

**Resistivity /
Array Induction Tool
Final Composite 5”**

Company: PB ENERGY STORAGE SERVICES, INC

Well: DCP Linam Ranch AGI #2

Field: AGI; BONE SPRING-WOLFCAMP

County: LEA State: NEW MEXICO

Resistivity

Array Induction Tool

Final Composite [5"=100']

County:	LEA
Field:	AGI; BONE SPRING-WOLFCAMP
Location:	1600' FSL & 1750' FWL
Well:	DCP Linam Ranch AGI #2
Company:	PB ENERGY STORAGE SERVICES, INC
Location:	
Permanent Datum:	Ground Level
Log Measured From:	Kelly Bushing
Drilling Measured From:	Kelly Bushing
API Serial No.	Section:
30-025-42139	30
	Township:
	18S
	Range:
	37E
Logging Date	12-Oct-2014
Run Number	One
Depth Driller	1585.00 ft
Schlumberger Depth	1526.00 ft
Bottom Log Interval	1525.00 ft
Top Log Interval	142.00 ft
Casing Driller Size @ Depth	30 in @ 145.00 ft
Casing Schlumberger	142 ft
Bit Size	17.5 in
Type Fluid In Hole	Fresh Water
Density	9.3 lbm/gal
Fluid Loss	PH 12 cm3
Source of Sample	Active Tank
RM @ Meas Temp	0.46 ohm.m @ 64.8 degF
RMF @ Meas Temp	0.38 ohm.m @ 75 degF
RMC @ Meas Temp	0.31 ohm.m @ 75 degF
Source RMF	RMC Pressed
RM @ BHT	0.32 @ 98.3 @ 0.29 @ 98.3
Max Recorded Temperatures	98.3 degF
Circulation Stopped	Time 11-Oct-2014 20:00:00
Logger on Bottom	Time 12-Oct-2014 09:55:41
Unit Number	Location: 2133
Recorded By	EMIL LUDICK
Witnessed By	TERRY WALLEY

Elev.:	K.B.	3763.00 ft
	G.L.	3738.00 ft
	D.F.	3762.00 ft
Elev.:	3738.00 f	
	25.00 ft	above Perm. Datum
Run 3a	10-Dec-2014	
9234.00 ft		
9234.00 ft		
9247.00 ft		
8594.00 ft		
9.625 in @ 8604.00 ft		
8594 ft		
8.5 in		
Fresh Water		
10.1 lbm/gal		
0 cm3		
Active Tank		
1.09 ohm.m @ 62.2 degF		
0.75 ohm.m @ 75 degF		
0.89 ohm.m @ 75 degF		
Calculated		
0.52 @ 138 @ 0.42 @ 138		
138 degF		
09-Dec-2014		
10-Dec-2014		
2381		
Matt Clardy/ Phil Lacasse		
Russell Bentley		

RUN 1

Disclaimer

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10. Calibration Report
11. Tail

Remarks and Equipment Summary

One: Toolstring				One: Remarks
Equip name LEH-QT:3338 LEH-QT:3338	Length 31.93	MP name	Offset	THANK YOU FOR CHOOSING SCHLUMBERGER!
				LOGGER REQUESTED: 20:00 11-OCT-2014 LOGGER ARRIVAL: RIG READY: RIG: PRECISION #107
EDTC-B:9071 EDTH-B:8196 EDTG-A:79243 EDTC-B:9071	29.02			CREW: E. LUDICK, C. CRUZ, M. MARTINEZ, A. HUANG, T. ARNZEN
		CTEM ACCZ HV Gamma Ray TelStatus	25.52 0.00 0.00 23.65 22.52	TOOLS RUN AS PER TOOL SKETCH AND PRESENTATIONS AS PER CLIENT LOGGING PROGRAM.
PPC-B:8601 PPC-B:8601	22.52			NO CASING RUN. 30 INCH CONDUCTIVE TUBING WITH AN INNER DIAMETER OF 29.35 INCH SET.
		PPC-B Calipers	21.37	AIT RUN IN COMPUTE STANDOFF MODE WITH TWO 1.5 INCH STANDOFFS. AIT RUN CENTRALIZED WITH PPC.
				CALIPERS CHECKED IN CASING WITH INNER CASING ID OF 29.35 INCHES.
				MATRIX LIMESTONE DENSITY 2.71 g/cc AND FLUID DENSITY 1.0 g/cc
				PPC USED FOR CALIPER LOG. NO FUTURE CASING DIAMETER. BIT SIZE TO BE EXPANDED TO 26 INCHES.
AIT-M:160 AMIS:160 AMRM:160	16.00			HD1 CALIPER SCALE 10 - 20 INCHES AS PER CLIENT REQUEST
		Temperature Induction Power Supply	7.91 7.91 7.91	
		SP Mud Resistivity Head Tension	0.08 0.00	

TOOL_ZERO Lengths are in ft Maximum Outer Diameter = 9.000 in Line: Sensor Location, Value: Gating Offset All measurements are relative to TOOL_ZERO		
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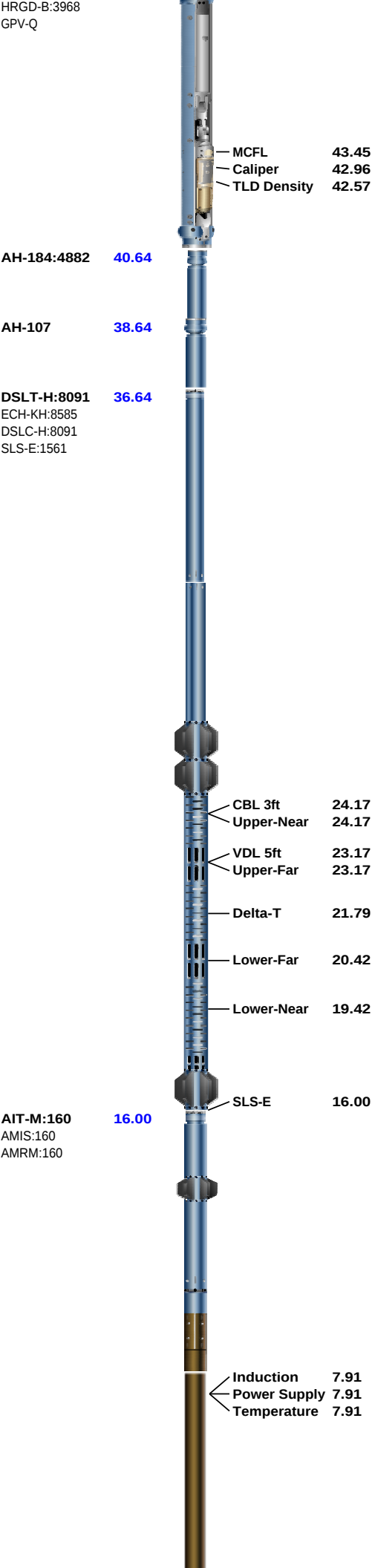
Depth Summary			
	One		
Depth Measuring Device			
Type	IDW-B		
Serial Number	63074		
Calibration Date	02-SEP-2014		
Calibrator Serial Number			
Calibration Cable Type	7-46P-XS		
Wheel Correction 1	-2		
Wheel Correction 2	-1		
Tension Device			
Type	CMTD-B/A		
Serial Number	3872		
Calibration Date	03-OCT-2014		
Calibrator Serial Number	1019		
Number of Calibration Points	0		
Logging Cable			
Type	7-46P-XS		
Serial Number	U713011		
Length	19700.00 ft		
Conveyance Type	Wireline		
Rig Type	LAND		
One:Depth Control Parameters		Depth Control Remarks	
Log Sequence	First Log In the Well	IDW USED AS PRIMARY DEPTH CONTROL DEVICE.	
Rig Up Length At Surface		Z-CHART USED AS SECONDARY DEPTH CONTROL DEVICE.	
Rig Up Length At Bottom		FOLLOWED SCHLUMBERGER FULL DEPTH CONTROL POLICY DATED APRIL 7TH, 2012.	
Rig Up Length Correction		ALL LOGS CORRELATED TO DOWN LOG BOTTOM 300 ft.	
Stretch Correction	0.75 ft	STRETCH CORRECTION OF 0.75 ft APPLIED BY COMPARING MAIN PASS TO DOWN PASS.	
Tool Zero Check At Surface	0.14 ft		
Disclaimer		RUN 2	
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 - 8.2 Log (Log (AIT_5_Inch) RA)
9. Two Repeat Pass 5" = 100'
 - 9.1 Integration Summary
 - 9.2 Composite Summary
 - 9.3 Log (Copy of Log (AIT_5_Inch))
10. Calibration Report
11. Tail

Remarks and Equipment Summary

Two: Toolstring				Two: Remarks
Equip name	Length	MP name	Offset	Toolstring run as per toolsketch. Bowspring used to eccentralize HGNS. 0.125" standoff created by wear-ring on HGNS. 1.5" standoffs used on AIT, and DSLT. Porosity computed on a Limestone scale with density of 2.71 g/cc and slowness of 47.6 us/ft. Rig: Precision 107 Your Schlumberger Crew: Tyler Bolton, Adam Jaramillo, Jose Gomez.
LEH-QC:1317	82.94			
EDTC-B:9071	80.48			
EDTH-B:8196				
EDTG-A:79243				
EDTC-B:9071				
		CTEM	76.98	
		ACCZ	0.00	
		HV	0.00	
		Gamma Ray	75.11	
		TelStatus	73.98	
HNGS-BA:84	73.98			
HEH-K:1035				
HNGS-BA:84				
		GR	70.99	
HNGC-B:610	65.79			
HNGH-A:4094				
HNGC-B:610				
		Tel Status	64.04	
HGNS-B:951	62.29	Temperature	62.26	
HGNH:3894				
NPV-N		GR	61.55	
NSR-F:2683				
HACCZ-B:448				
HMCA-B				
HGNS-B:951				
		CNL Porosity	55.21	
		HMCA	52.88	
		HGNS	52.88	
		Acceleromete	0.00	
		r		
HDRS-B:1829	52.88			
ECH-MEB:952				
HRCC-B:839				
HRMS-B:1829				
Short Spacing:274				
83				
Backscatter				
Long Spacing:287				
74				
GSR-J:5339				
		HRCC	48.88	





SP 0.08
Mud Resistivity 0.00
TOOL_ZERO

Lengths are in ft

Maximum Outer Diameter = 9.000 in

Line: Sensor Location, Value: Gating Offset

All measurements are relative to TOOL_ZERO

Depth Summary

Two

Depth Measuring Device

Type IDW-JA
Serial Number 5910
Calibration Date 02-Jun-2014
Calibrator Serial Number
Calibration Cable Type 7-46P XS
Wheel Correction 1 -2
Wheel Correction 2 -1

Tension Device

Type CMTD-B/A
Serial Number 5044
Calibration Date 18-Oct-2014
Calibrator Serial Number 80725A
Number of Calibration Points 10
Calibration Root Mean Square Error 19
Calibration Peak Error 36

Logging Cable

Type 7-46P-XS
Serial Number U711059
Length 15500.00 ft
Conveyance Type Wireline
Rig Type Land

Two:Depth Control Parameters

Log Sequence Subsequent Trip To the Well
Reference Log Name Platform Express-CNL
Reference Log Run Number One
Reference Log Date 01-Nov-2014
Subsequent Trip Down Log Correction 7.29 ft

Depth Control Remarks

All primary and secondary depth control procedures followed.
IDW used as primary depth control device.
Z-chart used as secondary depth control device.

Disclaimer

RUN 3

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13.1 Integration Summary

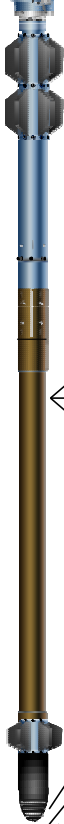
Operational Run Summary

Parameter (unit)	Run 3a					
Date Log Started	10-Dec-2014					
Time Log Started	03:52:06					
Date Log Finished	10-Dec-2014					
Time Log Finished	06:35:47					
Top Log Interval (ft)	8594.00					
Bottom Log Interval (ft)	9247.00					
Total Depth (ft)	9247.00					
Max Hole Deviation (deg)	0.00					
Azimuth of Max Deviation (deg)	0.00					
Bit Size (in)	8.500					
Logging Unit Number	2381					
Logging Unit Location	Midland, TX					
Recorded By	Matt Clardy/ Phil Lacasse					
Witnessed By	Russell Bentley					
Service Order Number	D0M2-00023					

Borehole Fluids

Parameter(unit)	Run 3a					
Fluid Type	Water					
Fluid Name	Fresh Water					
Max Recorded Temperatures (degF)	138					
Source of Sample	Active Tank					
Salinity (ppm)	500					
Density (lbm/gal)	10.1					
Funnel Viscosity (s)	42					
Fluid Loss (cm3)	0					
PH	10.5					
Date/Time Circulation Stopped	09-Dec-2014 08:00:00					

AIT-M:190 16.00
AMIS:190
AMRM:190



Temperature 7.91
Induction 7.91
Power Supply 7.91

SP 0.08
Mud Resistivity 0.00
TOOL_ZERO

Lengths are in ft
Maximum Outer Diameter = 7.000 in
Line: Sensor Location, Value: Gating Offset
All measurements are relative to TOOL_ZERO

Depth Summary

Run 3a

Depth Measuring Device

Type	IDW-B		
Serial Number	6568		
Calibration Date	28-Jul-2014		
Calibrator Serial Number			
Calibration Cable Type	7-46P/AXS		
Wheel Correction 1	-4		
Wheel Correction 2	-3		

Tension Device

Type	CMTD-B/A		
Serial Number	8100		
Calibration Date	18-Nov-2014		
Calibrator Serial Number	U713032		
Number of Calibration Points	10		
Calibration Root Mean Square Error	16		
Calibration Peak Error	20		

Logging Cable

Type	7-46P-XS		
Serial Number	U713032		
Length	23800.00 ft		
Conveyance Type	Wireline		
Rig Type			

Run 3a:Depth Control Parameters

Depth Control Remarks

Log Sequence	First Log In the Well	All Schlumberger depth control procedures to date followed. All passes correlated to previous SLB log in well dated 11/30/14.
Rig Up Length At Surface		CMTD used as primary tension control. CMTD last calibrated on 11-Nov-2014.
Rig Up Length At Bottom		IDW used as primary means of depth control. Z-chart used as secondary means of depth control. IDW calibrated on 28-Jul-2014.
Rig Up Length Correction		

Main Pass 5"=100'

Pass Summary

Run Name	Pass Objective	Direction	Top	Bottom	Start	Stop	DSC Mode	Depth Shift	Include Parallel Data
One	Main[3]:Up	Up	40.69 ft	1545.04 ft	12-Oct-2014 10:12:58 AM	12-Oct-2014 10:42:41 AM	ON	0.90 ft	No

All depths are referenced to toolstring zero

Log

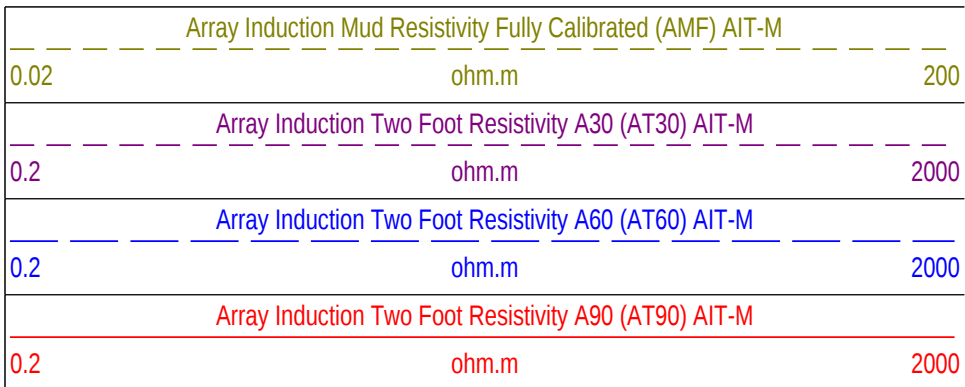
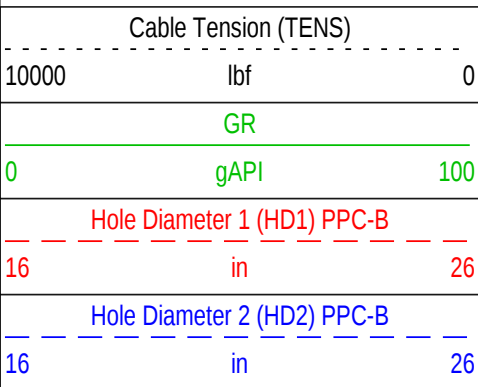
Company:PB ENERGY STORAGE SERVICES, INCWell:LINAM #2

One: Main[3]:Up:S007

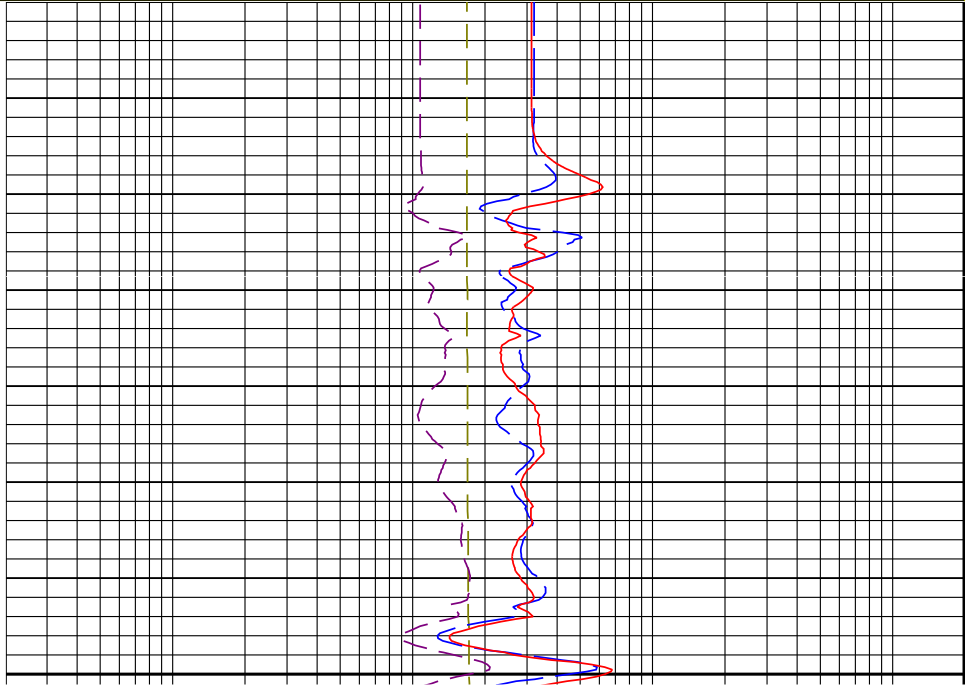
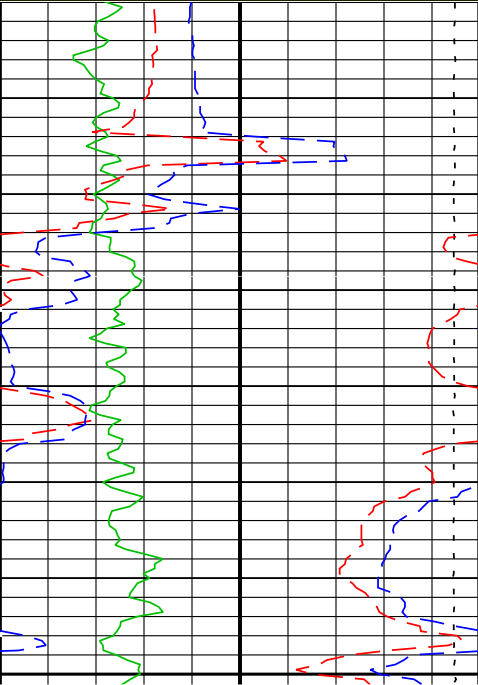
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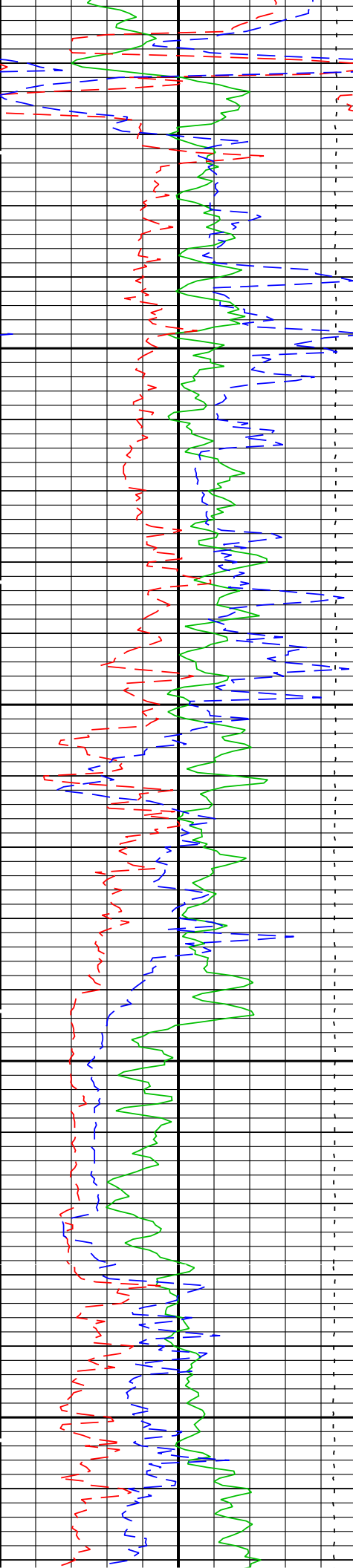
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AMF	AIT-M:AMIS:AMIS	12in
AT30	AIT-M:AMIS:AMIS	3in
AT60	AIT-M:AMIS:AMIS	3in
AT90	AIT-M:AMIS:AMIS	3in
GR_CAL	EDTC-B:EDTC-B:EDTC-B	6in
HD1	PPC-B:PPC-B:PPC-B	6in
HD2	PPC-B:PPC-B:PPC-B	6in
TENS	WLWorkflow	6in
TIME_1900	WLWorkflow	0.1in

TIME_1900 - Time Marked every 60.00 (s)



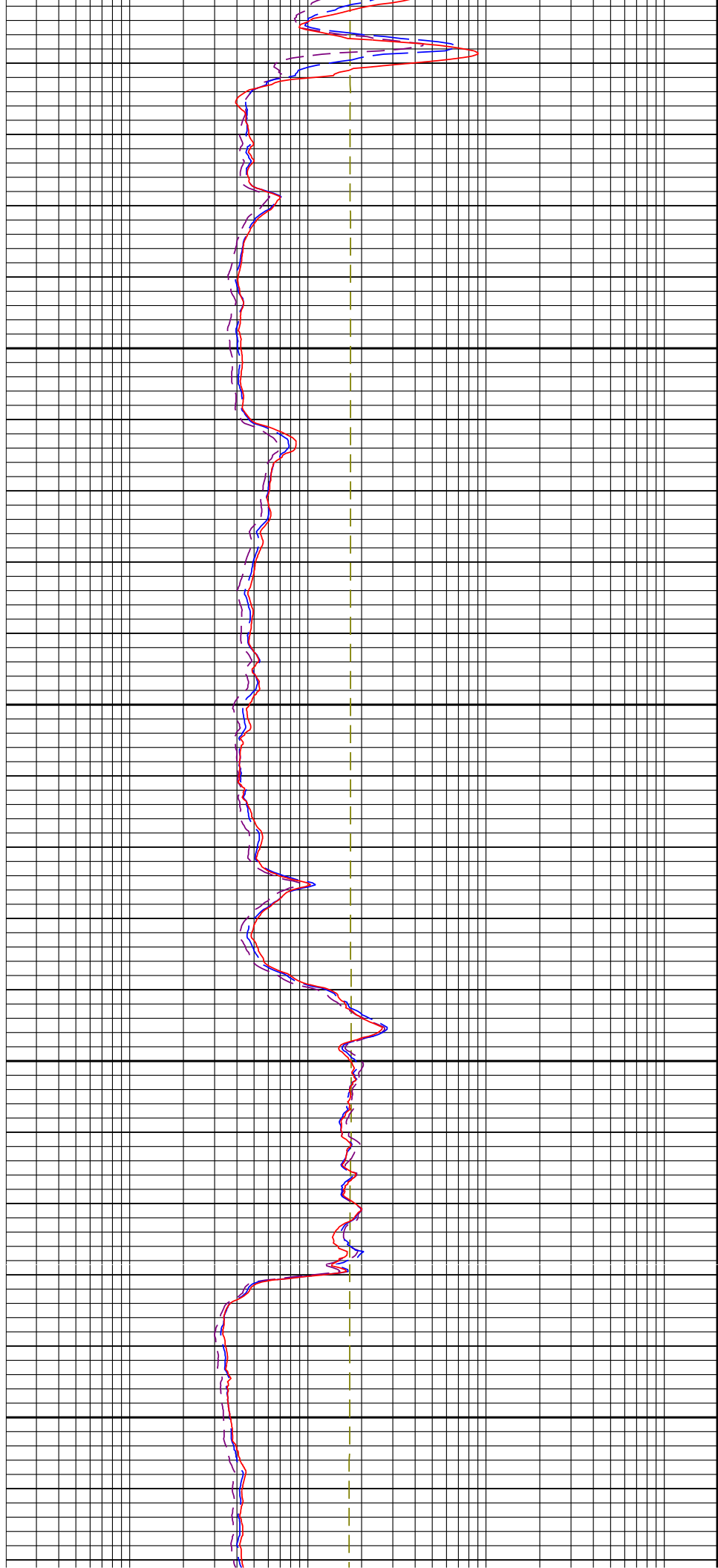
5" Resistivity

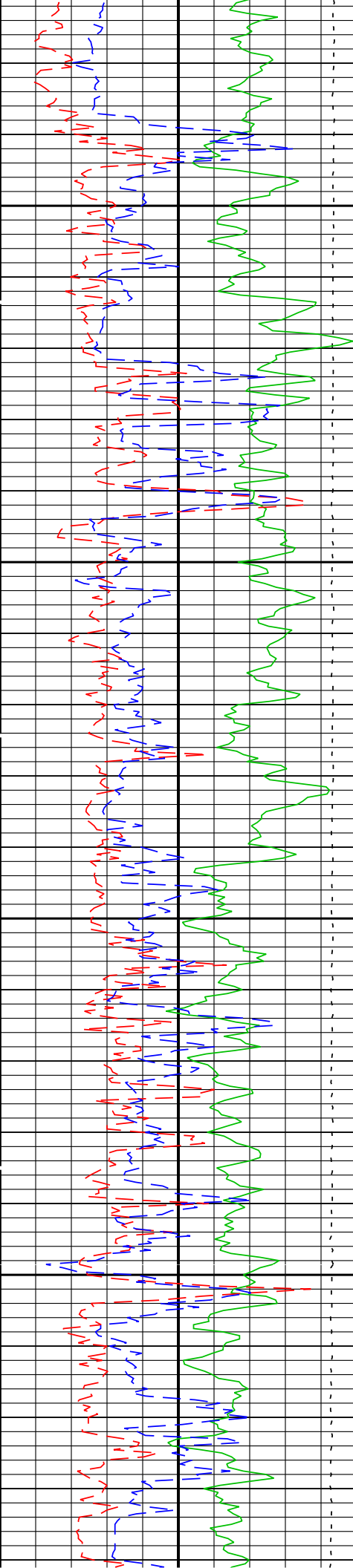




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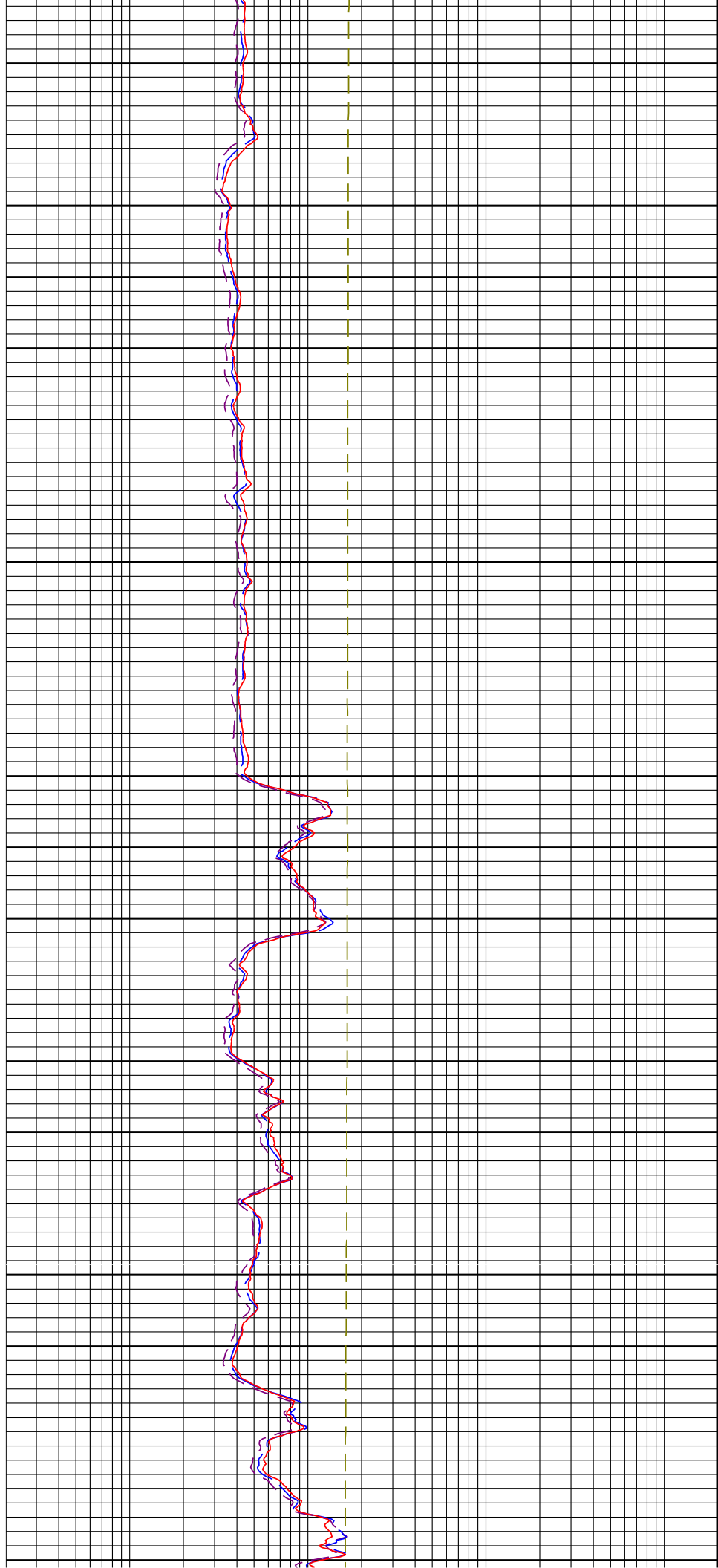
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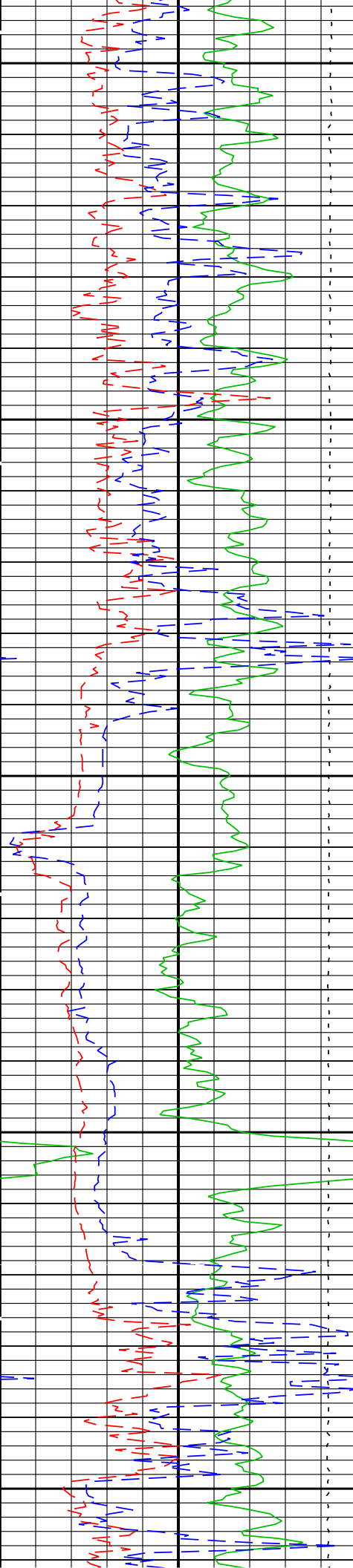




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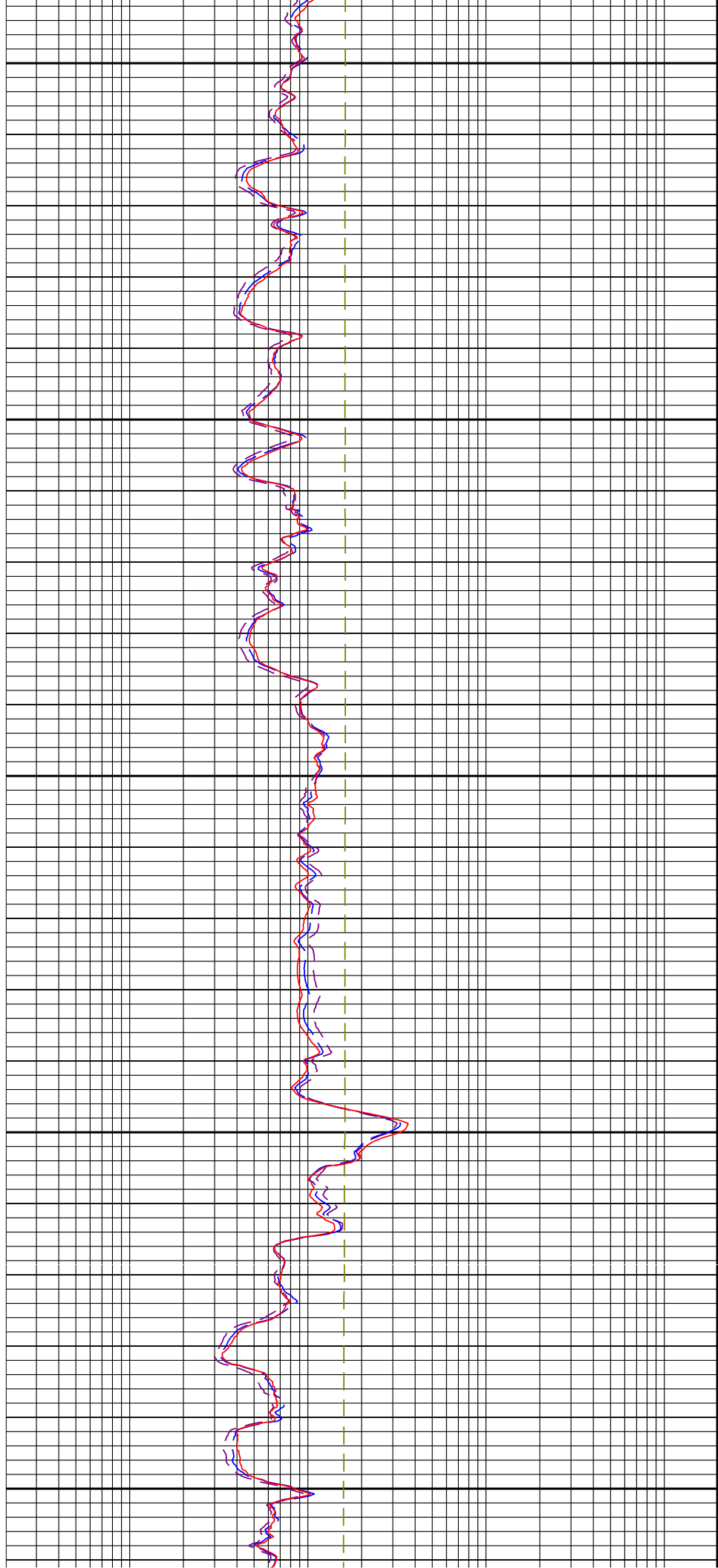
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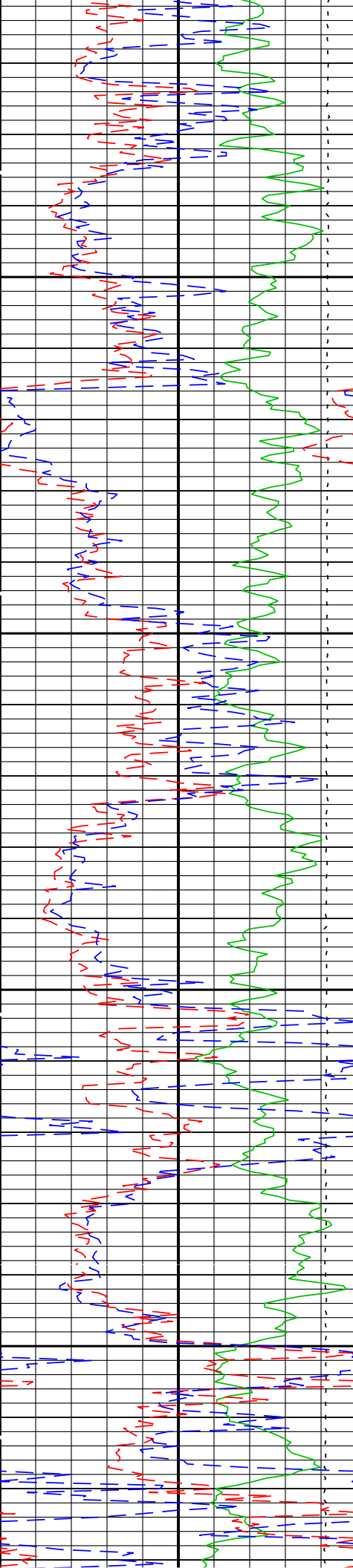




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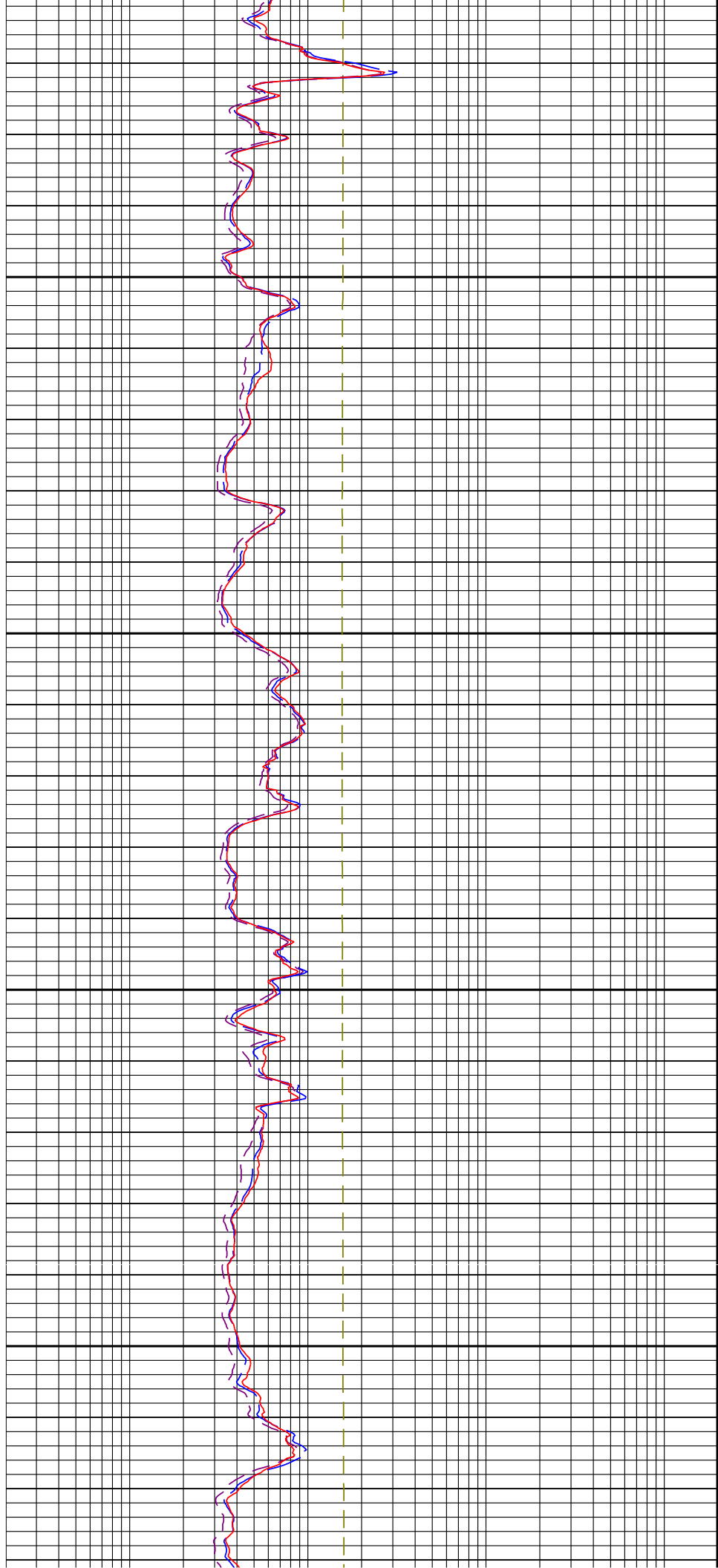
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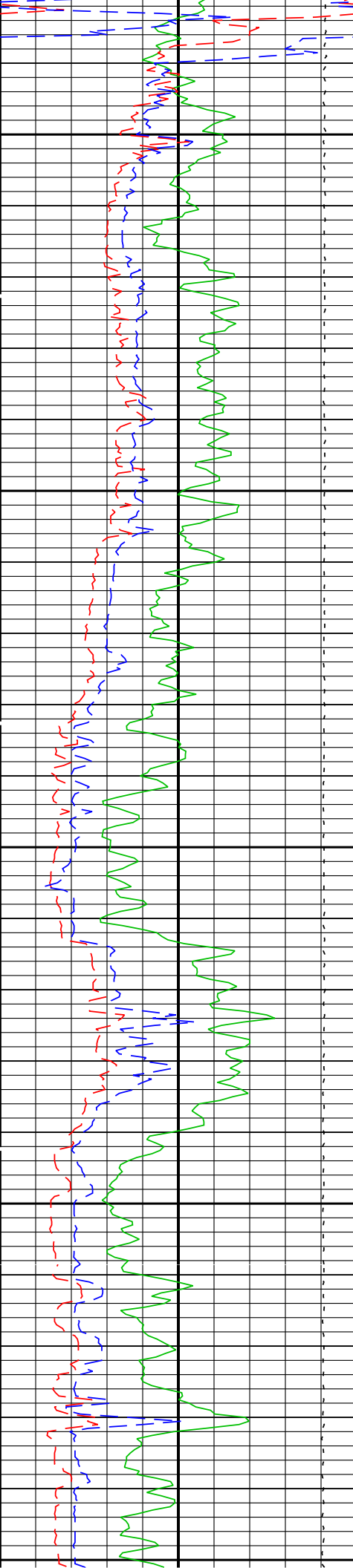




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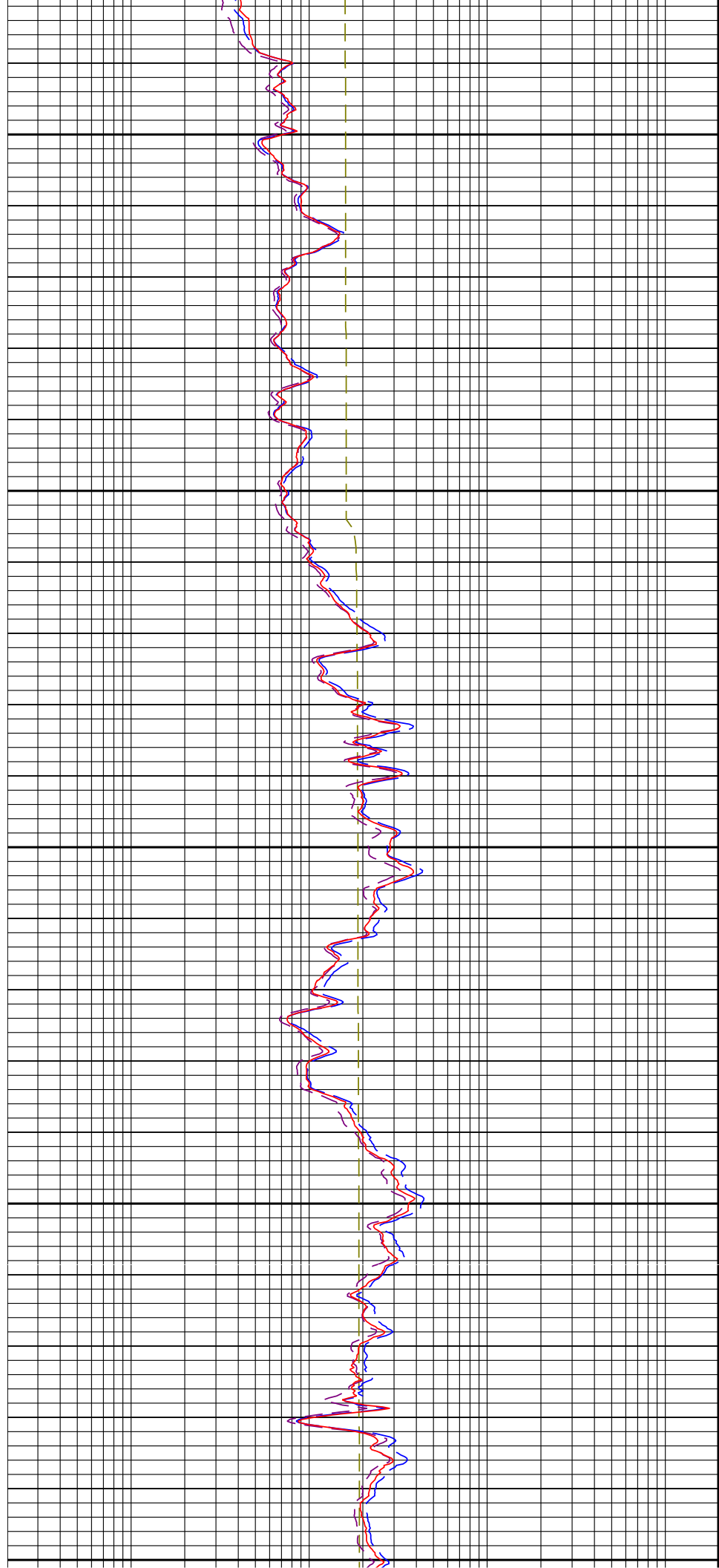


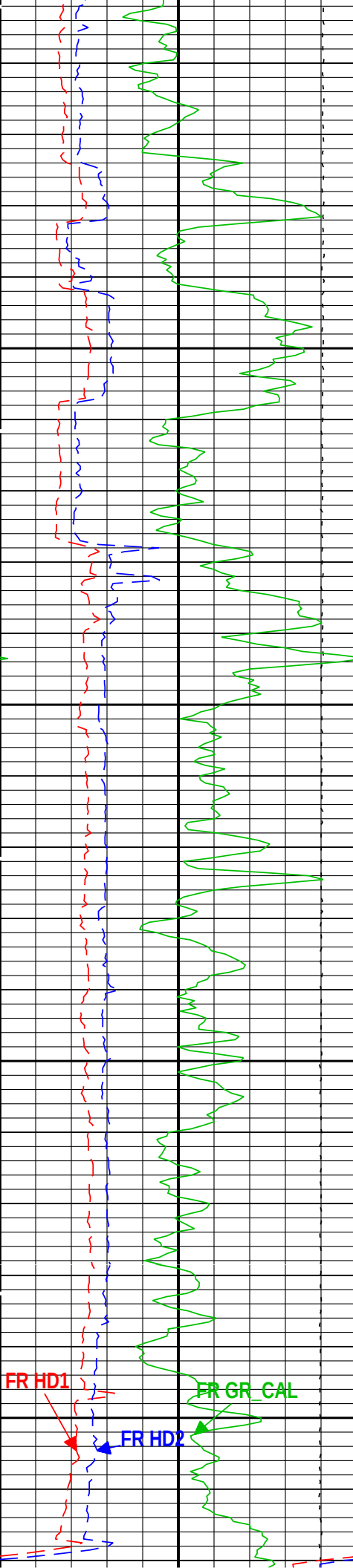


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1200

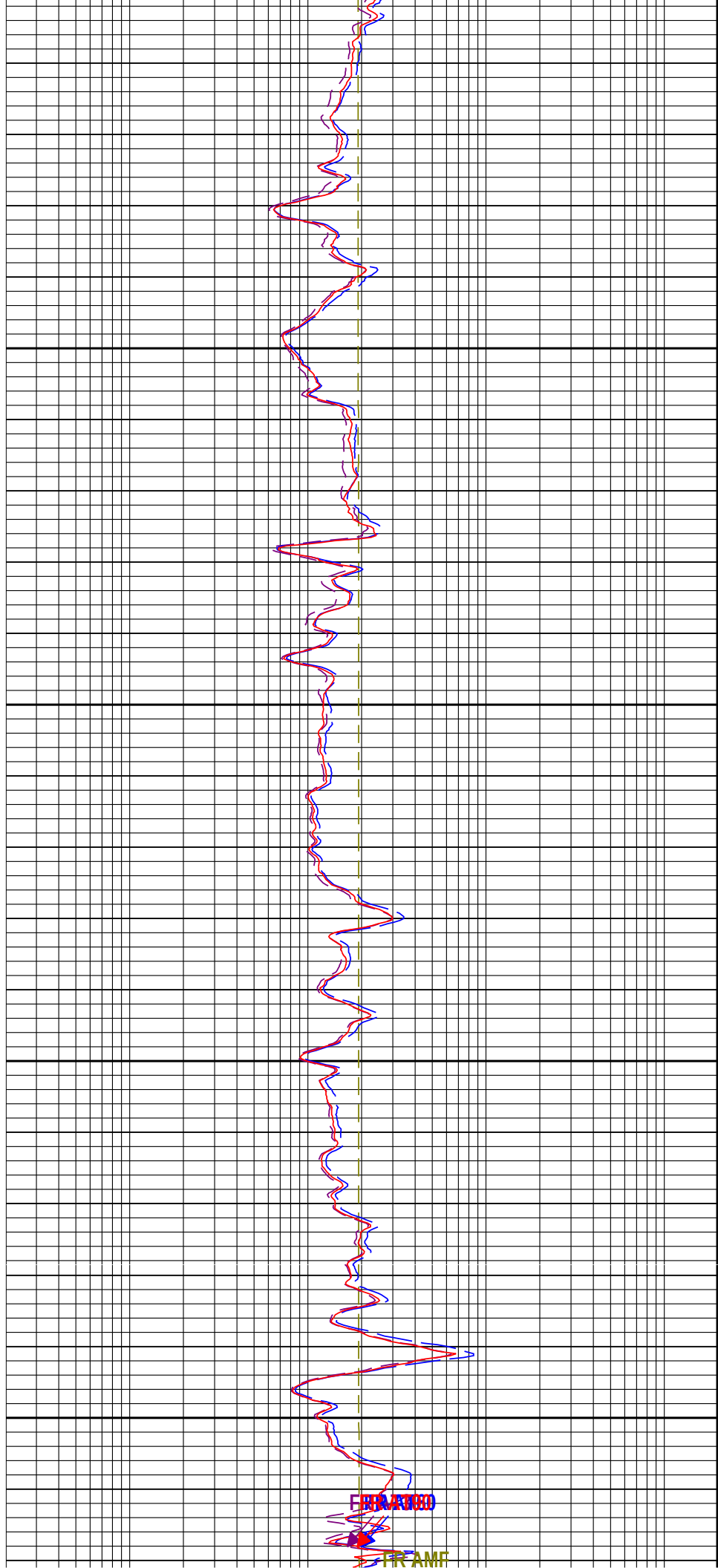
1300





1400

1500



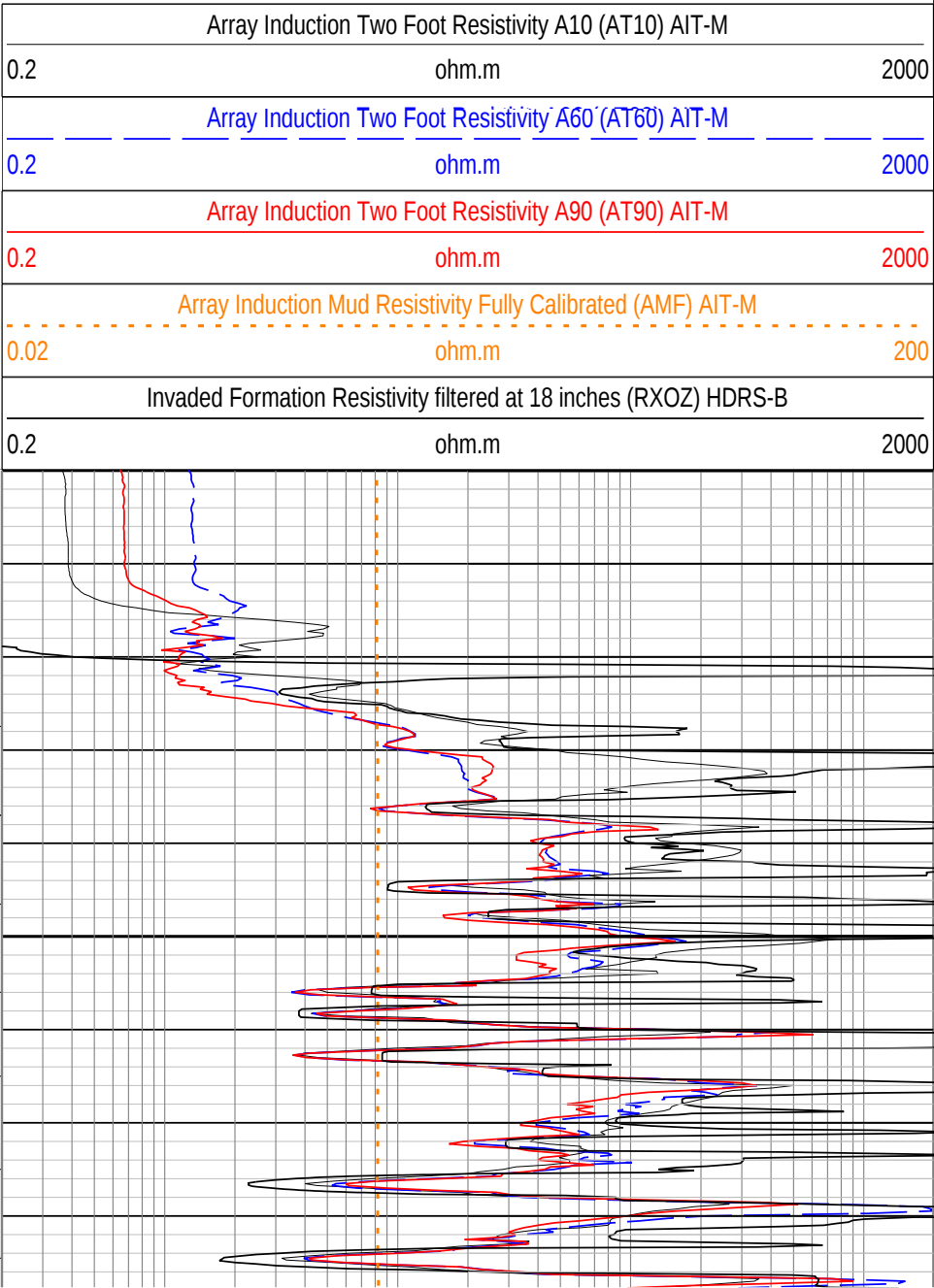
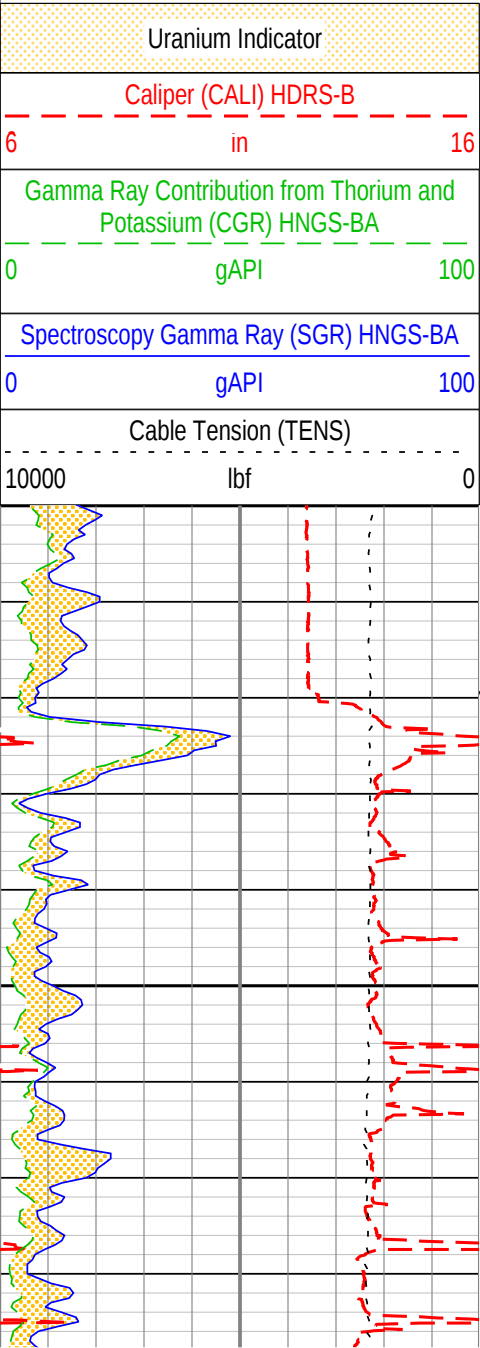
FR TENS			TD 1526.00ft					
5" Resistivity								
Cable Tension (TENS) 10000 lbf 0			Array Induction Mud Resistivity Fully Calibrated (AMF) AIT-M 0.02 ohm.m 200					
GR 0 gAPI 100			Array Induction Two Foot Resistivity A30 (AT30) AIT-M 0.2 ohm.m 2000					
Hole Diameter 1 (HD1) PPC-B 16 in 26			Array Induction Two Foot Resistivity A60 (AT60) AIT-M 0.2 ohm.m 2000					
Hole Diameter 2 (HD2) PPC-B 16 in 26			Array Induction Two Foot Resistivity A90 (AT90) AIT-M 0.2 ohm.m 2000					
TIME_1900 - Time Marked every 60.00 (s)								
Description: HRLT BASIC LOG Format: Log (HRLA_5_Inch) Index Scale: 5 in per 100 ft Index Unit: ft Index Type: Measured Depth Creation Date: 12-Oct-2014 11:45:43								
Channel Processing Parameters								
Parameter	Description				Tool	Value		Unit
ABHM	Array Induction Borehole Correction Mode				AIT-M	Compute Standoff		
ACDE	Array Induction Casing Detection Enable				AIT-M	Yes		
BHS	Borehole Status (Open or Cased Hole)				Borehole	Depth Zoned		
BS	Bit Size				WLSESSION	Depth Zoned		in
CBLO	Casing Bottom (Logger)				WLSESSION	142		ft
GCSE_DOWN_PASS	Generalized Caliper Selection for WL Log Down Passes				Borehole	BS		
GCSE_UP_PASS	Generalized Caliper Selection for WL Log Up Passes				Borehole	HD1		
GRSE	Generalized Mud Resistivity Selection, from Measured or Computed Mud Resistivity				Borehole	AMF		
Depth Zone Parameters								
Parameter	Value		Start (ft)			Stop (ft)		
BHS	Cased		130			142		
BHS	Open		142			1545		
BS	30		130			145		
BS	17.5		145			1526		
All depth are actual.								
Tool Control Parameters								
Parameter	Description				Tool	Value		Unit
MAX_LOG_SPEED	Toolstring Maximum Logging Speed				WLSESSION	3600		ft/h
Main Pass 5" = 100'								
Integration Summary								
Output Channel(s)	Output Description			Input Parameter		Output Value		Unit
ICV	Integrated Cement Volume			HVAS, FCD		2381.29		ft3
IHV	Integrated Hole Volume			HVAS		5118.77		ft3
Log	Company:PB ENERGY STORAGE SERVICES, INC				Well:DCP Linam Ranch AGI #2			
					Two: Main[3]:Up:S021			
Description: AIT Basic Log Two Format: Log (Log (AIT_5_Inch)) Index Scale: 5 in per 100 ft Index Unit: ft Index Type: Measured Depth Creation Date: 30-Nov-2014 17:11:07								
Channel	Source		Sampling					

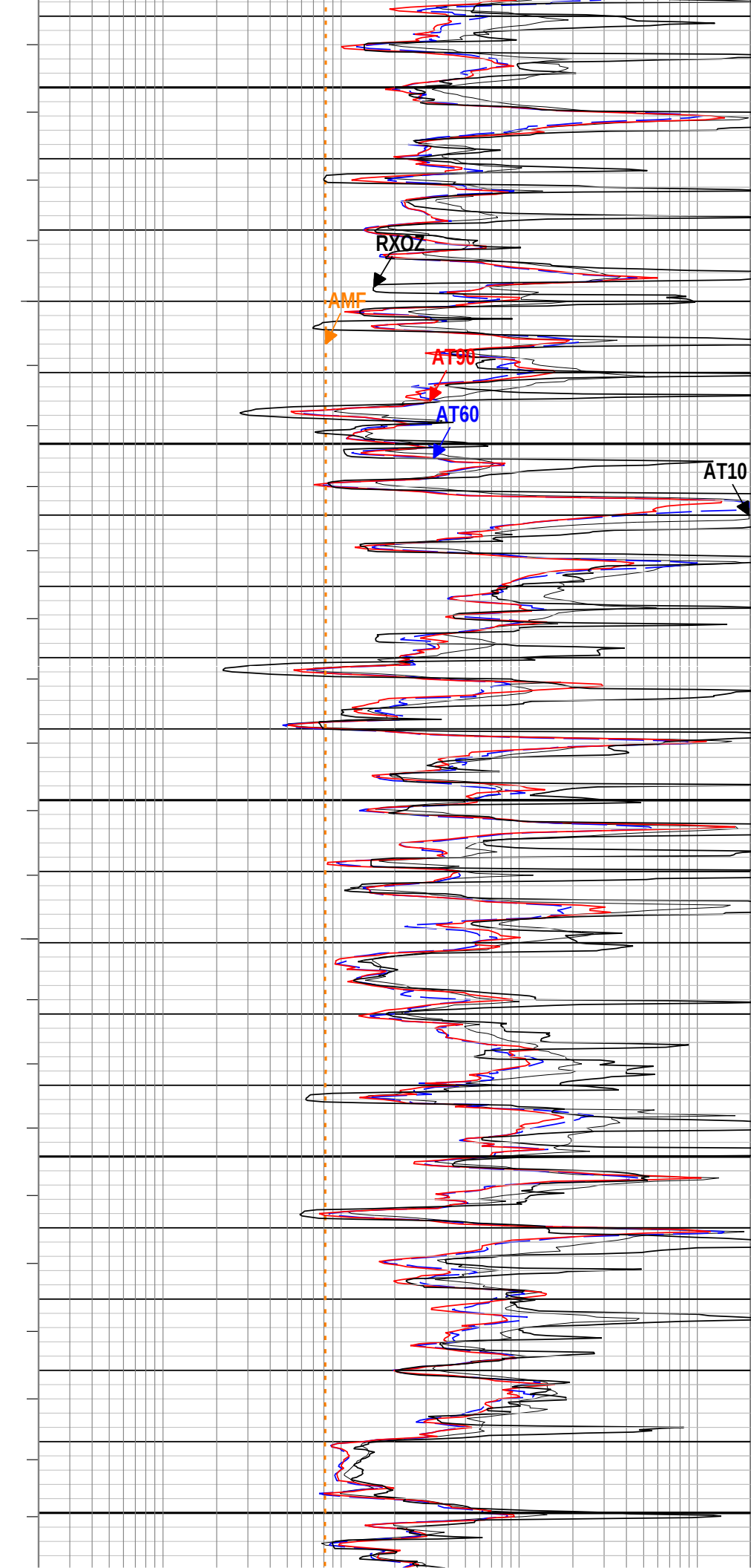
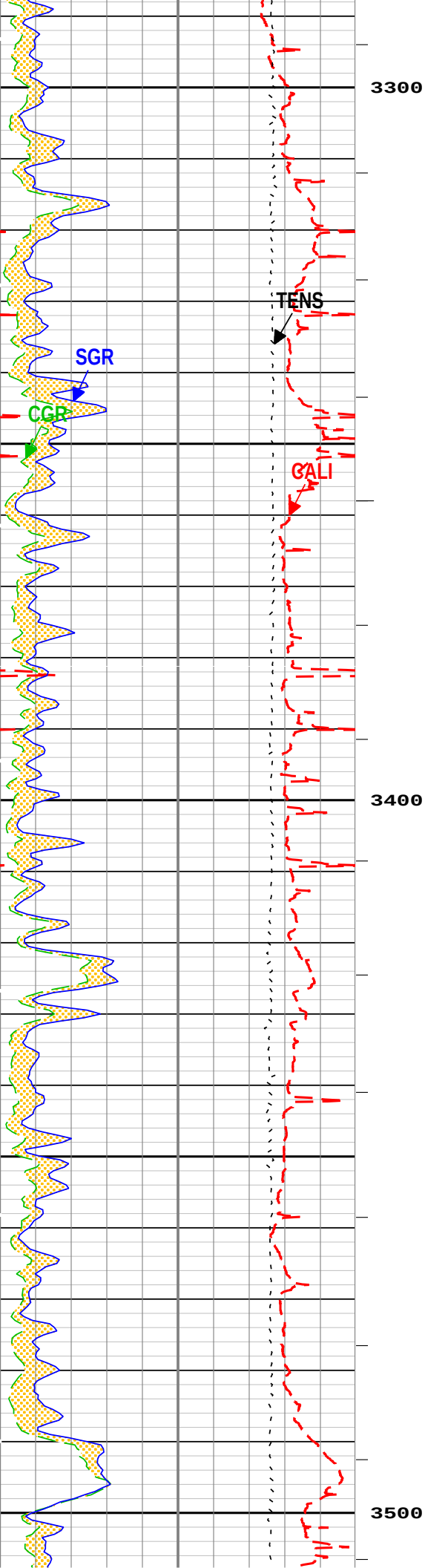
Channel	Source	Sampling
AMF	AIT-M:AMIS:AMIS	12in
AT10	AIT-M:AMIS:AMIS	3in
AT60	AIT-M:AMIS:AMIS	3in
AT90	AIT-M:AMIS:AMIS	3in
CALI	HDRS-B:HRCC-B:HRCC-B	1in
CGR	HNGS-BA:HNGS-BA:HNGS-BA	6in
ICV	Borehole	6in
IHV	Borehole	6in
RXOZ	HDRS-B:HRMS-B:HRGD-B	2in
SGR	HNGS-BA:HNGS-BA:HNGS-BA	6in
TENS	WLWorkflow	6in
TIME_1900	WLWorkflow	0.1in

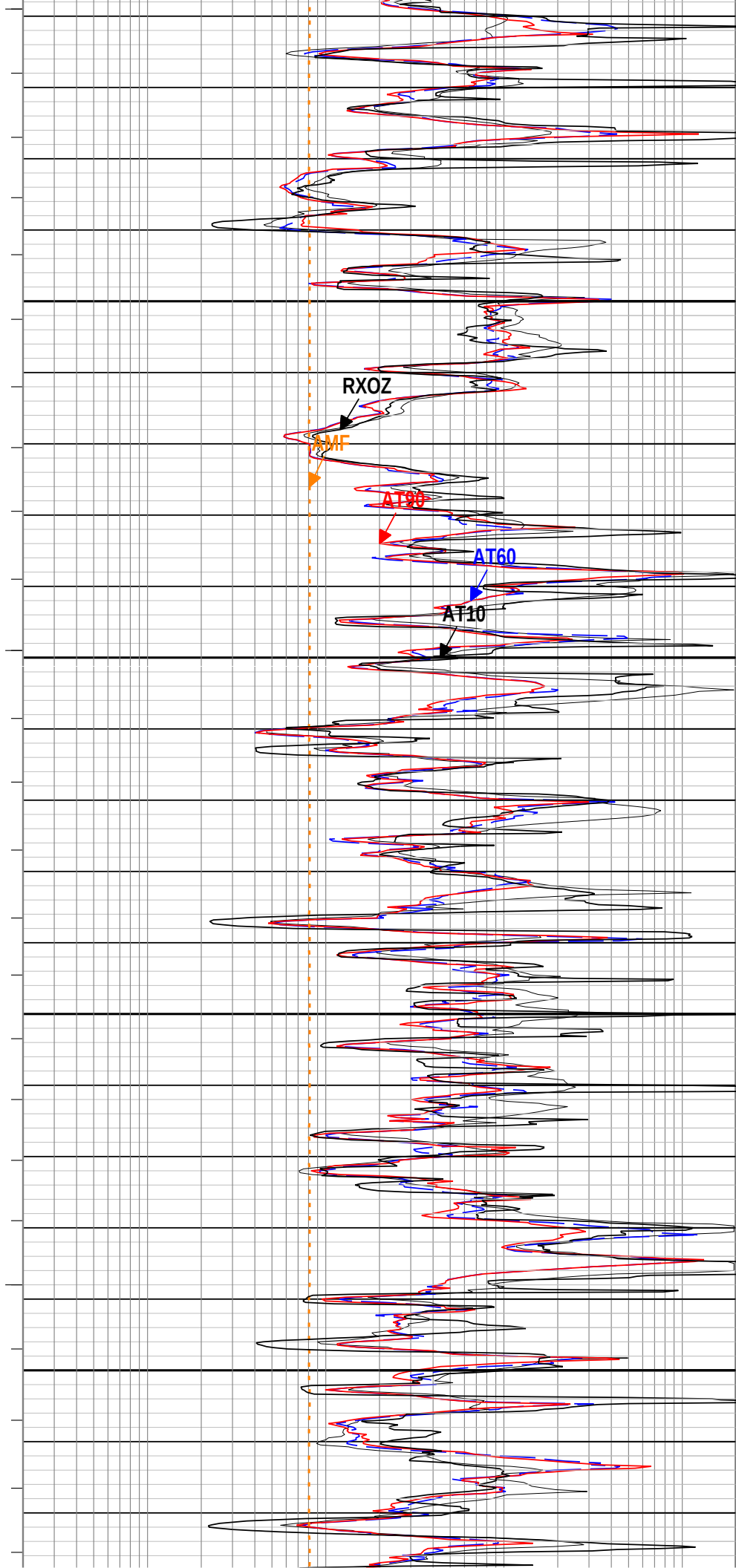
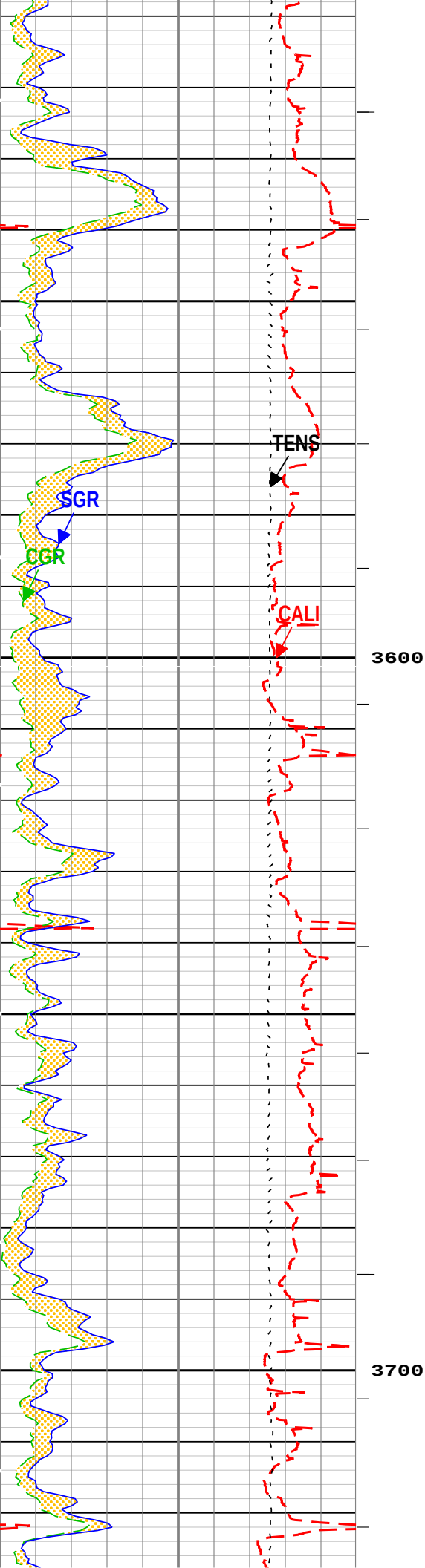
- IHV - Integrated Hole Volume every 10.00 (ft3)
- IHV - Integrated Hole Volume every 100.00 (ft3)
- ICV - Integrated Cement Volume every 10.00 (ft3)
- ICV - Integrated Cement Volume every 100.00 (ft3)

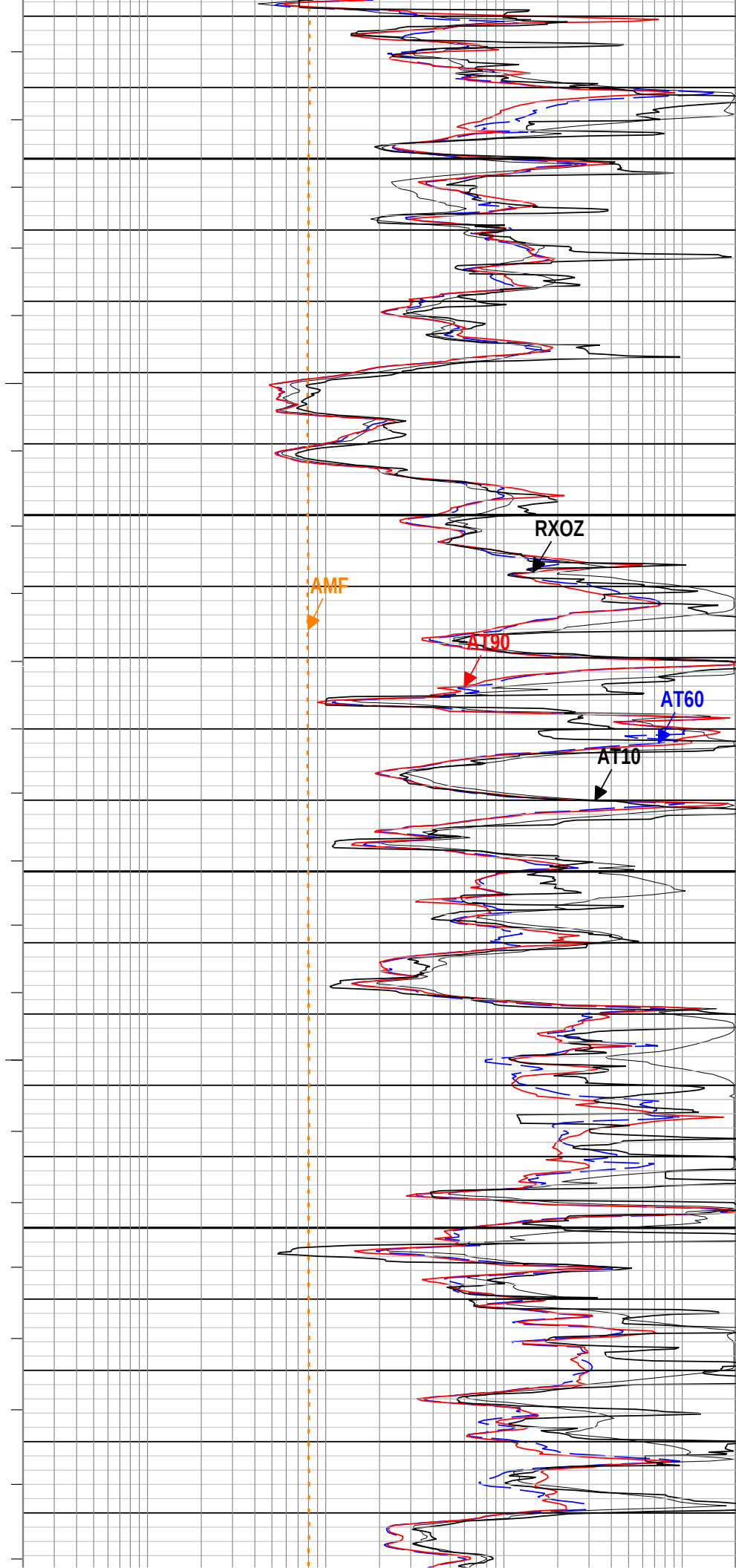
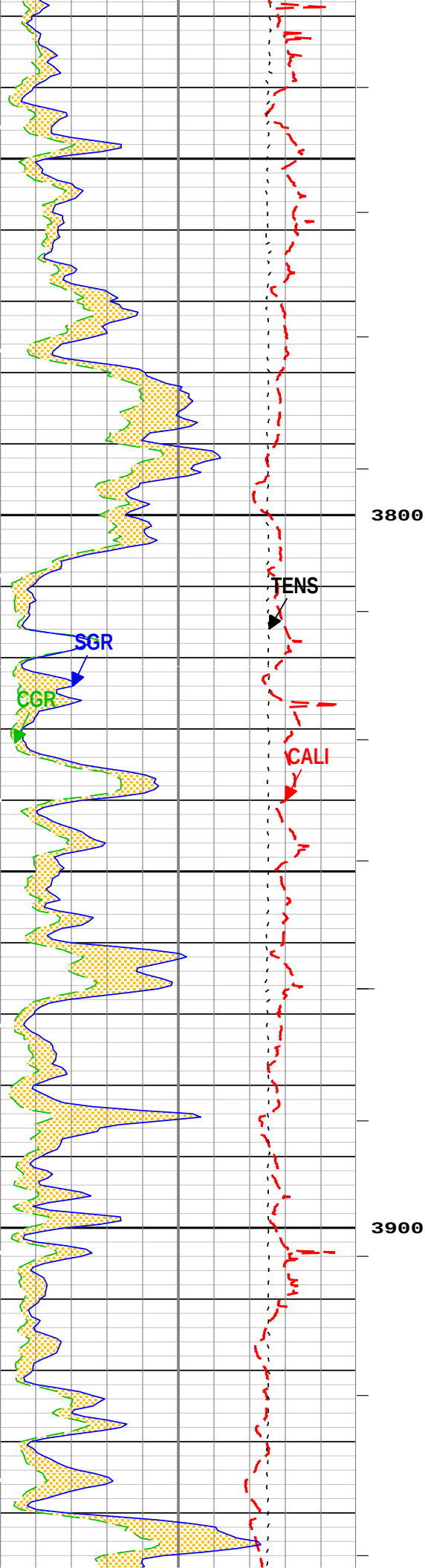
RUN 2

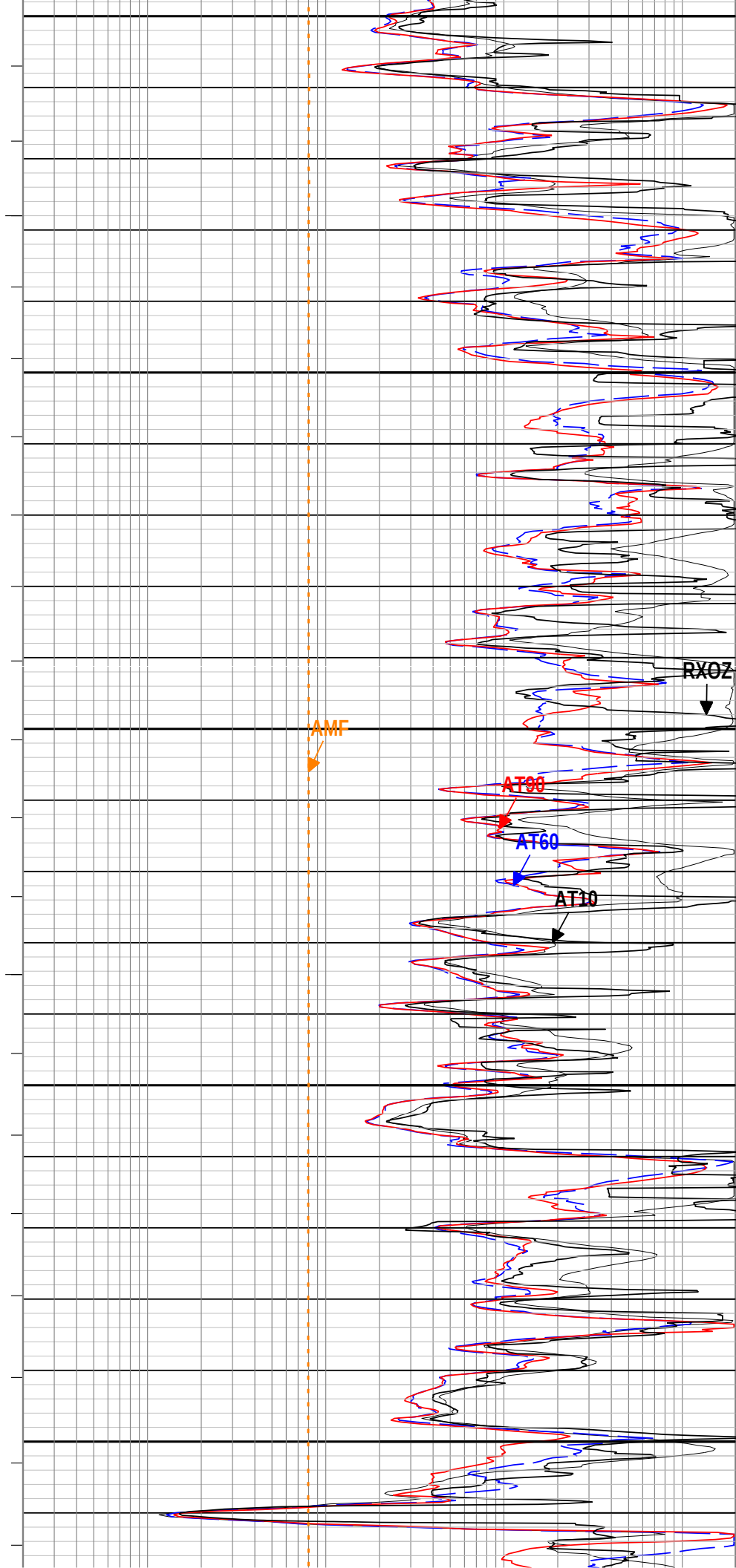
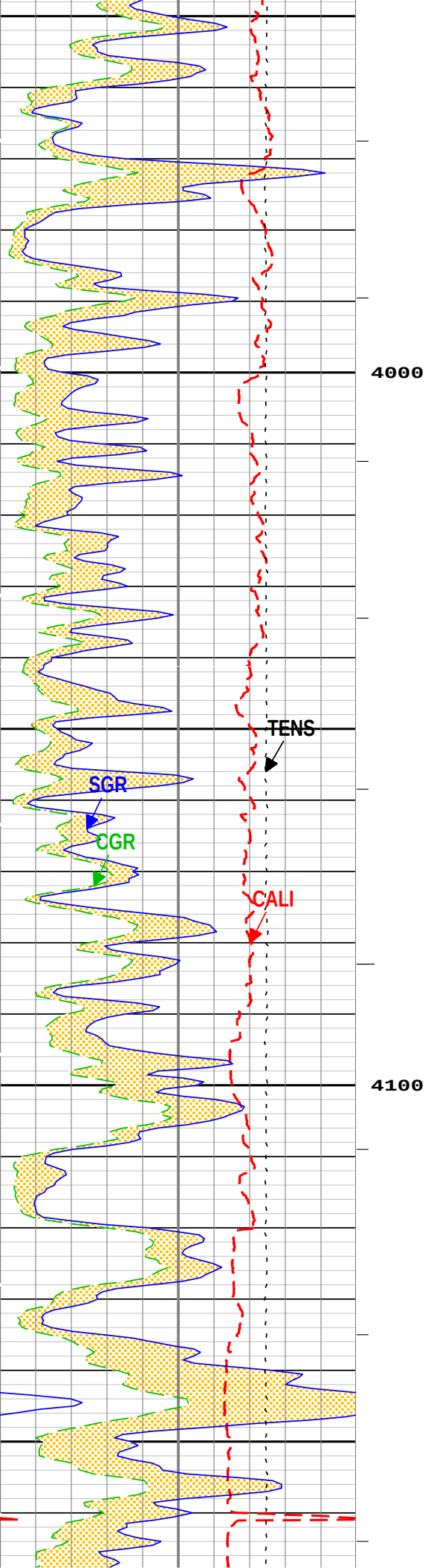
TIME_1900 - Time Marked every 60.00 (s)

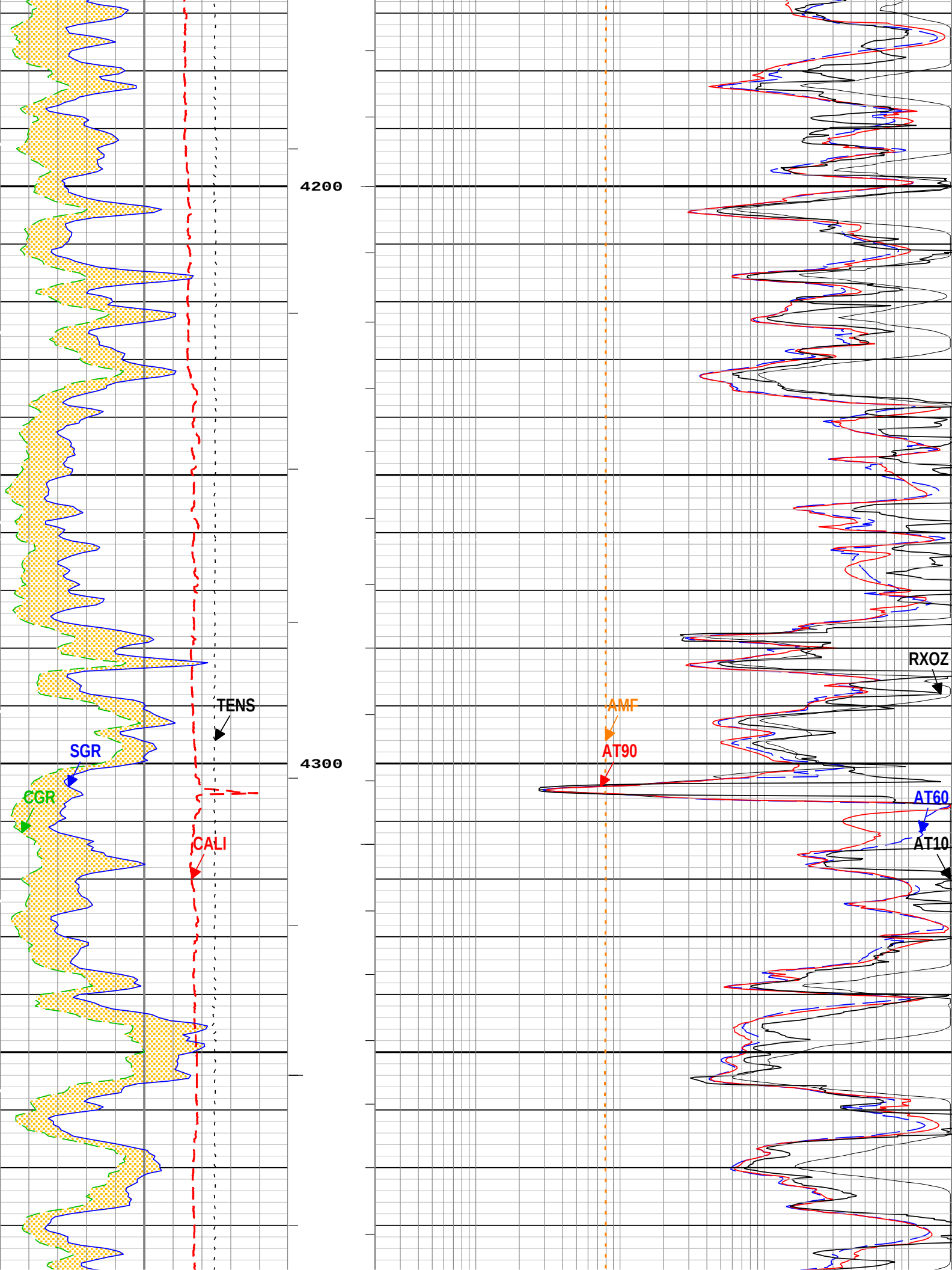


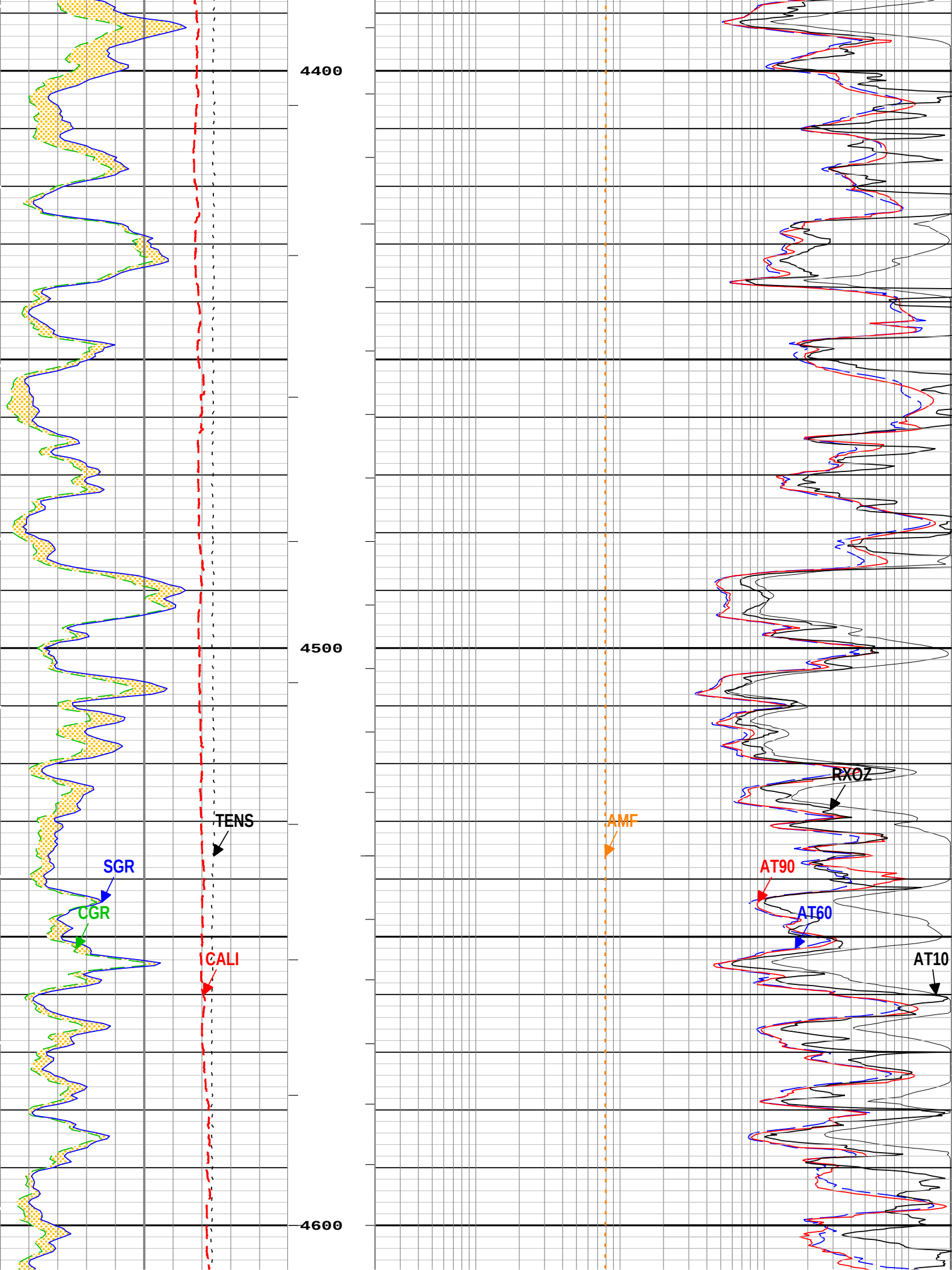


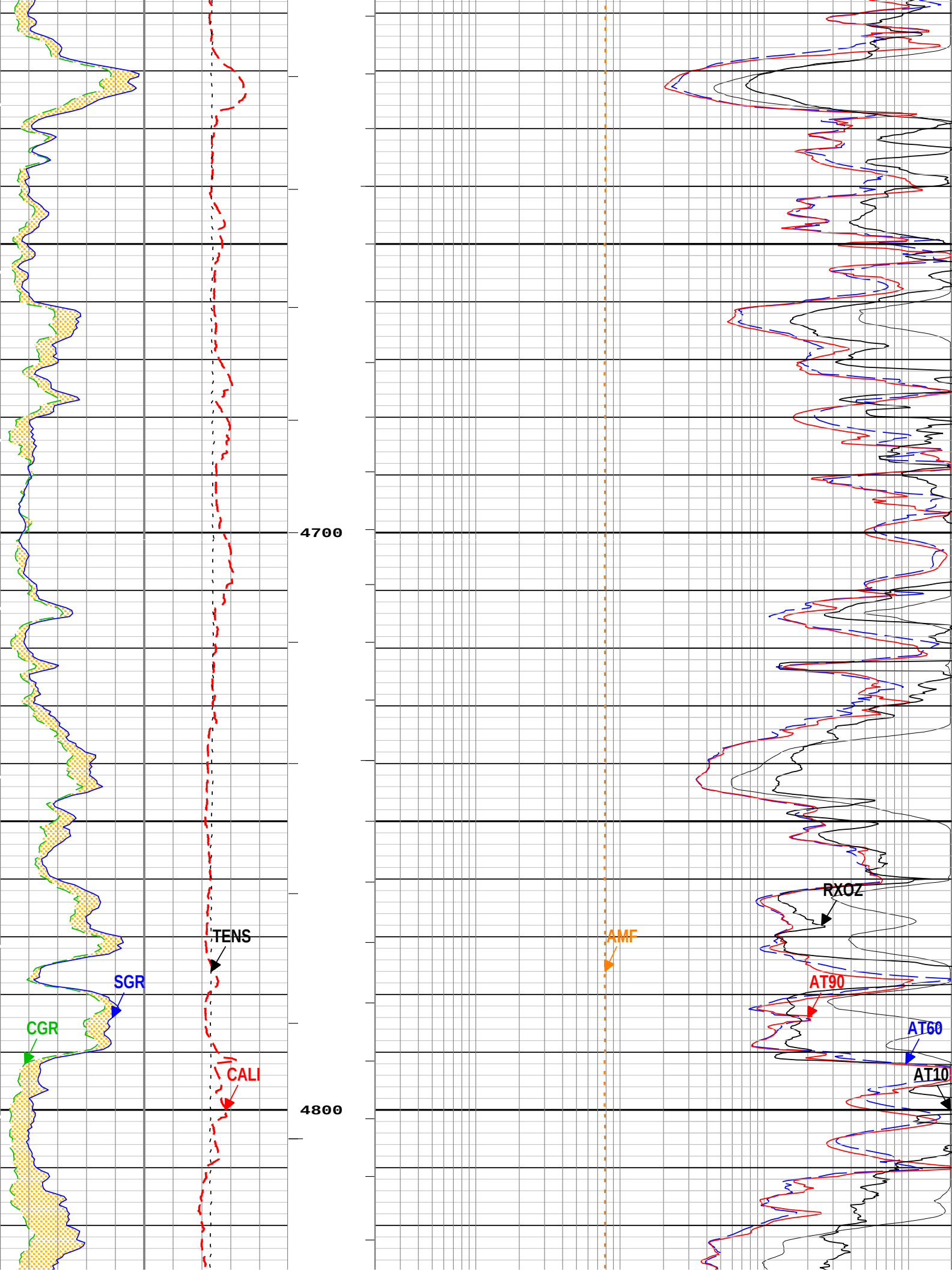


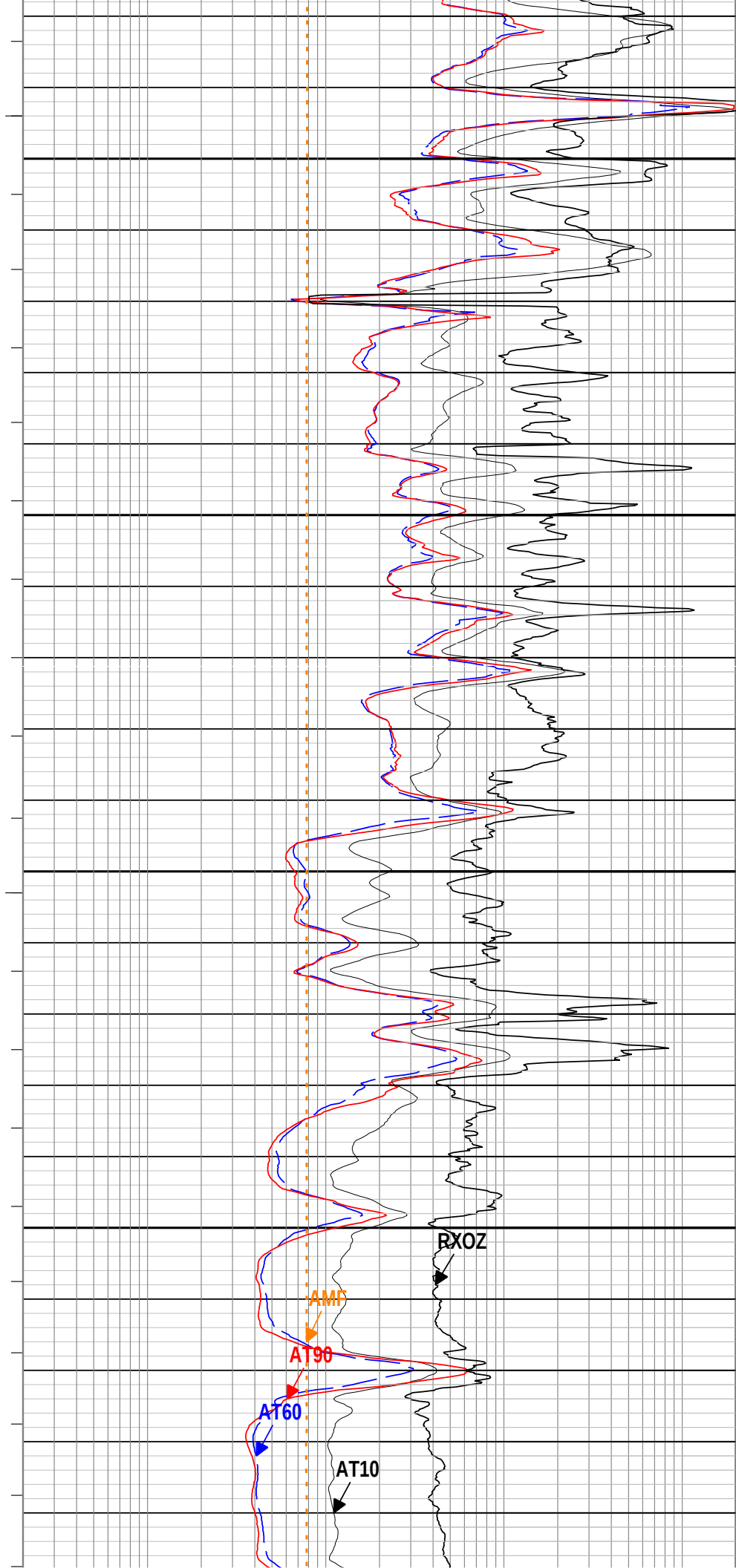
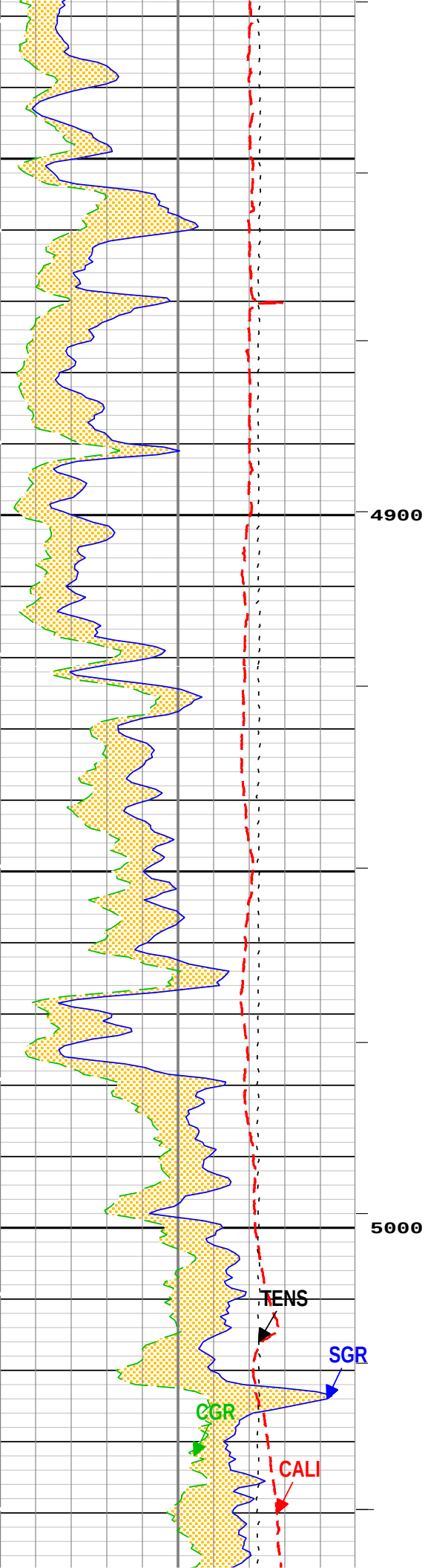


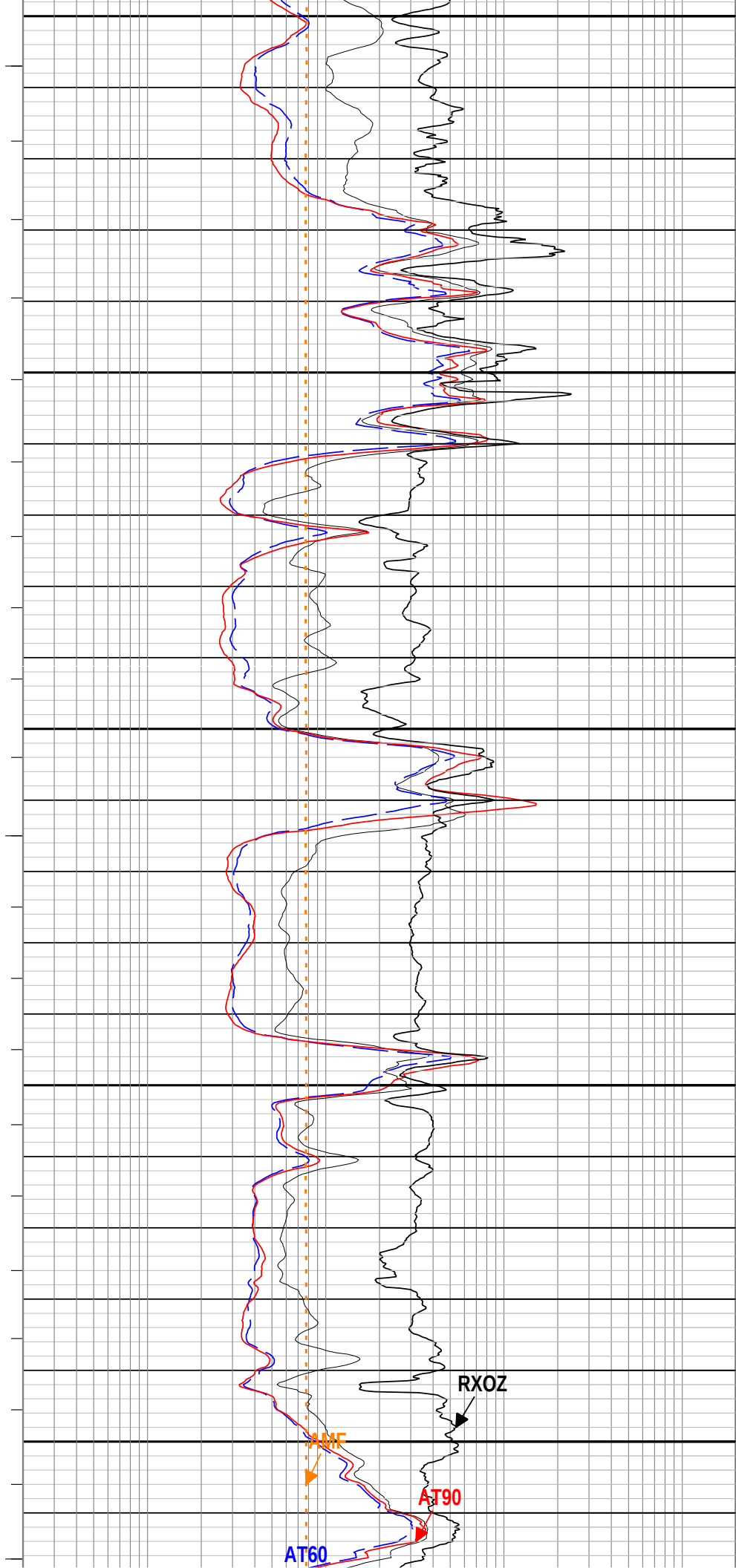
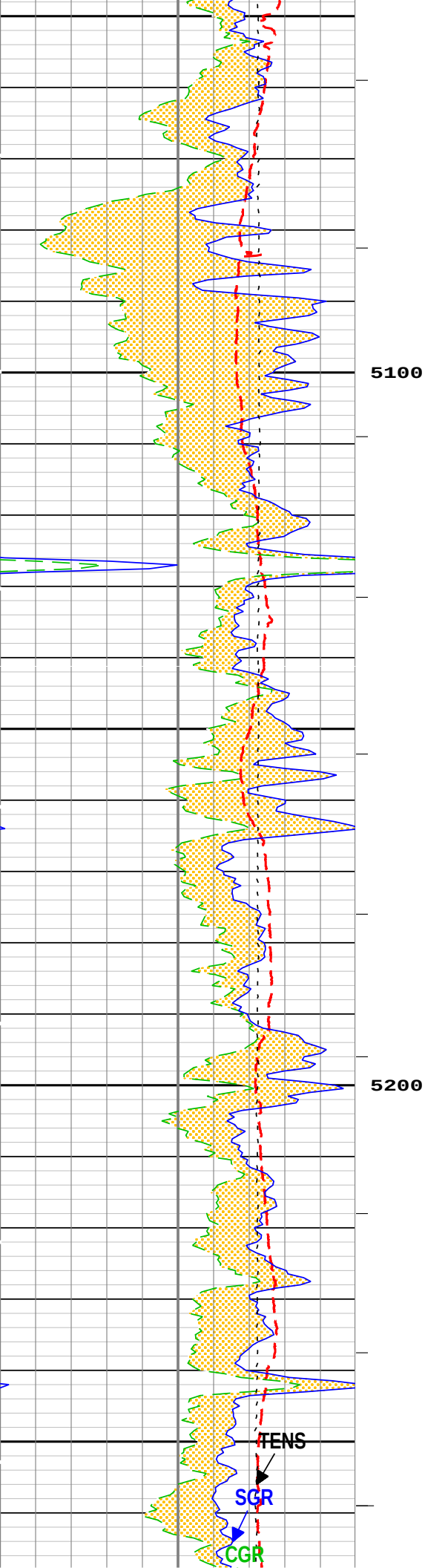


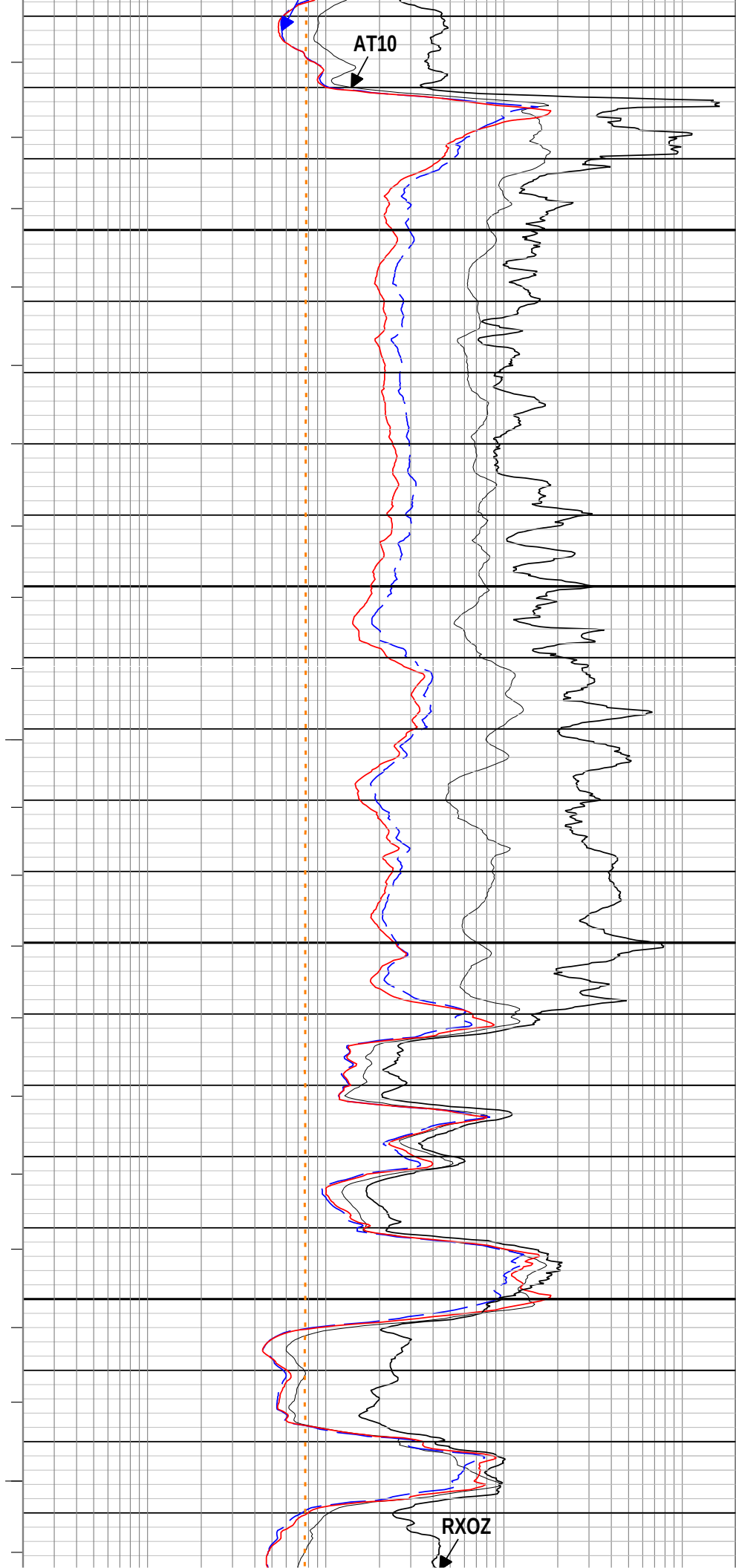
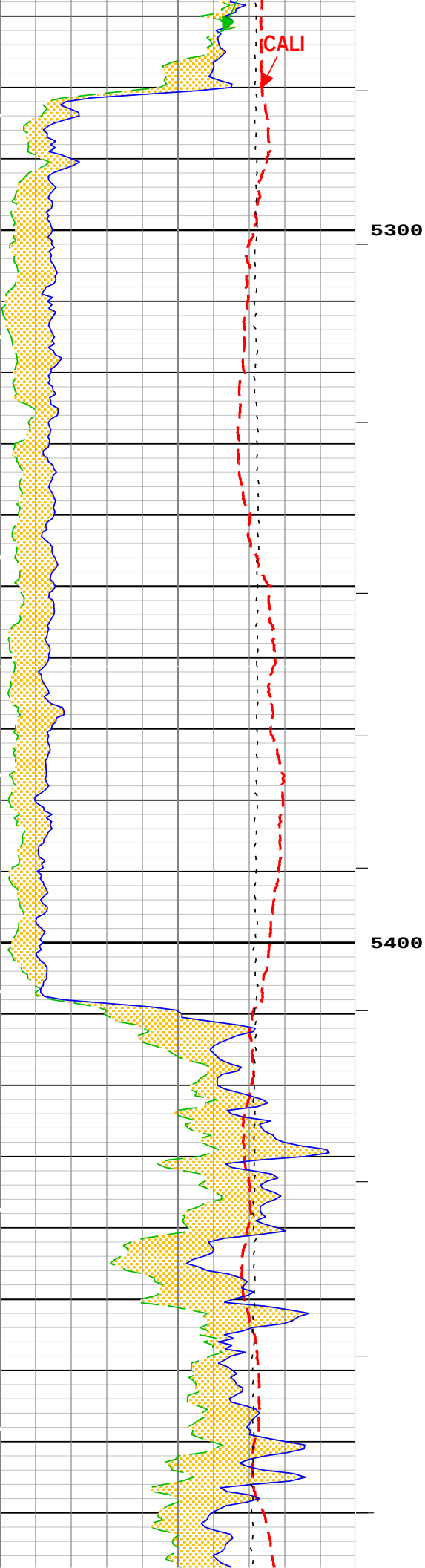


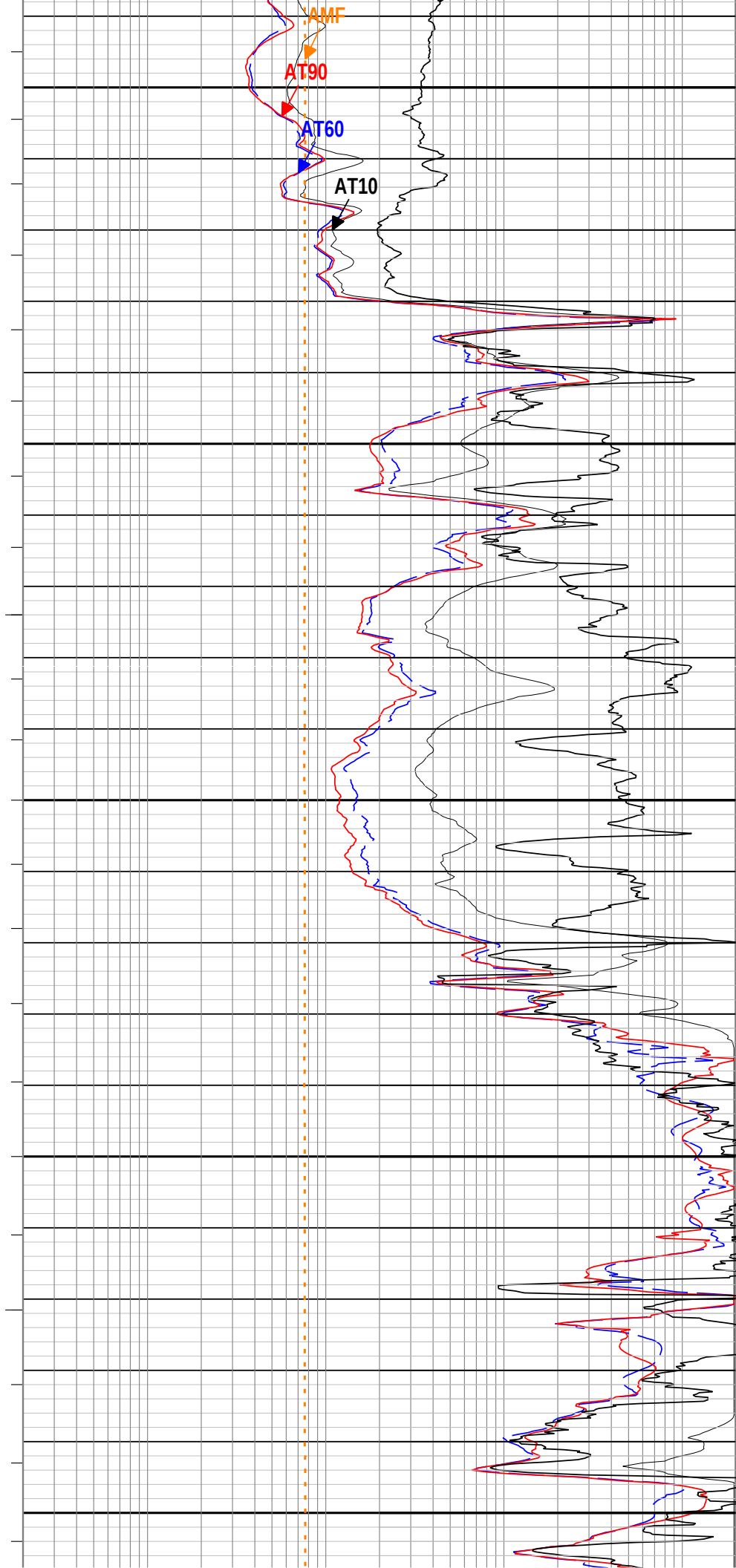
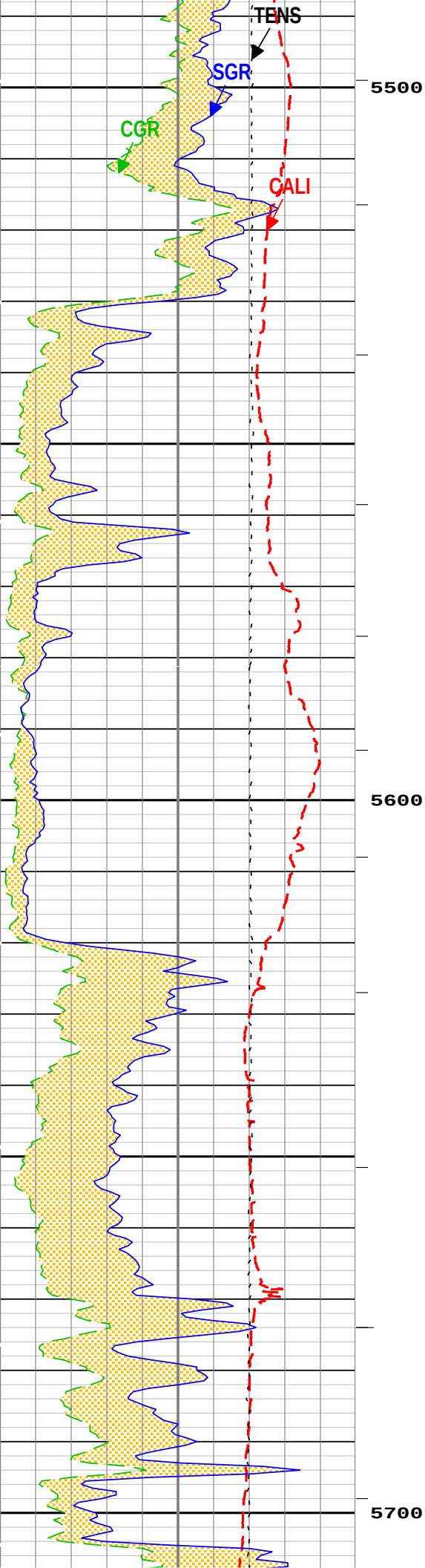


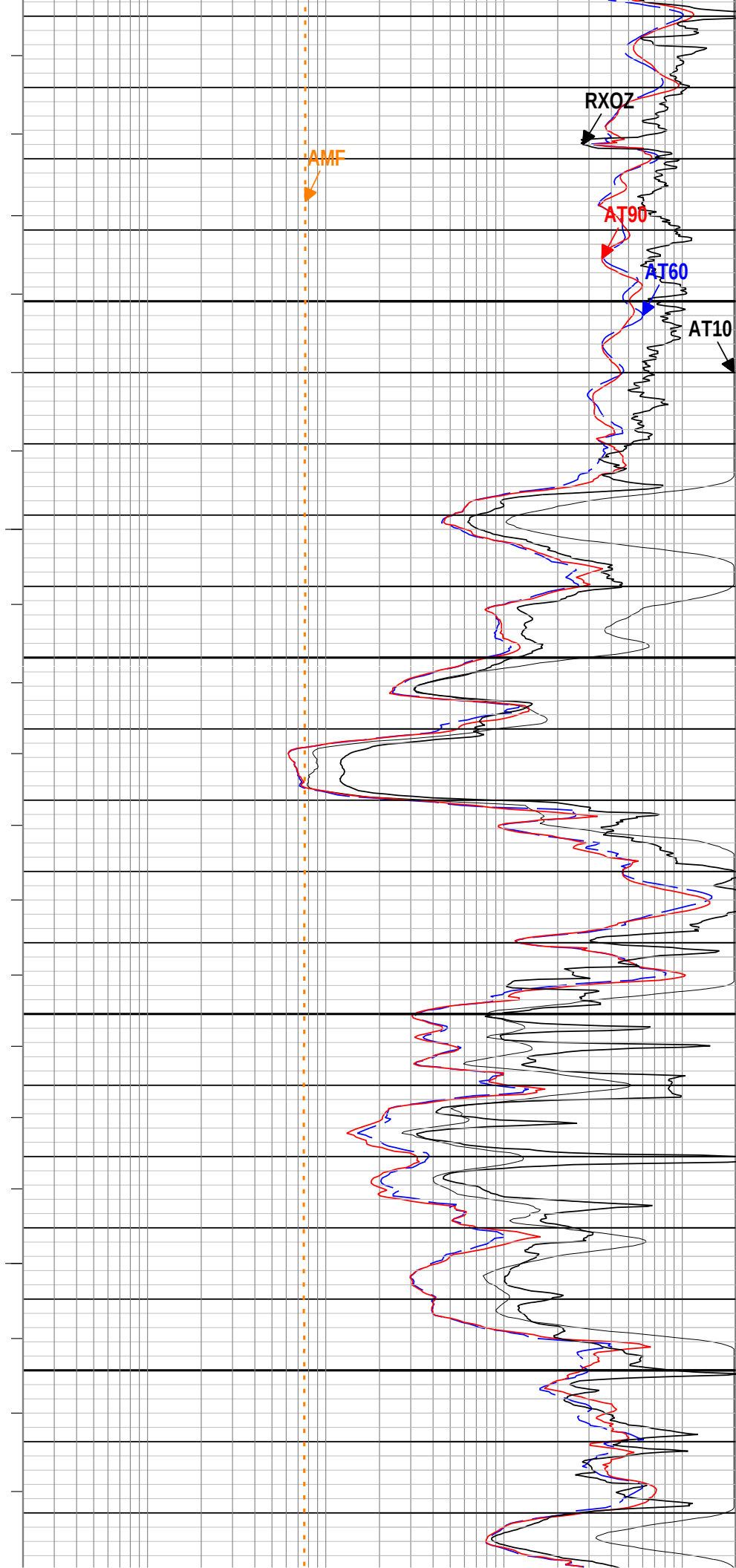
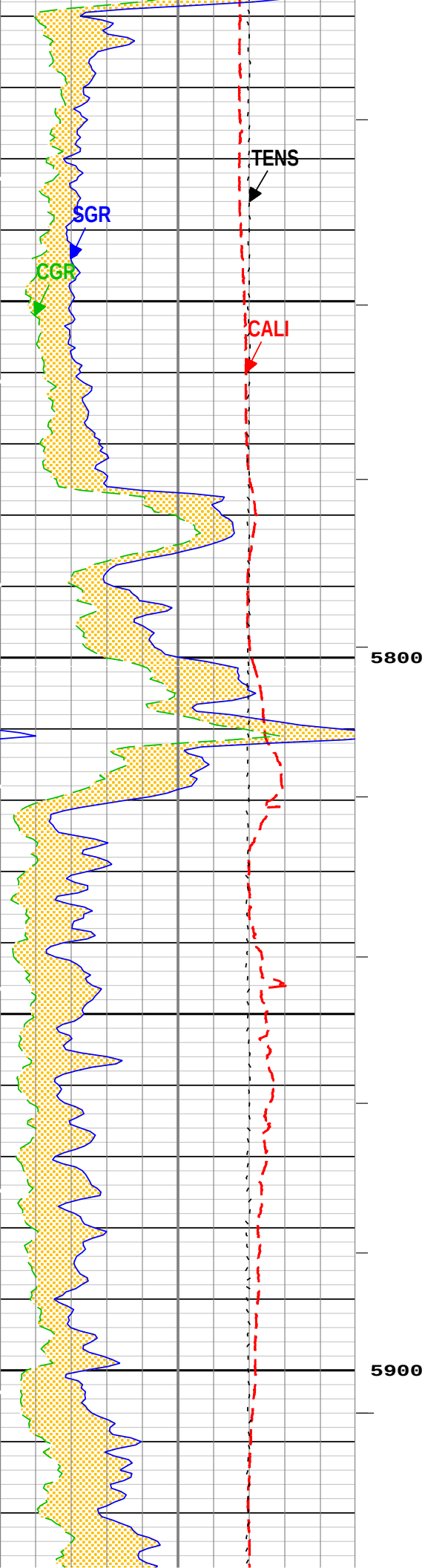


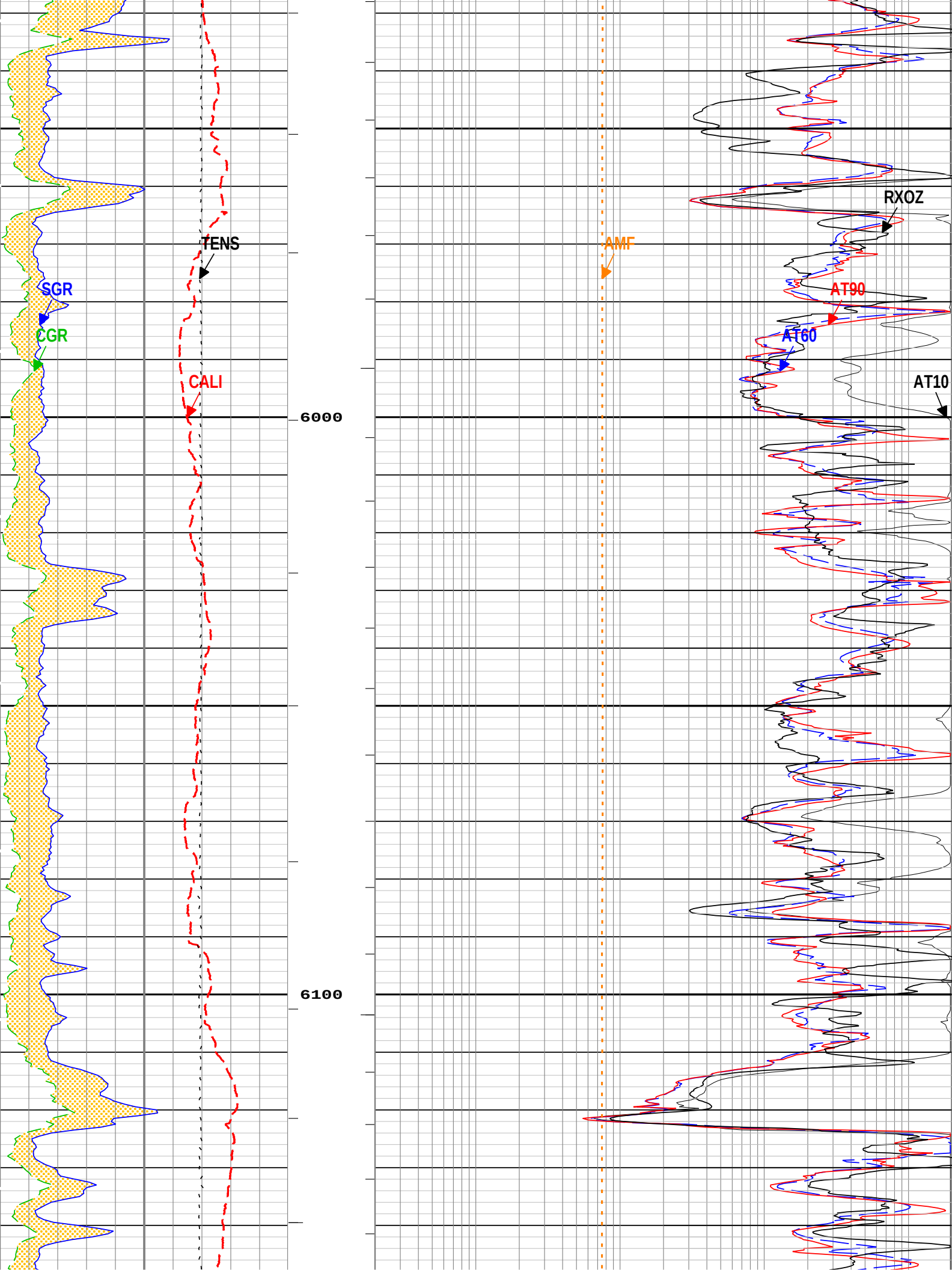


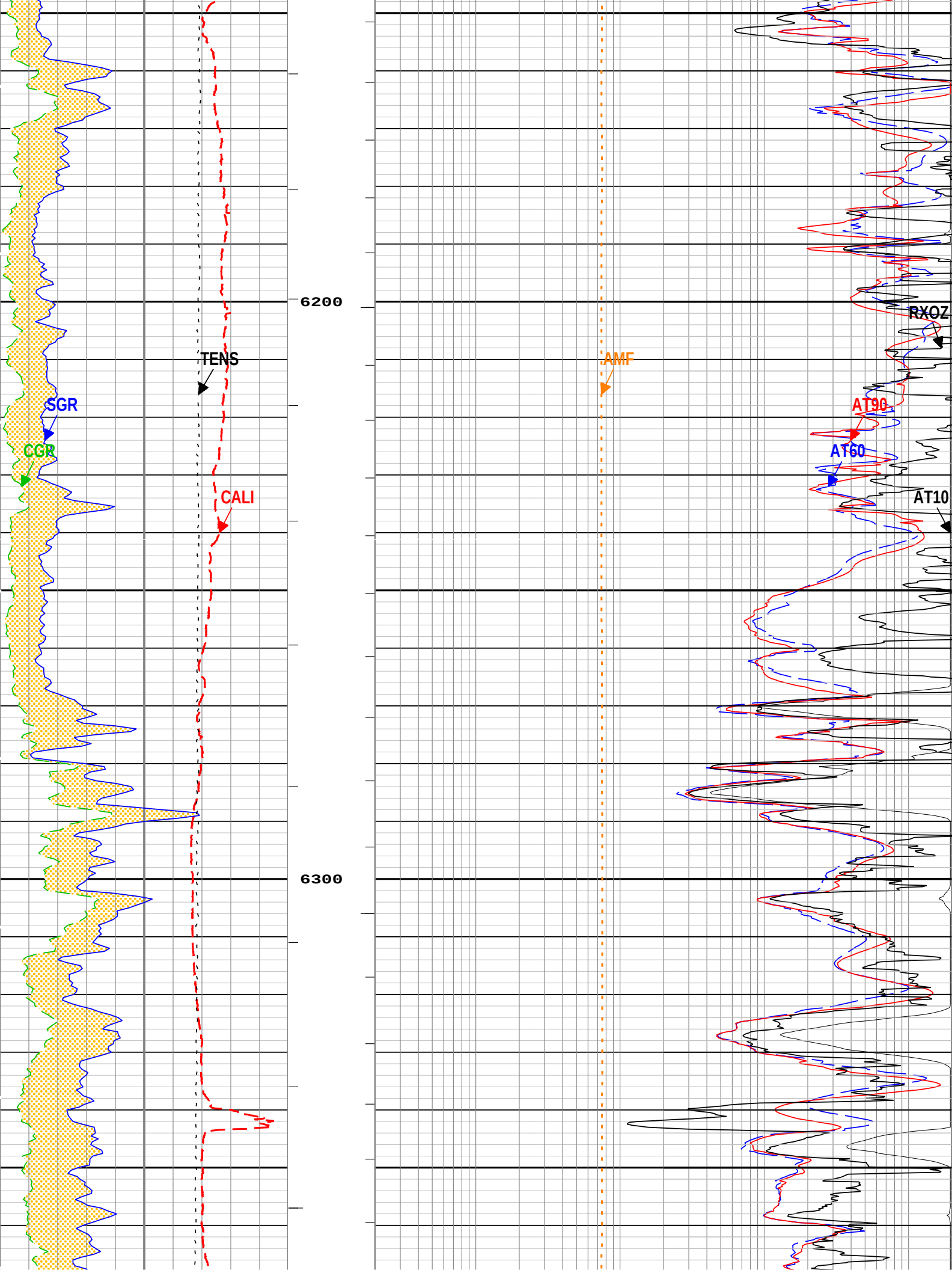


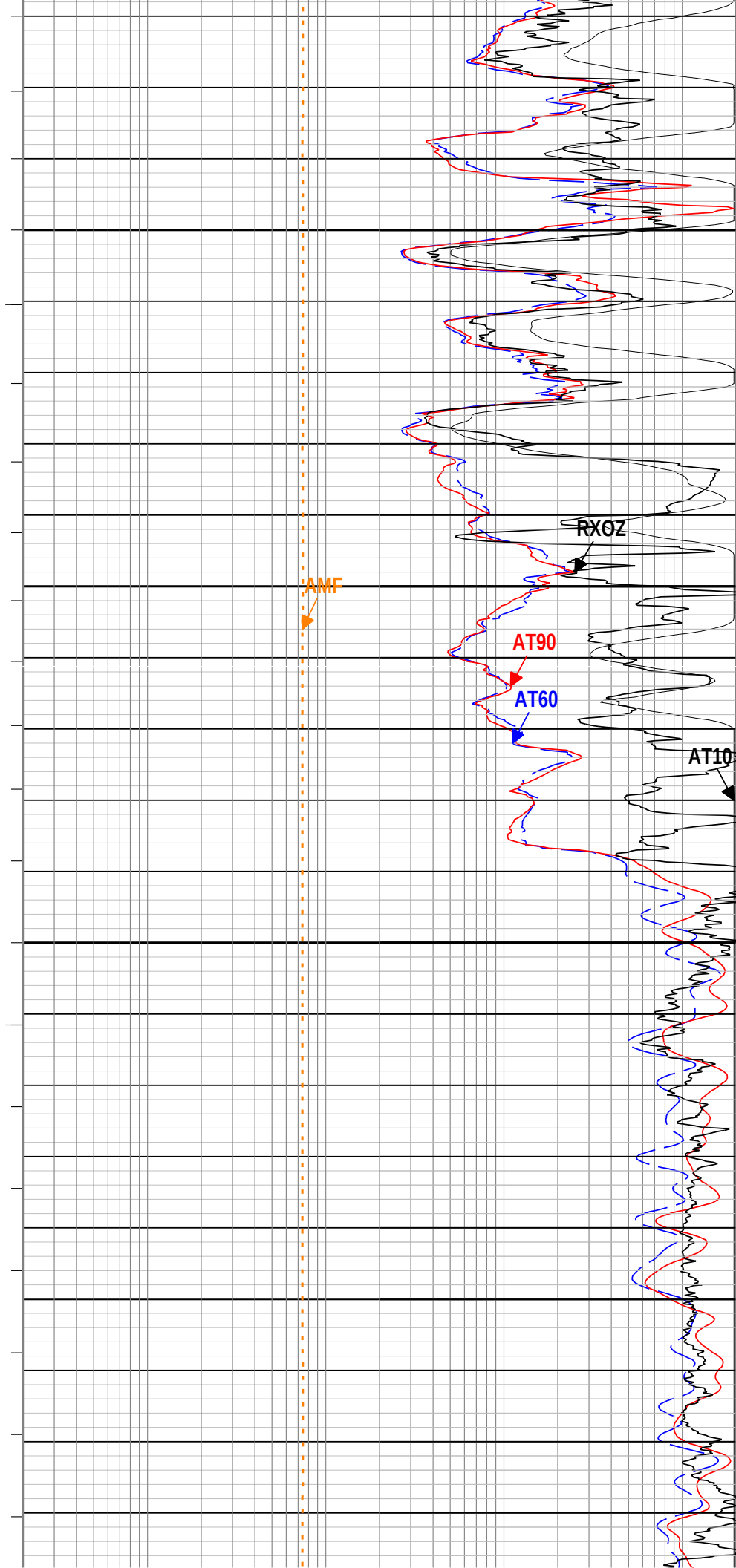
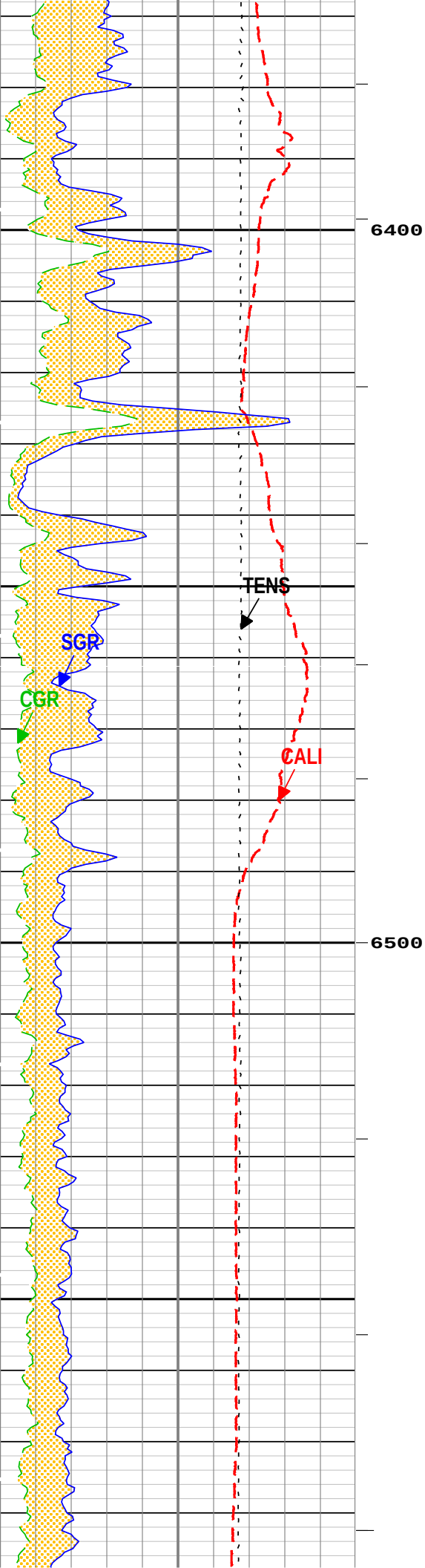


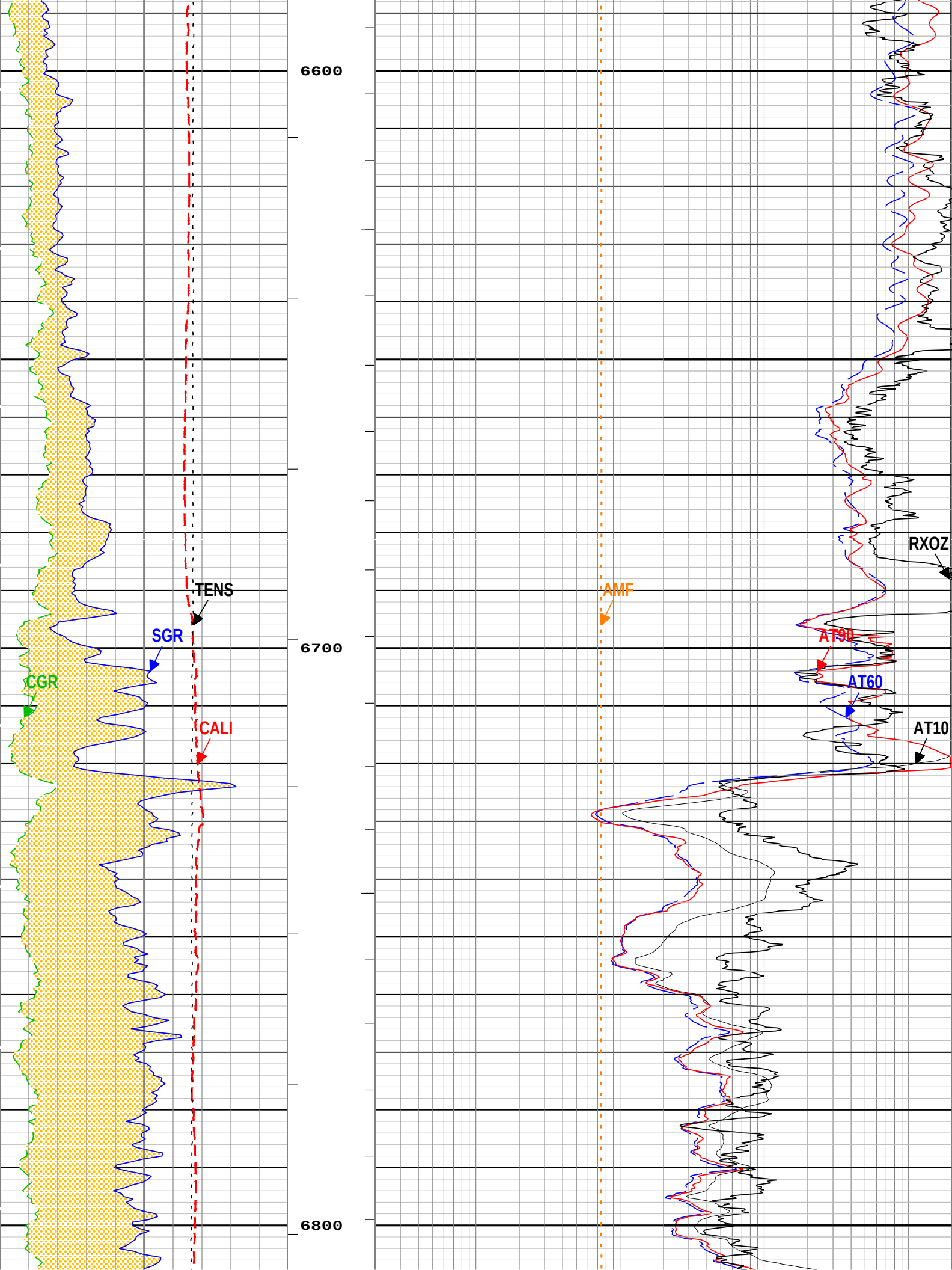


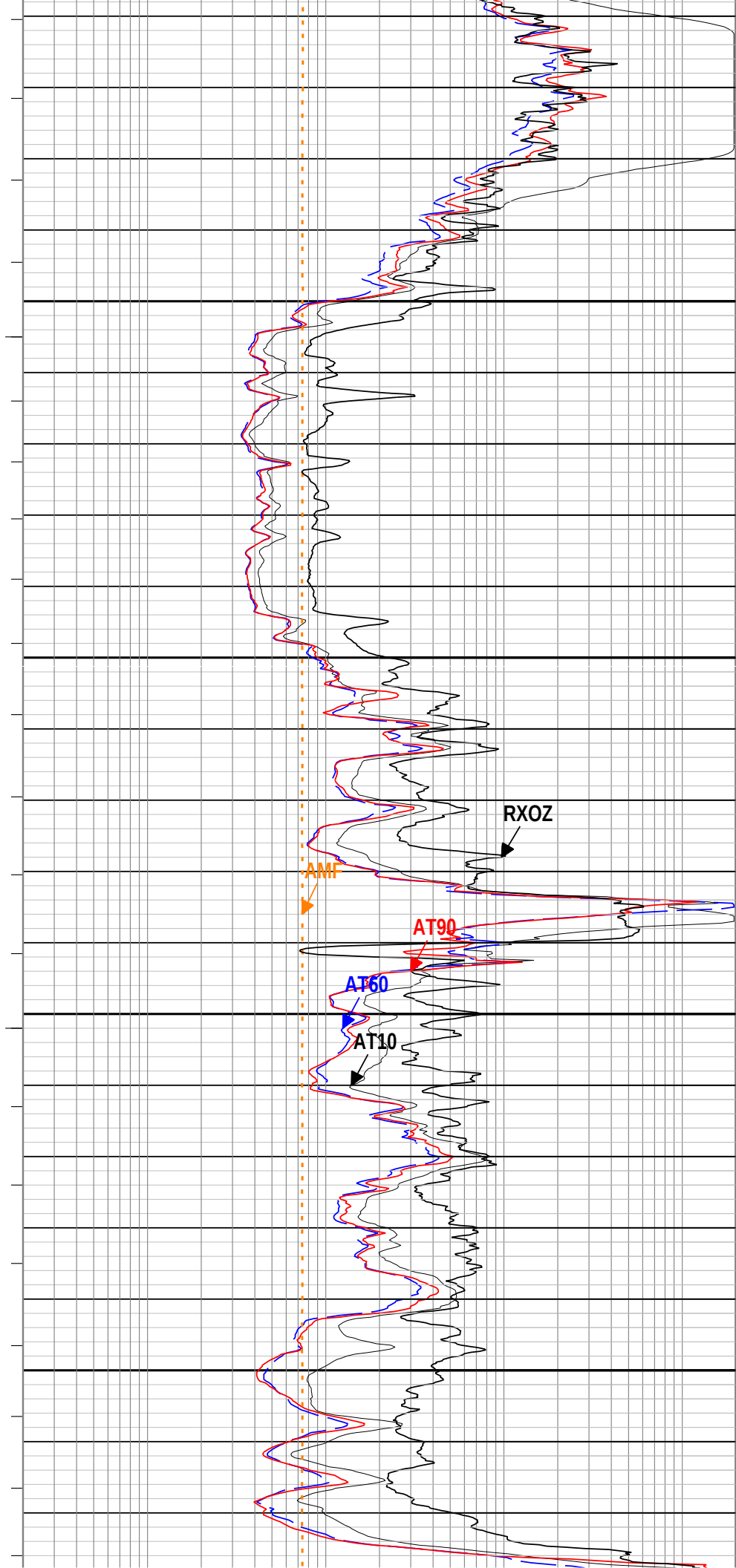
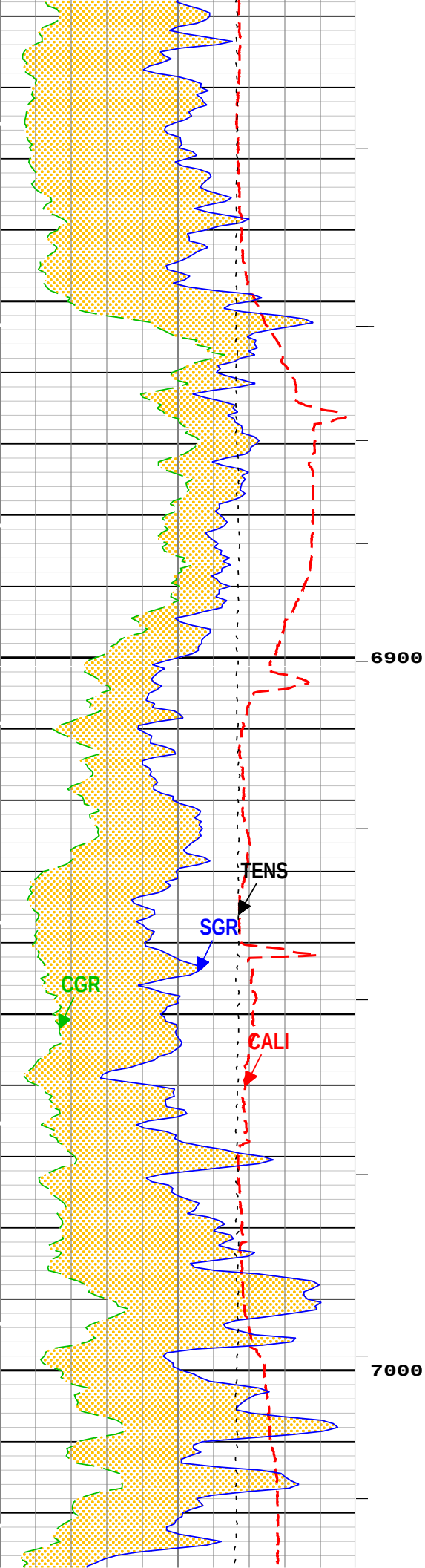


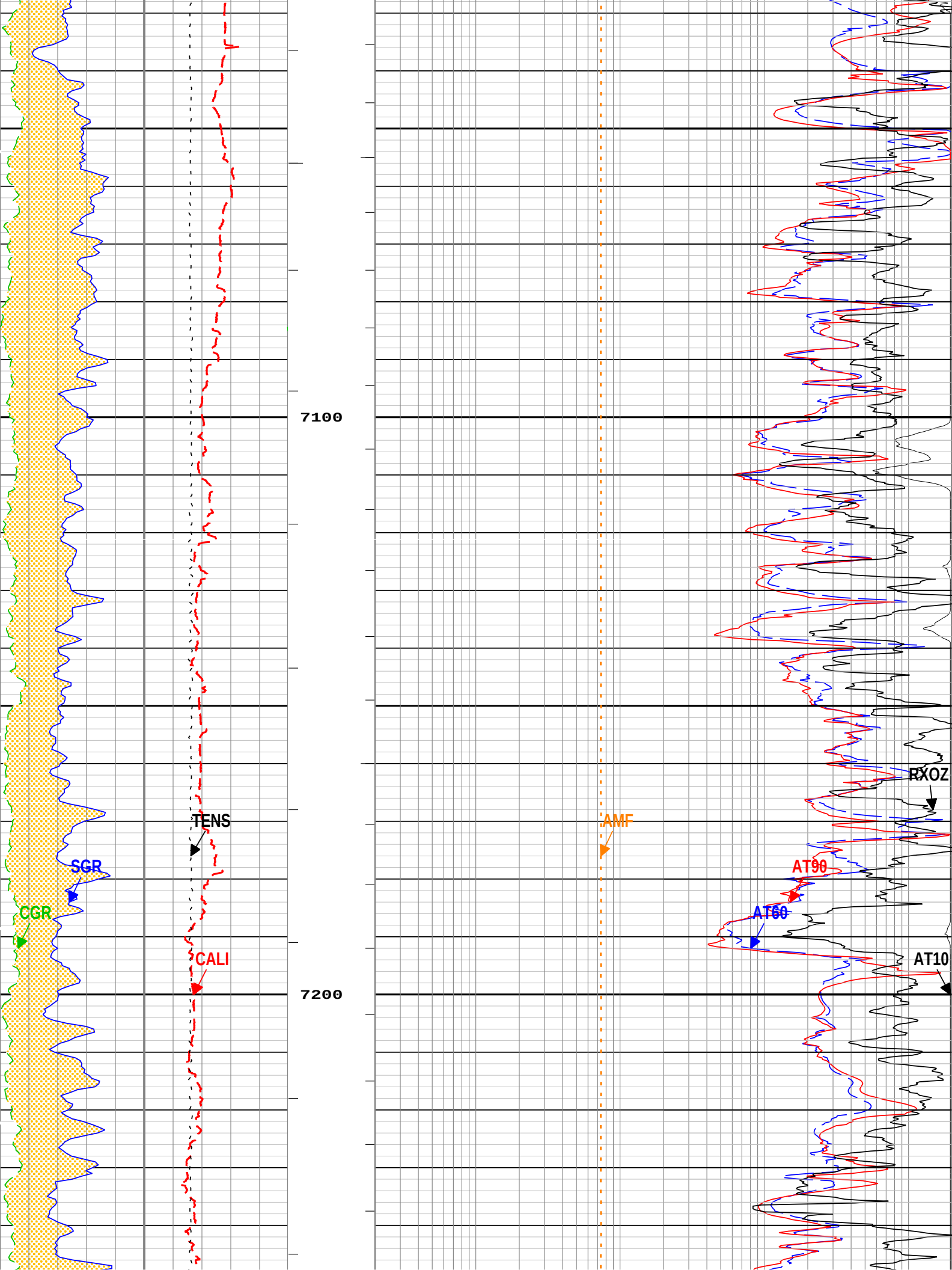


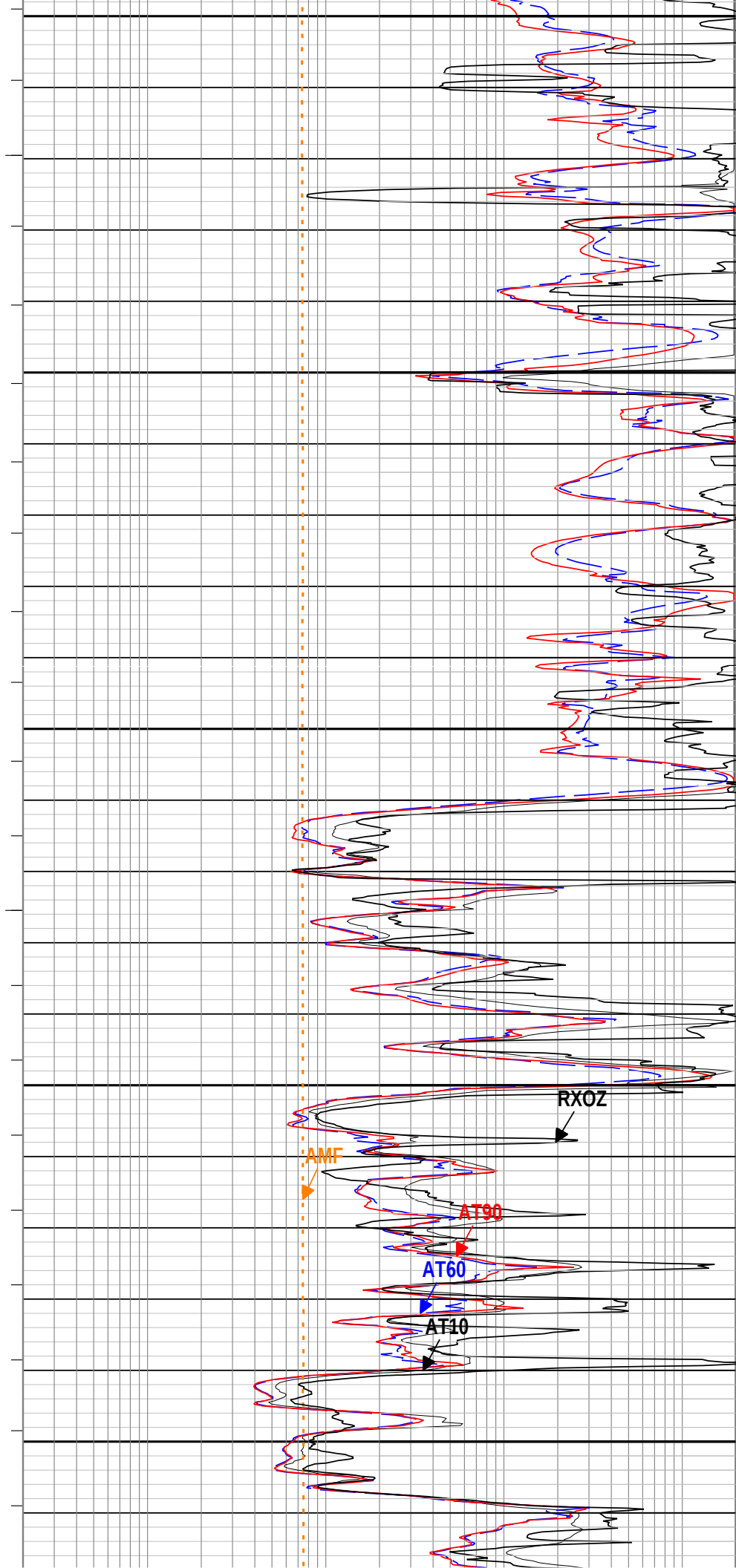
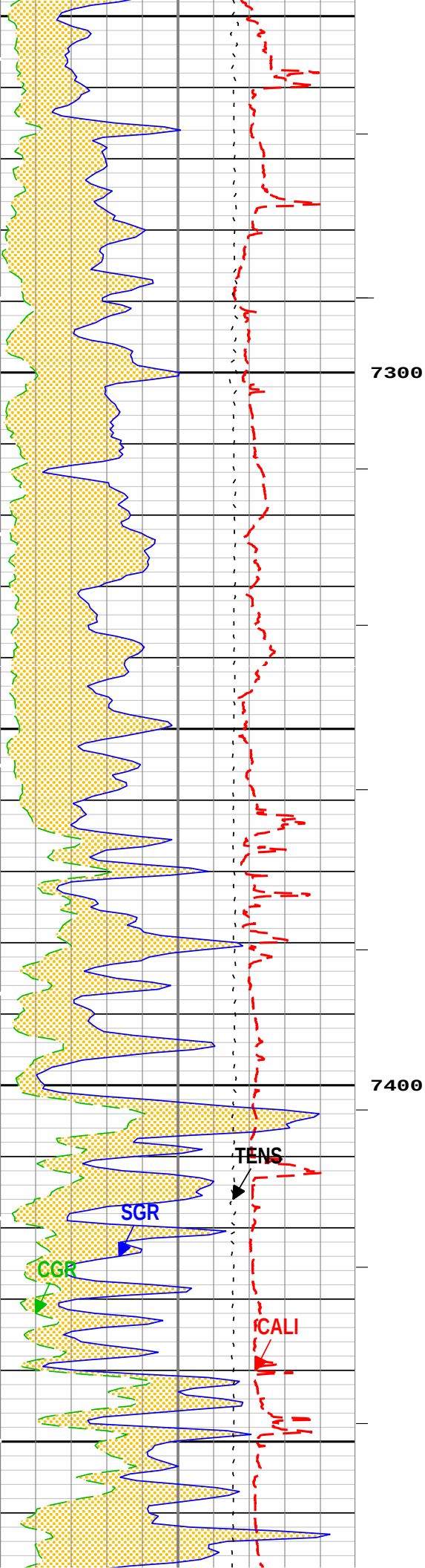


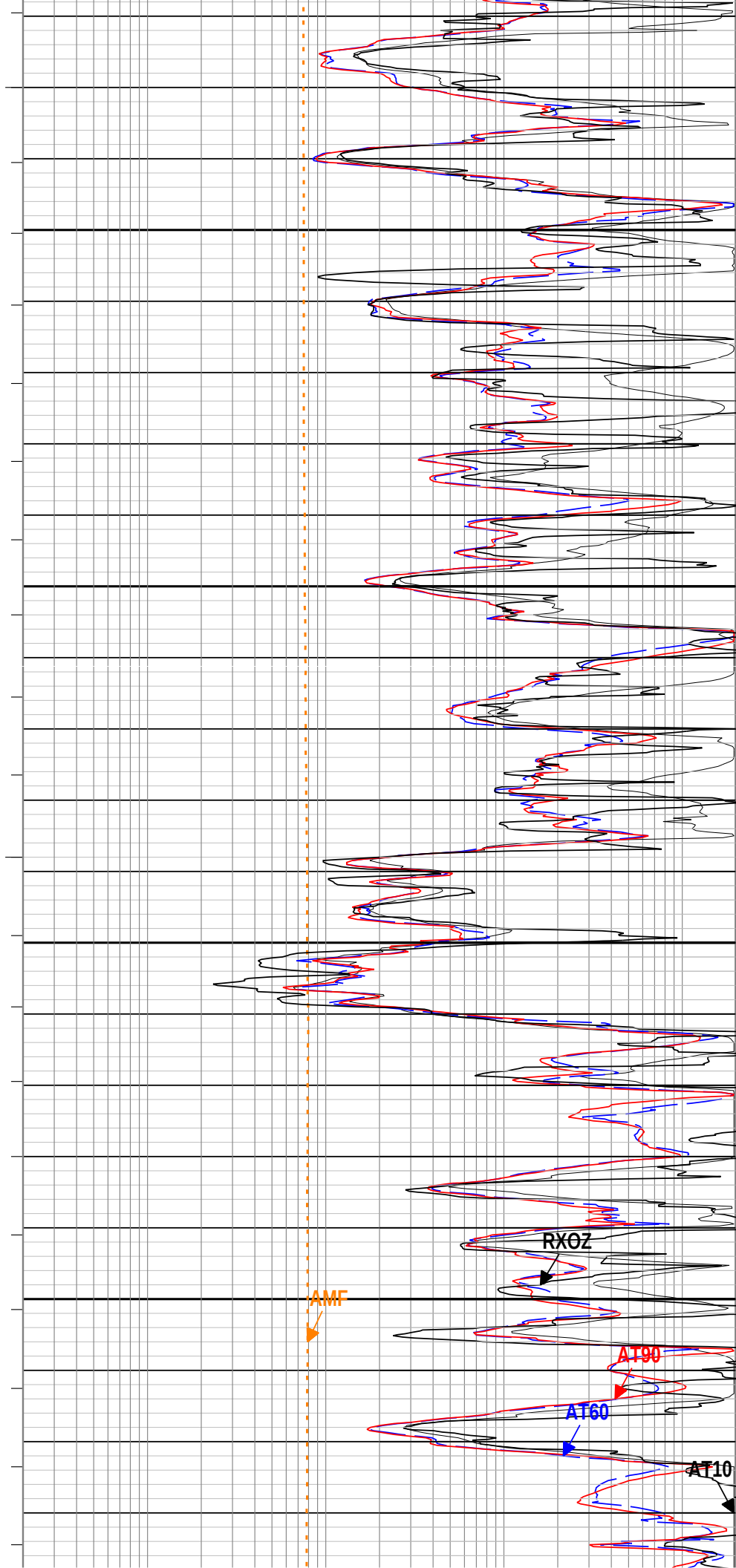
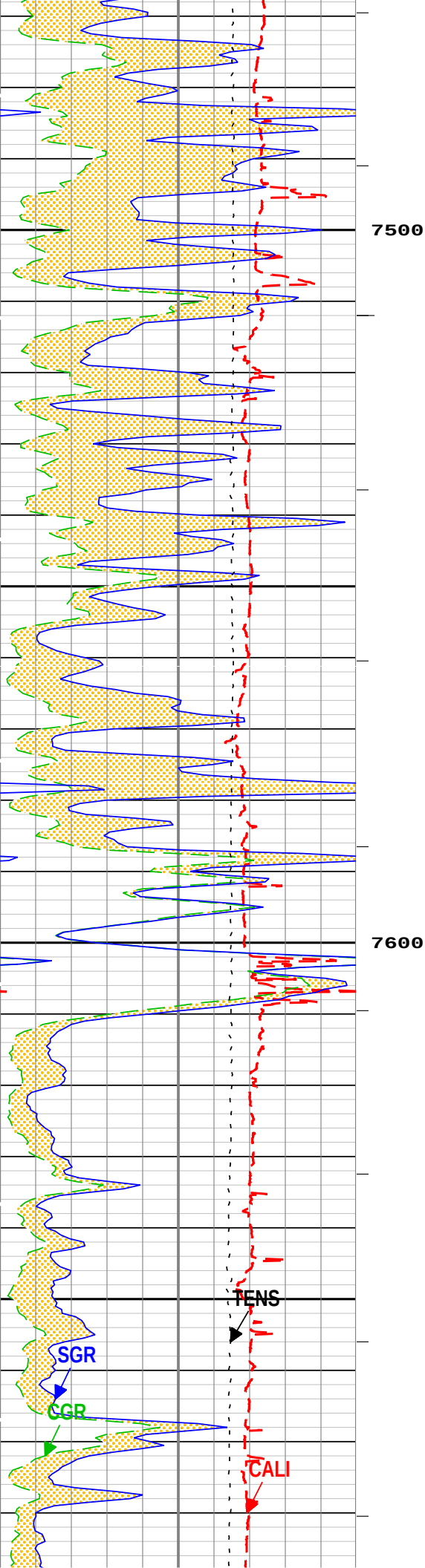


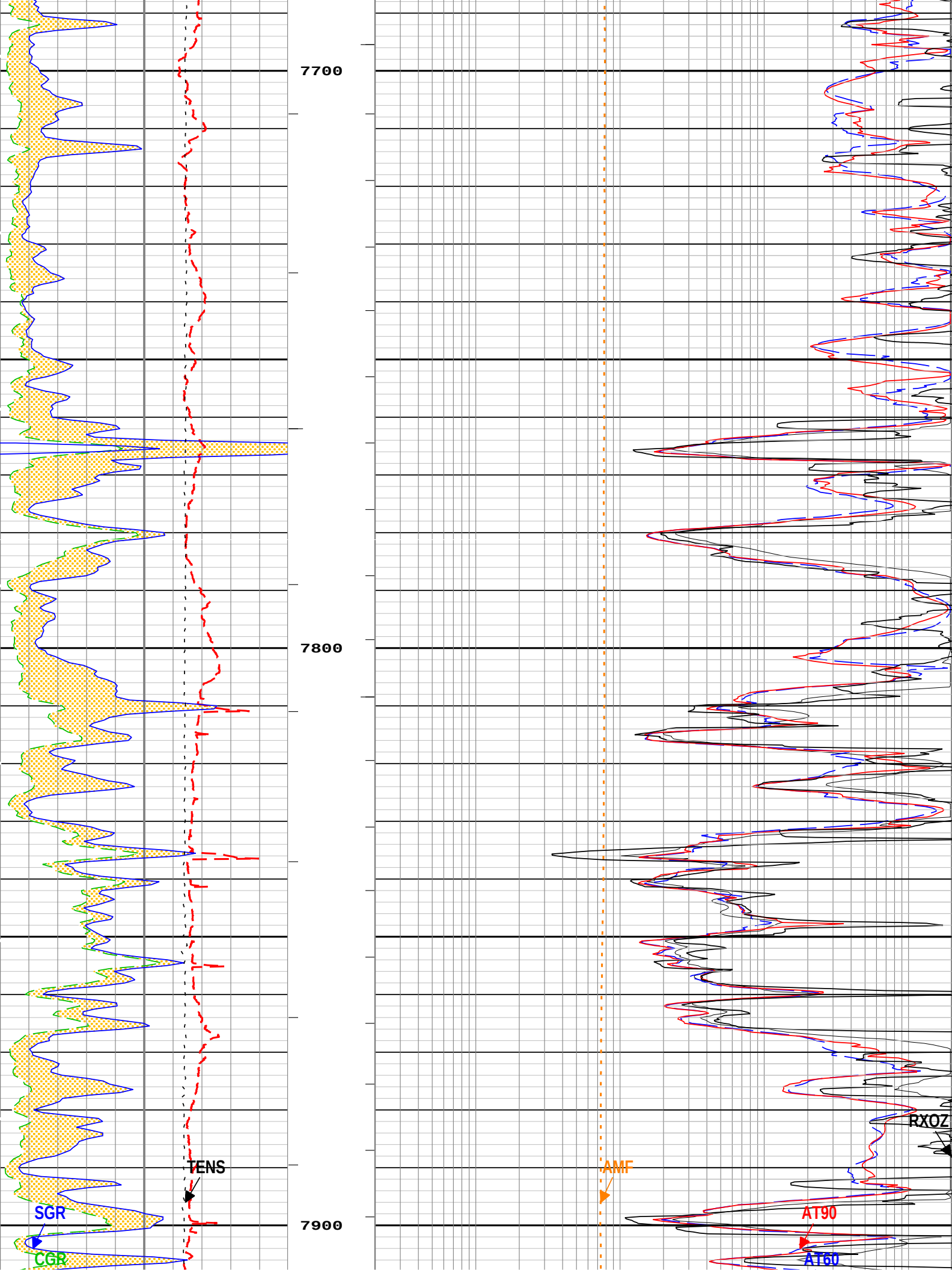


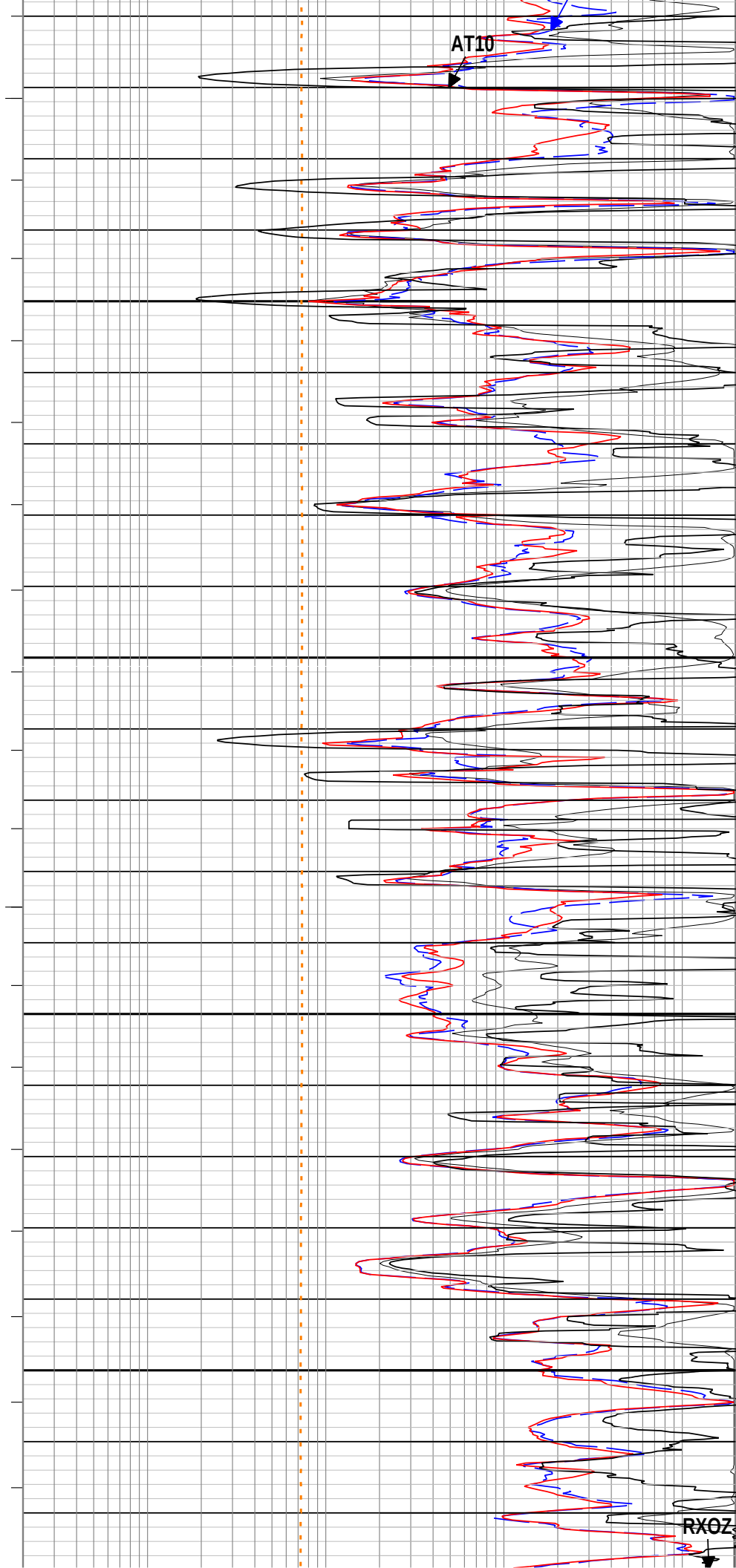
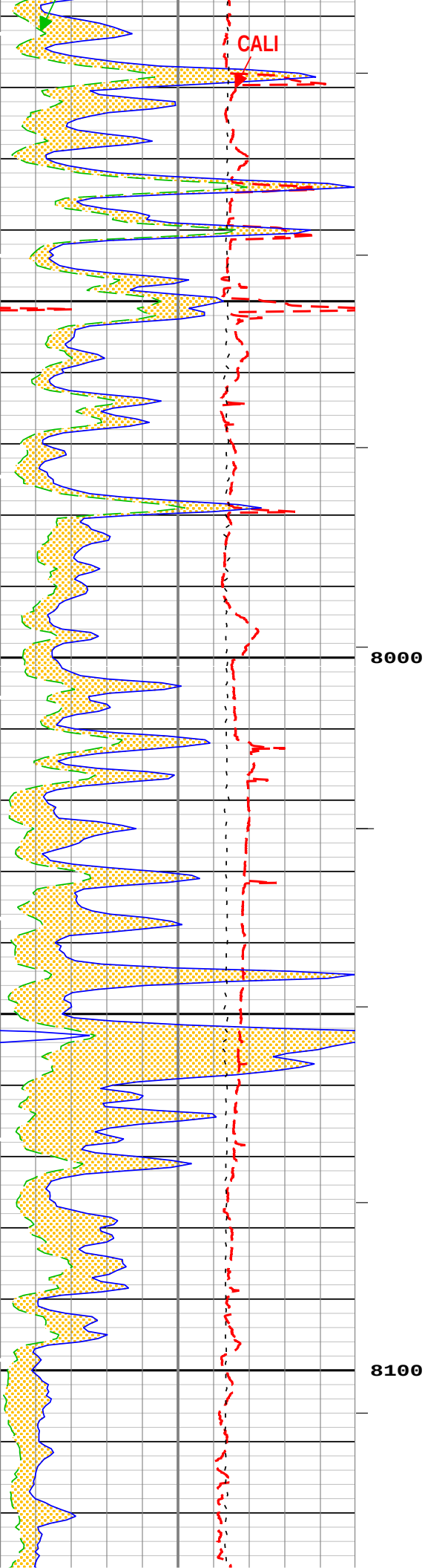


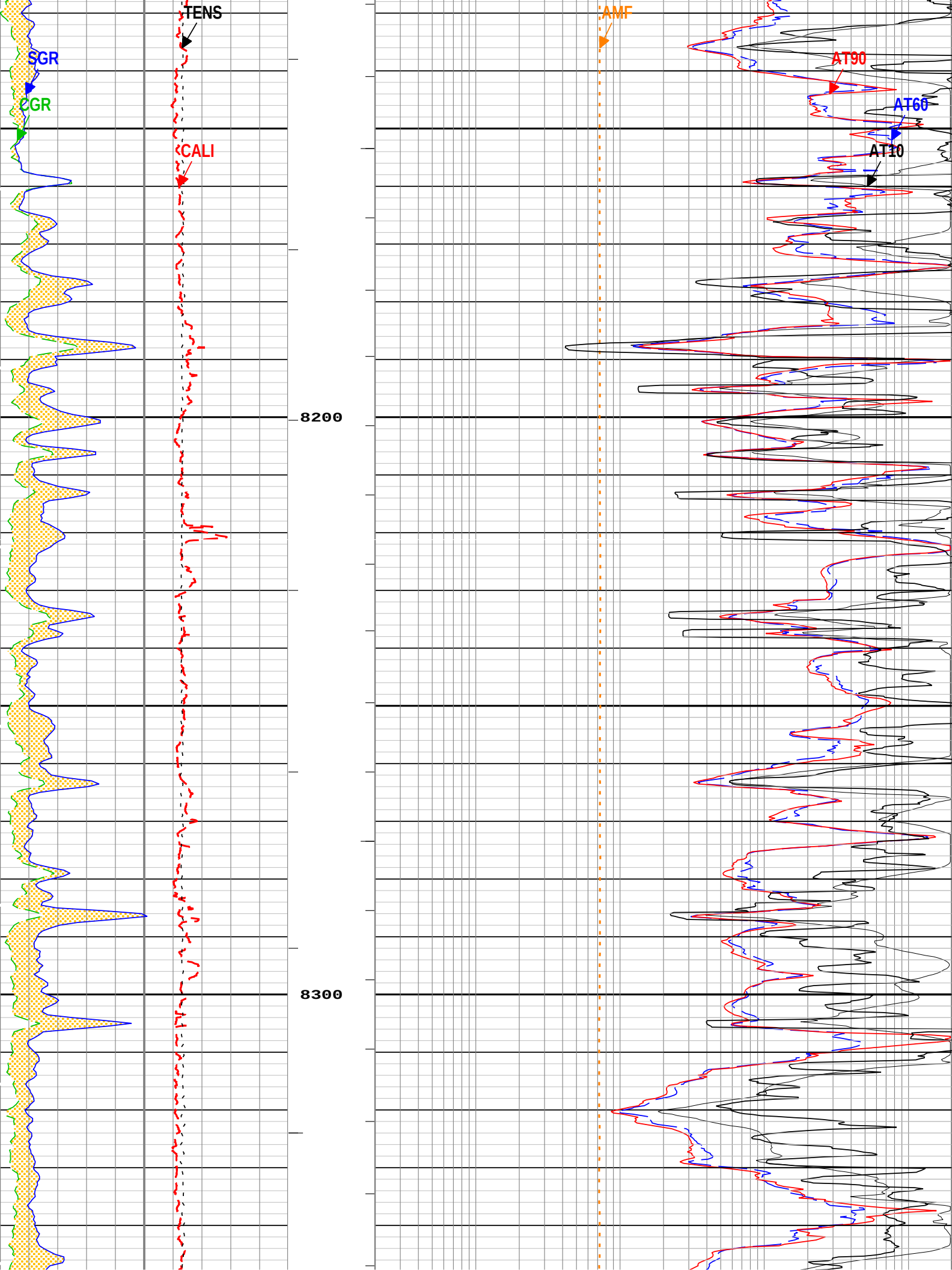


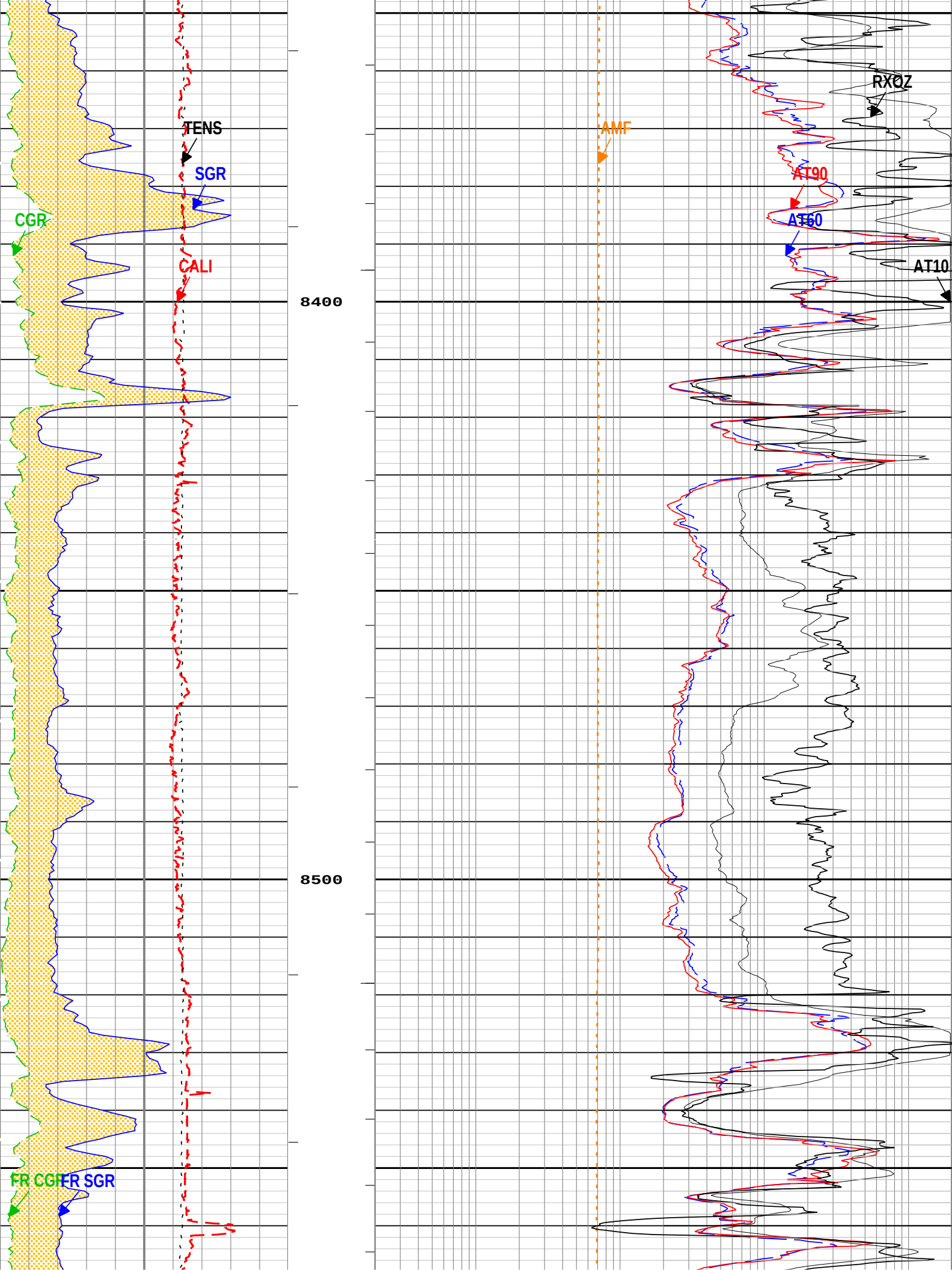


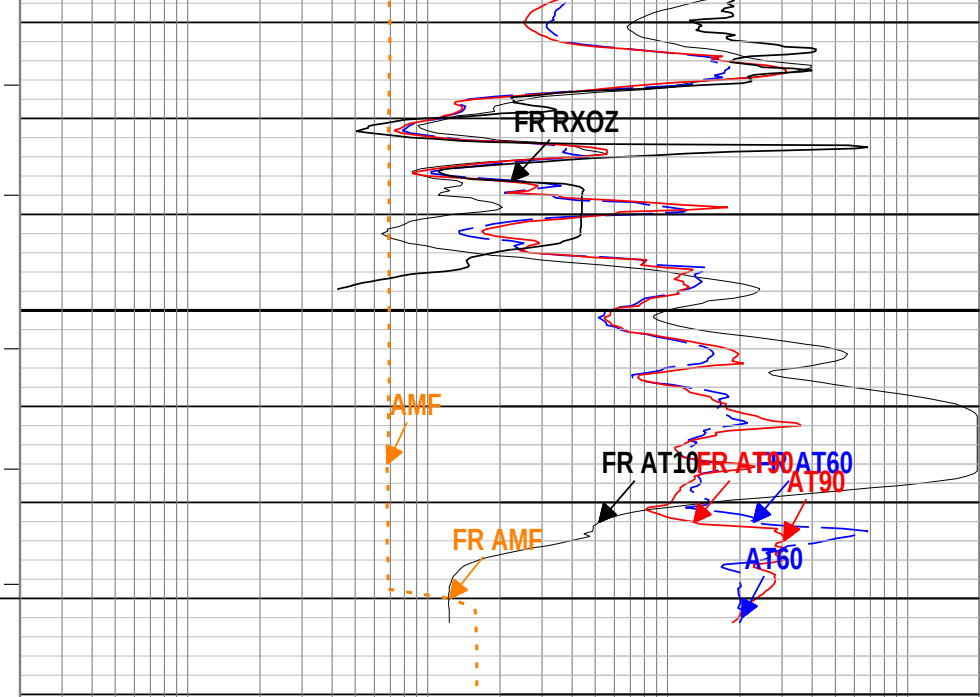
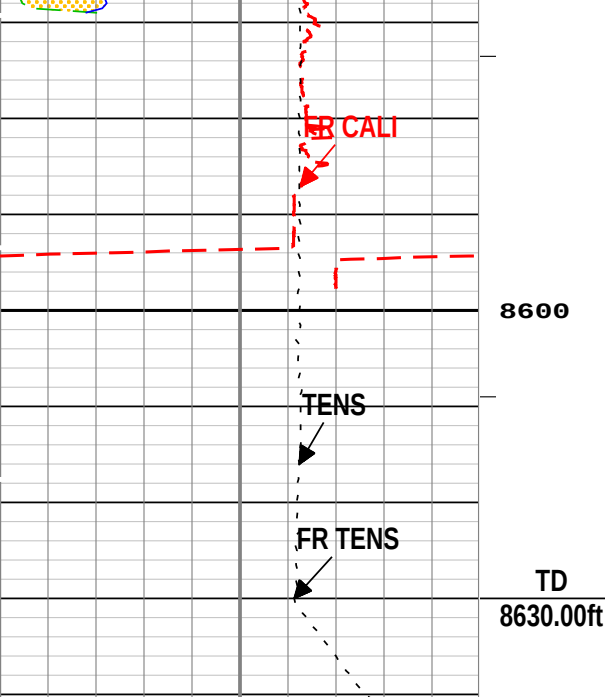












Uranium Indicator		
Caliper (CALI) HDRS-B		
6	in	16
Gamma Ray Contribution from Thorium and Potassium (CGR) HNGS-BA		
0	gAPI	100
Spectroscopy Gamma Ray (SGR) HNGS-BA		
0	gAPI	100
Cable Tension (TENS)		
10000	lbf	0

Array Induction Two Foot Resistivity A10 (AT10) AIT-M		
0.2	ohm.m	2000
Array Induction Two Foot Resistivity A60 (AT60) AIT-M		
0.2	ohm.m	2000
Array Induction Two Foot Resistivity A90 (AT90) AIT-M		
0.2	ohm.m	2000
Array Induction Mud Resistivity Fully Calibrated (AMF) AIT-M		
0.02	ohm.m	200
Invaded Formation Resistivity filtered at 18 inches (RXOZ) HDRS-B		
0.2	ohm.m	2000

TIME_1900 - Time Marked every 60.00 (s)

ICV - Integrated Cement Volume every 100.00 (ft3)

ICV - Integrated Cement Volume every 10.00 (ft3)

IHV - Integrated Hole Volume every 100.00 (ft3)

IHV - Integrated Hole Volume every 10.00 (ft3)

Description: AIT Basic Log Two Format: Log (Log (AIT_5_Inch)) Index Scale: 5 in per 100 ft Index Unit: ft Index Type: Measured Depth Creation Date: 30-Nov-2014 17:11:07

Channel Processing Parameters				
Parameter	Description	Tool	Value	Unit
AAPL	Array Induction Answer Product Level(Depth Log/View only)	AIT-M	Radial	
ABHM	Array Induction Borehole Correction Mode	AIT-M	Compute Standoff	
ACDE	Array Induction Casing Detection Enable	AIT-M	No	
ACEN	Array Induction Tool Centering Flag (in Borehole)	AIT-M	Eccentered	
AMRF	Array Induction Mud Resistivity Factor	AIT-M	1	
ASTA	Array Induction Tool Standoff	AIT-M	1.625	in
ATSE	Array Induction Temperature Selection(Sonde Error Correction)	AIT-M	Internal	
BAR1	Detector 1 Barite Constant	HNGS-BA	1	
BAR2	Detector 2 Barite Constant	HNGS-BA	1	
BARI	Barite Mud Presence Flag	Borehole	No	
BHK	Drilling Fluid Potassium Concentration	Borehole	0	%
BHS	Borehole Status (Open or Cased Hole)	Borehole	Depth Zoned	

BS	Bit Size	WLSESSION	Depth Zoned	in
CALI_SHIFT	CALI Supplementary Offset	HDRS-B	0.168	in
CBLO	Casing Bottom (Logger)	WLSESSION	3219.5	ft
CSODDRL	Casing Outer Diameter - Zoned along driller depths	WLSESSION	Depth Zoned	in
DBCC	Barite Constant Correction Flag	HNGS-BA	None	
DFD	Drilling Fluid Density	Borehole	8.8	lbm/gal
FCD	Future Casing (Outer) Diameter	WLSESSION	9.625	in
GCSE_DOWN_PASS	Generalized Caliper Selection for WL Log Down Passes	Borehole	BS	
GCSE_UP_PASS	Generalized Caliper Selection for WL Log Up Passes	Borehole	CALI	
GRSE	Generalized Mud Resistivity Selection, from Measured or Computed Mud Resistivity	Borehole	AMF	
H1P	Detector 1 Allow/Disallow in Processing	HNGS-BA	Allow	
H2P	Detector 2 Allow/Disallow in Processing	HNGS-BA	Allow	
HALF	Alpha Filter Length	HNGS-BA	60	in
HATIM	Marquardt Accumulation Time	HNGS-BA	600	s
HCRB	Apply Borehole Potassium Correction	HNGS-BA	None	
HEMA	Hematite Presence Flag	Borehole	No	
HVCS	Integrated Hole Volume Caliper Selection	Borehole	Measured Area	
IHVC	Integrated Hole Volume Control	Borehole	Start	
MHCC	Switch to select MCFL High Contrast Correction	HDRS-B	No	
MPOF	MCFL Processing Operation Mode	HDRS-B	On	
SGRC	Standard Gamma Ray Correction Flag	HNGS-BA	Yes	
TPOS	Tool Position: Centered or Eccentered	HNGS-BA	Eccentered	

Depth Zone Parameters

Parameter	Value	Start (ft)	Stop (ft)
BHS	Cased	0	3520
BHS	Open	3520	8641
BS	26	0	1570
BS	17.5	1570	3226.75
BS	12.25	3226.75	8630
CSODDRL	20	0	1570
CSODDRL	13.375	1570	3220

All depth are actual.

Tool Control Parameters	
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Parameter	Description	Tool	Value	Unit
HRGD_BRD_TYPE	HRGD Board Type	HDRS-B	WITH_HET	
MAX_LOG_SPEED	Toolstring Maximum Logging Speed	WLSESSION	1800	ft/h
STSO_HRDD	Temperature Source for the Density Algorithm	HDRS-B	HET data channel	

Main Pass 5"=100'									
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Pass Summary	
1	100%
2	100%
3	100%
4	100%
5	100%
6	100%
7	100%
8	100%
9	100%
10	100%
11	100%
12	100%
13	100%
14	100%
15	100%
16	100%
17	100%
18	100%
19	100%
20	100%
21	100%
22	100%
23	100%
24	100%
25	100%
26	100%
27	100%
28	100%
29	100%
30	100%
31	100%
32	100%
33	100%
34	100%
35	100%
36	100%
37	100%
38	100%
39	100%
40	100%
41	100%
42	100%
43	100%
44	100%
45	100%
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85	100%
86	100%
87	100%
88	100%
89	100%
90	100%
91	100%
92	100%
93	100%
94	100%
95	100%
96	100%
97	100%
98	100%
99	100%
100	100%

Run Name	Pass Objective	Direction	Top	Bottom	Start	Stop	DSC Mode	Depth Shift	Include Parallel Data
Run 3a	Main[3]:Up	Up	8020.70 ft	9265.70 ft	10-Dec-2014 4:51:32 AM	10-Dec-2014 5:17:20 AM	ON	6.53 ft	No

All depths are referenced to toolstring zero

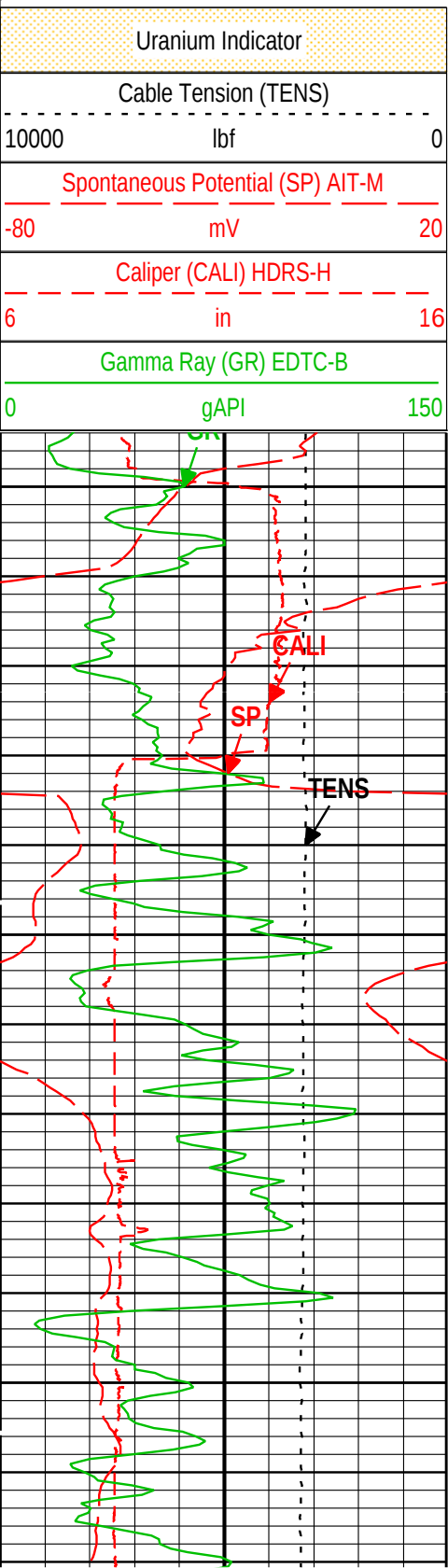
Log	Company:PB ENERGY STORAGE SERVICES, INC	Well:DCP Linam Ranch AGI #2
		Run 3a: Main[3]:Up:S012

Description: HRLT BASIC LOG Format: Log (HRLA_5_Inch) Index Scale: 5 in per 100 ft Index Unit: ft Index Type: Measured Depth Creation Date: 10-Dec-2014 09:14:44

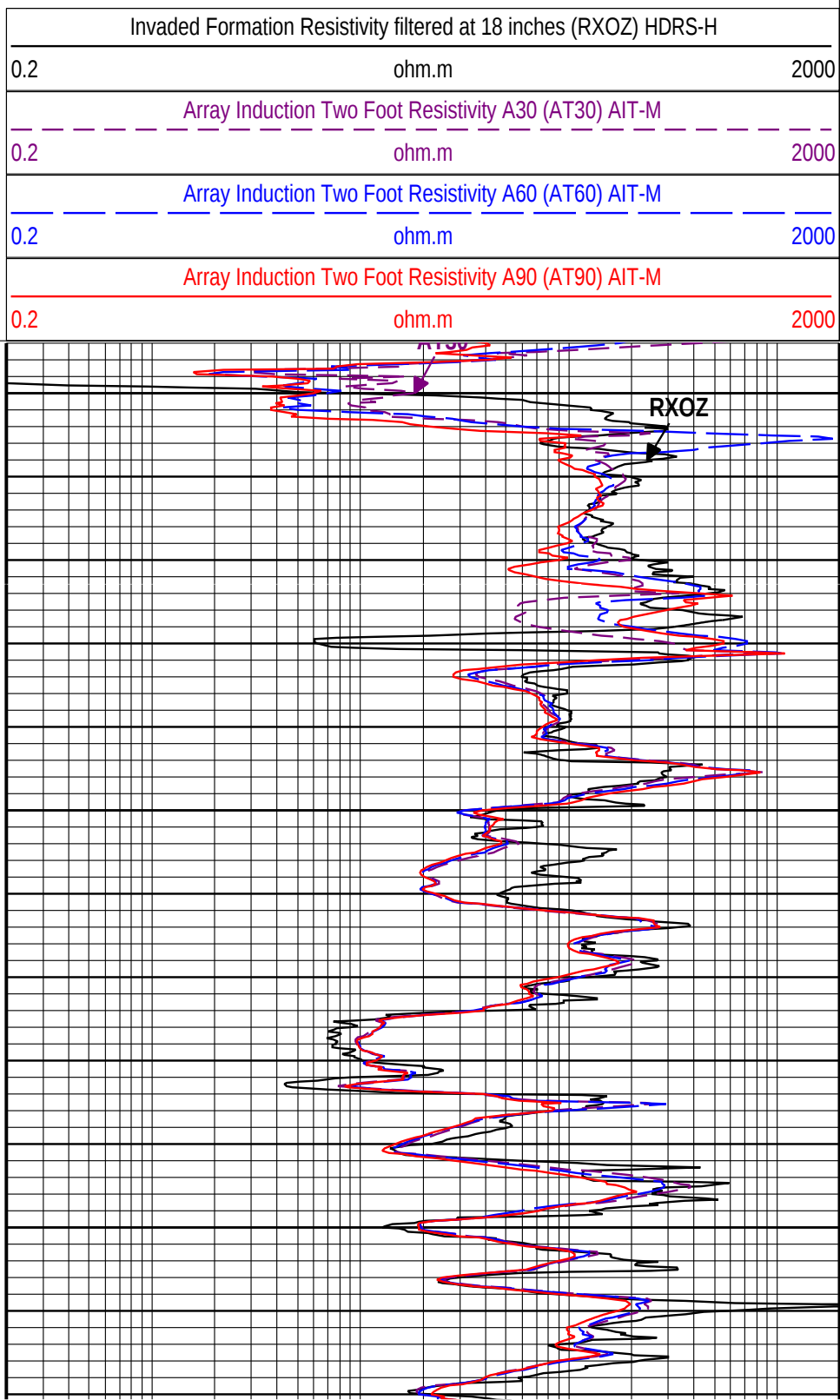
Channel	Source	Sampling
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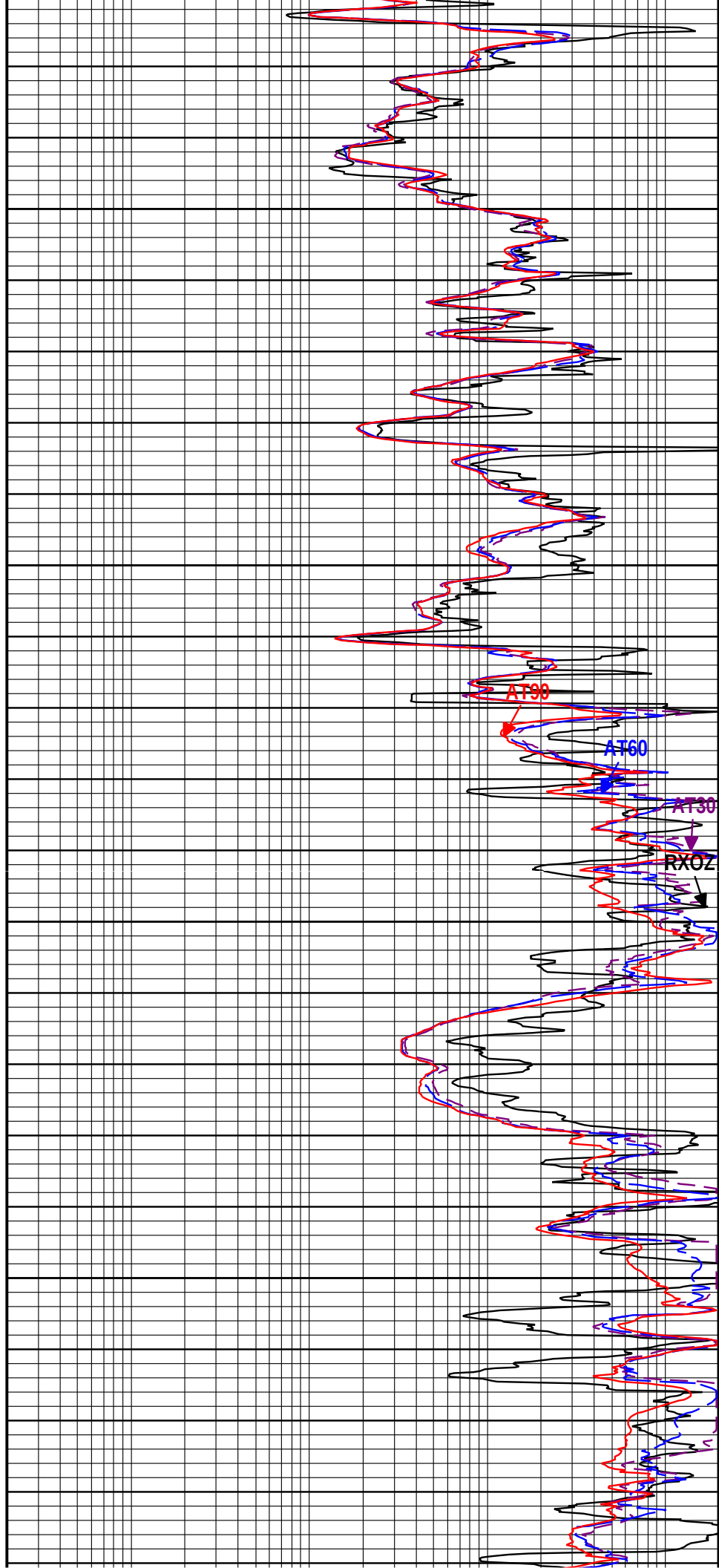
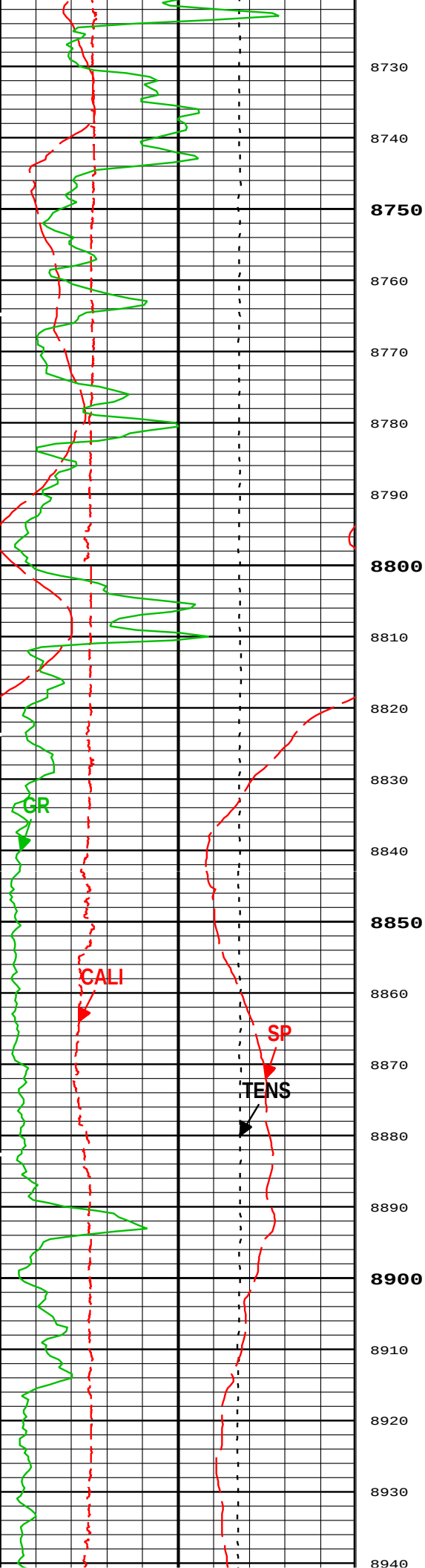
AT30	AIT-M:AMIS:AMIS	3in
AT60	AIT-M:AMIS:AMIS	3in
AT90	AIT-M:AMIS:AMIS	3in
CALI	HDRS-H:HRCC-H:HRCC-H	1in
GR	EDTC-B:EDTC-B:EDTC-B	6in
RXOZ	HDRS-H:HRMS-H:HRGD-H	2in
SP	AIT-M:AMIS:AMIS	6in
TENS	WLWorkflow	6in
TIME_1900	WLWorkflow	0.1in

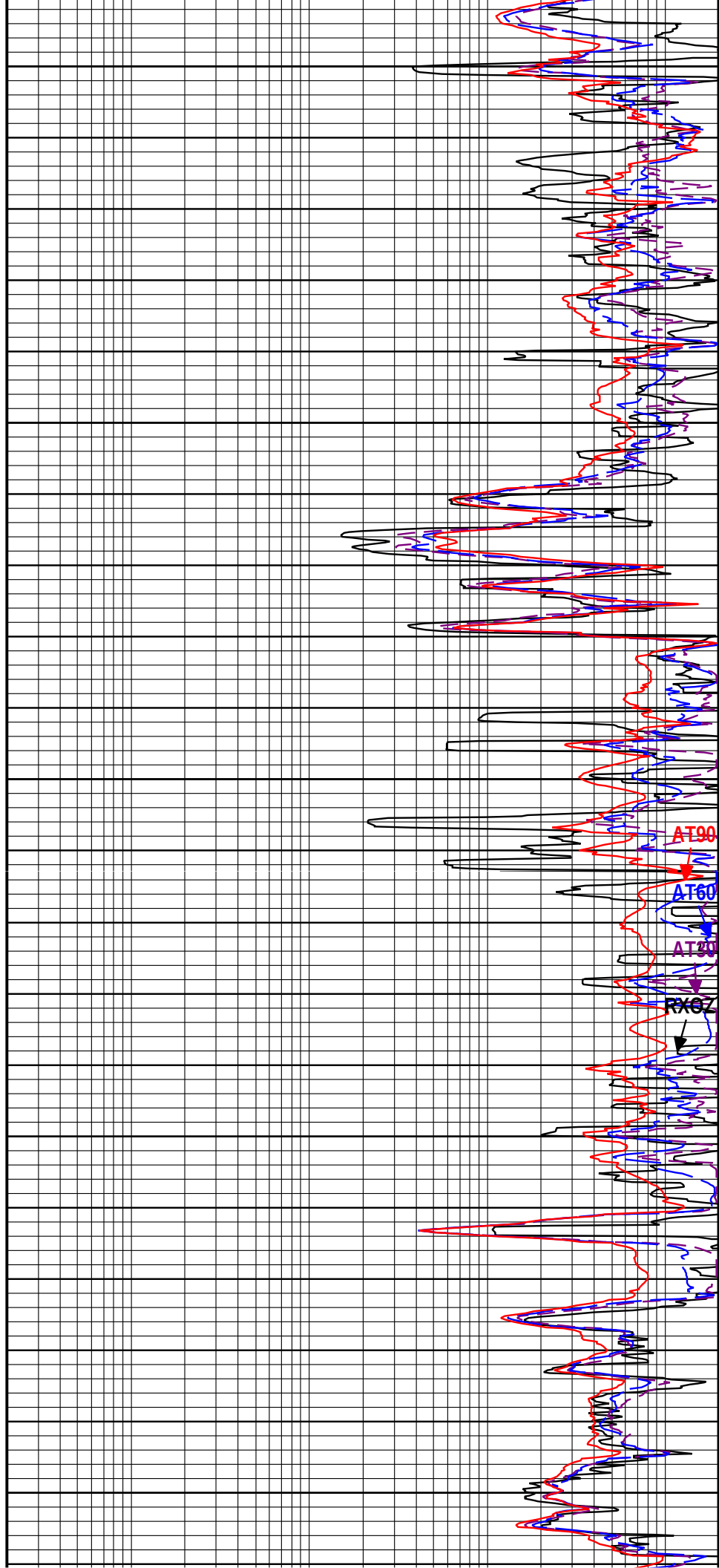
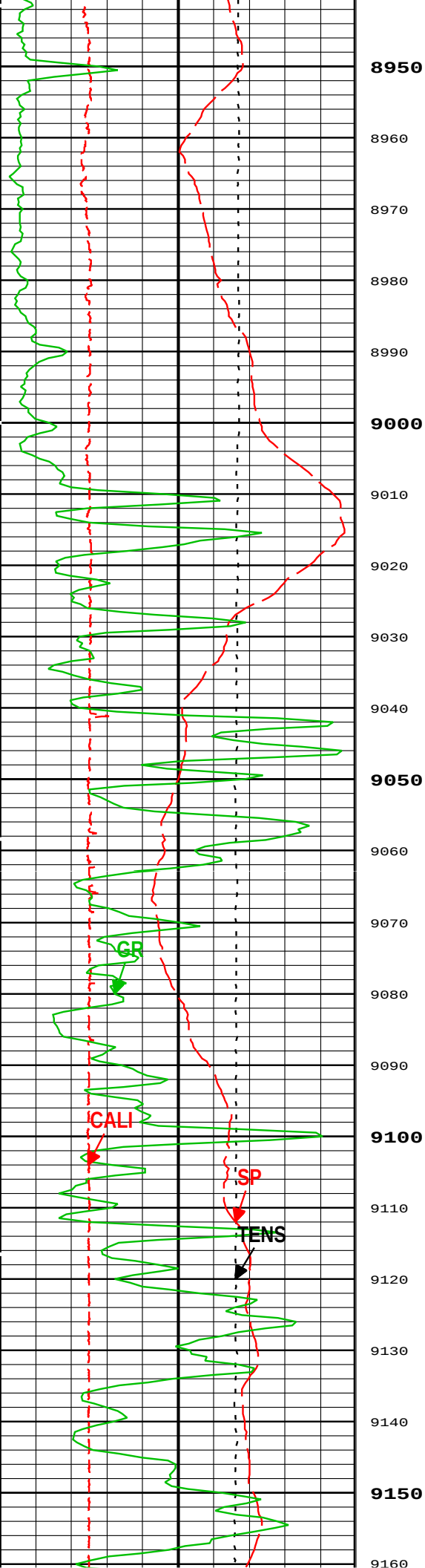
TIME_1900 - Time Marked every 60.00 (s)

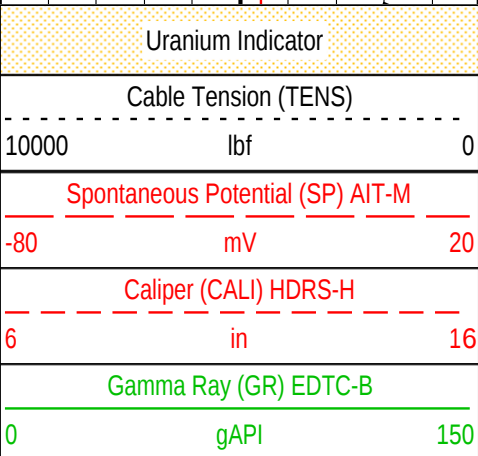
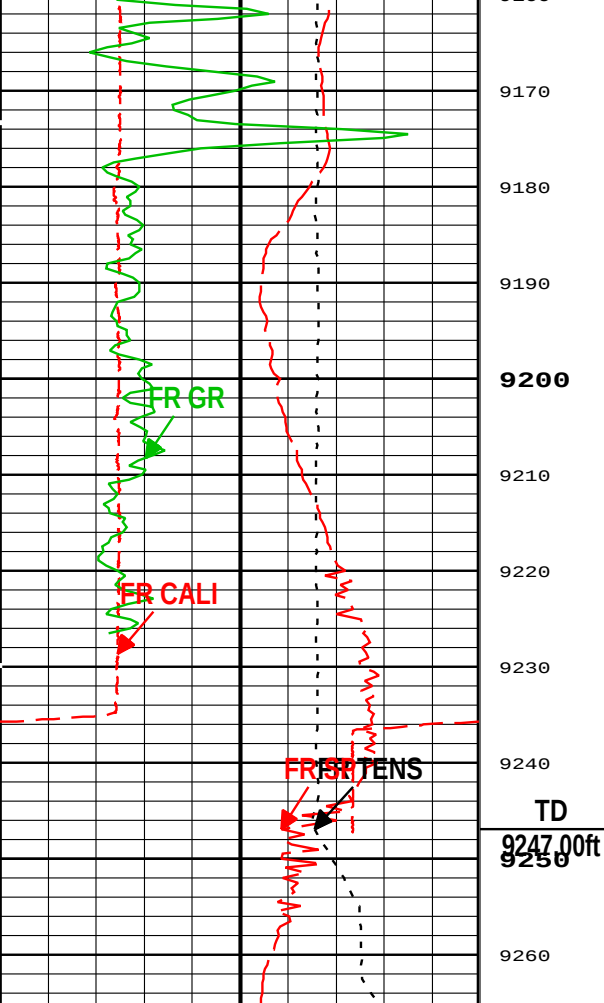


RUN 3



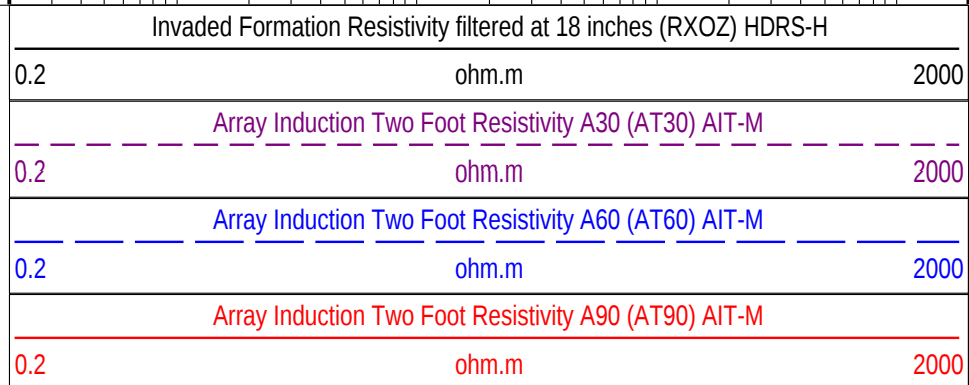
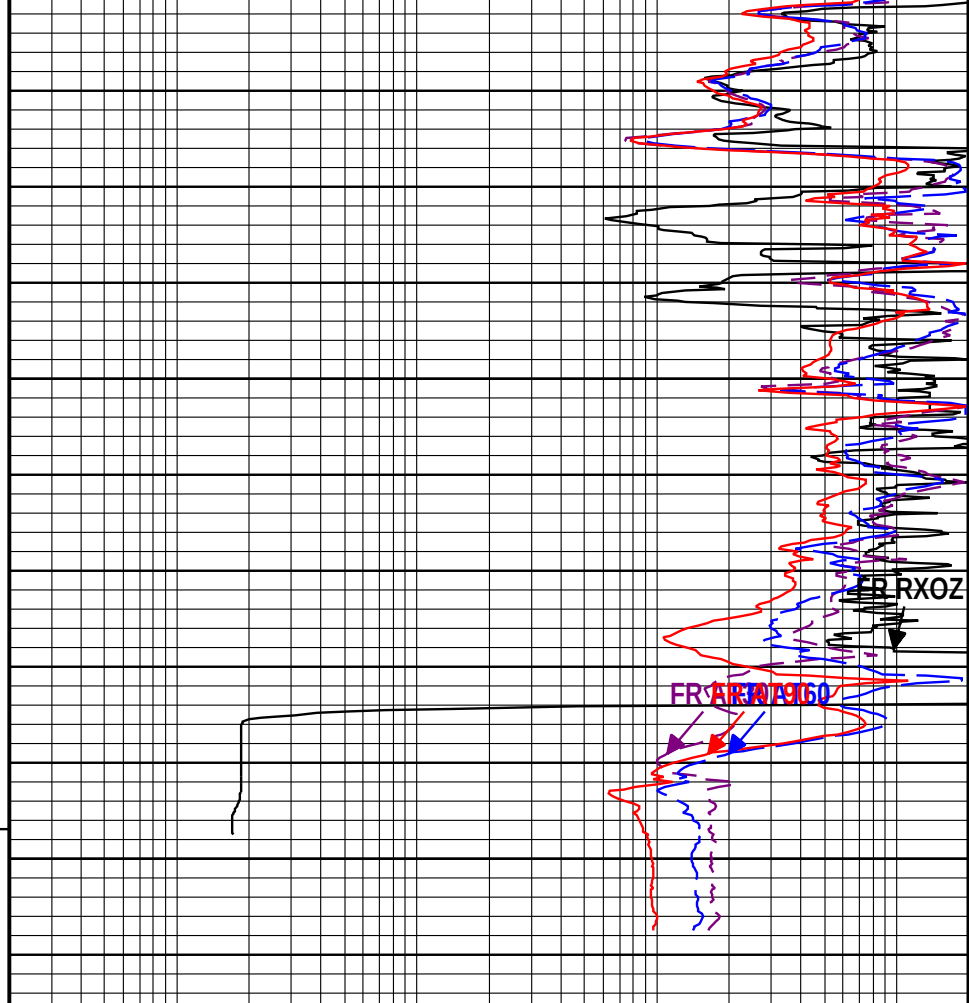






TIME_1900 - Time Marked every 60.00 (s)

Description: HRLT BASIC LOG Format: Log (HRLA_5_Inch) Index Scale: 5 in per 100 ft Index Unit: ft Index Type: Measured Depth Creation Date: 10-Dec-2014 09:14:44



Channel Processing Parameters				
Parameter	Description	Tool	Value	Unit
ABHM	Array Induction Borehole Correction Mode	AIT-M	Compute Standoff	
ACDE	Array Induction Casing Detection Enable	AIT-M	No	
ASTA	Array Induction Tool Standoff	AIT-M	1.6	in
BARI	Barite Mud Presence Flag	Borehole	Yes	
BHS	Borehole Status (Open or Cased Hole)	Borehole	Open	
BS	Bit Size	WLSESSION	8.5	in
CALI_SHIFT	CALI Supplementary Offset	HDRS-H	0.2	in
CBLO	Casing Bottom (Logger)	WLSESSION	8594	ft
CDEN	Cement Density	EDTC-B	2	g/cm3
DFD	Drilling Fluid Density	Borehole	10.1	lbm/gal

GCSE_DOWN_PASS	Generalized Caliper Selection for WL Log Down Passes	Borehole	BS	
GCSE_UP_PASS	Generalized Caliper Selection for WL Log Up Passes	Borehole	CALI	
GRSE	Generalized Mud Resistivity Selection, from Measured or Computed Mud Resistivity	Borehole	AMF	
SPDR	SP Drift Per Foot	AIT-M	0	mV/ft

Tool Control Parameters				
Parameter	Description	Tool	Value	Unit
HRGD_BRD_TYPE	HRGD Board Type	HDRS-H	WITH_HET	
MAX_LOG_SPEED	Toolstring Maximum Logging Speed	WLSESSION	3600	ft/h

Repeat Analysis 5"=100'

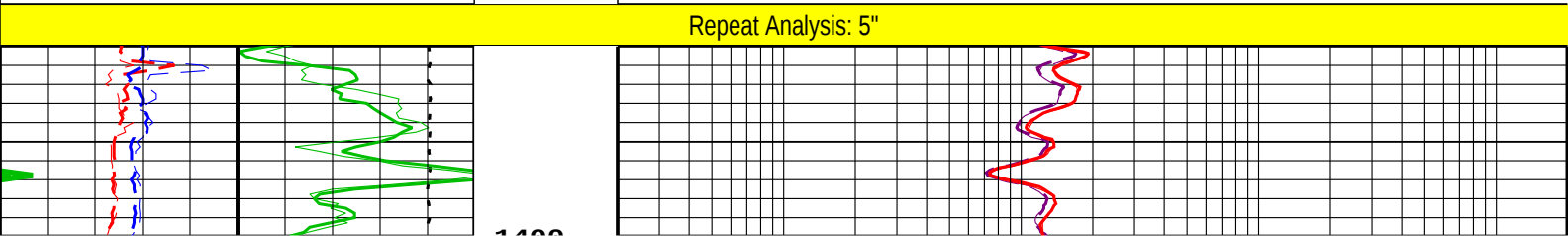
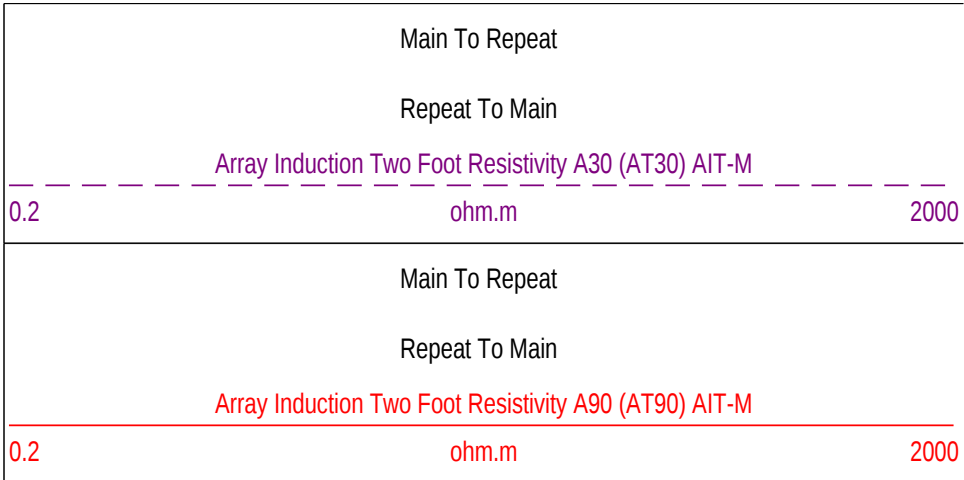
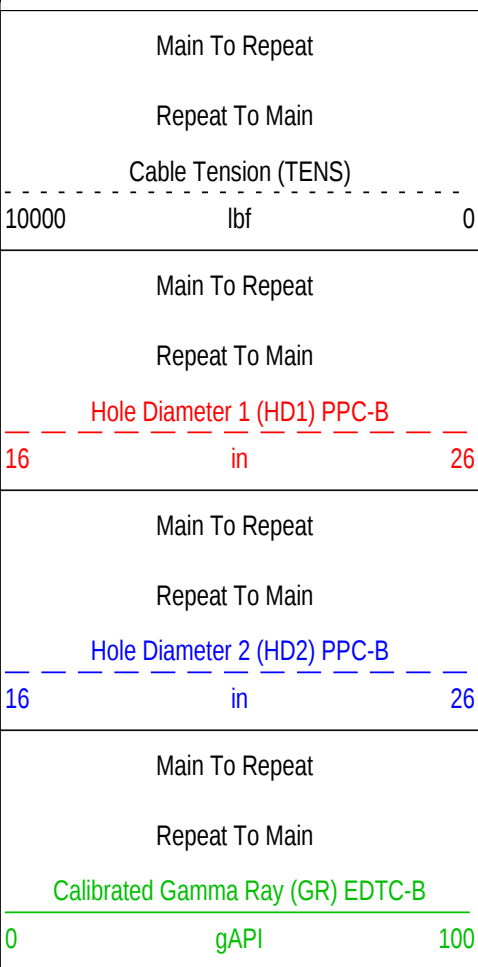
Pass Summary									
Run Name	Pass Objective	Direction	Top	Bottom	Start	Stop	DSC Mode	Depth Shift	Include Parallel Data
One	Repeat[2]:Up	Up	1199.88 ft	1539.95 ft	12-Oct-2014 10:01:02 AM	12-Oct-2014 10:07:36 AM	ON	0.75 ft	No
One	Main[3]:Up	Up	40.69 ft	1545.04 ft	12-Oct-2014 10:12:58 AM	12-Oct-2014 10:42:41 AM	ON	0.90 ft	No

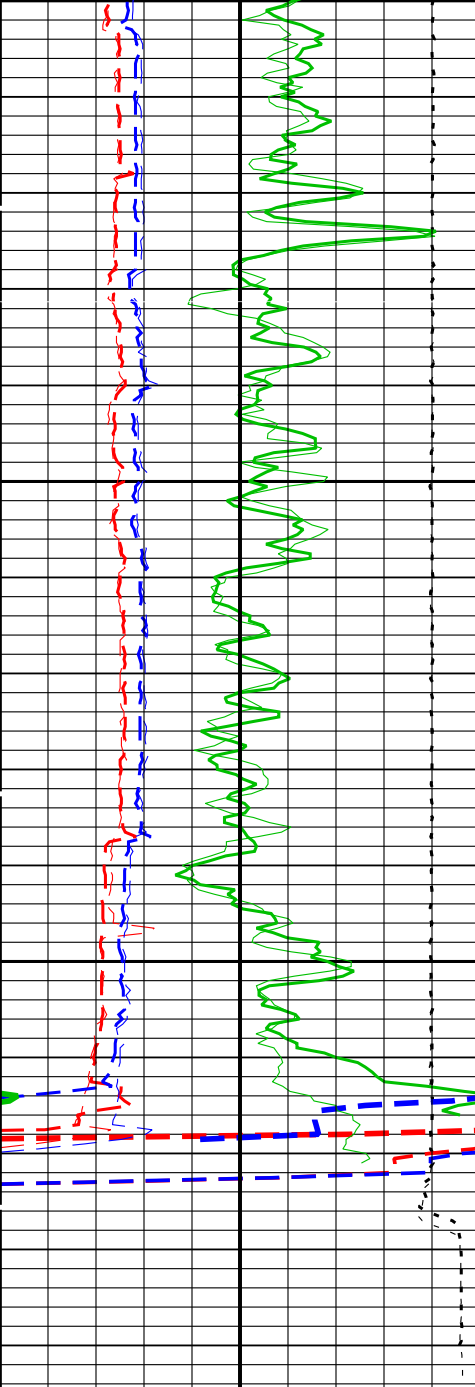
All depths are referenced to toolstring zero

Log	Company:PB ENERGY STORAGE SERVICES, INC Well:LINAM #2 One: Main[3]:Up:S007
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Description: HRLT BASIC LOG Format: Log (HRLA_5_Inch RA) Index Scale: 5 in per 100 ft Index Unit: ft Index Type: Measured Depth Creation Date: 12-Oct-2014 11:45:43

TIME_1900 - Time Marked every 60.00 (s)



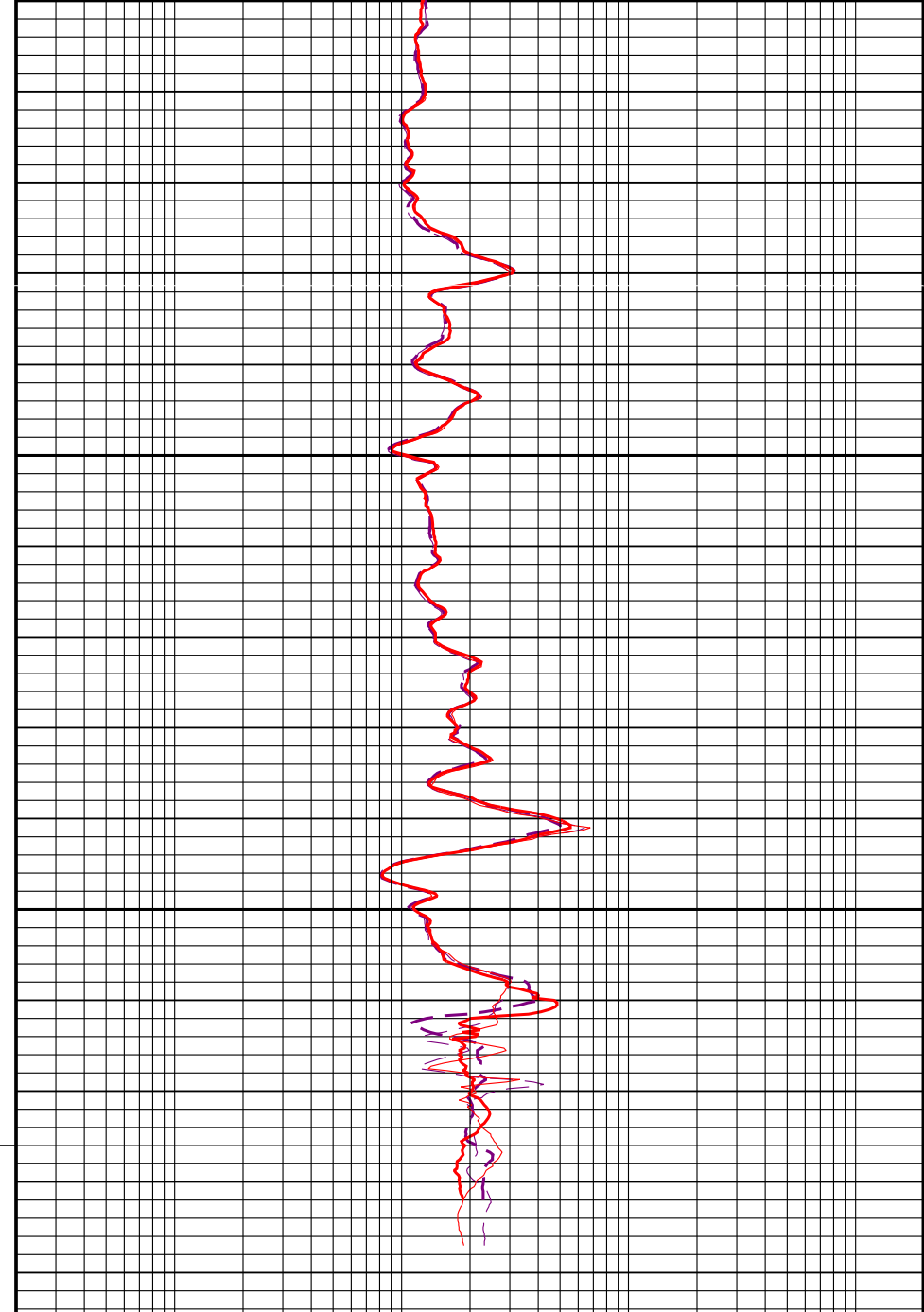


1400

1500

TD

1526.00ft



Repeat Analysis: 5"

Main To Repeat		
Repeat To Main		
Cable Tension (TENS)		
Parameter	Description	
10000	lbf	0
Main To Repeat		
Repeat To Main		
Hole Diameter 1 (HD1) PPC-B		
16	in	26
Main To Repeat		
Repeat To Main		
Hole Diameter 2 (HD2) PPC-B		

Main To Repeat		
Repeat To Main		
Array Induction Two Foot Resistivity A30 (AT30) AIT-M		
0.2	ohm.m	2000
Main To Repeat		
Repeat To Main		
Array Induction Two Foot Resistivity A90 (AT90) AIT-M		
0.2	ohm.m	2000

10	in	26
Main To Repeat		
Repeat To Main		
Calibrated Gamma Ray (GR) EDTC-B		
0	gAPI	100

TIME_1900 - Time Marked every 60.00 (s)

Description: HRLT BASIC LOG Format: Log (HRLA_5_Inch RA) Index Scale: 5 in per 100 ft Index Unit: ft Index Type: Measured Depth Creation Date: 12-Oct-2014 11:45:43

Repeat Analysis 5"=100'

Pass Summary									
Run Name	Pass Objective	Direction	Top	Bottom	Start	Stop	DSC Mode	Depth Shift	Include Parallel Data
Run 3a	Repeat[2]:Up	Up	8822.03 ft	9262.54 ft	10-Dec-2014 4:35:24 AM	10-Dec-2014 4:44:17 AM	ON	6.05 ft	No
Run 3a	Main[3]:Up	Up	8020.70 ft	9265.70 ft	10-Dec-2014 4:51:32 AM	10-Dec-2014 5:17:20 AM	ON	6.53 ft	No

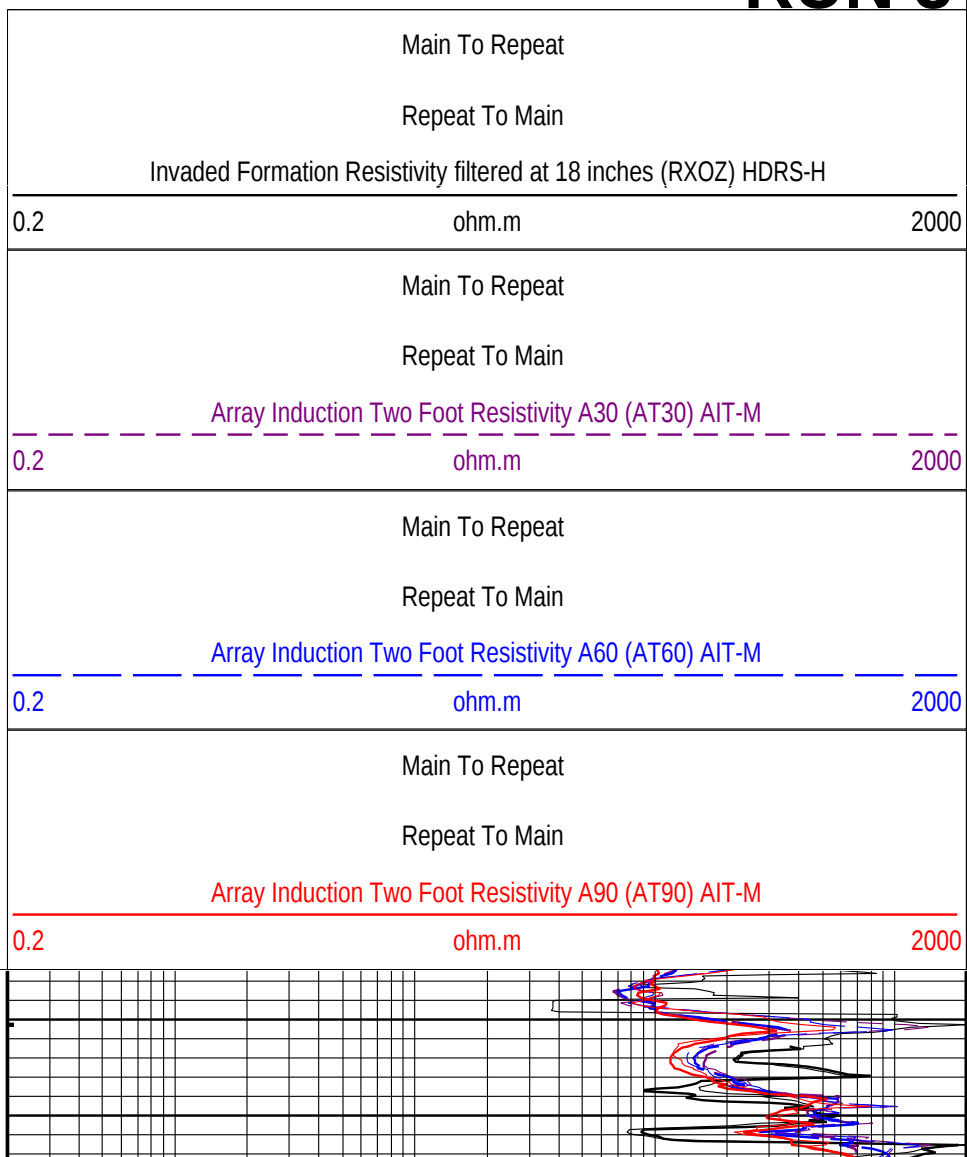
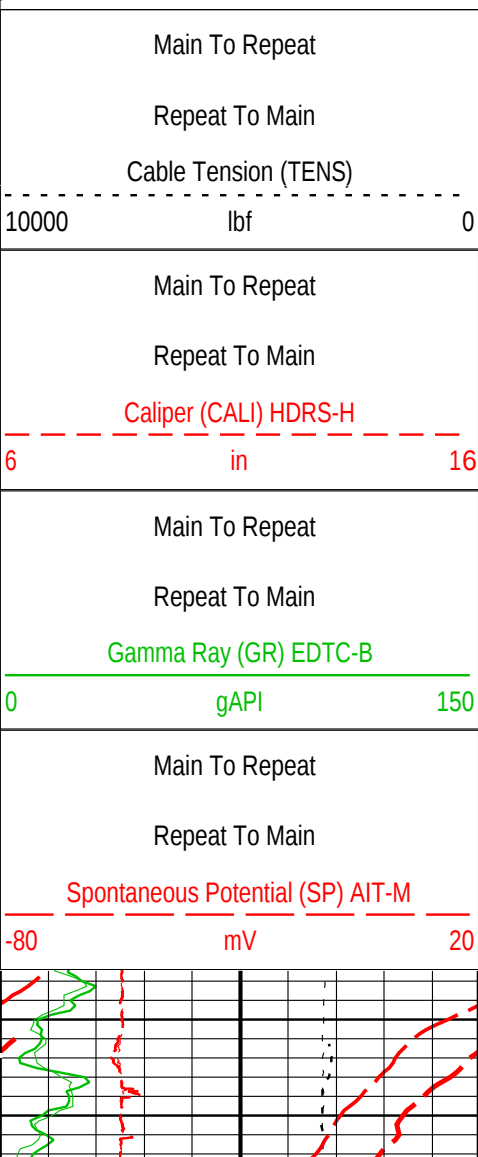
All depths are referenced to toolstring zero

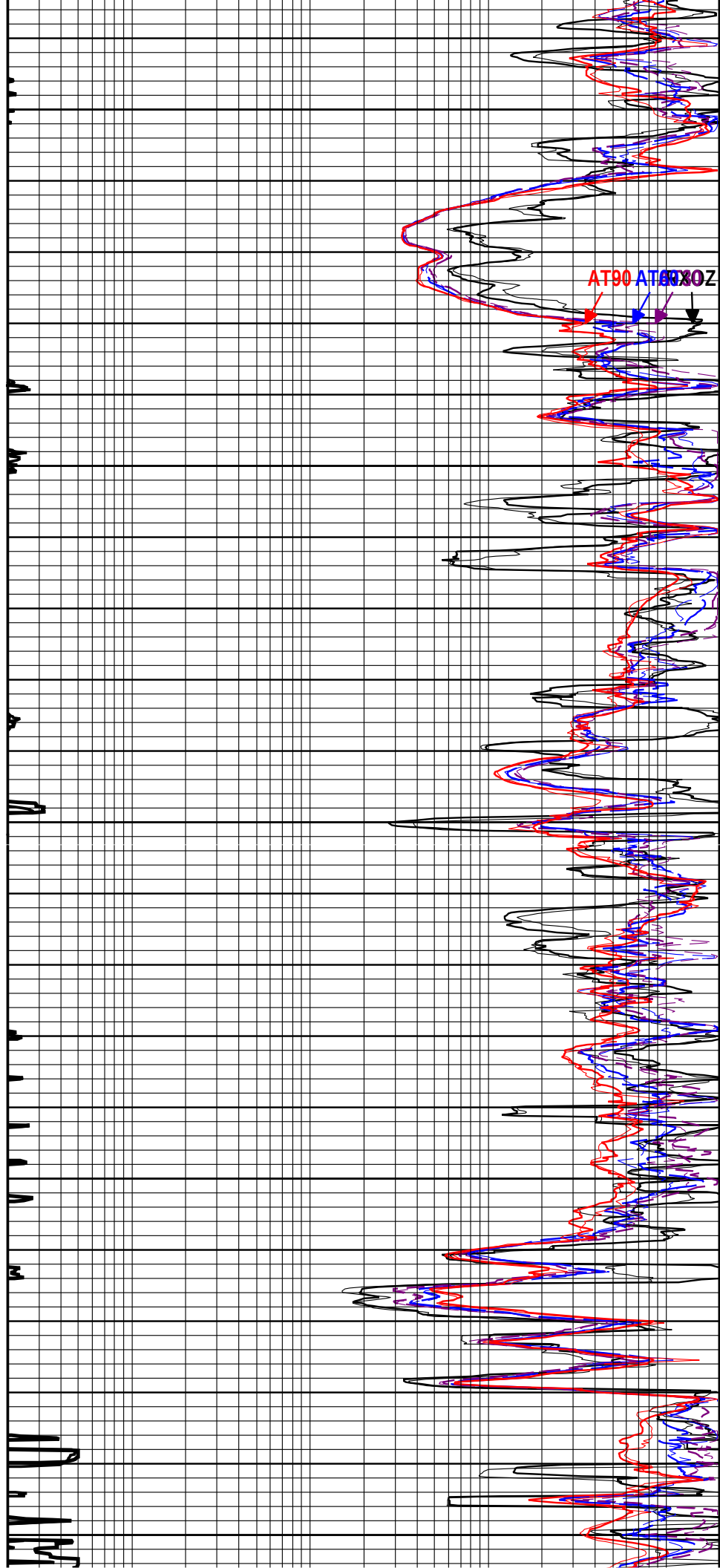
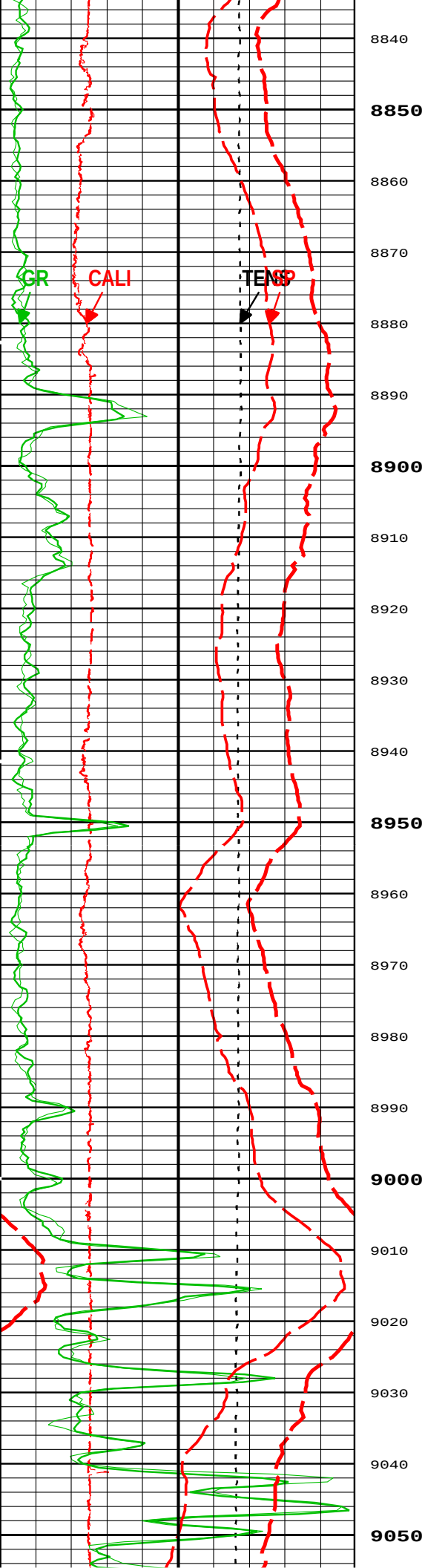
Log	Company:PB ENERGY STORAGE SERVICES, INC Well:DCP Linam Ranch AGI #2 Run 3a: Main[3]:Up:S012
-----	---

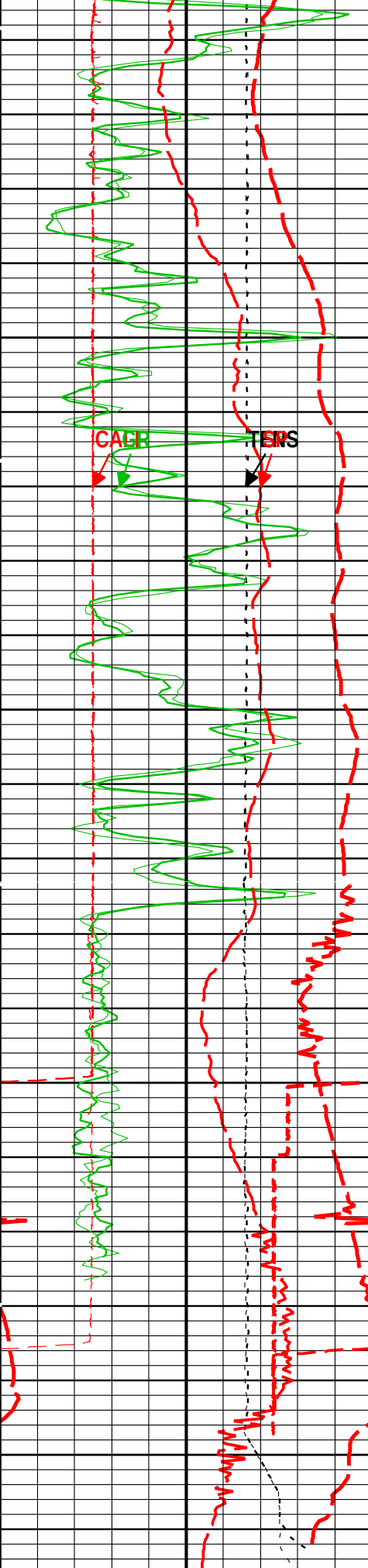
Description: HRLT BASIC LOG Format: Log (HRLA_5_Inch RA) Index Scale: 5 in per 100 ft Index Unit: ft Index Type: Measured Depth Creation Date: 10-Dec-2014 09:14:50

TIME_1900 - Time Marked every 60.00 (s)

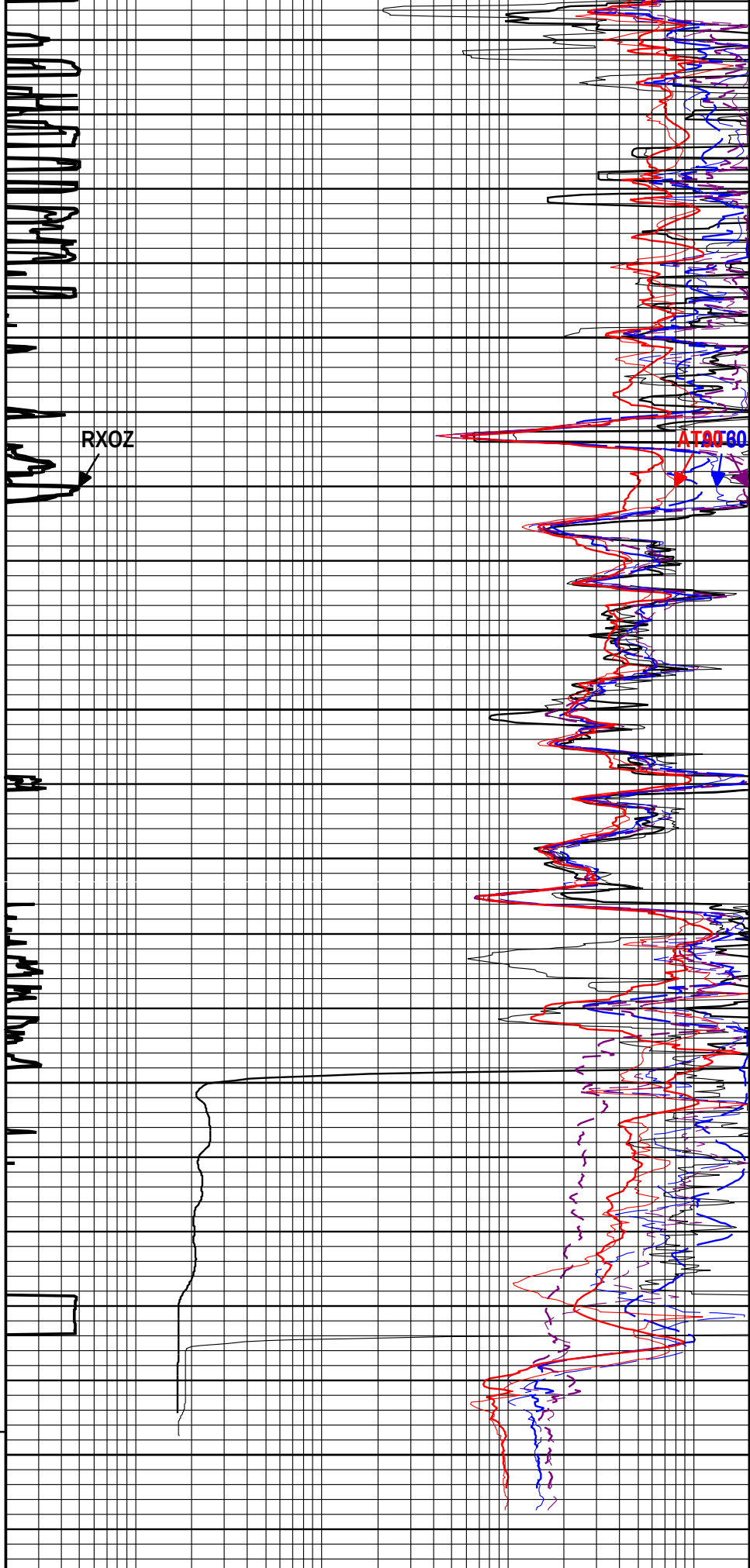
RUN 3







9060
9070
9080
9090
9100
9110
9120
9130
9140
9150
9160
9170
9180
9190
9200
9210
9220
9230
9240
TD
9247.00ft
9250
9260



Main To Repeat

Main To Repeat

Repeat To Main		
Cable Tension (TENS)		
10000	lbf	0
Main To Repeat		
Repeat To Main		
Caliper (CALI) HDRS-H		
6	in	16
Main To Repeat		
Repeat To Main		
Gamma Ray (GR) EDTC-B		
0	gAPI	150
Main To Repeat		
Repeat To Main		
Spontaneous Potential (SP) AIT-M		
-80	mV	20

TIME_1900 - Time Marked every 60.00 (s)

Description: HRLT BASIC LOG Format: Log (HRLA_5_Inch RA) Index Scale: 5 in per 100 ft Index Unit: ft Index Type: Measured Depth Creation Date: 10-Dec-2014 09:14:50

Repeat Pass 5"=100'

Pass Summary									
Run Name	Pass Objective	Direction	Top	Bottom	Start	Stop	DSC Mode	Depth Shift	Include Parallel Data
One	Repeat[2]:Up	Up	1199.88 ft	1539.95 ft	12-Oct-2014 10:01:02 AM	12-Oct-2014 10:07:36 AM	ON	0.75 ft	No

All depths are referenced to toolstring zero

Log	Company:PB ENERGY STORAGE SERVICES, INC Well:LINAM #2								
	One: Repeat[2]:Up:S007								

Description: HRLT BASIC LOG Format: Log (HRLA_5_Inch) Index Scale: 5 in per 100 ft Index Unit: ft Index Type: Measured Depth Creation Date: 12-Oct-2014 11:45:44

Channel	Source	Sampling	RUN 1
AMF	AIT-M:AMIS:AMIS	12in	
AT30	AIT-M:AMIS:AMIS	3in	
AT60	AIT-M:AMIS:AMIS	3in	
AT90	AIT-M:AMIS:AMIS	3in	
GR_CAL	EDTC-B:EDTC-B:EDTC-B	6in	
HD1	PPC-B:PPC-B:PPC-B	6in	
HD2	PPC-B:PPC-B:PPC-B	6in	
TENS	WLWorkflow	6in	
TIME_1900	WLWorkflow	0.1in	

TIME_1900 - Time Marked every 60.00 (s)

Cable Tension (TENS)		
10000	lbf	0
GR		
0	gAPI	100

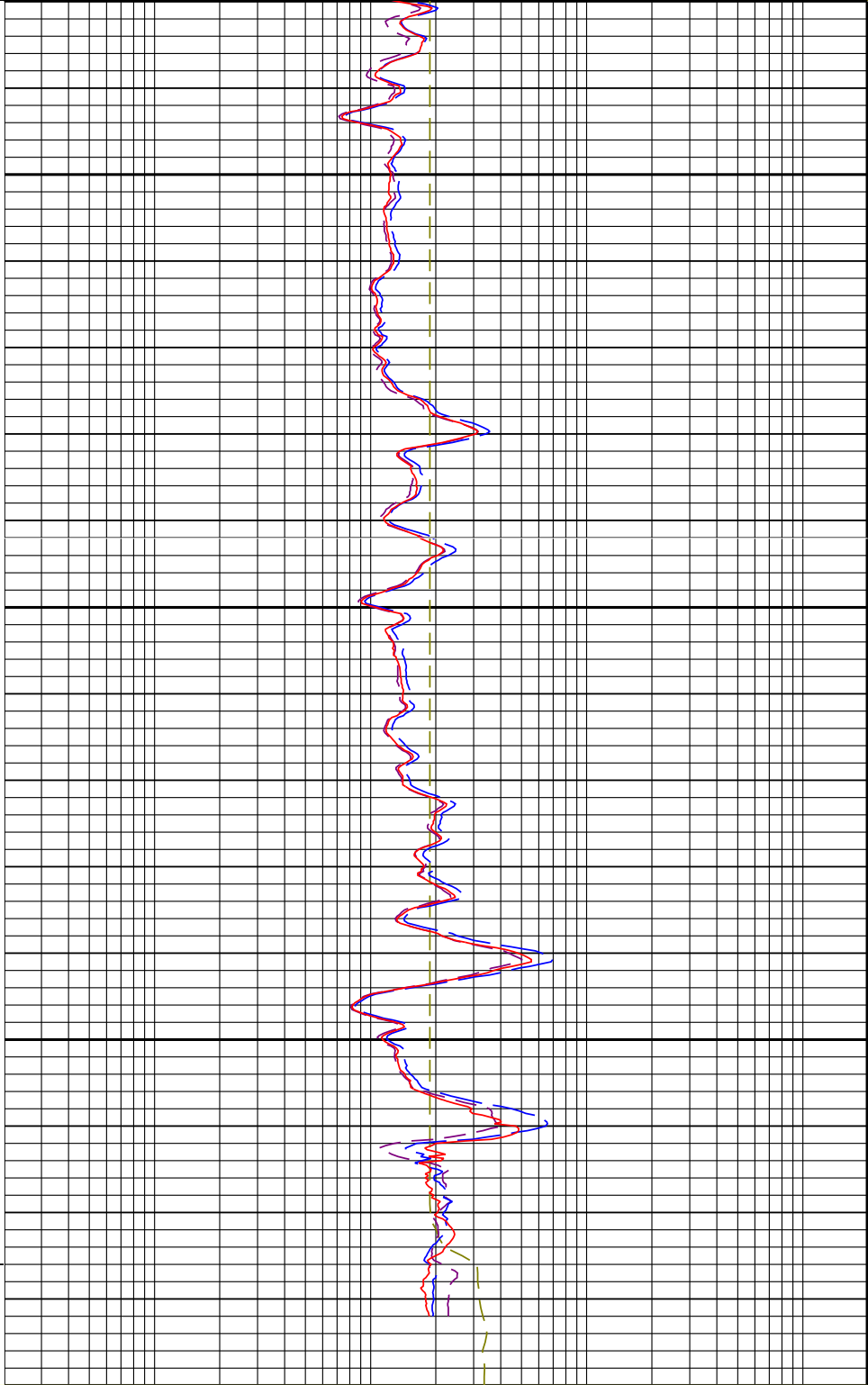
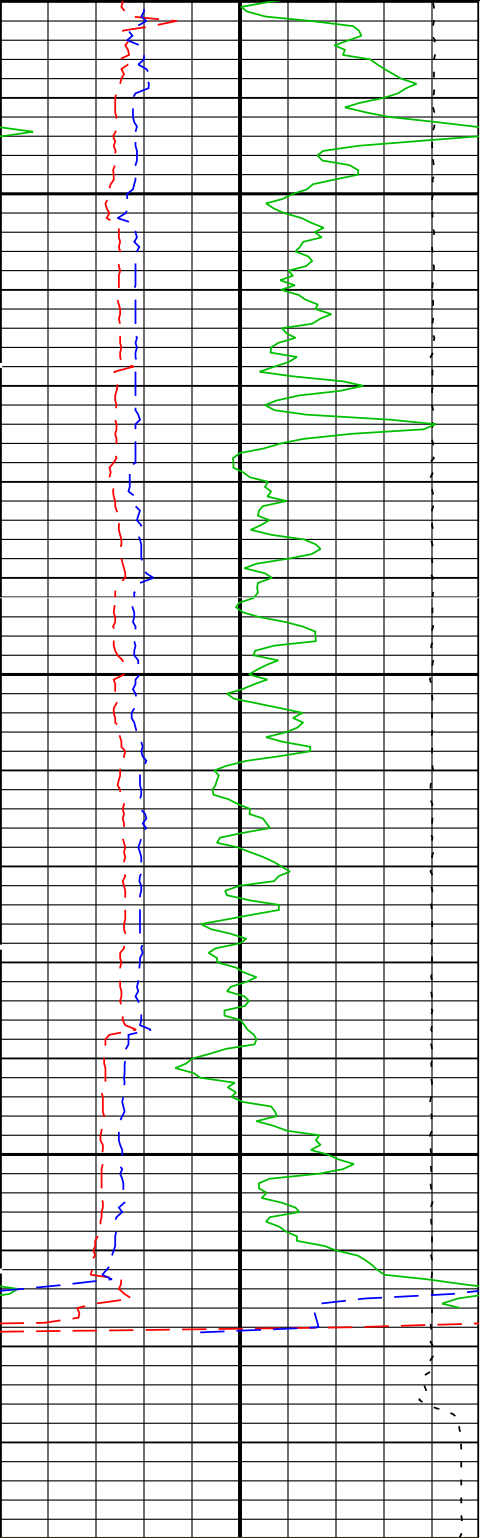
Repeat To Main		
Invaded Formation Resistivity filtered at 18 inches (RXOZ) HDRS-H		
0.2	ohm.m	2000
Main To Repeat		
Repeat To Main		
Array Induction Two Foot Resistivity A30 (AT30) AIT-M		
0.2	ohm.m	2000
Main To Repeat		
Repeat To Main		
Array Induction Two Foot Resistivity A60 (AT60) AIT-M		
0.2	ohm.m	2000
Main To Repeat		
Repeat To Main		
Array Induction Two Foot Resistivity A90 (AT90) AIT-M		
0.2	ohm.m	2000

Array Induction Mud Resistivity Fully Calibrated (AMF) AIT-M		
0.02	ohm.m	200
Array Induction Two Foot Resistivity A30 (AT30) AIT-M		
0.2	ohm.m	2000

Hole Diameter 1 (HD1) PPC-B		
16	in	26
Hole Diameter 2 (HD2) PPC-B		
16	in	26

Array Induction Two Foot Resistivity A60 (AT60) AIT-M		
0.2	ohm.m	2000
Array Induction Two Foot Resistivity A90 (AT90) AIT-M		
0.2	ohm.m	2000

5" Resistivity



5" Resistivity

Cable Tension (TENS)		
10000	lbf	0
GR		
0	gAPI	100
Hole Diameter 1 (HD1) PPC-B		
16	in	26
Hole Diameter 2 (HD2) PPC-B		

Array Induction Mud Resistivity Fully Calibrated (AMF) AIT-M		
0.02	ohm.m	200
Array Induction Two Foot Resistivity A30 (AT30) AIT-M		
0.2	ohm.m	2000
Array Induction Two Foot Resistivity A60 (AT60) AIT-M		
0.2	ohm.m	2000
Array Induction Two Foot Resistivity A90 (AT90) AIT-M		

16	in	26	0.2	ohm.m	2000
----	----	----	-----	-------	------

TIME_1900 - Time Marked every 60.00 (s)

Description: HRLT BASIC LOG Format: Log (HRLA_5_Inch) Index Scale: 5 in per 100 ft Index Unit: ft Index Type: Measured Depth Creation Date: 12-Oct-2014 11:45:44

Repeat Pass 5" = 100'

Integration Summary				
Output Channel(s)	Output Description	Input Parameter	Output Value	Unit
ICV	Integrated Cement Volume	HVAS, FCD	117.36	ft3
IHV	Integrated Hole Volume	HVAS	310.86	ft3

Pass Summary									
Run Name	Pass Objective	Direction	Top	Bottom	Start	Stop	DSC Mode	Depth Shift	Include Parallel Data
Two	Repeat[2]:Up	Up	8280.83 ft	8641.74 ft	30-Nov-2014 1:13:56 PM	30-Nov-2014 1:26:00 PM	ON	10.16 ft	No
All depths are referenced to toolstring zero									

Log	Company:PB ENERGY STORAGE SERVICES, INC Well:DCP Linam Ranch AGI #2 Two: Repeat[2]:Up:S021
-----	---

Description: AIT Basic Log Two Format: Log (Copy of Log (AIT_5_Inch)) Index Scale: 5 in per 100 ft Index Unit: ft Index Type: Measured Depth
Creation Date: 30-Nov-2014 17:11:11

Channel	Source	Sampling
AMF	AIT-M:AMIS:AMIS	12in
AT10	AIT-M:AMIS:AMIS	3in
AT60	AIT-M:AMIS:AMIS	3in
AT90	AIT-M:AMIS:AMIS	3in
CALI	HDRS-B:HRCC-B:HRCC-B	1in
CGR	HNGS-BA:HNGS-BA:HNGS-BA	6in
ICV	Borehole	6in
IHV	Borehole	6in
SGR	HNGS-BA:HNGS-BA:HNGS-BA	6in
TENS	WLWorkflow	6in
TIME_1900	WLWorkflow	0.1in

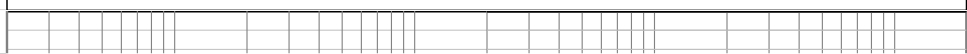
—IHV - Integrated Hole Volume every 10.00 (ft3)	RUN 2
—IHV - Integrated Hole Volume every 100.00 (ft3)	
—ICV - Integrated Cement Volume every 10.00 (ft3)	
—ICV - Integrated Cement Volume every 100.00 (ft3)	

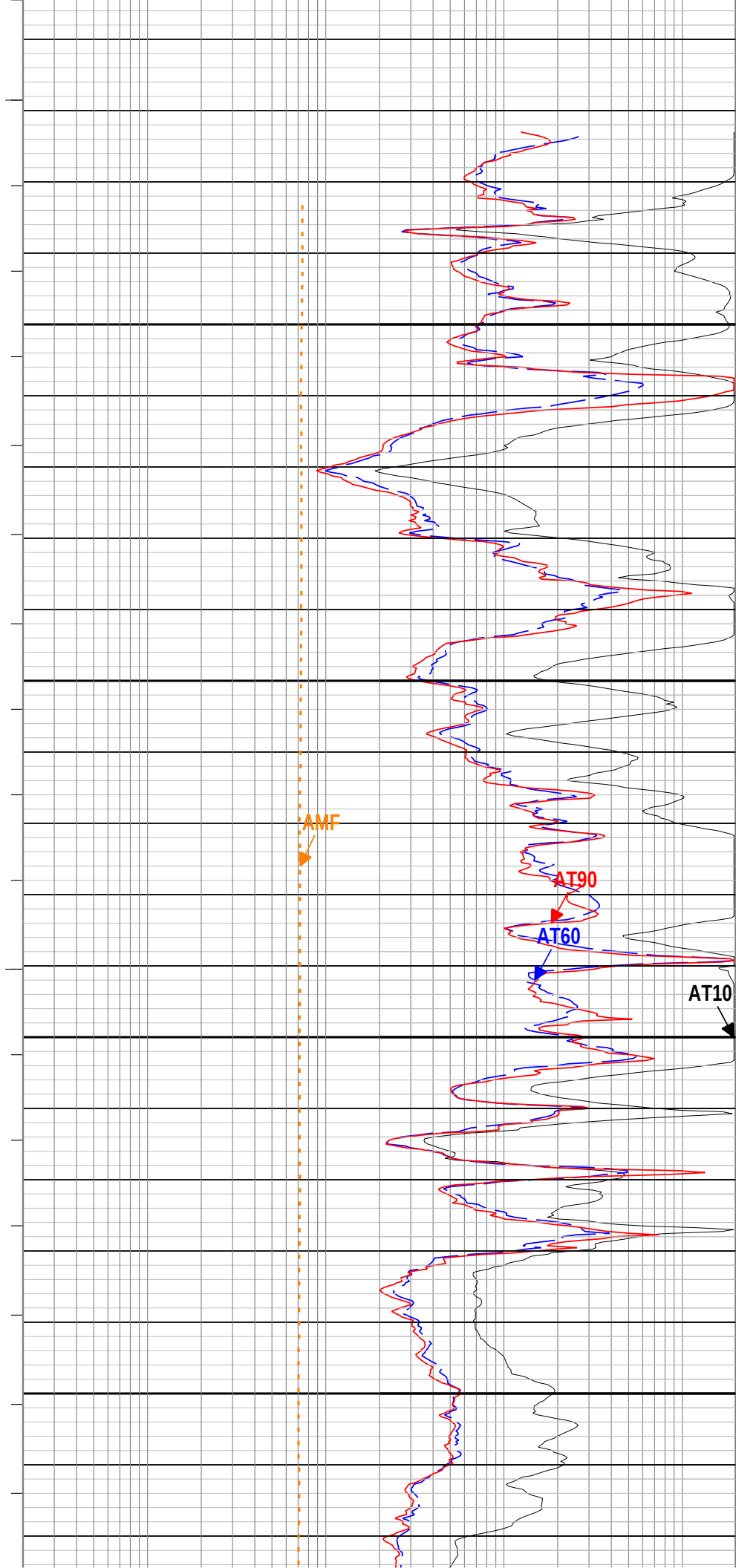
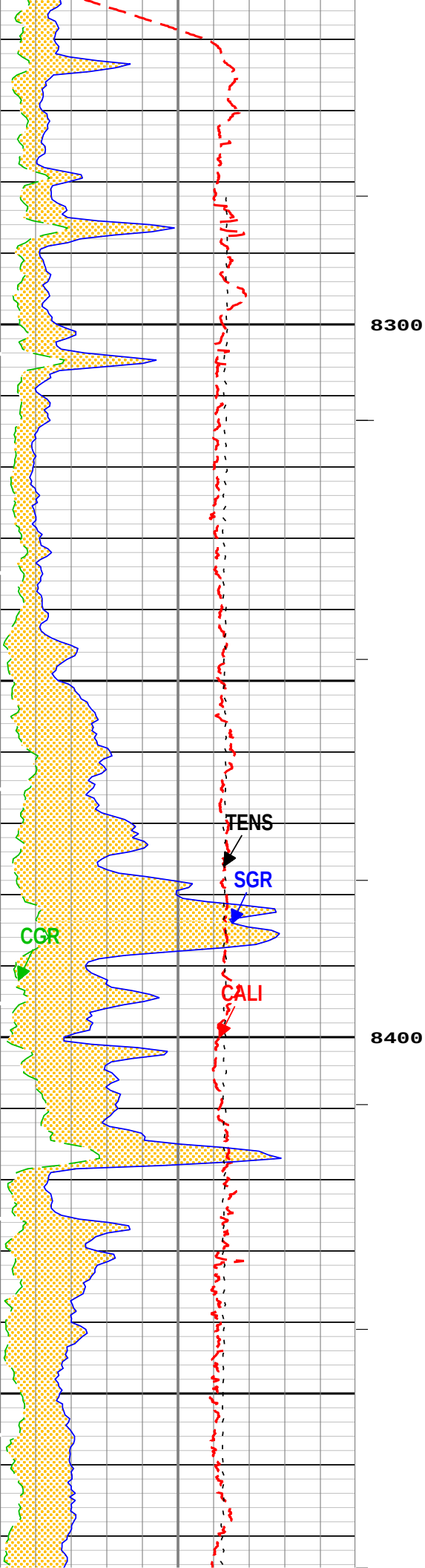
TIME_1900 - Time Marked every 60.00 (s)

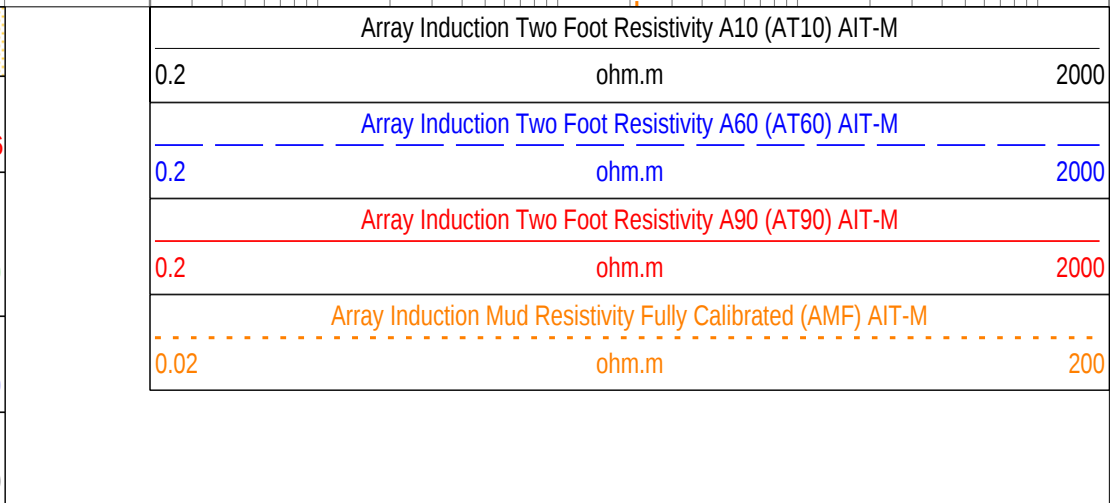
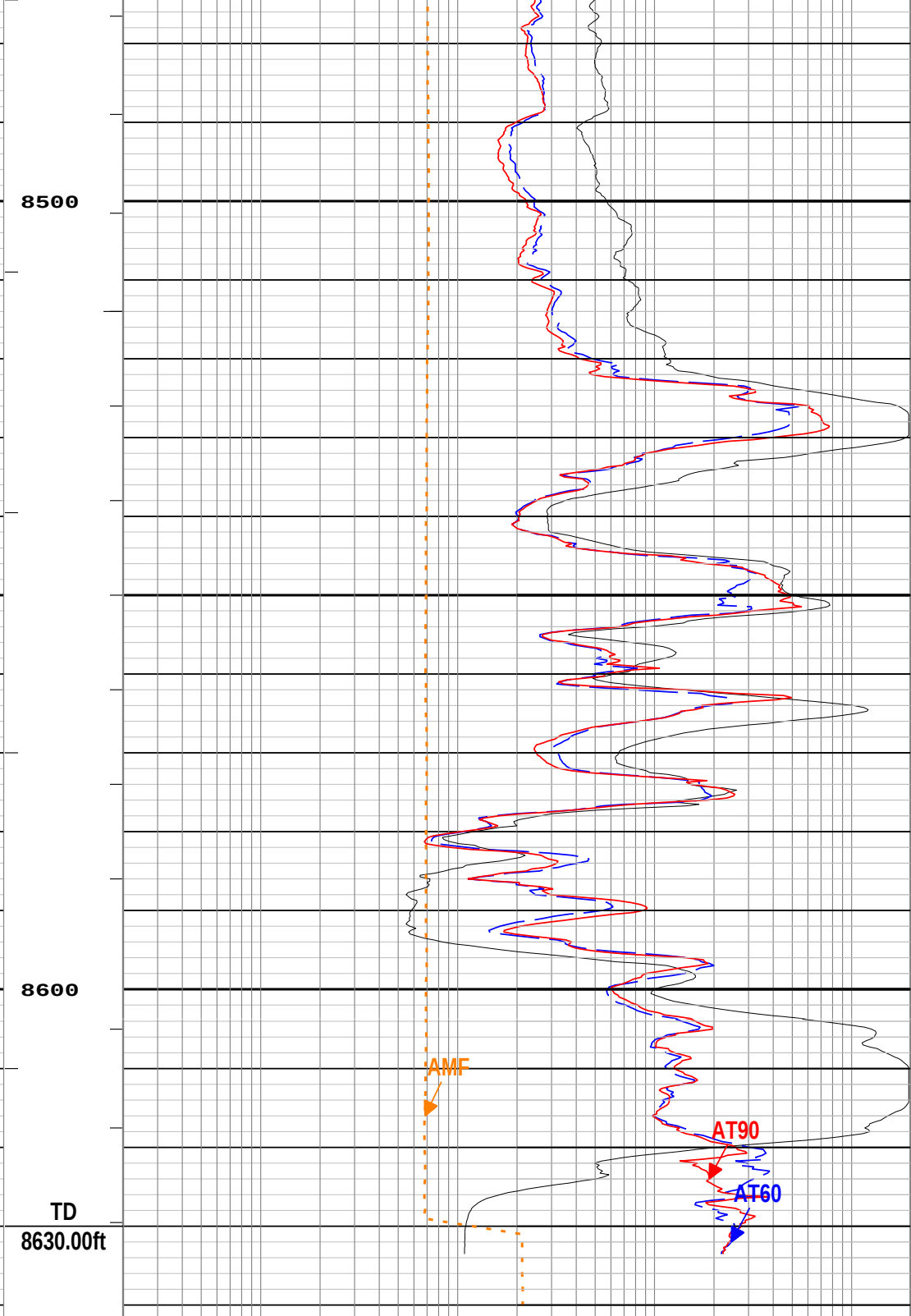
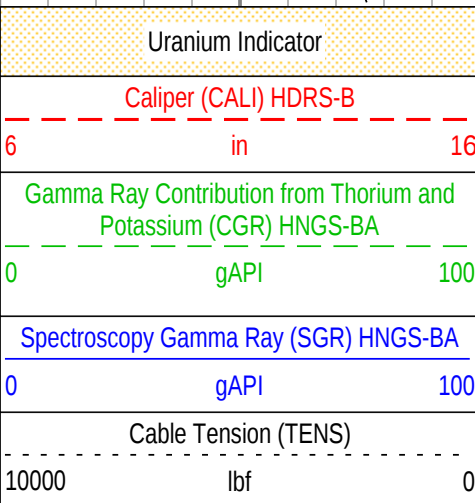
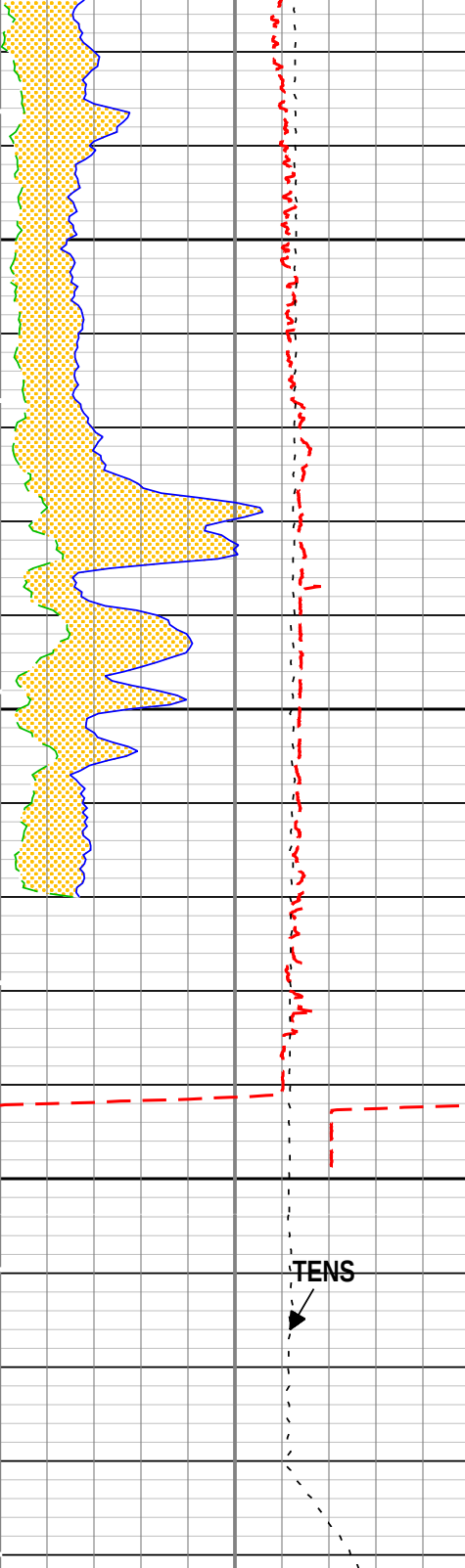
Uranium Indicator		
Caliper (CALI) HDRS-B		
6	in	16
Gamma Ray Contribution from Thorium and Potassium (CGR) HNGS-BA		
0	gAPI	100
Spectroscopy Gamma Ray (SGR) HNGS-BA		
0	gAPI	100
Cable Tension (TENS)		
10000	lbf	0



Array Induction Two Foot Resistivity A10 (AT10) AIT-M		
0.2	ohm.m	2000
Array Induction Two Foot Resistivity A60 (AT60) AIT-M		
0.2	ohm.m	2000
Array Induction Two Foot Resistivity A90 (AT90) AIT-M		
0.2	ohm.m	2000
Array Induction Mud Resistivity Fully Calibrated (AMF) AIT-M		
0.02	ohm.m	200







TIME_1900 - Time Marked every 60.00 (s)

└─ICV - Integrated Cement Volume every 100.00 (ft3)

└─ICV - Integrated Cement Volume every 10.00 (ft3)

└─IHV - Integrated Hole Volume every 100.00 (ft3)

└─IHV - Integrated Hole Volume every 10.00 (ft3)

Description: AIT Basic Log Two Format: Log (Copy of Log (AIT_5_Inch)) Index Scale: 5 in per 100 ft Index Unit: ft Index Type: Measured Depth
Creation Date: 30-Nov-2014 17:11:11

Company: PB ENERGY STORAGE SERVICES, INC

Schlumberger

Well: DCP Linam Ranch AGI #2

Field: AGI; BONE SPRING-WOLFCAMP

County: LEA

State: NEW MEXICO

Resistivity

Array Induction Tool

Final Composite [5"=100']

Th Peak Resolution	%	Master Before After Before-Master After-Before	7.000 ----- ----- ----- -----	5.000 ----- ----- ----- -----	7.417 ----- ----- ----- -----	9.000 ----- ----- ----- -----	
Background Count Rate	CPS	Master Before After Before-Master After-Before	142.500 ----- ----- ----- -----	10.000 ----- ----- ----- -----	113.435 113.791 ----- 0.356 -----	265.000 ----- ----- ----- -----	
Gain Ratio		Master Before After Before-Master After-Before	1.000 ----- ----- ----- -----	0.940 ----- ----- ----- -----	1.026 ----- ----- ----- -----	1.060 ----- ----- ----- -----	

HNGB Background and Na22 Set Point Determination - Detector 2 Calibration

Master (EEPROM): 15:49:10 25-Sep-2014		Before (Measured): 12:05:06 09-Dec-2014		After:			
Measurement	Unit	Phase	Nominal	Low Limit	Actual	High Limit	
Th Peak Location		Master Before After Before-Master After-Before	209.630 ----- ----- ----- -----	201.000 ----- ----- ----- -----	207.869 ----- ----- ----- -----	218.250 ----- ----- ----- -----	
Th Peak Resolution	%	Master Before After Before-Master After-Before	7.000 ----- ----- ----- -----	5.000 ----- ----- ----- -----	7.291 ----- ----- ----- -----	9.000 ----- ----- ----- -----	
Background Count Rate	CPS	Master Before After Before-Master After-Before	142.500 ----- ----- ----- -----	10.000 ----- ----- ----- -----	112.271 112.886 ----- 0.615 -----	265.000 ----- ----- ----- -----	
Gain Ratio		Master Before After Before-Master After-Before	1.000 ----- ----- ----- -----	0.940 ----- ----- ----- -----	0.999 ----- ----- ----- -----	1.060 ----- ----- ----- -----	

HNGB Background and Na22 Set Point Determination - Detector 1 Calibration

Master (EEPROM): 15:49:10 25-Sep-2014		Before (Measured): 12:05:06 09-Dec-2014		After:			
Measurement	Unit	Phase	Nominal	Low Limit	Actual	High Limit	
Na 511 Peak Set Point		Master Before After Before-Master After-Before	40.000 ----- ----- ----- -----	38.000 ----- ----- ----- -----	40.000 ----- ----- ----- -----	43.500 ----- ----- ----- -----	

HNGB Background and Na22 Set Point Determination - Detector 2 Calibration

Master (EEPROM): 15:49:10 25-Sep-2014		Before (Measured): 12:05:06 09-Dec-2014		After:			
Measurement	Unit	Phase	Nominal	Low Limit	Actual	High Limit	
Na 511 Peak Set Point		Master Before After Before-Master After-Before	40.000 ----- ----- ----- -----	38.000 ----- ----- ----- -----	41.000 ----- ----- ----- -----	43.500 ----- ----- ----- -----	

EDTC-B (Enhanced Digital Telemetry Cartridge - Version B) Calibration - Run Run 3c

Primary Equipment :		EDTC-B		EDTC-B			
		8101					
Calibration Parameter :		Plus Reference (Jig minus background reference)		165			

EDTC-B Accelerometer Calibration - EDTC-B Accelerometer Calibration

Before (Measured): 15:34:18 05-Dec-2014 Expired by 3 days

Measurement	Unit	Phase	Nominal	Low Limit	Actual	High Limit	
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AZ Vertical Measurement	ft/s2	Before	32.19	31.53	32.03	32.84		
EDTC-B Memory Data - EDTC-B Memory Data								
Master (EEPROM):		10:43:02 10-Dec-2014						
Measurement	Unit	Phase	Nominal	Low Limit	Actual	High Limit		
Initial PMT HV	V	Master			1801.000			
Accelerometer Serial Number		Master			142			
Accelerometer Coefficients - 0		Master	----	----	2.900	----		
Accelerometer Coefficients - 1		Master	----	----	0.000	----		
Accelerometer Coefficients - 2		Master	----	----	0.000	----		
Accelerometer Coefficients - 3		Master	----	----	0.000	----		
Accelerometer Coefficients - 4		Master	----	----	0.000	----		
Accelerometer Coefficients - 5		Master	----	----	0.000	----		
Accelerometer Coefficients - 6		Master	----	----	0.000	----		
Accelerometer Coefficients - 7		Master	----	----	-0.003	----		
Accelerometer Coefficients - 8		Master	----	----	0.000	----		
Accelerometer Coefficients - 9		Master	----	----	0.000	----		
Accelerometer Coefficients - 10		Master	----	----	0.000	----		
Accelerometer Coefficients - 11		Master	----	----	0.000	----		
Gamma-Ray Detector Serial Number		Master			7002			
EDTC-B Gamma-Ray Calibration - Gamma Ray Coefficients								
Before (Measured):		07:53:58 05-Dec-2014		After:				
Measurement	Unit	Phase	Nominal	Low Limit	Actual	High Limit		
Gamma Ray Gain		Before	1.000	0.900	1.043	1.100		
		After	----	----	----	----		
		After-Before	----	----	----	----		
EDTC-B Gamma-Ray Calibration - Gamma Ray Accumulations								
Before (Measured):		07:53:58 05-Dec-2014		After:				
Measurement	Unit	Phase	Nominal	Low Limit	Actual	High Limit		
RGR Zero Measurement	gAPI	Before		0	36.808	120.000		
		After	----	----	----	----		
		After-Before	----	----	----	----		
RGR Plus Measurement	gAPI	Before	165.000	150.000	158.171	180.000		
		After			NOT DONE			
		After-Before	----	----	----	----		
Company: PB ENERGY STORAGE SERVICES, INC					Schlumberger			
Well: DCP Linam Ranch AGI #2								
Field: AGI; Bone Spring-Wolfcamp								
County: Lea								
State: New Mexico								
Spectral Gamma Ray								
Final Composite [5"=100']								