

Company: St. Croix Operating Inc.

Well: Jack Creek #2

Field: Wildcat

County: Washington State: Colorado

Platform Express  
Array Induction  
with Linear Correlation

County: Washington  
Field: Wildcat  
Location: SESE Sec. 4, T2S, R51W  
Well: Jack Creek #2  
Company: St. Croix Operating Inc.

Location:	SESE Sec. 4, T2S, R51W	Elev.:	K.B.	4612.60 ft
	SHL: 900' FSL & 600' FEL		G.L.	4594.00 ft
	Lat/Long: 39.905070 / -103.089550		D.F.	4612.60 ft
	Permanent Datum:	Ground Level	Elev.:	4594.00 f
Log Measured From:		Kelly Bushing	18.60 ft	above Perm.Datum
Drilling Measured From:		Kelly Bushing		
API Serial No.	Section:	Township:	Range:	
05-121-11079	4	2S	51W	

Logging Date 18-Dec-2018

Run Number ONE

Depth Driller 4285.00 ft

Schlumberger Depth 4285.00 ft

Bottom Log Interval 4285.00 ft

Top Log Interval 100.00 ft

Casing Driller Size @ Depth 8.625 in @ 503.00 ft

Casing Schlumberger 503.5 ft

Bit Size 7.875 in

Type Fluid In Hole WBM

Density 9.2 lbm/gal 55 s

Fluid Loss PH

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 Pressed

RM @ BHT RMF @ BHT 0.12 @ 118 0.09 @ 118

Max Recorded Temperatures 121 degF

Circulation Stopped 18-Dec-2018 11:15:00

Logger on Bottom Time 18-Dec-2018 14:53:00

Unit Number Location: 2161

Recorded By Ashley Rosacker Fort Morgan

Witnessed By Phillip Wilcox

Disclaimer

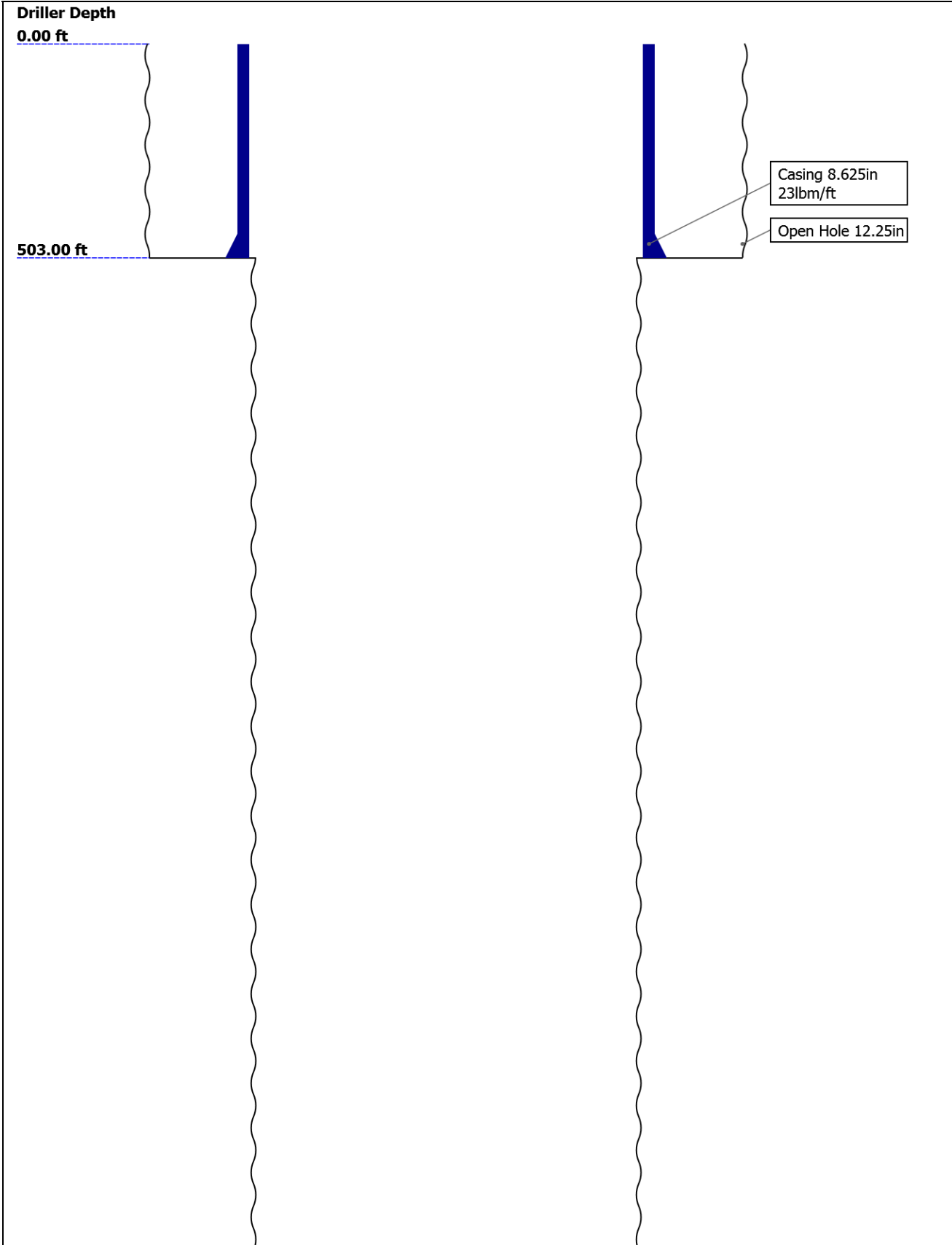
THE USE OF AND RELIANCE UPON THIS RECORDED-DATA BY THE HEREIN NAMED COMPANY (AND ANY OF ITS AFFILIATES, PARTNERS, REPRESENTATIVES, AGENTS, CONSULTANTS AND EMPLOYEES) IS SUBJECT TO THE TERMS AND CONDITIONS AGREED UPON BETWEEN SCHLUMBERGER AND THE COMPANY, INCLUDING: (a) RESTRICTIONS ON USE OF THE RECORDED-DATA; (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.

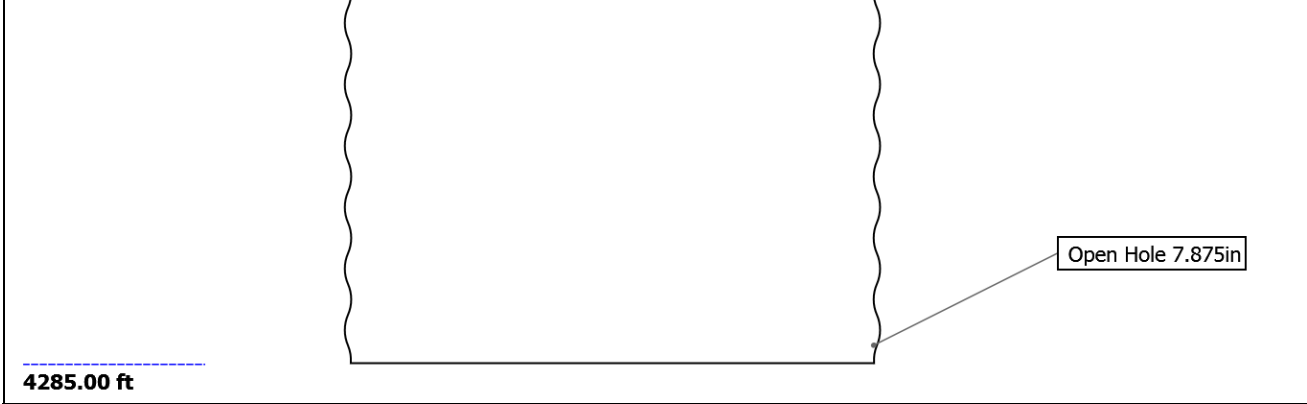
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Well Sketch




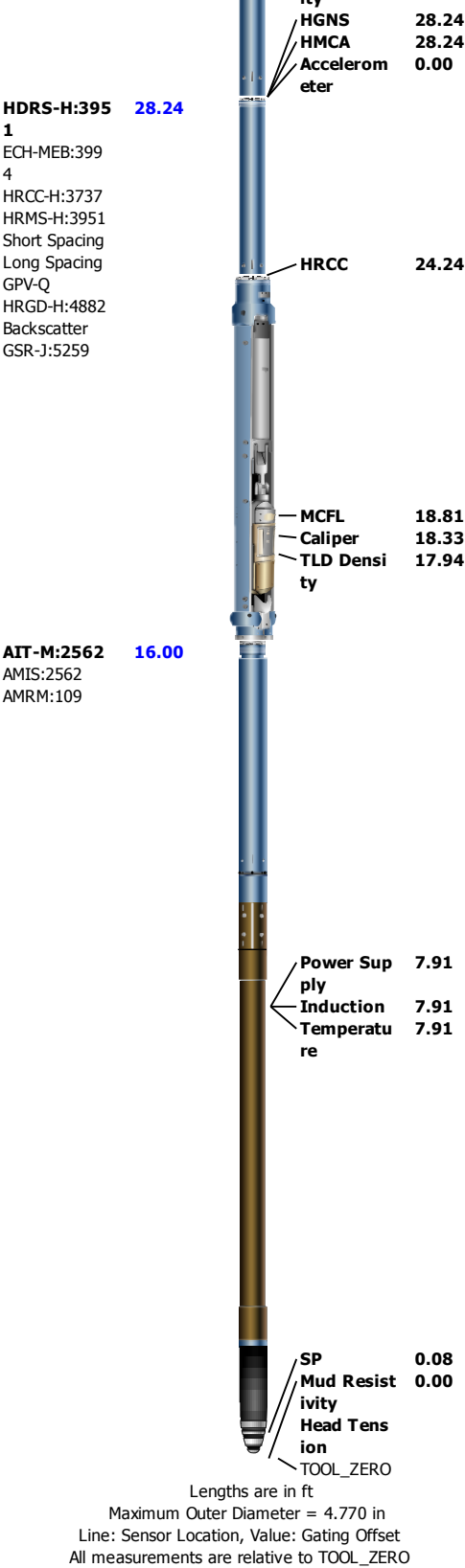


Borehole Size/Casing/Tubing Record

Bit						
Bit Size ( in )	12.25	7.875				
Top Driller ( ft )	0	503				
Top Logger ( ft )	0	503				
Bottom Driller ( ft )	503	4285				
Bottom Logger ( ft )	503	4285				
Casing						
Size ( in )	8.625					
Weight ( lbm/ft )	23					
Inner Diameter ( in )	8.122					
Grade	X52					
Top Driller ( ft )	0					
Top Logger ( ft )	0					
Bottom Driller ( ft )	503					
Bottom Logger ( ft )	503.5					

Remarks and Equipment Summary

ONE: Toolstring				ONE: Remarks	
<b>Equip name</b> <b>LEH-QT:3076</b>	<b>Length</b> <b>47.64</b>	<b>MP name</b>	<b>Offset</b>	Thank you for choosing Schlumberger!	
				This is the first log in the well.	
				Toolstring run as per toolsketch and client logging program.	
				Requested to run the tool slick with no bowspring or standoffs.	
				Matrix: Sandstone - 2.65 from TD to 4050 Limestone - 2.71 from 4050 to CS.	
				BHT: 118 degF	
				TD: 4282.5 ft Casing Shoe: 503.5 ft	
<b>EDTC-B:9038</b>	<b>44.15</b>	CTEM ACCZ HV Gamma Ray TelStatus Temperature GR	40.65 0.00 0.00 38.78 37.65 37.62 36.91		
<b>HGNS-H:3730</b>	<b>37.65</b>				
HGNH:2742 NPV-N NSR-F:5068 HMCA-H HGNS-H:3730 HACCZ-H:1537					
		CNL Porosity	30.57		



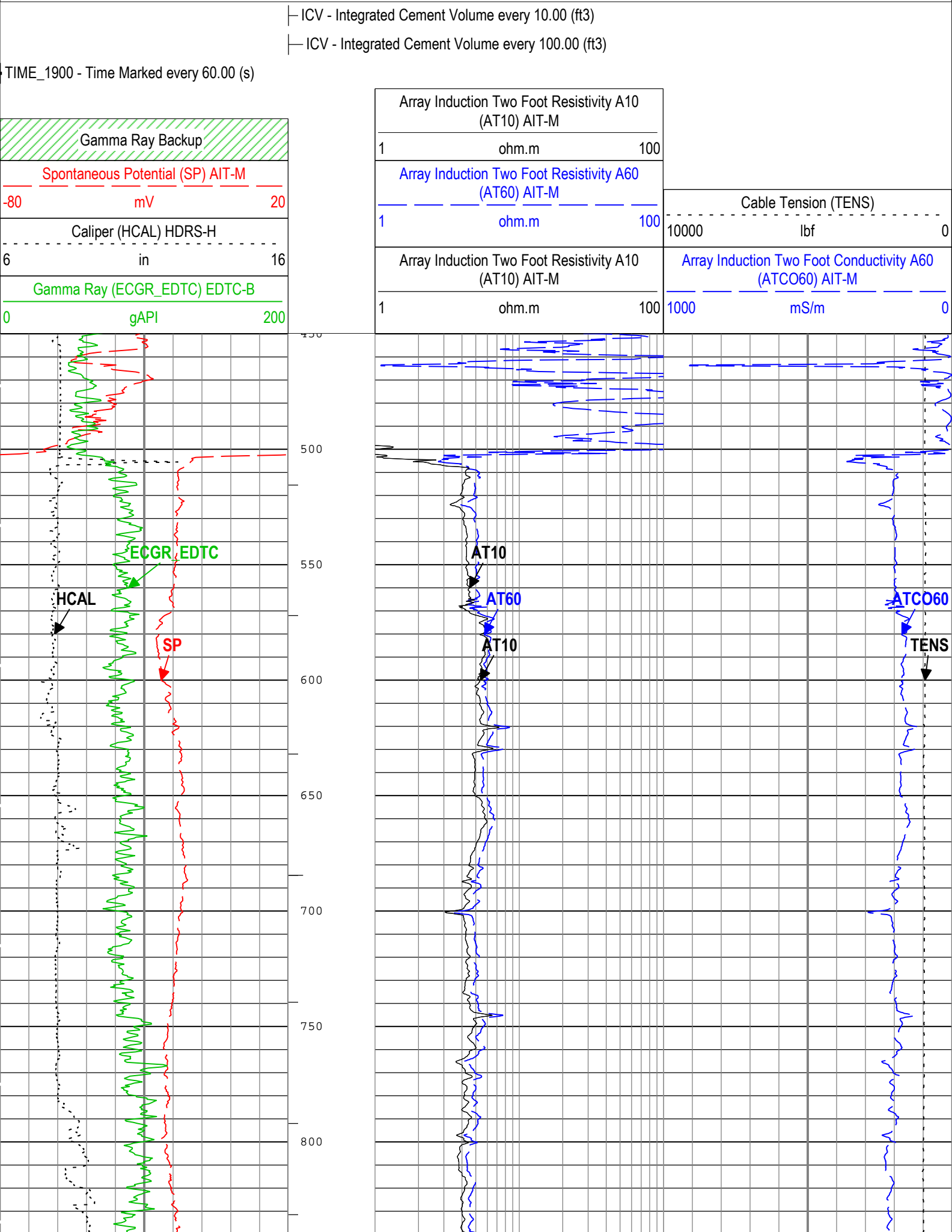
## Depth Summary

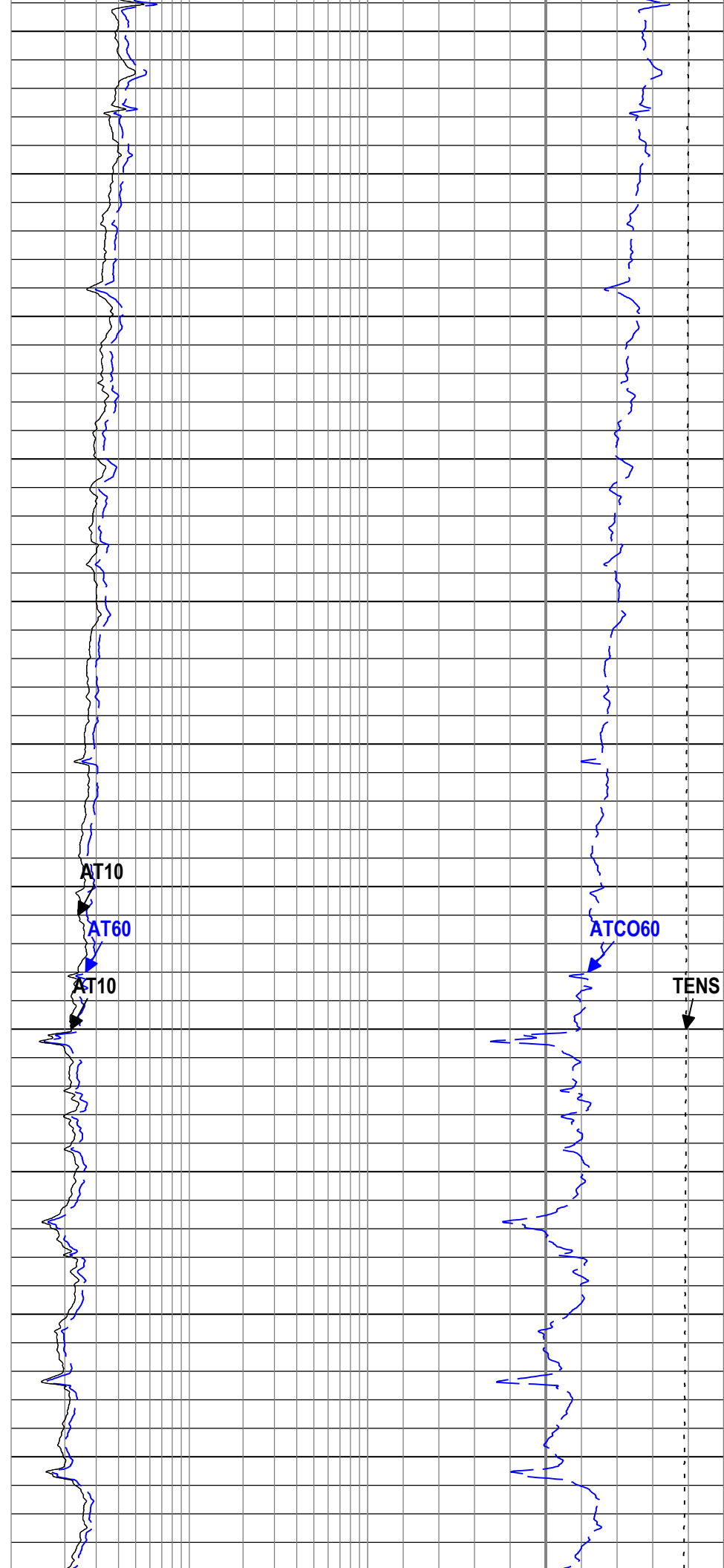
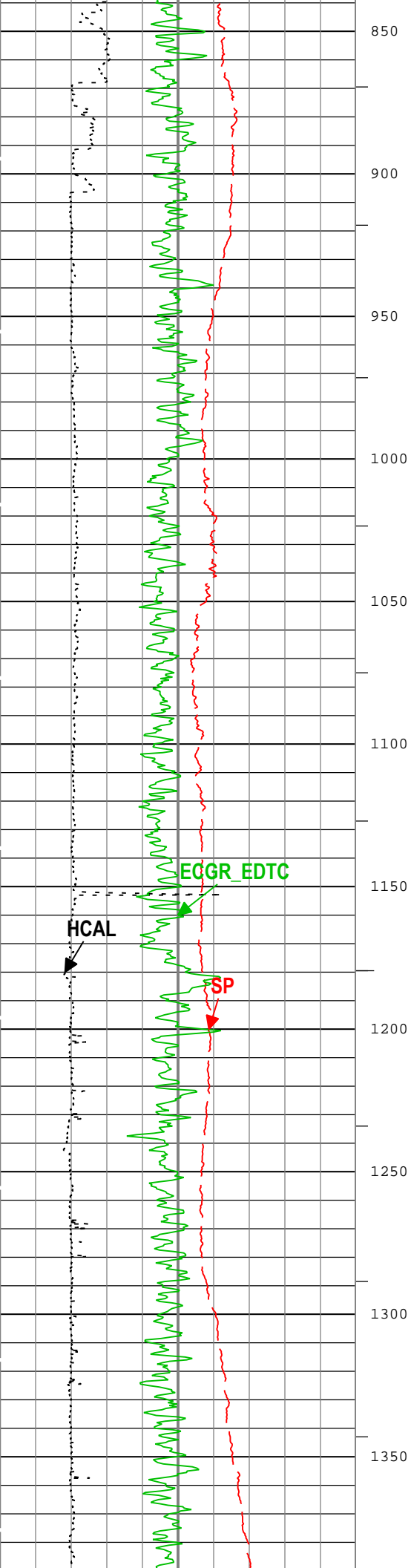
ONE

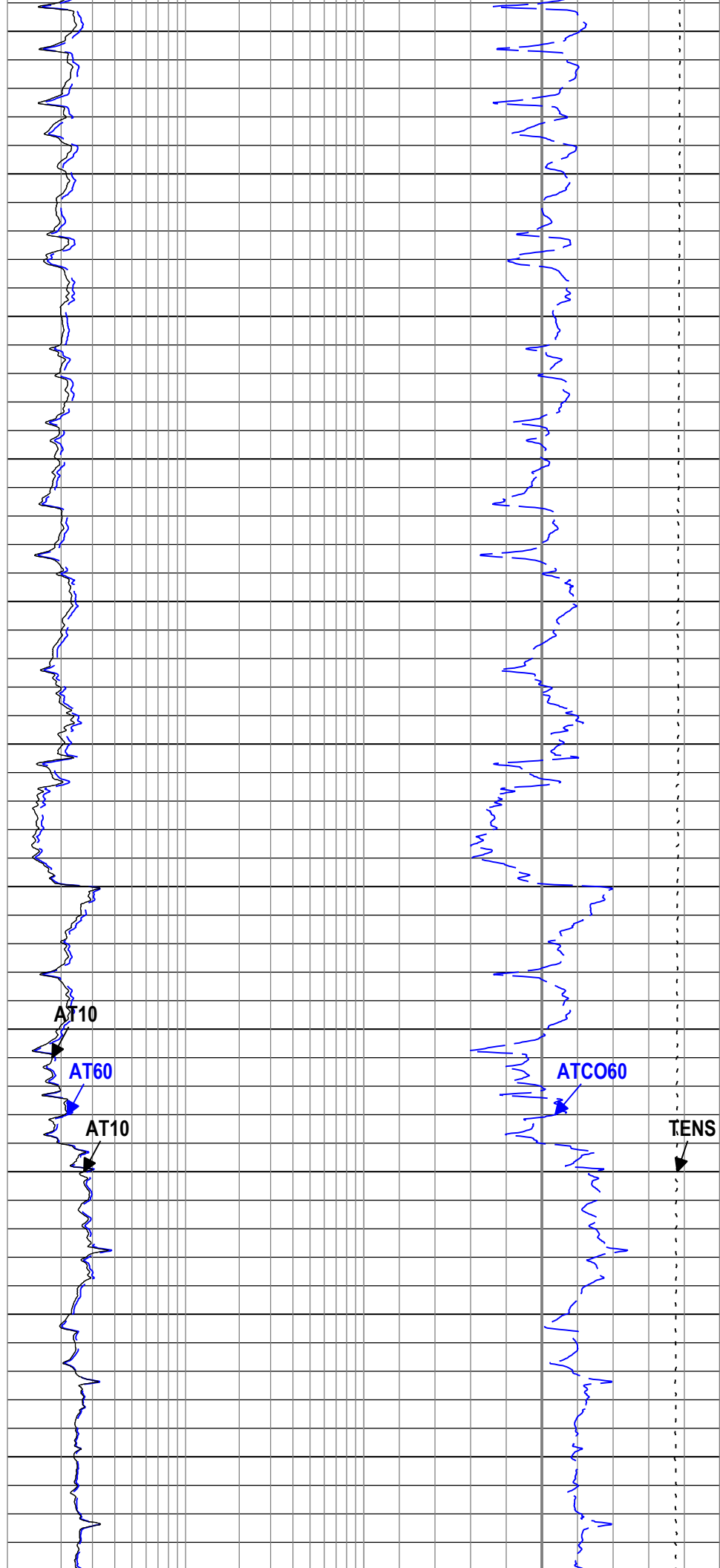
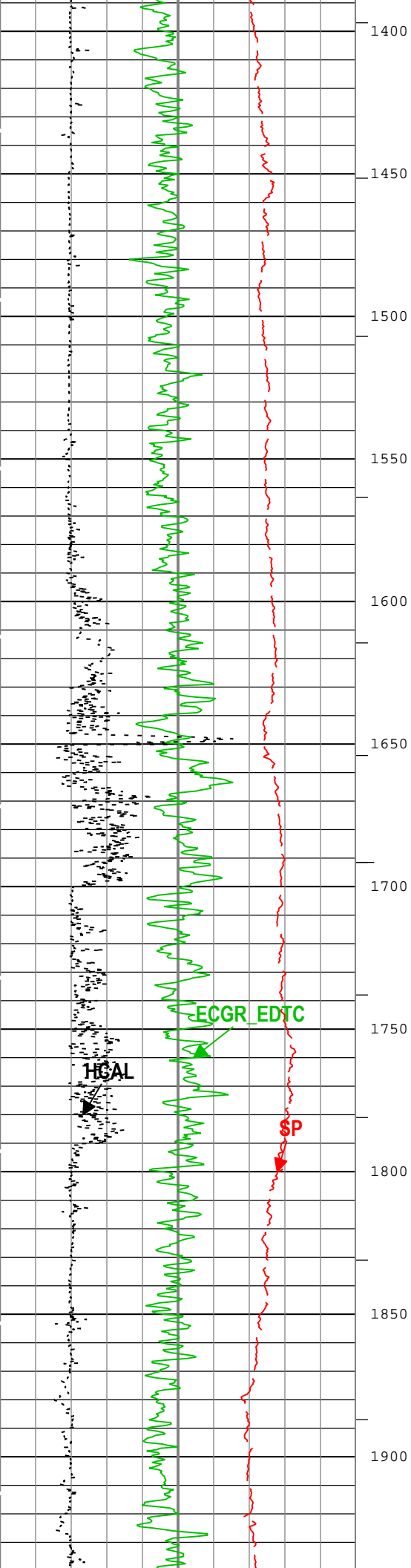
## Depth Measuring Device

Type	IDW-B		
Serial Number			
Calibration Date			
Calibrator Serial Number			
Calibration Cable Type			
Wheel Correction 1	0		
Wheel Correction 2	0		

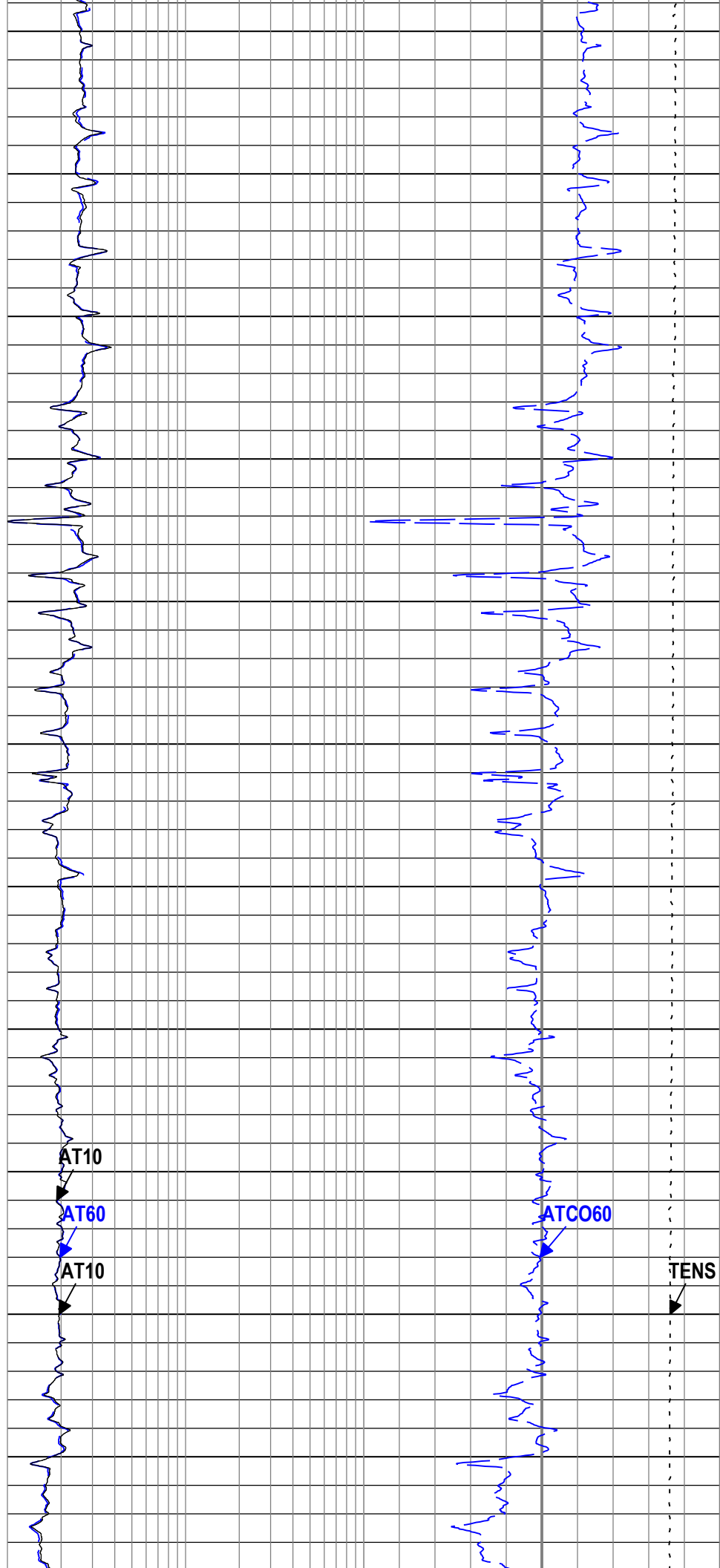
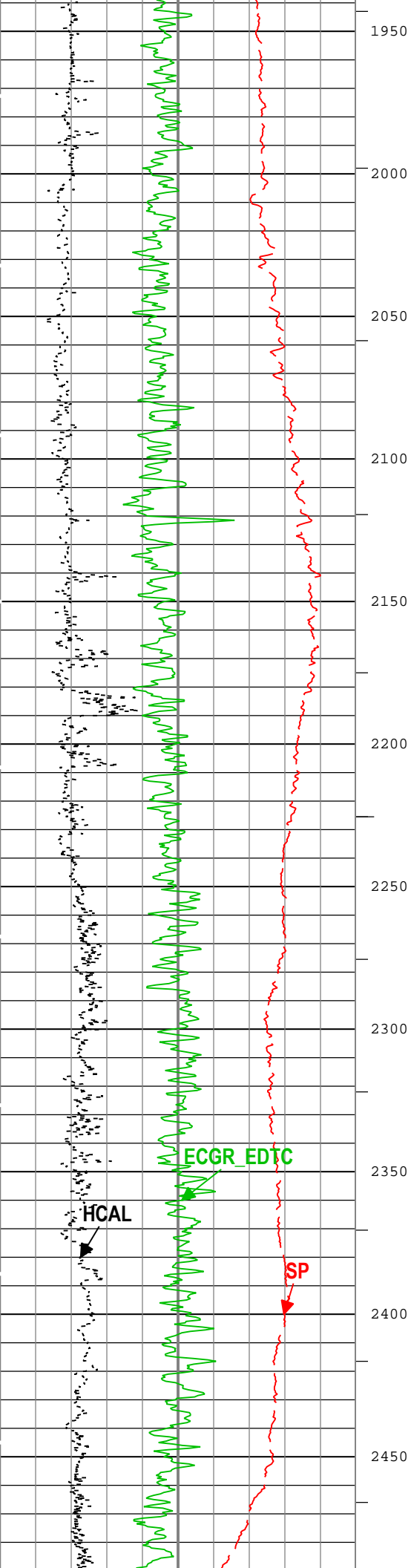
Wheel Correction 2	0								
Tension Device									
Type	CMTD-B/A								
Serial Number									
Calibration Date									
Calibrator Serial Number									
Number of Calibration Points	0								
Logging Cable									
Type	7-46A-XS								
Serial Number									
Length	24000.00 ft								
Conveyance 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.  IDW used as primary depth reference.  Z-Chart used as secondary depth reference.				
Rig Up Length At Surface									
Rig Up Length At Bottom									
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			732.61		ft3
Software Version									
Acquisition System						Version			
Maxwell 2018 SP2						8.2.104493.3100			
Pass Summary									
Run Name	Pass Objective	Direction	Top	Bottom	Start	Stop	DSC Mode	Depth Shift	Include Parallel Data
ONE	Log[3]:Up	Up	43.65 ft	4299.46 ft	18-Dec-2018 3:06:10 PM	18-Dec-2018 4:27:30 PM	ON	0.00 ft	No
All depths are referenced to toolstring zero									
Log									
						Company:St. Croix Operating Inc.		Well:Jack Creek #2	
						ONE: Log[3]:Up:S005			
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: 18-Dec-2018 16:39:56									
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					
ICV	Borehole			6in - RT					
SP	AIT-M:AMIS:AMIS			6in					
TENS	WI Workflow			6in					

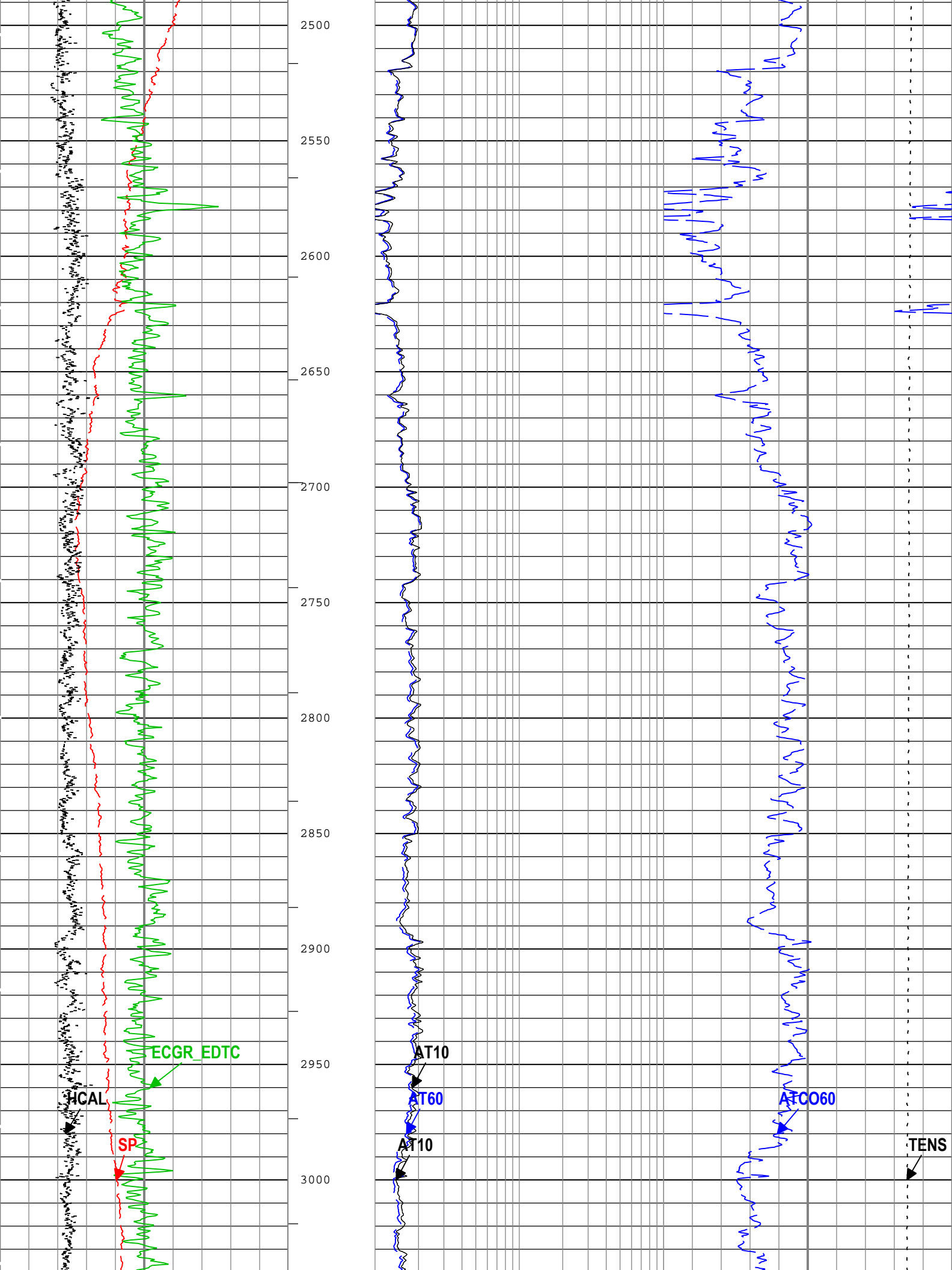


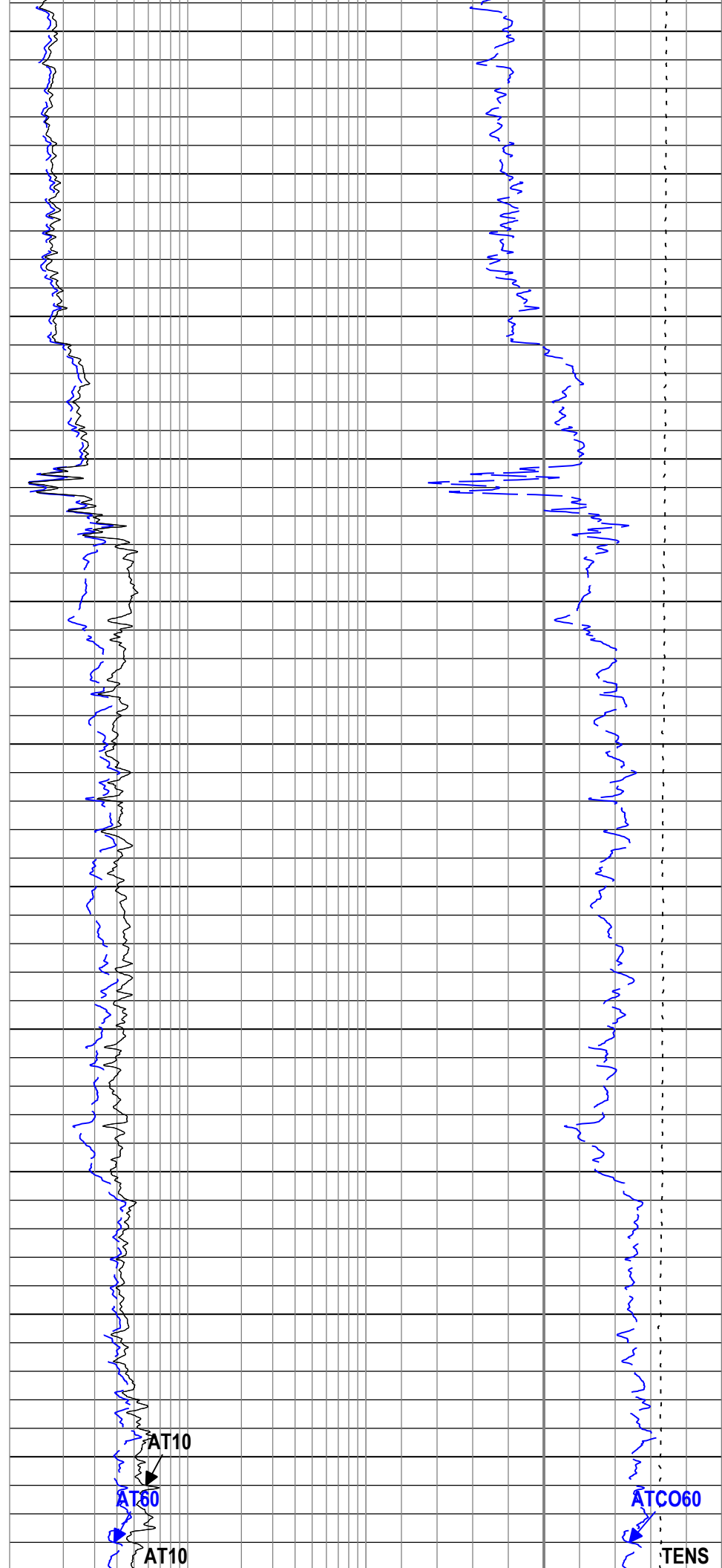
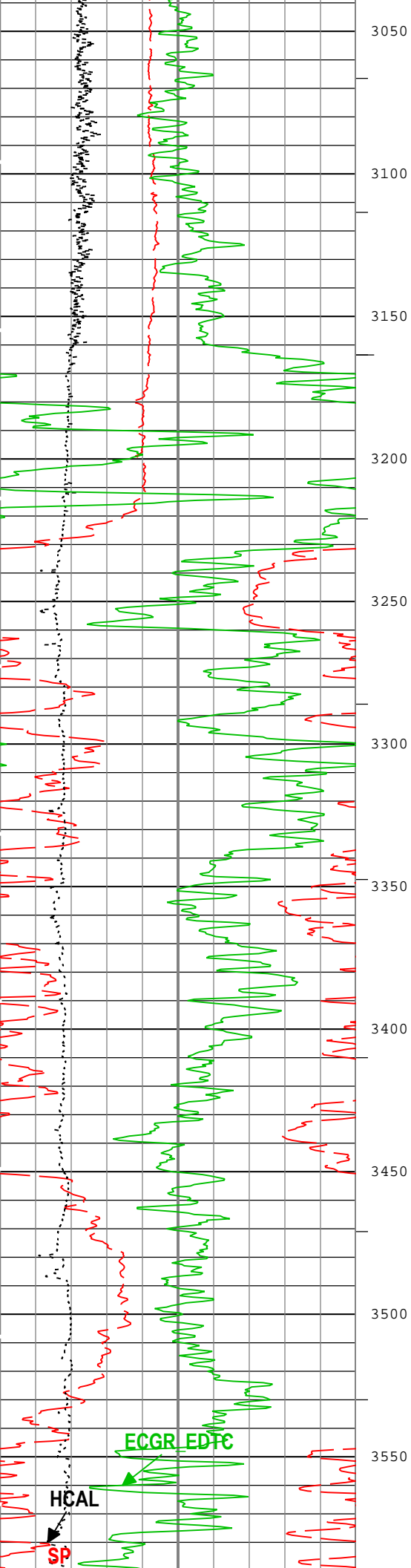


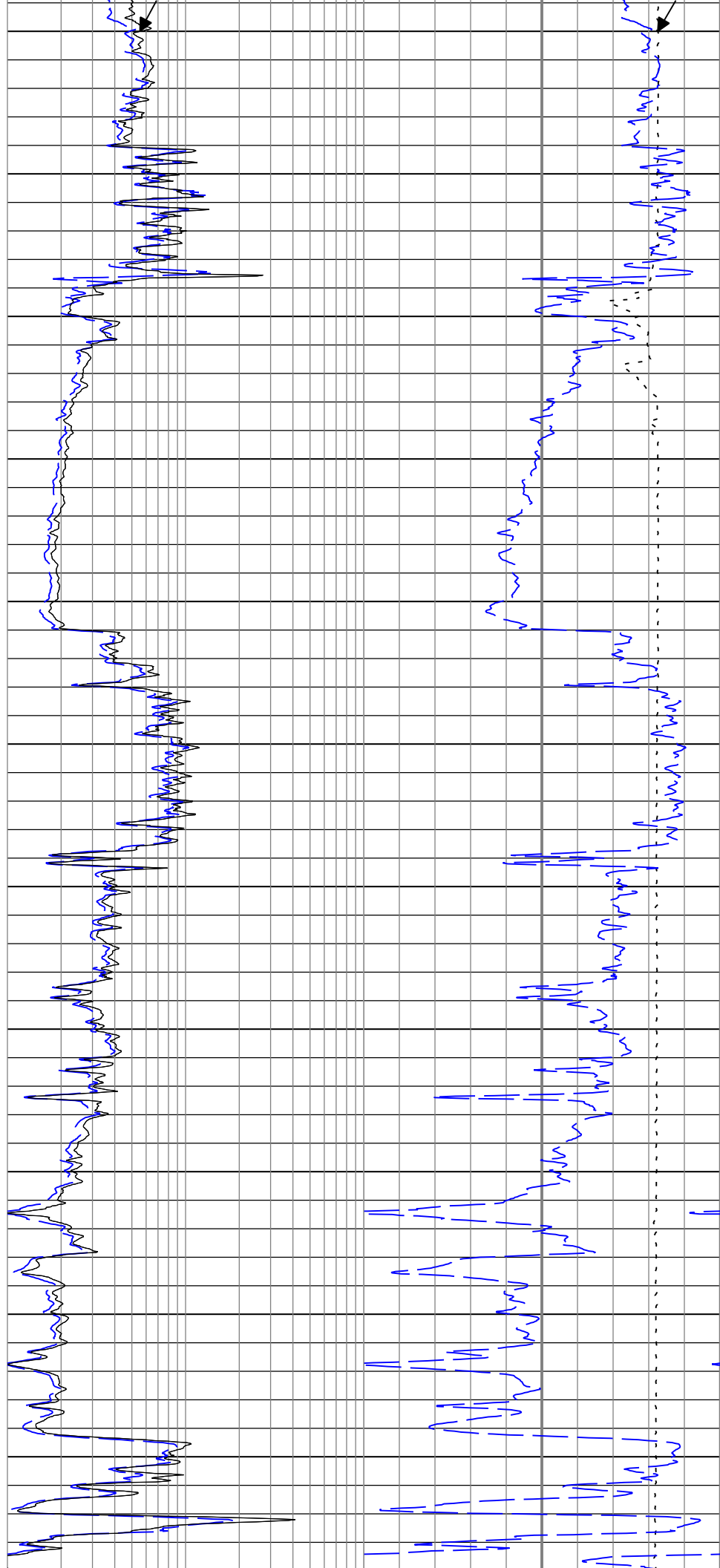
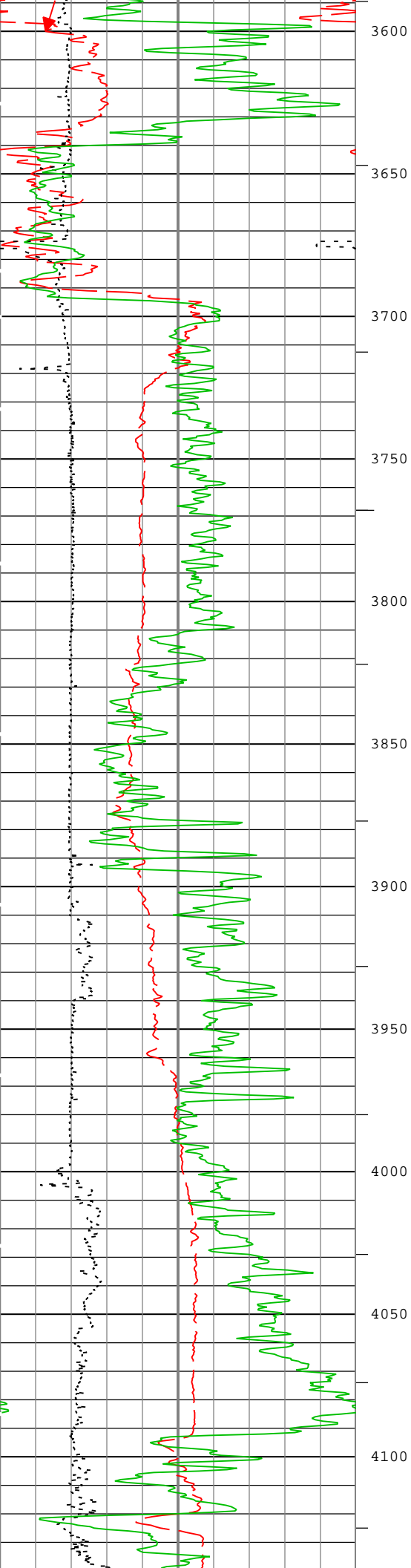


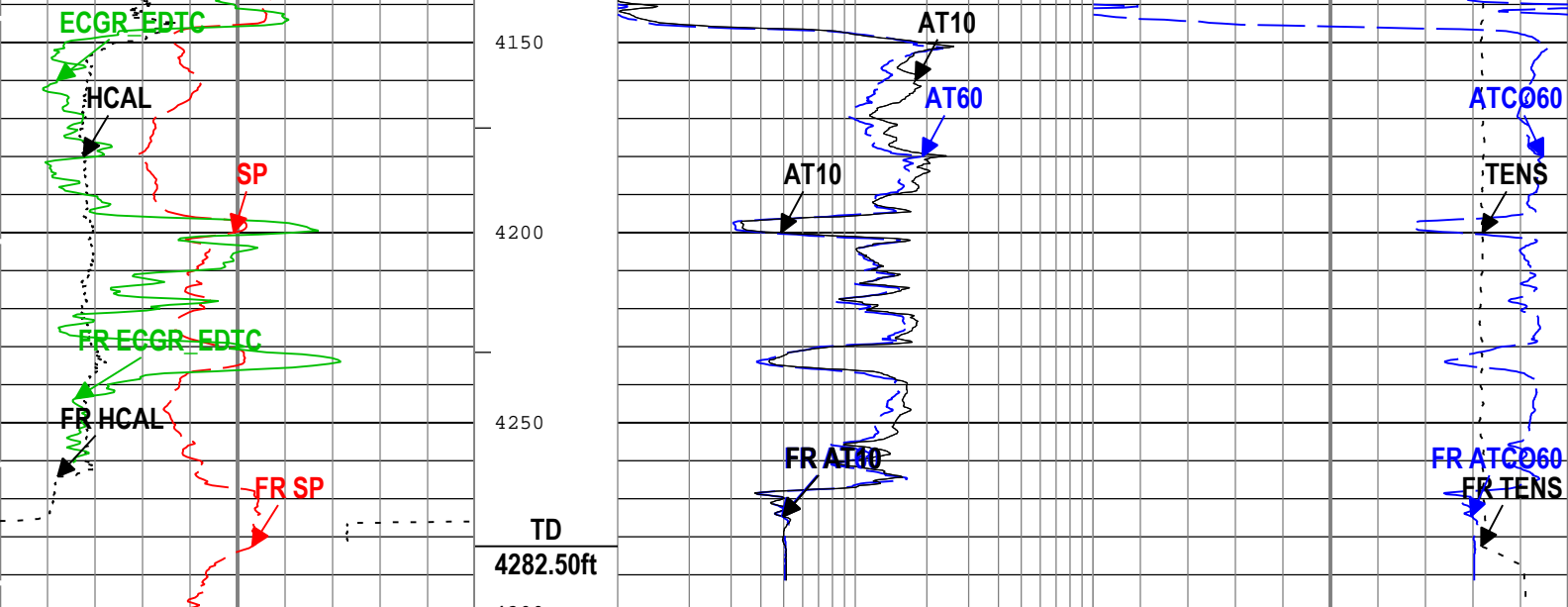












Gamma Ray Backup		
Spontaneous Potential (SP) AIT-M		
-80	mV	20
Caliper (HCAL) HDRS-H		
6	in	16
Gamma Ray (ECGR_EDTC) EDTC-B		
0	gAPI	200

Array Induction Two Foot Resistivity A10 (AT10) AIT-M		
1	ohm.m	100
Array Induction Two Foot Resistivity A60 (AT60) AIT-M		
1	ohm.m	100
Array Induction Two Foot Resistivity A10 (AT10) AIT-M		
1	ohm.m	100

Cable Tension (TENS)		
10000	lbf	0
Array Induction Two Foot Conductivity A60 (ATC060) AIT-M		
1000	mS/m	0

TIME\_1900 - Time Marked every 60.00 (s)

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

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: 18-Dec-2018 16:39:56

## Channel Processing Parameters

### ONE: Parameters

Parameter	Description	Tool	Value	Unit
ABHM	Array Induction Borehole Correction Mode	AIT-M	Compute Standoff	
ASTA	Array Induction Tool Standoff	AIT-M	0.125	in
BARI(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	0.516	in
CBLO	Casing Bottom (Logger)	WLSESSION	503.5	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	9.2	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	
SP_SHIFT	SP Shift	AIT-M	400	mV
SPDR	SP Drift Per Foot	AIT-M	0	mV/ft

### Depth Zone Parameters

Depth Zone Parameters

Parameter	Value	Start ( ft )	Stop ( ft )
BS	12.25	450	503
BS	7.875	503	4285

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	732.61	ft3
IHV	Integrated Hole Volume	GCSE_UP_PASS	1358.15	ft3

Software Version

Acquisition System	Version
Maxwell 2018 SP2	8.2.104493.3100

Pass Summary

Run Name	Pass Objective	Direction	Top	Bottom	Start	Stop	DSC Mode	Depth Shift	Include Parallel Data
ONE	Log[3]:Up	Up	43.65 ft	4299.46 ft	18-Dec-2018 3:06:10 PM	18-Dec-2018 4:27:30 PM	ON	0.00 ft	No

All depths are referenced to toolstring zero

Log

Company:St. Croix Operating Inc. Well:Jack Creek #2  
ONE: Log[3]:Up:S005

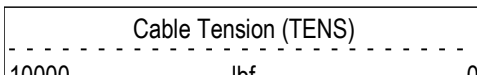
Description: AIT Basic Log Two Format: Log ( Induction-5 ) Index Scale: 5 in per 100 ft Index Unit: ft Index Type: Measured Depth Creation Date: 18-Dec-2018 16:39:57

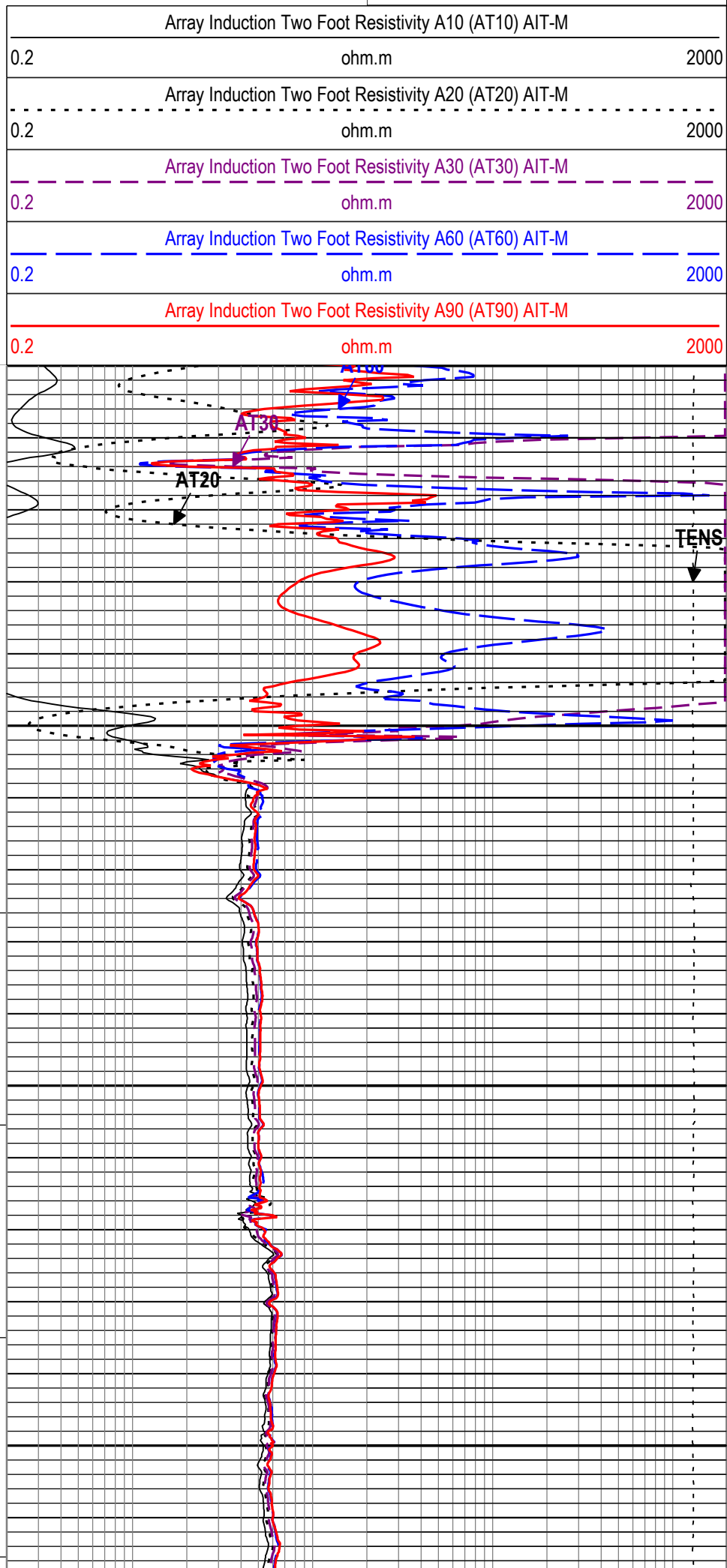
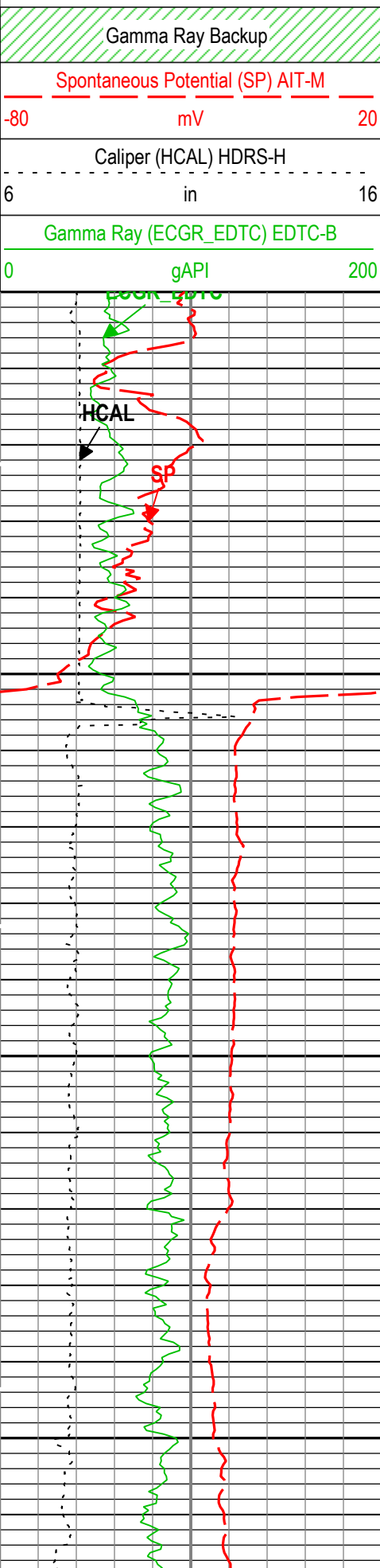
Channel	Source	Sampling
AT10	AIT-M:AMIS:AMIS	3in
AT20	AIT-M:AMIS:AMIS	3in
AT30	AIT-M:AMIS:AMIS	3in
AT60	AIT-M:AMIS:AMIS	3in
AT90	AIT-M:AMIS:AMIS	3in
CALI	HDRS-H:HRCC-H:HRCC-H	1in
GR	EDTC-B:EDTC-B:EDTC-B	6in
ICV	Borehole	6in - RT
IHV	Borehole	6in - RT
SP	AIT-M:AMIS:AMIS	6in
TENS	WLWorkflow	6in
TIME_1900	WLWorkflow	0.1in

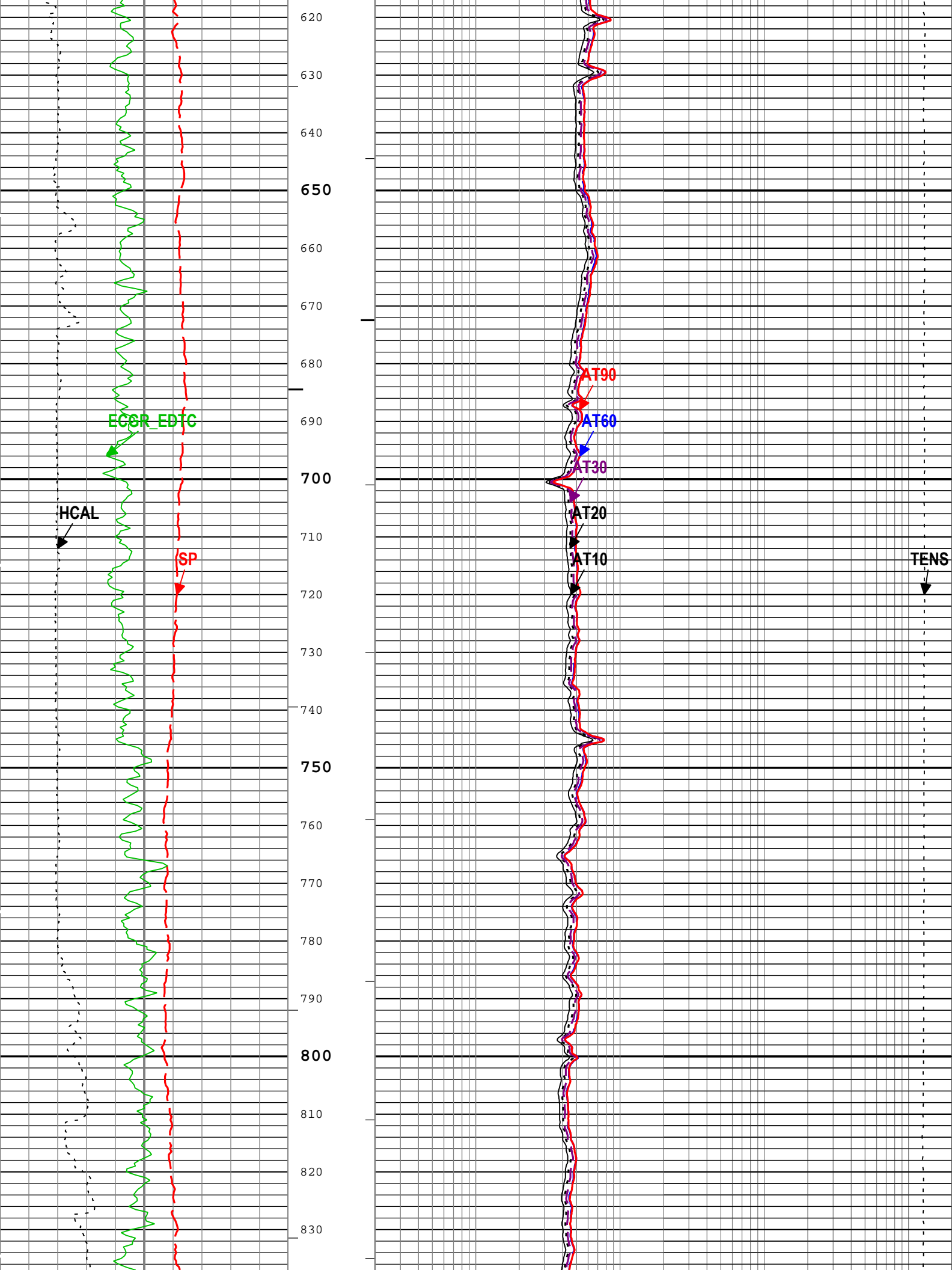
—IHV - Integrated Hole Volume every 10.00 (ft3)  
—IHV - Integrated Hole Volume every 100.00 (ft3)

TIME\_1900 - Time Marked every 60.00 (s)

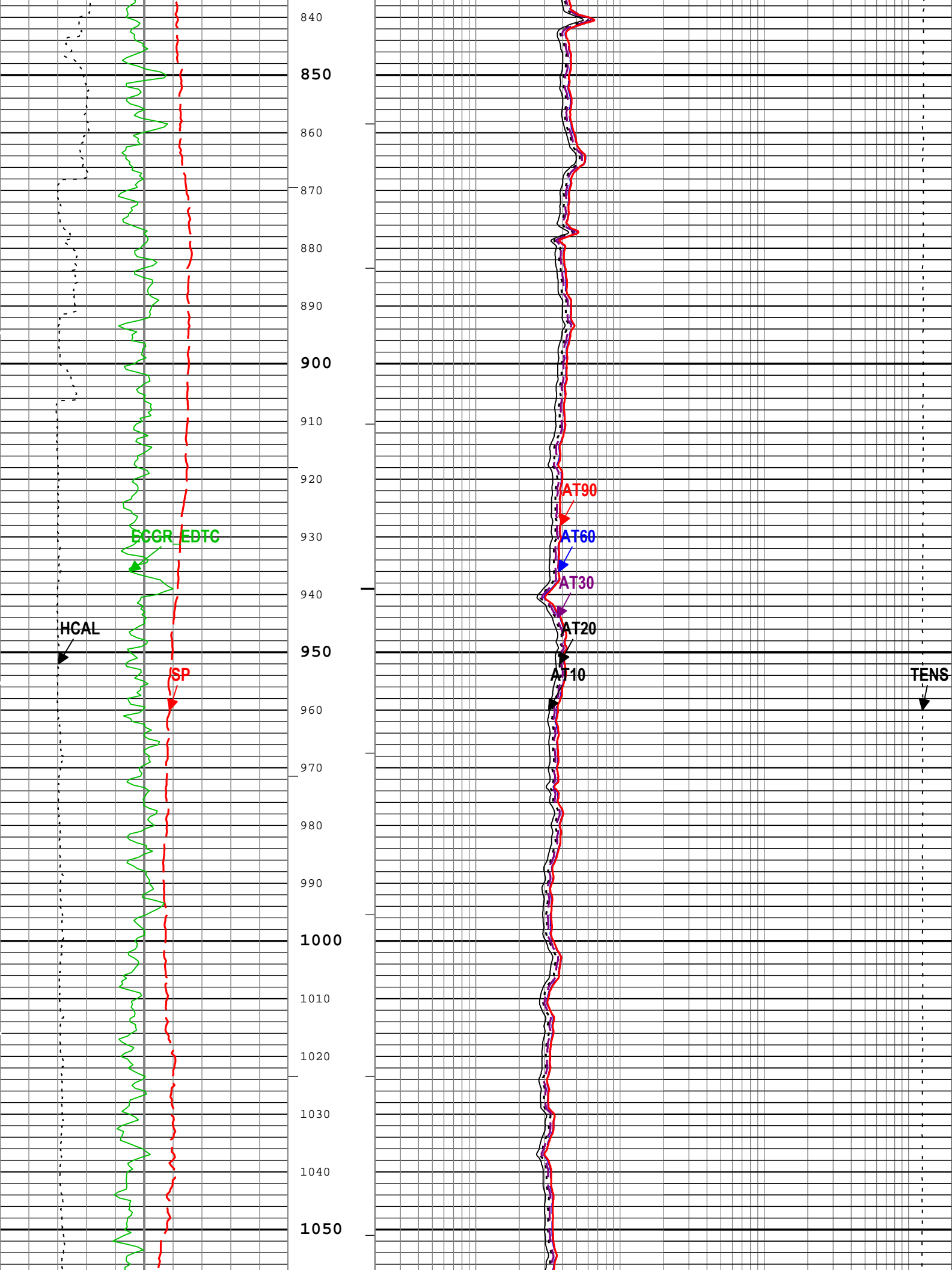
—ICV - Integrated Cement Volume every 10.00 (ft3)  
—ICV - Integrated Cement Volume every 100.00 (ft3)

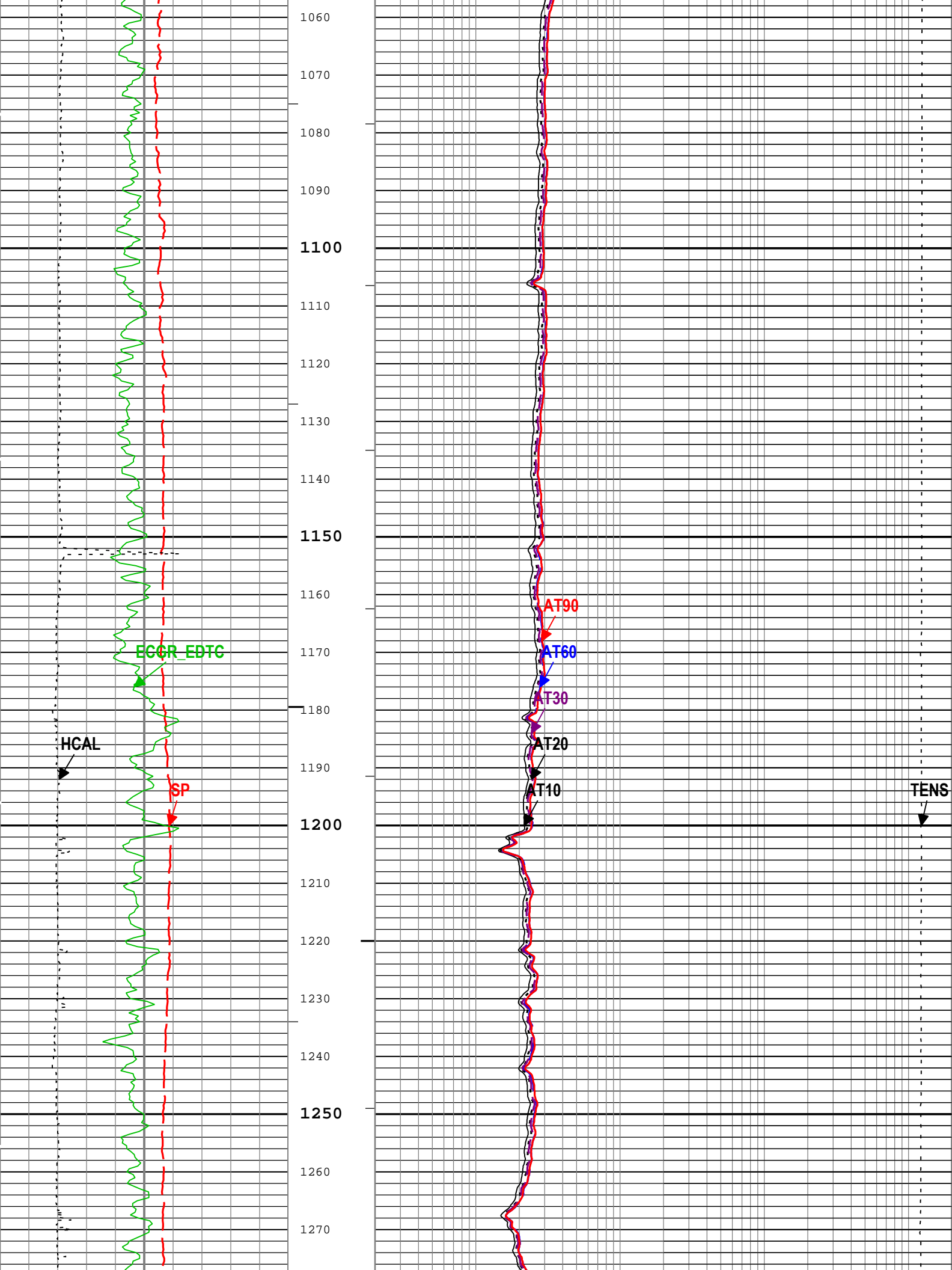


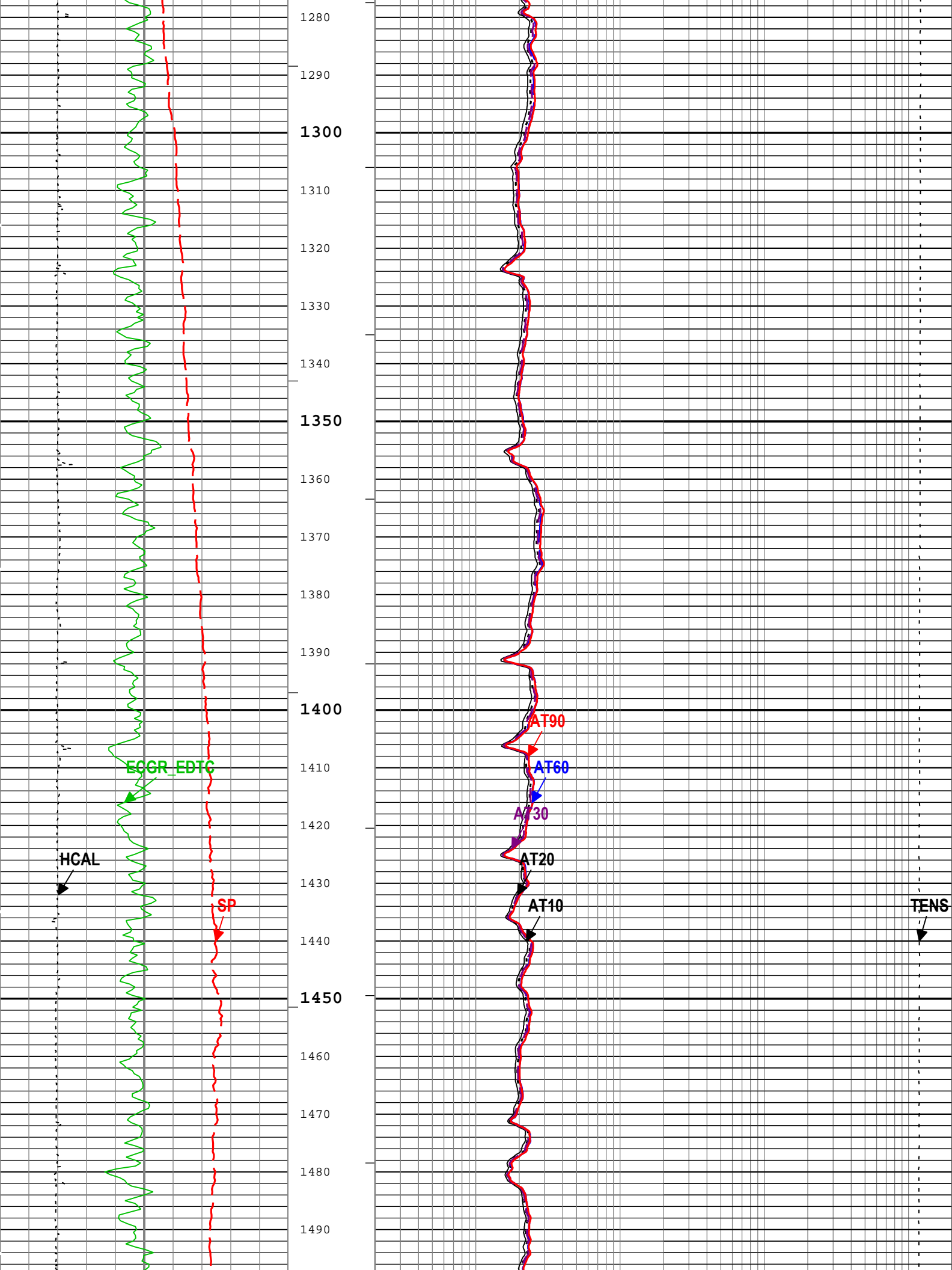


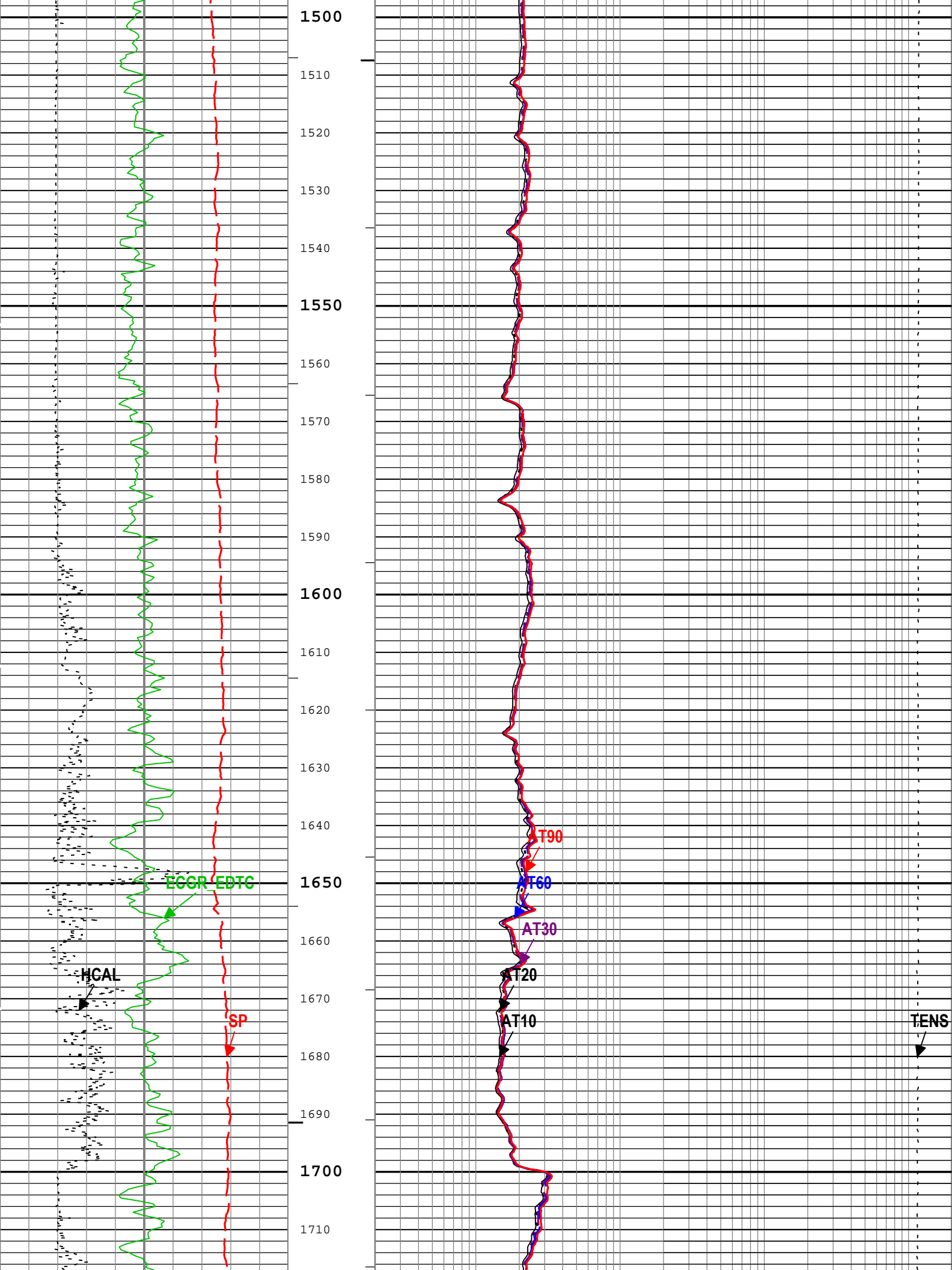


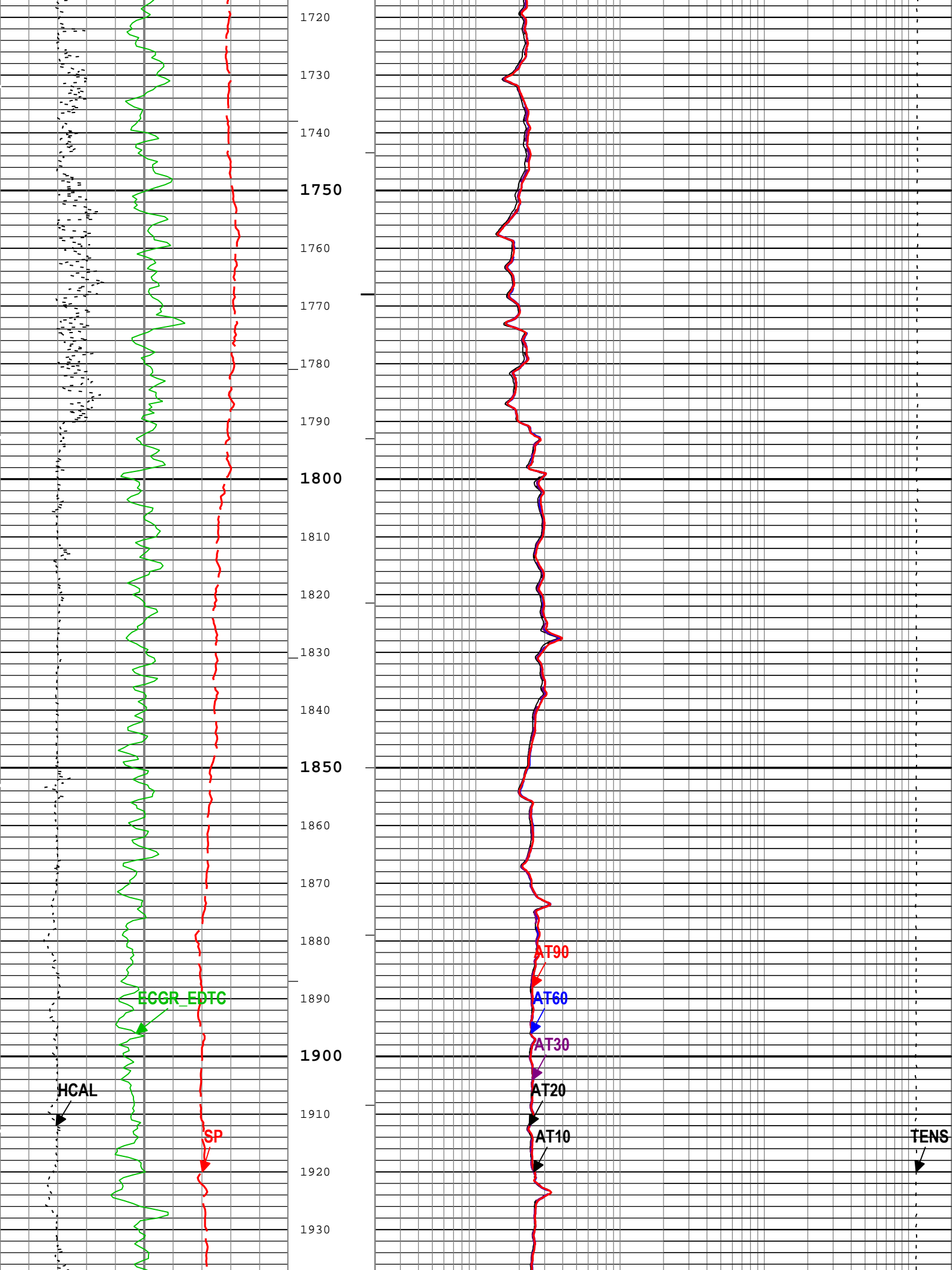


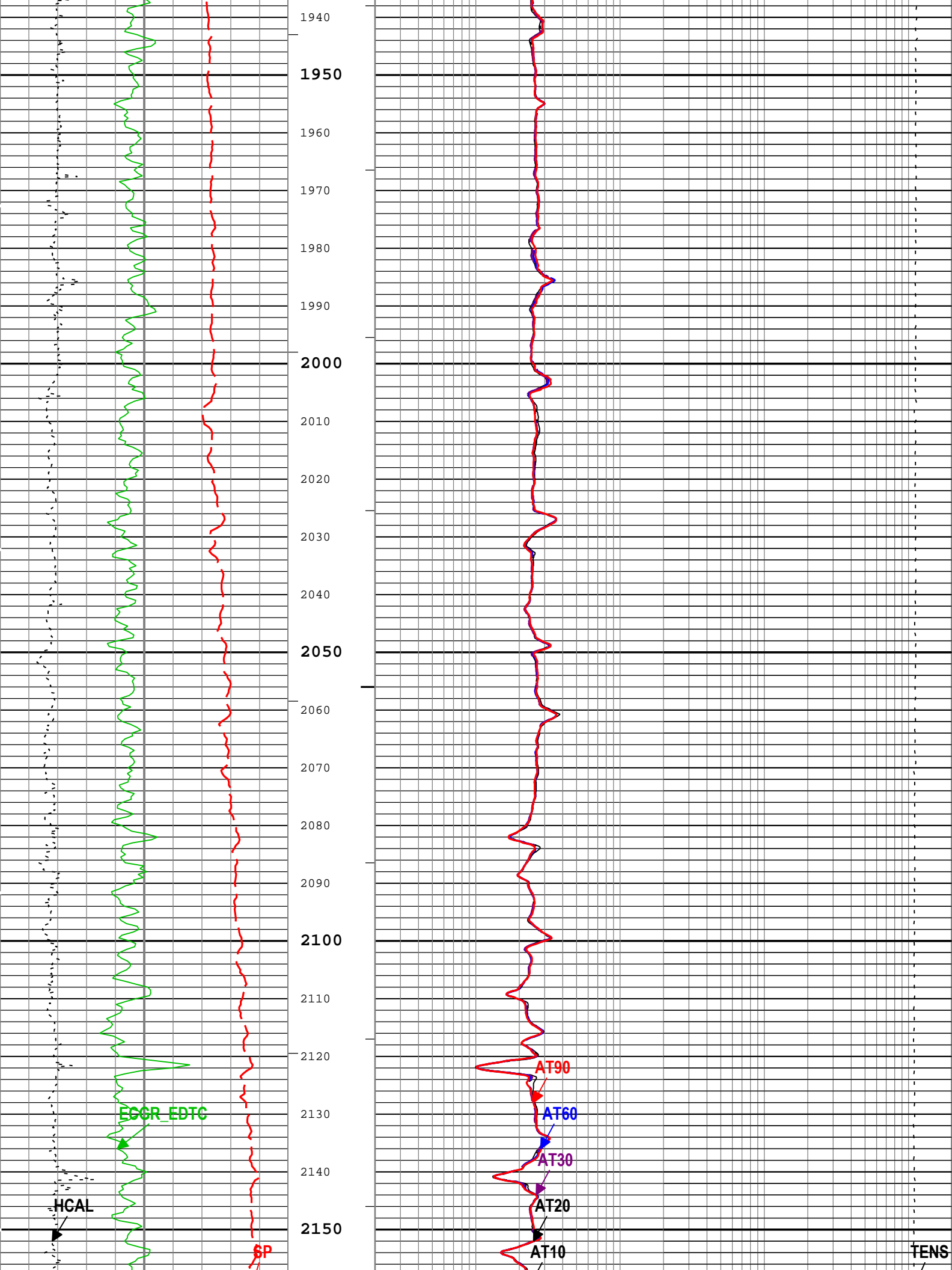


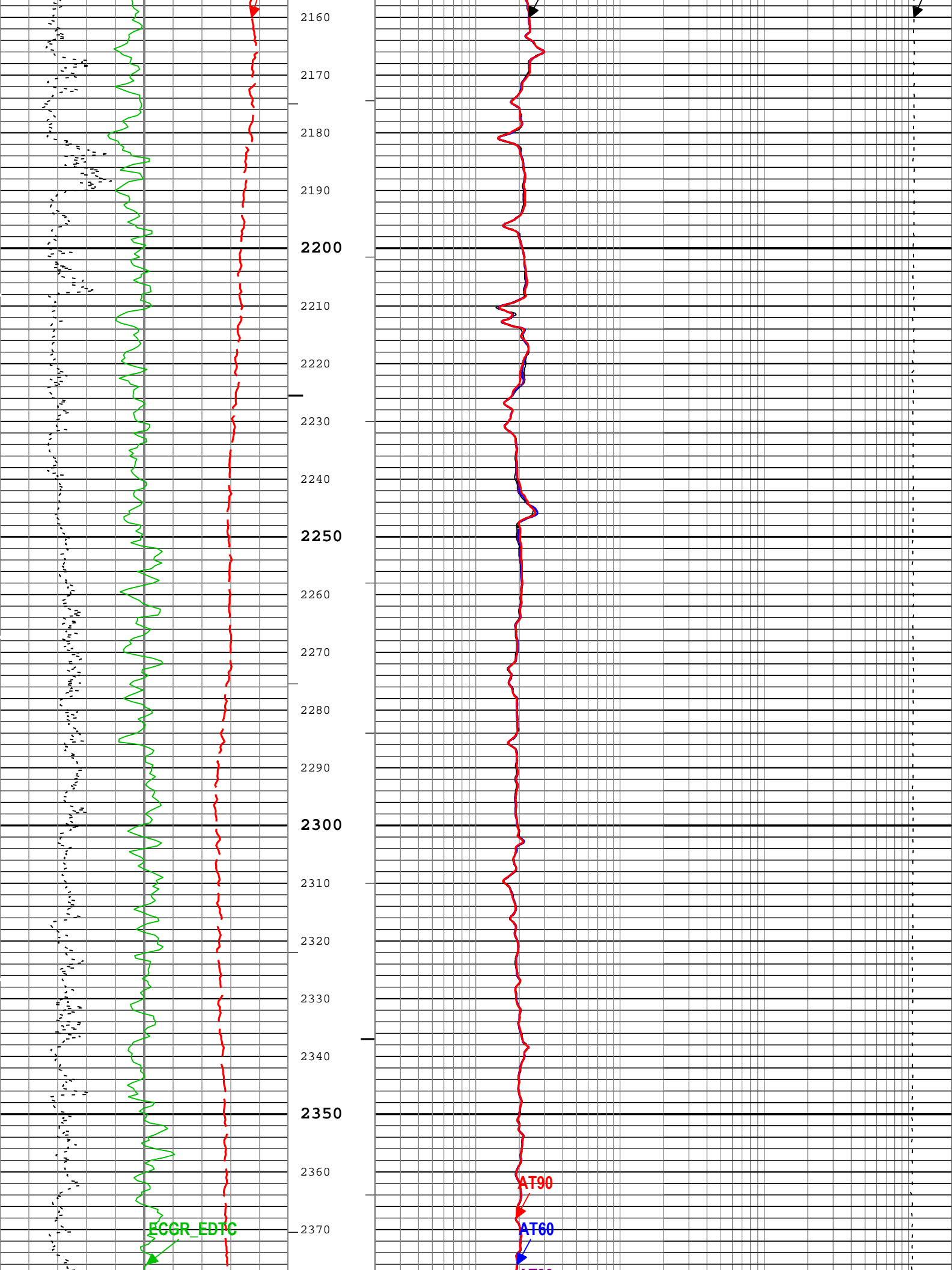


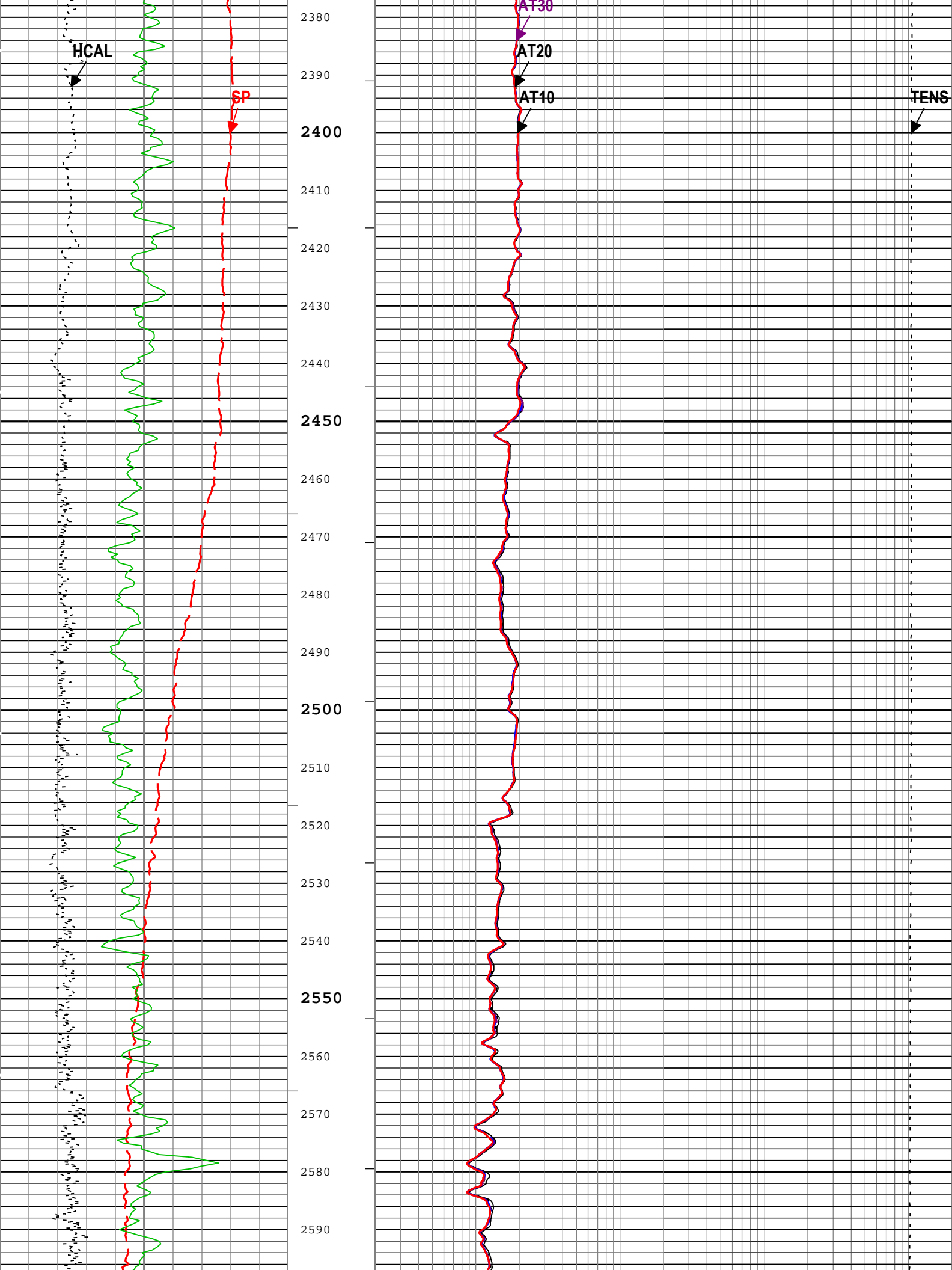




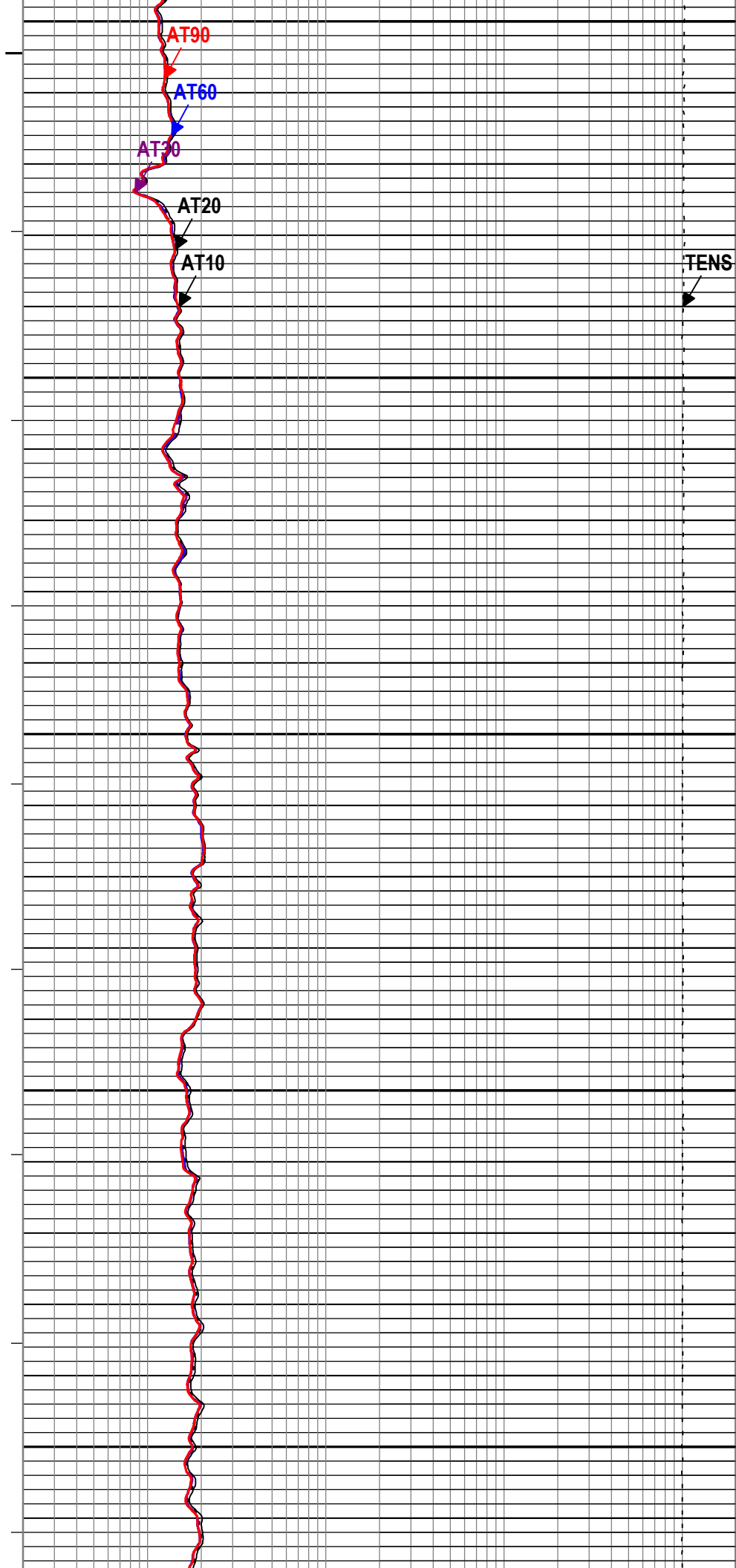
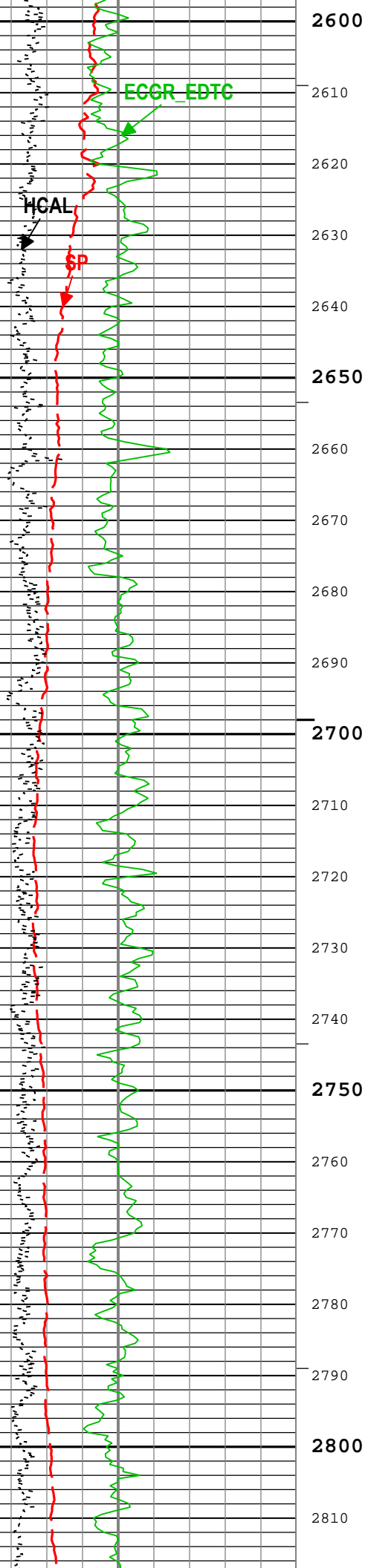


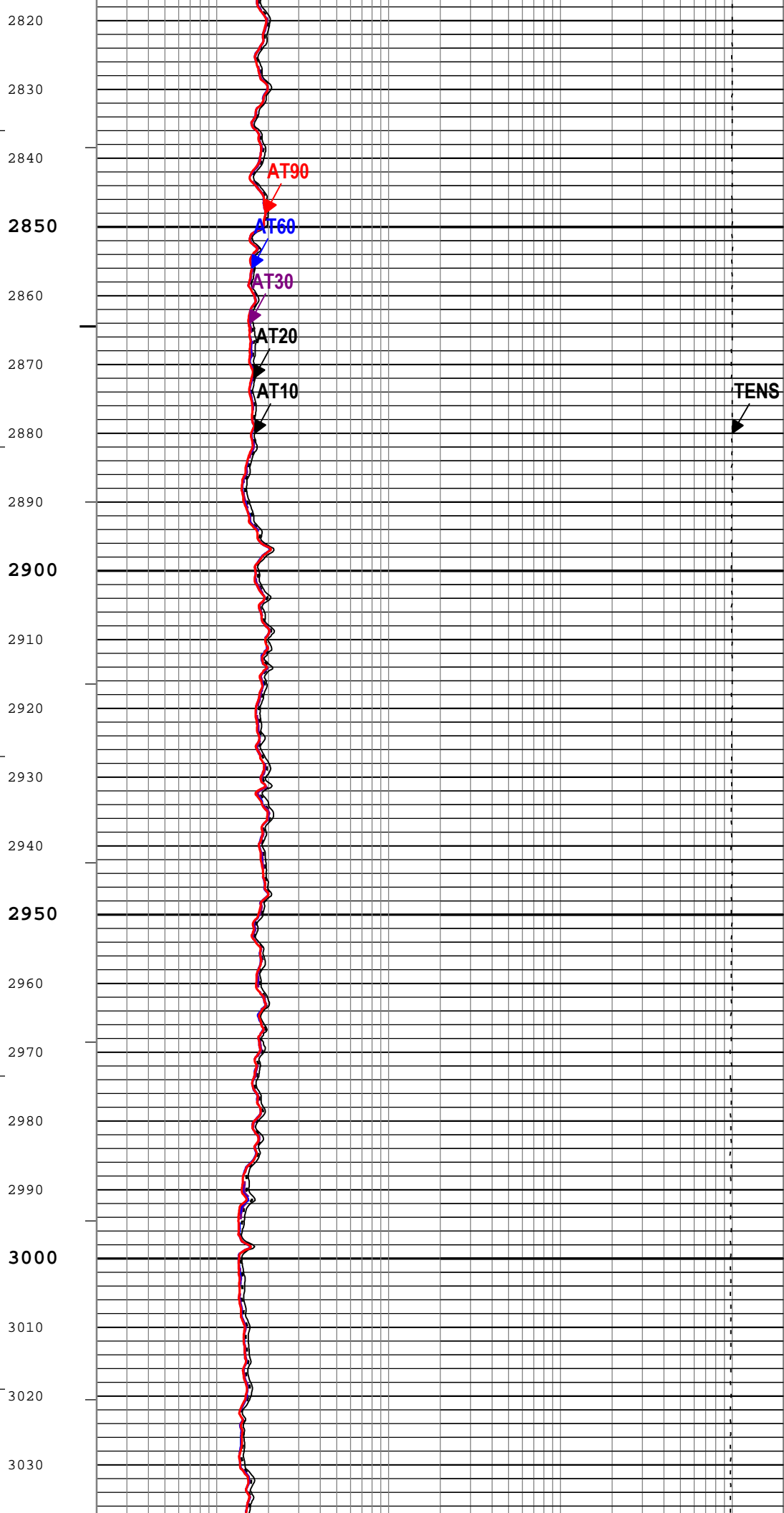
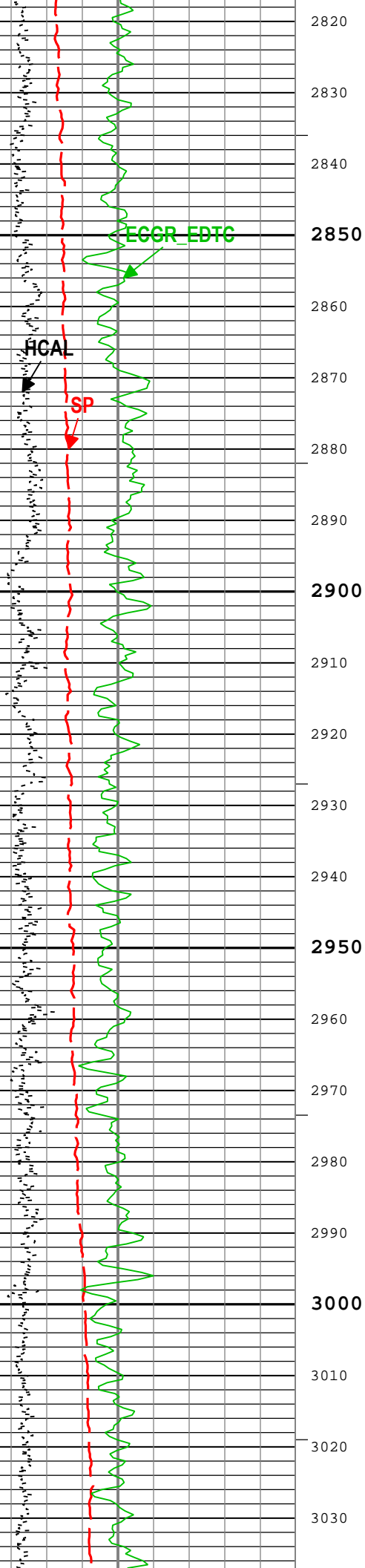


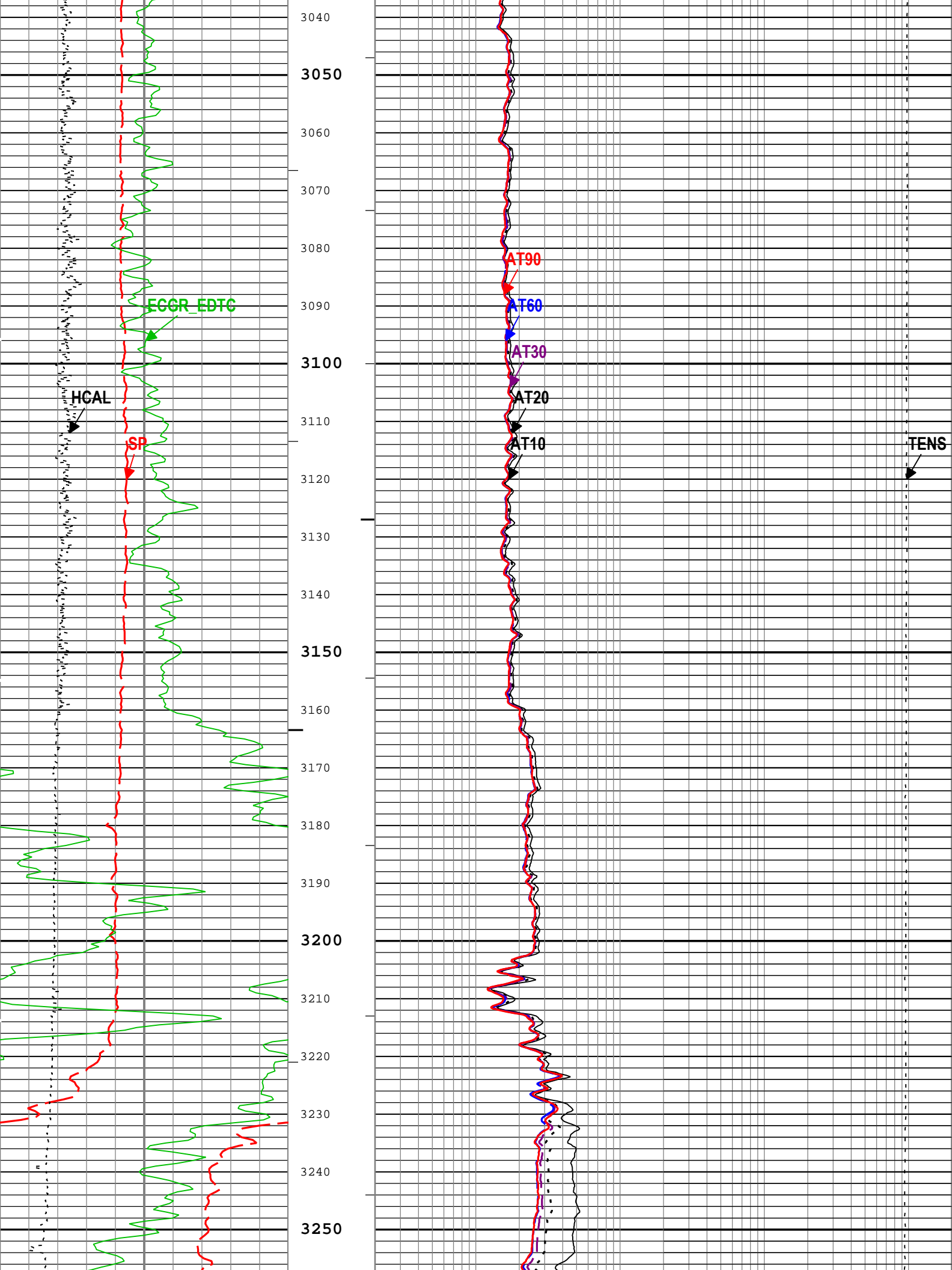




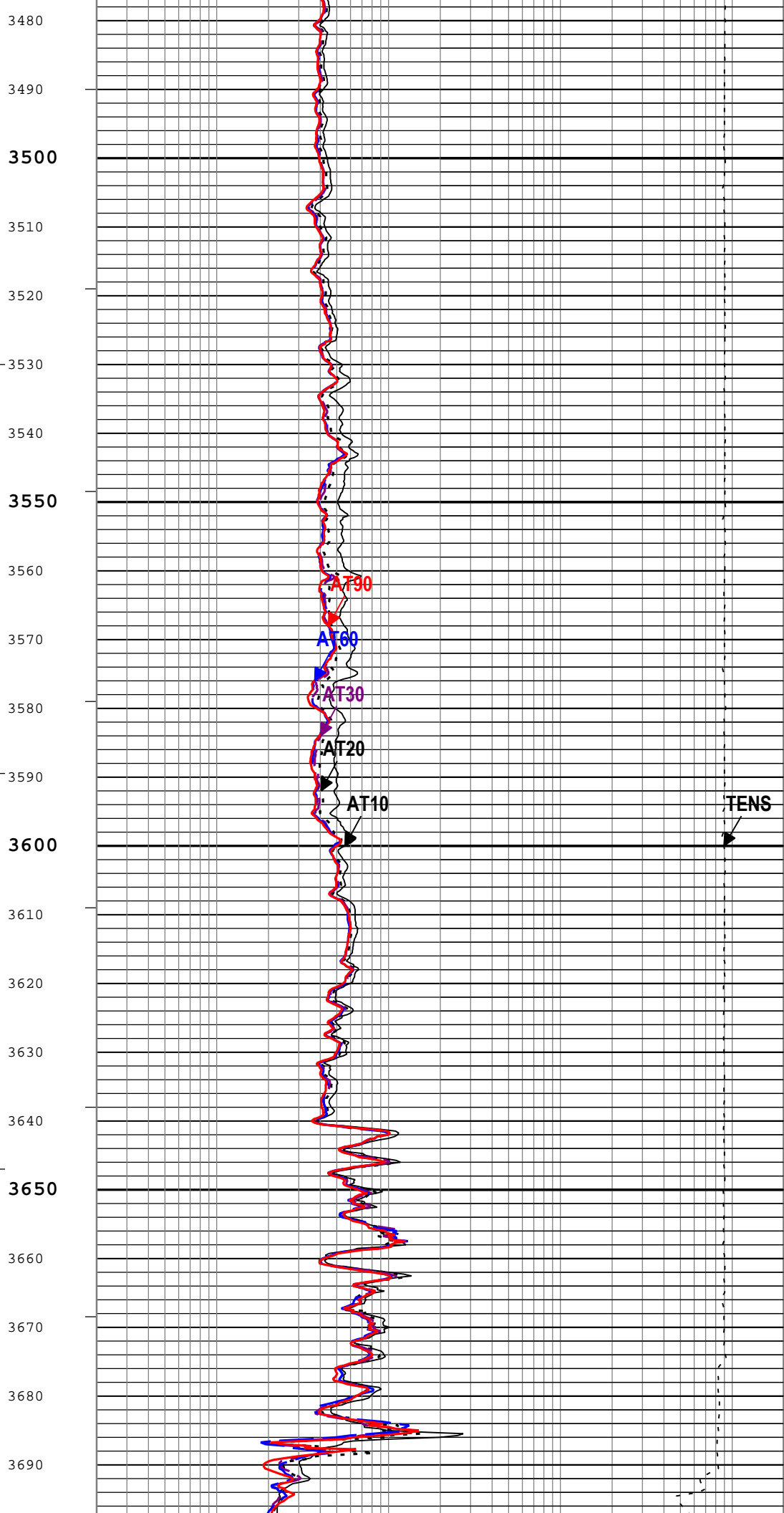
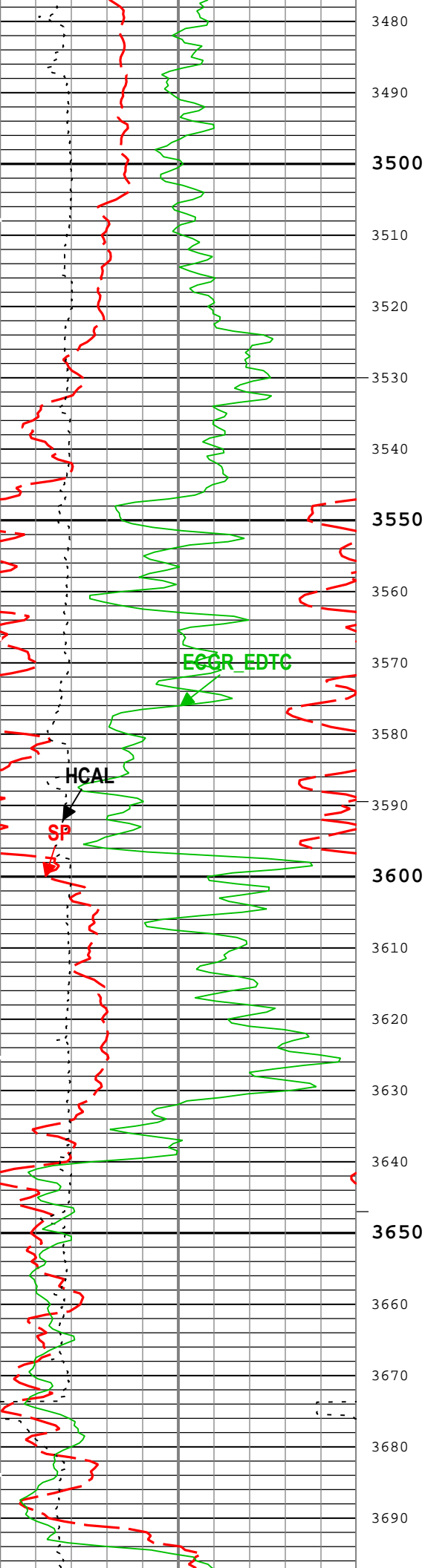


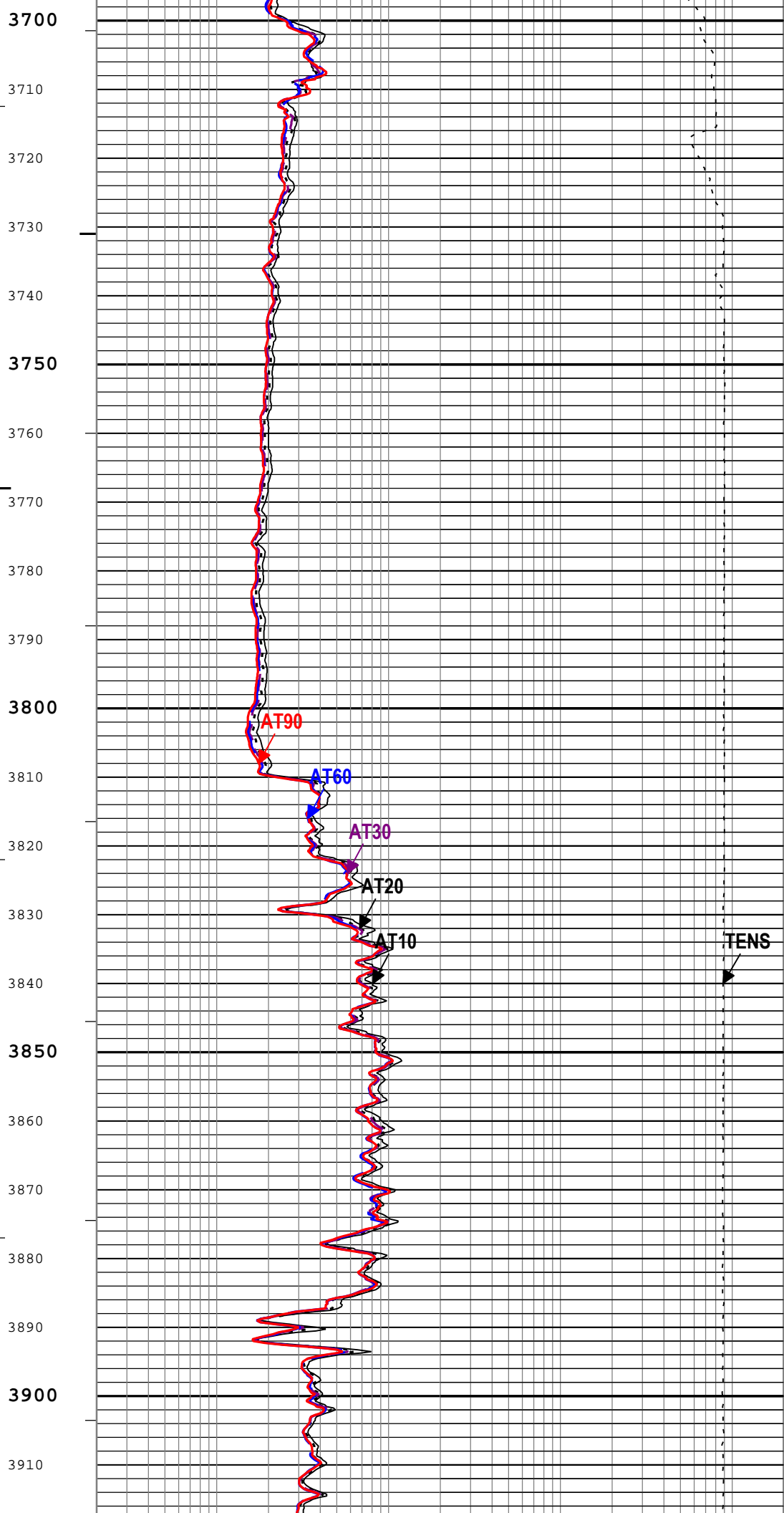
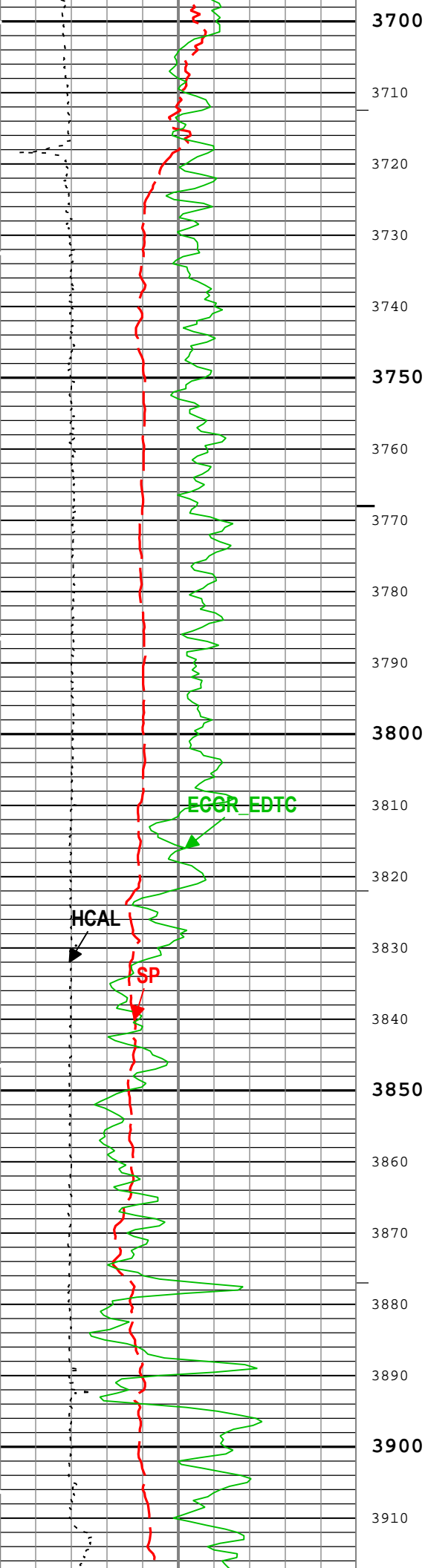


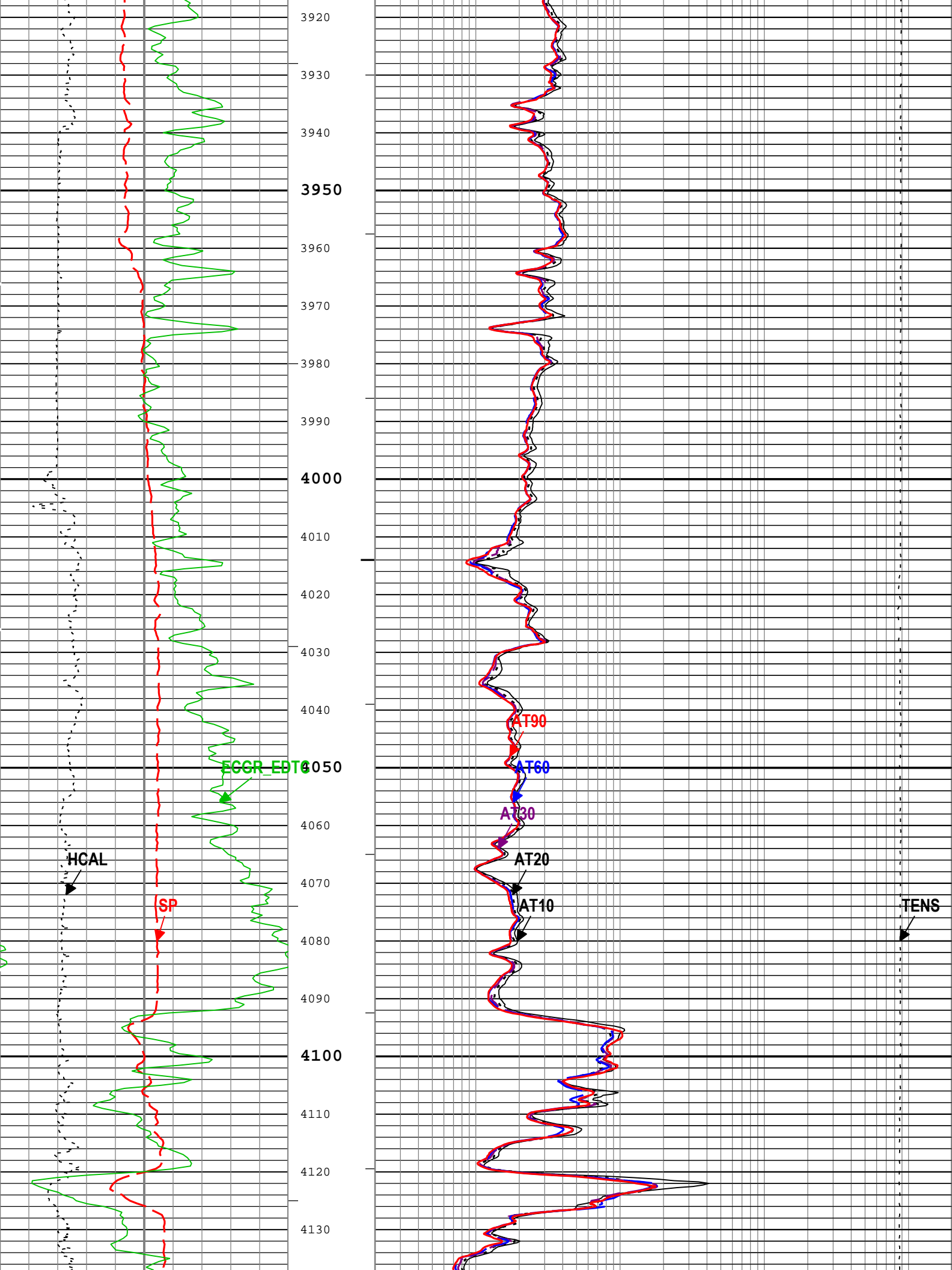


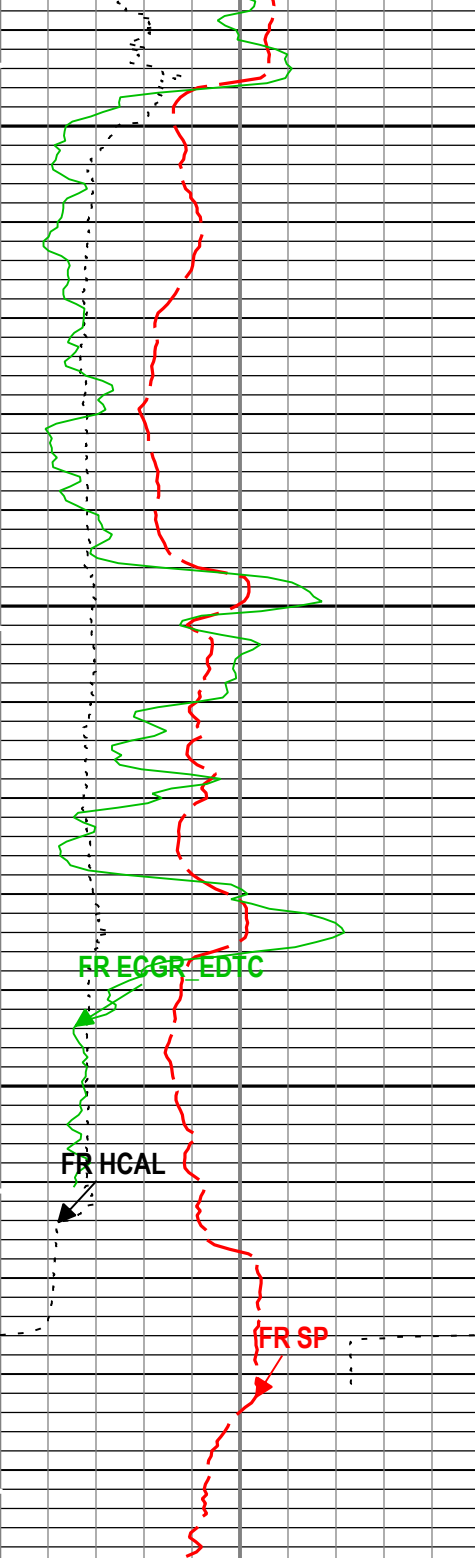




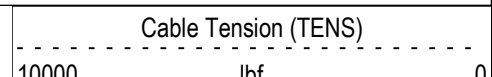
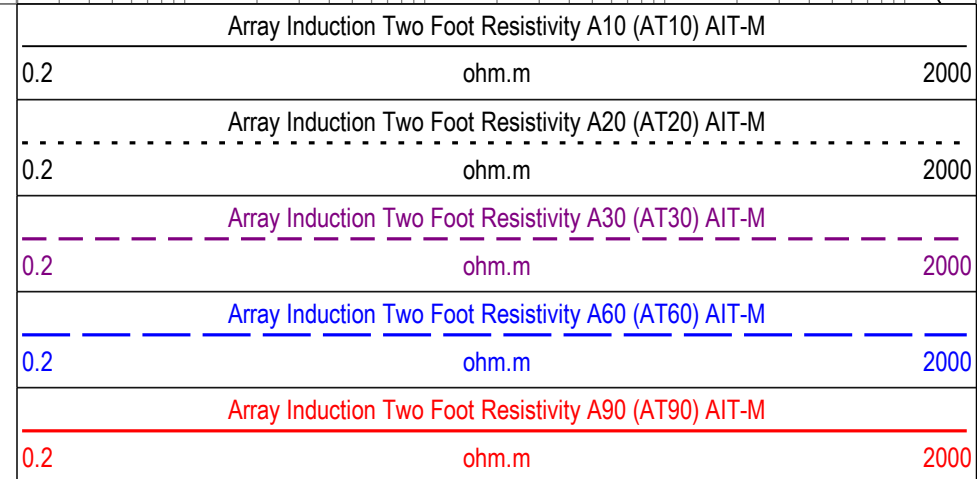
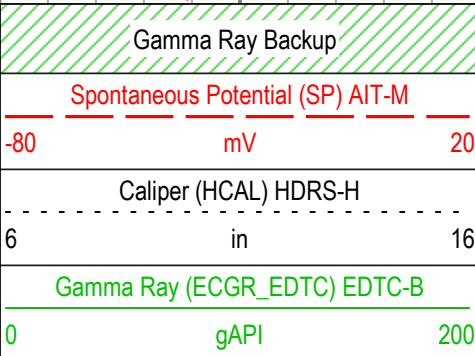
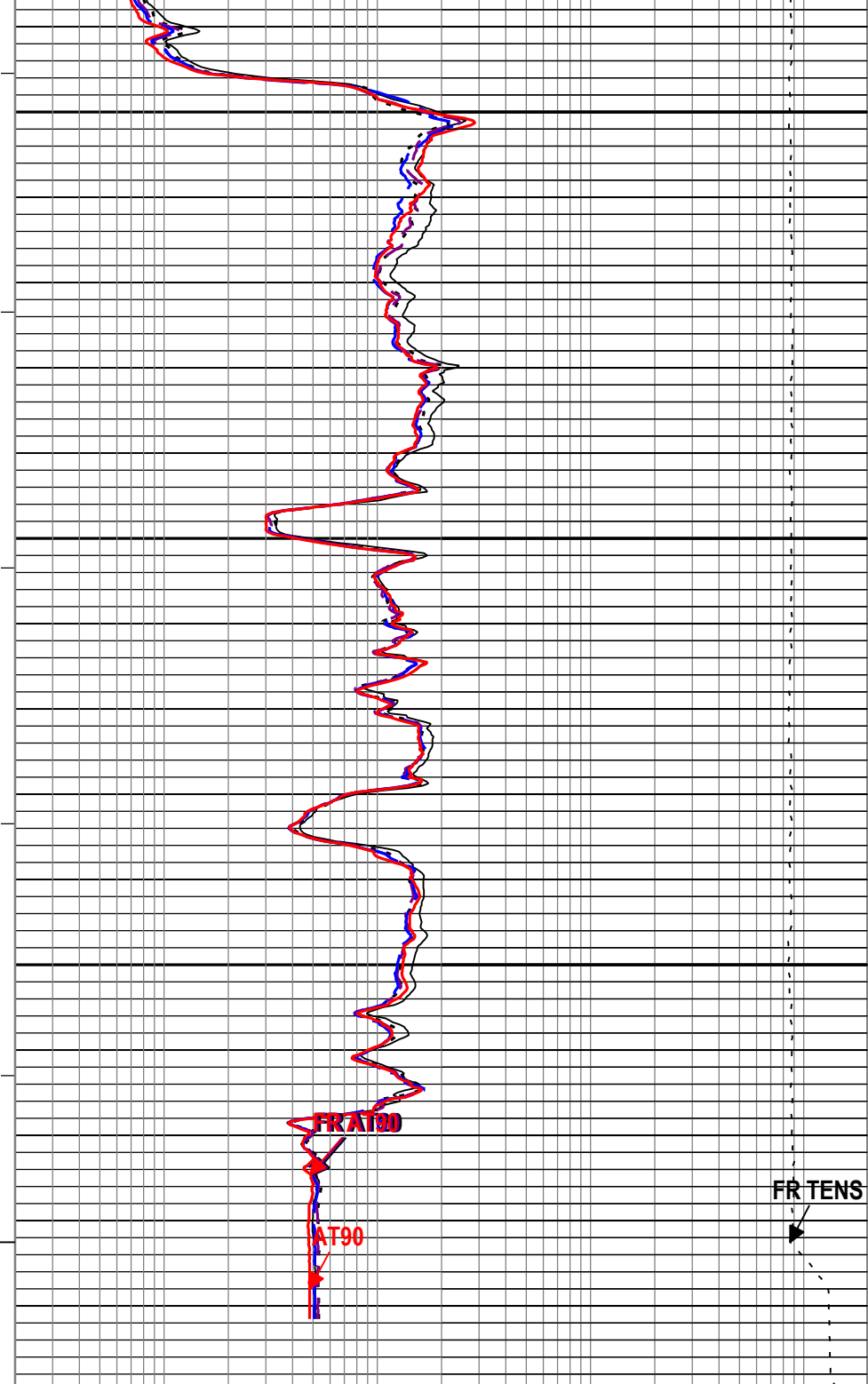








4140  
4150  
4160  
4170  
4180  
4190  
4200  
4210  
4220  
4230  
4240  
4250  
4260  
4270  
4280  
4282.50ft  
4290





TIME_1900 - Time Marked every 60.00 (s)	└─ ICV - Integrated Cement Volume every 100.00 (ft3)	10000	100
	└─ 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 ( Induction-5 )    Index Scale: 5 in per 100 ft    Index Unit: ft    Index Type: Measured Depth    Creation Date: 18-Dec-2018 16:39:57			

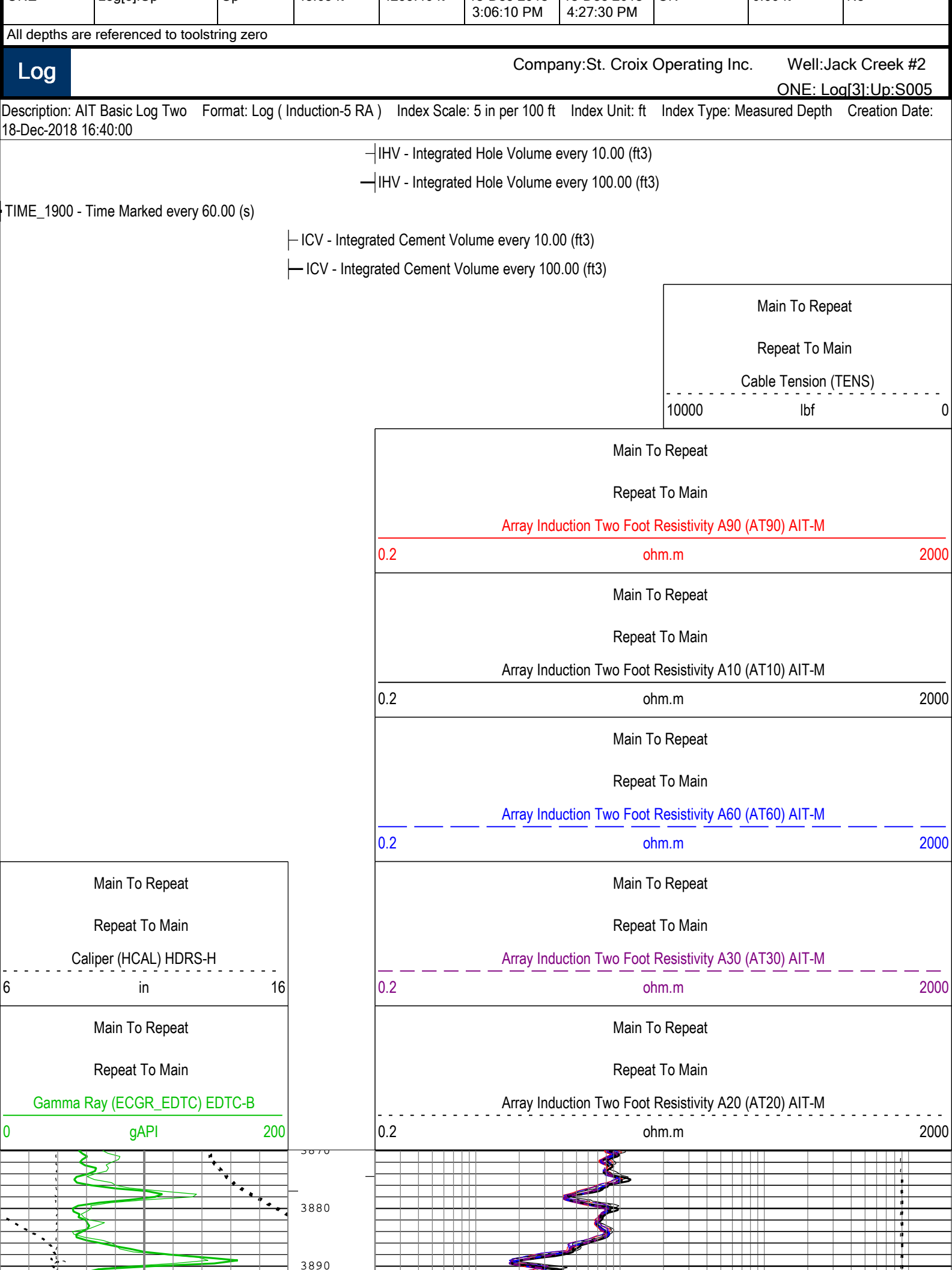
Channel Processing Parameters				
ONE: Parameters				
Parameter	Description	Tool	Value	Unit
ABHM	Array Induction Borehole Correction Mode	AIT-M	Compute Standoff	
ASTA	Array Induction Tool Standoff	AIT-M	0.125	in
BARI(ISSBAR)	Barite Mud Presence Flag	Borehole	No	
BHS	Borehole Status (Open or Cased Hole)	Borehole	Open	
BS	Bit Size	WLSESSION	Depth Zoned	in
CALI_SHIFT	CALI Supplementary Offset	HDRS-H	0.516	in
CBLO	Casing Bottom (Logger)	WLSESSION	503.5	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	9.2	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	
SP_SHIFT	SP Shift	AIT-M	400	mV
SPDR	SP Drift Per Foot	AIT-M	0	mV/ft

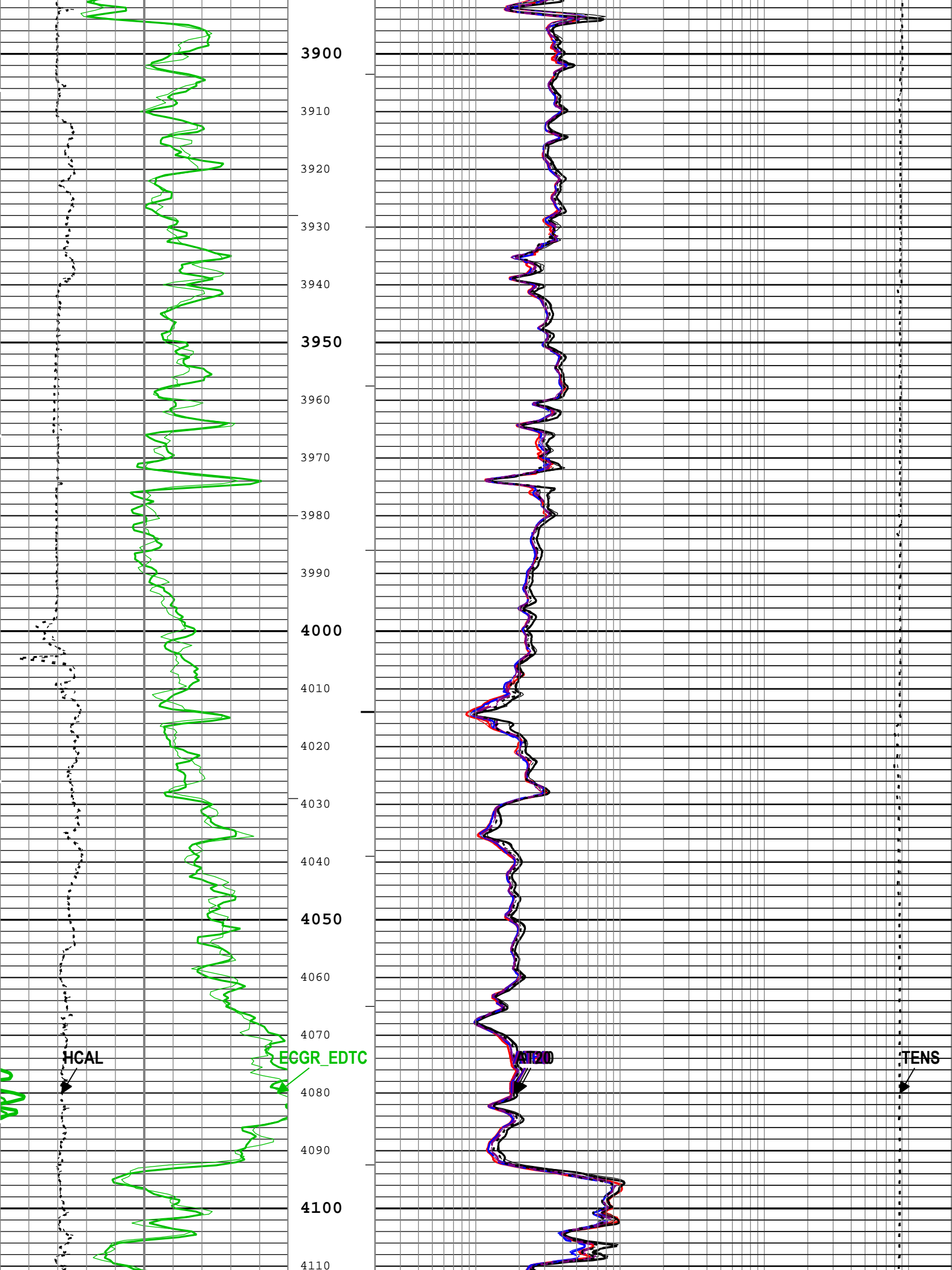
Depth Zone Parameters			
Parameter	Value	Start ( ft )	Stop ( ft )
BS	12.25	450	503
BS	7.875	503	4285
All depth are actual.			

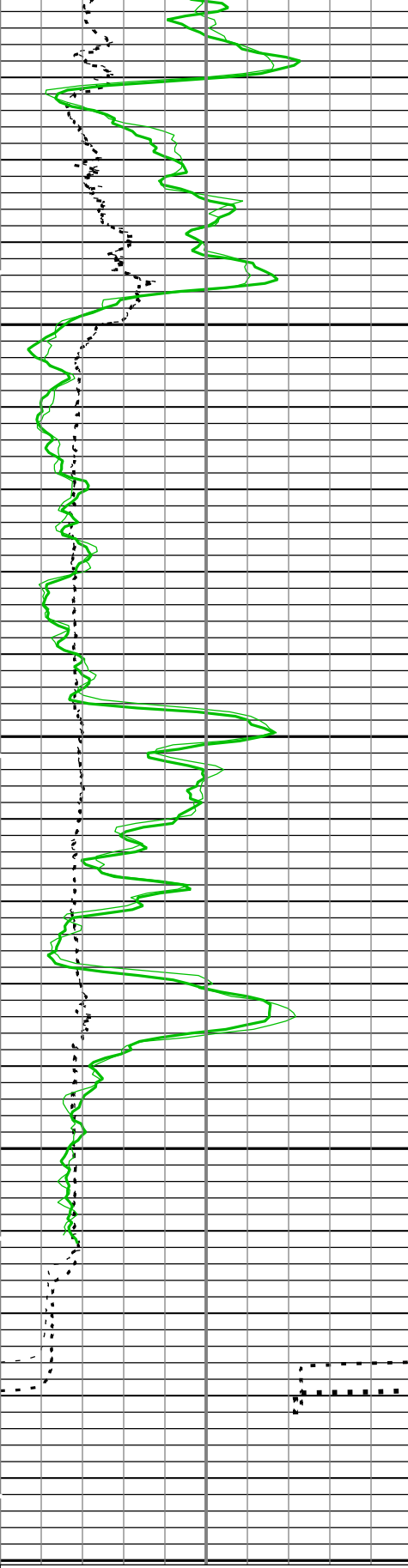
Tool Control Parameters				
ONE: Parameters				
Parameter	Description	Tool	Value	Unit
MAX_LOG_SPEED	Toolstring Maximum Logging Speed	WLSESSION	3600	ft/h
ONE				
5" Induction				

Software Version	
Acquisition System	Version
Maxwell 2018 SP2	8.2.104493.3100

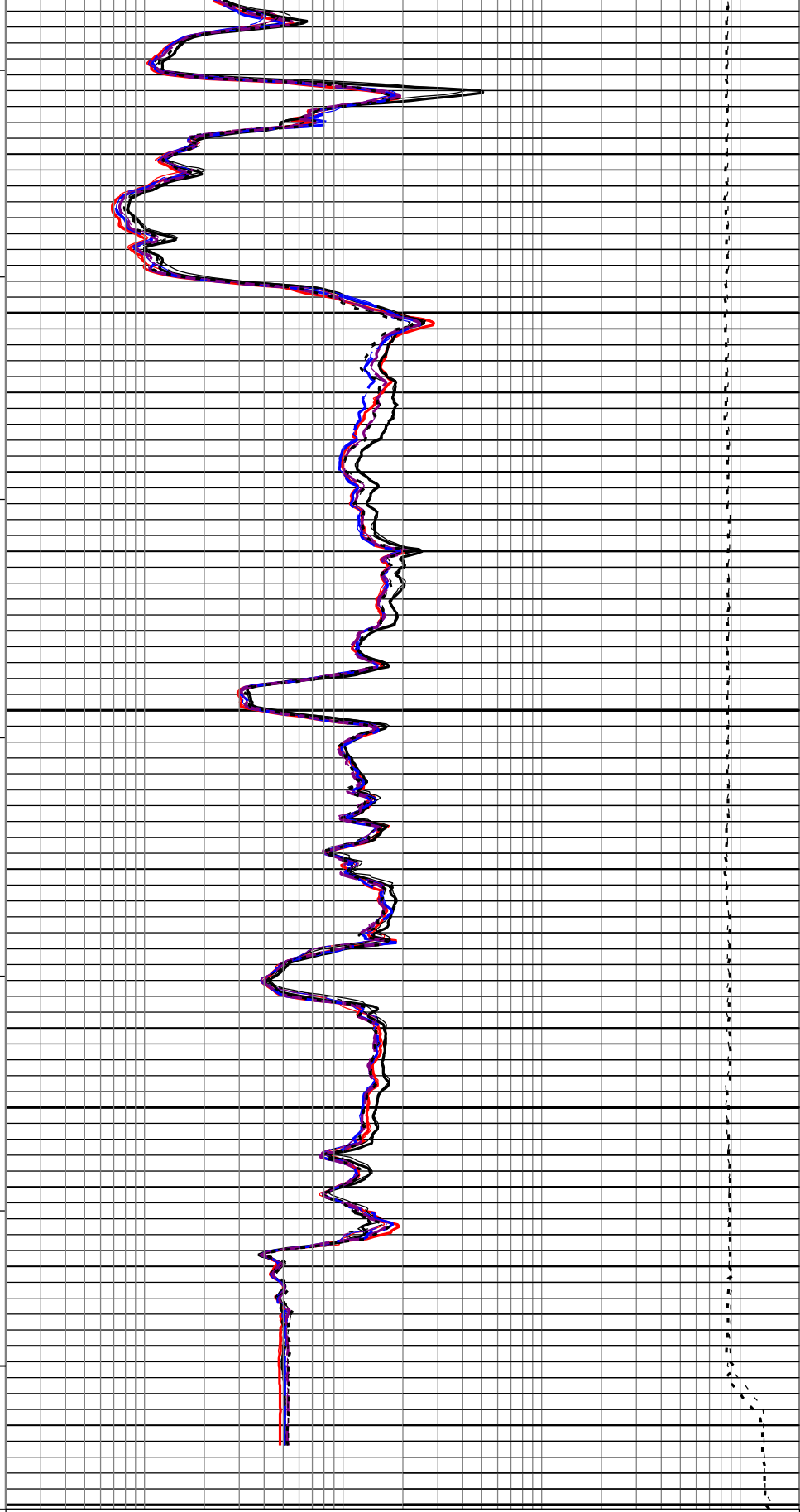
Pass Summary									
Run Name	Pass Objective	Direction	Top	Bottom	Start	Stop	DSC Mode	Depth Shift	Include Parallel Data
ONE	Log[2]:Up	Up	3874.70 ft	4300.59 ft	18-Dec-2018 2:53:22 PM	18-Dec-2018 3:03:18 PM	ON	0.00 ft	No
ONE	Log[3]:Up	Up	43.65 ft	4299.46 ft	18-Dec-2018	18-Dec-2018	ON	0.00 ft	No







4120  
4130  
4140  
4150  
4160  
4170  
4180  
4190  
4200  
4210  
4220  
4230  
4240  
4250  
4260  
4270  
4280  
TD  
4282.50ft  
4290  
4300



Main To Repeat  
Repeat To Main  
Caliper (HCAL) HDRS-H  
6 in 16  
Main To Repeat

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

<div>Repeat To Main</div> <div>Gamma Ray (ECGR_EDTC) EDTC-B</div> <div>0gAPI200</div>	<div>Repeat To Main</div> <div>Array Induction Two Foot Resistivity A10 (AT10) AIT-M</div> <div>0.2ohm.m2000</div>		
	<div>Main To Repeat</div> <div>Repeat To Main</div> <div>Array Induction Two Foot Resistivity A60 (AT60) AIT-M</div> <div>0.2ohm.m2000</div>		
	<div>Main To Repeat</div> <div>Repeat To Main</div> <div>Array Induction Two Foot Resistivity A30 (AT30) AIT-M</div> <div>0.2ohm.m2000</div>		
	<div>Main To Repeat</div> <div>Repeat To Main</div> <div>Array Induction Two Foot Resistivity A20 (AT20) AIT-M</div> <div>0.2ohm.m2000</div>		
	<div>Main To Repeat</div> <div>Repeat To Main</div> <div>Cable Tension (TENS)</div> <div>10000lbf0</div>		

ICV - Integrated Cement Volume every 100.00 (ft3)

ICV - Integrated Cement Volume every 10.00 (ft3)

TIME\_1900 - Time Marked every 60.00 (s)

IHV - Integrated Hole Volume every 100.00 (ft3)

IHV - Integrated Hole Volume every 10.00 (ft3)

Channel Processing Parameters				
ONE: Parameters				
Parameter	Description	Tool	Value	Unit
ABHM	Array Induction Borehole Correction Mode	AIT-M	Compute Standoff	
ASTA	Array Induction Tool Standoff	AIT-M	0.125	in
BARI(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	0.516	in
CBLO	Casing Bottom (Logger)	WLSESSION	503.5	ft
CDEN	Cement Density	EDTC-B	2	g/cm3
DFD	Drilling Fluid Density	Borehole	9.2	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	
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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	2562	
Auxiliary Equipment :			
AITM Rm/SP Bottom Nose	AMRM	109	

AIT Sonde Calibration - Test Loop Gain

Master (EEPROM):		21:49:28 10-Mar-2018					
Measurement	Unit	Phase	Nominal	Low Limit	Actual	High Limit	
Test Loop Gain - 0		Master	1.000	0.950	1.014	1.050	
Test Loop Phase - 0	deg	Master	0	-3.000	0.524	3.000	
Test Loop Gain - 1		Master	1.000	0.950	1.013	1.050	
Test Loop Phase - 1	deg	Master	0	-3.000	0.644	3.000	
Test Loop Gain - 2		Master	1.000	0.950	1.015	1.050	
Test Loop Phase - 2	deg	Master	0	-3.000	0.108	3.000	
Test Loop Gain - 3		Master	1.000	0.950	1.009	1.050	
Test Loop Phase - 3	deg	Master	0	-3.000	0.144	3.000	
Test Loop Gain - 4		Master	1.000	0.950	0.993	1.050	
Test Loop Phase - 4	deg	Master	0	-3.000	0.110	3.000	
Test Loop Gain - 5		Master	1.000	0.950	0.989	1.050	
Test Loop Phase - 5	deg	Master	0	-3.000	-0.056	3.000	
Test Loop Gain - 6		Master	1.000	0.950	1.000	1.050	
Test Loop Phase - 6	deg	Master	0	-3.000	0.278	3.000	
Test Loop Gain - 7		Master	1.000	0.950	1.014	1.050	
Test Loop Phase - 7	deg	Master	0	-3.000	-0.041	3.000	

AIT Sonde Calibration - Sonde Error Correction

Master (EEPROM):		21:49:28 10-Mar-2018					
Measurement	Unit	Phase	Nominal	Low Limit	Actual	High Limit	
Sonde Error Correction Real - 0	mS/m	Master	-----	-231.000	-90.511	119.000	
Sonde Error Correction Quad - 0		Master	-----	-2250.000	-12.770	2250.000	
Sonde Error Correction Real - 1	mS/m	Master	-----	114.000	165.326	204.000	
Sonde Error Correction Quad - 1		Master	-----	-625.000	-75.327	625.000	
Sonde Error Correction Real - 2	mS/m	Master	-----	66.000	104.659	156.000	
Sonde Error Correction Quad - 2		Master	-----	-350.000	63.282	350.000	
Sonde Error Correction Real - 3	mS/m	Master	-----	39.000	55.423	89.000	
Sonde Error Correction Quad - 3		Master	-----	-250.000	51.642	250.000	
Sonde Error Correction Real - 4	mS/m	Master	-----	15.000	26.570	35.000	
Sonde Error Correction Quad - 4		Master	-----	-63.000	-29.986	63.000	
Sonde Error Correction Real - 5	mS/m	Master	-----	4.000	11.103	24.000	
Sonde Error Correction Quad - 5		Master	-----	-50.000	-16.905	50.000	
Sonde Error Correction Real - 6	mS/m	Master	-----	5.000	6.462	15.000	
Sonde Error Correction Quad - 6		Master	-----	-30.000	-8.061	30.000	
Sonde Error Correction Real - 7	mS/m	Master	-----	-5.000	-4.924	5.000	
Sonde Error Correction Quad - 7		Master	-----	-30.000	-0.292	30.000	

AIT Mud Calibration - Mud Calibration Gain

Master (EEPROM):		21:49:28 10-Mar-2018					
Measurement	Unit	Phase	Nominal	Low Limit	Actual	High Limit	
Coarse Gain		Master	1.000	0.800	1.024	1.200	
Fine Gain		Master	1.000	0.800	1.030	1.200	

AIT Electronics Check - Thru Calibration Check

Master (EEPROM):		21:49:28 10-Mar-2018					
Measurement	Unit	Phase	Nominal	Low Limit	Actual	High Limit	
Thru Cal Mag - 0	V	Master	-----	0.366	0.641	0.854	
Thru Cal Phase - 0	deg	Master	-----	137.000	-175.189	-103.000	
Thru Cal Mag - 1	V	Master	-----	0.762	1.314	1.778	
Thru Cal Phase - 1	deg	Master	-----	136.000	-176.305	-104.000	
Thru Cal Mag - 2	V	Master	-----	0.372	0.651	0.868	
Thru Cal Phase - 2	deg	Master	-----	132.000	-179.892	-108.000	
Thru Cal Mag - 3	V	Master	-----	0.420	0.736	0.980	
Thru Cal Phase - 3	deg	Master	-----	131.000	179.337	-109.000	
Thru Cal Mag - 4	V	Master	-----	0.804	1.375	1.876	
Thru Cal Phase - 4	deg	Master	-----	125.000	173.125	-115.000	
Thru Cal Mag - 5	V	Master	-----	1.176	2.005	2.744	
Thru Cal Phase - 5	deg	Master	-----	122.000	171.443	-118.000	
Thru Cal Mag - 6	V	Master	-----	1.176	2.005	2.744	
Thru Cal Phase - 6	deg	Master	-----	121.000	171.455	-119.000	
Thru Cal Mag - 7	V	Master	-----	0.846	1.442	1.974	
Thru Cal Phase - 7	deg	Master	-----	115.000	170.747	-125.000	
SPA Zero	mV	Master		-50.000	0.350	50.000	
SPA Plus	mV	Master		941.000	990.193	1040.000	
Temperature Zero	V	Master		-0.050	0.000	0.050	
Temperature Plus	V	Master		0.870	0.918	0.960	

HDRS-H (HILT Density and Rxo Sonde, 150 degC) Calibration - Run ONE			
Primary Equipment :			
HILT High-Resolution Control Cartridge, 150 degC		HRCC-H	3737
HILT Resistivity Gamma-Ray Density Device, 150 degC		HRGD-H	4882
Auxiliary Equipment :			
HRDD Backscatter Detector		Backscatter	
HRDD Long Spacing Detector		Long Spacing	
HRDD Short Spacing Detector		Short Spacing	
Cesium 137 Gamma-Ray Logging Source		GSR-J	5259
HILT High-Resolution Control Cartridge, 150 degC		HRCC-H	3737
HILT High-Resolution Mechanical Sonde, 150 degC		HRMS-H	3951
Calibration Parameter :			
Small Ring Size (Caliper Calibration Small Ring)		8.00	
Large Ring Size (Caliper Calibration Large Ring)		12.00	

HDRS Density Calibration - Inversion Results			
Master (EEPROM):		15:52:40 09-Dec-2018	
Measurement	Unit	Phase	
Rho Aluminum	g/cm3	Master	2.596
Rho Magnesium	g/cm3	Master	1.686
Pe Aluminum		Master	2.570
Pe Magnesium		Master	2.650

HDRS Density Calibration - Deviation Summary			
Master (EEPROM):		15:52:40 09-Dec-2018	
Measurement	Unit	Phase	
BS Average Deviation	%	Master	0
BS Max Deviation	%	Master	0
SS Average Deviation	%	Master	0
SS Max Deviation	%	Master	0
LS Average Deviation	%	Master	0
LS Max Deviation	%	Master	0

HDRS Density Calibration - Background Summary			
Master (EEPROM):		15:52:40 09-Dec-2018	

Measurement	Unit	Phase	Nominal	Low Limit	Actual	High Limit		
BS Window Ratio		Master	1.0000		0.7416			
BS Window Sum	1/s	Master	1		27426			
SS Window Ratio		Master	1.0000		0.4741			
SS Window Sum	1/s	Master	1		10068			
LS Window Ratio		Master	1.0000		0.2938			
LS Window Sum	1/s	Master	1		1135			

## HDRS Density Calibration - Photo-multiplier High Voltages

Master (EEPROM):		15:52:40 09-Dec-2018						
Measurement	Unit	Phase	Nominal	Low Limit	Actual	High Limit		
BS PM High Voltage	V	Master		1000	1493	2400		
SS PM High Voltage	V	Master		1000	1484	2400		
LS PM High Voltage	V	Master		1000	1739	2400		

## HDRS Density Calibration - Crystal Quality Resolutions

Master (EEPROM):		15:52:40 09-Dec-2018						
Measurement	Unit	Phase	Nominal	Low Limit	Actual	High Limit		
BS Crystal Resolution	%	Master		5.00	10.59	25.00		
SS Crystal Resolution	%	Master		5.00	8.79	20.00		
LS Crystal Resolution	%	Master		5.00	9.28	20.00		

## 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	3730
Auxiliary Equipment :			
	HGNS Accelerometer, 150 degC	HACCZ-H	1537
	AmBe Neutron Logging Source	NSR-F	5068
Calibration Parameter :			
	Water Temperature (Calibration Tank Water Temperature)	65.0	
	Housing Size (Thermal Housing Size)	3.37	
	JIG-BKG		

## HGNS Accelerometer EEPROM - Accelerometer EEPROM Read

Master (EEPROM):		00:00:00 15-Mar-2002						
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	----	----	-530.200	----		
Accelerometer Coefficients - 1		Master	----	----	-13.060	----		
Accelerometer Coefficients - 2		Master	----	----	-0.001	----		
Accelerometer Coefficients - 3		Master	----	----	0.000	----		
Accelerometer Coefficients - 4		Master	----	----	2.722	----		
Accelerometer Coefficients - 5		Master	----	----	0.000	----		
Accelerometer Coefficients - 6		Master	----	----	0.000	----		
Accelerometer Coefficients - 7		Master	----	----	0.000	----		
Accelerometer Coefficients - 8		Master	----	----	298.900	----		
Accelerometer Coefficients - 9		Master	----	----	1.007	----		

## HGNS Neutron Calibration - HGNS Neutron Accumulations

Master (EEPROM):		21:32:32 07-Nov-2018						
Measurement	Unit	Phase	Nominal	Low Limit	Actual	High Limit		
Near Zero Measurement	1/s	Master	0	5.0	28.5	40.0		
Far Zero Measurement	1/s	Master	0	5.0	27.4	40.0		
Near Plus Measurement	1/s	Master	6031.0	4700.0	5307.0	6900.0		
Far Plus Measurement	1/s	Master	2793.0	1900.0	2180.0	2900.0		
Near Corrected Plus Measurement	1/s	Master		4700.0	5299.0	6900.0		
Far Corrected Plus Measurement	1/s	Master		1900.0	2163.0	2900.0		



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

Primary Equipment :		
EDTC-B	EDTC-B	9038
Calibration Parameter :		
Plus Reference		

EDTC-B Memory Data - EDTC-B Memory Data

Master (EEPROM):		14:30:48 18-Dec-2018					
Measurement	Unit	Phase	Nominal	Low Limit	Actual	High Limit	
Initial PMT HV	V	Master			1574.000		
Accelerometer Serial Number		Master			1206		
Accelerometer Coefficients - 0		Master	----	----	2.970E+000	----	
Accelerometer Coefficients - 1		Master	----	----	1.998E-004	----	
Accelerometer Coefficients - 2		Master	----	----	6.002E-007	----	
Accelerometer Coefficients - 3		Master	----	----	-3.225E-008	----	
Accelerometer Coefficients - 4		Master	----	----	8.128E-010	----	
Accelerometer Coefficients - 5		Master	----	----	-6.221E-012	----	
Accelerometer Coefficients - 6		Master	----	----	1.615E-014	----	
Accelerometer Coefficients - 7		Master	----	----	-4.416E-003	----	
Accelerometer Coefficients - 8		Master	----	----	4.347E-005	----	
Accelerometer Coefficients - 9		Master	----	----	-4.540E-008	----	
Accelerometer Coefficients - 10		Master	----	----	5.842E-013	----	
Accelerometer Coefficients - 11		Master	----	----	-1.668E-012	----	
Gamma-Ray Detector Serial Number		Master			79215		

Company:

St. Croix Operating Inc.

Well:

Jack Creek #2

Field:

Wildcat

County:

Washington

State:

Colorado

Schlumberger

Platform Expres

Array Induction

with Linear Correlation