

Company: St. Croix Operating, Inc.

Well: State 3-16

Field: Wildcat

County: Washington State: Colorado

Platform Express
Array Induction
with Linear Correlation

County:	Washington			
Field:	Wildcat			
Location:	NENW Sec. 16, T3S, R52W			
Well:	State 3-16			
Company:	St. Croix Operating, Inc.			
Location:		Elev.: K.B. 4827.00 ft		
NENW Sec. 16, T3S, R52W		G.L. 4821.00 ft		
SHL: 1100' FNL & 1700' FWL		D.F. 4827.00 ft		
Lat/Long: 39.796480 / -103.212730				
Permanent Datum:		Ground Level		Elev.: 4821.00 f
Log Measured From:		Kelly Bushing		6.00 ft
Drilling Measured From:		Kelly Bushing		above Perm.Datum
API Serial No.		Section:	Township:	Range:
05-121-11073		16	3S	52W

Logging Date 10-Jun-2018

Run Number ONE

Depth Driller 4500.00 ft

Schlumberger Depth 4504.00 ft

Bottom Log Interval 3500.00 ft

Top Log Interval 100.00 ft

Casing Driller Size @ Depth 8.625 in @ 325.00 ft

Casing Schlumberger 326.5 ft

Bit Size 7.875 in

Type Fluid In Hole WBM

Density 9.1 lbm/gal 67 s

Fluid Loss PH 7.2 cm3 8.5

MUD Source of Sample Active Tank

RM @ Meas Temp 0.2 ohm.m @ 68 degF

RMF @ Meas Temp 0.15 ohm.m @ 68 degF

RMC @ Meas Temp

Source RMF RMC

RM @ BHT 0.11 @ 125.11 0.09 @ 125.11

Max Recorded Temperatures

Circulation Stopped

Logger on Bottom Time 09-Jun-2018 14:30:00

Unit Number Location: 10-Jun-2018 01:56:00

Recorded By Ashley Rosacker

Witnessed By Gary Duke

Disclaimer

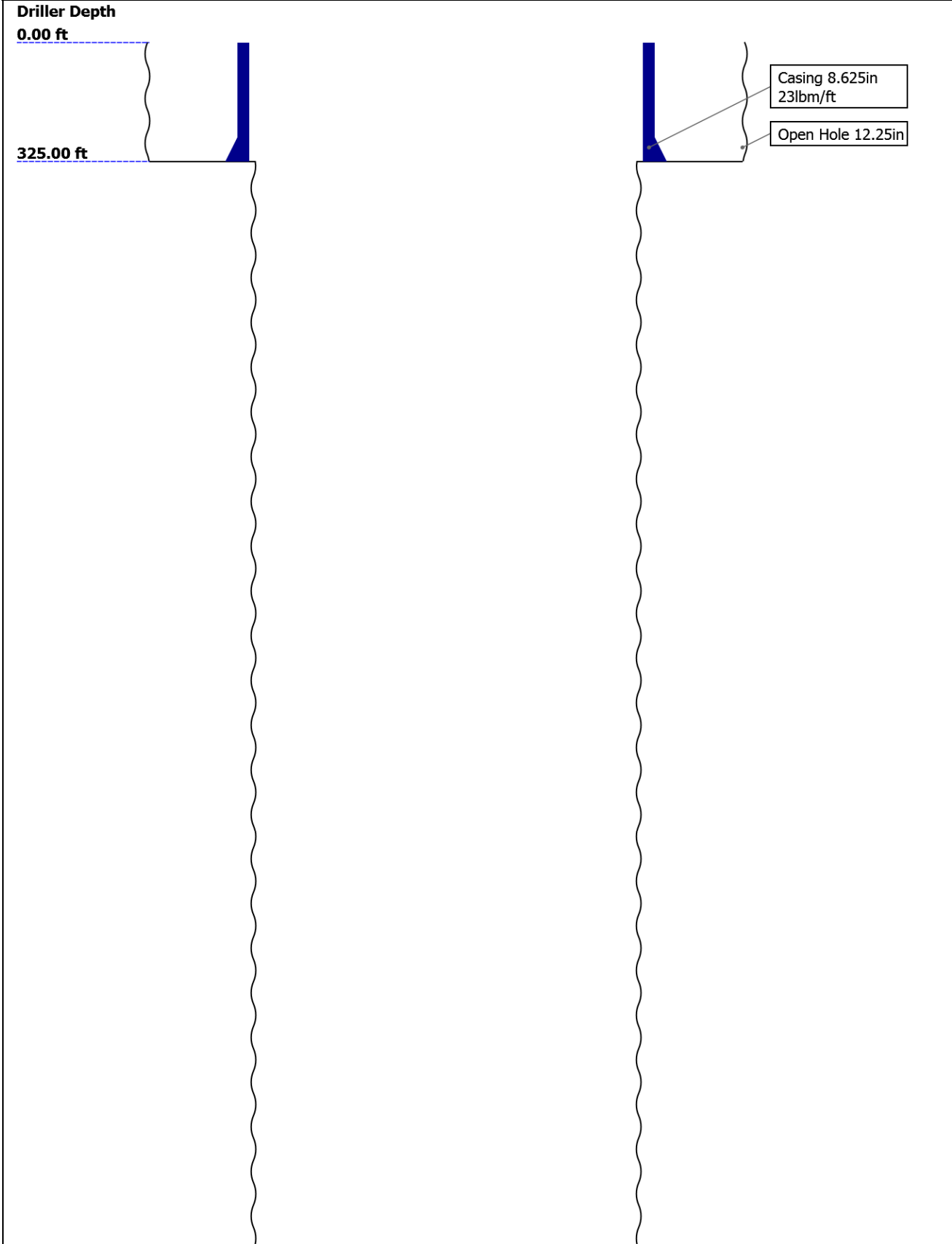
THE USE OF AND RELIANCE UPON THIS RECORDED-DATA BY THE HEREIN NAMED COMPANY (AND ANY OF ITS AFFILIATES, PARTNERS, REPRESENTATIVES, AGENTS, CONSULTANTS AND EMPLOYEES) IS SUBJECT TO THE TERMS AND CONDITIONS AGREED UPON BETWEEN SCHLUMBERGER AND THE COMPANY, INCLUDING: (a) RESTRICTIONS ON USE OF THE RECORDED-DATA; (b) DISCLAIMERS AND WAIVERS OF WARRANTIES AND REPRESENTATIONS REGARDING COMPANY'S USE AND RELIANCE UPON THE RECORDED-DATA; AND (c) CUSTOMER'S FULL AND SOLE RESPONSIBILITY FOR ANY INFERENCE DRAWN OR DECISION MADE IN CONNECTION WITH THE USE OF THIS RECORDED-DATA.

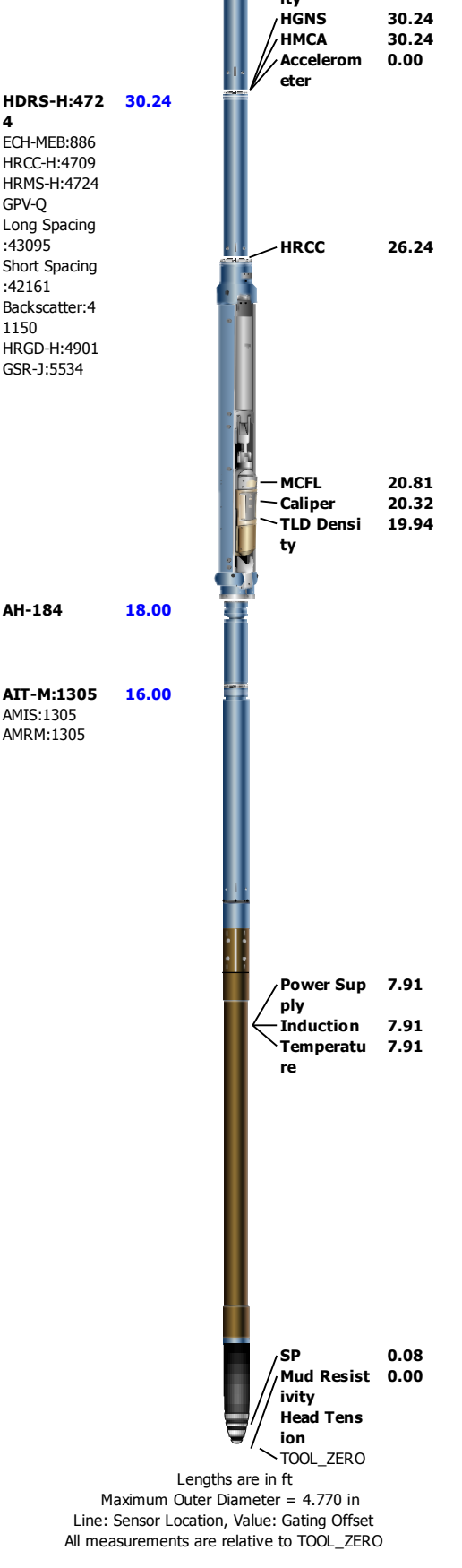
Contents

- 1. Header
- 2. Disclaimer
- 3. Contents
- 4. Well Sketch
- 5. Borehole Size/Casing/Tubing Record
- 6. Remarks and Equipment Summary
- 7. Depth Summary
- 8. ONE 2" Induction
 - 8.1 Integration Summary
 - 8.2 Software Version
 - 8.3 Composite Summary
 - 8.4 Log (Induction-2)
 - 8.5 Parameter Listing
- 9. ONE 5" Induction
 - 9.1 Integration Summary
 - 9.2 Software Version
 - 9.3 Composite Summary

- 9.4 Log (Induction-5)
- 9.5 Parameter Listing
- 10. ONE 5" Induction
 - 10.1 Composite Summary
 - 10.2 Log (Induction-5 RA)
- 11. Calibration Report
- 12. Tail

Well Sketch





Depth Summary			
		ONE	
Depth Measuring Device			
Type	IDW-B		
Serial Number			
Calibration Date			
Calibrator Serial Number			
Calibration Quality			

Calibration Cable Type			
Wheel Correction 1	0		
Wheel Correction 2	0		

Tension Device

Type	CMTD-B/A		
Serial Number			
Calibration Date			
Calibrator Serial Number			
Number of Calibration Points	0		

Logging Cable

Type	7-46A-XS		
Serial Number			
Length	24000.00 ft		
Conveyance Type	Wireline		
Rig Type	Land		

ONE:Depth Control Parameters

Depth Control Remarks

Log Sequence	First Log In the Well	All Schlumberger depth control policies followed.
Rig Up Length At Surface		IDW used as primary depth reference.
Rig Up Length At Bottom		Z-Chart used as secondary depth reference.
Rig Up Length Correction		
Stretch Correction		
Tool Zero Check At Surface		

ONE

2" Induction

Integration Summary

Output Channel(s)	Output Description	Input Parameter	Output Value	Unit
ICV	Integrated Cement Volume	GCSE_UP_PASS, FCD	986.99	ft3

Software Version

Acquisition System	Version
Maxwell 2018 SP1	8.1.99839.3100

Pass Summary

Run Name	Pass Objective	Direction	Top	Bottom	Start	Stop	DSC Mode	Depth Shift	Include Parallel Data
ONE	Log[3]:Up	Up	78.30 ft	4514.15 ft	10-Jun-2018 2:09:34 AM	10-Jun-2018 3:27:37 AM	ON	2.93 ft	No

All depths are referenced to toolstring zero

Log

Company:St. Croix Operating, Inc. Well:State 3-16

ONE: Log[3]:Up:S004

Description: AIT Basic Log Two Format: Log (Induction-2) Index Scale: 2 in per 100 ft Index Unit: ft Index Type: Measured Depth Creation Date: 10-Jun-2018 04:05:02

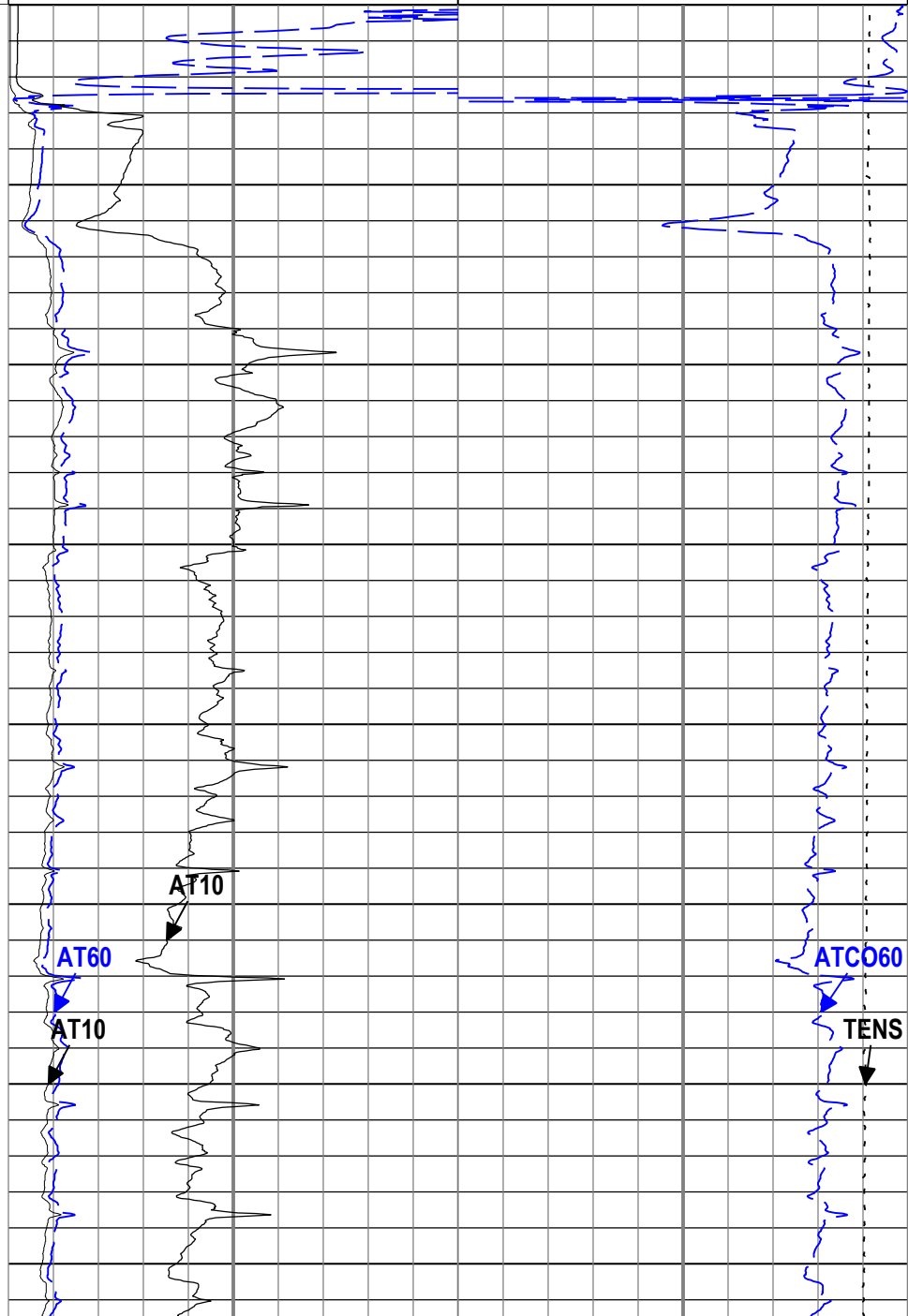
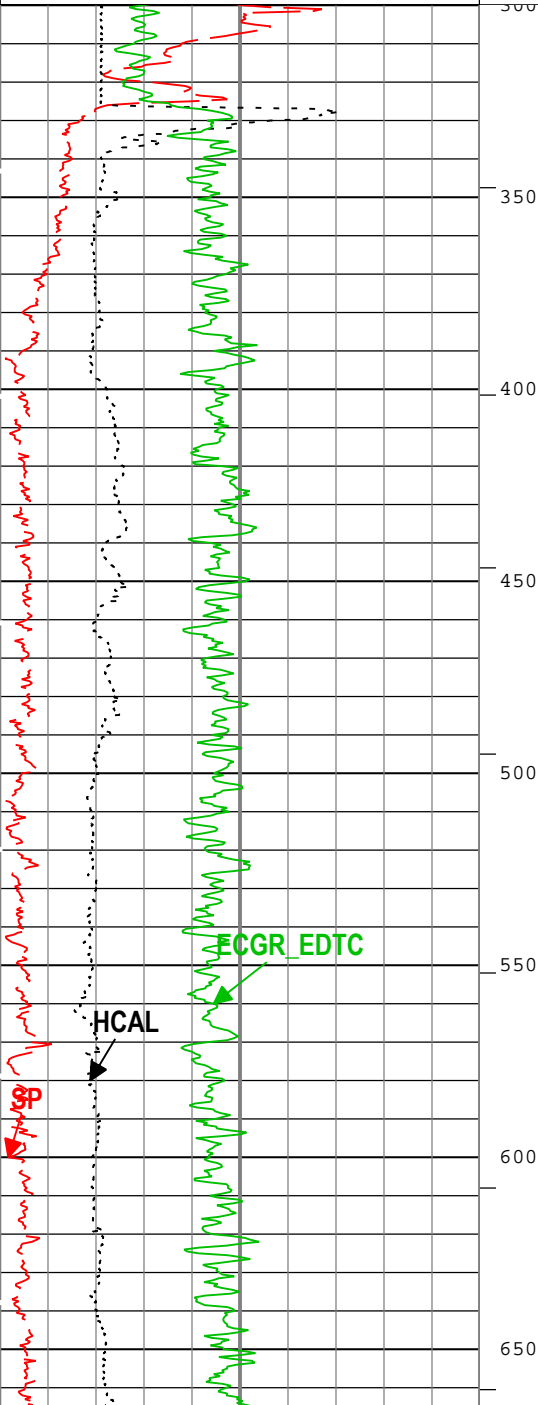
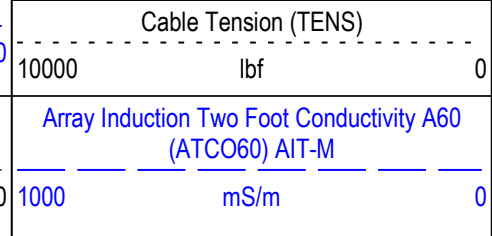
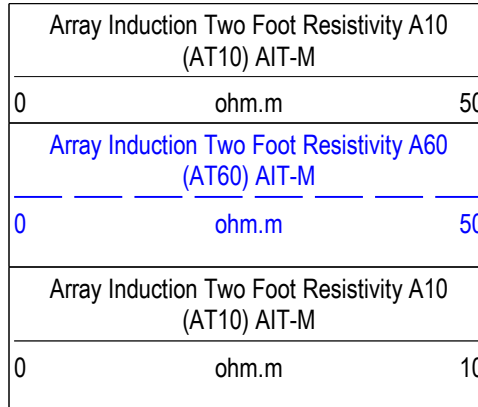
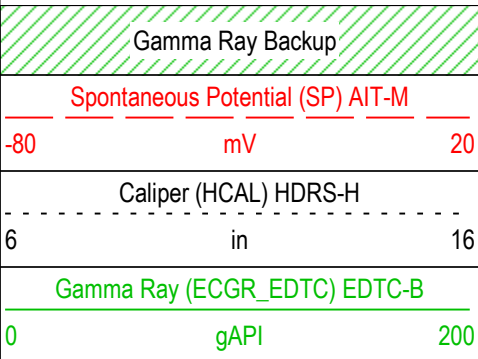
Channel	Source	Sampling
AT10	AIT-M:AMIS:AMIS	3in
AT60	AIT-M:AMIS:AMIS	3in
ATCO60	AIT-M:AMIS:AMIS	3in
CALI	HDRS-H:HRCC-H:HRCC-H	1in
GR	EDTC-B:EDTC-B:EDTC-B	6in

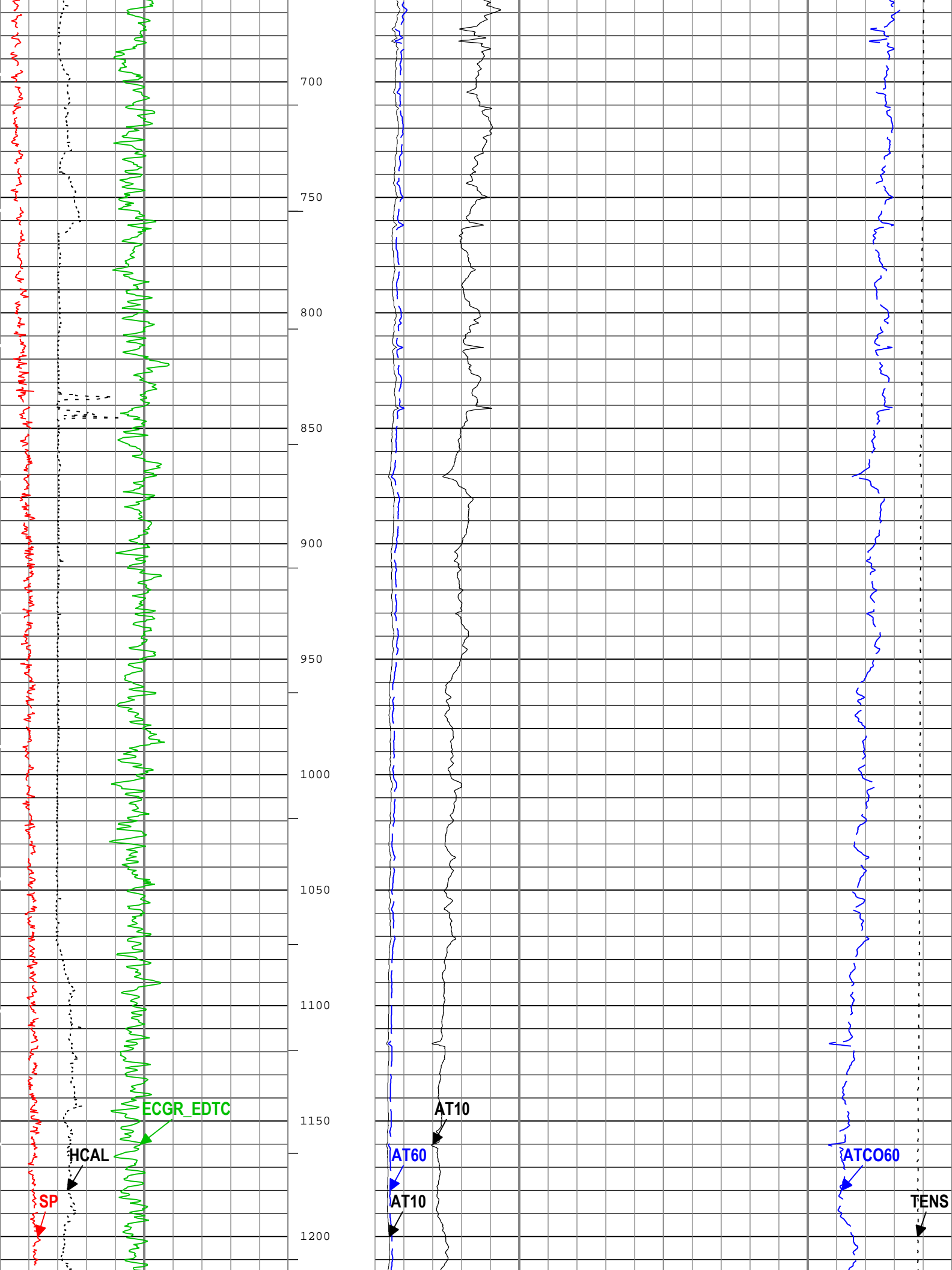
CV	Borehole	6in - RT
SP	AIT-M:AMIS:AMIS	6in
TENS	WLWorkflow	6in
TIME_1900	WLWorkflow	0.1in

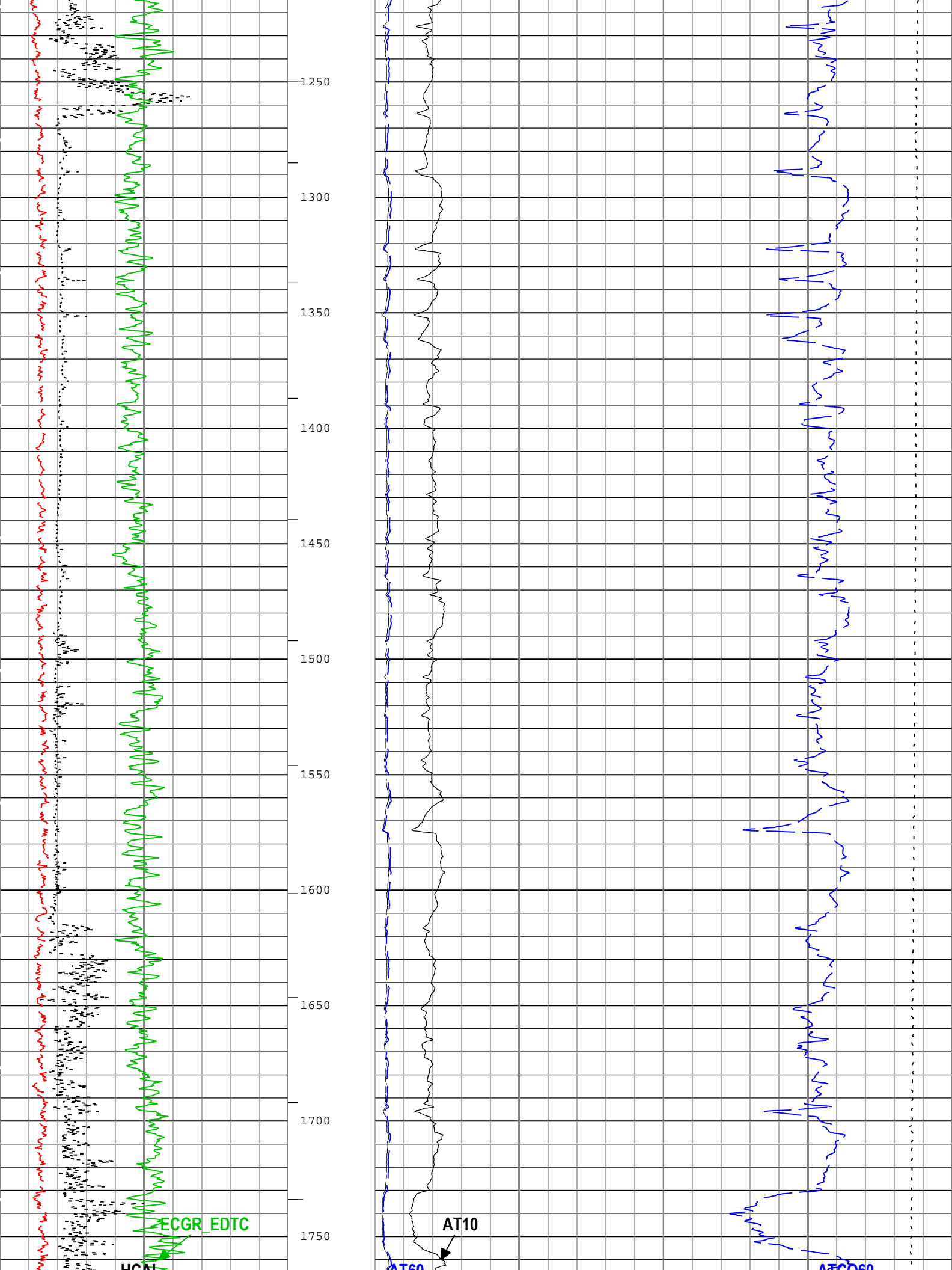
TIME_1900 - Time Marked every 60.00 (s)

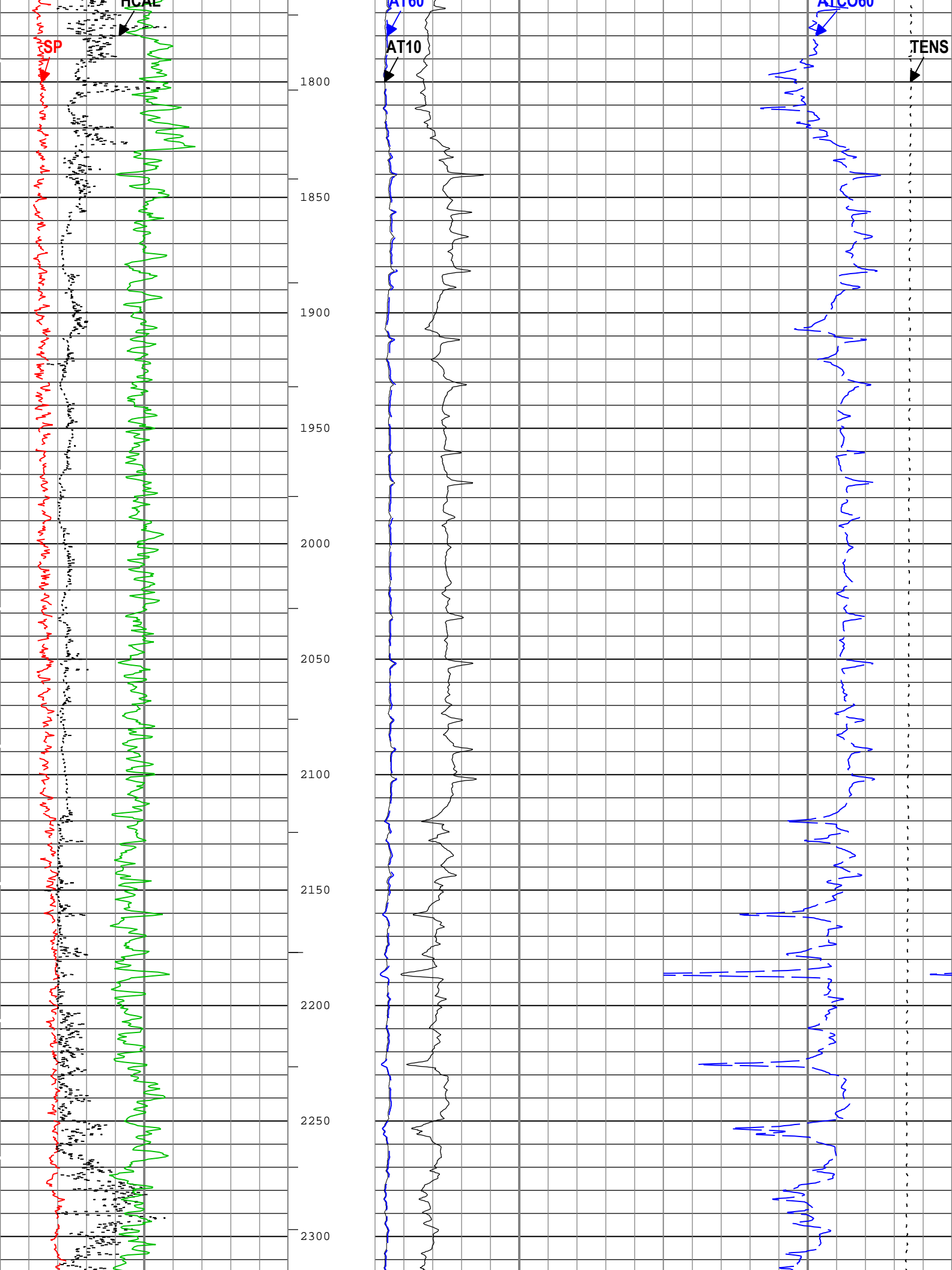
ICV - Integrated Cement Volume every 10.00 (ft3)

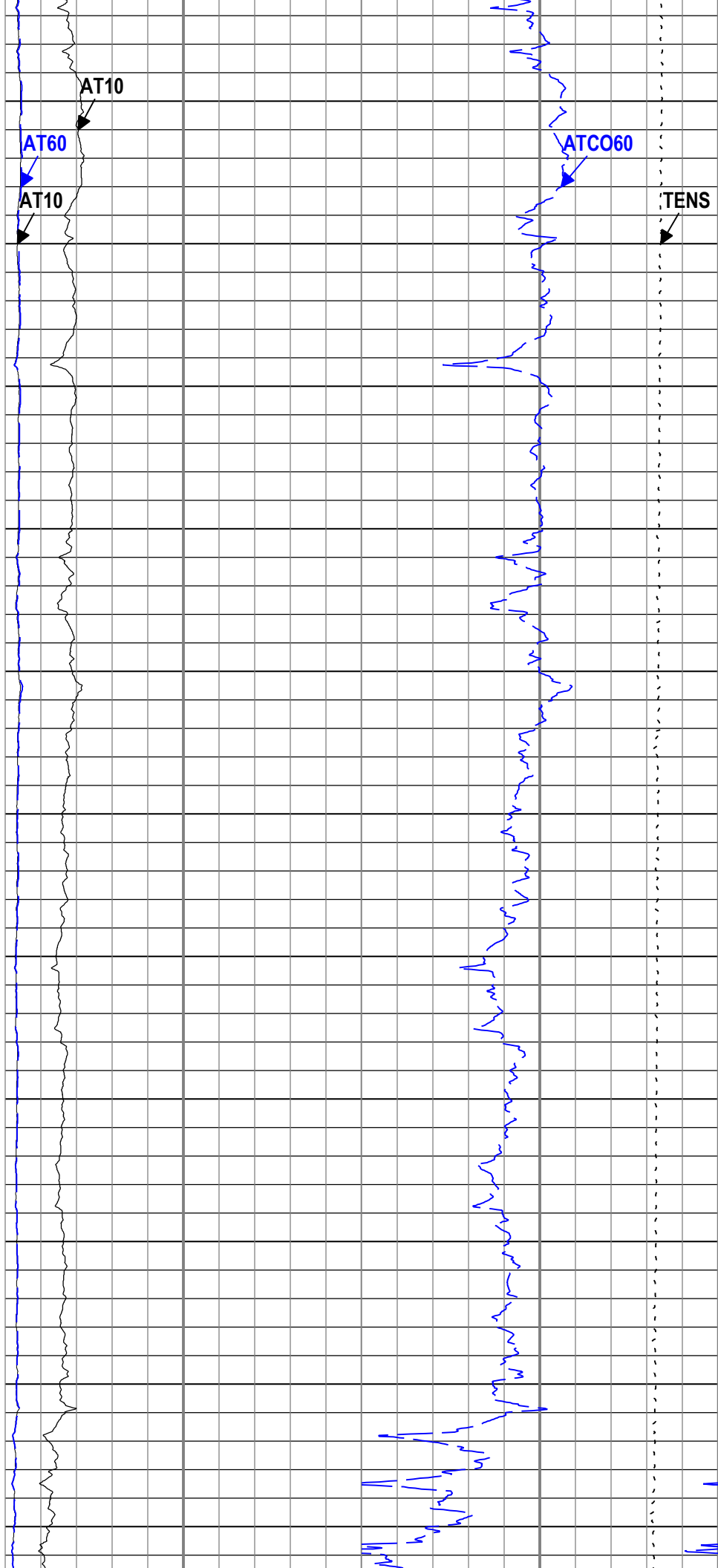
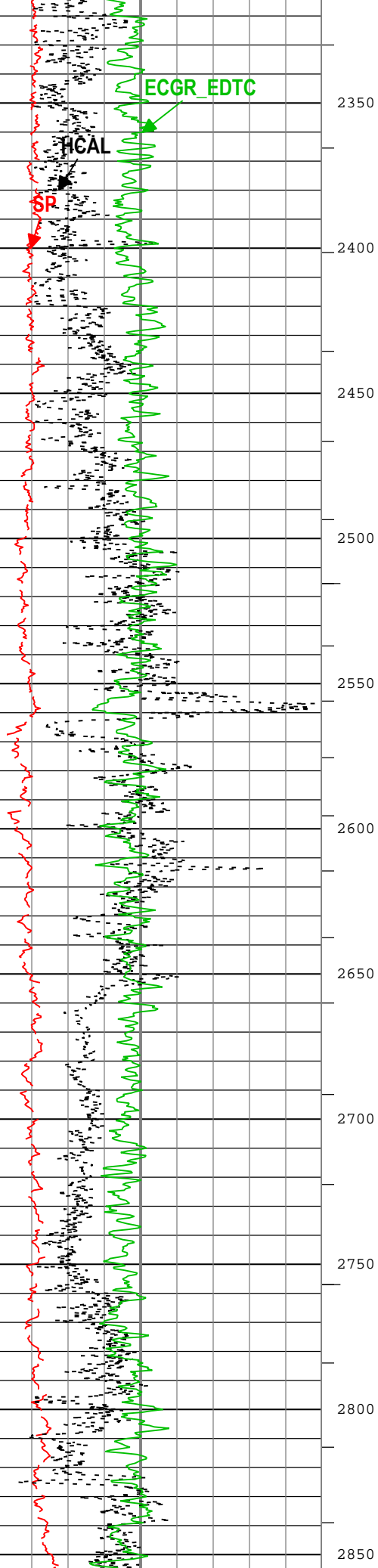
ICV - Integrated Cement Volume every 100.00 (ft3)

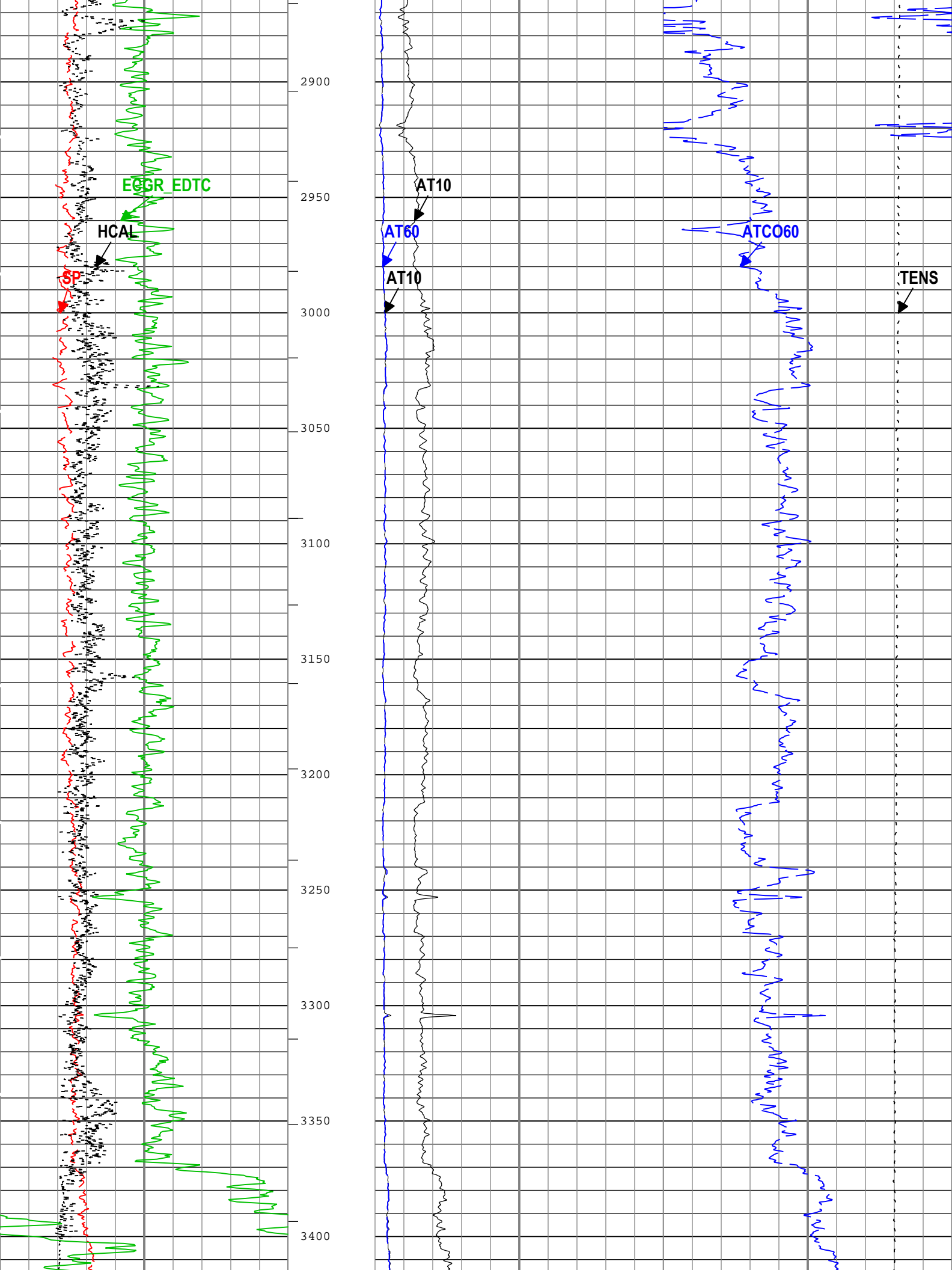


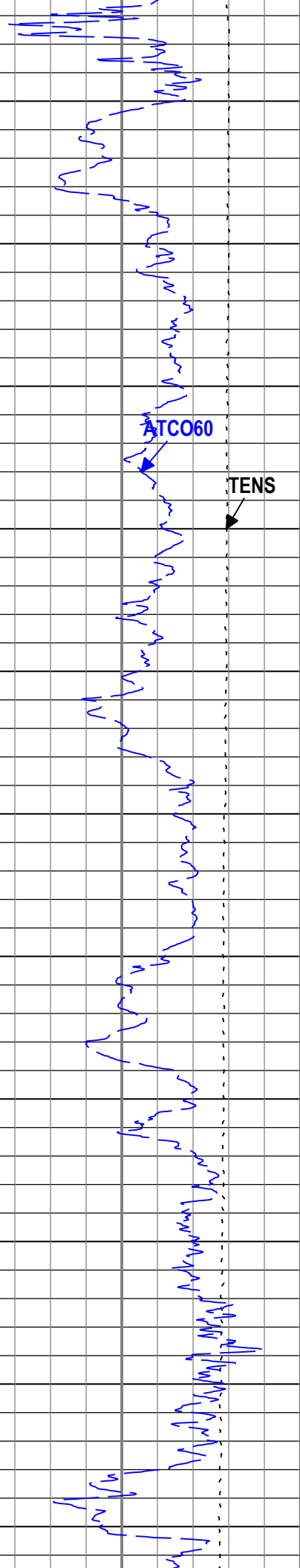
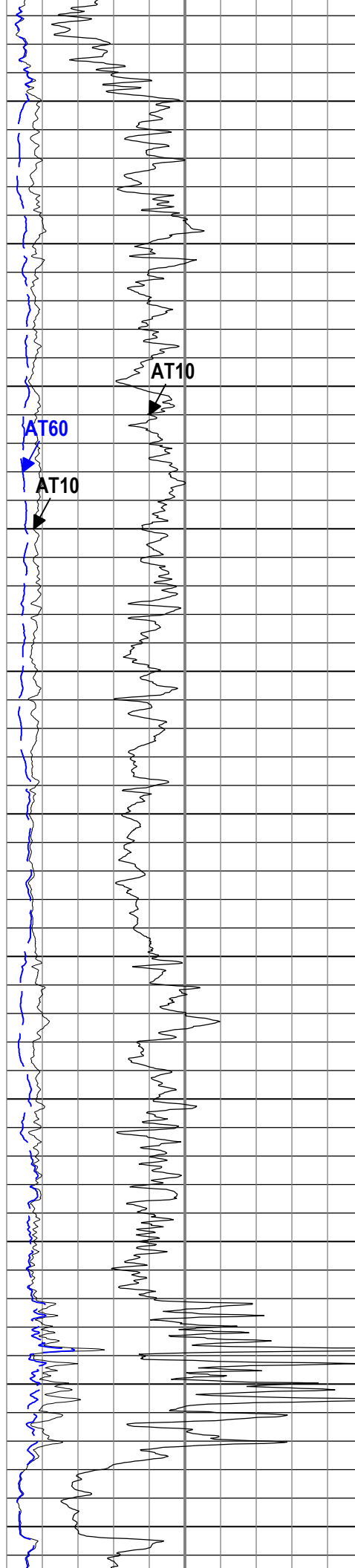
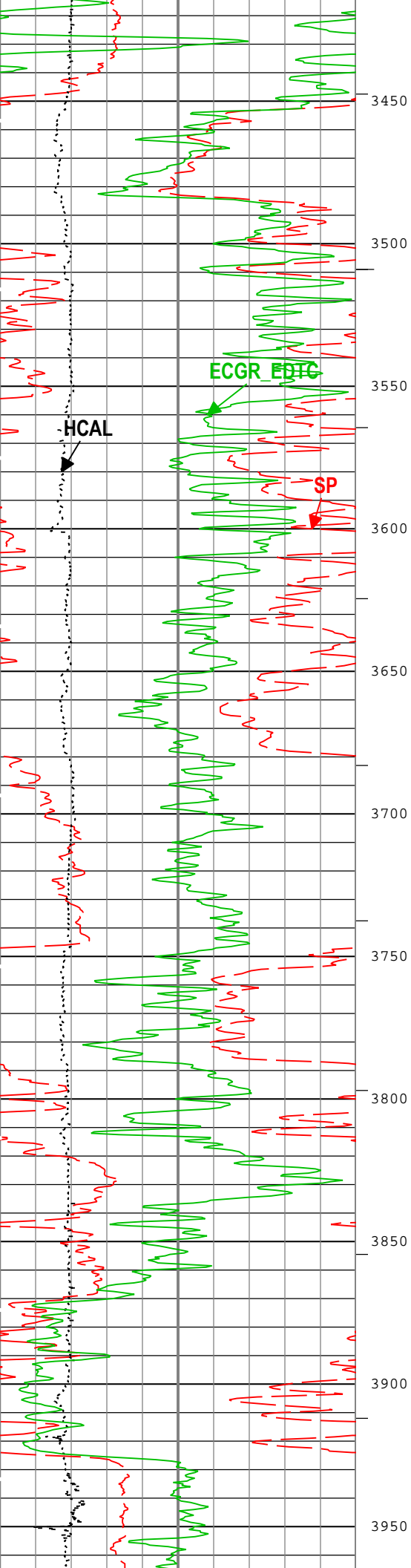


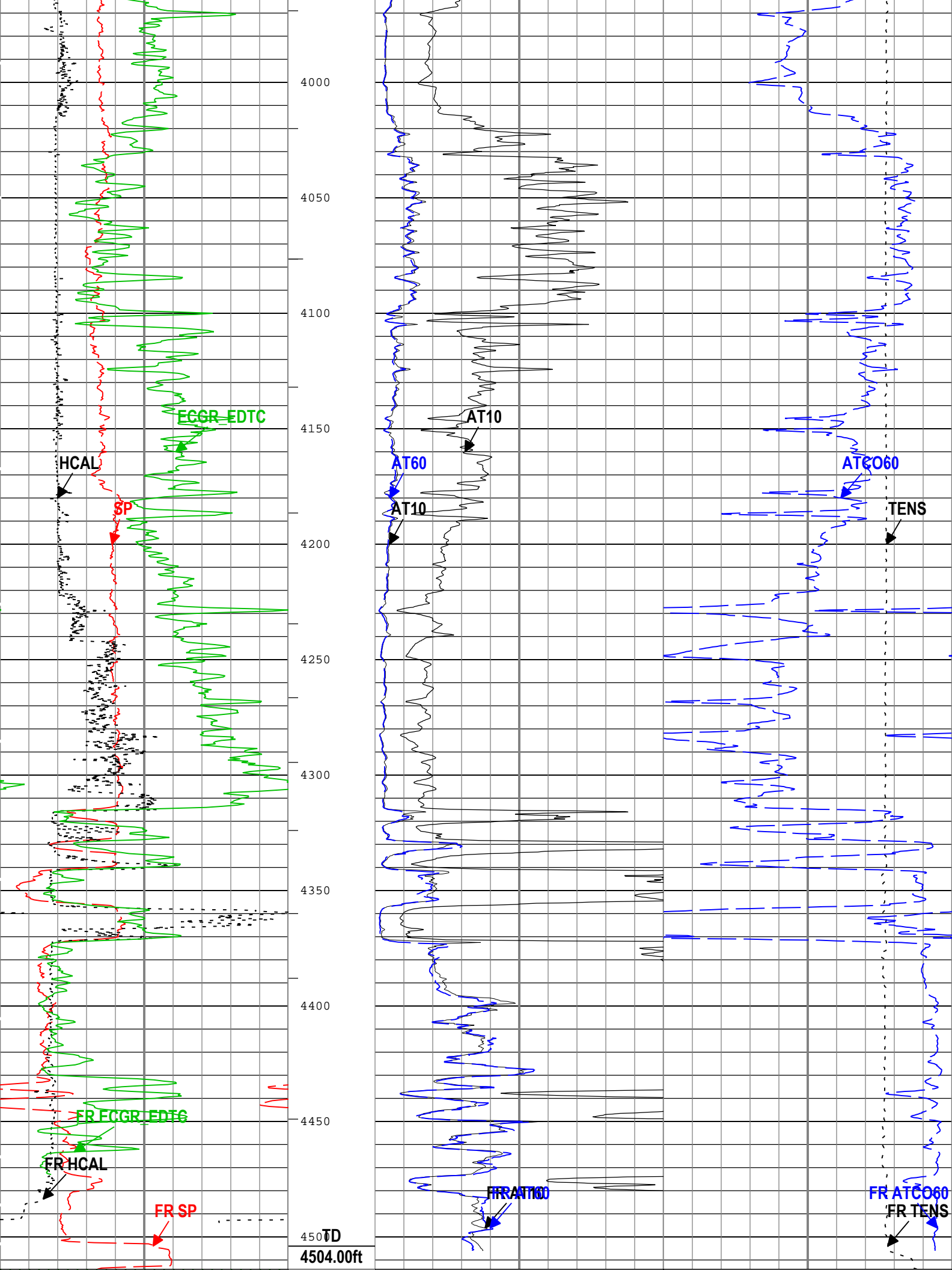












Gamma Ray Backup
Spontaneous Potential (SP) AIT-M
-80 mV 20
Caliper (HCAL) HDRS-H
6 in 16
Gamma Ray (ECGR_EDTC) EDTC-B
0 gAPI 200

Array Induction Two Foot Resistivity A10 (AT10) AIT-M
0 ohm.m 50
Array Induction Two Foot Resistivity A60 (AT60) AIT-M
0 ohm.m 50
Array Induction Two Foot Resistivity A10 (AT10) AIT-M
0 ohm.m 10

Cable Tension (TENS)
10000 lbf 0
Array Induction Two Foot Conductivity A60 (ATCO60) AIT-M
1000 mS/m 0

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

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

TIME_1900 - Time Marked every 60.00 (s)

Description: AIT Basic Log Two Format: Log (Induction-2) Index Scale: 2 in per 100 ft Index Unit: ft Index Type: Measured Depth Creation Date: 10-Jun-2018 04:05:02

Channel Processing Parameters

ONE: Parameters

Parameter	Description	Tool	Value	Unit
ABHM	Array Induction Borehole Correction Mode	AIT-M	Compute Standoff	
ISSBAR	Barite Mud Presence Flag	Borehole	No	
BHS	Borehole Status (Open or Cased Hole)	Borehole	Open	
BS	Bit Size	WLSESSION	Depth Zoned	in
CALI_SHIFT	CALI Supplementary Offset	HDRS-H	0.153	in
CBLO	Casing Bottom (Logger)	WLSESSION	326.5	ft
CDEN	Cement Density	EDTC-B	2	g/cm3
CSODDRL	Casing Outer Diameter - Zoned along driller depths	WLSESSION	8.625	in
DFD	Drilling Fluid Density	Borehole	9.1	lbm/gal
DFT_CATEGORY	Drilling Fluid Type	Borehole	Water	
FCD	Future Casing (Outer) Diameter	WLSESSION	5.5	in
GCSE_DOWN_PASS	Generalized Caliper Selection for WL Log Down Passes	Borehole	BS(RT)	
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	
SP_SHIFT	SP Shift	AIT-M	500	mV
SPDR	SP Drift Per Foot	AIT-M	0	mV/ft

Depth Zone Parameters

Parameter	Value	Start (ft)	Stop (ft)
BS	12.25	300	325
BS	7.875	325	4504

All depth are actual.

Tool Control Parameters

ONE: Parameters

Parameter	Description	Tool	Value	Unit
MAX_LOG_SPEED	Toolstring Maximum Logging Speed	WLSESSION	3600	ft/h

ONE

5" Induction

Integration Summary

Output Channel(s)	Output Description	Input Parameter	Output Value	Unit
ICV	Integrated Cement Volume	GCSE_UP_PASS, FCD	986.99	ft3
IHV	Integrated Hole Volume	GCSE_UP_PASS	1677.76	ft3

Software Version

Acquisition System	Version
Maxwell 2018 SP1	8.1.99839.3100

Pass Summary

Run Name	Pass Objective	Direction	Top	Bottom	Start	Stop	DSC Mode	Depth Shift	Include Parallel Data
ONE	Log[3]:Up	Up	78.30 ft	4514.15 ft	10-Jun-2018 2:09:34 AM	10-Jun-2018 3:27:37 AM	ON	2.93 ft	No

All depths are referenced to toolstring zero

Log

Company:St. Croix Operating, Inc. Well:State 3-16
ONE: Log[3]:Up:S004

Description: AIT Basic Log Two Format: Log (Induction-5) Index Scale: 5 in per 100 ft Index Unit: ft Index Type: Measured Depth Creation Date: 10-Jun-2018 04:05:04

Channel	Source	Sampling
AT10	AIT-M:AMIS:AMIS	3in
AT20	AIT-M:AMIS:AMIS	3in
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
ICV	Borehole	6in - RT
IHV	Borehole	6in - RT
SP	AIT-M:AMIS:AMIS	6in
TENS	WLWorkflow	6in
TIME_1900	WLWorkflow	0.1in

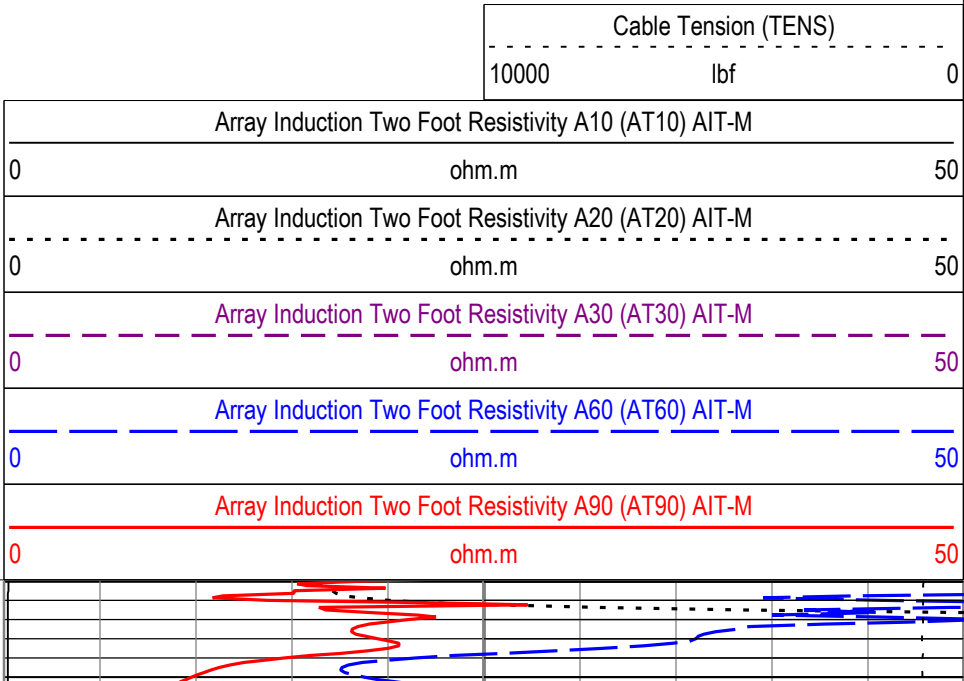
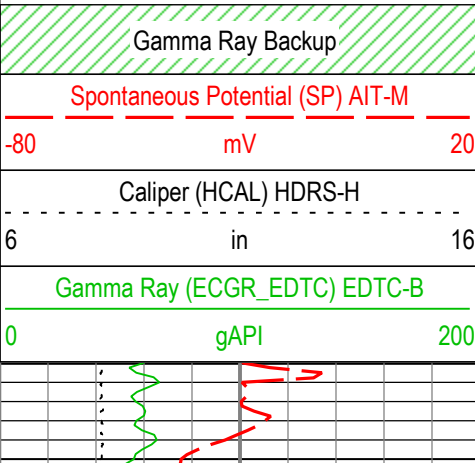
TIME_1900 - Time Marked every 60.00 (s)

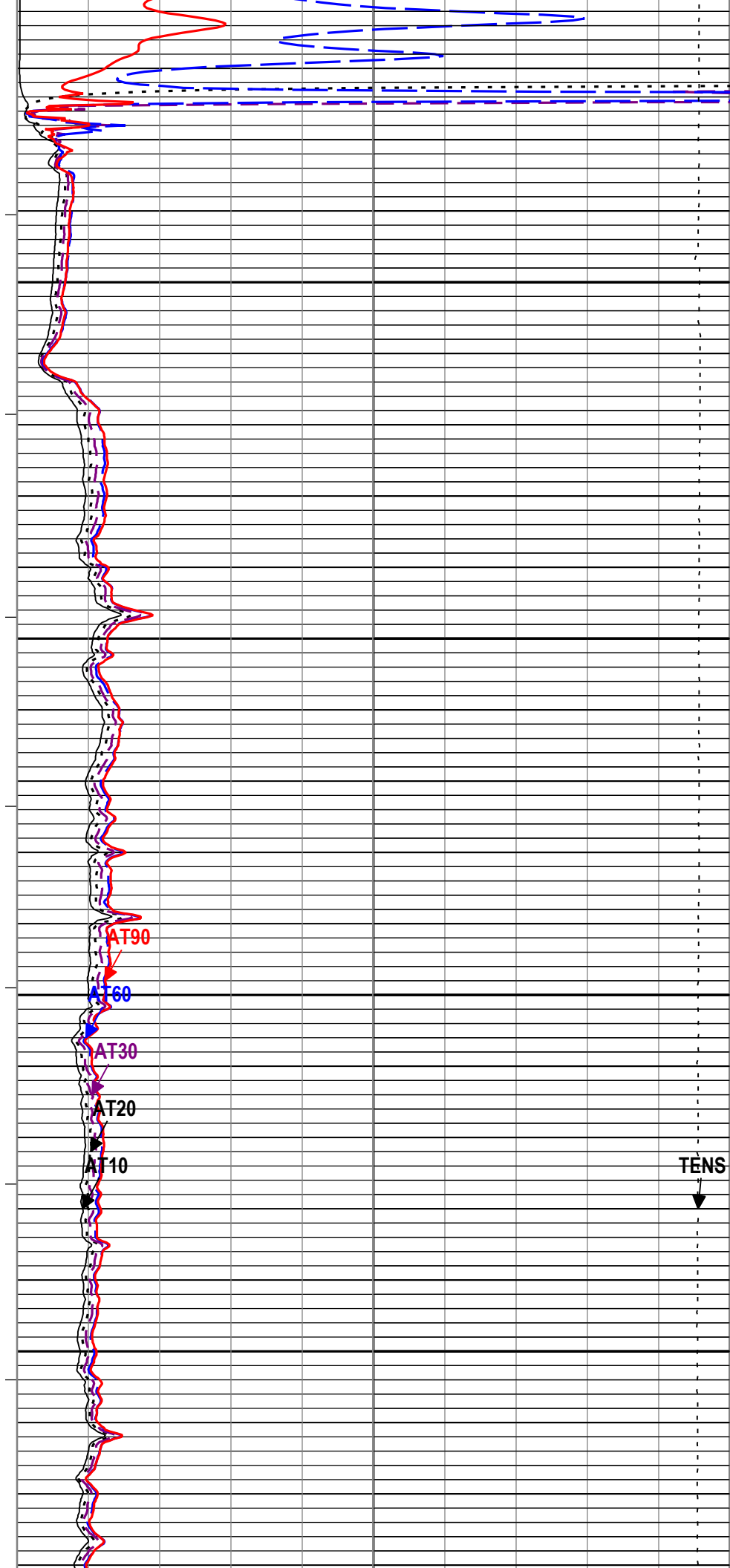
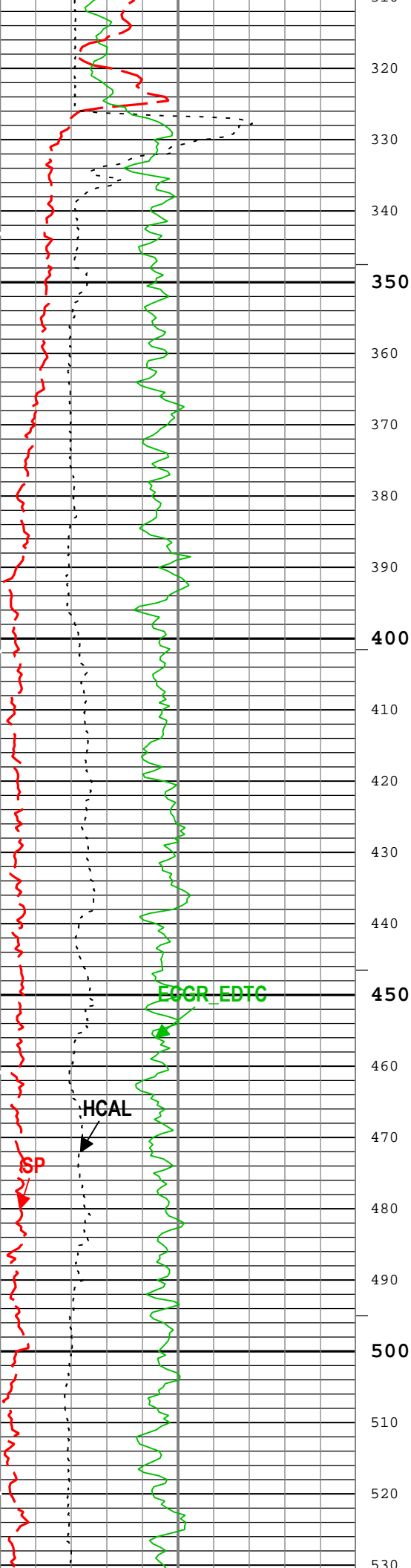
└─ IHV - Integrated Hole Volume every 10.00 (ft3)

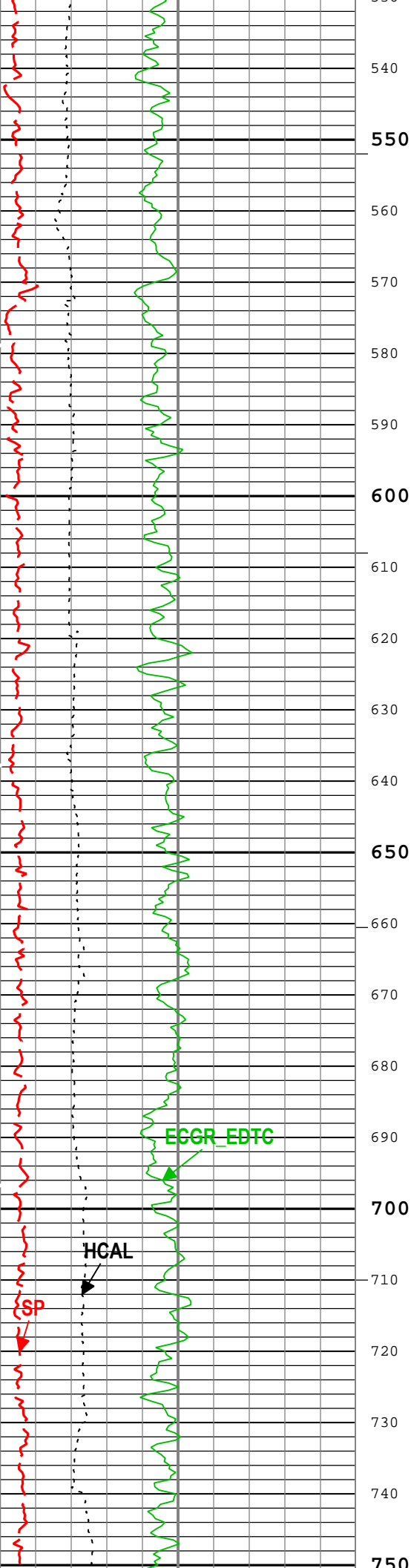
└─ IHV - Integrated Hole Volume every 100.00 (ft3)

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

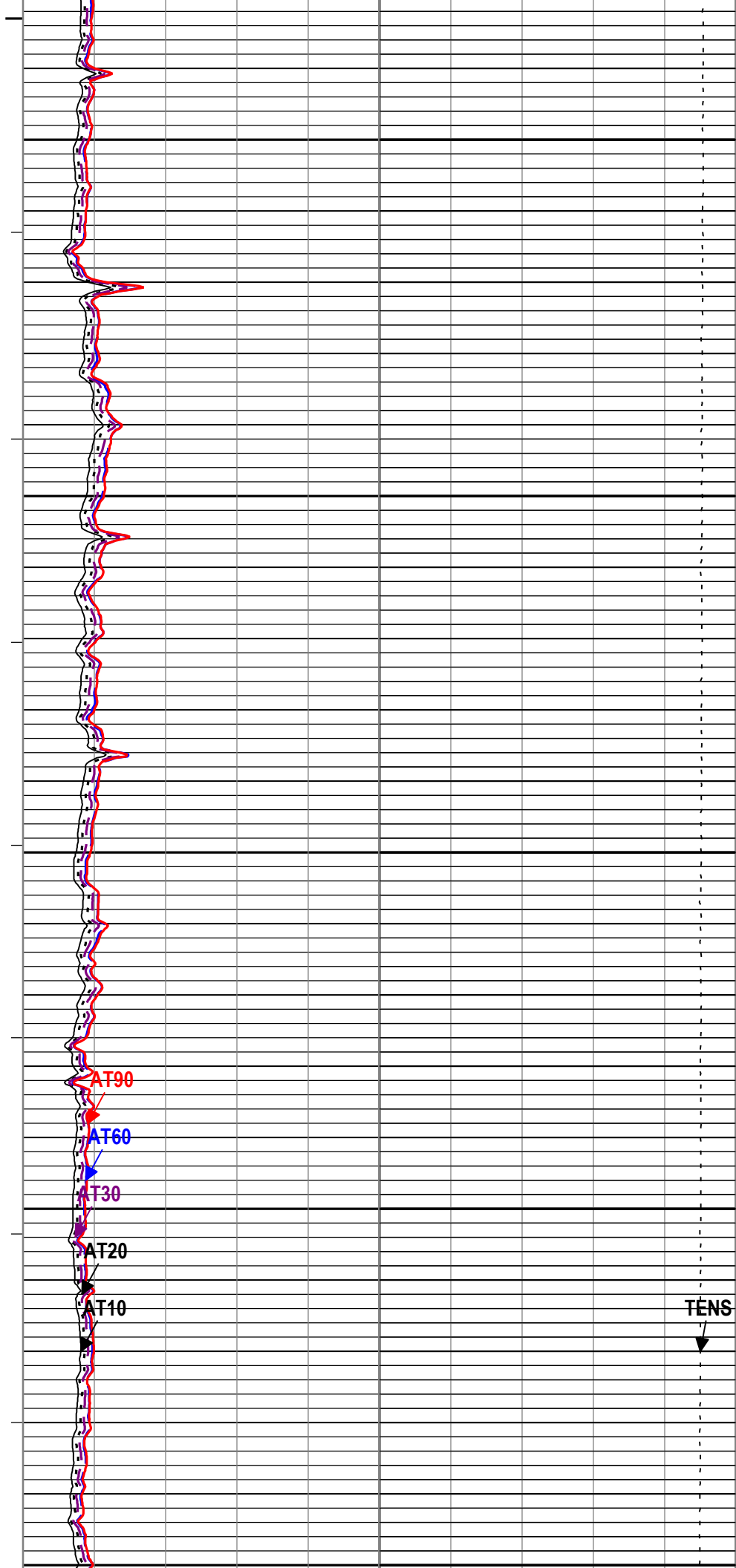
└─ ICV - Integrated Cement Volume every 100.00 (ft3)



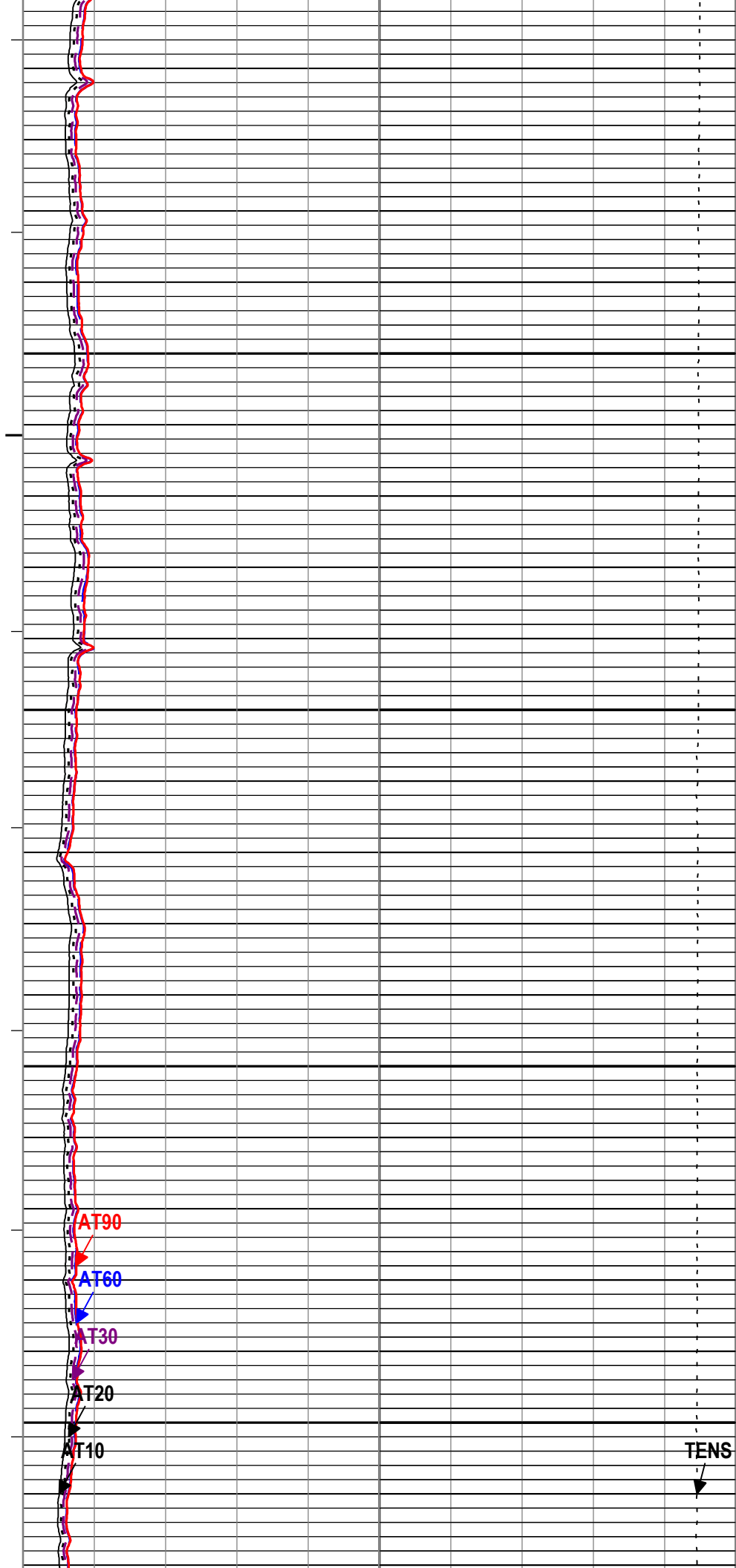
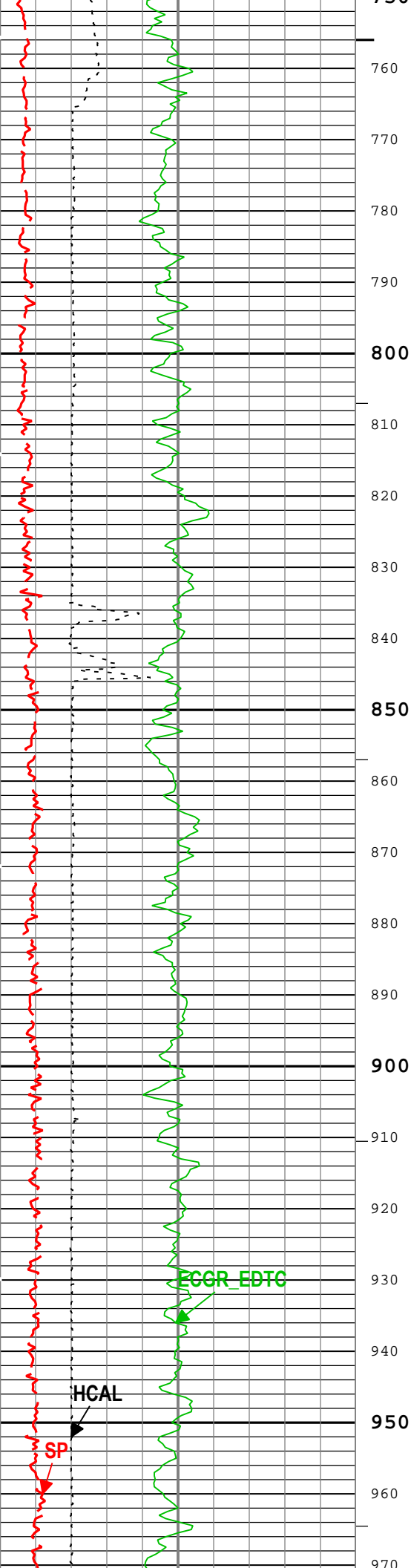


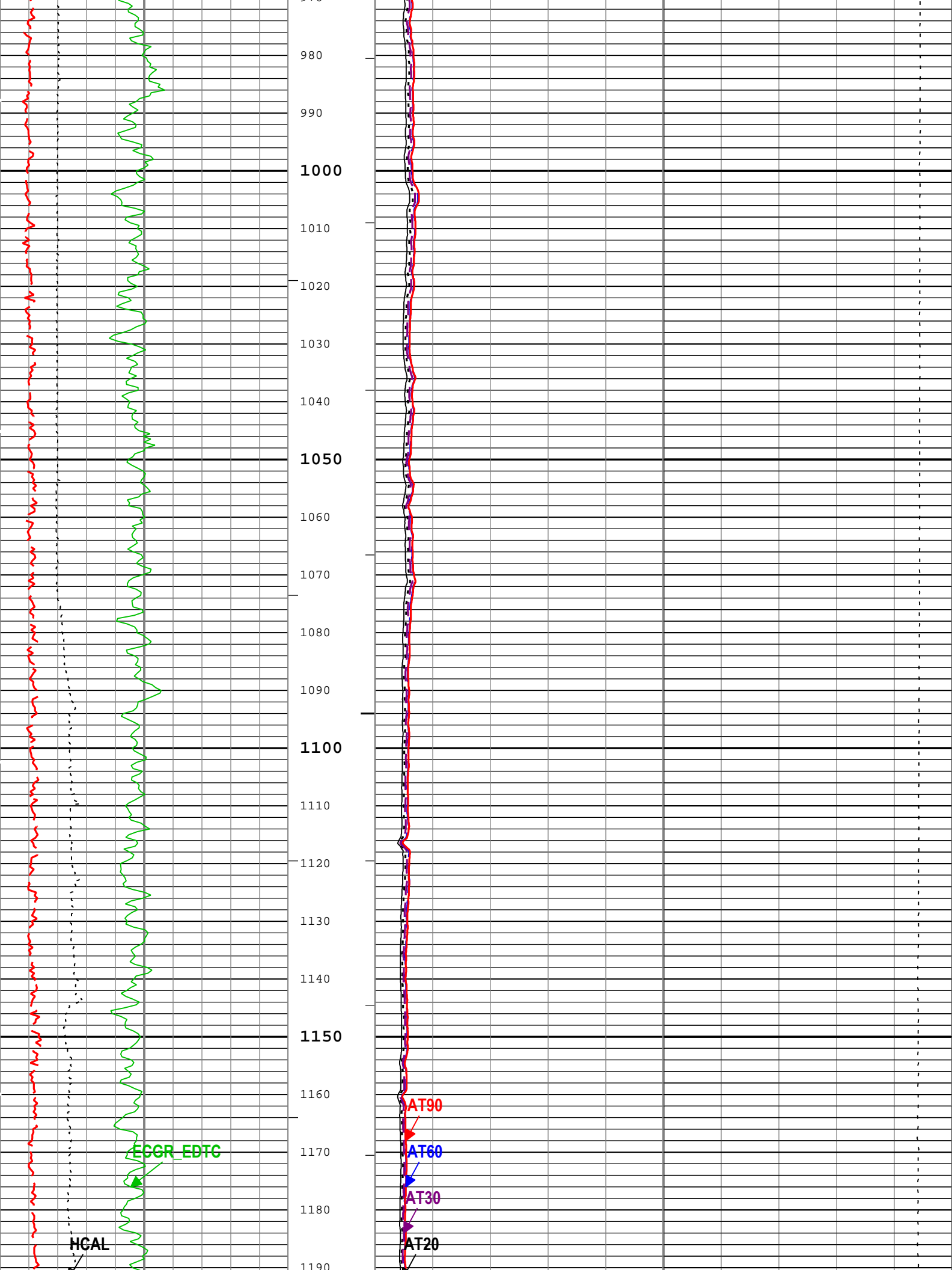


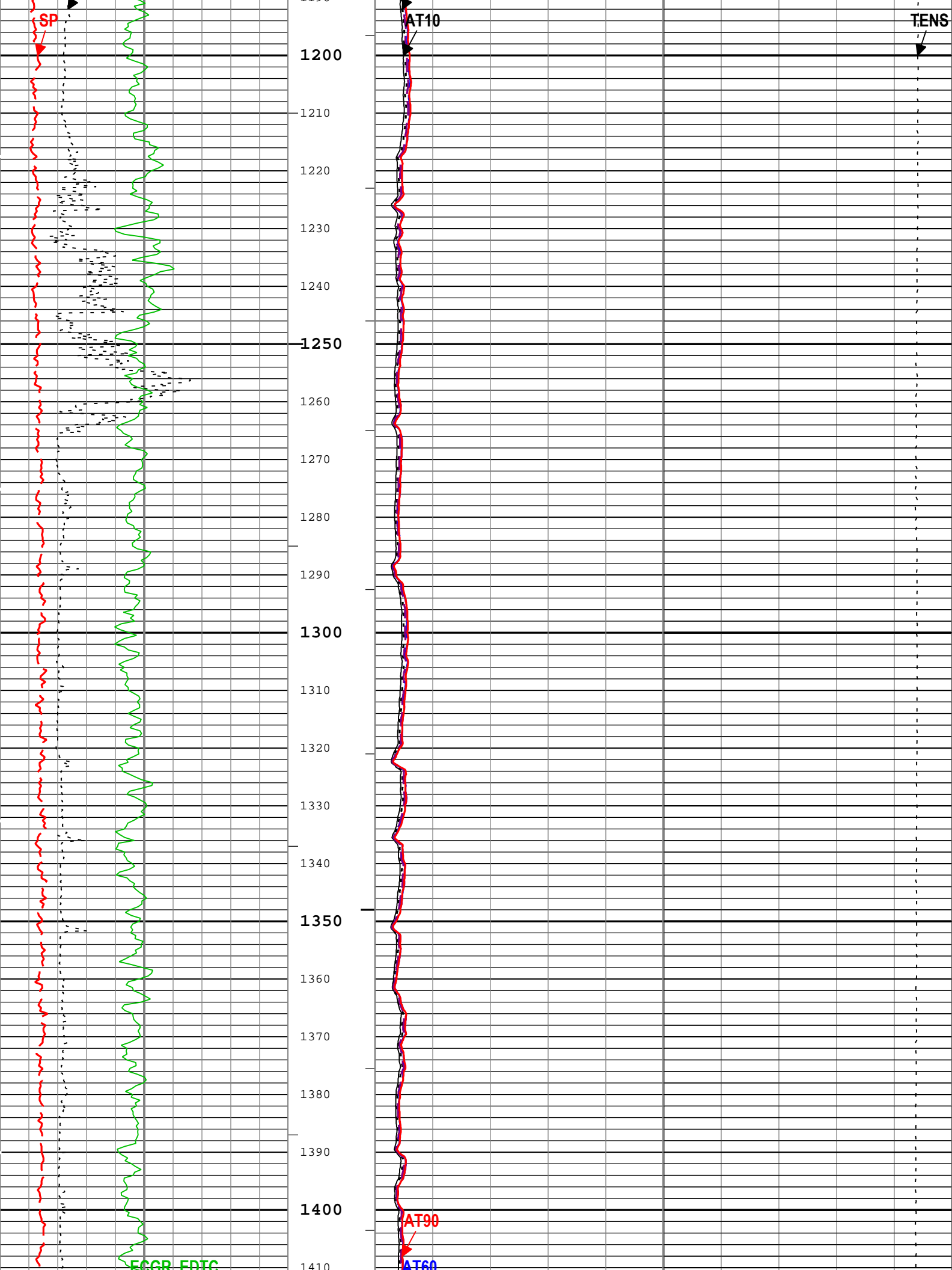
540
550
560
570
580
590
600
610
620
630
640
650
660
670
680
690
700
710
720
730
740
750

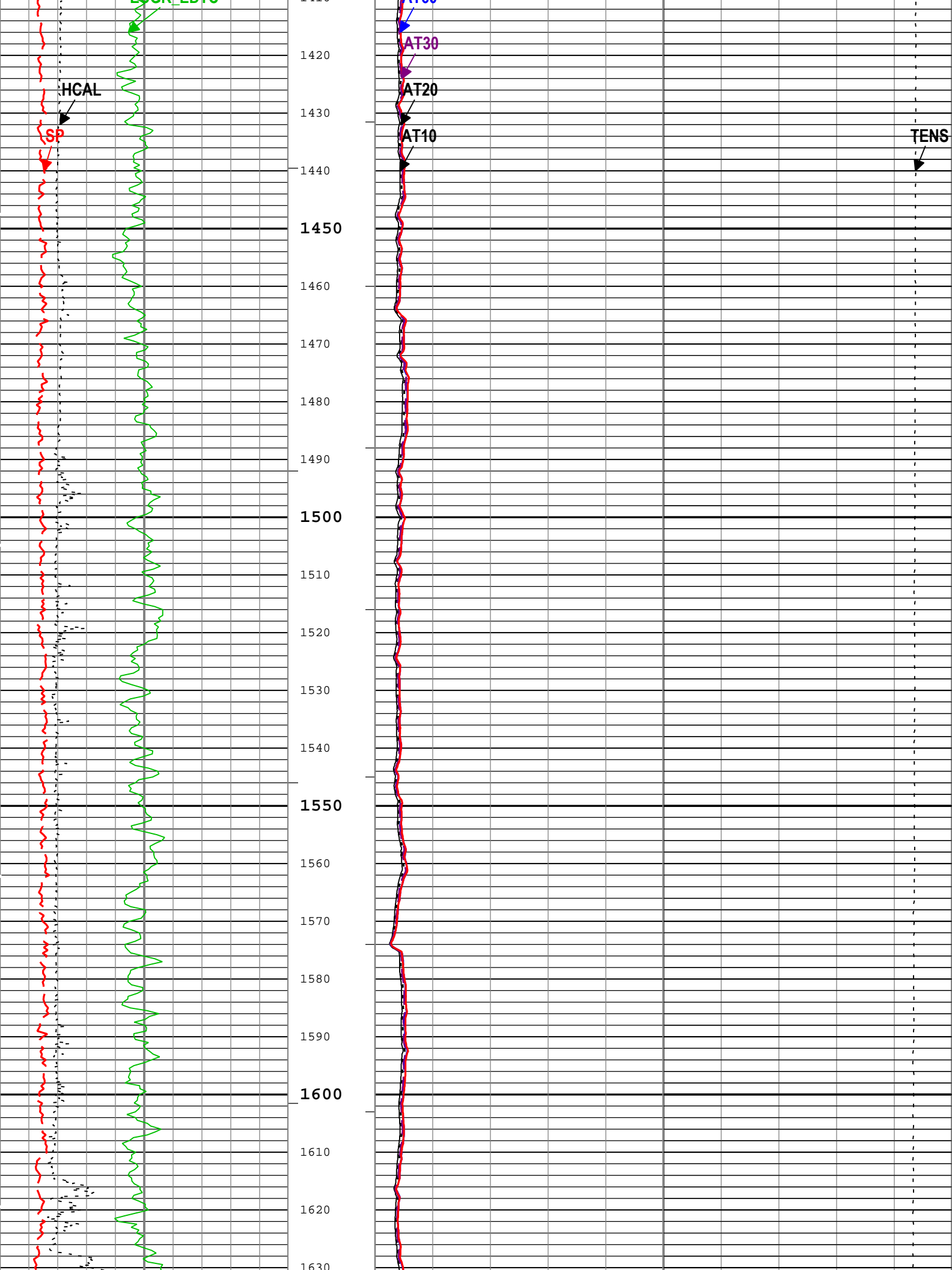


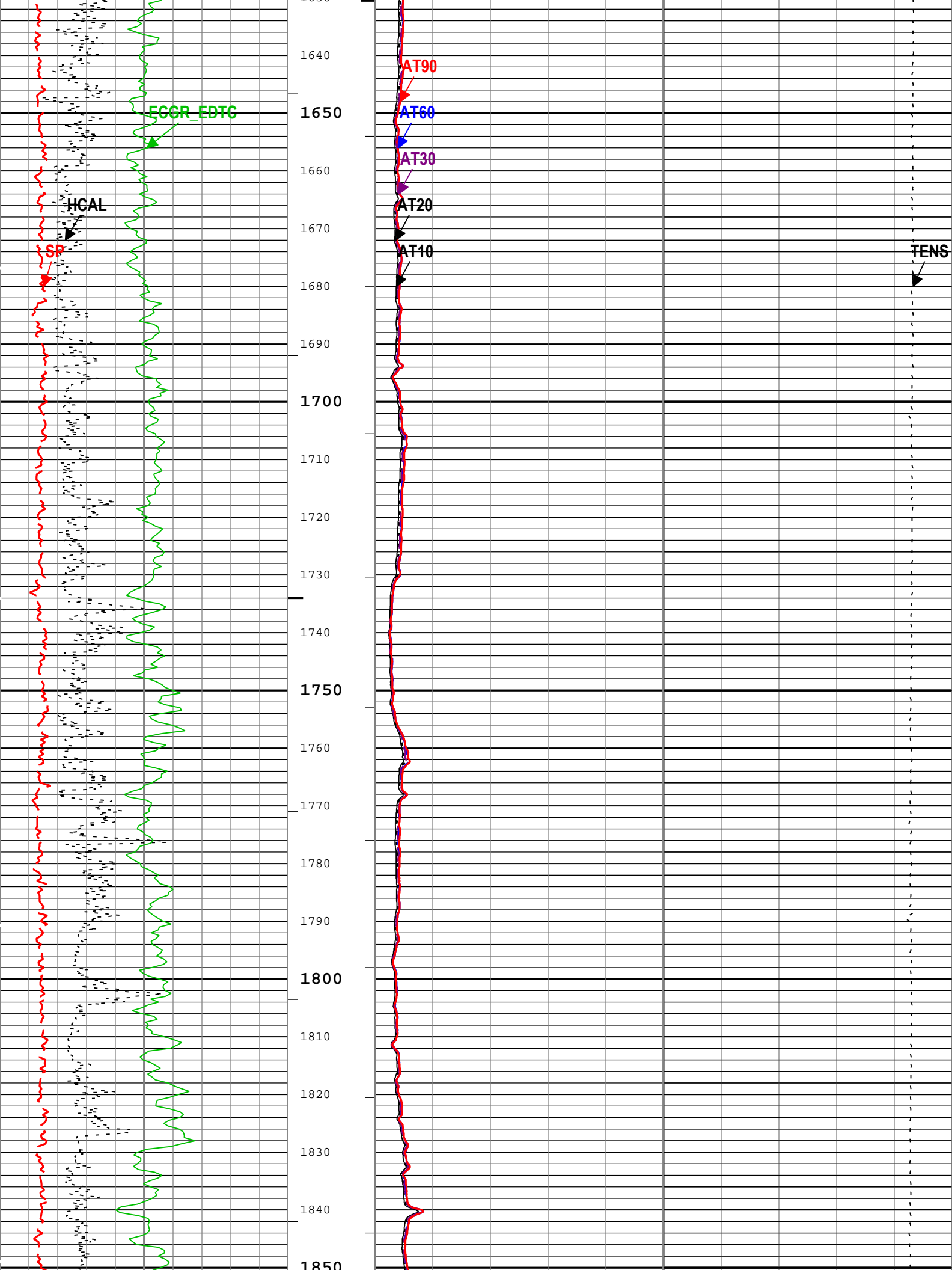
TENS

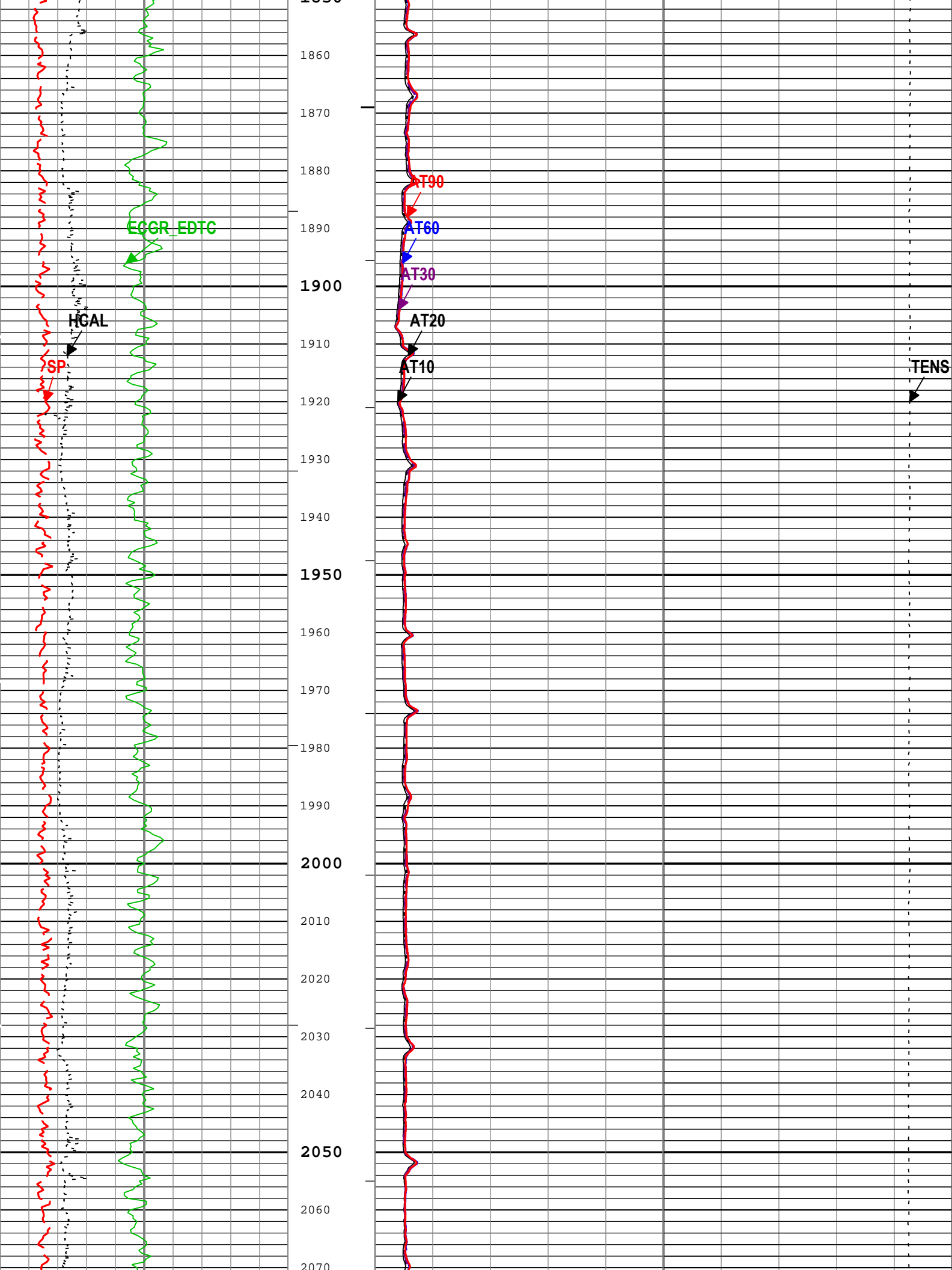


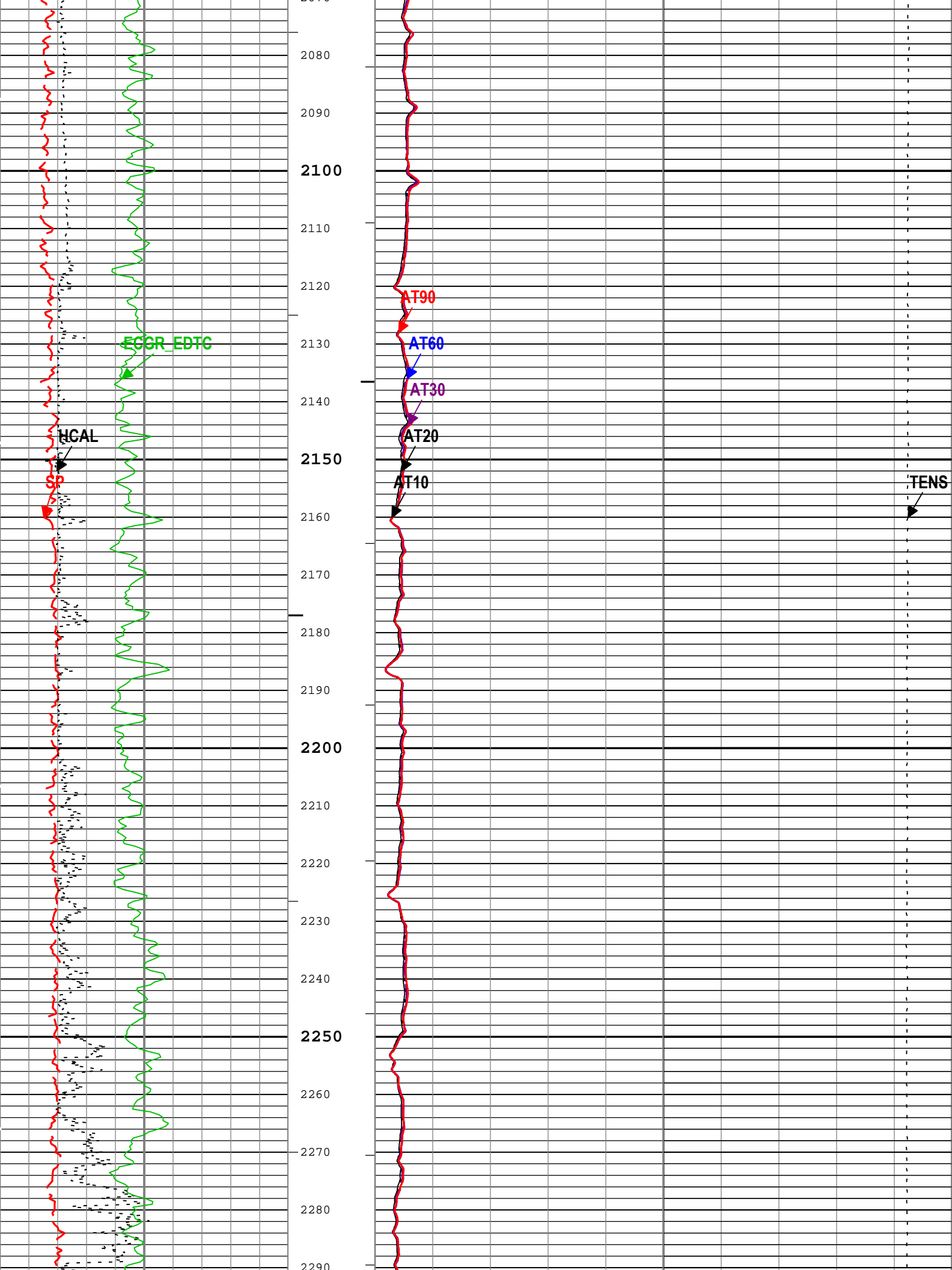


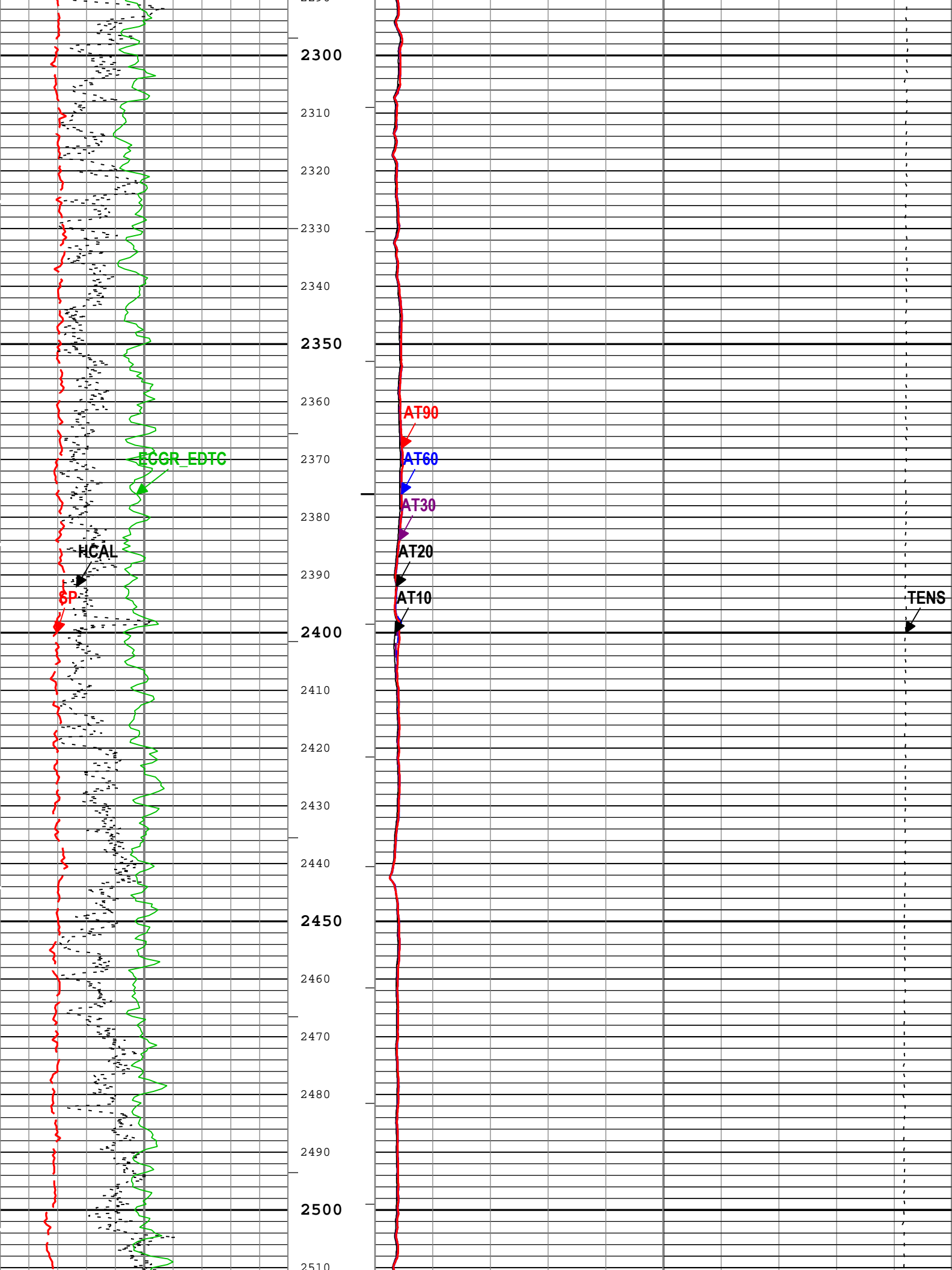


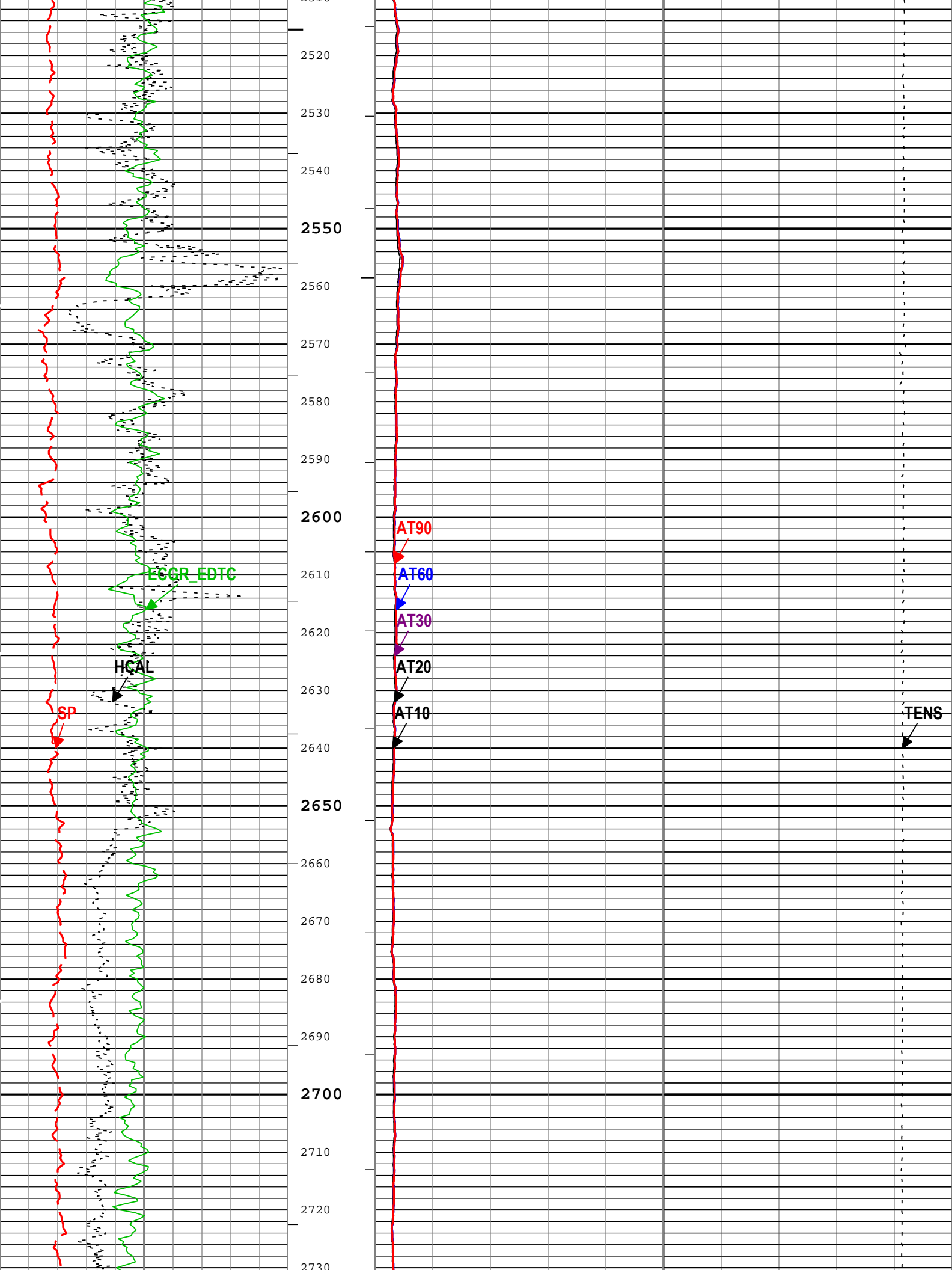


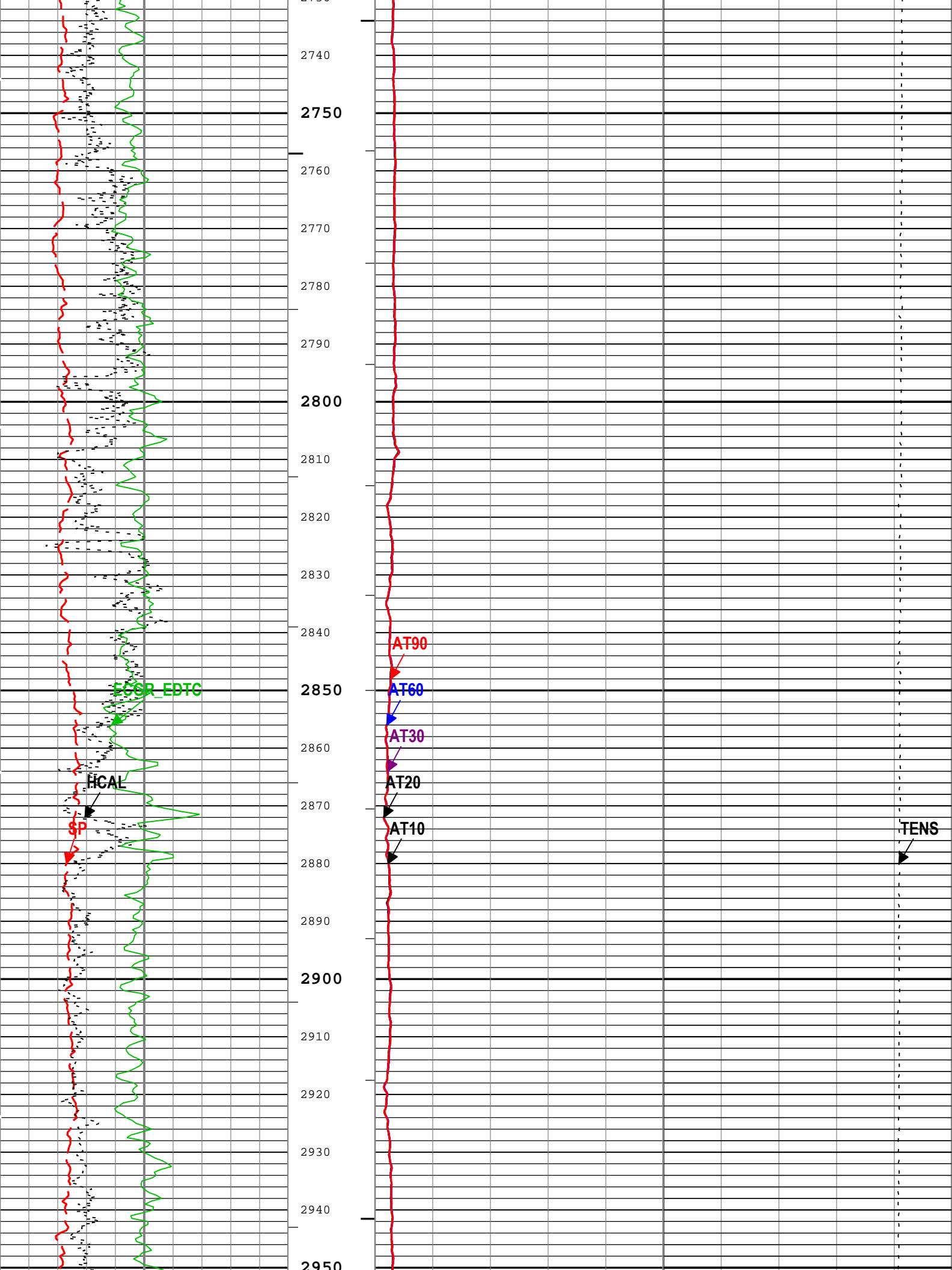


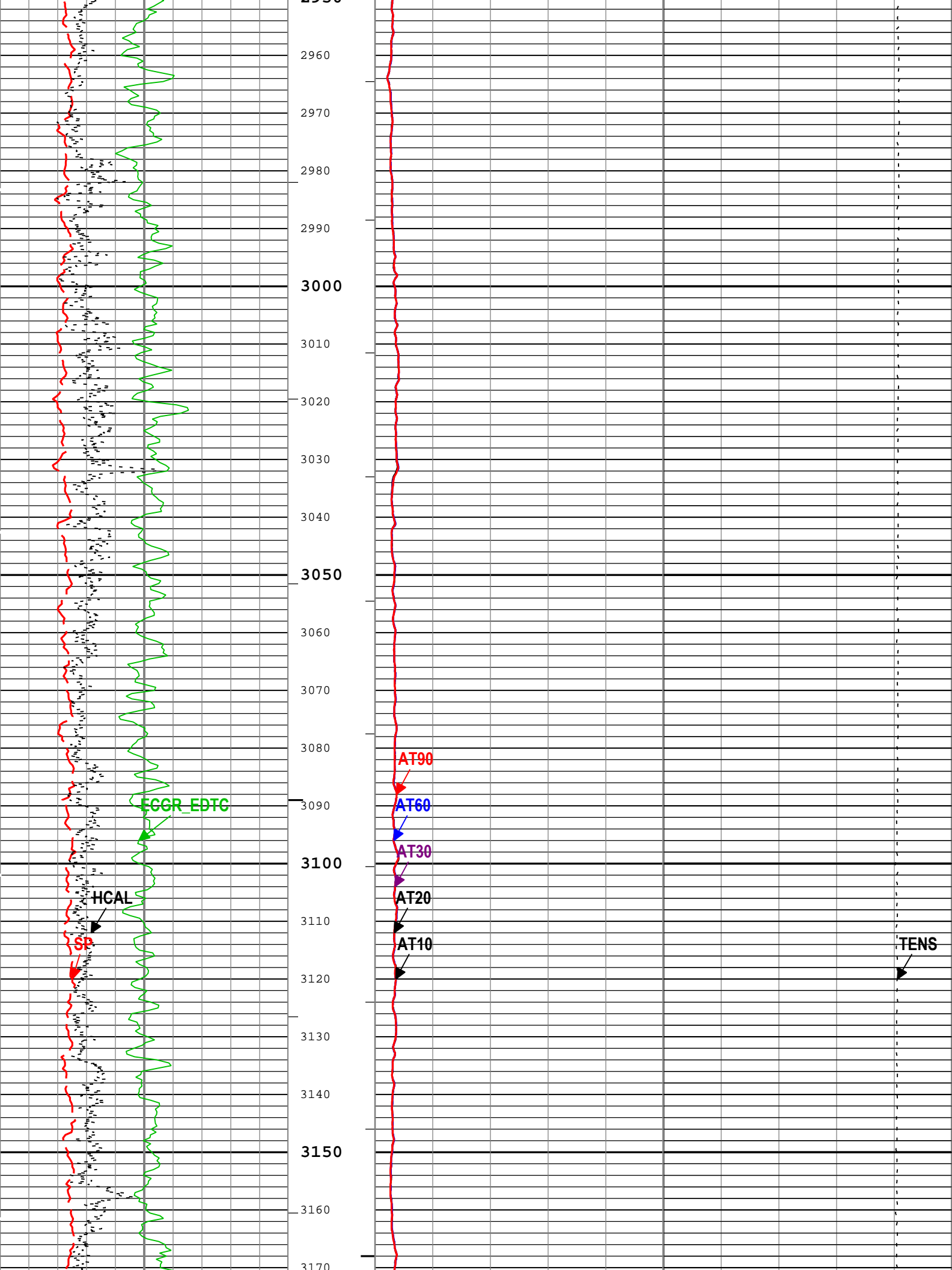


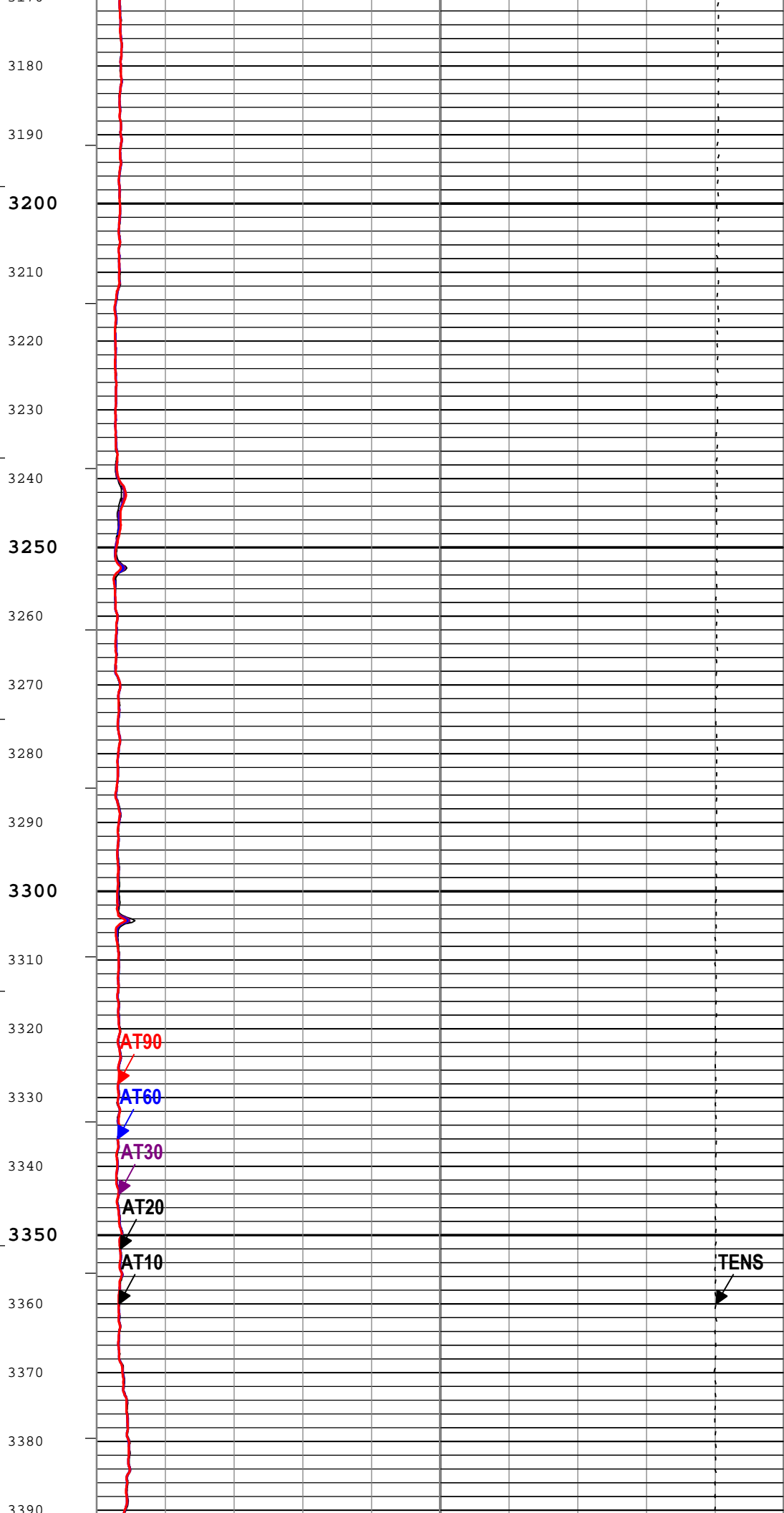
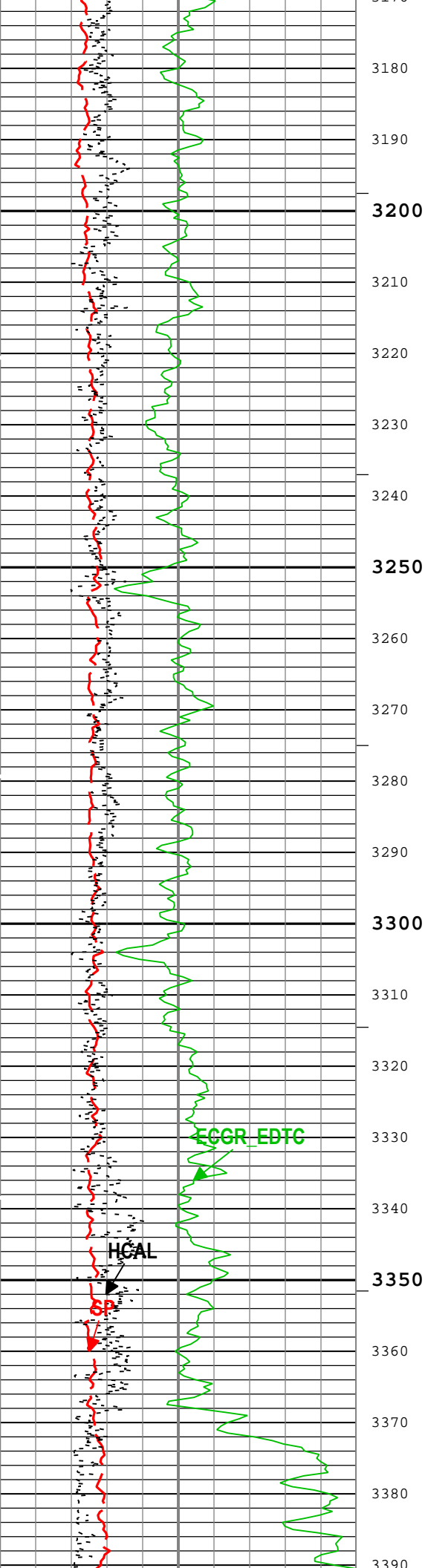


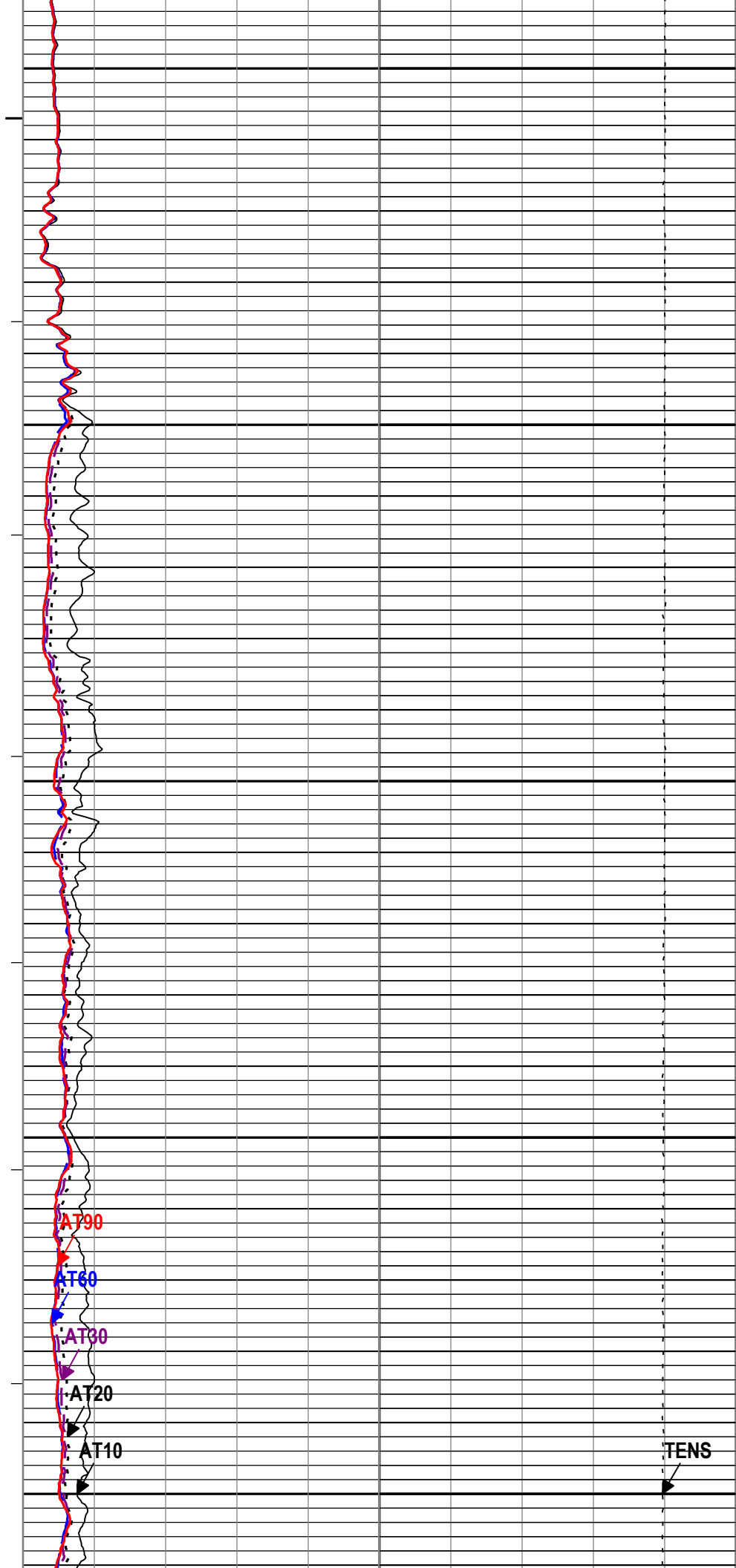
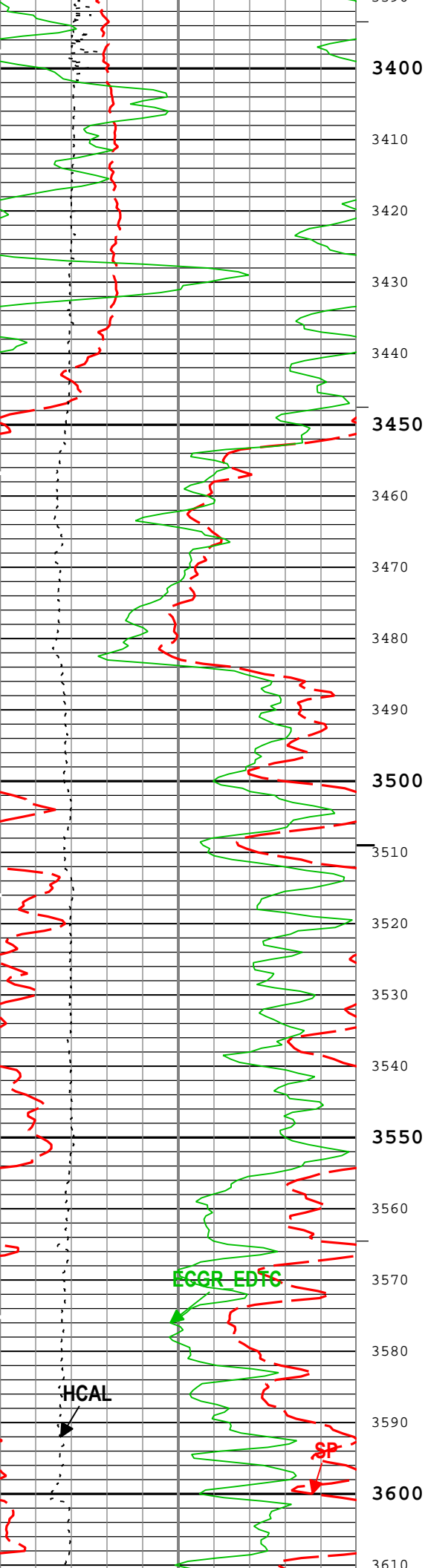


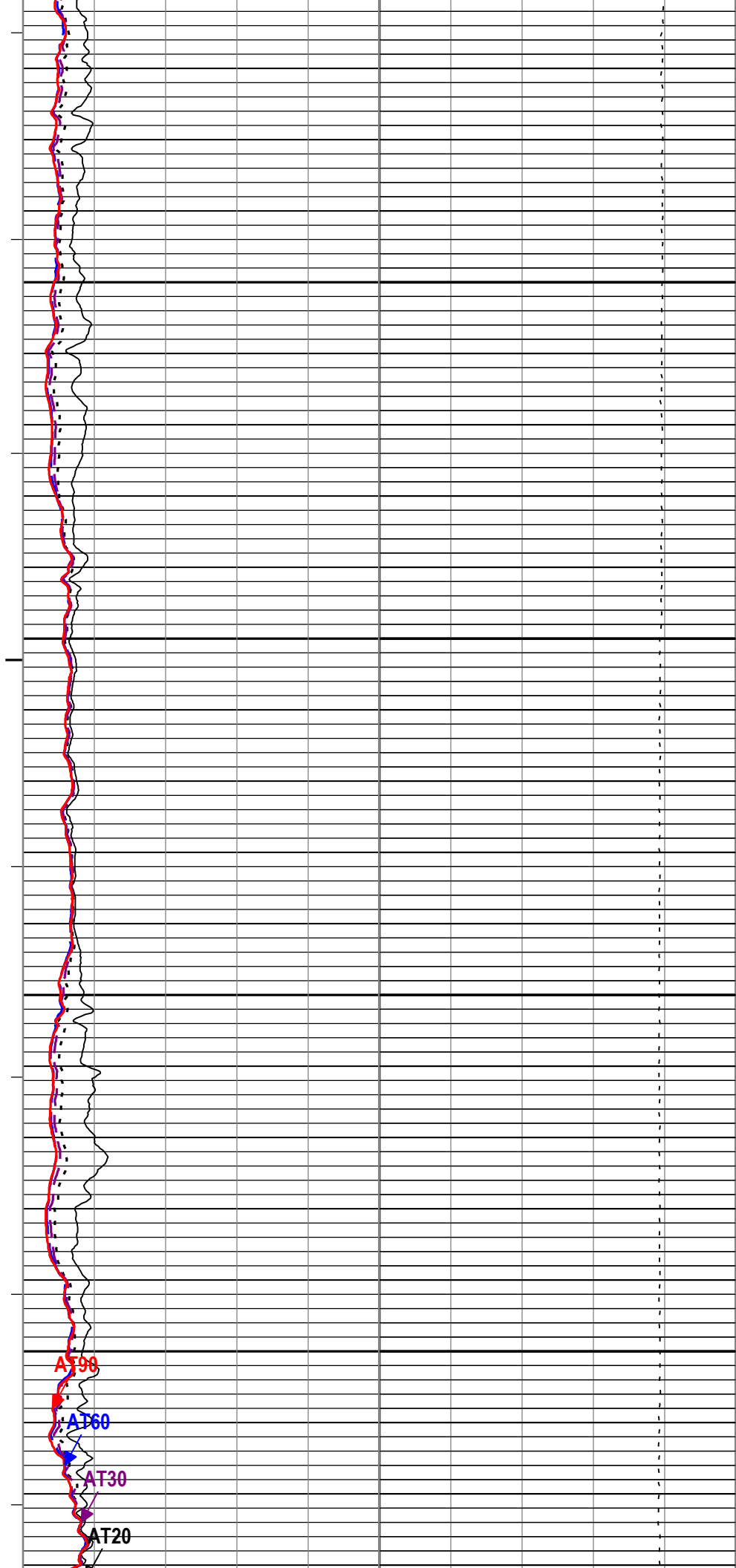
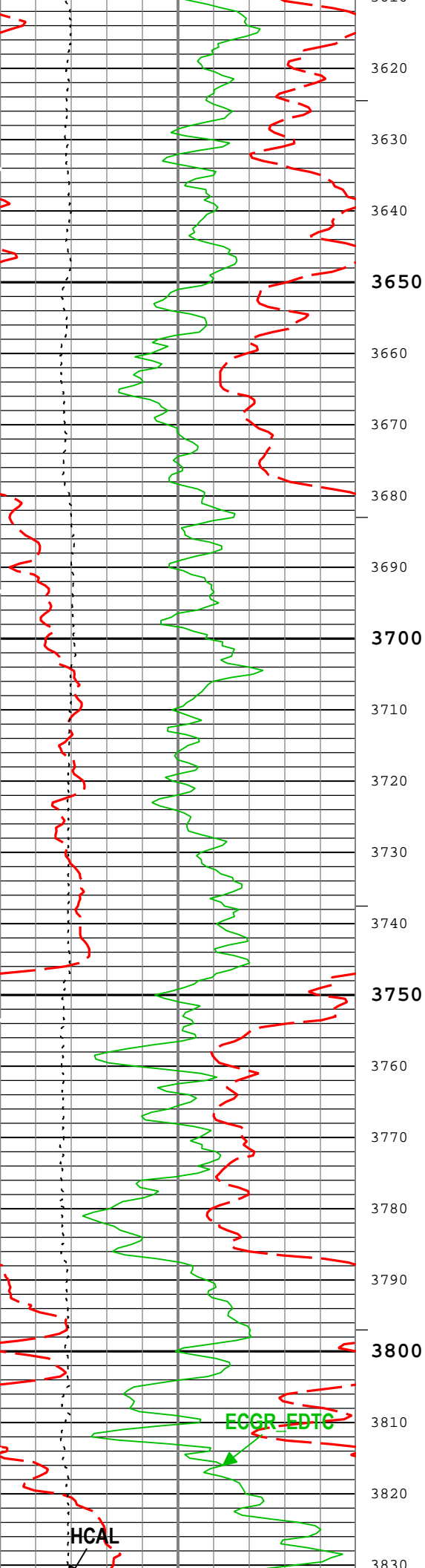


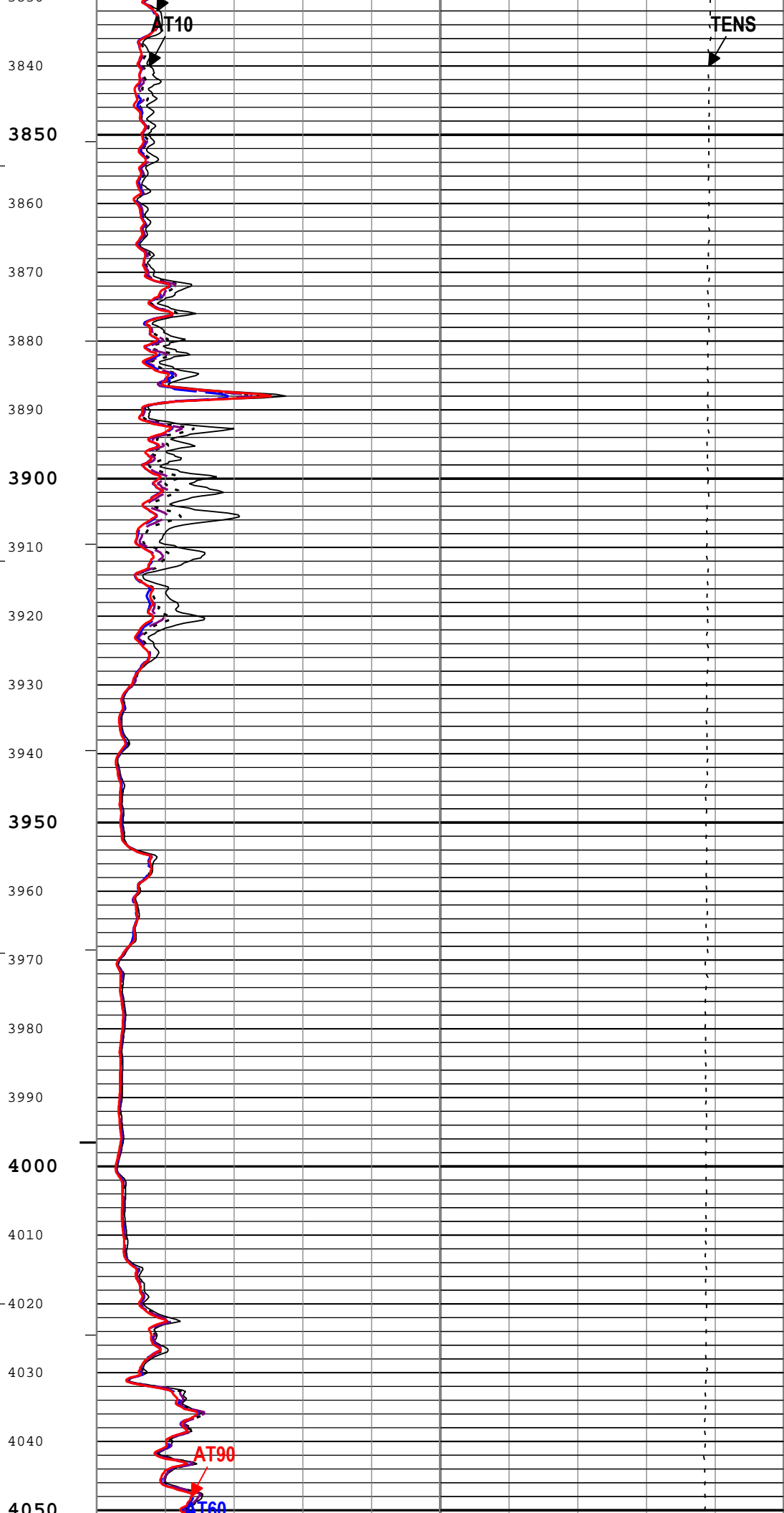
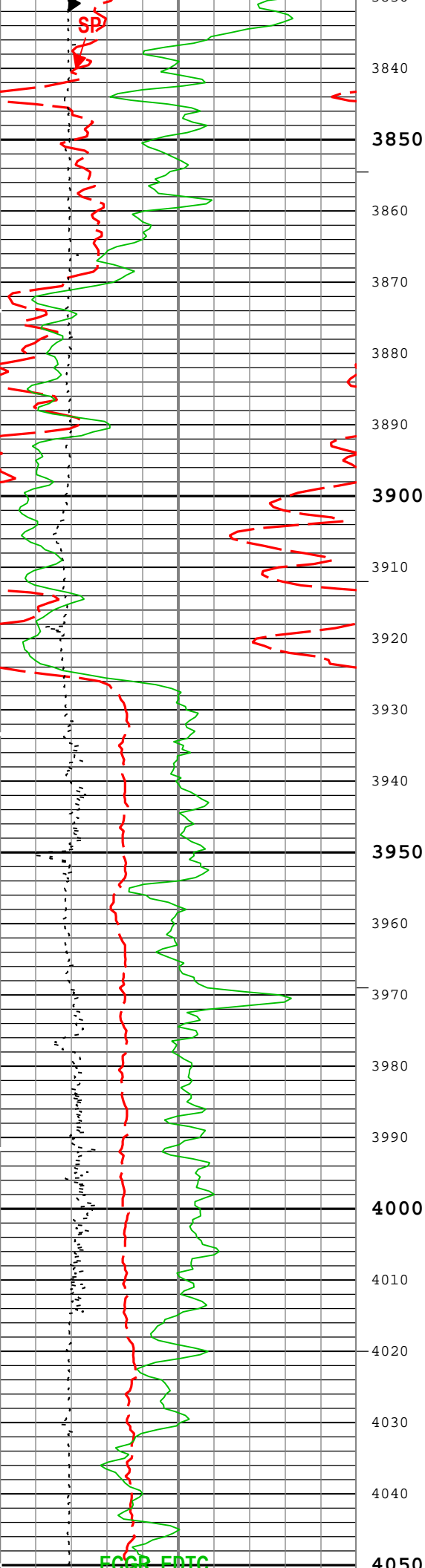


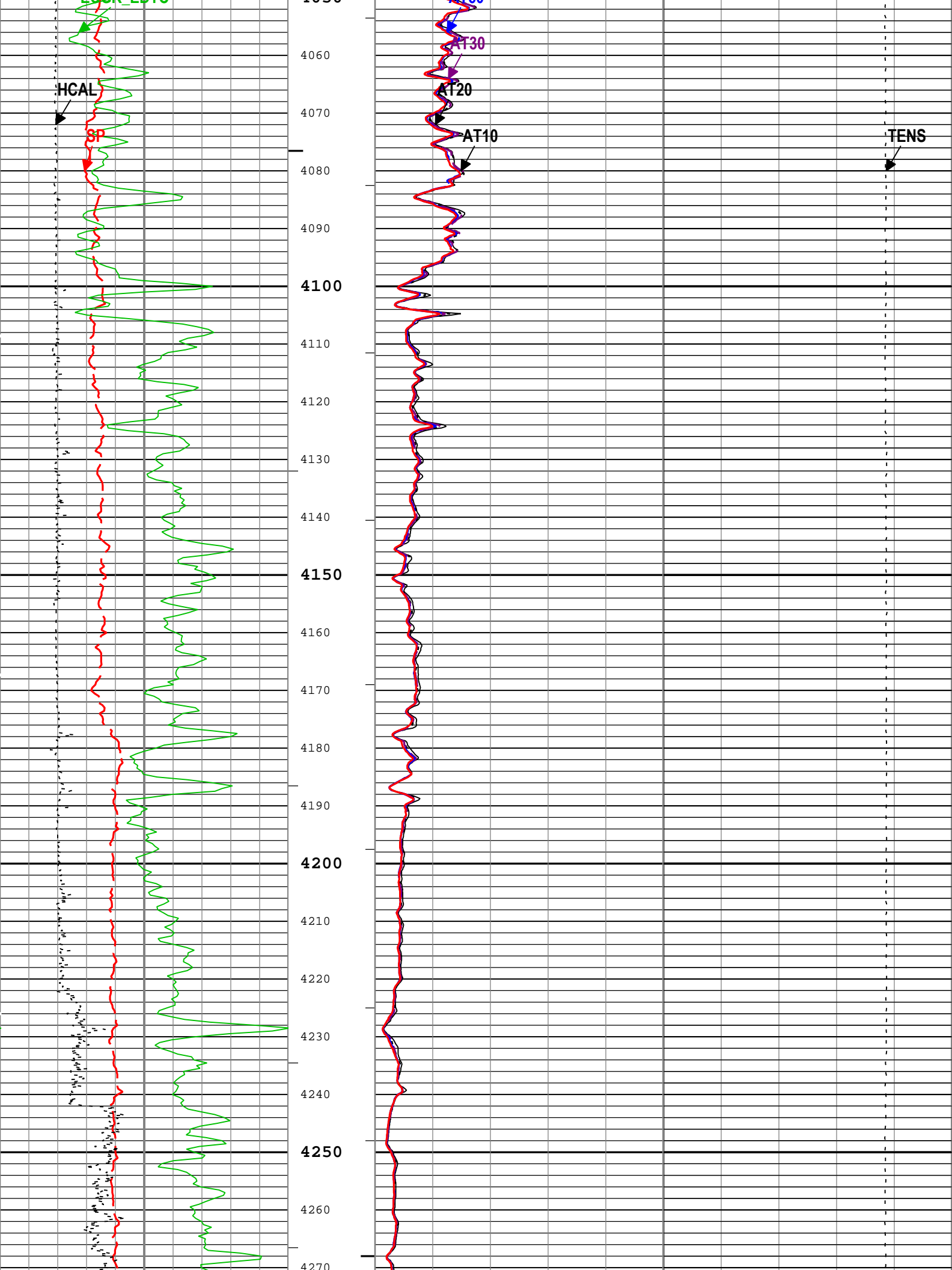


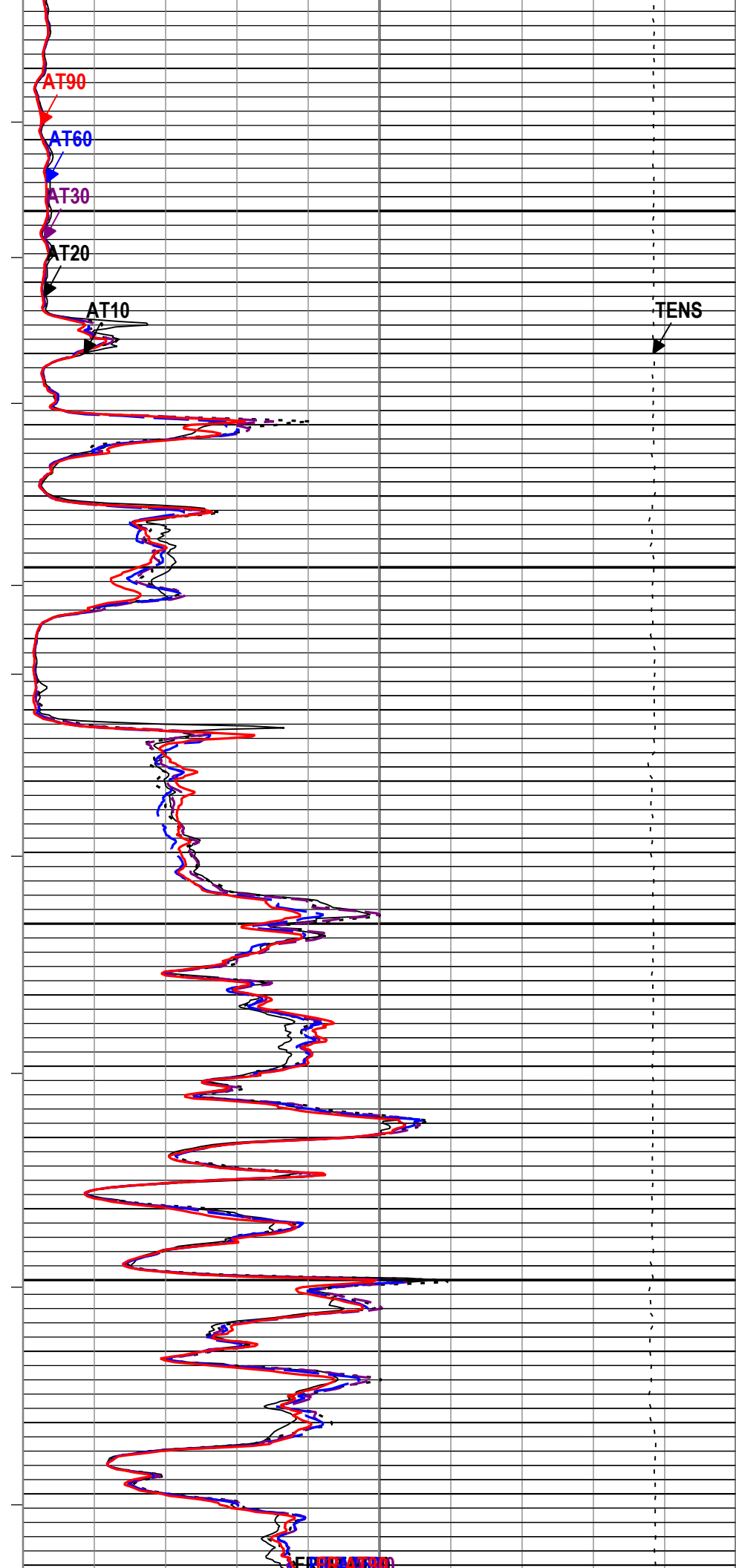
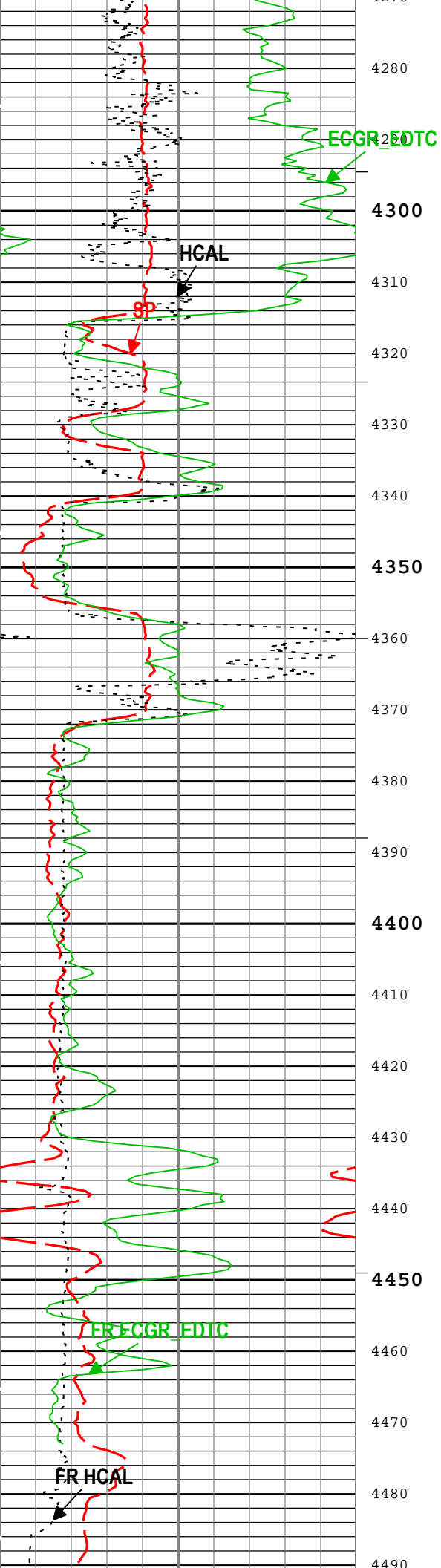












All depth are actual.

ONE: Parameters

ONE

Software Version	
------------------	--

Pass Summary	
--------------	--

ONE	Log[2]:Up	Up	4186.13 ft	4513.38 ft	10-Jun-2018 1:56:57 AM	10-Jun-2018 2:04:41 AM	ON	2.99 ft	No
-----	-----------	----	------------	------------	---------------------------	---------------------------	----	---------	----

All depths are referenced to toolstring zero

Description: AIT Basic Log Two Format: Log (Induction-5 RA) Index Scale: 5 in per 100 ft Index Unit: ft Index Type: Measured Depth Creation Date: 10-Jun-2018 04:05:07

TIME_1900 - Time Marked every 60.00 (s)

—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)

Main To Repeat

Repeat To Main

Cable Tension (TENS)

10000

lbf

0

Main To Repeat

Repeat To Main

Array Induction Two Foot Resistivity A90 (AT90) AIT-M

0

ohm.m

50

Main To Repeat

Repeat To Main

Array Induction Two Foot Resistivity A10 (AT10) AIT-M

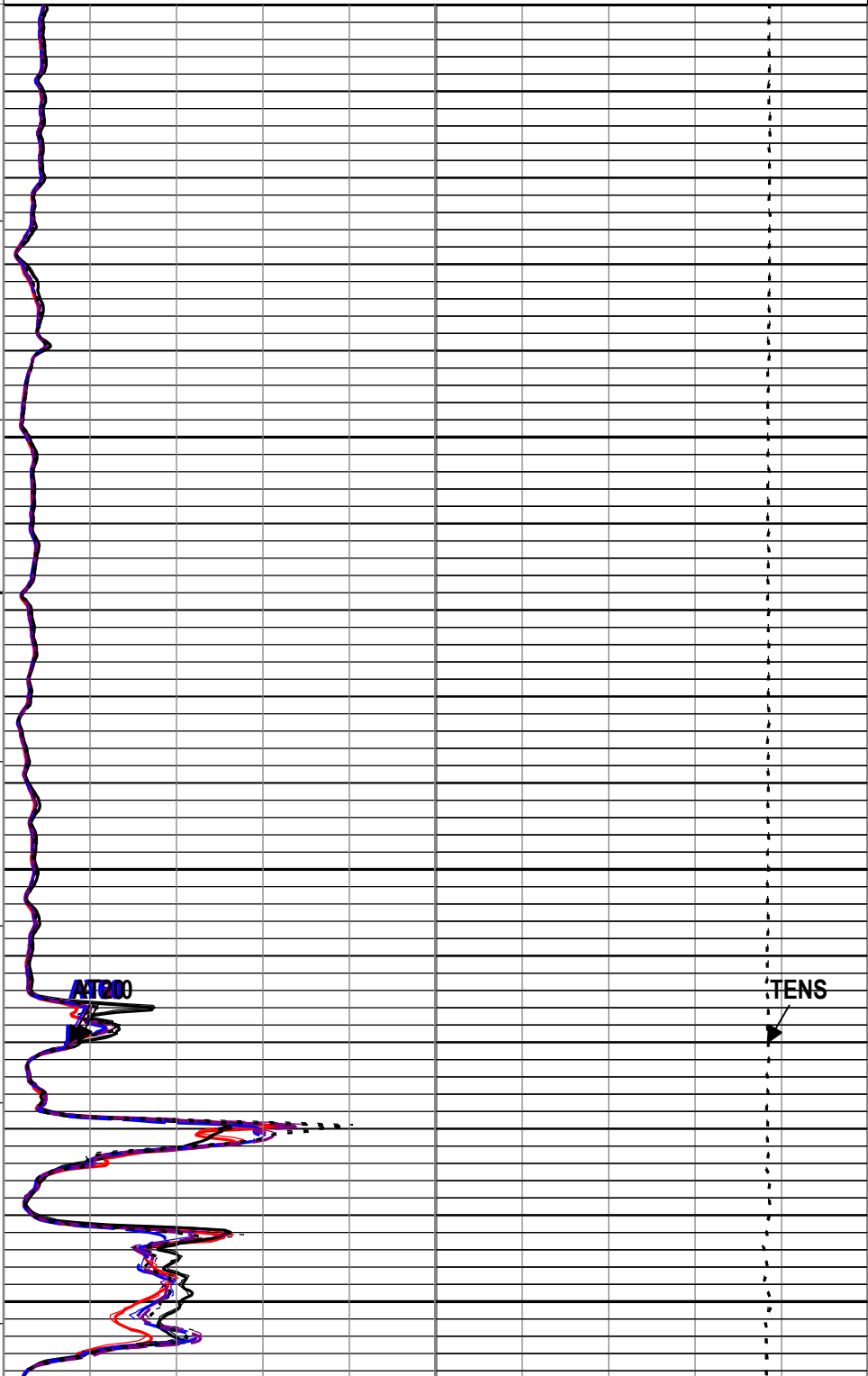
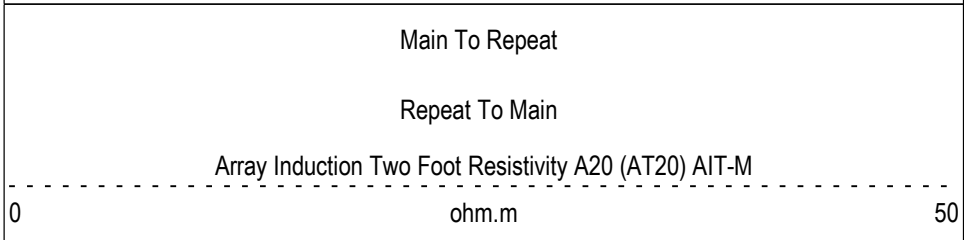
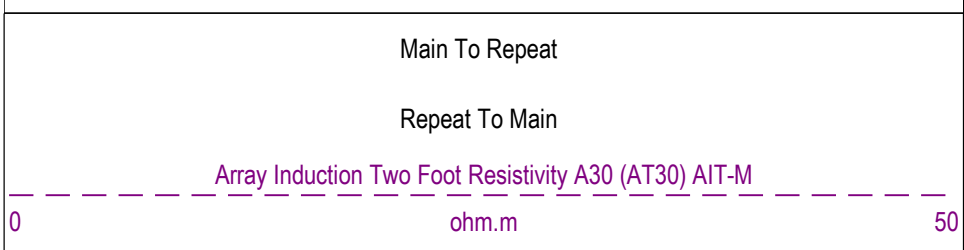
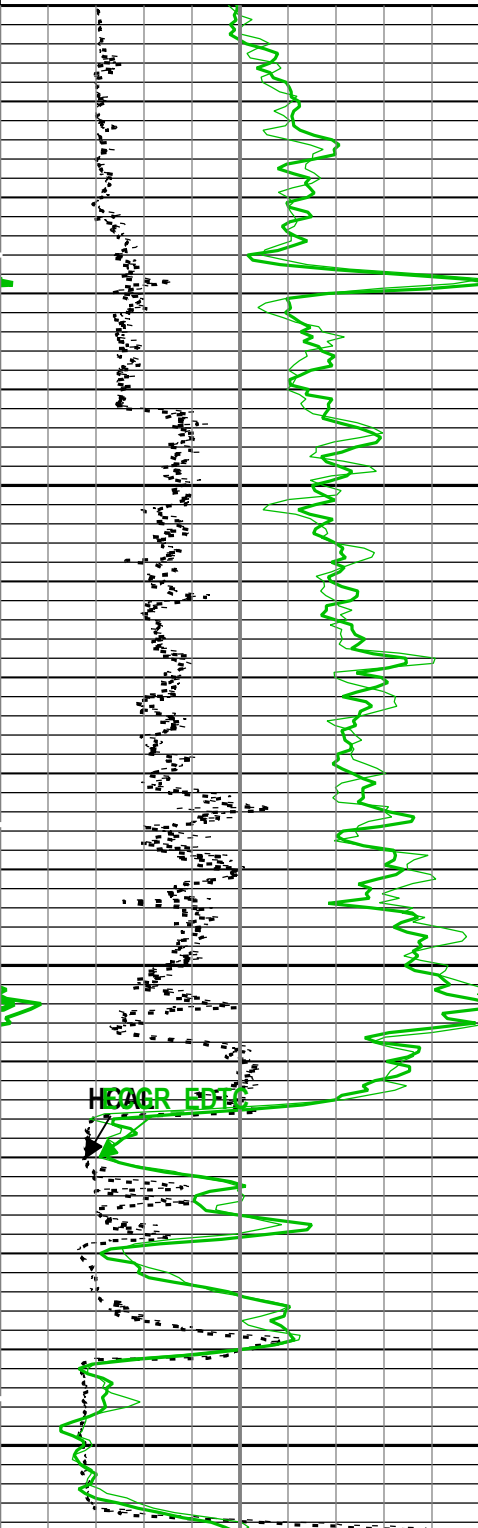
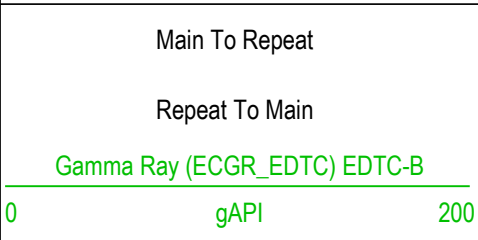
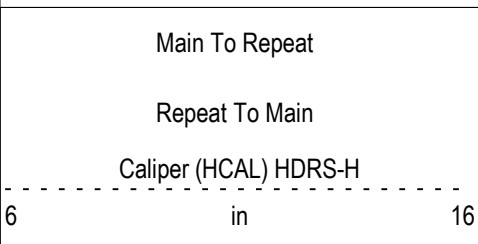
0

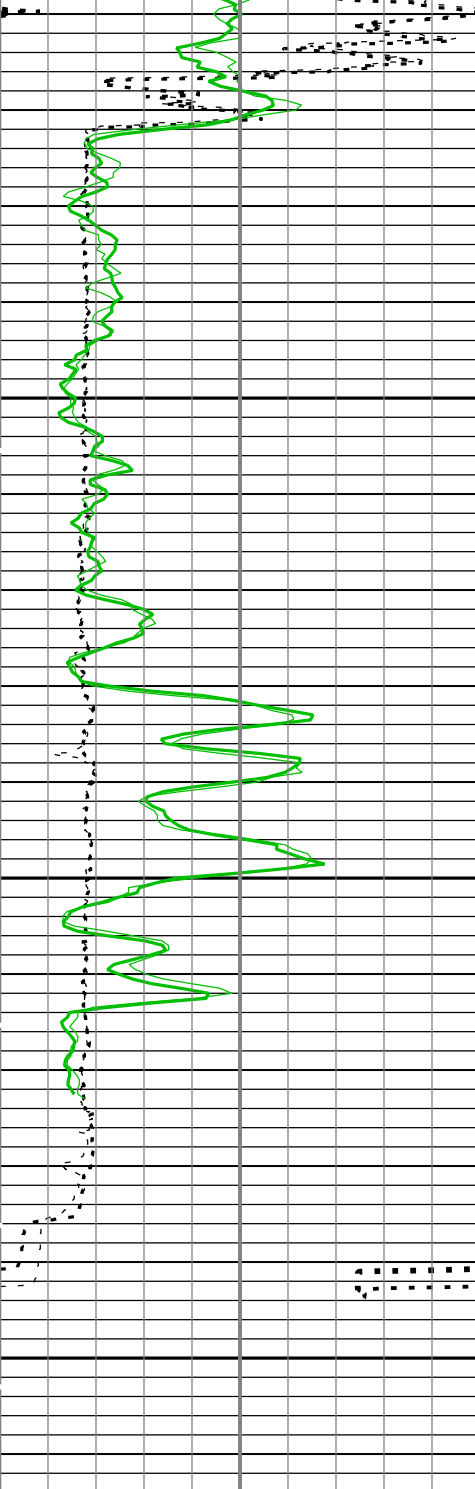
ohm.m

50

Main To Repeat

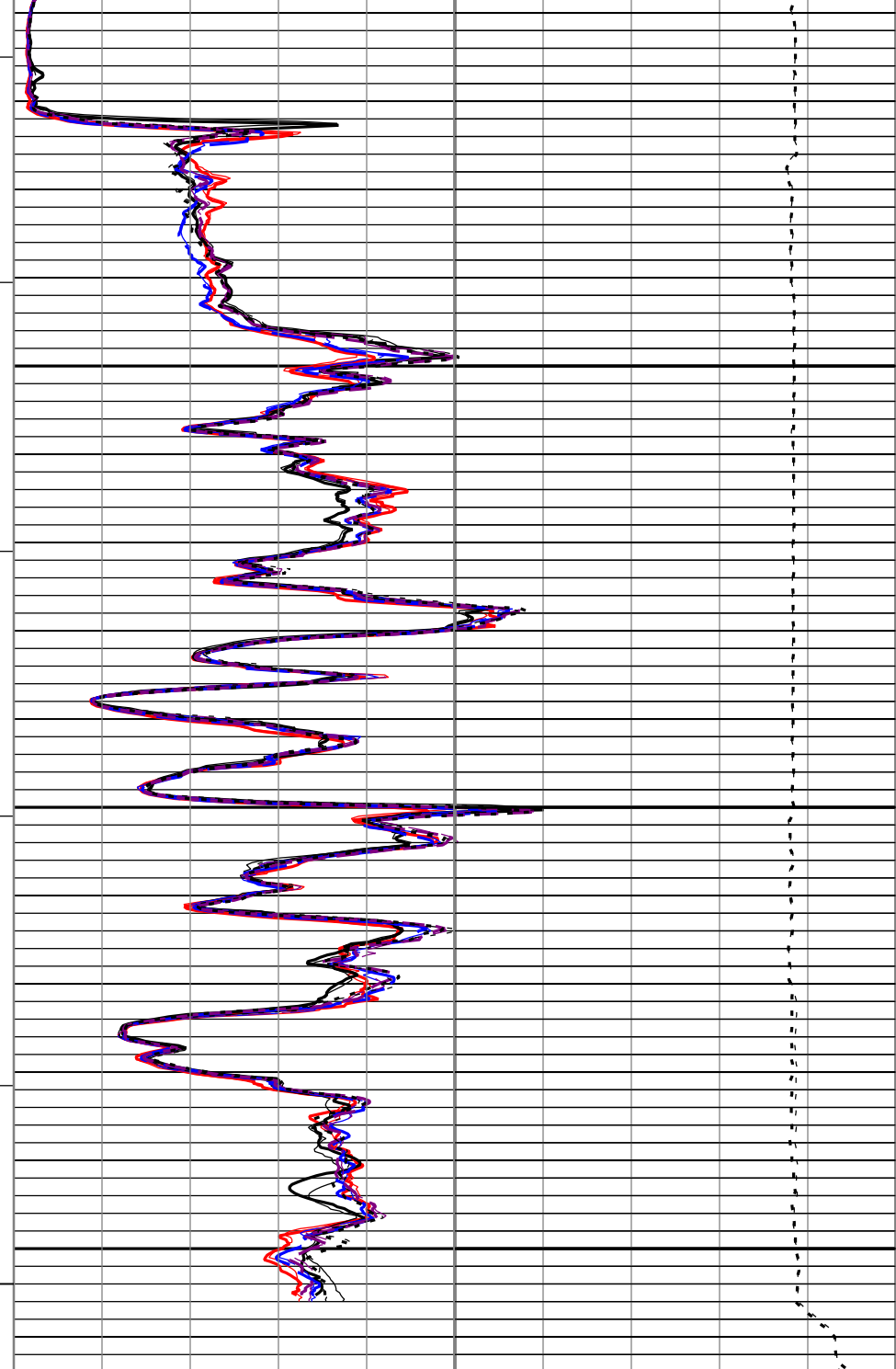
Repeat To Main





4360
4370
4380
4390
4400
4410
4420
4430
4440
4450
4460
4470
4480
4490
4500
TD
4504.00ft
4510

Main To Repeat		
Repeat To Main		
Caliper (HCAL) HDRS-H		
6	in	16
Main To Repeat		
Repeat To Main		
Gamma Ray (ECGR_EDTC) EDTC-B		
0	gAPI	200



Main To Repeat		
Repeat To Main		
Array Induction Two Foot Resistivity A90 (AT90) AIT-M		
0	ohm.m	50
Main To Repeat		
Repeat To Main		
Array Induction Two Foot Resistivity A10 (AT10) AIT-M		
0	ohm.m	50
Main To Repeat		
Repeat To Main		

0

ohm.m

50

Main To Repeat

Repeat To Main

Array Induction Two Foot Resistivity A30 (AT30) AIT-M

0

ohm.m

50

Main To Repeat

Repeat To Main

Array Induction Two Foot Resistivity A20 (AT20) AIT-M

0

ohm.m

50

Main To Repeat

Repeat To Main

Cable Tension (TENS)

10000

lbf

0

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)

TIME_1900 - Time Marked every 60.00 (s)

Description: AIT Basic Log Two Format: Log (Induction-5 RA) Index Scale: 5 in per 100 ft Index Unit: ft Index Type: Measured Depth Creation Date: 10-Jun-2018 04:05:07

Channel Processing Parameters				
ONE: Parameters				
Parameter	Description	Tool	Value	Unit
ABHM	Array Induction Borehole Correction Mode	AIT-M	Compute Standoff	
ISSBAR	Barite Mud Presence Flag	Borehole	No	
BHS	Borehole Status (Open or Cased Hole)	Borehole	Open	
BS	Bit Size	WLSESSION	7.875	in
CALI_SHIFT	CALI Supplementary Offset	HDRS-H	0.153	in
CBLO	Casing Bottom (Logger)	WLSESSION	326.5	ft
CDEN	Cement Density	EDTC-B	2	g/cm3
DFD	Drilling Fluid Density	Borehole	9.1	lbm/gal
DFT_CATEGORY	Drilling Fluid Type	Borehole	Water	
FCD	Future Casing (Outer) Diameter	WLSESSION	5.5	in
GCSE_DOWN_PASS	Generalized Caliper Selection for WL Log Down Passes	Borehole	BS(RT)	
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	
Tool Control Parameters				
ONE: Parameters				
Parameter	Description	Tool	Value	Unit
MAX_LOG_SPEED	Toolstring Maximum Logging Speed	WLSESSION	3600	ft/h
Calibration Report				

AIT-M (Array Induction Tool - M) Calibration - Run ONE

Primary Equipment :			File code for AIT-MA Sonde Tool Element			AMIS	1305
Auxiliary Equipment :			AITM Rm/SP Bottom Nose			AMRM	1305

AIT Sonde Calibration - Test Loop Gain

Master (EEPROM):		19:47:51 02-Jan-2018					
Measurement	Unit	Phase	Nominal	Low Limit	Actual	High Limit	
Test Loop Gain - 0		Master	1.000	0.950	1.018	1.050	
Test Loop Phase - 0	deg	Master	0	-3.000	0.466	3.000	
Test Loop Gain - 1		Master	1.000	0.950	1.016	1.050	
Test Loop Phase - 1	deg	Master	0	-3.000	0.592	3.000	
Test Loop Gain - 2		Master	1.000	0.950	1.018	1.050	
Test Loop Phase - 2	deg	Master	0	-3.000	-0.168	3.000	
Test Loop Gain - 3		Master	1.000	0.950	1.014	1.050	
Test Loop Phase - 3	deg	Master	0	-3.000	-0.081	3.000	
Test Loop Gain - 4		Master	1.000	0.950	1.000	1.050	
Test Loop Phase - 4	deg	Master	0	-3.000	0.271	3.000	
Test Loop Gain - 5		Master	1.000	0.950	0.986	1.050	
Test Loop Phase - 5	deg	Master	0	-3.000	0.500	3.000	
Test Loop Gain - 6		Master	1.000	0.950	0.999	1.050	
Test Loop Phase - 6	deg	Master	0	-3.000	0.312	3.000	
Test Loop Gain - 7		Master	1.000	0.950	1.015	1.050	
Test Loop Phase - 7	deg	Master	0	-3.000	-0.002	3.000	

AIT Sonde Calibration - Sonde Error Correction

Master (EEPROM):		19:47:51 02-Jan-2018					
Measurement	Unit	Phase	Nominal	Low Limit	Actual	High Limit	
Sonde Error Correction Real - 0	mS/m	Master	----	-231.000	-84.140	119.000	
Sonde Error Correction Quad - 0		Master	----	-2250.000	-111.537	2250.000	
Sonde Error Correction Real - 1	mS/m	Master	----	114.000	189.149	204.000	
Sonde Error Correction Quad - 1		Master	----	-625.000	-132.092	625.000	
Sonde Error Correction Real - 2	mS/m	Master	----	66.000	96.476	156.000	
Sonde Error Correction Quad - 2		Master	----	-350.000	-197.375	350.000	
Sonde Error Correction Real - 3	mS/m	Master	----	39.000	56.388	89.000	
Sonde Error Correction Quad - 3		Master	----	-250.000	-3.688	250.000	
Sonde Error Correction Real - 4	mS/m	Master	----	15.000	26.947	35.000	
Sonde Error Correction Quad - 4		Master	----	-63.000	-16.050	63.000	
Sonde Error Correction Real - 5	mS/m	Master	----	4.000	11.514	24.000	
Sonde Error Correction Quad - 5		Master	----	-50.000	23.280	50.000	
Sonde Error Correction Real - 6	mS/m	Master	----	5.000	10.454	15.000	
Sonde Error Correction Quad - 6		Master	----	-30.000	-5.840	30.000	
Sonde Error Correction Real - 7	mS/m	Master	----	-5.000	-1.634	5.000	
Sonde Error Correction Quad - 7		Master	----	-30.000	3.752	30.000	

AIT Mud Calibration - Mud Calibration Gain

Master (EEPROM):		19:47:51 02-Jan-2018					
Measurement	Unit	Phase	Nominal	Low Limit	Actual	High Limit	
Coarse Gain		Master	1.000	0.800	0.872	1.200	
Fine Gain		Master	1.000	0.800	0.863	1.200	

AIT Electronics Check - Thru Calibration Check

Master (EEPROM):		19:47:51 02-Jan-2018	Before (Measured):		01:21:46 10-Jun-2018	After:	
Measurement	Unit	Phase	Nominal	Low Limit	Actual	High Limit	
Thru Cal Mag - 0	V	Master	----	0.366	0.607	0.854	
		Before	----	0.366	0.607	0.854	
		After	----	----	----	----	
		Before-Master	----	----	0.000	----	
		After-Before	----	----	----	----	
Thru Cal Phase - 0	deg	Master	----	137.000	-172.033	-103.000	
		Before	----	137.000	-173.892	-103.000	

		After	----	----	----	----	<div><div></div></div>
		Before-Master	----	----	-1.859	----	<div><div></div></div>
		After-Before	----	----	----	----	<div><div></div></div>
Thru Cal Mag - 1	V	Master	----	0.762	1.245	1.778	<div><div></div><div></div></div>
		Before	----	0.762	1.244	1.778	<div><div></div><div></div></div>
		After	----	----	----	----	<div><div></div></div>
		Before-Master	----	----	-0.001	----	<div><div></div></div>
		After-Before	----	----	----	----	<div><div></div></div>
Thru Cal Phase - 1	deg	Master	----	136.000	-172.976	-104.000	<div><div></div><div></div></div>
		Before	----	136.000	-174.837	-104.000	<div><div></div><div></div></div>
		After	----	----	----	----	<div><div></div></div>
		Before-Master	----	----	-1.861	----	<div><div></div></div>
		After-Before	----	----	----	----	<div><div></div></div>
Thru Cal Mag - 2	V	Master	----	0.372	0.617	0.868	<div><div></div><div></div></div>
		Before	----	0.372	0.616	0.868	<div><div></div><div></div></div>
		After	----	----	----	----	<div><div></div></div>
		Before-Master	----	----	-0.001	----	<div><div></div></div>
		After-Before	----	----	----	----	<div><div></div></div>
Thru Cal Phase - 2	deg	Master	----	132.000	-176.357	-108.000	<div><div></div><div></div></div>
		Before	----	132.000	-178.218	-108.000	<div><div></div><div></div></div>
		After	----	----	----	----	<div><div></div></div>
		Before-Master	----	----	-1.861	----	<div><div></div></div>
		After-Before	----	----	----	----	<div><div></div></div>
Thru Cal Mag - 3	V	Master	----	0.420	0.699	0.980	<div><div></div><div></div></div>
		Before	----	0.420	0.698	0.980	<div><div></div><div></div></div>
		After	----	----	----	----	<div><div></div></div>
		Before-Master	----	----	-0.001	----	<div><div></div></div>
		After-Before	----	----	----	----	<div><div></div></div>
Thru Cal Phase - 3	deg	Master	----	131.000	-177.087	-109.000	<div><div></div><div></div></div>
		Before	----	131.000	-178.952	-109.000	<div><div></div><div></div></div>
		After	----	----	----	----	<div><div></div></div>
		Before-Master	----	----	-1.865	----	<div><div></div></div>
		After-Before	----	----	----	----	<div><div></div></div>
Thru Cal Mag - 4	V	Master	----	0.804	1.309	1.876	<div><div></div><div></div></div>
		Before	----	0.804	1.307	1.876	<div><div></div><div></div></div>
		After	----	----	----	----	<div><div></div></div>
		Before-Master	----	----	-0.002	----	<div><div></div></div>
		After-Before	----	----	----	----	<div><div></div></div>
Thru Cal Phase - 4	deg	Master	----	125.000	177.118	-115.000	<div><div></div><div></div></div>
		Before	----	125.000	175.239	-115.000	<div><div></div><div></div></div>
		After	----	----	----	----	<div><div></div></div>
		Before-Master	----	----	-1.879	----	<div><div></div></div>
		After-Before	----	----	----	----	<div><div></div></div>
Thru Cal Mag - 5	V	Master	----	1.176	1.905	2.744	<div><div></div><div></div></div>
		Before	----	1.176	1.904	2.744	<div><div></div><div></div></div>
		After	----	----	----	----	<div><div></div></div>
		Before-Master	----	----	-0.001	----	<div><div></div></div>
		After-Before	----	----	----	----	<div><div></div></div>
Thru Cal Phase - 5	deg	Master	----	122.000	175.565	-118.000	<div><div></div><div></div></div>
		Before	----	122.000	173.679	-118.000	<div><div></div><div></div></div>
		After	----	----	----	----	<div><div></div></div>
		Before-Master	----	----	-1.886	----	<div><div></div></div>
		After-Before	----	----	----	----	<div><div></div></div>
Thru Cal Mag - 6	V	Master	----	1.176	1.903	2.744	<div><div></div><div></div></div>
		Before	----	1.176	1.901	2.744	<div><div></div><div></div></div>
		After	----	----	----	----	<div><div></div></div>
		Before-Master	----	----	-0.002	----	<div><div></div></div>
		After-Before	----	----	----	----	<div><div></div></div>
Thru Cal Phase - 6	deg	Master	----	121.000	175.599	-119.000	<div><div></div><div></div></div>
		Before	----	121.000	173.713	-119.000	<div><div></div><div></div></div>
		After	----	----	----	----	<div><div></div></div>
		Before-Master	----	----	-1.886	----	<div><div></div></div>
		After-Before	----	----	----	----	<div><div></div></div>
Thru Cal Mag - 7	V	Master	----	0.846	1.375	1.974	<div><div></div><div></div></div>

		Before	----	0.846	1.373	1.974	<div><div></div><div></div><div></div><div></div><div></div></div>
		After	----	----	----	----	<div><div></div><div></div><div></div><div></div><div></div></div>
		Before-Master	----	----	-0.002	----	<div><div></div><div></div><div></div><div></div><div></div></div>
		After-Before	----	----	----	----	<div><div></div><div></div><div></div><div></div><div></div></div>
Thru Cal Phase - 7	deg	Master	----	115.000	174.690	-125.000	<div><div></div><div></div><div></div><div></div><div></div></div>
		Before	----	115.000	172.726	-125.000	<div><div></div><div></div><div></div><div></div><div></div></div>
		After	----	----	----	----	<div><div></div><div></div><div></div><div></div><div></div></div>
		Before-Master	----	----	-1.964	----	<div><div></div><div></div><div></div><div></div><div></div></div>
		After-Before	----	----	----	----	<div><div></div><div></div><div></div><div></div><div></div></div>
SPA Zero	mV	Master		-50.000	-0.123	50.000	<div><div></div><div></div><div></div><div></div><div></div></div>
		Before		-50.000	-0.119	50.000	<div><div></div><div></div><div></div><div></div><div></div></div>
		After	----	----	----	----	<div><div></div><div></div><div></div><div></div><div></div></div>
		Before-Master	----	----	0.004	----	<div><div></div><div></div><div></div><div></div><div></div></div>
		After-Before	----	----	----	----	<div><div></div><div></div><div></div><div></div><div></div></div>
SPA Plus	mV	Master		941.000	1002.225	1040.000	<div><div></div><div></div><div></div><div></div><div></div></div>
		Before		941.000	1003.250	1040.000	<div><div></div><div></div><div></div><div></div><div></div></div>
		After	----	----	----	----	<div><div></div><div></div><div></div><div></div><div></div></div>
		Before-Master	----	----	1.025	----	<div><div></div><div></div><div></div><div></div><div></div></div>
		After-Before	----	----	----	----	<div><div></div><div></div><div></div><div></div><div></div></div>
Temperature Zero	V	Master		-0.050	0.000	0.050	<div><div></div><div></div><div></div><div></div><div></div></div>
		Before		-0.050	0.000	0.050	<div><div></div><div></div><div></div><div></div><div></div></div>
		After	----	----	----	----	<div><div></div><div></div><div></div><div></div><div></div></div>
		Before-Master	----	----	0.000	----	<div><div></div><div></div><div></div><div></div><div></div></div>
		After-Before	----	----	----	----	<div><div></div><div></div><div></div><div></div><div></div></div>
Temperature Plus	V	Master		0.870	0.929	0.960	<div><div></div><div></div><div></div><div></div><div></div></div>
		Before		0.870	0.929	0.960	<div><div></div><div></div><div></div><div></div><div></div></div>
		After	----	----	----	----	<div><div></div><div></div><div></div><div></div><div></div></div>
		Before-Master	----	----	0.000	----	<div><div></div><div></div><div></div><div></div><div></div></div>
		After-Before	----	----	----	----	<div><div></div><div></div><div></div><div></div><div></div></div>

HDRS-H (HILT Density and Rxo Sonde, 150 degC) Calibration - Run ONE

Primary Equipment :

HILT High-Resolution Control Cartridge, 150 degC	HRCC-H	4709
HILT Resistivity Gamma-Ray Density Device, 150 degC	HRGD-H	4901

Auxiliary Equipment :

HRDD Backscatter Detector	Backscatter	41150
HRDD Long Spacing Detector	Long Spacing	43095
HRDD Short Spacing Detector	Short Spacing	42161
Cesium 137 Gamma-Ray Logging Source	GSR-J	5534
HILT High-Resolution Control Cartridge, 150 degC	HRCC-H	4709
HILT High-Resolution Mechanical Sonde, 150 degC	HRMS-H	4724

Calibration Parameter :

Small Ring Size (Caliper Calibration Small Ring)	8.00
Large Ring Size (Caliper Calibration Large Ring)	12.00

HDRS Caliper Calibration - Caliper Accumulations

Before (Measured): 12:55:32 09-Jun-2018

Measurement	Unit	Phase	Nominal	Low Limit	Actual	High Limit	<div><div></div><div></div><div></div><div></div><div></div></div>
Small Ring	in	Before	8.00	6.00	8.42	10.00	<div><div></div><div></div><div></div><div></div><div></div></div>
Large Ring	in	Before	12.00	9.00	12.41	15.00	<div><div></div><div></div><div></div><div></div><div></div></div>

HDRS Density Calibration - Inversion Results

Master (EEPROM): 14:17:48 22-May-2018

Measurement	Unit	Phase	Nominal	Low Limit	Actual	High Limit	<div><div></div><div></div><div></div><div></div><div></div></div>
Rho Aluminum	g/cm3	Master	2.596	2.586	2.598	2.606	<div><div></div><div></div><div></div><div></div><div></div></div>
Rho Magnesium	g/cm3	Master	1.686	1.676	1.686	1.696	<div><div></div><div></div><div></div><div></div><div></div></div>
Pe Aluminum		Master	2.570	2.470	2.526	2.670	<div><div></div><div></div><div></div><div></div><div></div></div>
Pe Magnesium		Master	2.650	2.550	2.632	2.750	<div><div></div><div></div><div></div><div></div><div></div></div>

HDRS Density Calibration - Deviation Summary

HDRS Density Calibration - Background Summary

Master (EEPROM): 14:17:48 22-May-2018

Measurement	Unit	Phase	Nominal	Low Limit	Actual	High Limit	
BS Average Deviation	%	Master	0	-0.6000	0.3972	0.6000	
BS Max Deviation	%	Master	0	-1.6000	0.8287	1.6000	
SS Average Deviation	%	Master	0	-1.0000	0.2853	1.0000	
SS Max Deviation	%	Master	0	-2.5000	0.6042	2.5000	
LS Average Deviation	%	Master	0	-1.5000	0.6423	1.5000	
LS Max Deviation	%	Master	0	-3.5000	2.6194	3.5000	

HDRS Density Calibration - Background Summary

Master (EEPROM): 14:17:48 22-May-2018 Before (Measured): 12:52:21 09-Jun-2018

Measurement	Unit	Phase	Nominal	Low Limit	Actual	High Limit	
BS Window Ratio		Master	1.0000		0.7383		
		Before	0.7383	0.7014	0.7379	0.7752	
		Before-Master	----	----	-0.0004	----	
BS Window Sum	1/s	Master	1		23373		
		Before	23373	22205	23316	24542	
		Before-Master	----	----	-57	----	
SS Window Ratio		Master	1.0000		0.4852		
		Before	0.4852	0.4610	0.4855	0.5095	
		Before-Master	----	----	0.0003	----	
SS Window Sum	1/s	Master	1		10478		
		Before	10478	9954	10460	11002	
		Before-Master	----	----	-18	----	
LS Window Ratio		Master	1.0000		0.2972		
		Before	0.2972	0.2824	0.2990	0.3121	
		Before-Master	----	----	0.0018	----	
LS Window Sum	1/s	Master	1		1178		
		Before	1178	1119	1173	1237	
		Before-Master	----	----	-5	----	

HDRS Density Calibration - Photo-multiplier High Voltages

Master (EEPROM): 14:17:48 22-May-2018 Before (Measured): 12:52:21 09-Jun-2018

Measurement	Unit	Phase	Nominal	Low Limit	Actual	High Limit	
BS PM High Voltage	V	Master		1000	1564	2400	
		Before		1000	1592	2400	
		Before-Master	----	-100	28	100	
SS PM High Voltage	V	Master		1000	1653	2400	
		Before		1000	1651	2400	
		Before-Master	----	-100	-2	100	
LS PM High Voltage	V	Master		1000	1570	2400	
		Before		1000	1570	2400	
		Before-Master	----	-100	0	100	

HDRS Density Calibration - Crystal Quality Resolutions

Master (EEPROM): 14:17:48 22-May-2018 Before (Measured): 12:52:21 09-Jun-2018

Measurement	Unit	Phase	Nominal	Low Limit	Actual	High Limit	
BS Crystal Resolution	%	Master		5.00	12.12	25.00	
		Before		5.00	12.31	25.00	
		Before-Master	----	-1.00	0.19	1.00	
SS Crystal Resolution	%	Master		5.00	8.92	20.00	
		Before		5.00	8.83	20.00	
		Before-Master	----	-1.00	-0.09	1.00	
LS Crystal Resolution	%	Master		5.00	8.88	20.00	
		Before		5.00	9.08	20.00	
		Before-Master	----	-1.00	0.20	1.00	

HDRS MCFL Calibration - MCFL Accumulations

Before (Measured): 01:21:05 10-Jun-2018

Measurement	Unit	Phase	Nominal	Low Limit	Actual	High Limit	
Main Resistivity	ohm.m	Before	3875	3565	3850	4185	
Deep Resistivity	ohm.m	Before	3830	3524	3798	4136	
Shallow Resistivity	ohm.m	Before	3830	3524	3798	4136	

HGNS-H (HILT Gamma-Ray and Neutron Sonde, 150 degC) Calibration - Run ONE

Primary Equipment :			
	HILT Gamma-Ray and Neutron Sonde, 150 degC	HGNS-H	3912
Auxiliary Equipment :			
	HGNS Accelerometer, 150 degC	HACCZ-H	4264
	AmBe Neutron Logging Source	NSR-F	5070
Calibration Parameter :			
	Water Temperature (Calibration Tank Water Temperature)	55.0	
	Housing Size (Thermal Housing Size)	3.38	
	JIG-BKG		

HGNS Accelerometer EEPROM - Accelerometer EEPROM Read

Master (EEPROM):	18:00:00 14-Jun-2005						
Measurement	Unit	Phase	Nominal	Low Limit	Actual	High Limit	
Accelerometer Manufacturer		Master			QAT_160		
Accelerometer Reference Temperature	degF	Master		30.2	77.0	122.0	
Accelerometer Coefficients - 0		Master	----	----	5359.000	----	
Accelerometer Coefficients - 1		Master	----	----	-15.426	----	
Accelerometer Coefficients - 2		Master	----	----	0.015	----	
Accelerometer Coefficients - 3		Master	----	----	0.000	----	
Accelerometer Coefficients - 4		Master	----	----	2.742	----	
Accelerometer Coefficients - 5		Master	----	----	0.000	----	
Accelerometer Coefficients - 6		Master	----	----	0.000	----	
Accelerometer Coefficients - 7		Master	----	----	0.000	----	
Accelerometer Coefficients - 8		Master	----	----	299.400	----	
Accelerometer Coefficients - 9		Master	----	----	1.009	----	

HGNS Neutron Calibration - HGNS Neutron Accumulations

Master (EEPROM):	13:07:56 06-Apr-2018						
Measurement	Unit	Phase	Nominal	Low Limit	Actual	High Limit	
Near Zero Measurement	1/s	Master	0	5.0	27.7	40.0	
Far Zero Measurement	1/s	Master	0	5.0	28.4	40.0	
Near Plus Measurement	1/s	Master	6031.0	4700.0	4972.0	6900.0	
Far Plus Measurement	1/s	Master	2793.0	1900.0	2078.0	2900.0	
Near Corrected Plus Measurement	1/s	Master		4700.0	5044.0	6900.0	
Far Corrected Plus Measurement	1/s	Master		1900.0	2114.0	2900.0	

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

Primary Equipment :			
	EDTC-B	EDTC-B	8473M
Calibration Parameter :			
	Plus Reference		

EDTC-B Memory Data - EDTC-B Memory Data

Master (EEPROM):	01:18:17 10-Jun-2018						
Measurement	Unit	Phase	Nominal	Low Limit	Actual	High Limit	
Initial PMT HV	V	Master			1596.000		
Accelerometer Serial Number		Master			539		
Accelerometer Coefficients - 0		Master	----	----	3.014E+000	----	
Accelerometer Coefficients - 1		Master	----	----	2.800E-004	----	
Accelerometer Coefficients - 2		Master	----	----	3.524E-007	----	
Accelerometer Coefficients - 3		Master	----	----	-5.257E-008	----	
Accelerometer Coefficients - 4		Master	----	----	1.263E-009	----	
Accelerometer Coefficients - 5		Master	----	----	-9.535E-012	----	
Accelerometer Coefficients - 6		Master	----	----	2.442E-014	----	
Accelerometer Coefficients - 7		Master	----	----	-3.396E-003	----	
Accelerometer Coefficients - 8		Master	----	----	3.712E-005	----	
Accelerometer Coefficients - 9		Master	----	----	5.860E-000	----	

Accelerometer Coefficients - 9		Master	----	----	-5.809E-009	----		
Accelerometer Coefficients - 10		Master	----	----	1.195E-009	----		
Accelerometer Coefficients - 11		Master	----	----	-4.589E-012	----		
Gamma-Ray Detector Serial Number		Master			7434			

Company:	St. Croix Operating, Inc.	Schlumberger
Well:	State 3-16	
Field:	Wildcat	
County:	Washington	
State:	Colorado	
Platform Expres		
Array Induction		
with Linear Correlation		