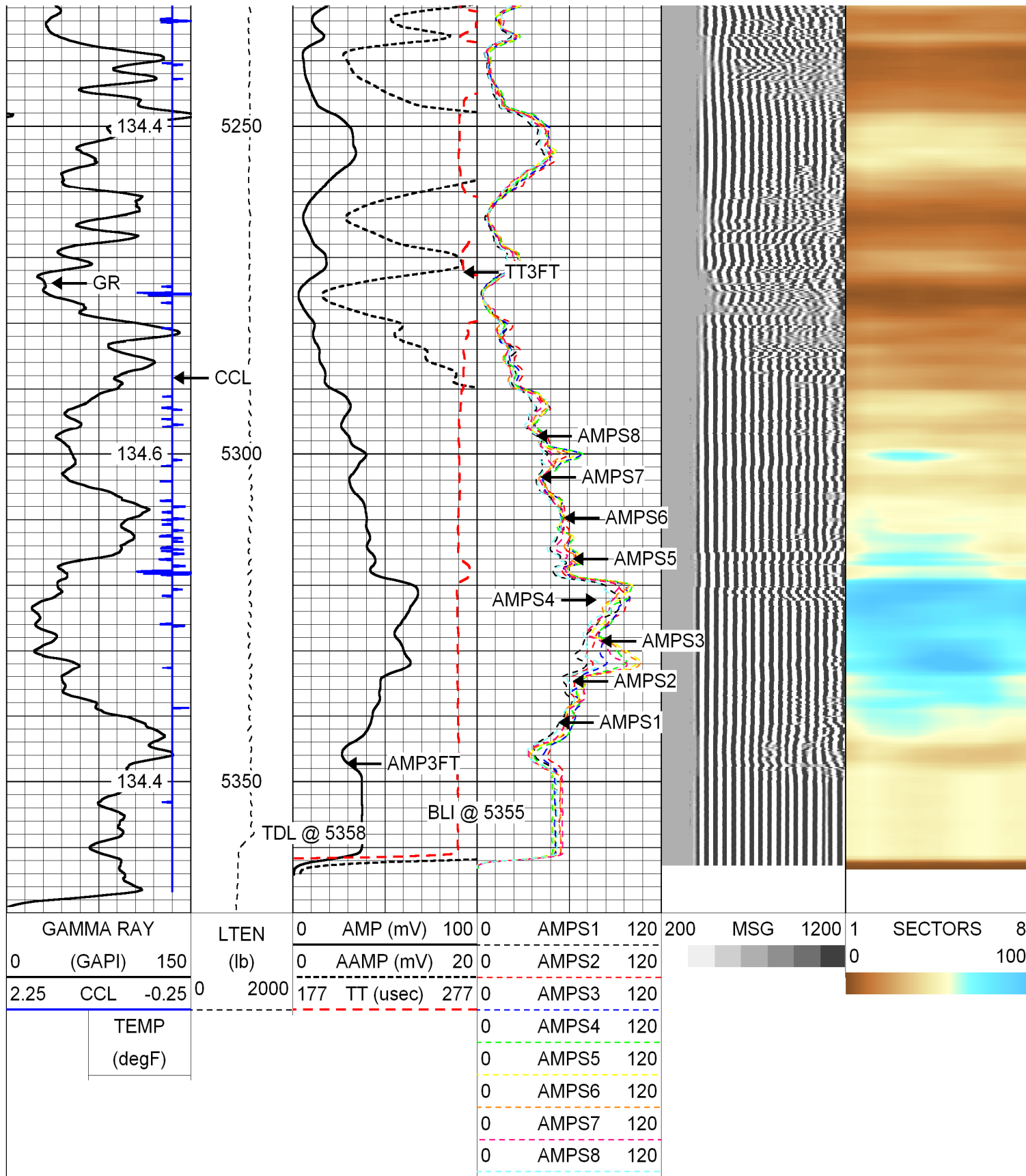












MAIN PASS

SCALE 1:240

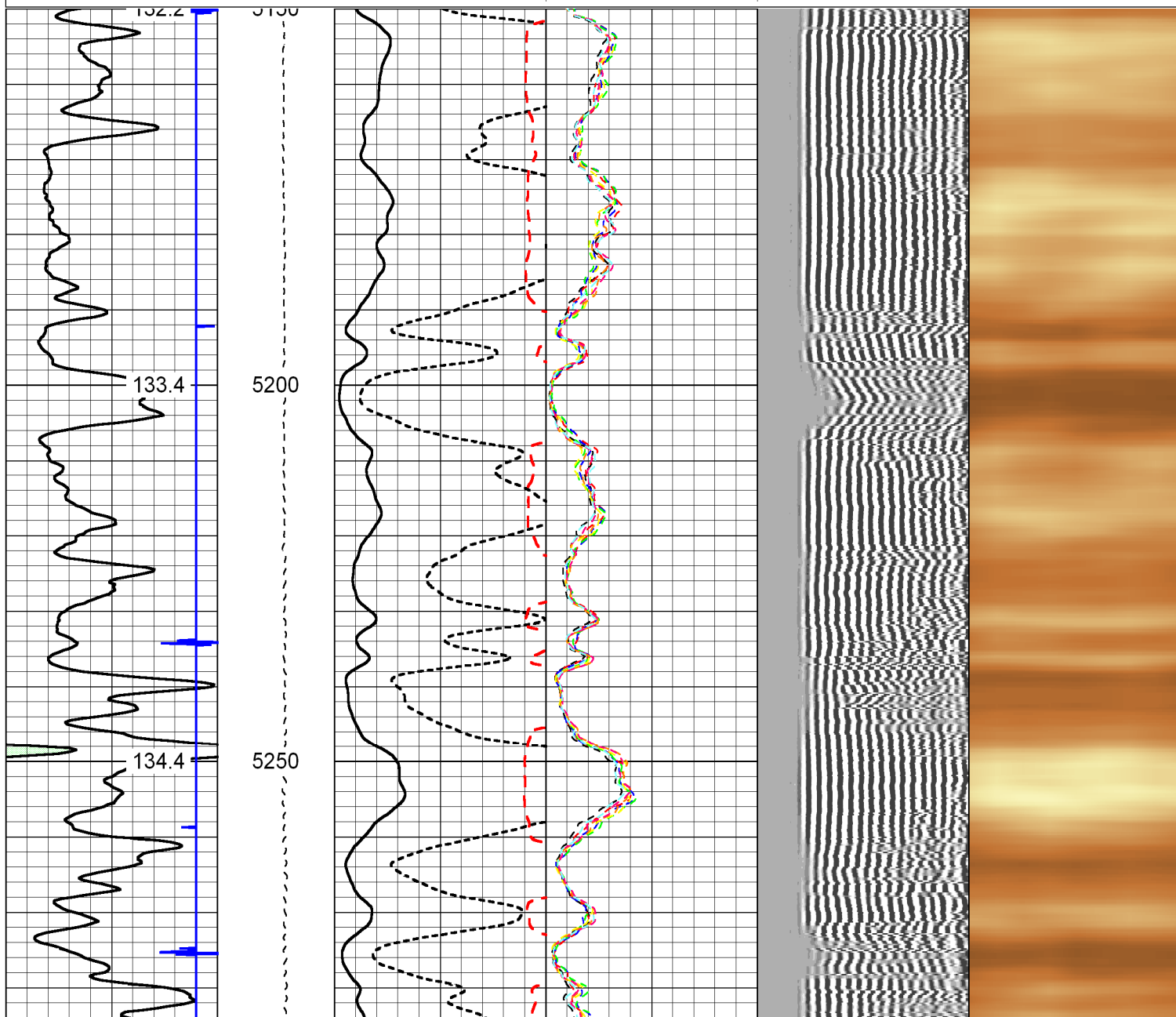
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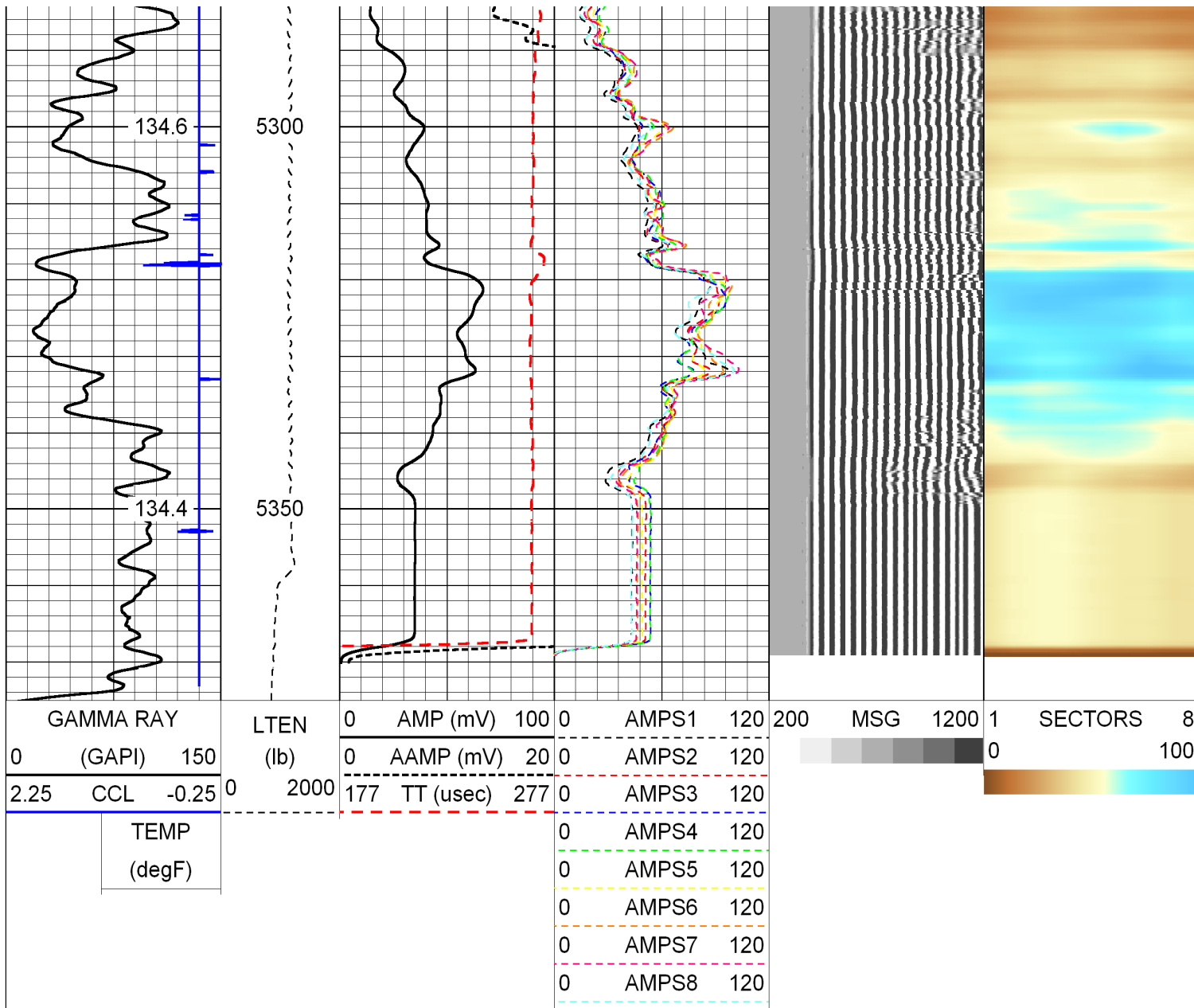
REPEAT PASS

SCALE 1:240

Database File: cimarex_hammer_19_3.db
 Dataset Pathname: pass8
 Presentation Format: rchltemp
 Dataset Creation: Fri Jul 05 11:05:49 2013 by Log Halliburton Casedho
 Charted by: Depth in Feet scaled 1:240

GAMMA RAY			LTEN (lb)	0 AMP (mV) 100		0 AMPS1 120		MSG	200 1200		SECTORS	8
0	(GAPI)	150		0	AAMP (mV) 20	0	AMPS2 120			0		
2.25	CCL	-0.25	0 2000	177	TT (usec) 277	0	AMPS3 120					
TEMP (degF)						0	AMPS4 120					
						0	AMPS5 120					
						0	AMPS6 120					
						0	AMPS7 120					
						0	AMPS8 120					





REPEAT PASS

HALLIBURTON

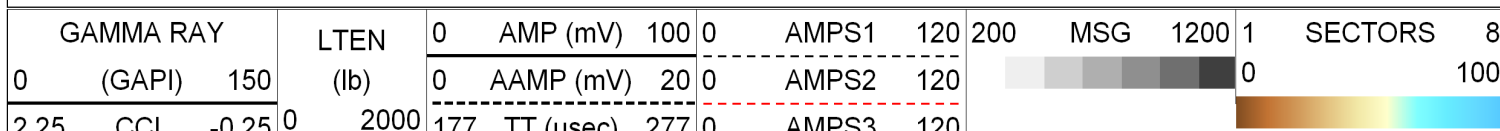
SCALE 1:240

FREE PIPE PASS

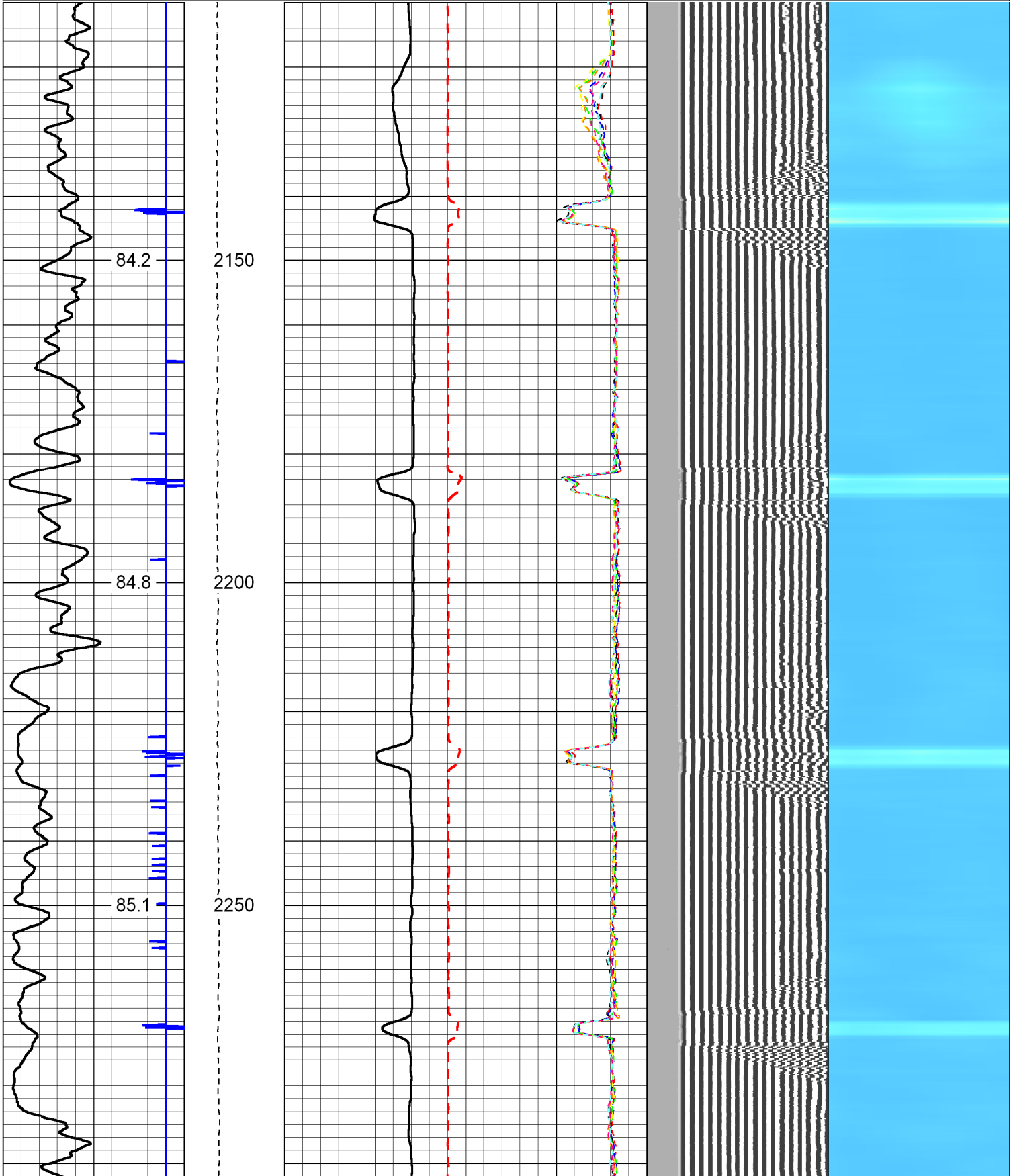
HALLIBURTON

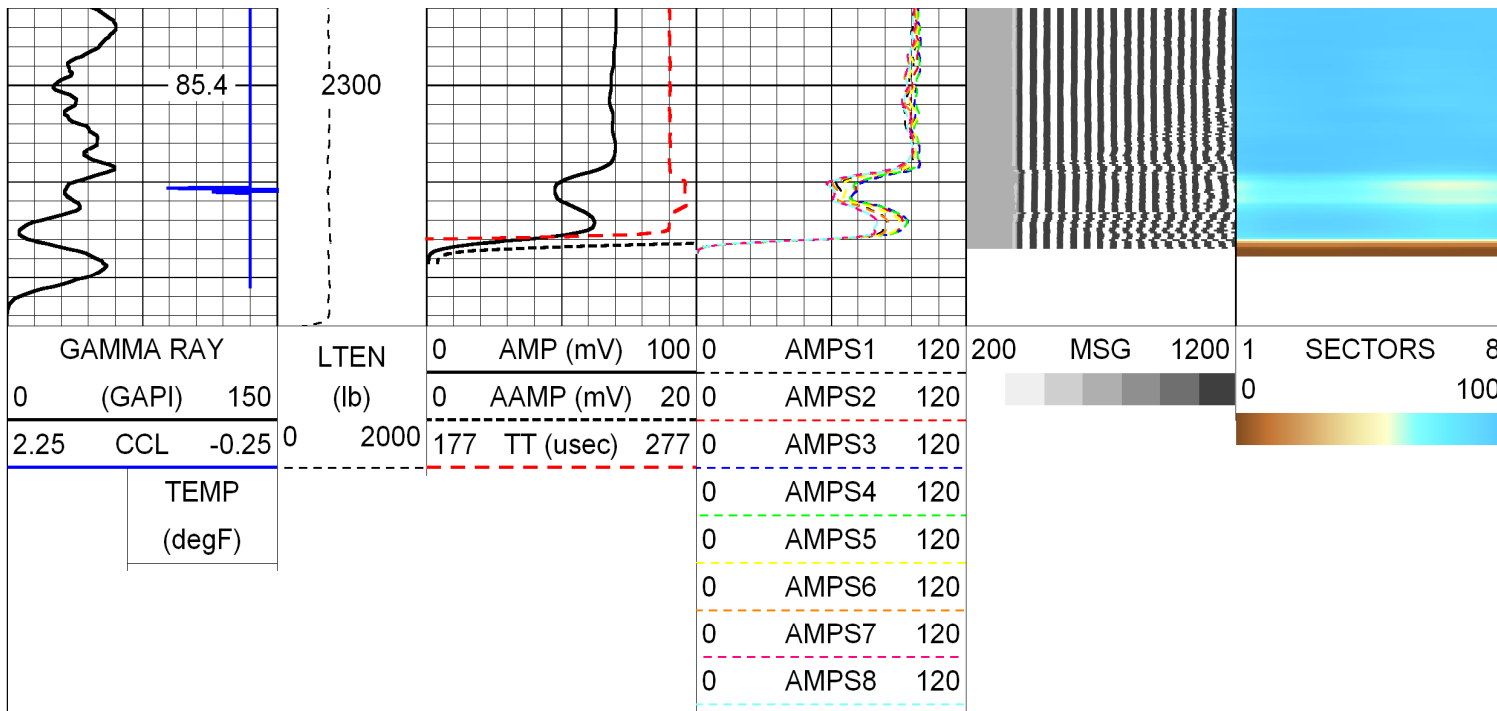
SCALE 1:240

Database File: cimarex_hammer_19_3.db
Dataset Pathname: pass5
Presentation Format: rcbltemp
Dataset Creation: Fri Jul 05 10:44:32 2013 by Log Halliburton Casedho
Charted by: Depth in Feet scaled 1:240



2.20	0.02	0.20	1.1	1.1 (0.00)	2.1	0	7.00	0.0	120
TEMP						0	AMPS4	120	
(degF)						0	AMPS5	120	
						0	AMPS6	120	
						0	AMPS7	120	
						0	AMPS8	120	





FREE PIPE PASS

HALLIBURTON

SCALE 1:240

Log Variables

Database: C:\Warrior\Data\cimarex_hammer_19_3.db
Dataset: field/well/run1/pass9

Top - Bottom

PPT usec 0	CASEWGHT lb/ft 15.5	MAXAMPL mV 72	MINAMPL mV 0.5	MINATTN db/ft 0.8	CASEOD in 5.5	PERFS 0
TDEPTH ft 5689	BOTTEMP degF 100	BITSIZE in 7.875				

Calibration Report

Database File: cimarex_hammer_19_3.db
Dataset Pathname: pass9
Dataset Creation: Fri Jul 05 11:13:45 2013 by Log Halliburton Casedho

Gamma Ray Calibration Report

Type / Serial: Probe275dig / 060633

SHOP CALIBRATION

Mon Feb 06 17:04:00 2012

	Counts/Sec.	Gain	Offset	Jig	Units
Background	39.7				cps
Calibrator	244.1				cps
		1.2967			GAPI/cps

PRIMARY VERIFICATION

Mon Feb 06 17:07:17 2012

Background	52.3		cps
Calibrator	314.3		cps
Difference		262.0	GAPI

BEFORE SURVEY VERIFICATION

Background	0.0		cps
Calibrator	0.0		cps
Difference		0.0	GAPI

AFTER SURVEY VERIFICATION

Background	0.0		cps
Calibrator	0.0		cps
Difference		0.0	GAPI

Segmented Cement Bond Log Calibration Report

Serial Number:	080454	
Tool Model:	Probe	
Calibration Casing Diameter:	5.500	in
Calibration Depth:	2170.422	ft

Master Calibration, performed Fri Jul 05 10:43:18 2013:

	Raw (v)		Calibrated (mv)		Results	
	Zero	Cal	Zero	Cal	Gain	Offset
3'	-0.003	0.560	0.500	71.921	126.921	0.830
CAL	0.678	0.678				
5'	0.004	0.566	0.500	71.921	126.973	0.007
SUM						
S1	0.001	0.564	0.000	100.000	177.500	-0.119
S2	-0.004	0.631	0.000	100.000	157.678	0.554
S3	-0.003	0.594	0.000	100.000	167.512	0.501
S4	-0.005	0.534	0.000	100.000	185.667	0.873
S5	0.000	0.525	0.000	100.000	190.622	-0.084
S6	-0.002	0.551	0.000	100.000	180.699	0.357
S7	-0.004	0.576	0.000	100.000	172.420	0.739
S8	-0.000	0.499	0.000	100.000	200.411	0.007

Internal Reference Calibration, performed Wed Dec 31 18:00:00 1969:

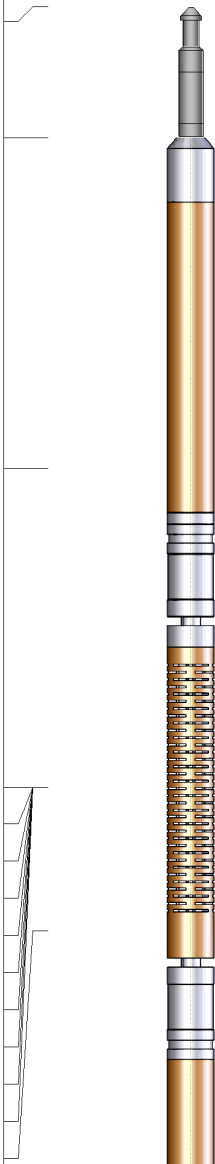
	Raw (v)		Calibrated (v)		Results	
	Zero	Cal	Zero	Cal	Gain	Offset
CAL	0.000	0.000	0.678	0.678	1.000	0.000

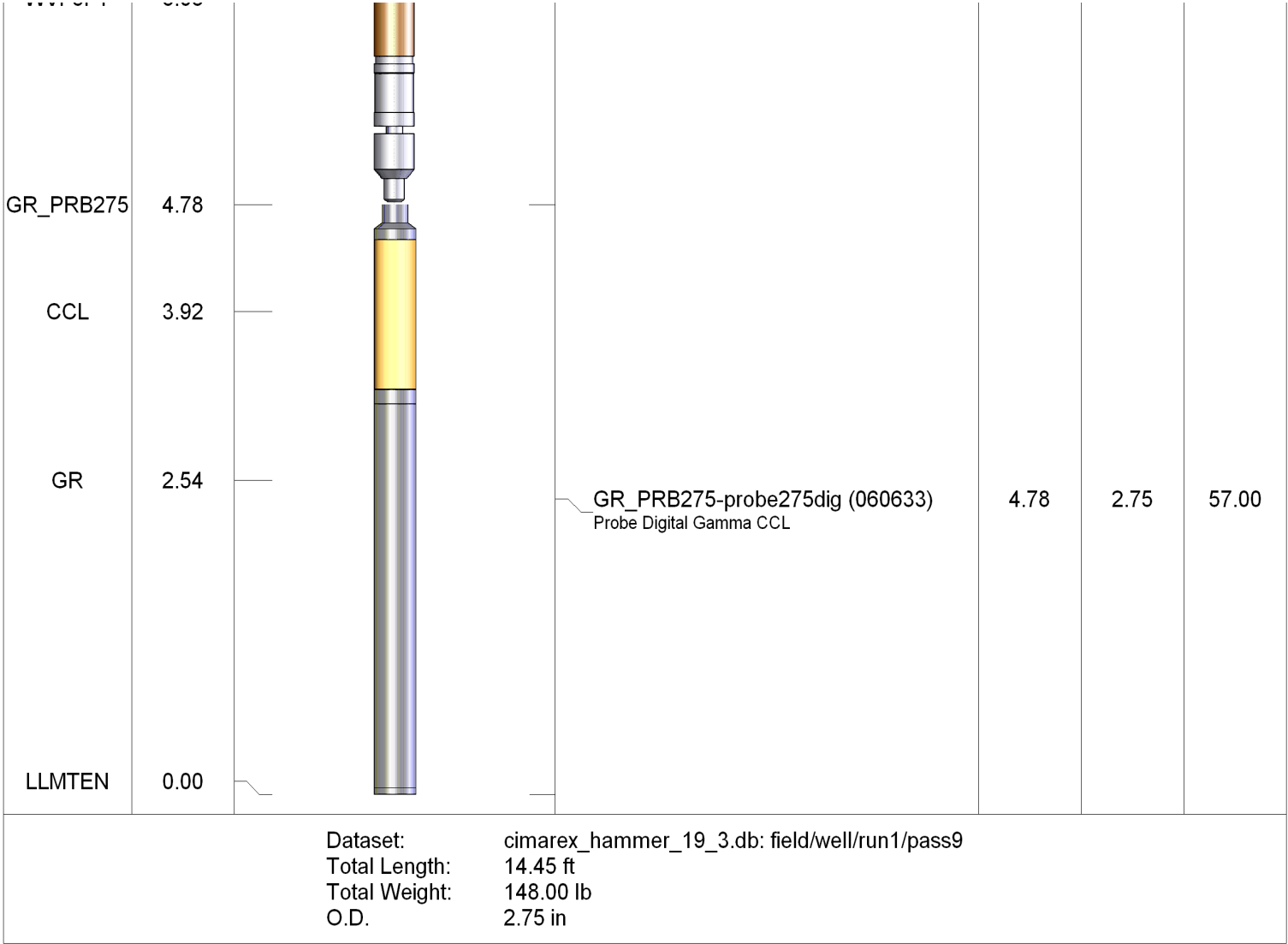
Air Zero Calibration, performed Wed Dec 31 18:00:00 1969:

	Raw (v)	Calibrated (v)	Results
	Zero	Zero	Offset
3'	0.000	0.000	0.000
5'	0.000	0.000	0.000
SUM			

S1	0.000	0.000	0.000
S2	0.000	0.000	0.000
S3	0.000	0.000	0.000
S4	0.000	0.000	0.000
S5	0.000	0.000	0.000
S6	0.000	0.000	0.000
S7	0.000	0.000	0.000
S8	0.000	0.000	0.000

Temperature Calibration Report				
Serial Number:	080454			
Tool Model:	Probe			
Performed:	Fri Feb 17 14:23:20 2012			
	Reference	Reading		
Low Reference:	0.00 degF	0.00	degF	
High Reference:	1.00 degF	1.00	degF	
Gain:	1.00			
Offset:	-16.00			
Delta Spacing	1			

Sensor	Offset (ft)	Schematic	Description	Len (ft)	OD (in)	Wt (lb)
STNDCH	14.45		STND_CH 1.4375 IN CABLE HEAD	0.92	1.44	1.00
RBT_PRB275	13.53					
TEMP	11.24					
WV3FT	9.03		RBT_PRB275-Probe (080454) Probe Radii Bond Tool with Digital Telemetry	8.75	2.75	90.00
WVFCAL	9.03					
WVFS1	9.03					
WVFS2	9.03					
WVFS3	9.03					
WVFS4	9.03					
WVFS5	9.03					
WVFS6	9.03					
WVFS7	9.03					
WVFS8	9.03					
WV5FT	8.03					



Company	CIMAREX ENERGY			
Well	HAMMER 19-3			
Field	WILDCAT			
County	HASKELL	State	KANSAS	
HALLIBURTON		RADIAL CEMENT BOND LOG		
		SCALE 1:240		