

HALLIBURTON				CEMENT BOND LOG				SCALE 1:240			
Company EAST CHEYENNE GAS Well ECGS 6-13 WP-D007-2 Field WEST PEETZ County LOGAN State CO				Company EAST CHEYENNE GAS STORAGE, LLC Well ECGS 6-13 WP-D007-2 Field WEST PEETZ County LOGAN State CO				Other Services			
API No.: 05-075-09411-00 Location: SURFACE HOLE LOCATION: 263' FNL & 2275' FWL				Serv #: 903182642							
Permanent Datum				G.L. Elevation 4550 ft				Elevation			
Log Measured From				K.B. , 14 Ft. above perm. datum				K.B. 4,564 ft			
Drilling Measured From				K.B.				D.F. 4,564 ft			
				G.L.				4,550 ft			
Date @ Time Logged				12-APR-2016 @ 15:20				Type Fluid in Hole			
Run No.				ONE				Density of Fluid			
Depth - Driller				5,265 ft				Fluid Level			
Depth - Logger				5,146 ft				Cement Top Est. Logged			
Bottom - Logged Interval				5,142 ft				Equipment / Location			
Top - Log Interval				2700 ft				Recorded by			
Max. Recorded Temp.				N/A				Witnessed by			
CEMENTING DATA				Surface				Protection			
				String				String			
Date / Time Cemented								Production			
Primary / Squeeze								String			
Expected								Liner			
Compressive Strength				psi@ hrs				psi@ hrs			
Cement Volume				psi@ hrs				psi@ hrs			
Cement Type / Weight				/				/			
Formulation											
Mud Type / Mud Wgt.				/				/			
Run Number				Borehole Record				Casing & Tubing Record			
				Bit				Weight			
				From				From			
				To				To			
								Size			
								9.625 in			
								36 lb/ft			
								7.00 in			
								26 lb/ft			
								SURFACE			
								5,264 ft			

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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 J-W WIRELINE CEMENT BOND LOG DATED OCTOBER 9, 2012
LOGGING INTERVALS PER CUSTOMER REQUEST
SQUEEZE AT 3040'
TOP OF CEMENT ON UPPER MOST SQUEEZE AT 2900'

HALLIBURTON CREW: J. WILKERSON, J. ADAMS
THANK YOU FOR CHOOSING HALLIBURTON ENERGY SERVICES, FT. LUPTON, CO

Service Ticket No.		901263840		API No.		05-075-09411-0000		PGM Ver		WARRIOR 8	
The Well Name, Location, Borehole Description, and / or Cementing Data Furnished by Client											
EQUIPMENT DATA											
CBL			GR/CCL								
Run No.	ALL		Run No.	ALL		Run No.			Run No.		
Serial No.	001		Serial No.	275		Serial No.			Serial No.		
Model No.	PROBEDIG_001		Model No.	GR-PROBE		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				

SIX	5146	4900	0 PSI	30 FPM	MAIN PASS 1 (BTM SQUEEZE SECTION)			
EIGHT	3300	2700	0 PSI	30 PSI	MAIN PASS 2 (TOP SQUEEZE SECTION)			
	AMP		TT		GR		MSG	
Pass	Scale		Scale		Scale		Scale	
No.	L	R	L	R	L	R	L	L
ALL PASSES	0	100	192	292	0	200	200	1200
	0	20						
DIRECTIONAL INFORMATION								
Maximum Deviation		N/A	deg. @	N/A	KOP	N/A		

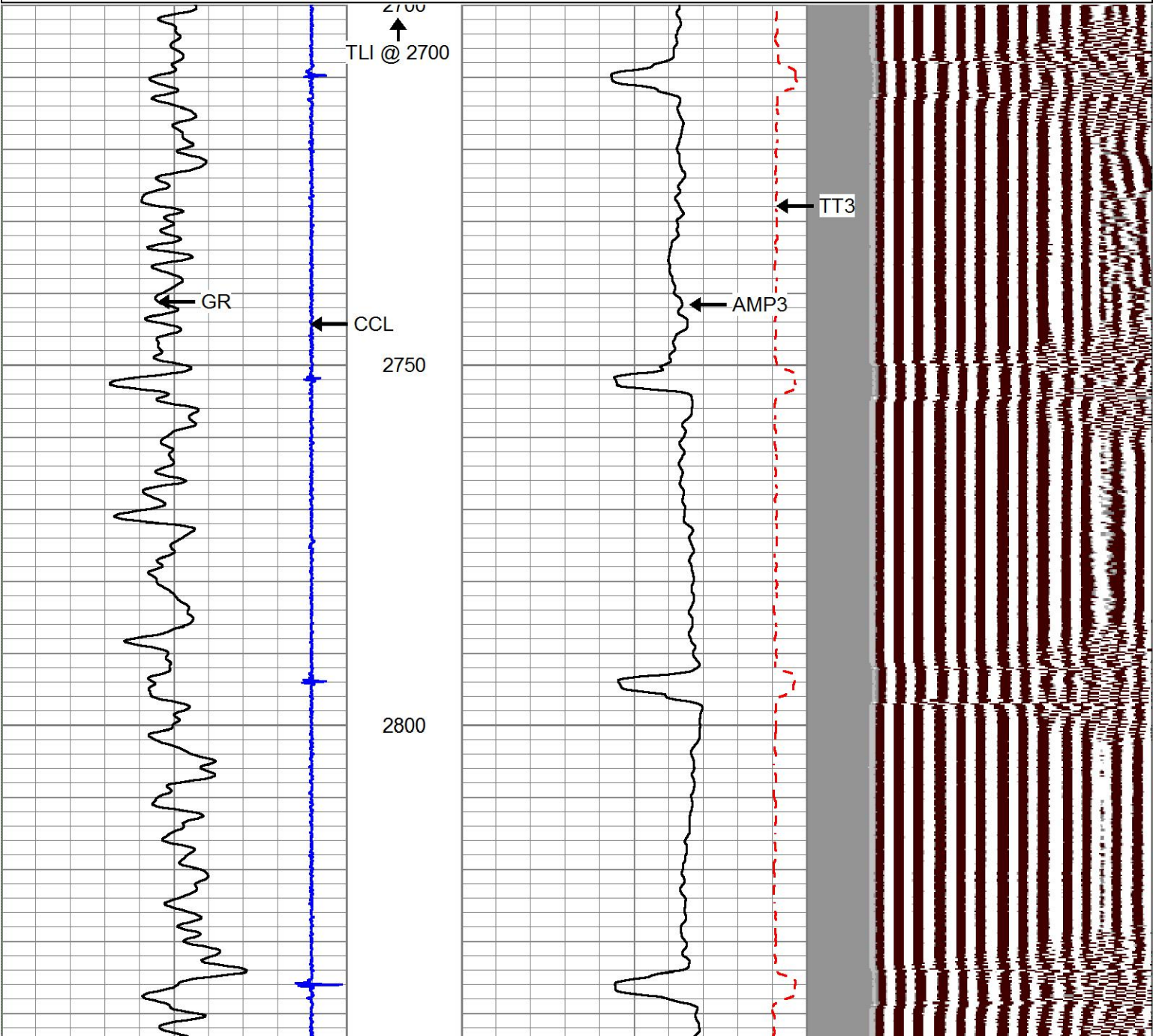
MAIN PASS 2 (TOP SQUEEZE SECTION)

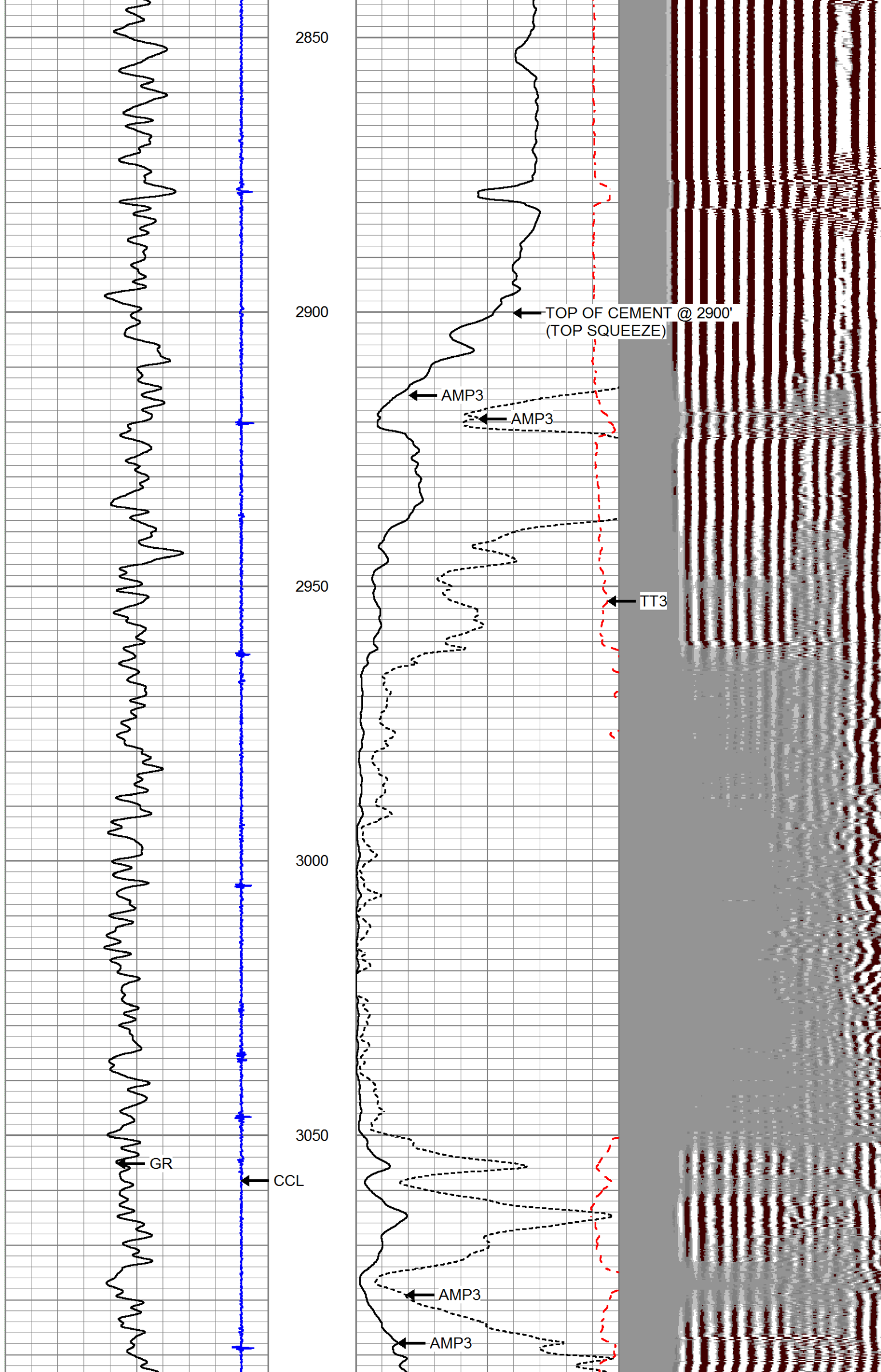
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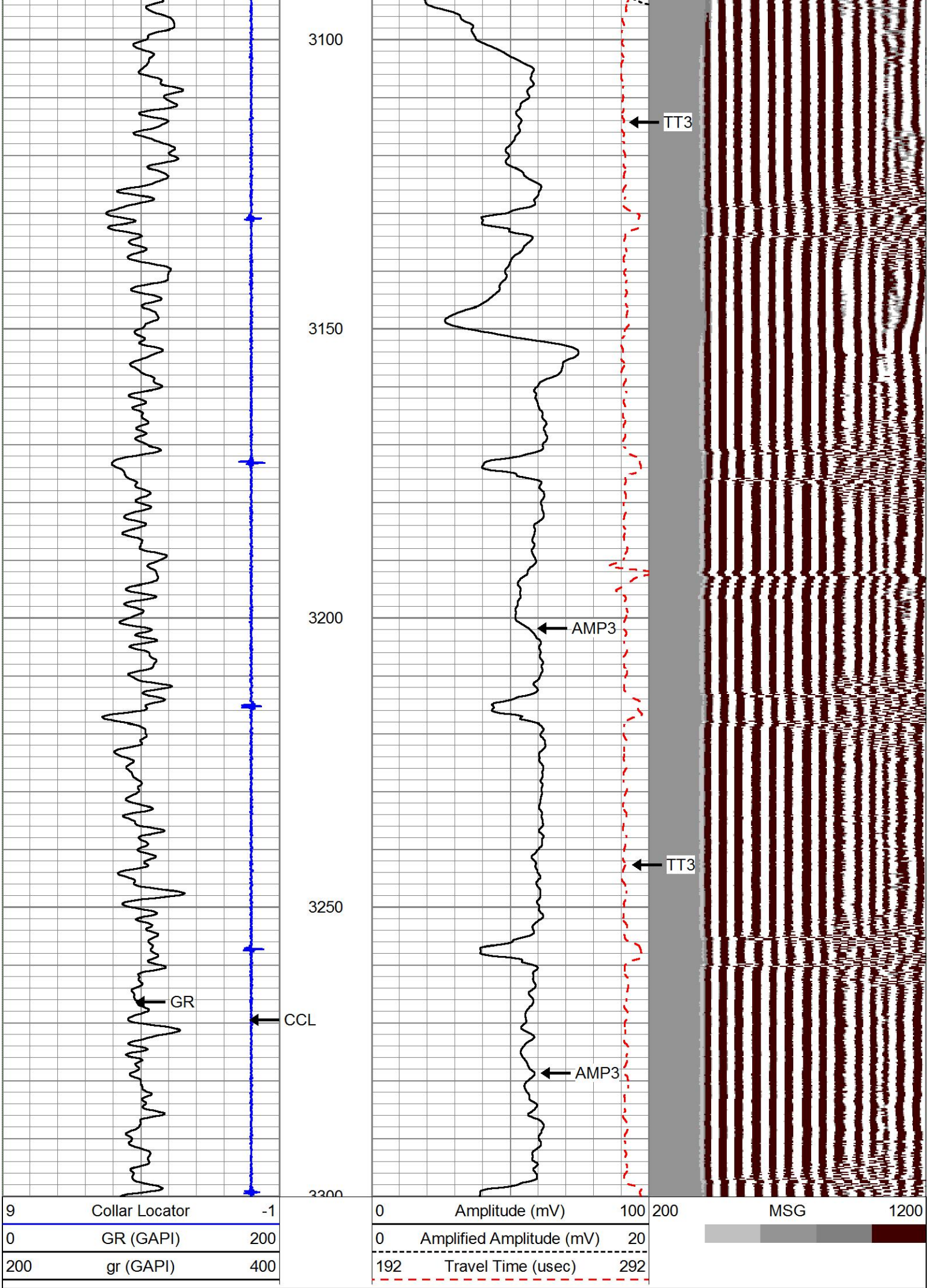
SCALE 1:240

Database File ecgs_6_13_wdp007_2_cbl.db
Dataset Pathname pass8
Presentation Format cbl_rr
Dataset Creation Tue Apr 12 15:28:36 2016
Charted by Depth in Feet scaled 1:240

9	Collar Locator	-1	0	Amplitude (mV)	100	200	MSG	1200
0	GR (GAPI)	200	0	Amplified Amplitude (mV)	20			
200	gr (GAPI)	400	192	Travel Time (usec)	292			







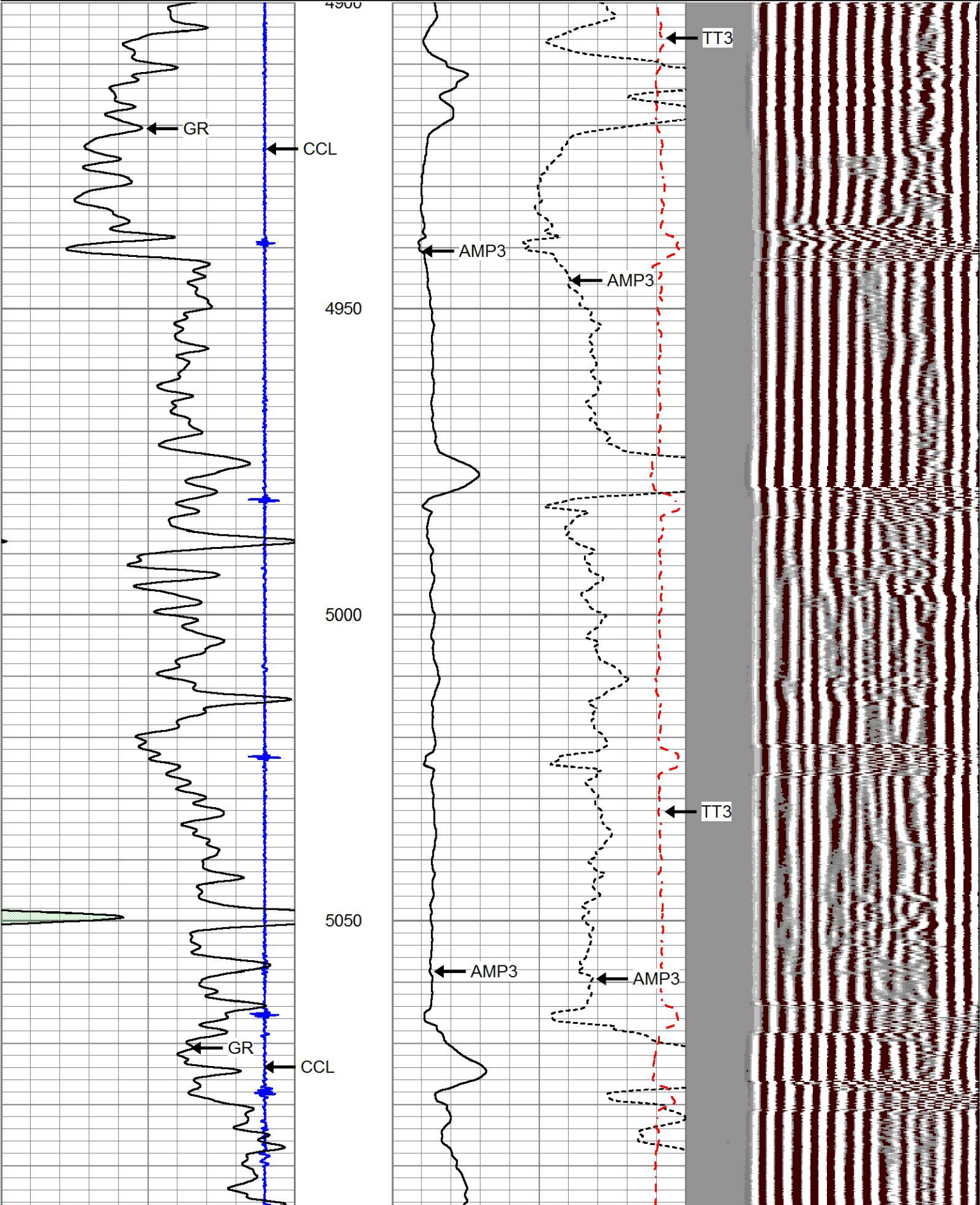
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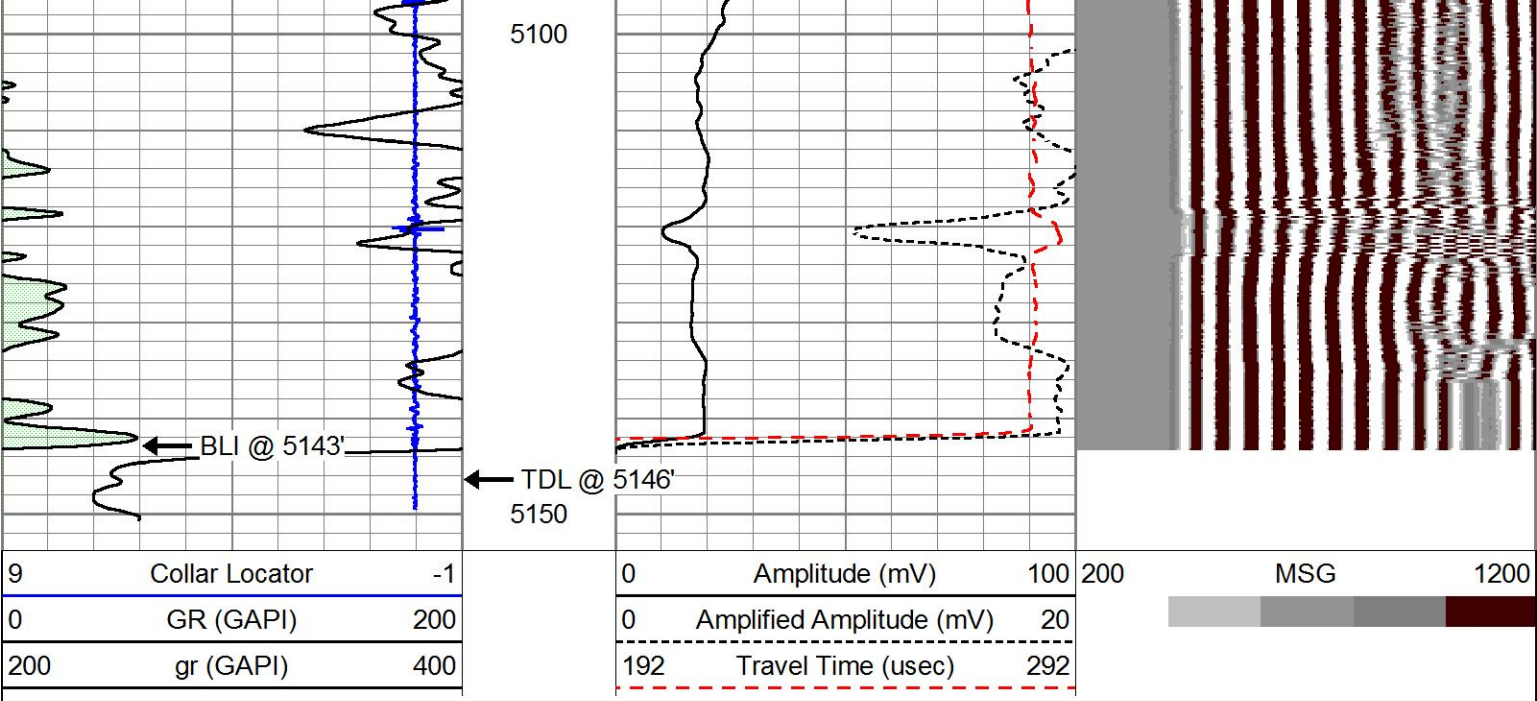
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SCALE 1:240

Database File ecgs_6_13_wdp007_2_cbl.db
Dataset Pathname pass6
Presentation Format cbl_rr
Dataset Creation Tue Apr 12 15:18:01 2016
Charted by Depth in Feet scaled 1:240

9	Collar Locator	-1	0	Amplitude (mV)	100	200	MSG	1200
0	GR (GAPI)	200	0	Amplified Amplitude (mV)	20			
200	gr (GAPI)	400	192	Travel Time (usec)	292			

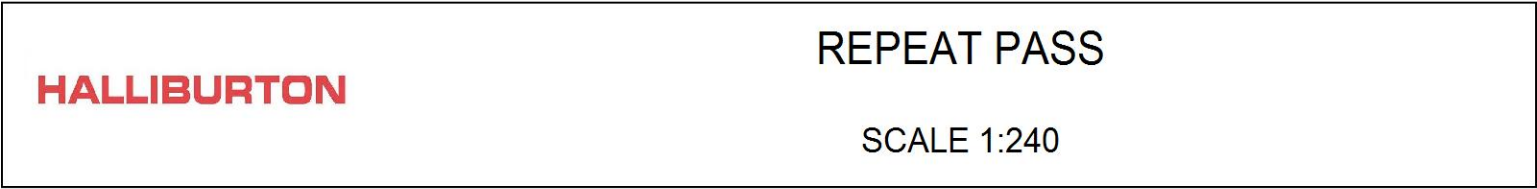




MAIN PASS 1 (BTM SQUEEZE SECTION)

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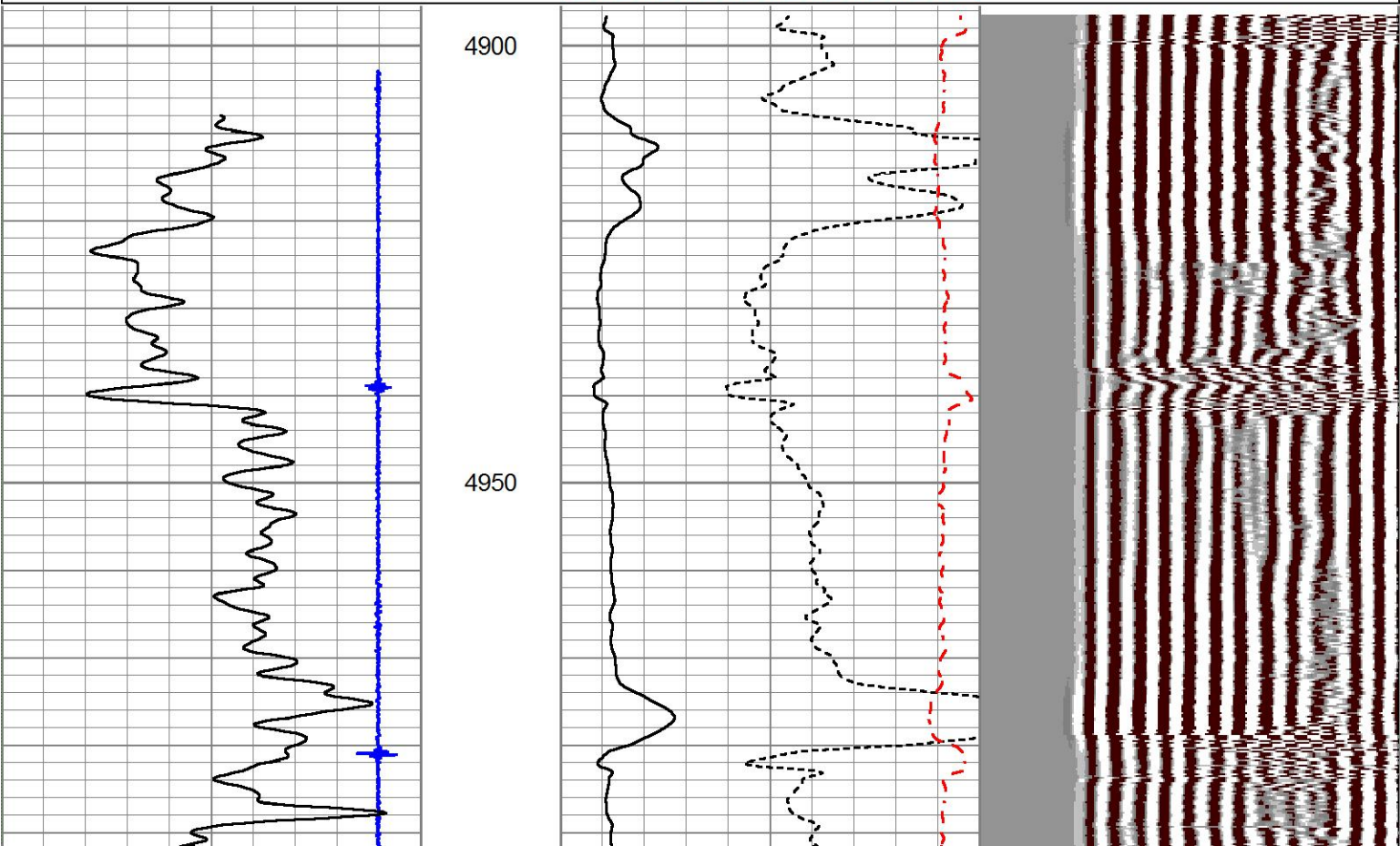
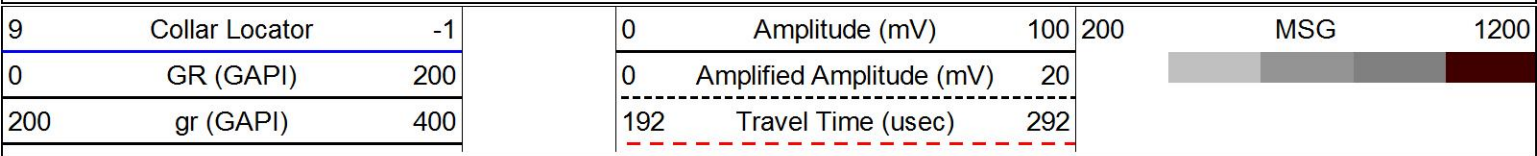
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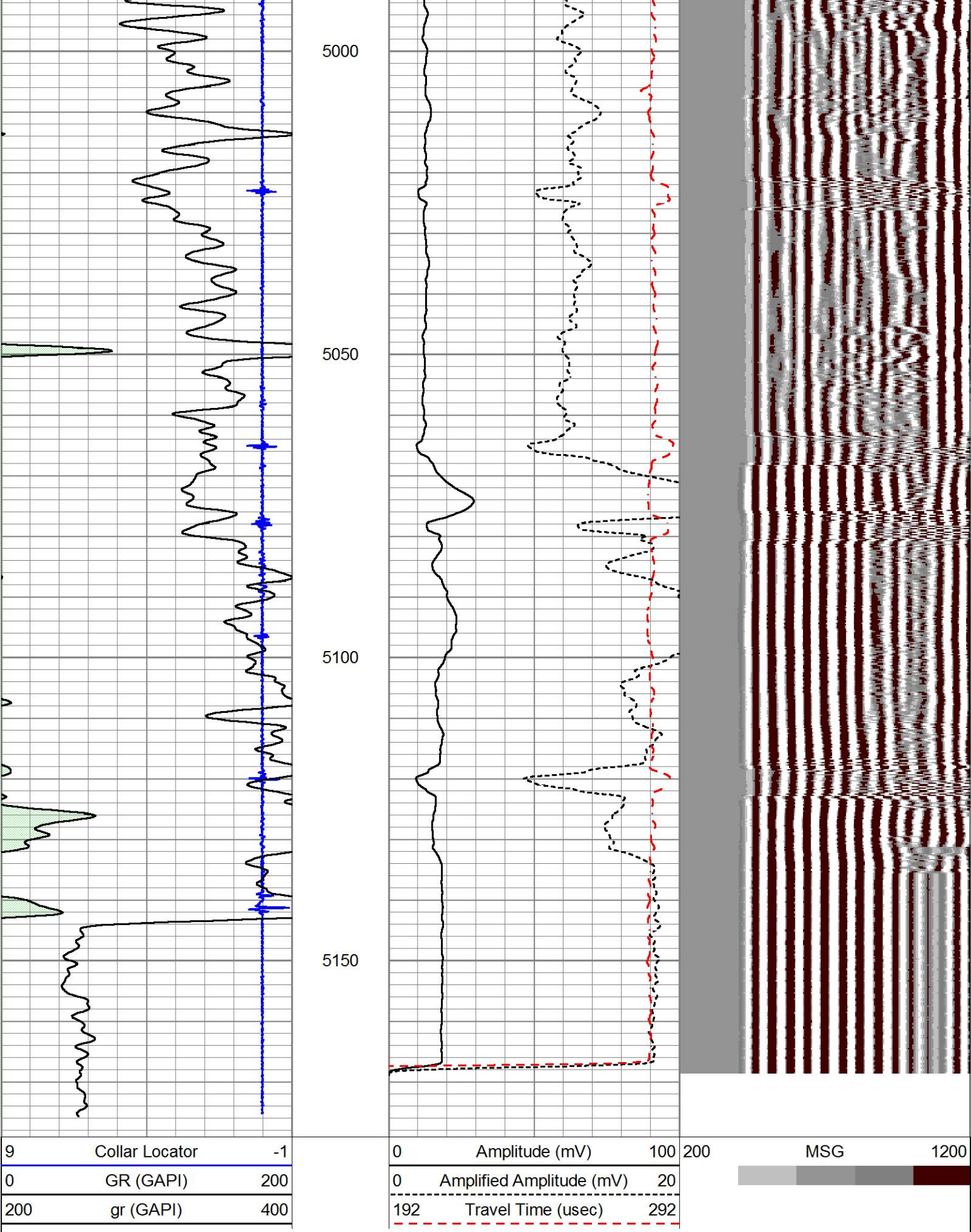


REPEAT PASS

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SCALE 1:240





REPEAT PASS

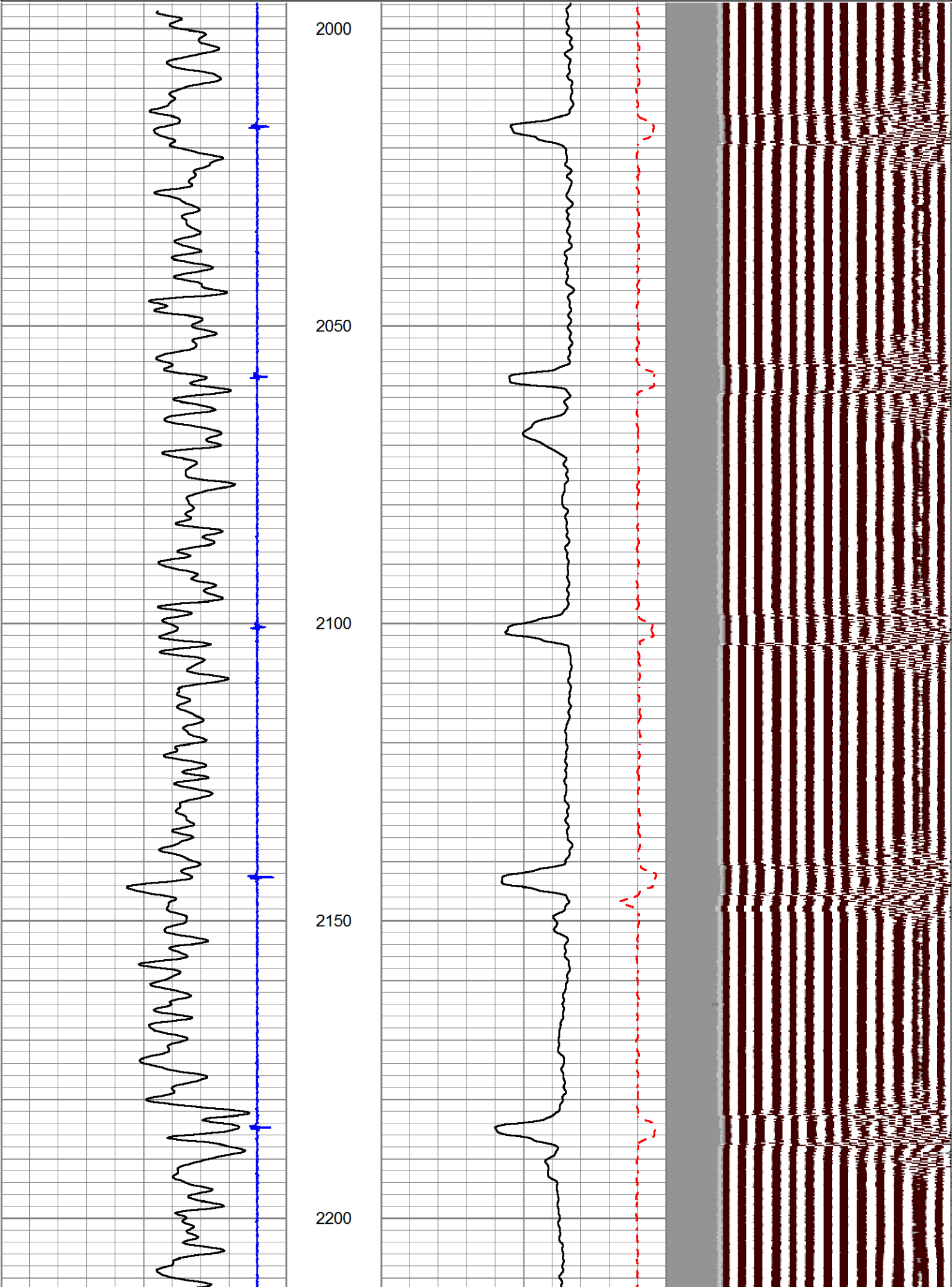
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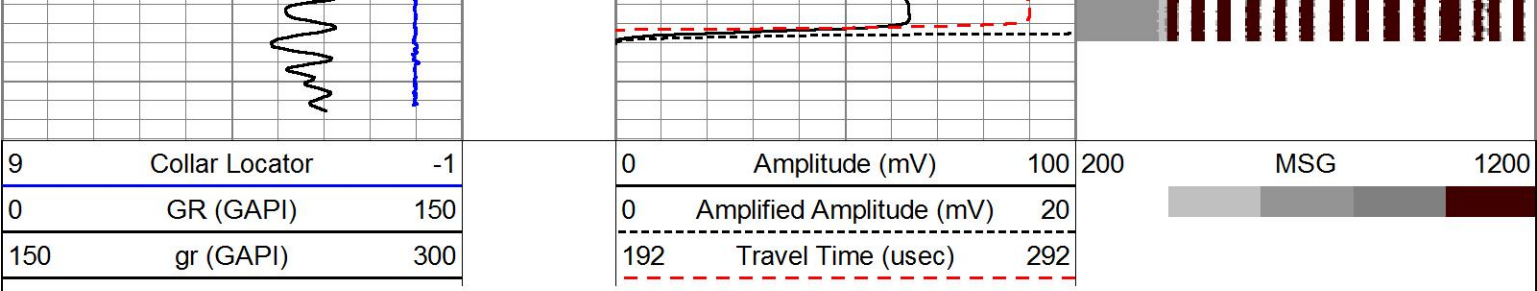
FREE PIPE PASS

SCALE 1:240

Database File	ecgs_6_13_wdp007_2_cbl.db
Dataset Pathname	pass3
Presentation Format	cbl_rr
Dataset Creation	Tue Apr 12 14:47:11 2016
Charted by	Depth in Feet scaled 1:240

9	Collar Locator	-1	0	Amplitude (mV)	100	200	MSG	1200
0	GR (GAPI)	150	0	Amplified Amplitude (mV)	20			
150	gr (GAPI)	300	192	Travel Time (usec)	292			





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FREE PIPE PASS

SCALE 1:240

Log VariablesDatabaseD:\Warrior_data\ecgs_6_13_wdp007_2_cbl.dbDataset field\well\run1\pass8/_vars_

Top - Bottom							
PPT usec 282	CASEWGHT lb/ft 26	MAXAMPL mV 65	MINAMPL mV 0	MINATTN db/ft 0.8	SRFTEMP degF 65	MudWgt lb/gal 8.33	CASETHCK in 0
CASEOD in 7	PERFS 0	TDEPTH ft 5146	BOTTEMP degF 100	BITSIZE in 7.875			

Calibration Report			
Database File	ecgs_6_13_wdp007_2_cbl.db		
Dataset Pathname	pass8		
Dataset Creation	Tue Apr 12 15:28:36 2016		

Gamma Ray Calibration Report			
Serial Number:	275		
Tool Model:	Probe		
Performed:	Thu Aug 07 08:00:19 2008		
Calibrator Value:	100.0	GAPI	
Background Reading:	35.0	cps	
Calibrator Reading:	160.0	cps	
Sensitivity:	1.0000	GAPI/cps	

Segmented Cement Bond Log Calibration Report			
Serial Number:	ProbeDIG_001		
Tool Model:	Digital		
Calibration Casing Diameter:	5.500	in	
Calibration Depth:	2119.950	ft	

Master Calibration, performed Tue Apr 12 14:46:31 2016:						
	Raw (v)		Calibrated (mv)		Results	
	Zero	Cal	Zero	Cal	Gain	Offset
3'	0.002	0.790	0.000	65.000	82.520	-0.187
CAL						
5'	0.001	0.021	0.000	65.000	3188.503	-2.063
SUM						
S1						
S2						
S3						
S4						
S5						
S6						
S7						
S8						

Internal Reference Calibration, performed (Not Performed):						
	Raw (v)		Calibrated (v)		Results	
	Zero	Cal	Zero	Cal	Gain	Offset
	<hr/>	<hr/>	<hr/>	<hr/>	<hr/>	<hr/>
CAL						

Air Zero Calibration, performed (Not Performed):				
	Raw (v)		Calibrated (v)	Results
	Zero	Zero		Offset
	<hr/>	<hr/>		<hr/>
3'	0.000	0.000		0.000
5'	0.000	0.000		0.000
SUM				
S1				
S2				
S3				
S4				
S5				
S6				
S7				
S8				

Sensor	Offset (ft)	Schematic	Description	Length (ft)	O.D. (in)	Weight (lb)
			CENT-Probe_275 (00001) Inline Centralizer	2.83	5.00	15.00
			PRBDIGCBL-Digital (ProbeDIG_001) Probe 3' and 5' with Digital Telemetry	9.17	2.75	100.00

