



**RADIAL BOND LOG
WITH GAMMA RAY**

Comp. FG HOLL COMPANY LLC
Well KRUCKENBERG #1-18
Field HEIZER WEST
Co. BARTON
State KANSAS

Company **FG HOLL COMPANY LLC**
Well **KRUCKENBERG #1-18**
Field **HEIZER WEST**
County **BARTON** State **KANSAS**

Location: API # : 15-009-26227-00-00
Permanent Datum SEC 18 TWP 19S RGE 14W
Log Measured From GROUND LEVEL Elevation 1908'
8' Above Perm. Datum
Drilling Measured From KELLY BUSHING
Elevation
K.B. 1916'
D.F. N/A
G.L. 1908'

Date of Service	08/21/2018	Other Services	GRN
Run Number	ONE		
Depth Driller or PBTD	3750'		
Depth Logger	3724'		
Bottom Log Interval	3718'		
Top Log Interval	2450'		
Open Hole Size	7.875"		
Type Fluid	WATER		
Fluid Level	FULL		
Fluid Density	N/A		
Max. Recorded Temperature	N/A		
Max. Wellhead Pressure	00 PSI		
Wellhead Connection	FLOWTEE		
Estimated Cement Top	2640'		
Unit Number	106		
Wireline Size	.288		
Location	HAYS KANSAS		
Recorded By	D.SCHMIDT		
Witnessed By	ROB LONG		
Tubing Record	Size	Wt/Ft	Top
Surface Casing	8.625"	23#	00'
Production Casing	5.5"	17#	00'
Liner Record			Bottom
			854'
			TD

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All interpretations are opinions based on inferences from electrical or other measurements and Pioneer Wireline Services, LLC cannot and does not guarantee the accuracy or correctness of any interpretation, and Pioneer Wireline Services, LLC will not be liable or responsible for any loss, costs, damages, or expenses incurred or sustained by anyone resulting from any interpretation made by any of our officers, agents or employees.

Comments

N/A DENOTES NOT AVAILABLE OR NON-APPLICABLE.

HEIZER,
WEST TO 70TH, SOUTH TO 30TH, 1/8 WEST,
SOUTH INTO

THANK YOU FOR USING PIONEER ENERGY SERVICES!

<p>Your Pioneer Energy Services Crew</p> <p>Engineer: D.SCHMIDT Operator: K.PFANNENSTIEL Operator: C.SCHULTZ Operator:</p>	<p>Tool Data - Services</p>	<p>Serial Number</p>
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Quantity	Offset (ft)	Submergence	Description	Length (ft)	O.D. (in)	Weight (lb)
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Sensor	Offset (ft)	Schematic	Description	Length (ft)	O.D. (in)	Weight (lb)	
			Cable Head-Titan_144 1 7/16" Titan Cable Head	1.03	1.44	2.00	
			Centralizer-275 Probe 2 3/4" Probe Adjustable Spring Centralizer	2.88	2.75	15.00	
TEMP	18.98						
WVFS8	16.69			PROBE-RBT-DIGITAL-RBL-DCT (PROBE-9.21-DCT) Probe 2 3/4" Radii Bond with Temp-Corrosion Package	2.75		105.00
WVFS7	16.69						
WVFS6	16.69						
WVFS5	16.69						
WVFS4	16.69						
WVFS3	16.69						
WVFS2	16.69						
WVFS1	16.69						
WVFCAL	16.69						
WVF3FT	16.69						
WVF5FT	15.69						
HEADVOLT	12.50			Centralizer-275 Probe 2 3/4" Probe Adjustable Spring Centralizer	2.88	2.75	15.00
CCL	8.72						
GR	7.42		PROBE-GR/CCL-DIGITAL-275 Probe GR-4.54 (Prob2.755-GR-60.00) Probe 2 3/4" Gamma Ray / CCL DIGITAL	4.54	2.75	60.00	
			Bullnose-PROBE Probe Go Pin Pressure Cap	0.33	1.38	1.00	
			NEU-PRNEU (ProbeNEU1)	4.75	1.88		
NEU	1.08						

Dataset: fghall_kruckenberg.db: field/well/scbl/pass6
 Total length: 25.61 ft
 Total weight: 198.00 lb
 O.D.: 2.75 in

Log Variables

DatabaseC:\ProgramData\Warrior\Data\fgHall_kruckenberg.db
 Dataset field/well/scbl/pass6/_vars_

Top - Bottom

BHTEMP_Src TEMP	BOREID in 7.875	BOTTEMP degF 100	CASEOD in 5.5	CASETHCK in 0.275	CASEWGHT lb/ft 17	MAXAMPL mV 71.9	MINAMPL mV 1
MINATTN db/ft 0.8	NPORSEL Limestone	NPORSHIFT 0	PERFS 0	PPT usec 0	SRFTEMP degF 65	TDEPTH ft 3750	

Variable Description

BHTEMP_Src : BHTEMP Input Source Selector
 BOREID : Borehole I.D.
 BOTTEMP : Bottom Hole Temperature
 CASEOD : Casing O.D.
 CASETHCK : Casing Thickness
 CASEWGHT : Casing Weight
 MAXAMPL : Maximum Amplitude
 MINAMPL : Minimum Amplitude

MINATTN : Minimum Attenuation
 NPORSEL : Neutron Porosity Curve Select
 NPORSHIFT : NPORSHIFT
 PERFS : Perforation Flag
 PPT : Predicted Pipe Time
 SRFTEMP : Surface Temperature
 TDEPTH : Total Depth

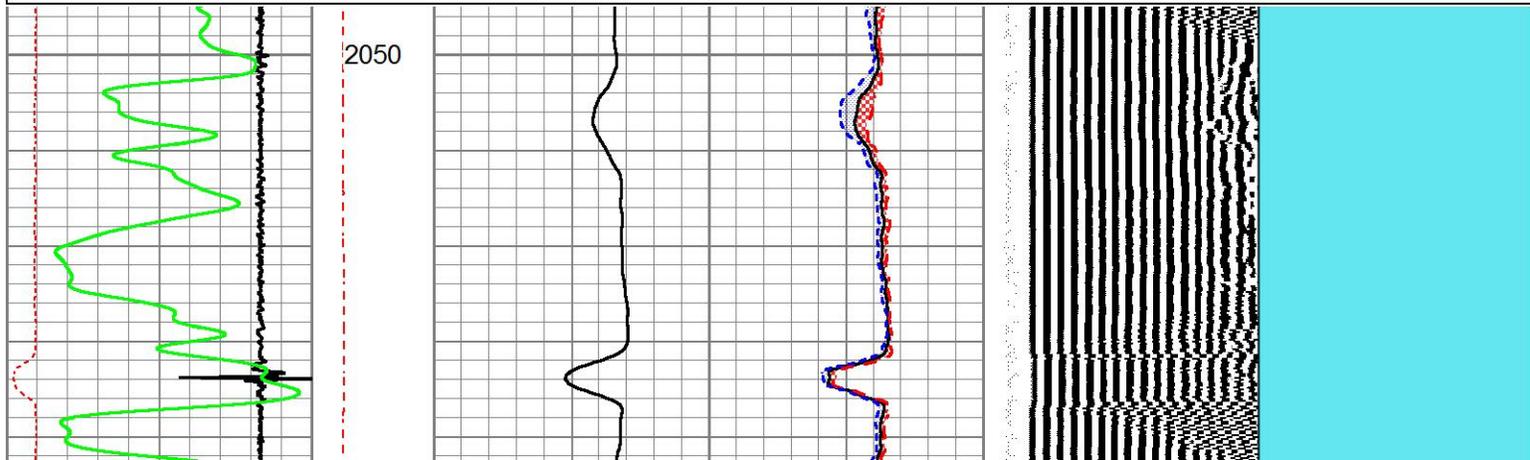


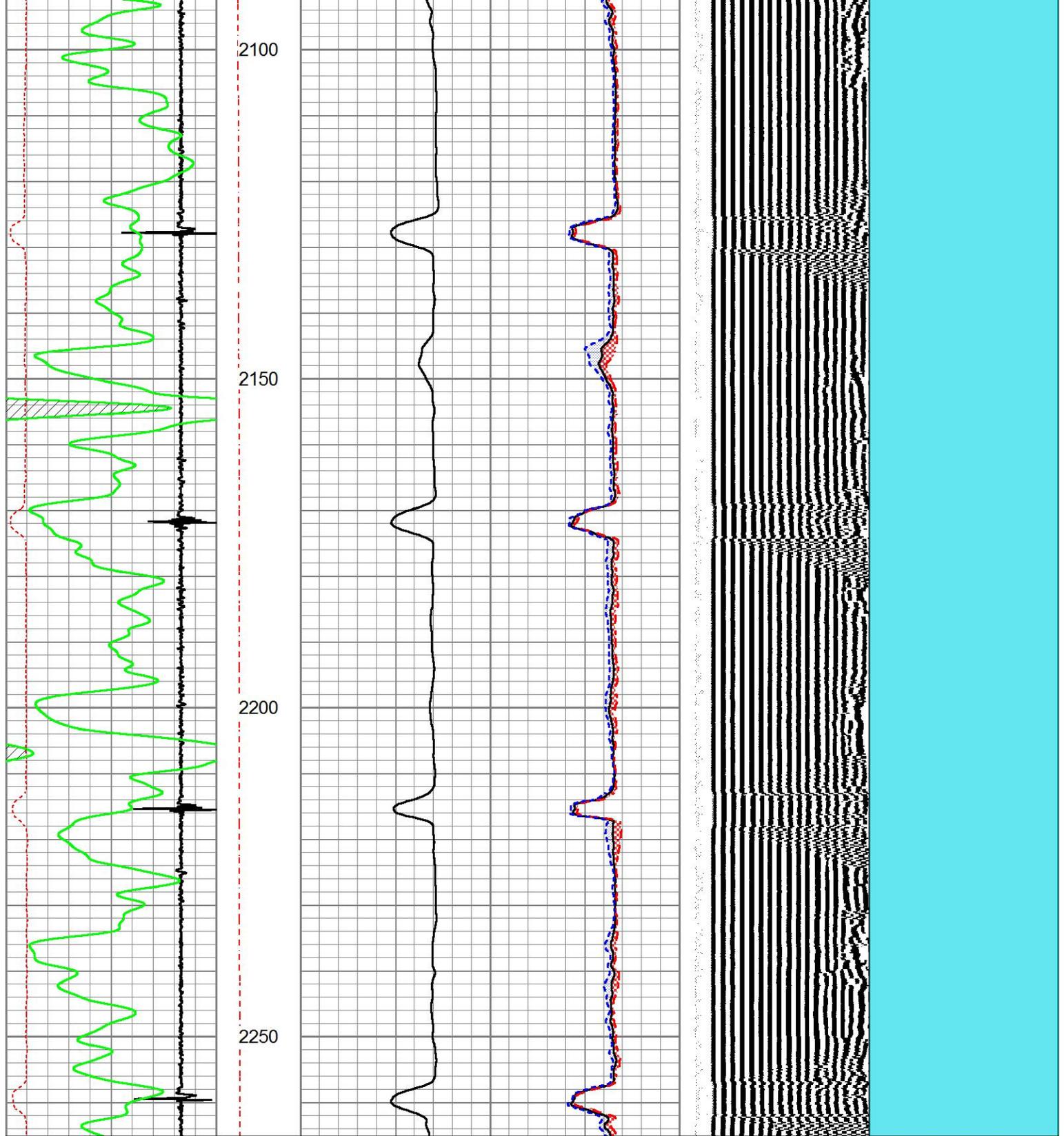
FREE PIPE SECTION

ZERO PSI APPLIED AT SURFACE

Database File fghall_kruckenberg.db
 Dataset Pathname scbl/pass7.1
 Presentation Format PINR_S~1
 Dataset Creation Tue Aug 21 10:58:11 2018
 Charted by Depth in Feet scaled 1:240

3' Travel Time 265 (usec) 165	Line Tension 0 (12000)	3' Amplitude (mV) 100	Sector Amplitude Average 0 150	200 VDL (usec) 1200	1	Sector Map	8
-5 Collar Locator 1		3' Amplified Amplitude X 5 (mV) 20	Sector Amplitude Maximum 0 150				
Gamma Ray 0 (GAPI) 150		Sector Amplitude Minimum 0 150					





3' Travel Time	
265 (usec)	165
-5 Collar Locator 1	
Gamma Ray	
0 (GAPI)	150

Line Tension
0 (12000)

3' Amplitude (mV) 100

3' Amplified Amplitude X 5 (mV) 20

Sector Amplitude Average 0 150

Sector Amplitude Maximum 0 150

Sector Amplitude Minimum 0 150

200 VDL (usec) 1200

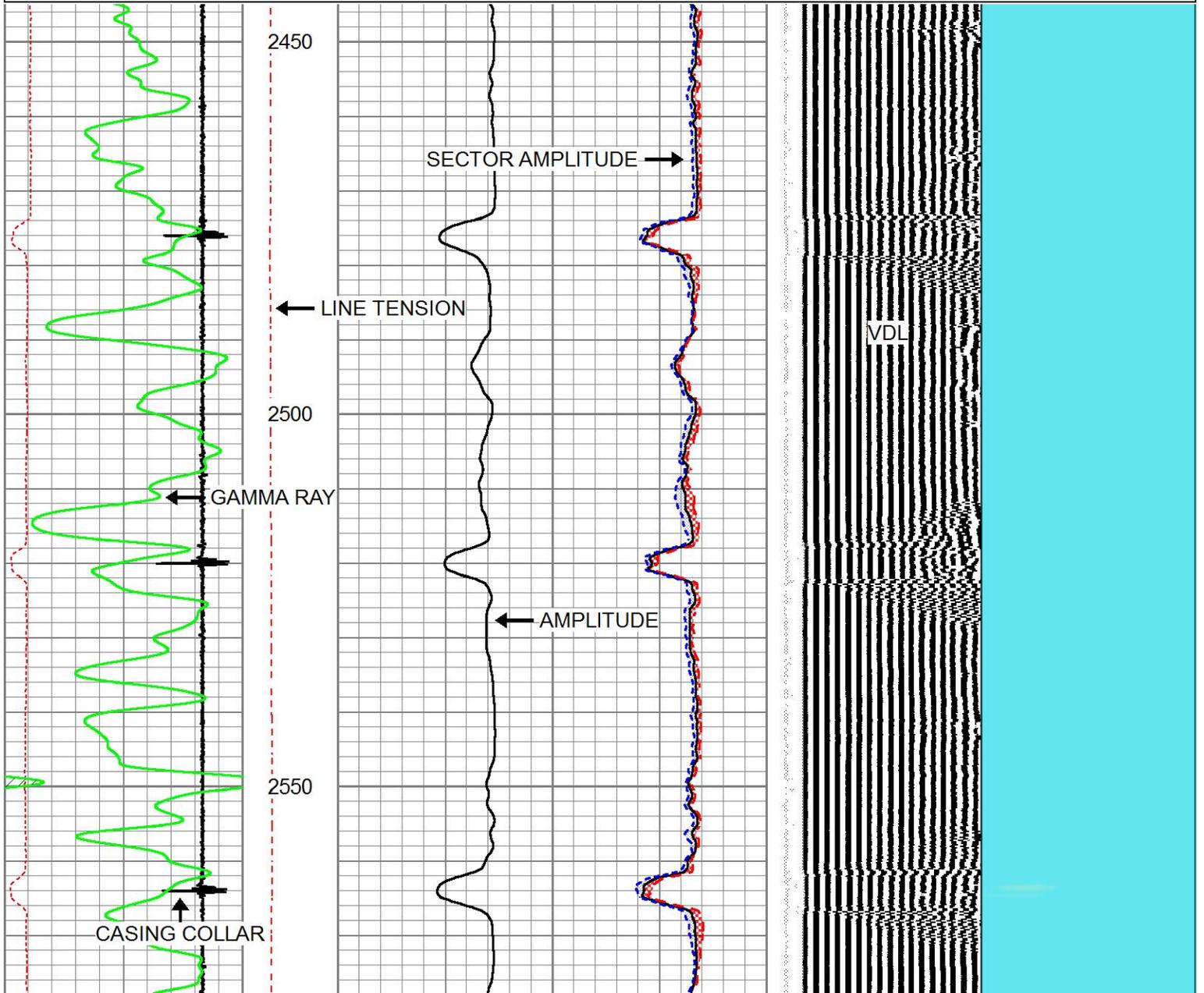
1 Sector Map 8

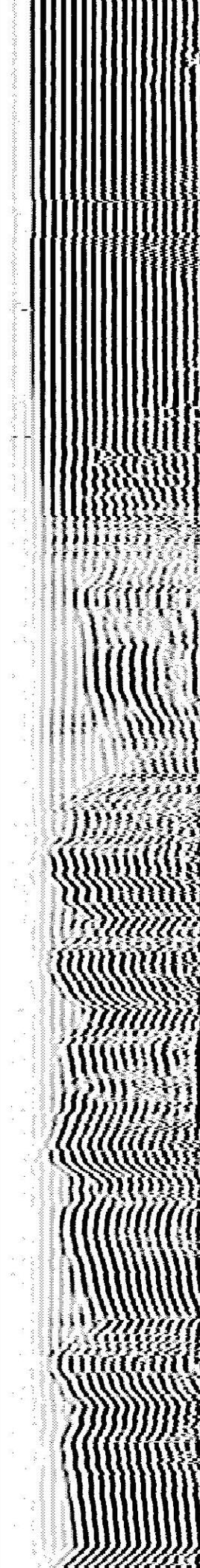
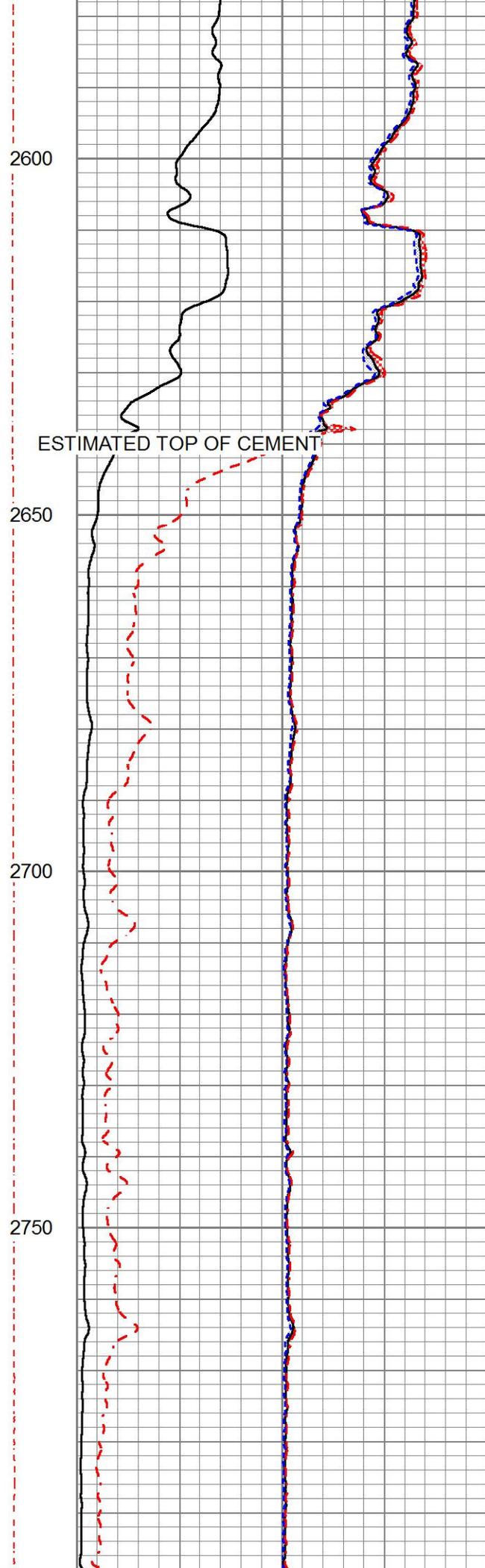
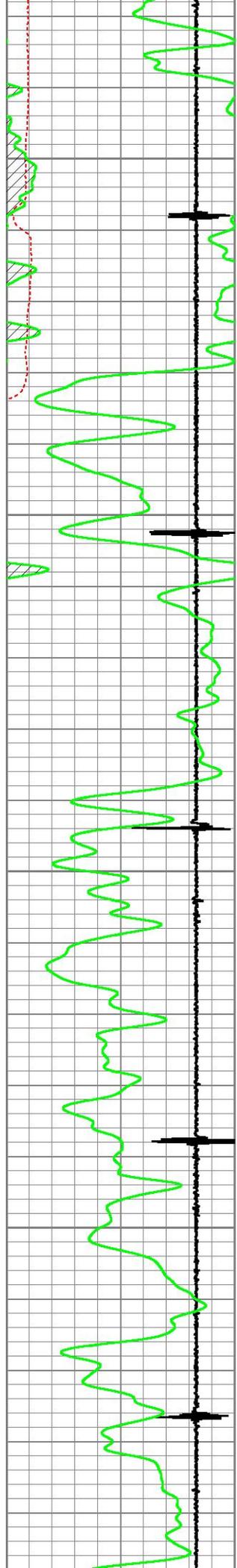


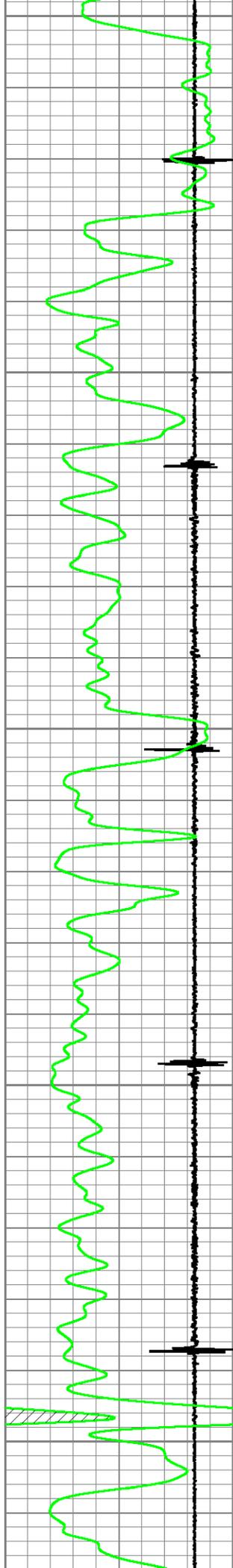
ZERO PSI APPLIED AT SURFACE

Database File fghall_kruckenberg.db
 Dataset Pathname scbl/pass6
 Presentation Format PINR_S~1
 Dataset Creation Tue Aug 21 10:02:32 2018
 Charted by Depth in Feet scaled 1:240

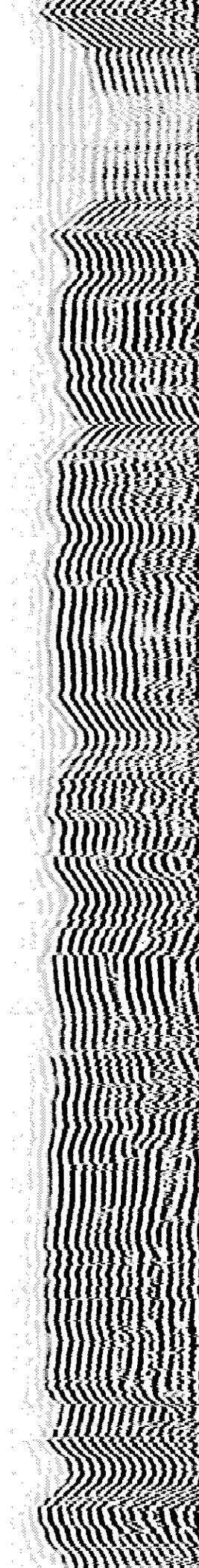
3' Travel Time 265 (usec) -5 Collar Locator Gamma Ray 0 (GAPI) 150	Line Tension 0 (12000)	3' Amplitude (mV) 0 100 3' Amplified Amplitude X 5 0 (mV) 20	Sector Amplitude Average 0 150 Sector Amplitude Maximum 0 150 Sector Amplitude Minimum 0 150	200 VDL (usec) 1200 1 Sector Map 8
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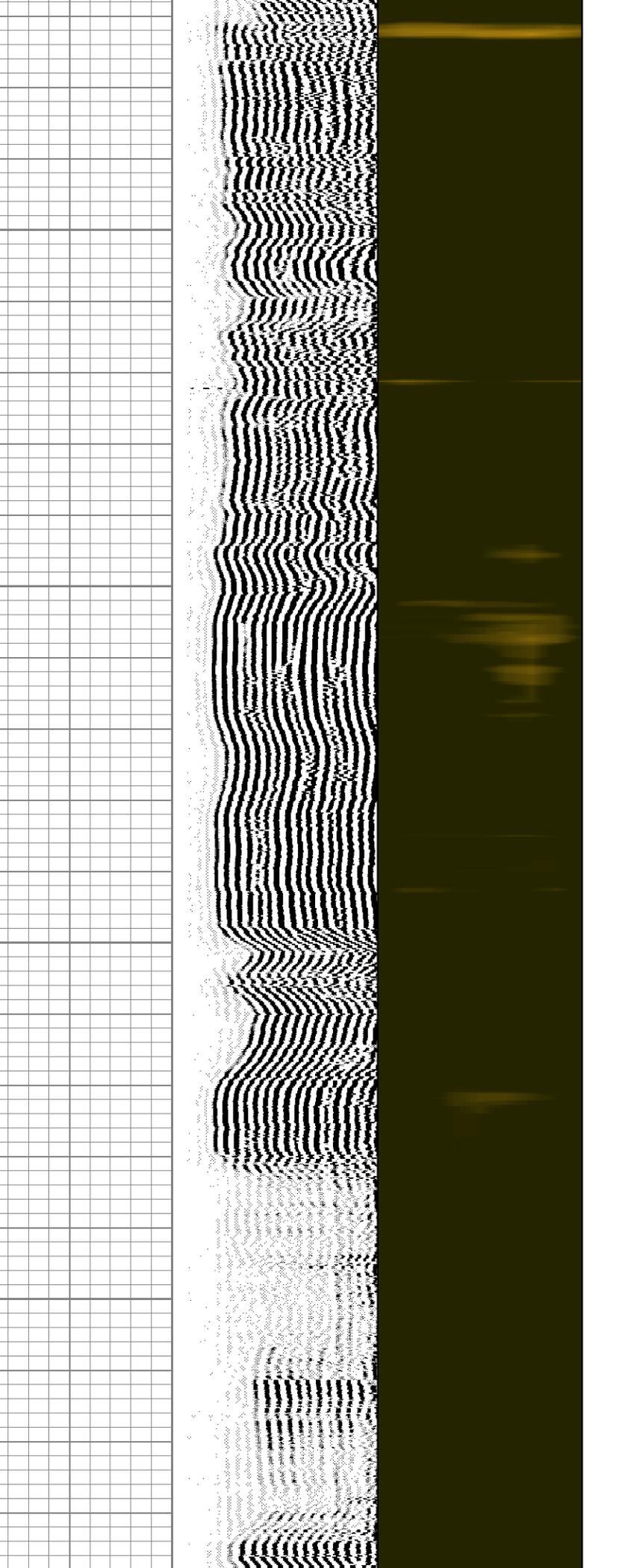
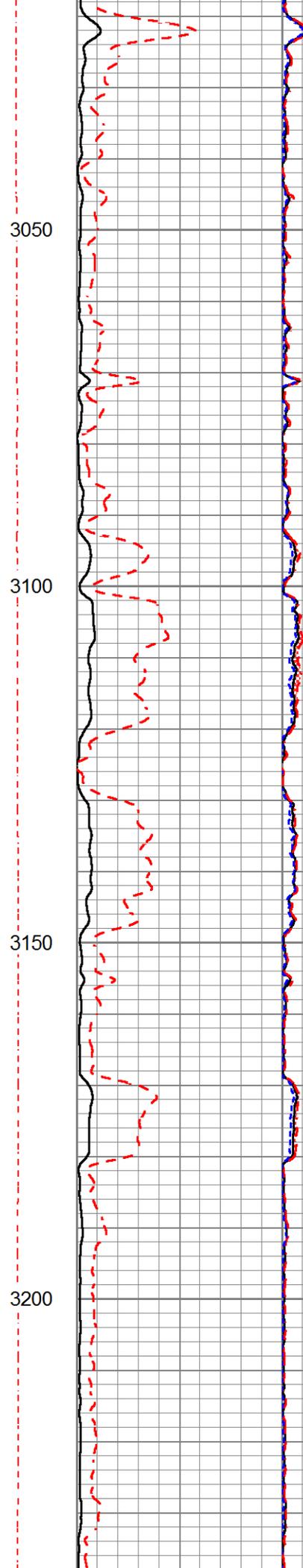
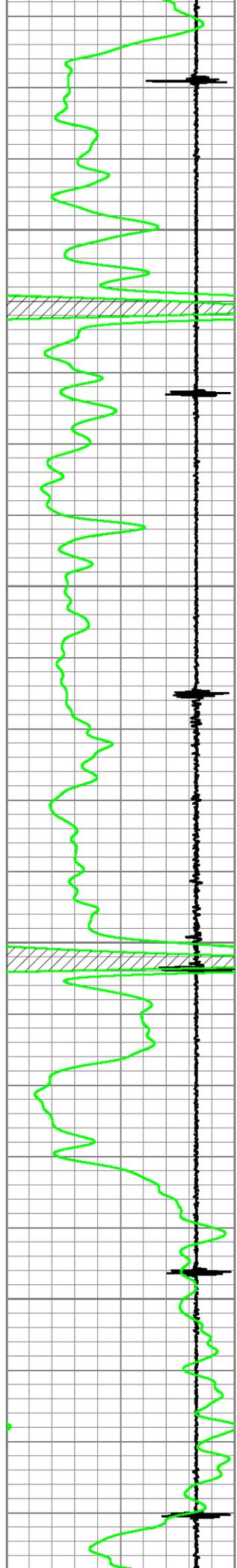


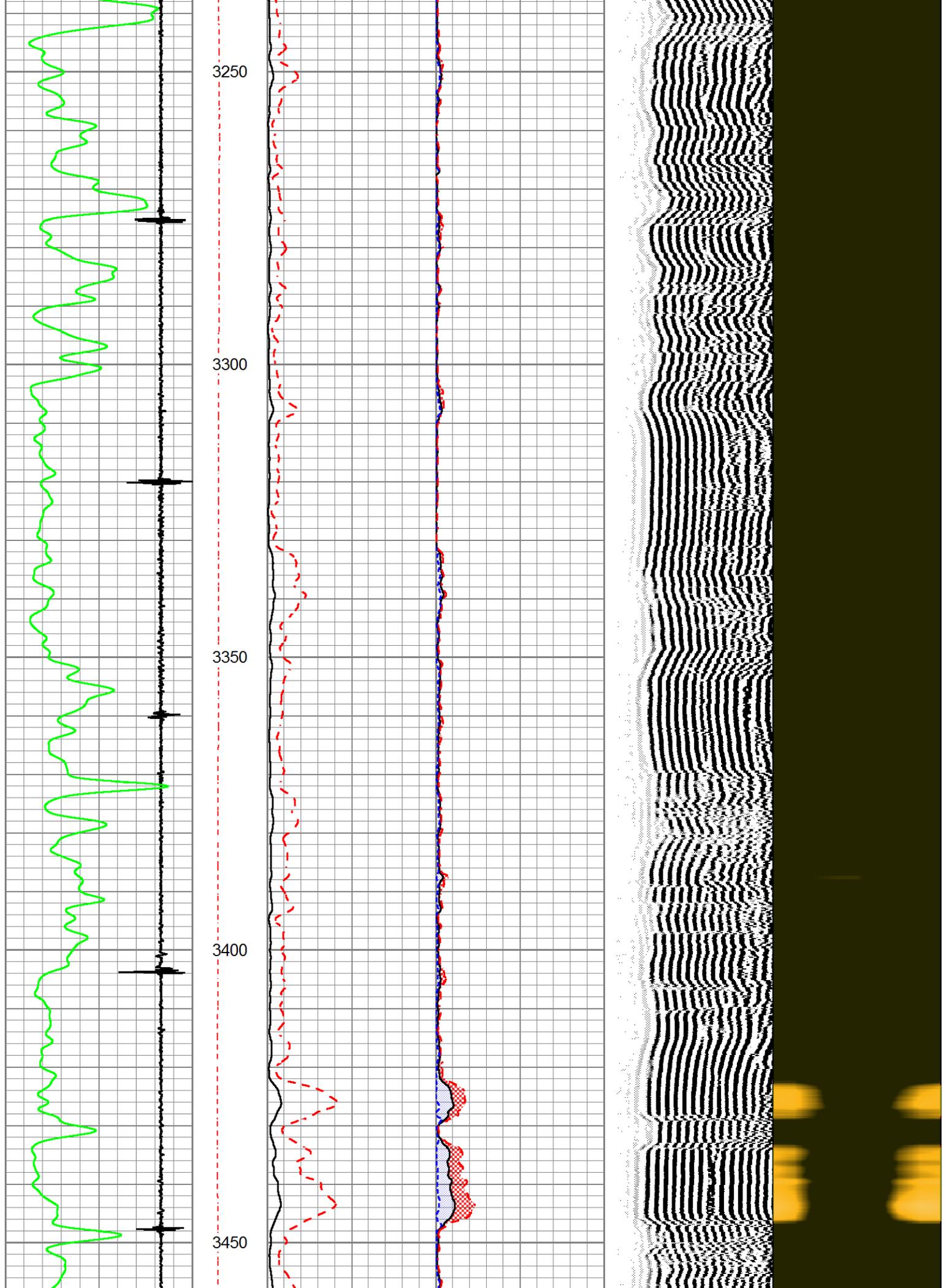


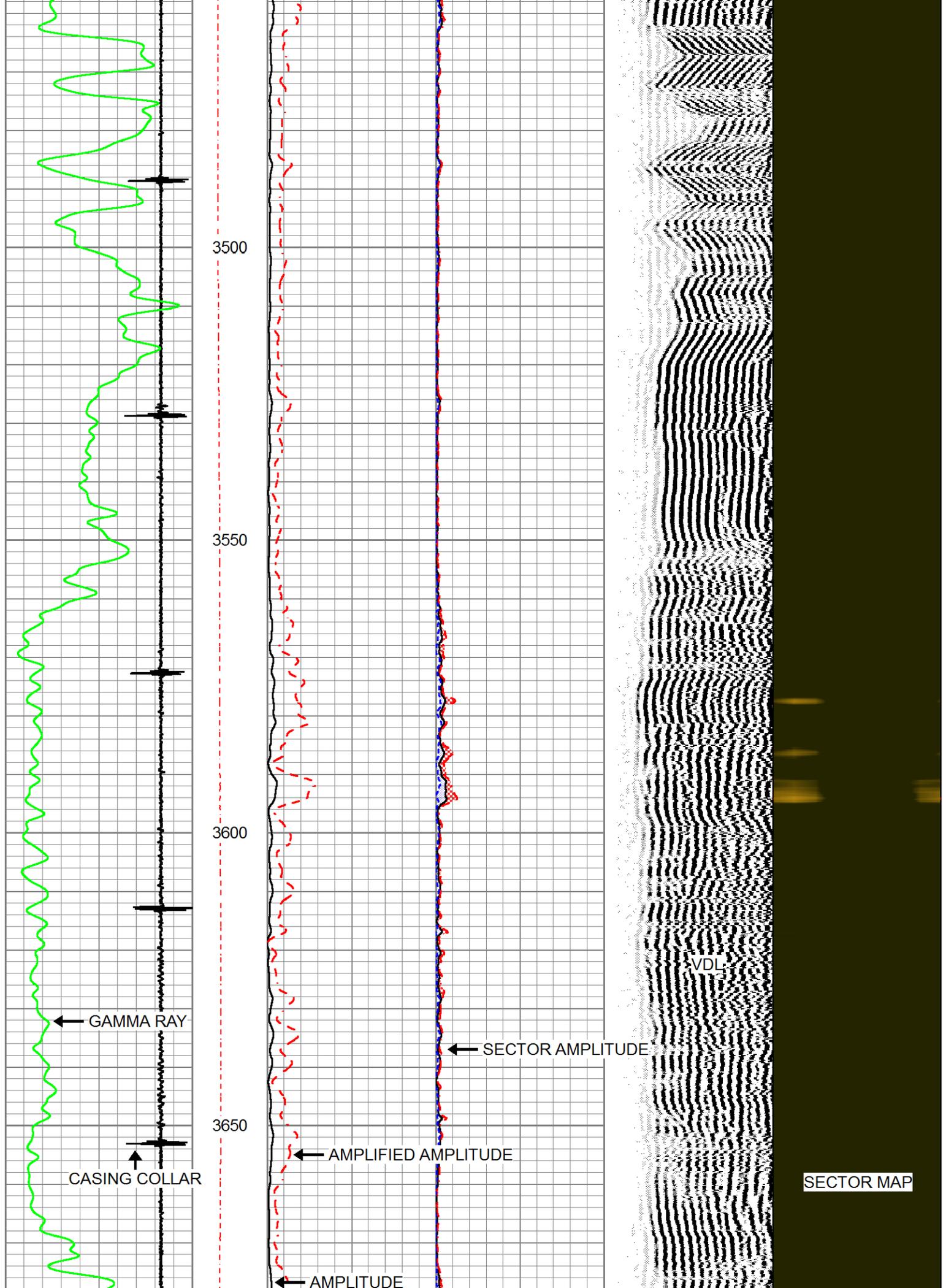


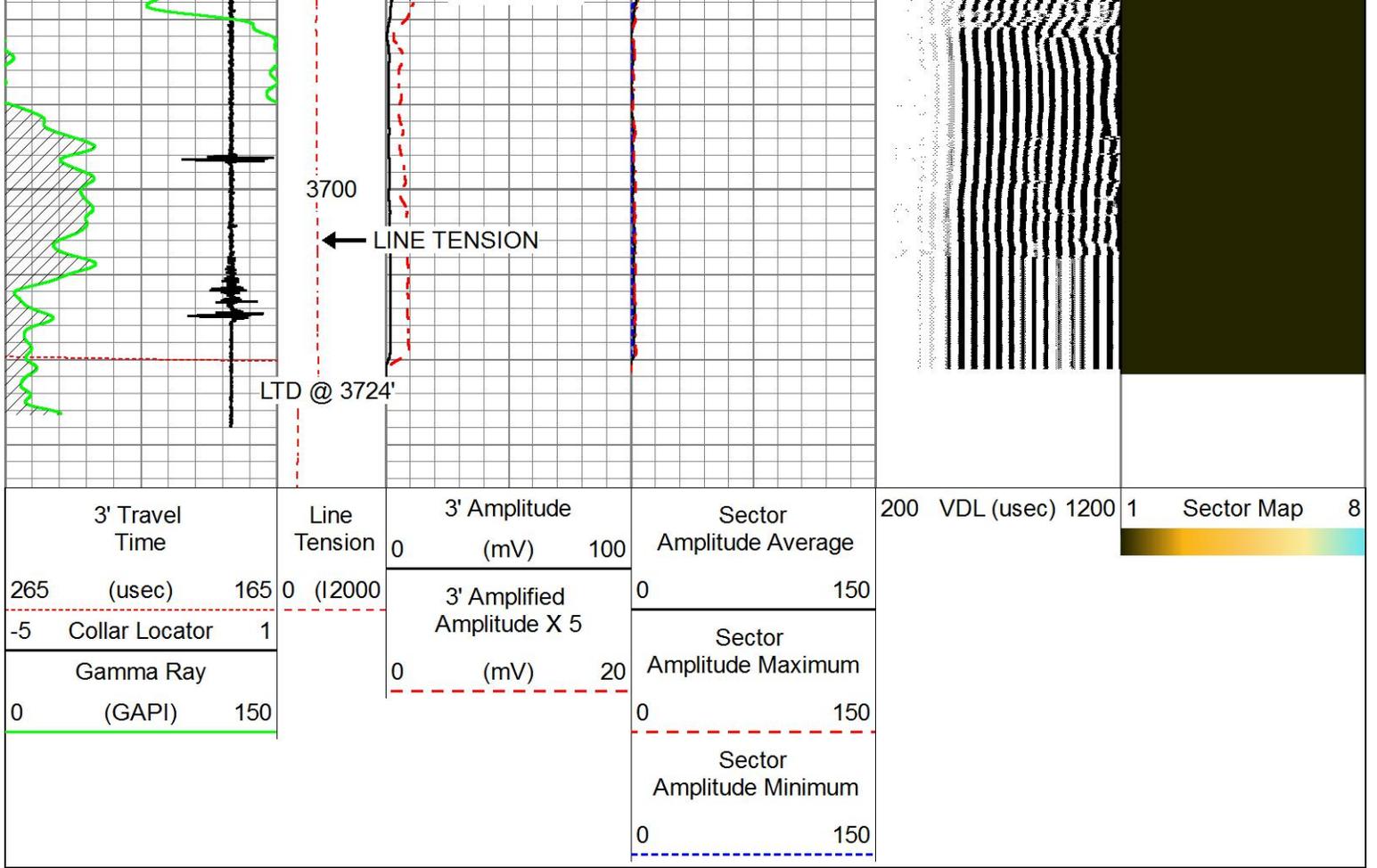
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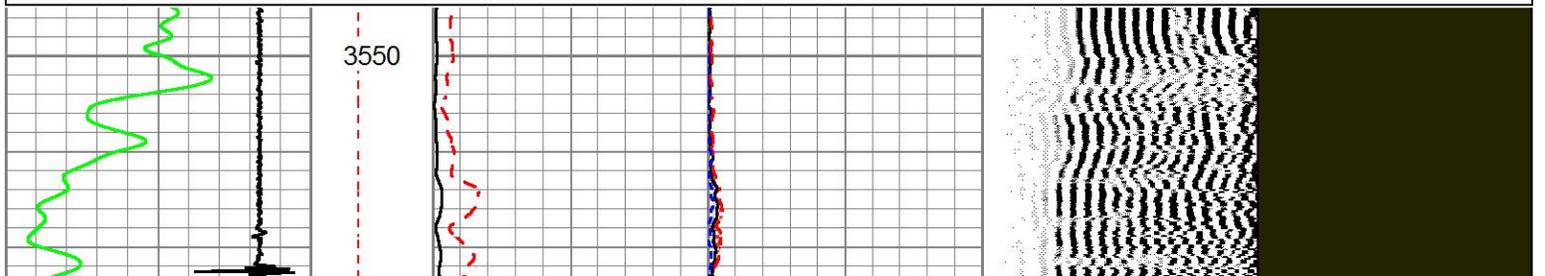
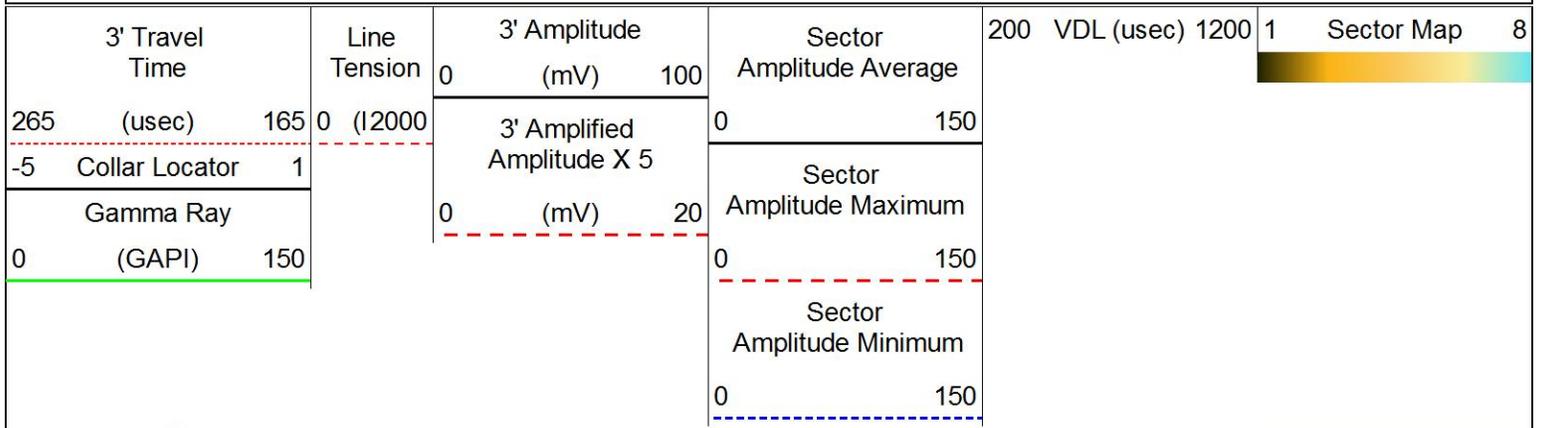


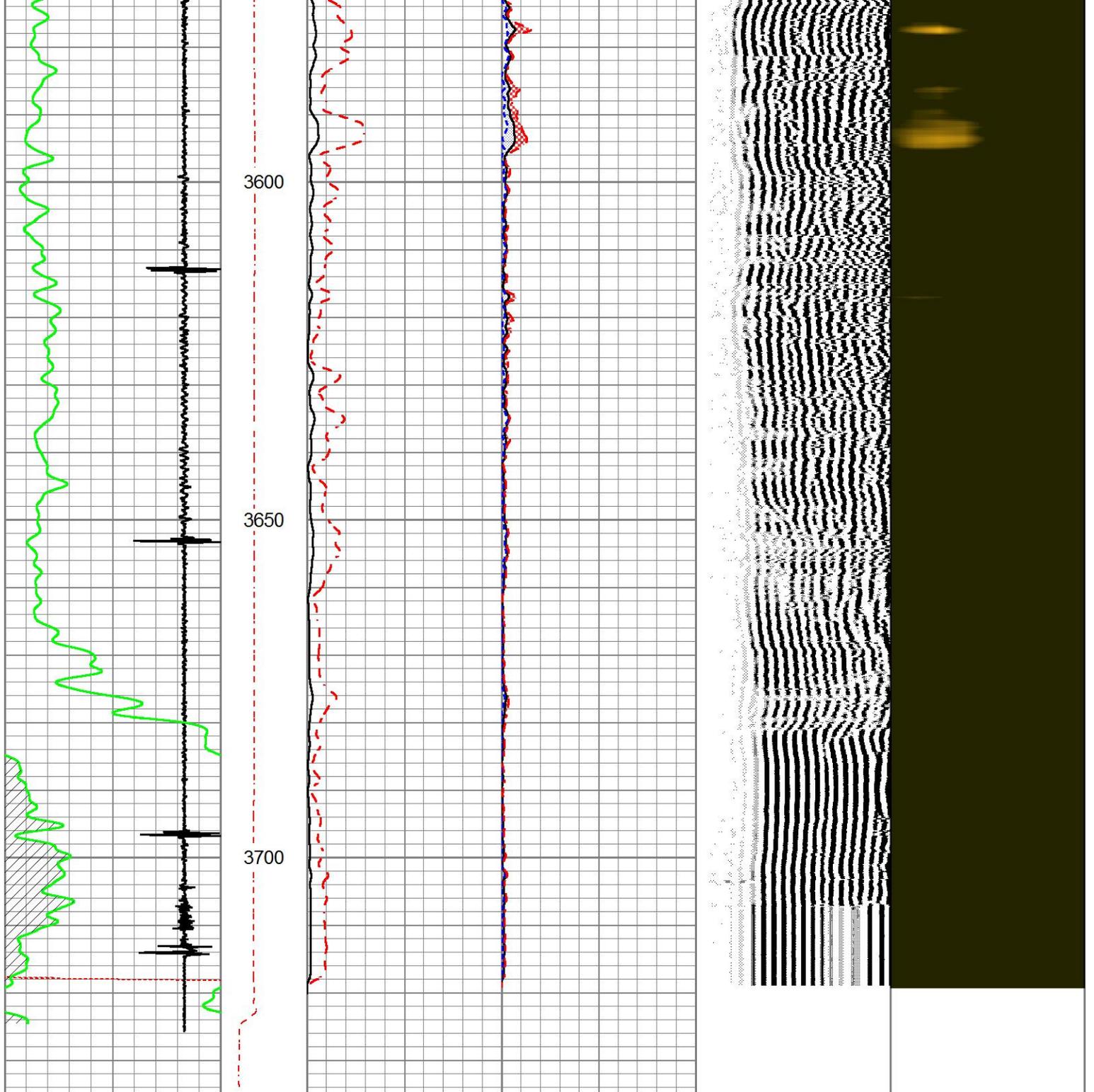


REPEAT SECTION

ZERO PSI APPLIED AT SURFACE

Database File fghall_kruckenberg.db
 Dataset Pathname scbl/pass5
 Presentation Format PINR_S~1
 Dataset Creation Tue Aug 21 09:53:43 2018
 Charted by Depth in Feet scaled 1:240





3' Travel Time	Line Tension	3' Amplitude (mV)	Sector Amplitude Average	200 VDL (usec) 1200	1	Sector Map	8
265 (usec) 165	0 (12000)	0 100	0 150				
-5 Collar Locator 1		3' Amplified Amplitude X 5 (mV)	Sector Amplitude Maximum				
Gamma Ray (GAPI)		0 20	0 150				
0 150			Sector Amplitude Minimum				
			0 150				

Neutron Calibration Report

Serial Number: ProbeNEU1
 Tool Model: PRNEU
 Performed: (Not Performed)

Calibrator Value: 1 NAPI
 Calibrator Reading: 1 cps
 Sensitivity: 1 NAPI/cps

Gamma Ray Calibration Report

Serial Number: Probe-275-GR-CCL
 Tool Model: 275 Probe GR-CCL
 Performed: Tue Aug 21 09:51:19 2018

Calibrator Value: 1.0 GAPI
 Background Reading: 0.0 cps
 Calibrator Reading: 1.0 cps
 Sensitivity: 1.1000 GAPI/cps

Segmented Cement Bond Log Calibration Report

Serial Number: PROBE-RBL-DCT
 Tool Model: RBL-DCT

Calibration Casing Diameter: 5.500 in
 Calibration Depth: 2551.272 ft

Master Calibration, performed Tue Aug 21 09:46:25 2018:

	Raw (v)		Calibrated (mv)		Results	
	Zero	Cal	Zero	Cal	Gain	Offset
3'	0.003	1.982	0.000	71.921	36.342	-0.100
CAL	0.003	2.178				
5'	0.003	1.923	0.000	71.921	37.462	-0.110
SUM						
S1	0.037	1.871	0.000	100.000	54.512	-1.996
S2	0.011	1.919	0.000	100.000	52.416	-0.590
S3	0.011	1.999	0.000	100.000	50.307	-0.577
S4	0.014	2.031	0.000	100.000	49.576	-0.671
S5	0.014	2.034	0.000	100.000	49.507	-0.714
S6	0.019	2.061	0.000	100.000	48.977	-0.945
S7	0.010	2.032	0.000	100.000	49.451	-0.505
S8	0.007	1.894	0.000	100.000	52.996	-0.362

Air Zero Calibration, performed Tue Aug 21 09:17:27 2018:

	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

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: PROBE-RBL-DCT
Tool Model: RBL-DCT
Performed: (Not Performed)

	Reference	Reading
Low Reference:	0.00 degF	0.00 degF
High Reference:	1.00 degF	1.00 degF
Gain:	1.00	
Offset:	0.00	
Delta Spacing	1	



PIONEER
Pioneer Energy Services

Company FG HOLL COMPANY LLC
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State KANSAS