

Company: St. Croix Operating, Inc.

Well: State 3-16

Field: Wildcat

County: Washington State: Colorado

Platform Express

Triple Combo

County:	Washington				
Field:	Wildcat				
Location:	NENW Sec. 16, T3S, R52W				
Well:	State 3-16				
Company:	St. Croix Operating, Inc.				
		Location:			
		NENW Sec. 16, T3S, R52W	Elev.:	K.B.	4827.00 ft
		SHL: 1100' FNL & 1700' FWL		G.L.	4821.00 ft
		Lat/Long: 39.796480 / -103.212730		D.F.	4827.00 ft
		Permanent Datum:	Ground Level	Elev.:	4821.00 f
		Log Measured From:	Kelly Bushing	6.00 ft	above Perm.Datum
		Drilling Measured From:	Kelly Bushing		
		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	Pressed
RM @ BHT	0.11 @ 125.11 0.09 @ 125.11	
Max Recorded Temperatures		
Circulation Stopped	Time 09-Jun-2018 14:30:00	
Logger on Bottom	Time 10-Jun-2018 01:56:00	
Unit Number	Location: 9102	Fort Morgan
Recorded By	Ashley Rosacker	
Witnessed By	Gary Duke	

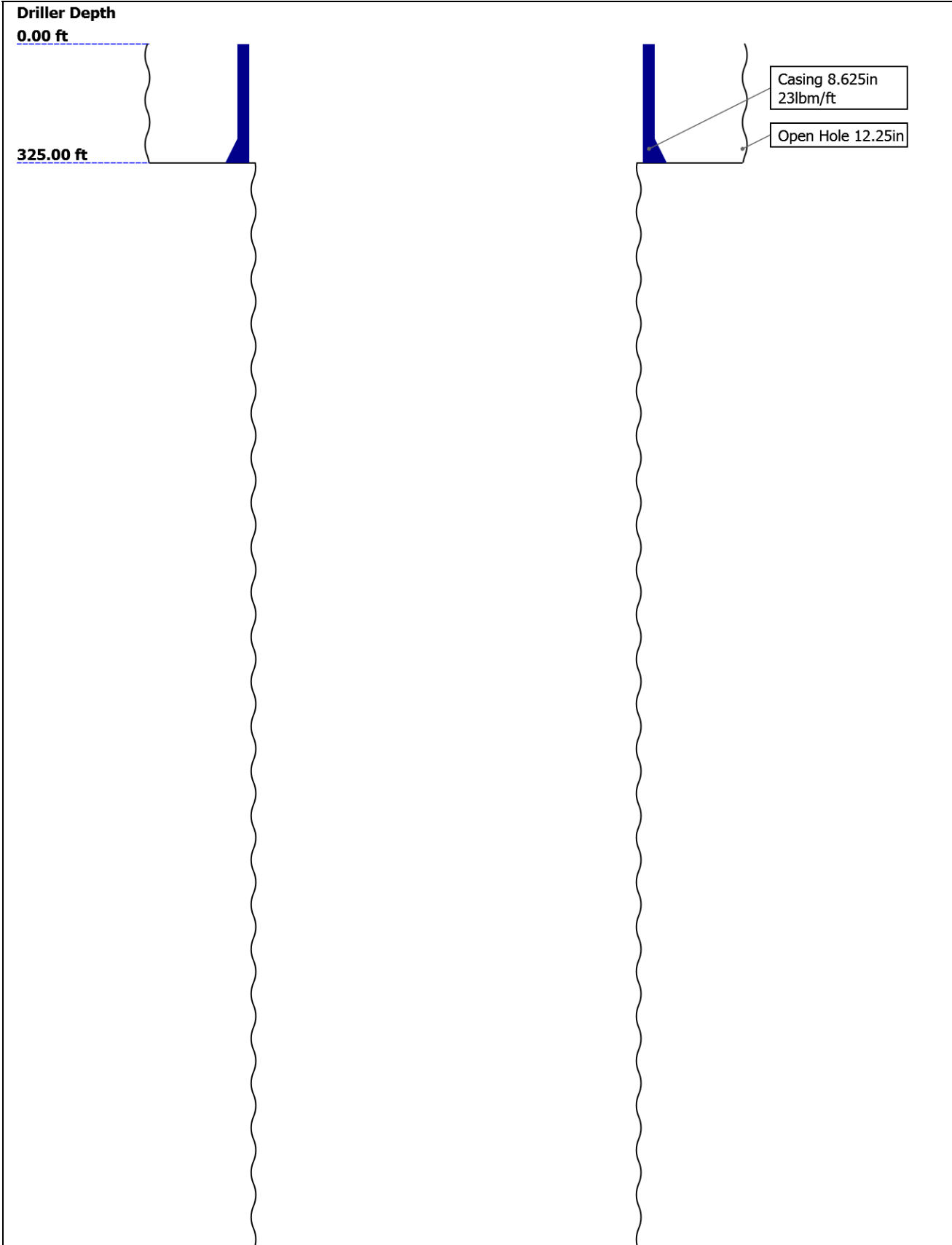
Disclaimer

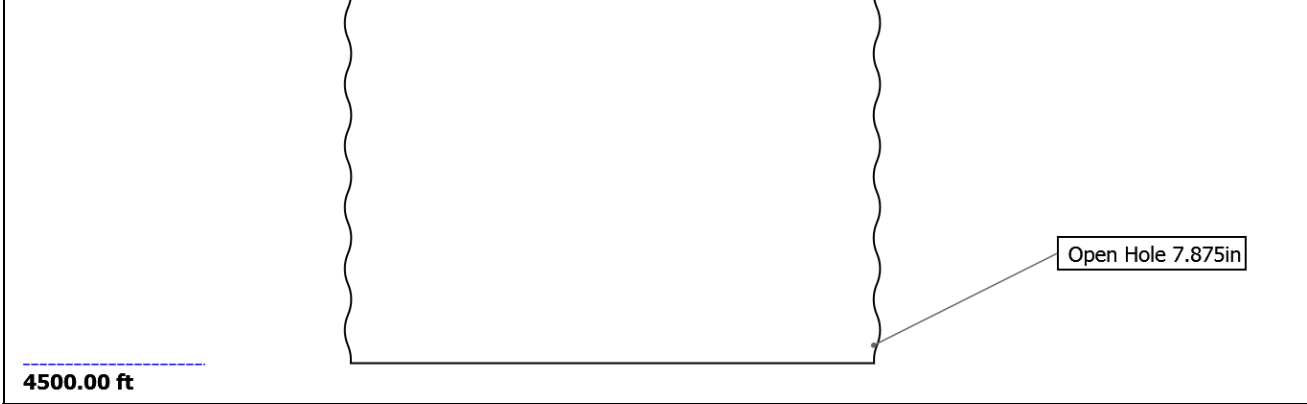
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Contents

- 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 5" Triple Combo
  - 8.1 Integration Summary
  - 8.2 Composite Summary
  - 8.3 Log ( TripleCombo-5 )
  - 8.4 Parameter Listing
- 9. ONE 5" Triple Combo
  - 9.1 Composite Summary
  - 9.2 Log ( TripleCombo-5 RA )
- 10. Calibration Report
- 11. Tail

Well Sketch






4500.00 ft

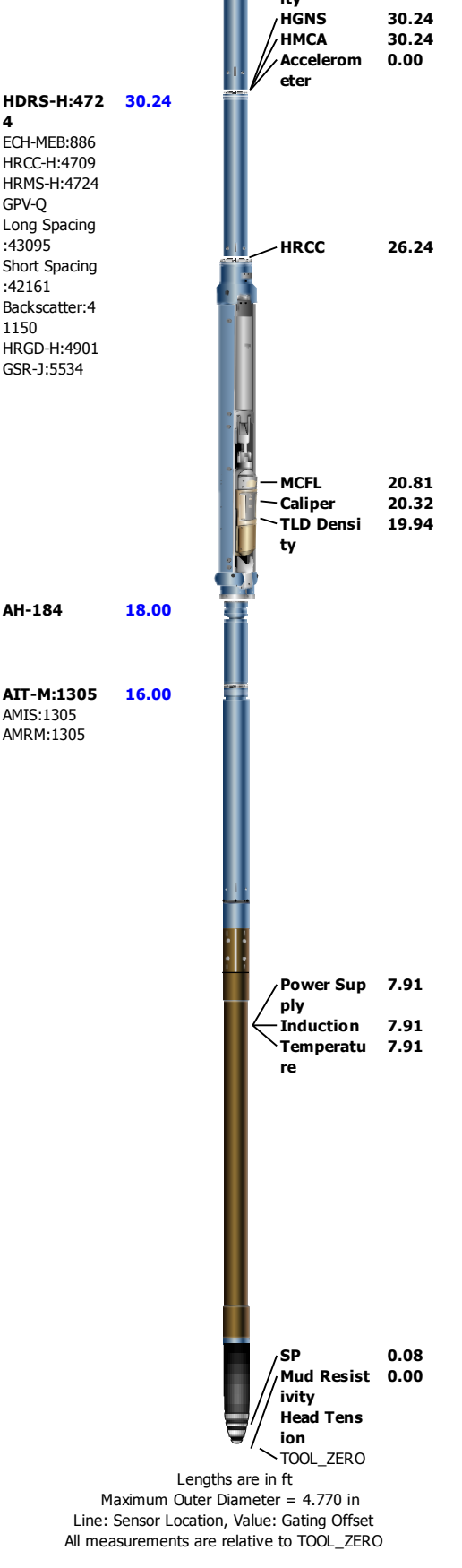
Open Hole 7.875in

Borehole Size/Casing/Tubing Record

Bit						
Bit Size ( in )	12.25	7.875				
Top Driller ( ft )	0	325				
Top Logger ( ft )	0	325				
Bottom Driller ( ft )	325	4500				
Bottom Logger ( ft )	325	4504				
Casing						
Size ( in )	8.625					
Weight ( lbm/ft )	23					
Inner Diameter ( in )	8.122					
Grade	N/A					
Top Driller ( ft )	0					
Top Logger ( ft )	0					
Bottom Driller ( ft )	325					
Bottom Logger ( ft )	326.5					

Remarks and Equipment Summary

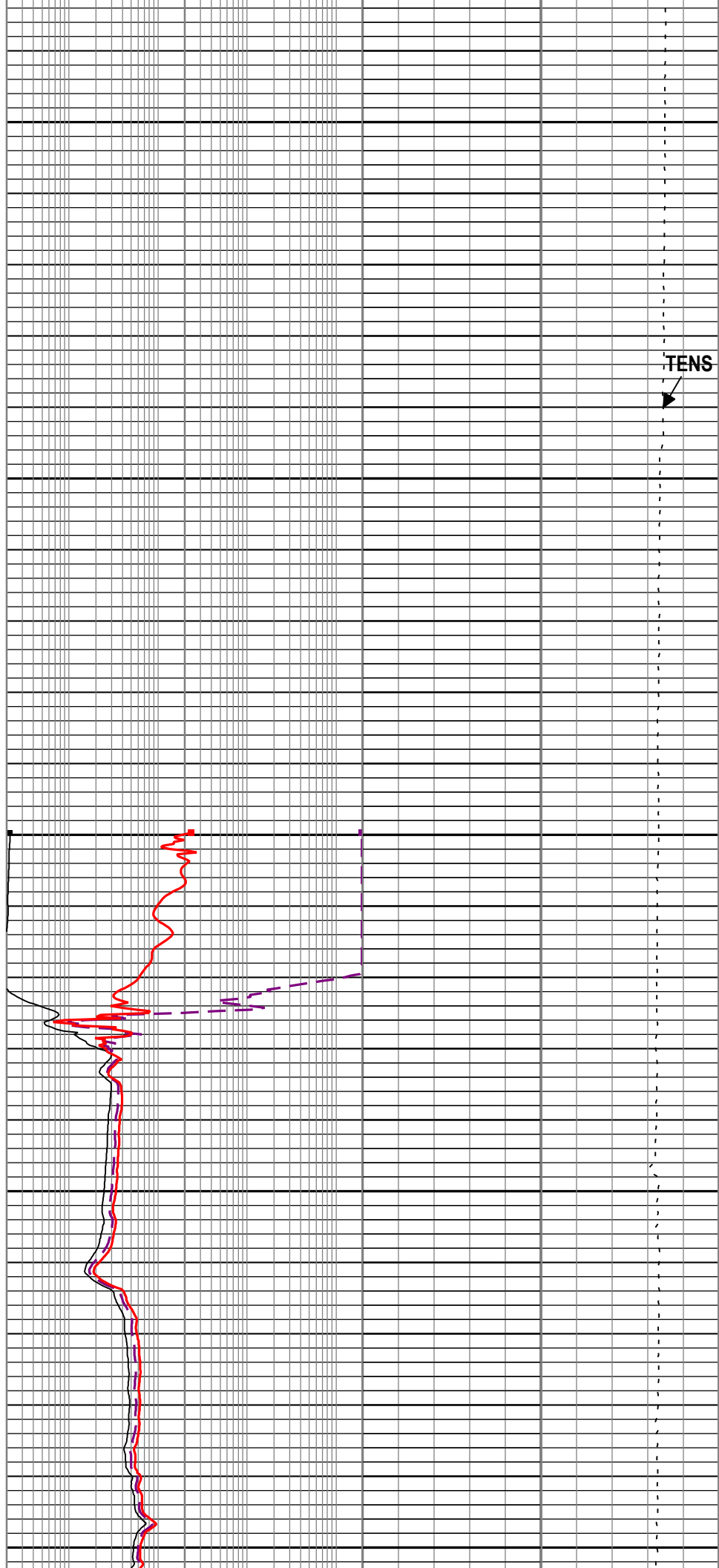
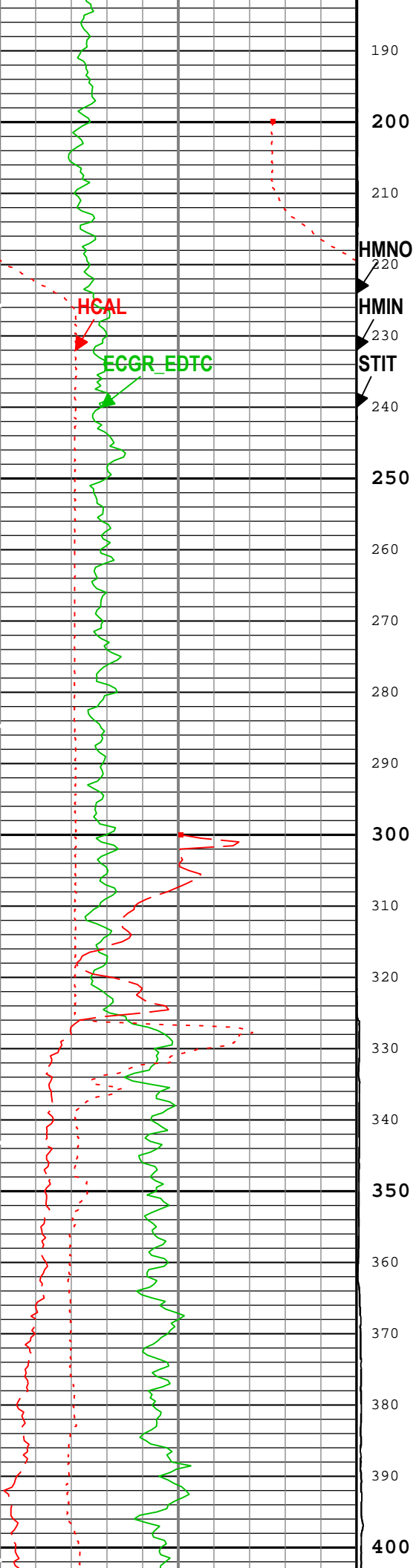
ONE: Toolstring				ONE: Remarks	
<b>Equip name</b> <b>LEH-QT</b> LEH-QT	<b>Length</b> <b>49.64</b>	<b>MP name</b>	<b>Offset</b>	Thank you for choosing Schlumberger!	
				This is the first log in the well.	
				Toolstring run as per tool sketch and client logging program.	
				Requested to run the tool slick with no bowspring or standoffs.	
				Matrix: Sandstone, Density:2.65	
				BHT: 125 degF	
<b>EDTC-B:847</b> <b>3M</b> EDTH-B:8624 EDTG-A:7743 4 EDTC-B:8473 M	<b>46.15</b>	<b>CTEM</b> <b>ACCZ</b> <b>HV</b> <b>Gamma Ra</b> <b>y</b> <b>TelStatus</b> <b>Temperatu</b> <b>re</b> <b>GR</b>	<b>42.65</b> <b>0.00</b> <b>0.00</b> <b>40.78</b>  <b>39.65</b> <b>39.62</b>  <b>38.91</b>	TD: 4504, Casing Shoe: 326.5	
<b>HGNS-H:391</b> <b>2</b> HGNH:3875 NPV-N NSR-F:5070 HMCA-H HACCZ-H:426 4 HGNS-H:3912	<b>39.65</b>	<b>CNL Poros</b> <b>ity</b>	<b>32.58</b>		

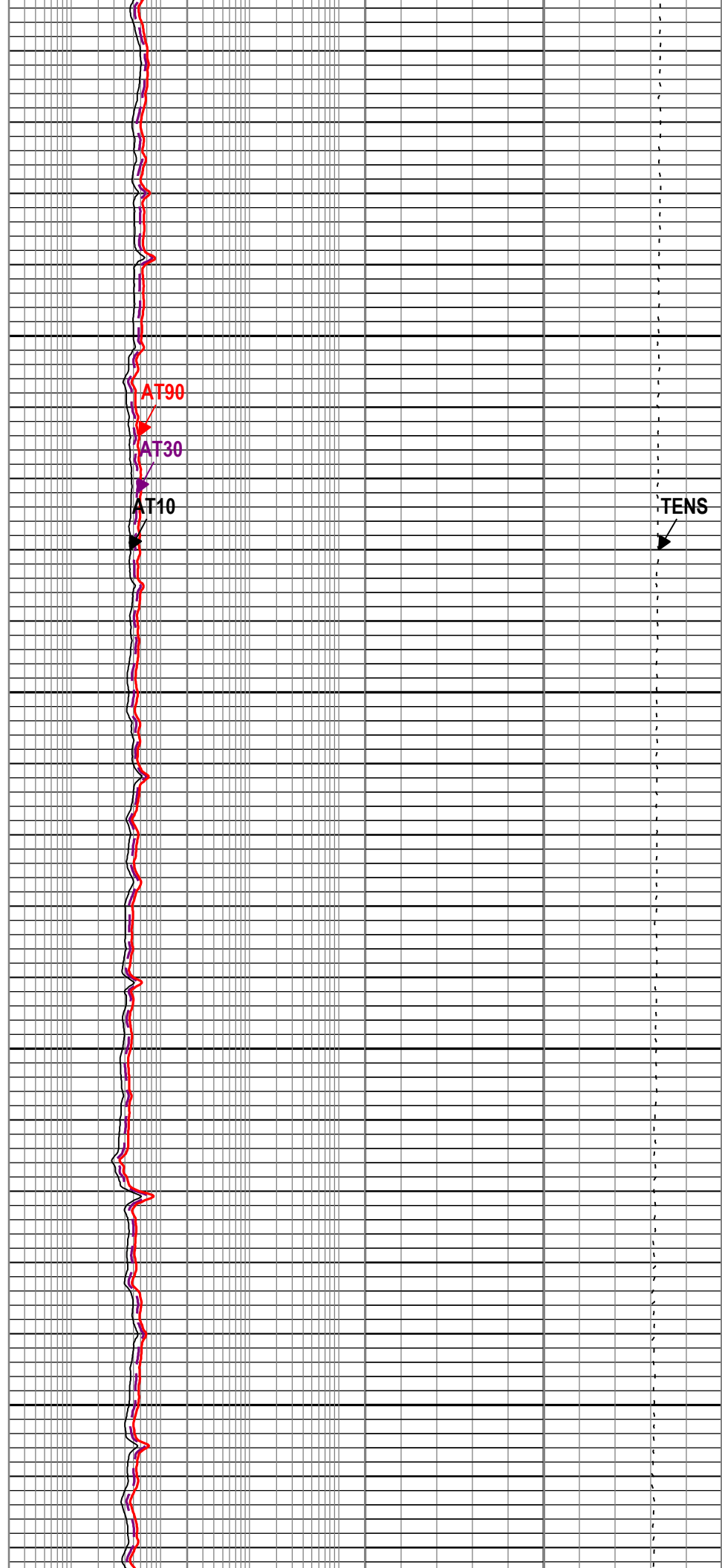
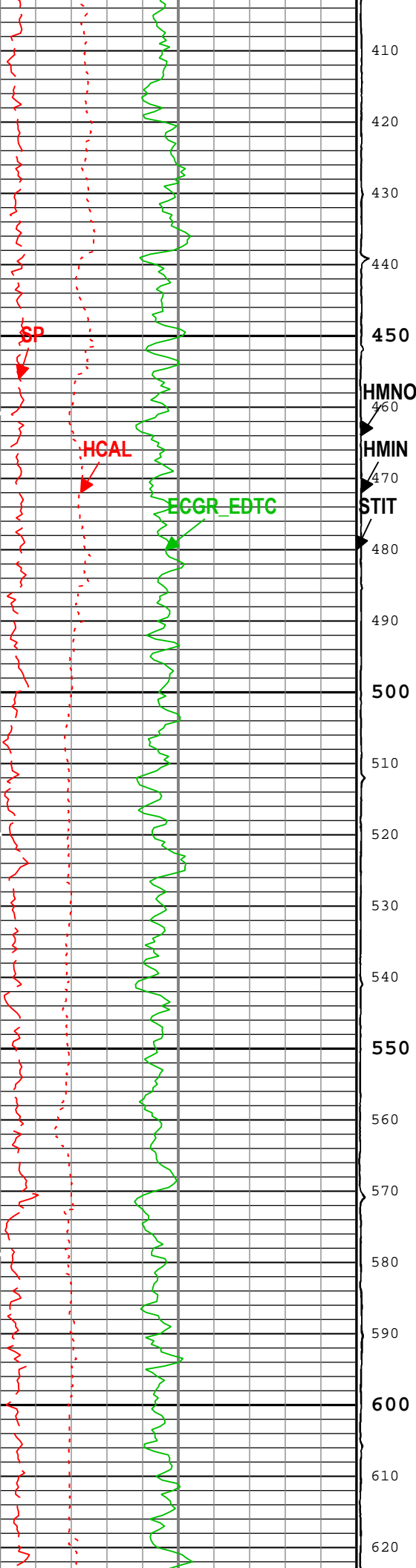


Depth Summary			
		ONE	
Depth Measuring Device			
Type	IDW-B		
Serial Number			
Calibration Date			
Calibrator Serial Number			
Calibration Quality			

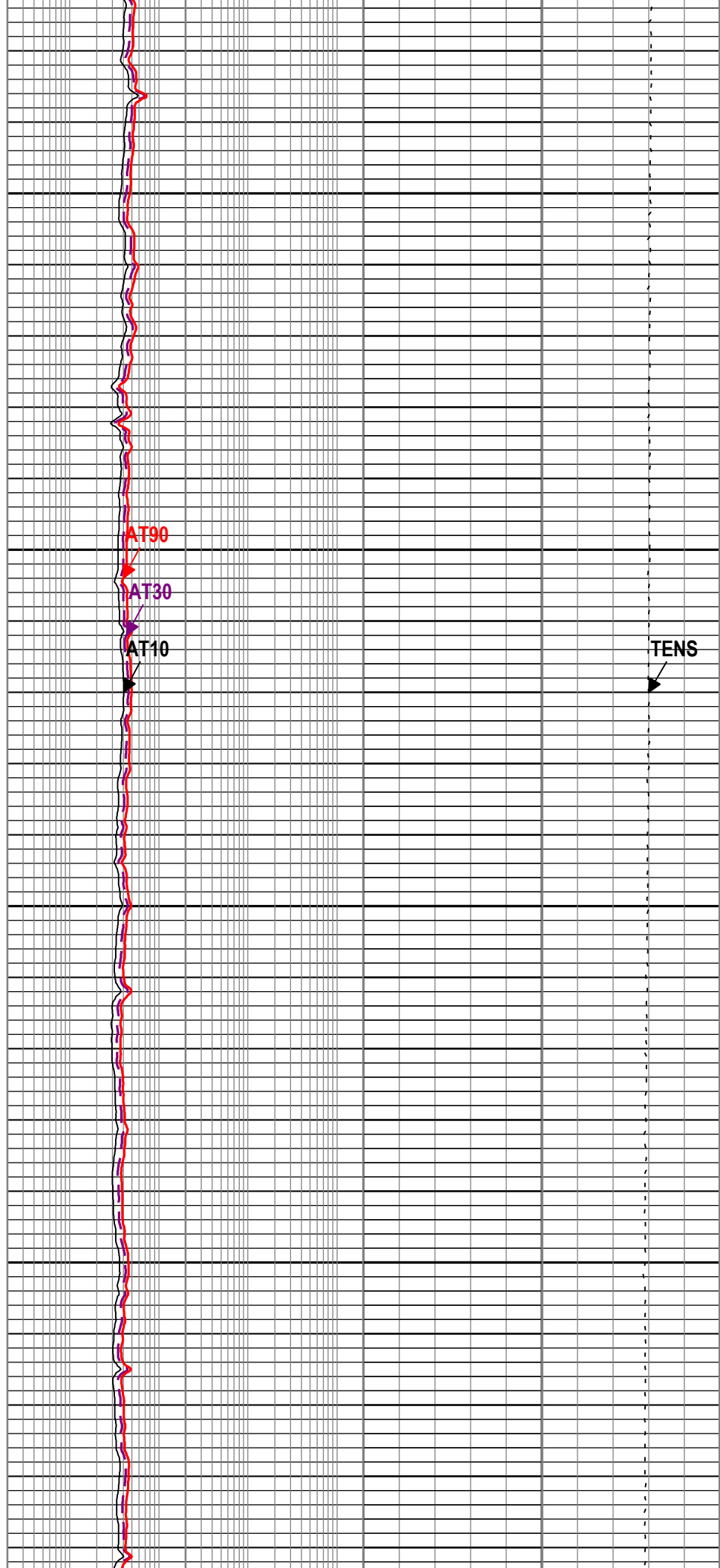
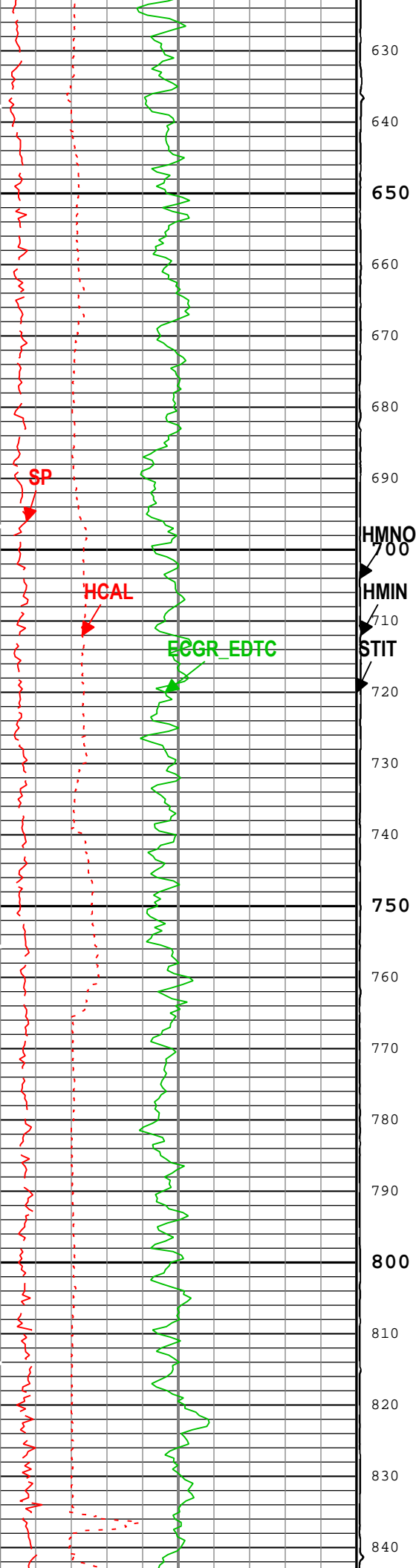
Calibration Cable Type									
Wheel Correction 1		0							
Wheel Correction 2		0							
Tension Device									
Type		CMTD-B/A							
Serial Number									
Calibration Date									
Calibrator Serial Number									
Number of Calibration Points		0							
Logging Cable									
Type		7-46A-XS							
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									
5" Triple Combo									
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: HGNS standard resolution porosities for Platform Express    Format: Log ( TripleCombo-5 )    Index Scale: 5 in per 100 ft    Index Unit: ft    Index Type: Measured Depth    Creation Date: 10-Jun-2018 04:04:31									
Channel	Source	Sampling							
AT10	AIT-M:AMIS:AMIS	3in							
AT30	AIT-M:AMIS:AMIS	3in							
AT90	AIT-M:AMIS:AMIS	3in							
CALI	HDRS-H:HRCC-H:HRCC-H	1in							
DPHZ	HDRS-H:HRMS-H:HRGD-H	2in							
GR	EDTC-B:EDTC-B:EDTC-B	6in							
NPOR	HGNS-H:HGNS-H:HGNS-H	6in							
PEFZ	HDRS-H:HRMS-H:HRGD-H	2in							
SMIN	HDRS-H:HRMS-H:HRGD-H	2in							
SMNO	HDRS-H:HRMS-H:HRGD-H	2in							
SP	AIT-M:AMIS:AMIS	6in							
STIT	DepthCorrection	6in							
TFNS	WL Work-flow	6in							

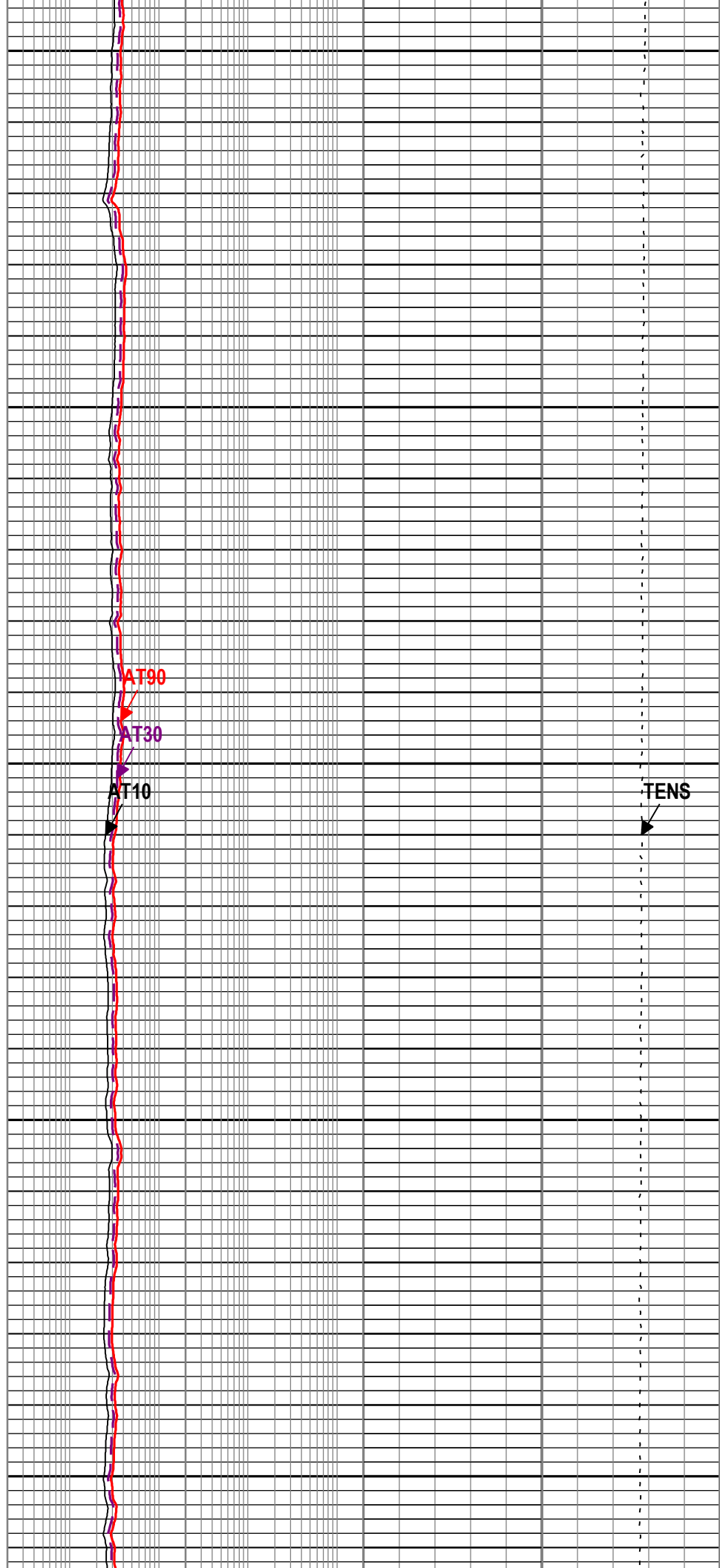
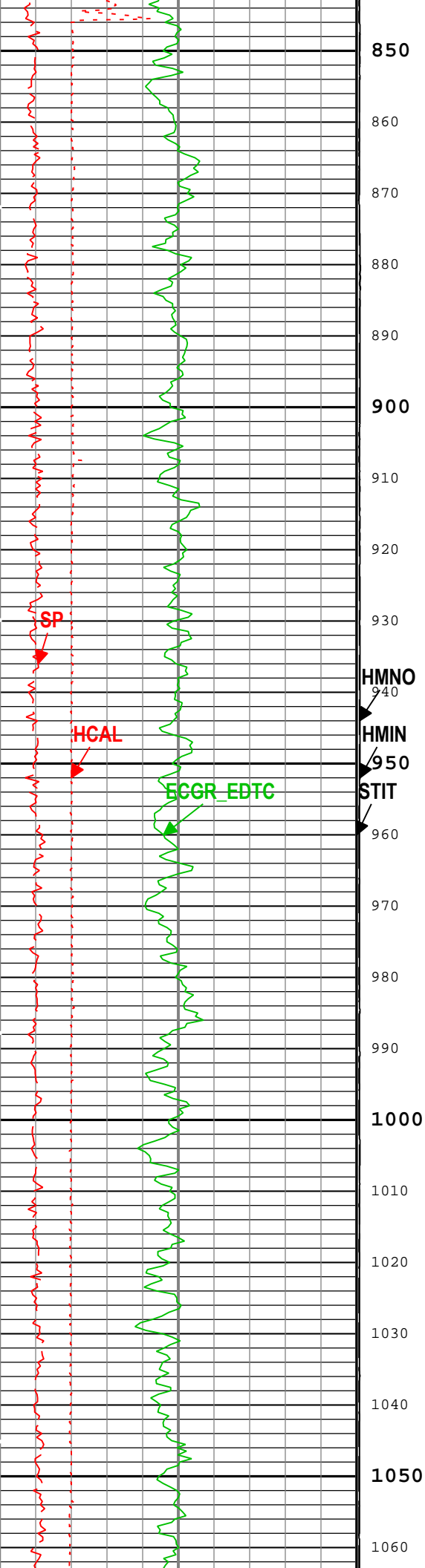


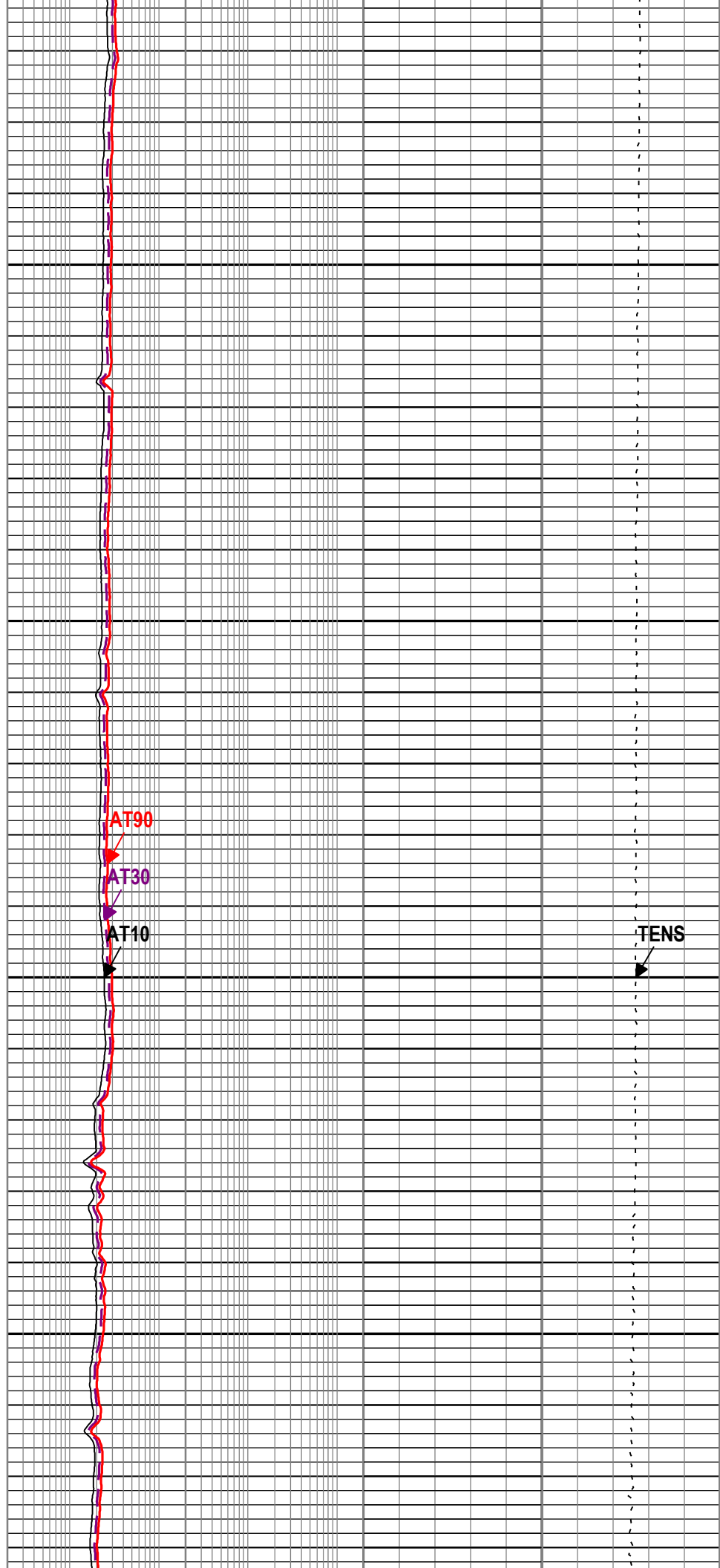
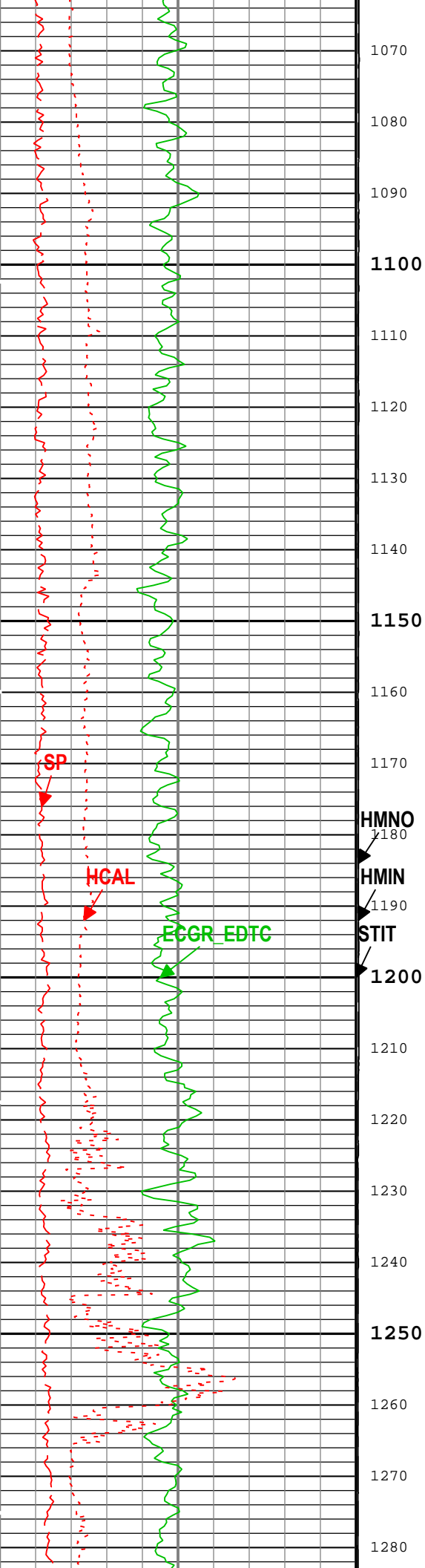


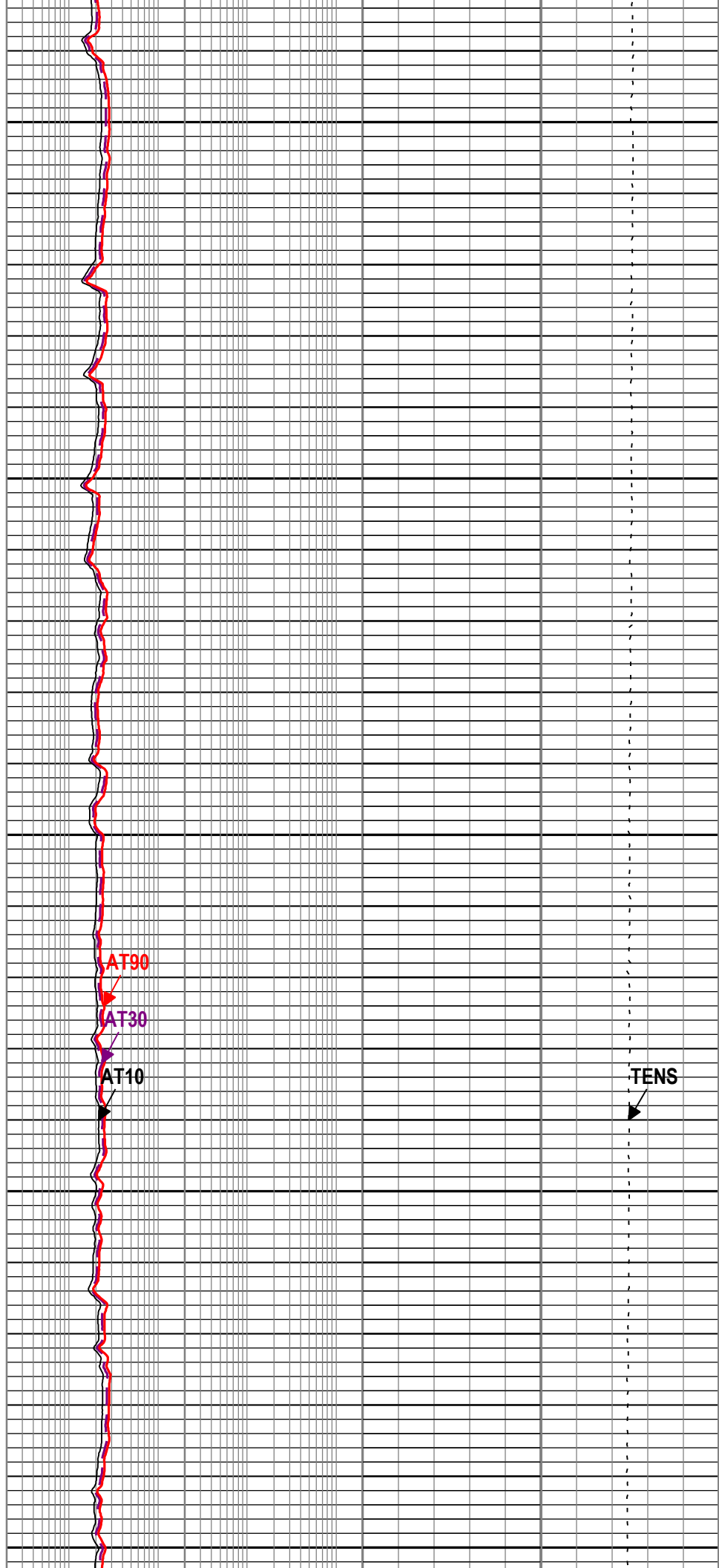
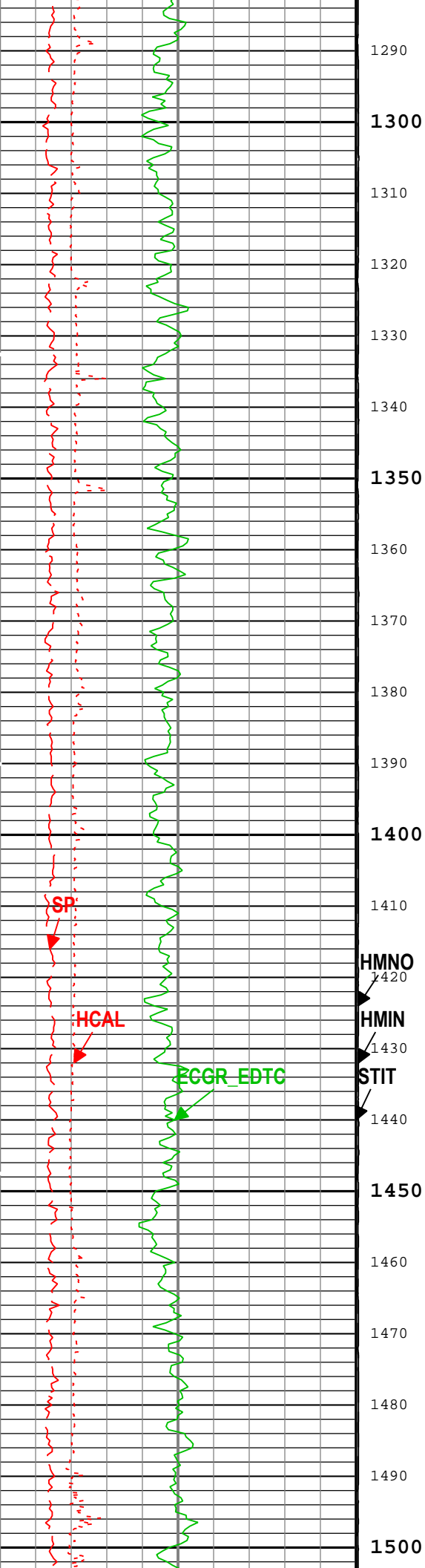


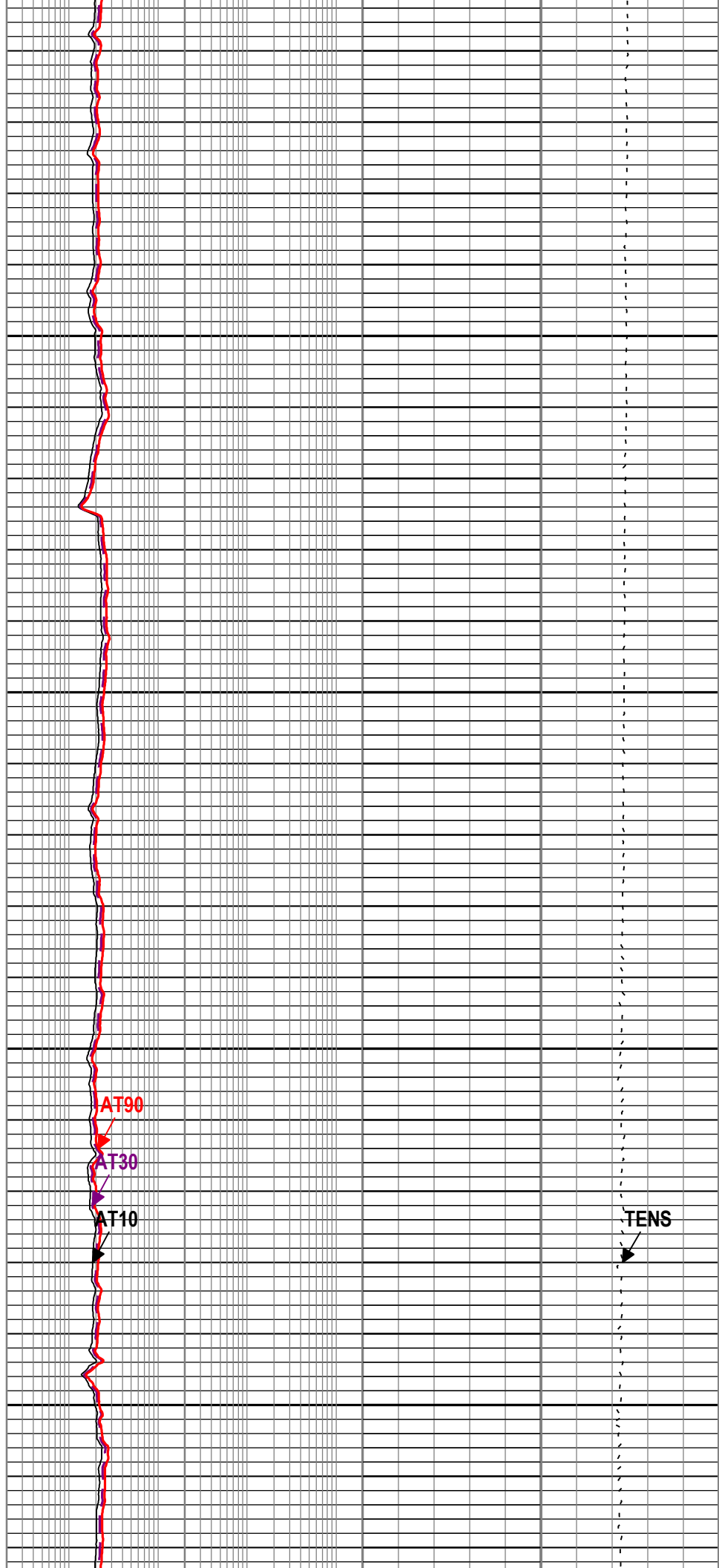
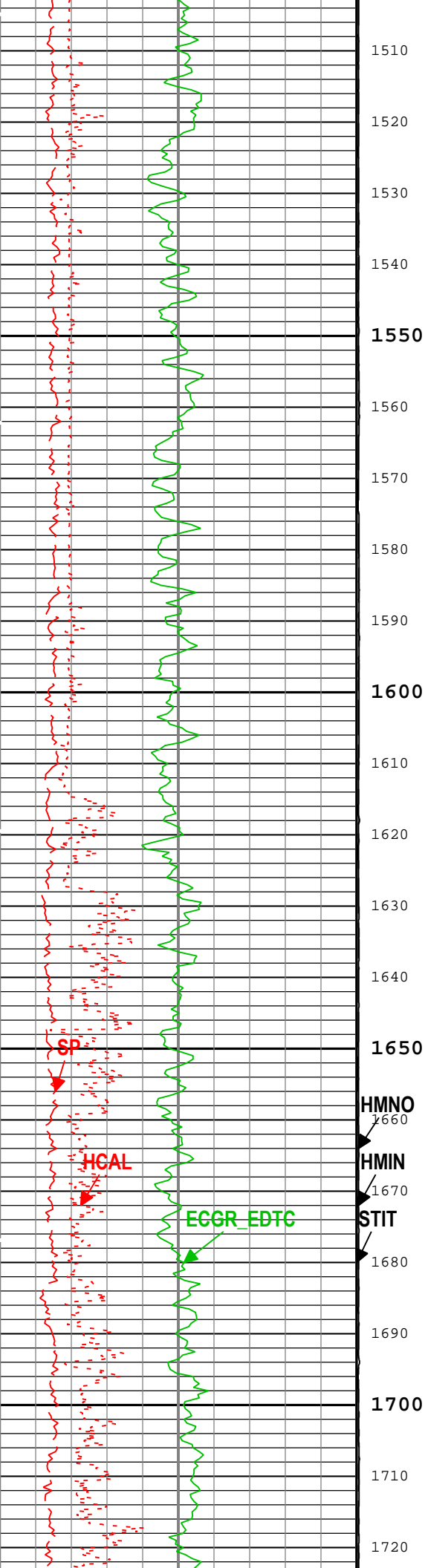


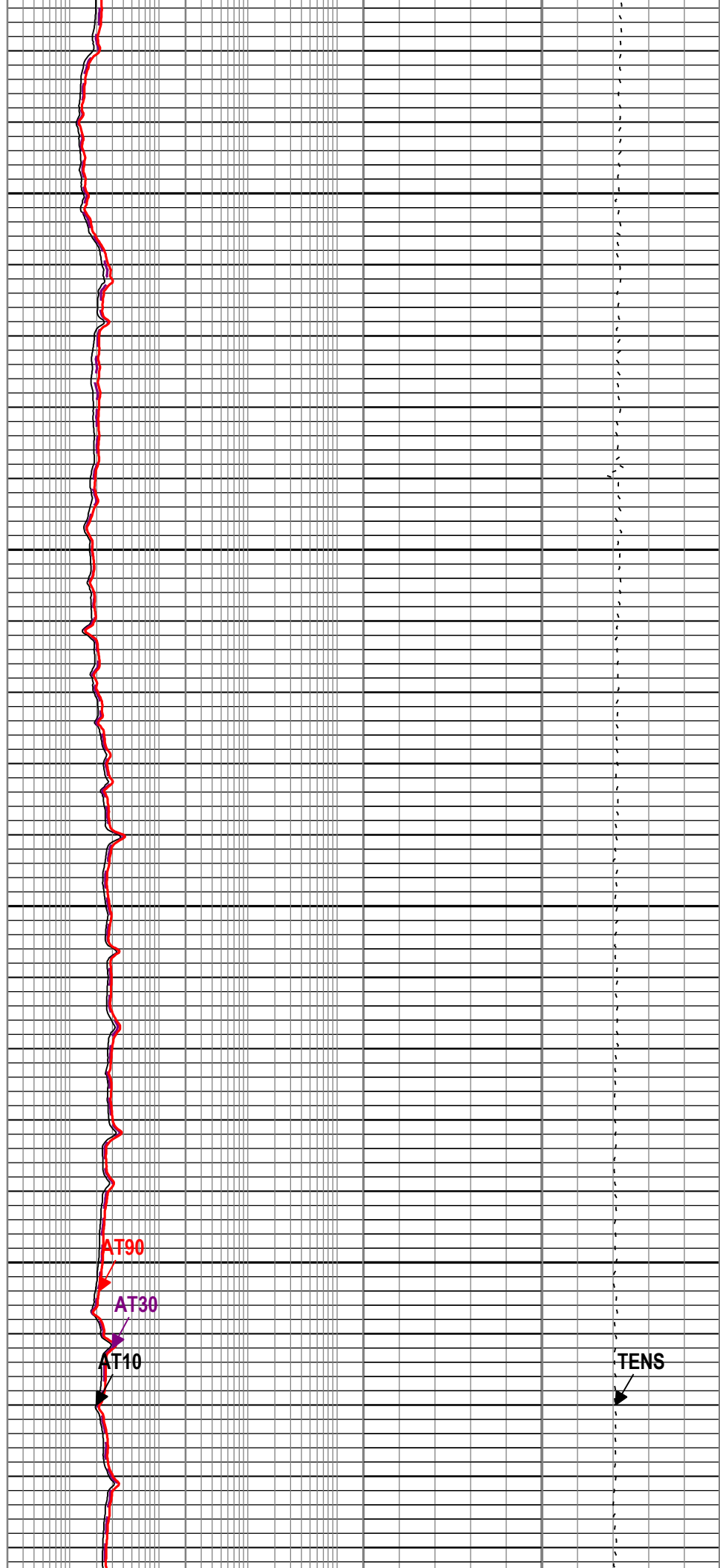
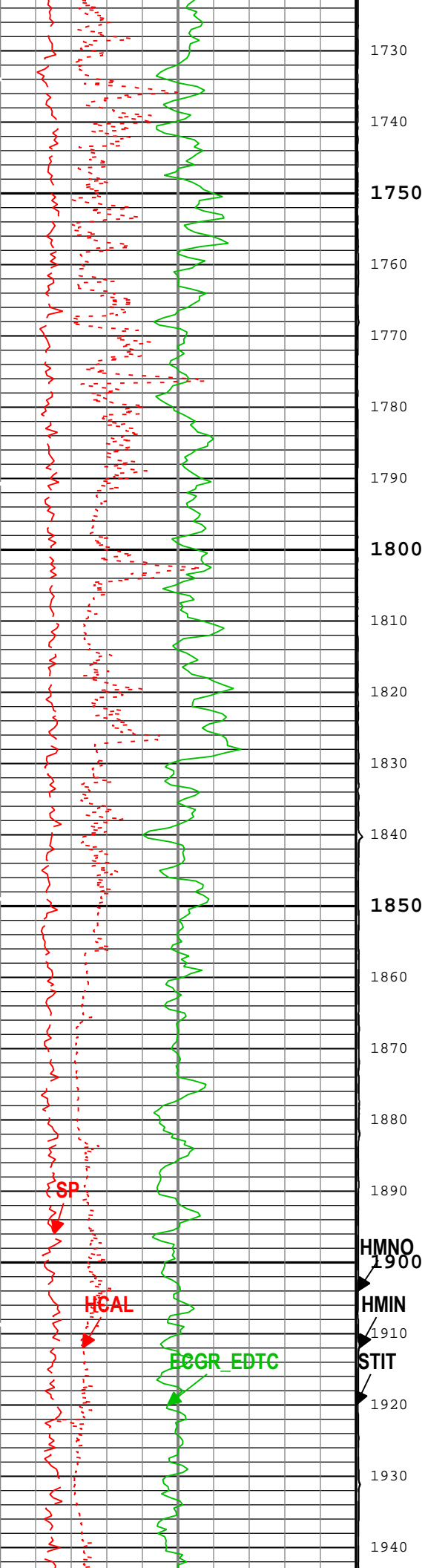


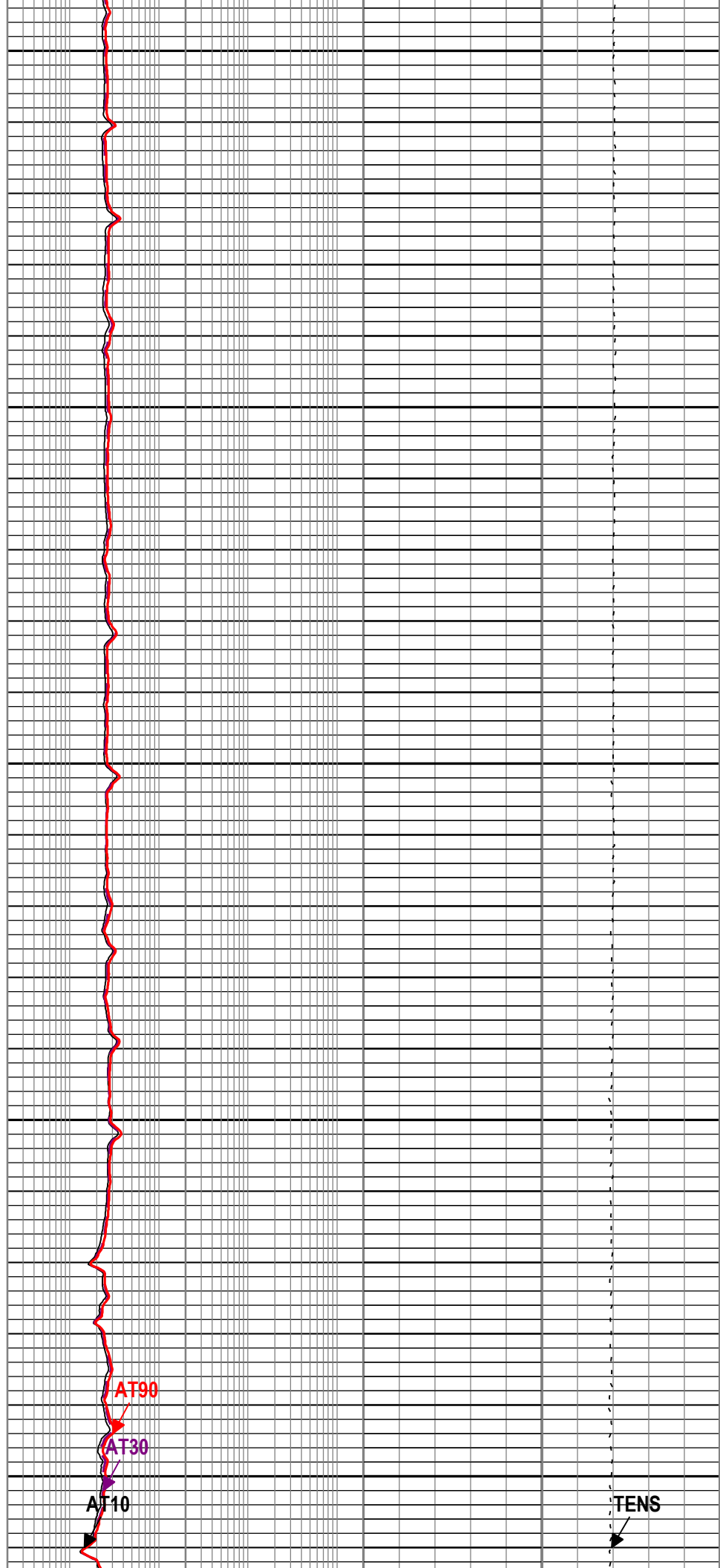
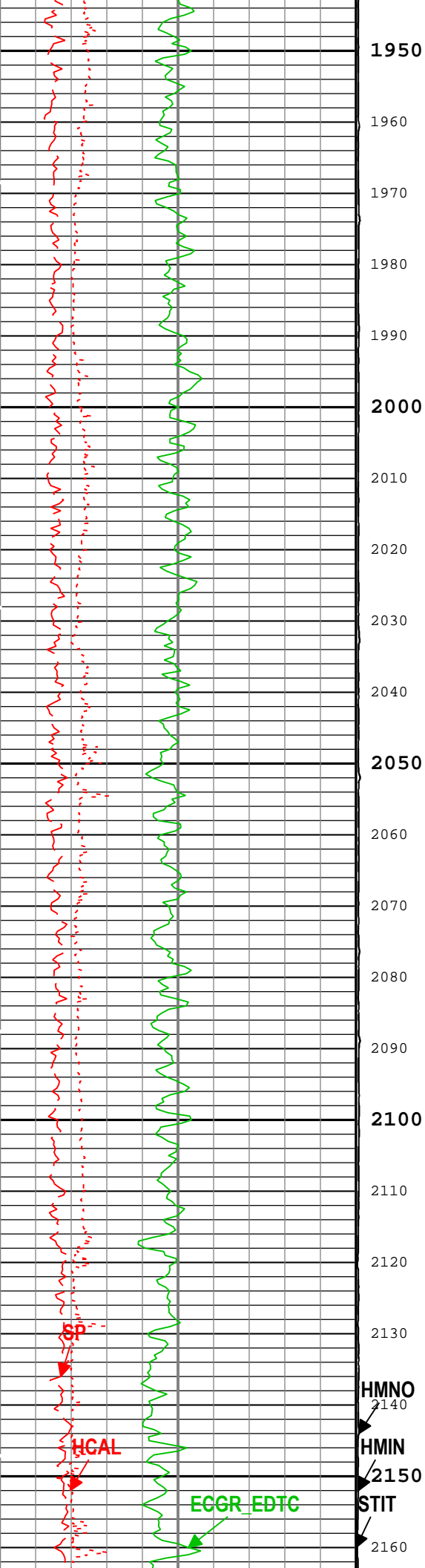


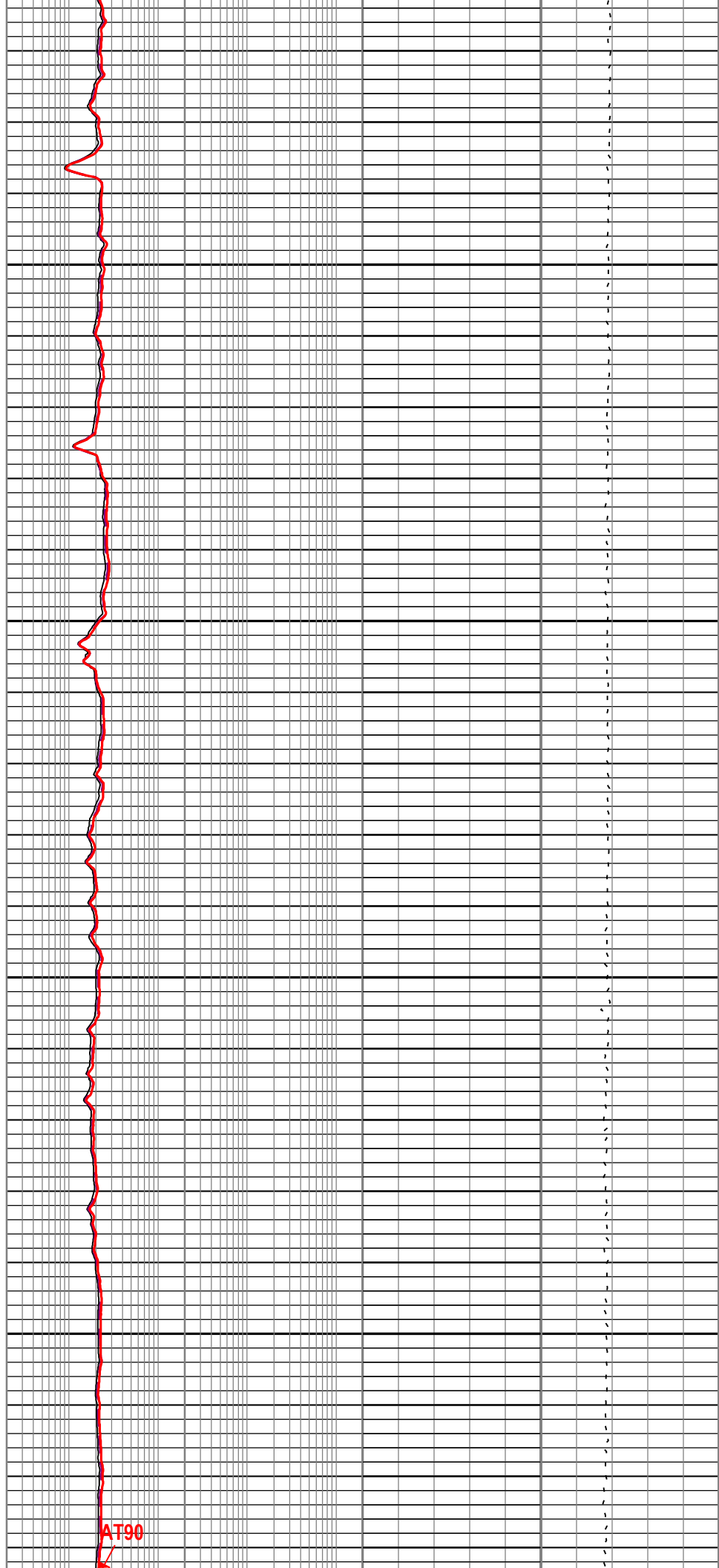
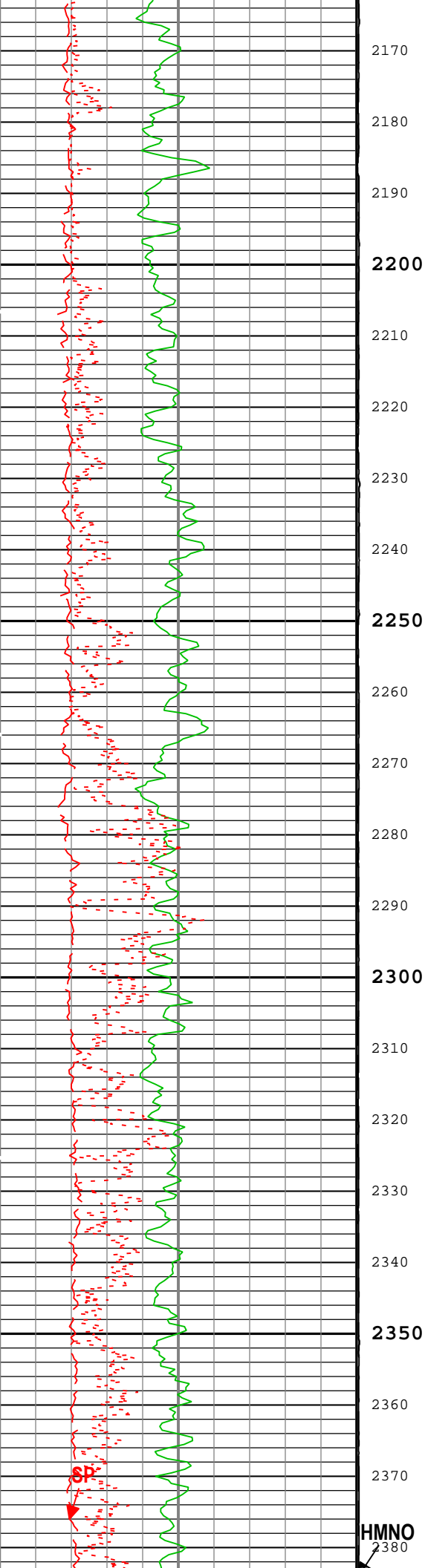




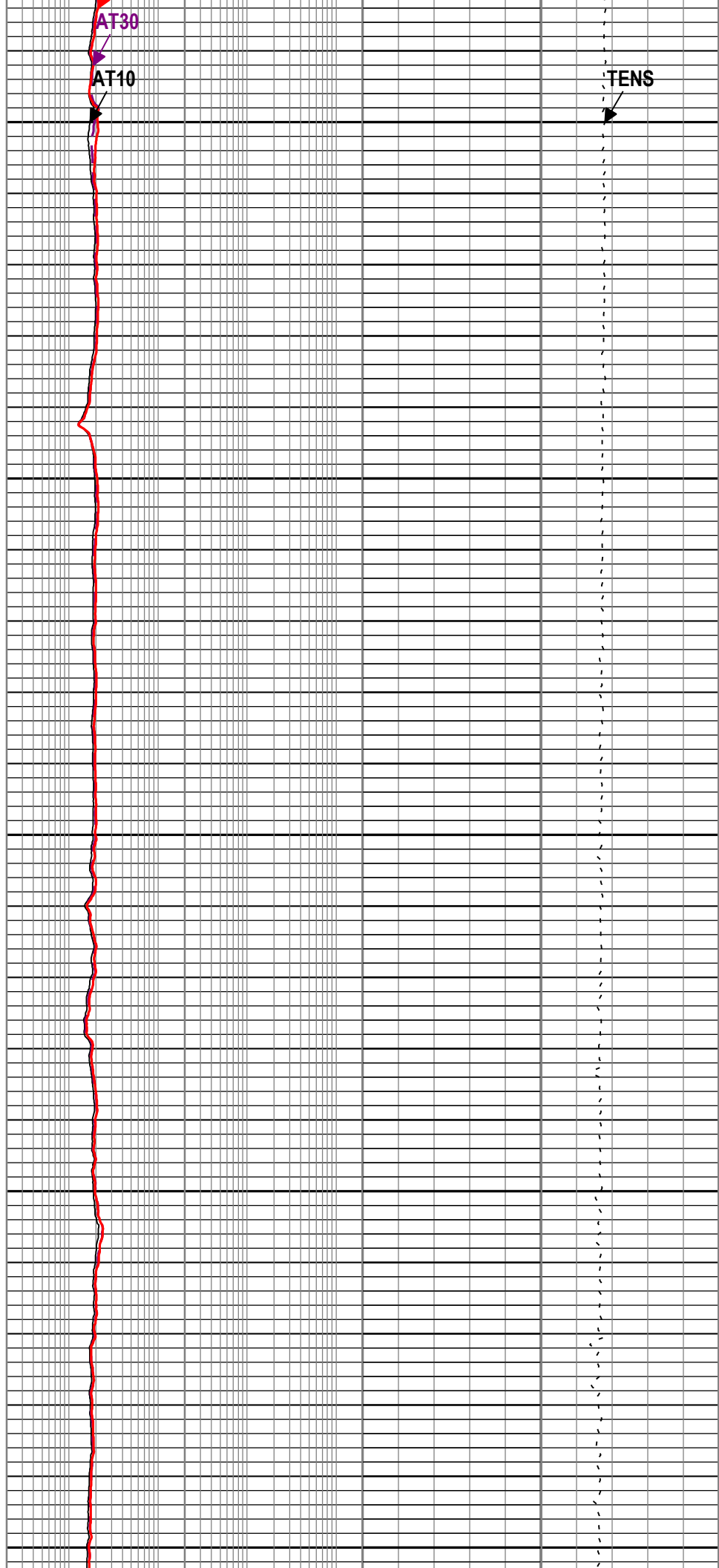
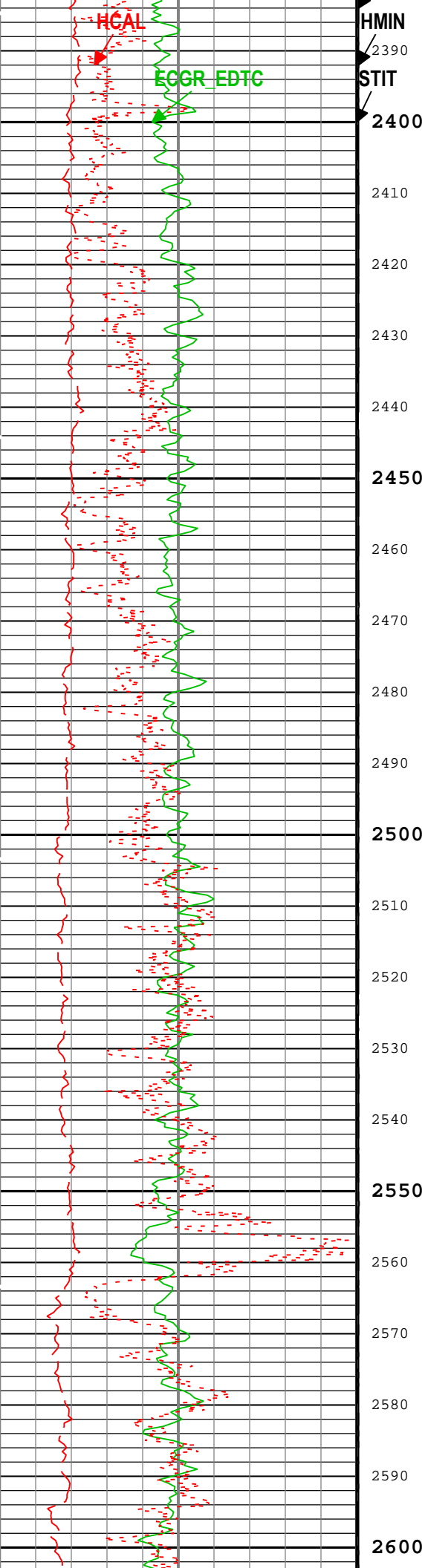


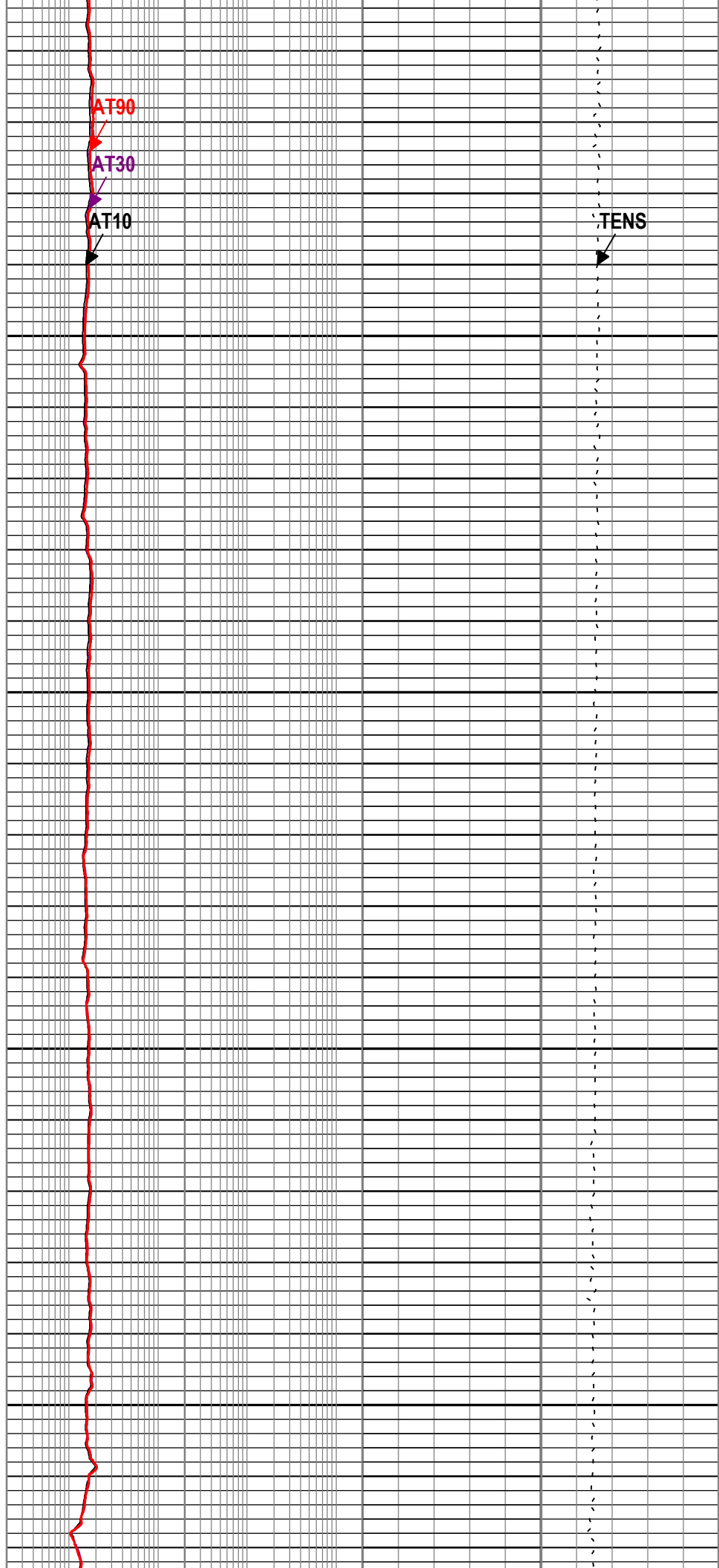
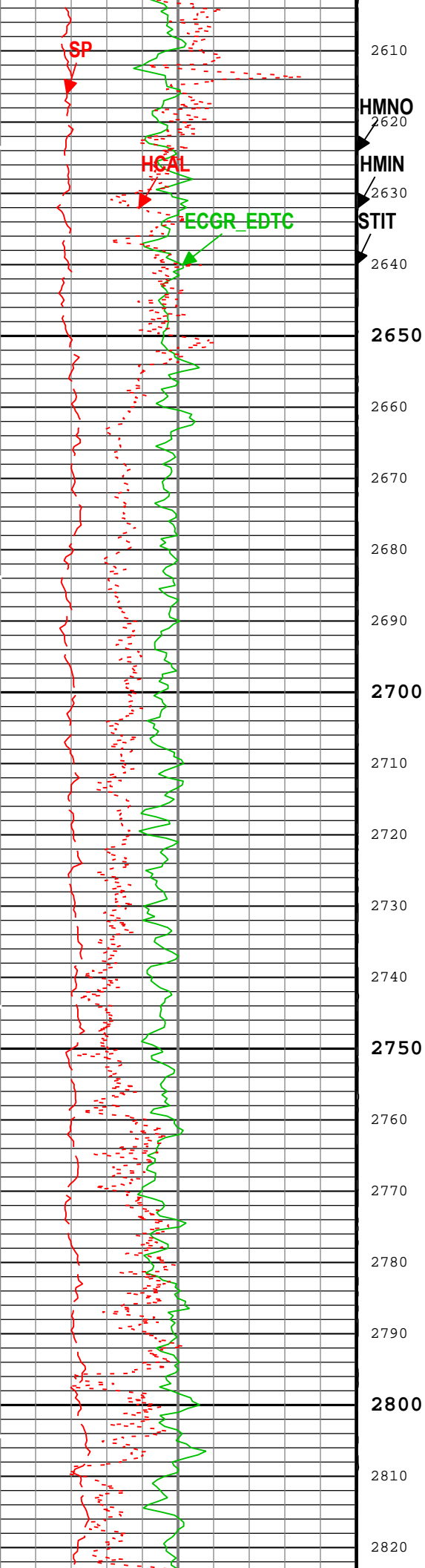


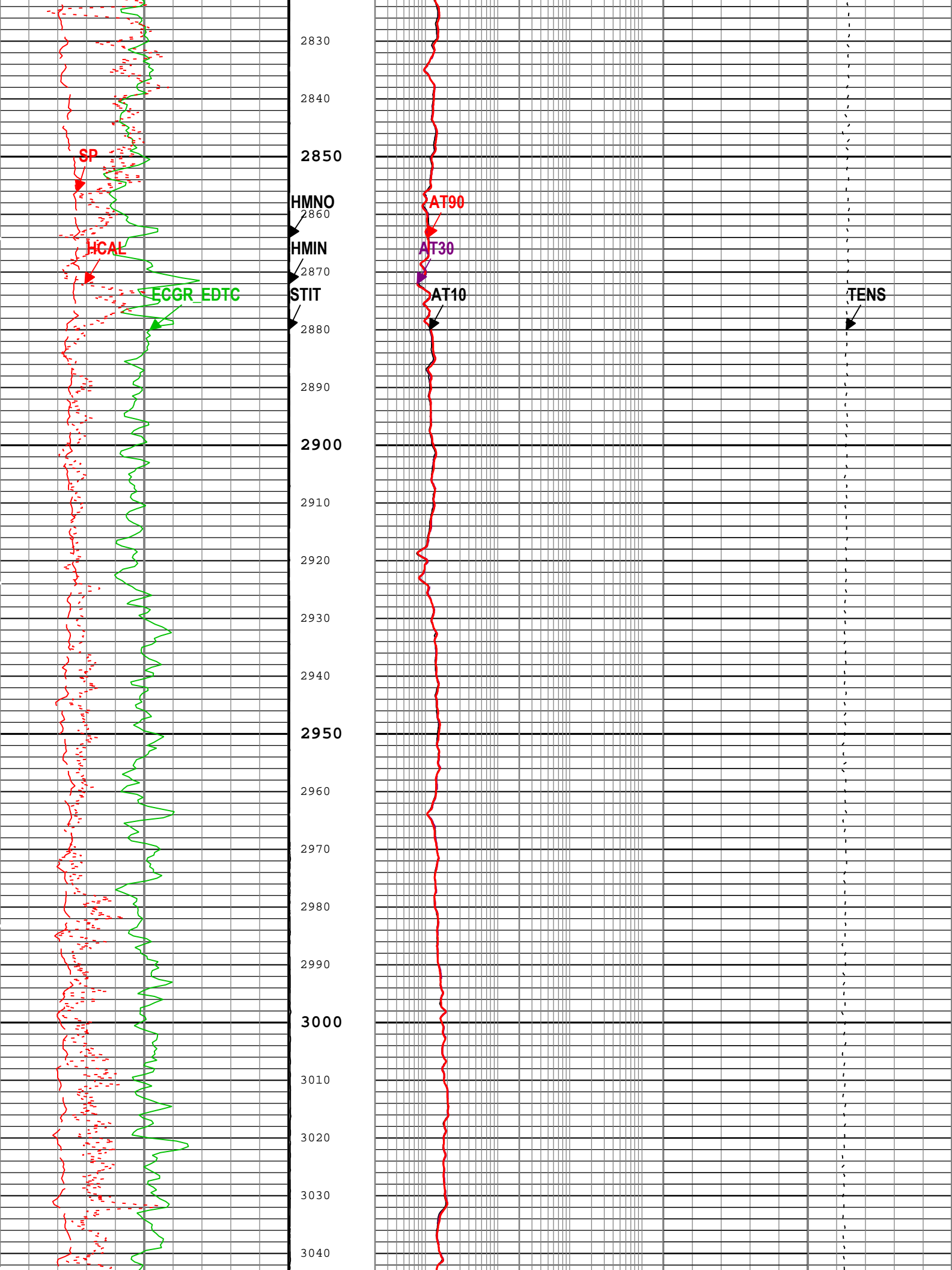


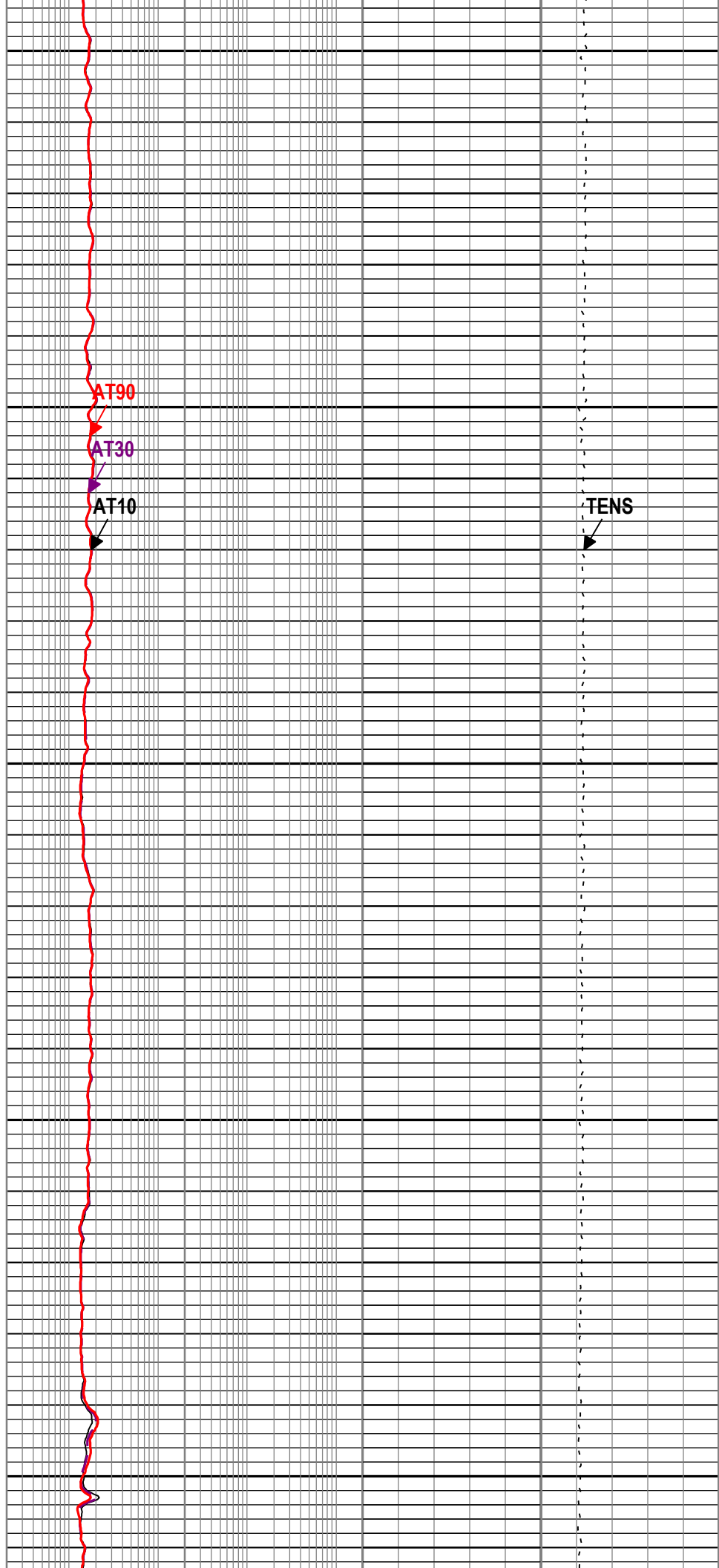
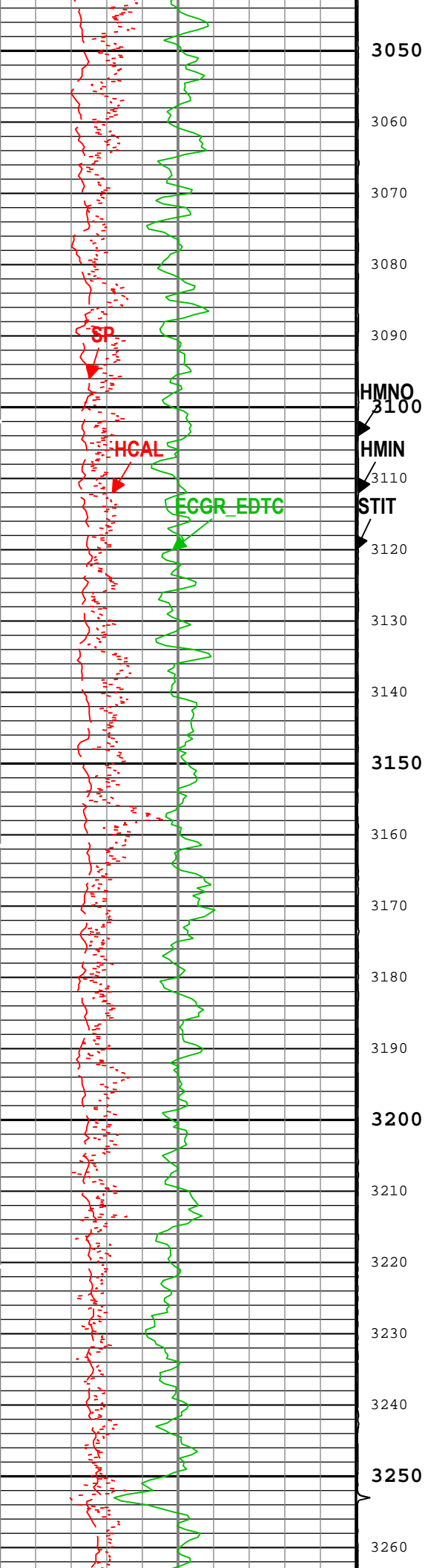


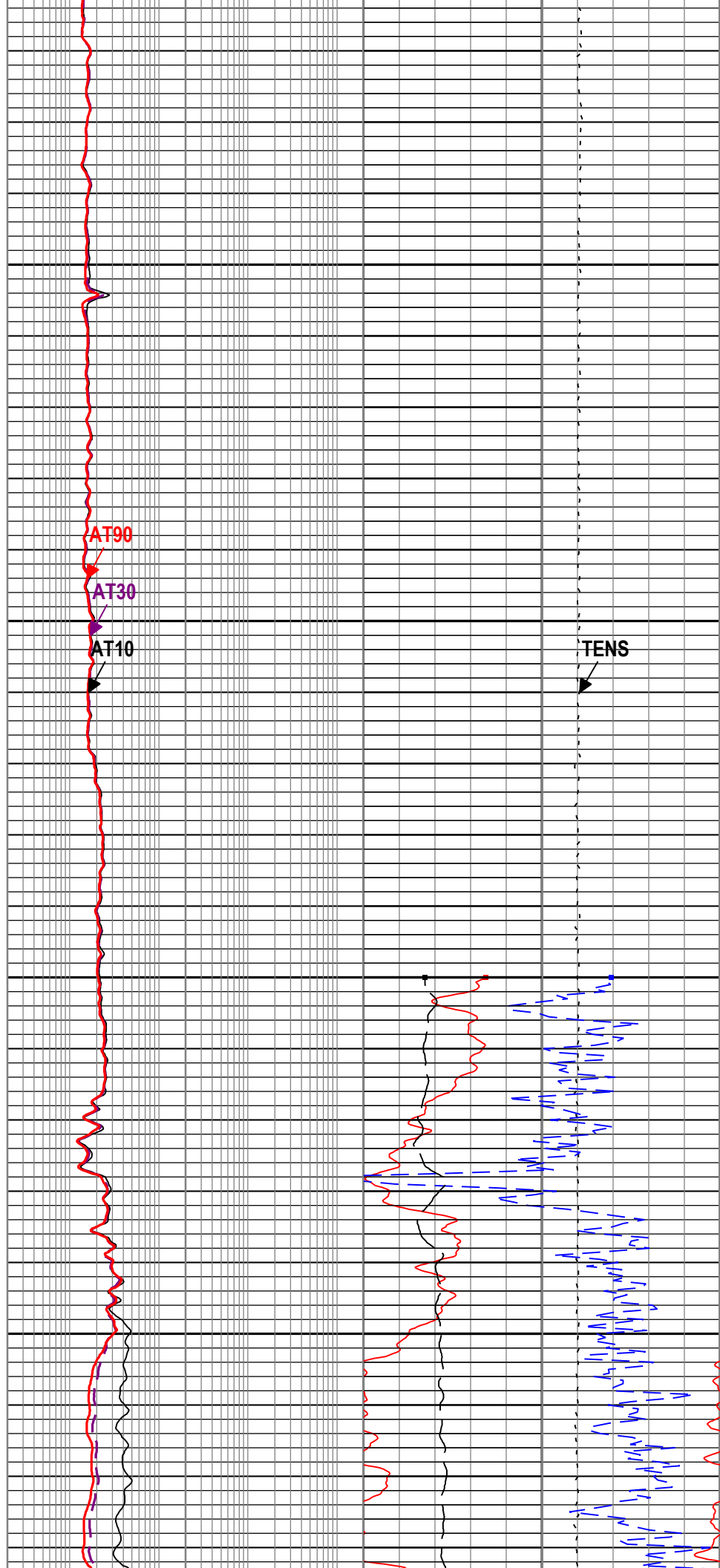
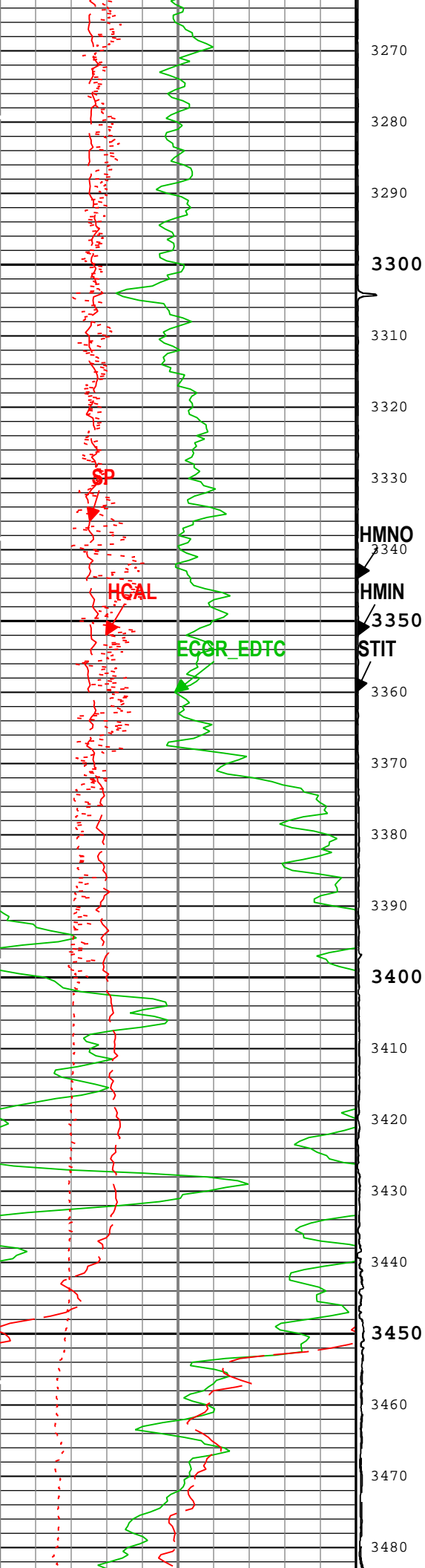


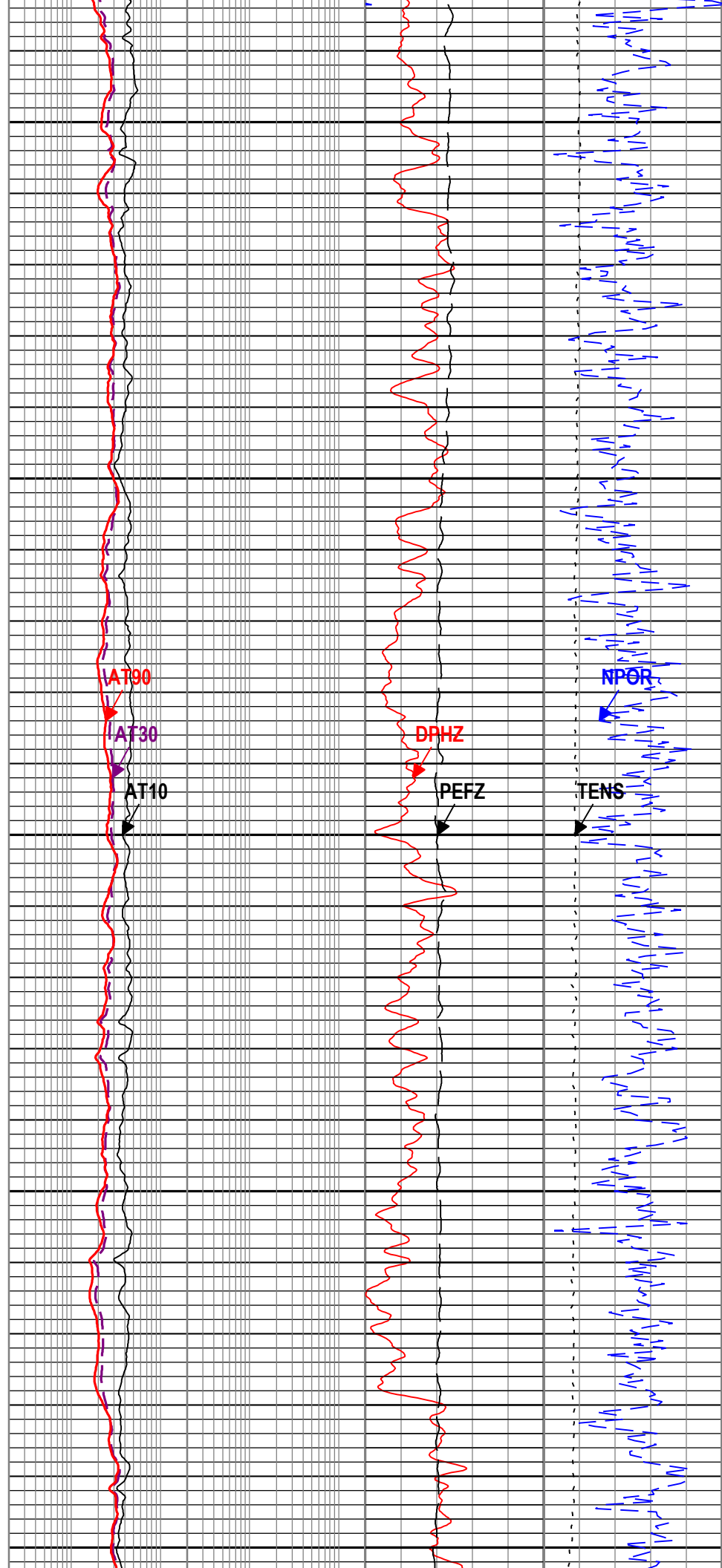
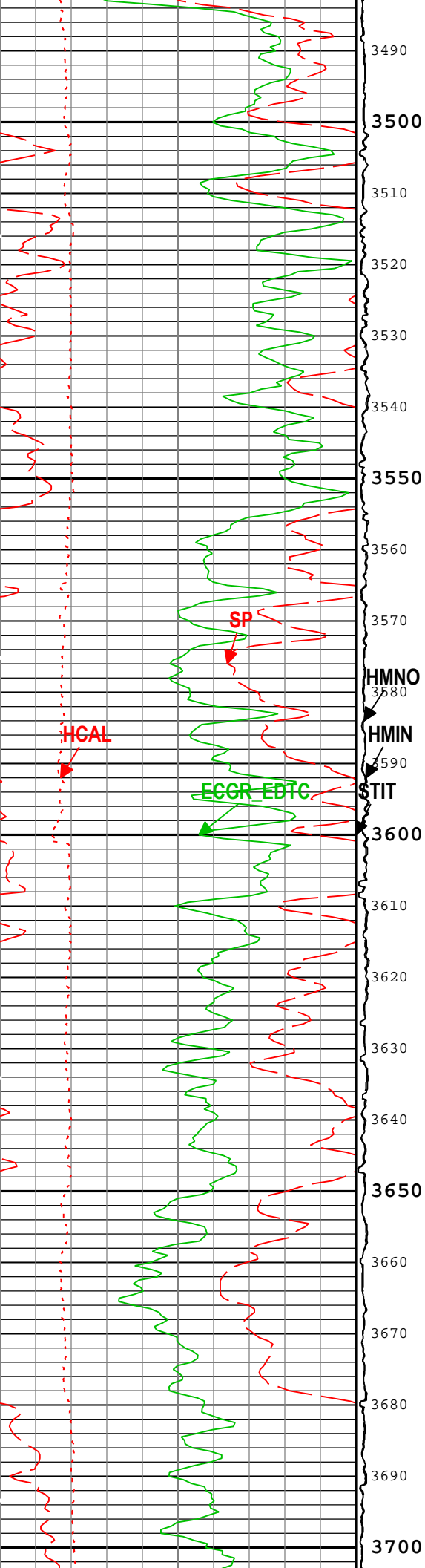


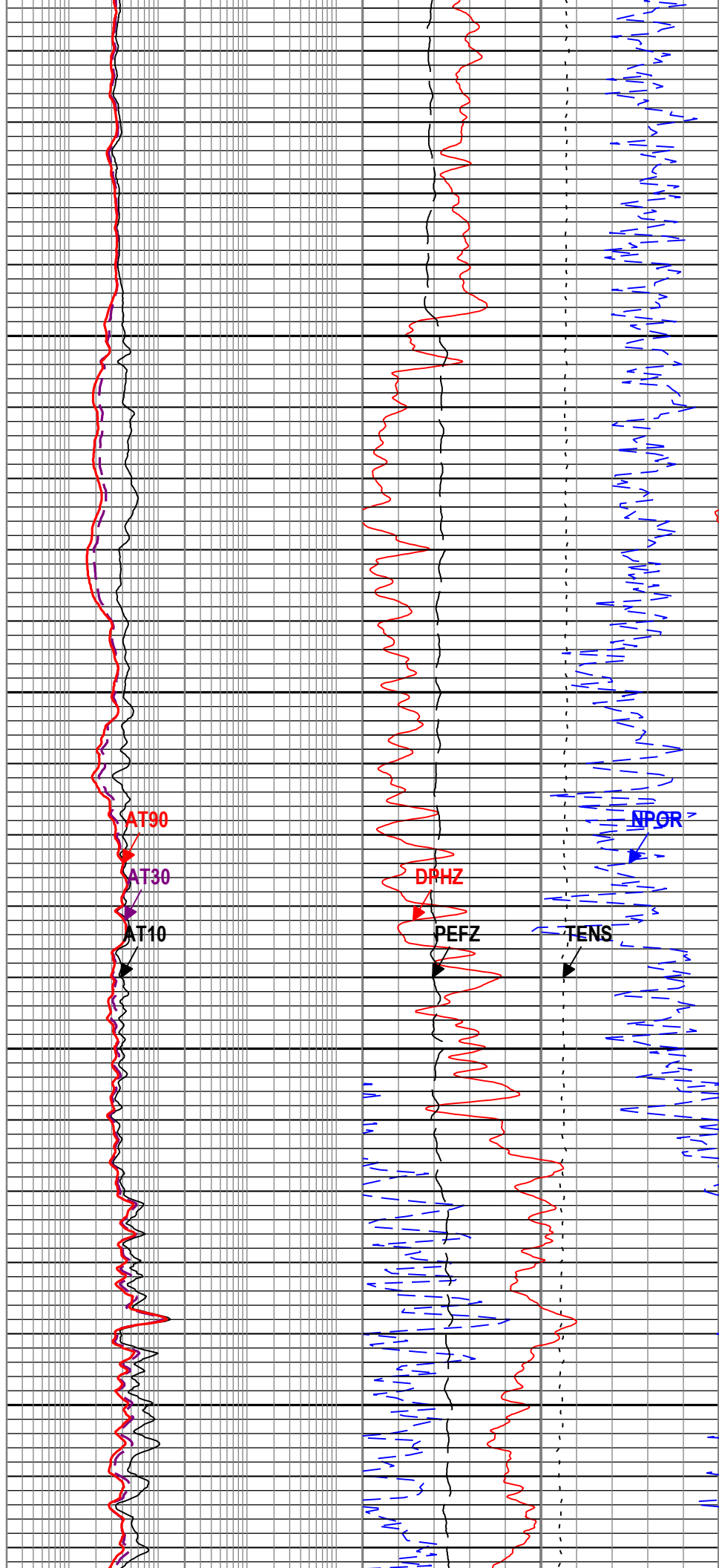
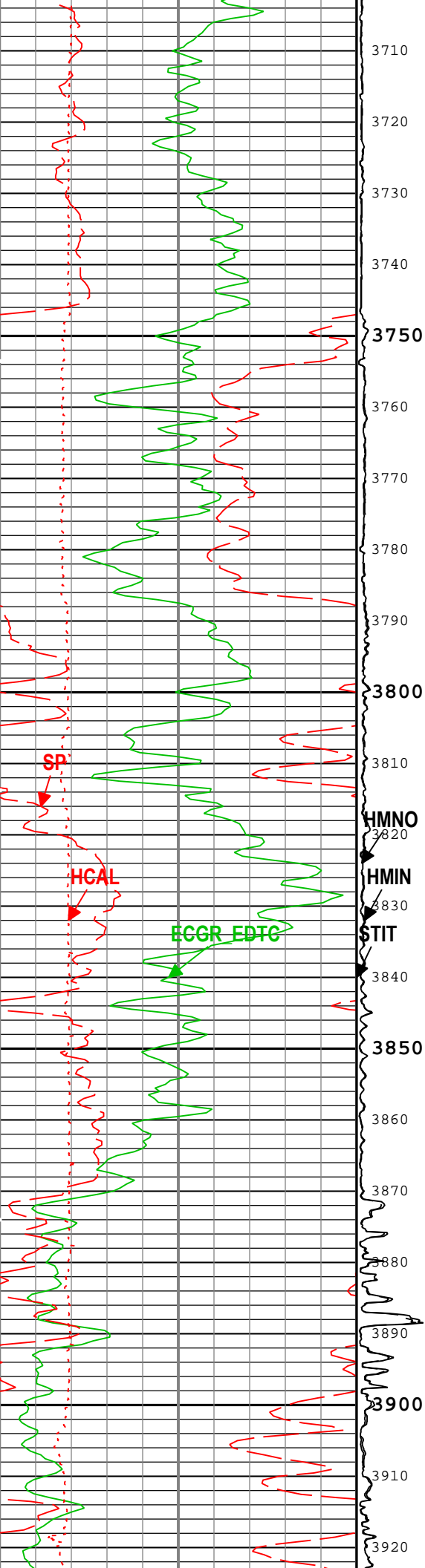


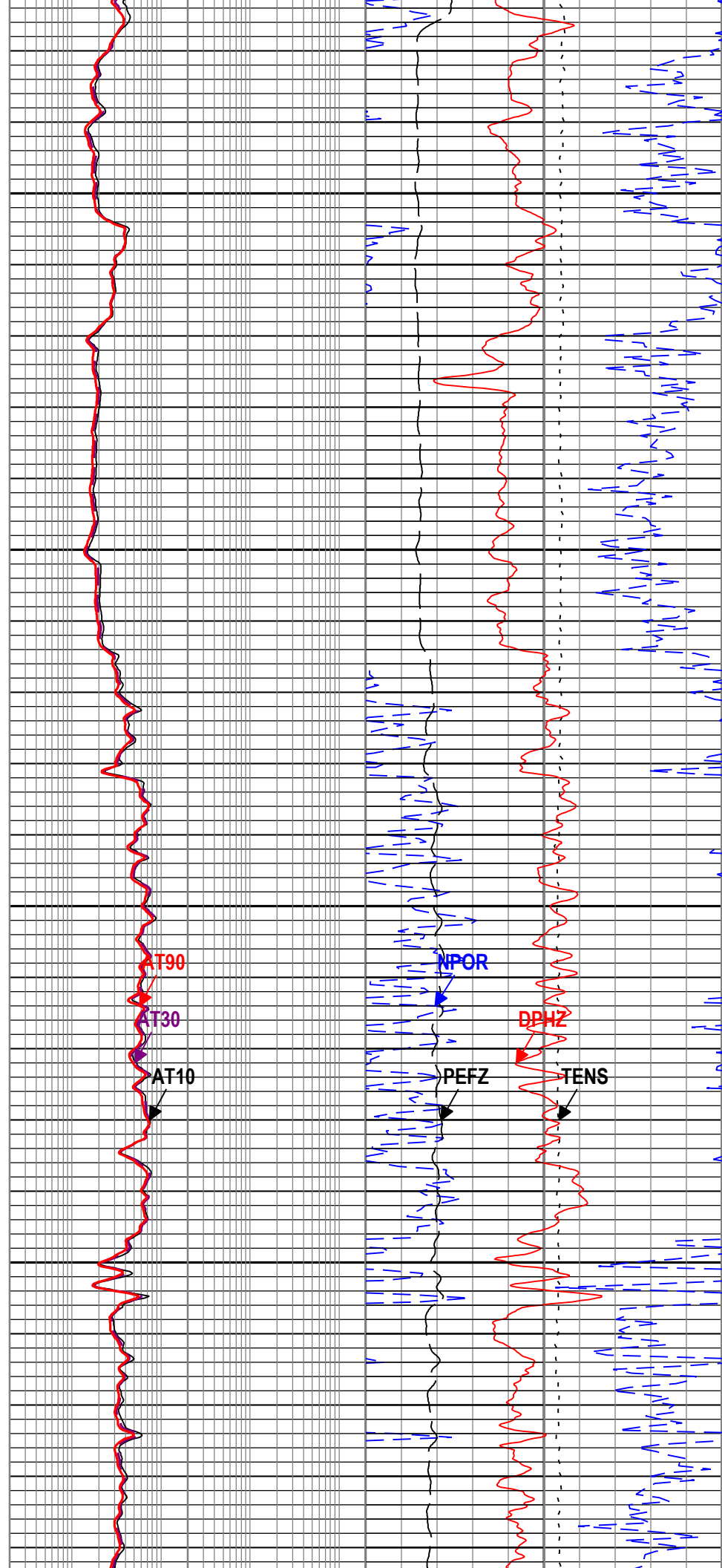
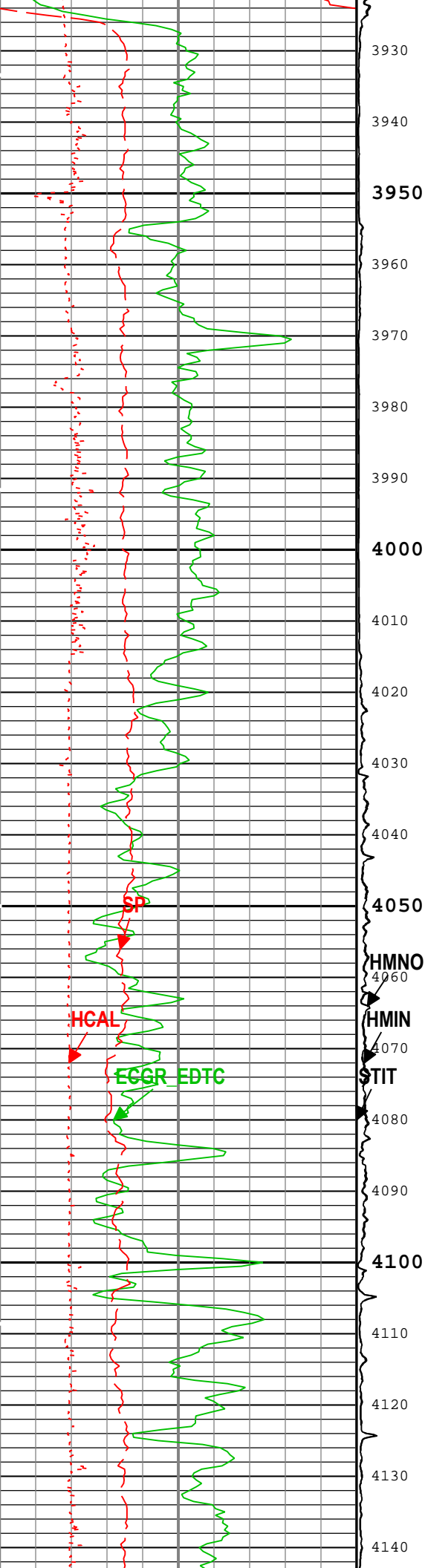




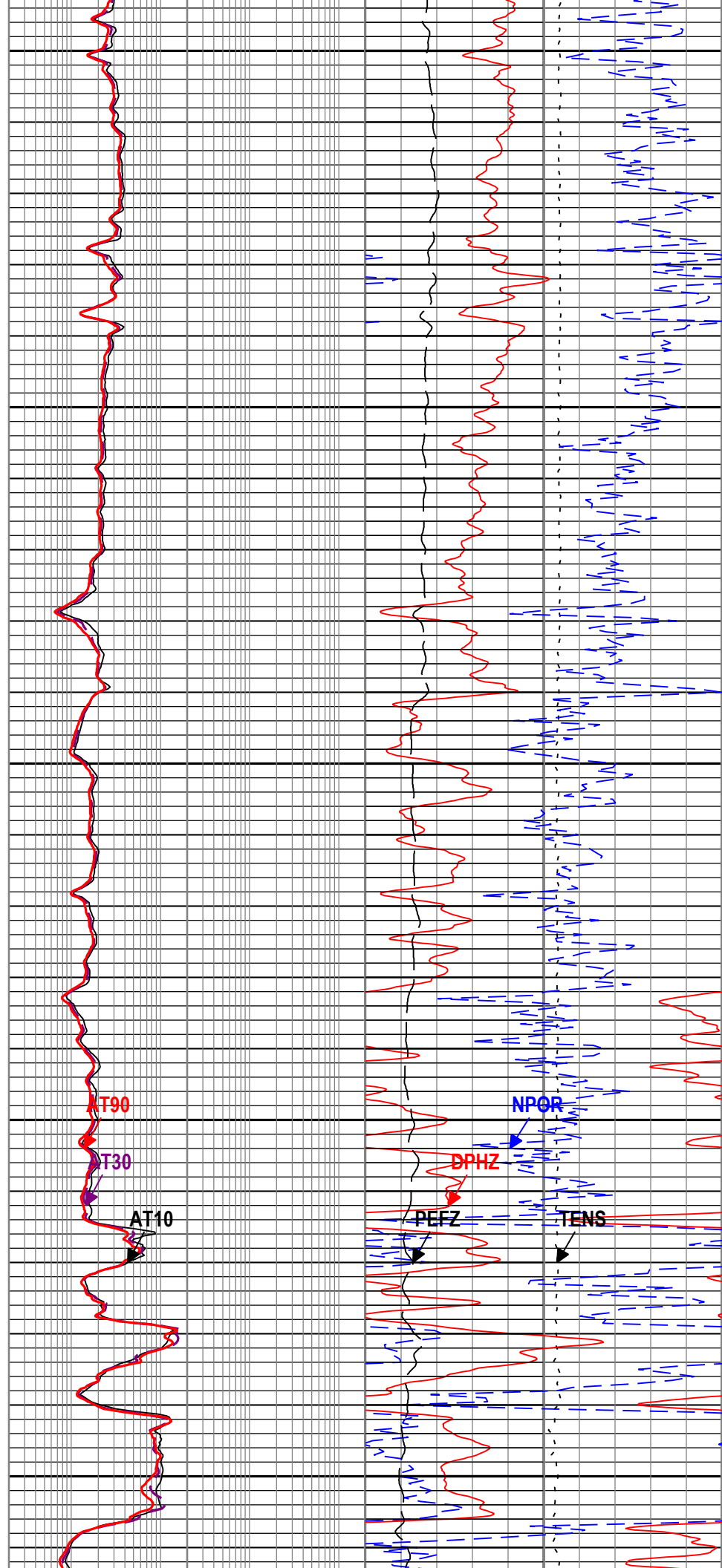
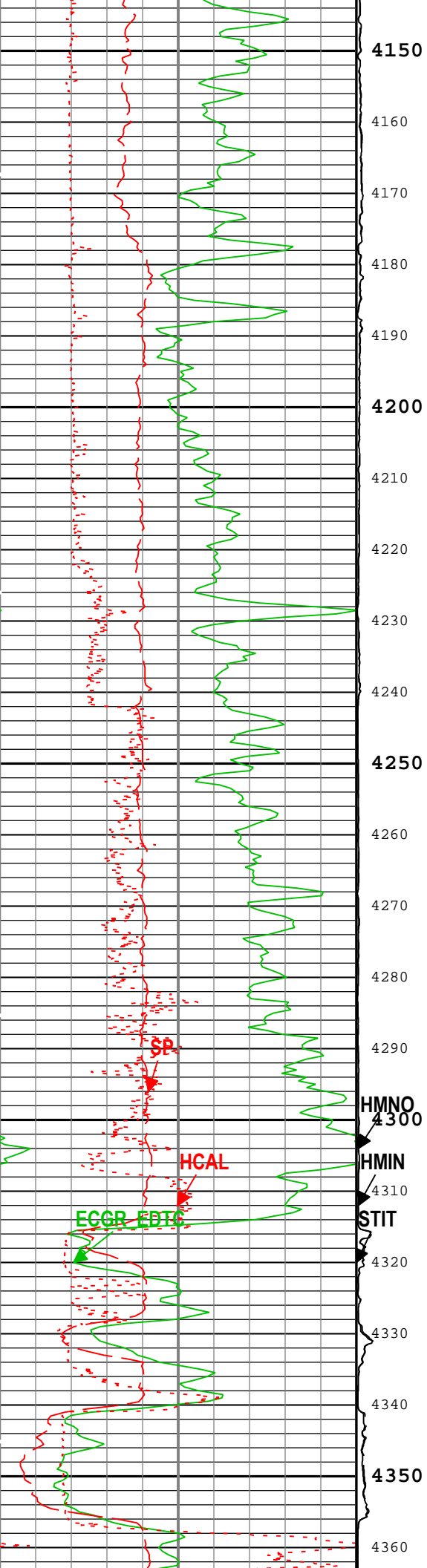


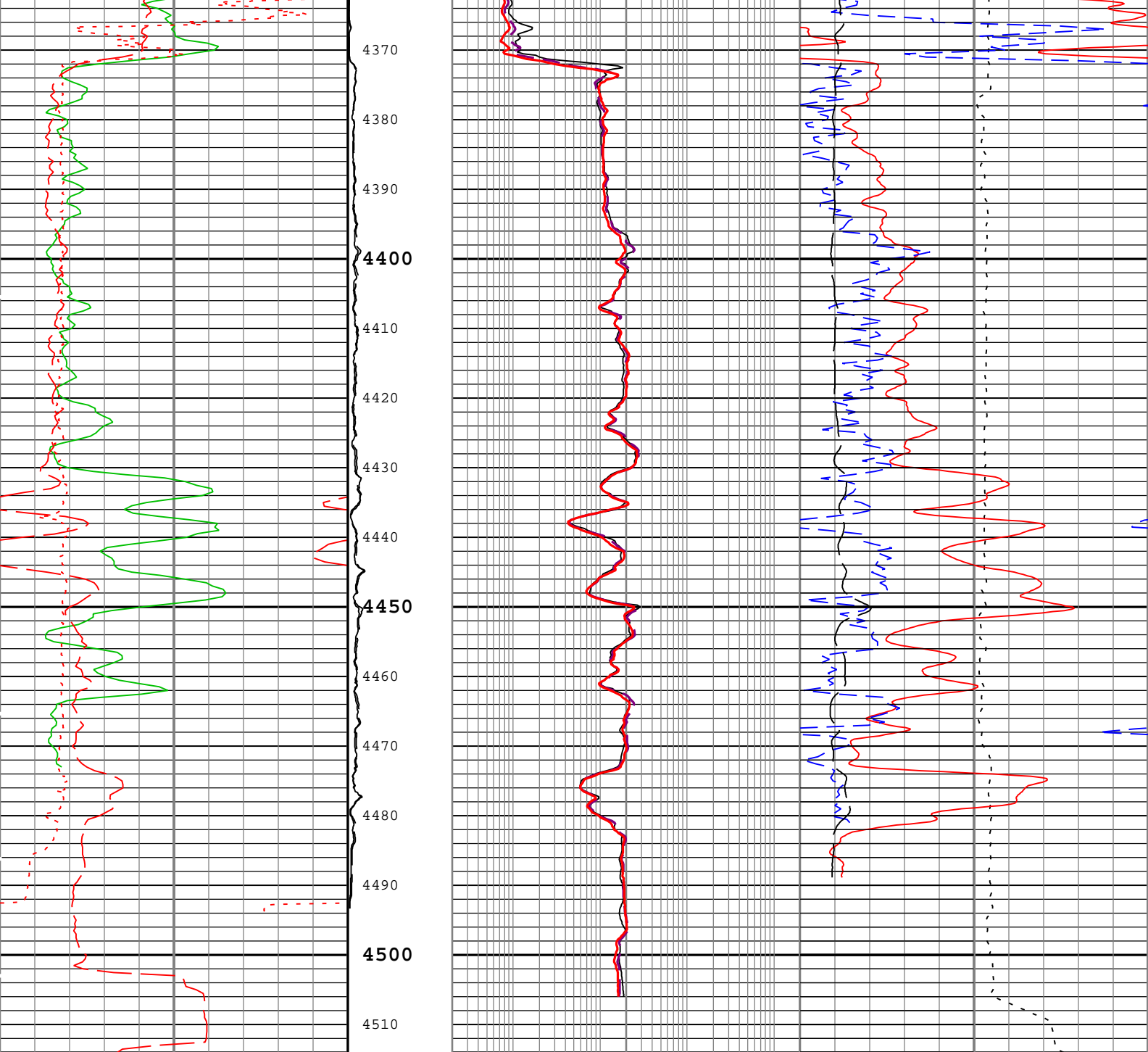












Gamma Ray Back up			Stuck Tool Indicator, Total (STIT)	Array Induction Two Foot Resistivity A10 (AT10) AIT-M			Gas Effect		
Gamma Ray (ECGR_EDTC) EDTC-B				0.2	ohm.m	2000	NPOR Backup		
0	gAPI		200	0	ft	50			
Caliper (HCAL) HDRS-H			Synthetic Micro-Inverse Resistivity (HMIN) HDRS-H	Array Induction Two Foot Resistivity A30 (AT30) AIT-M			Cable Tension (TENS)		
6	in			16	0.2	ohm.m	2000	5000	lbf
Spontaneous Potential (SP) AIT-M				Array Induction Two Foot Resistivity A90 (AT90) AIT-M			Standard Resolution Density Porosity (DPHZ) HDRS-H		
-80	mV		20	0	100	ohm.m	0.2	ft3/ft3	
								-0.1	
			Synthetic Micro-Normal Resistivity (HMNO) HDRS-H				Enhanced Thermal Neutron Porosity in Selected Lithology (NPOR) HGNS-H		
							0.3	m3/m3	
								-0.1	
							Standard Resolution Formation Photoelectric Factor (PEFZ) HDRS-H		

010m.m

010

TIME\_1900 - Time Marked every 60.00 (s)

Description: HGNS standard resolution porosities for Platform Express

Format: Log ( TripleCombo-5 )

Index Scale: 5 in per 100 ft

Index Unit: ft

Index Type: Measured Depth

Creation Date: 10-Jun-2018 04:04:31

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	
BHT	Bottom Hole Temperature	Borehole	125.11	degF
BS	Bit Size	WLSESSION	Depth Zoned	in
BSAL	Borehole Salinity	Borehole	600	ppm
BSCO	Borehole Salinity Correction Option	HGNS-H	Yes	
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
DC_MODE	Depth Correction Mode	DepthCorrection	Real-time	
DFD	Drilling Fluid Density	Borehole	9.1	lbm/gal
DFT_CATEGORY	Drilling Fluid Type	Borehole	Water	
DFT_WATER	Drilling Fluid Water Type	Borehole	WBM	
DHC	Density Hole Correction	HDRS-H	Bit Size	
FD	Fluid Density	Borehole	1	g/cm3
FSAL	Formation Salinity	Borehole	0	ppm
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	
GTSE	Generalized Temperature Selection, from Measured or Computed Temperature	Borehole	CTEM	
HSCO	Hole Size Correction Option	HGNS-H	Yes	
MATR	Rock Matrix for Neutron Porosity Corrections	Borehole	SANDSTONE	
MDEN	Matrix Density for Density Porosity	Borehole	2.65	g/cm3
MFST	Mud Filtrate Sample Temperature	Borehole	68	degF
PTCO	Pressure Temperature Correction Option	HGNS-H	Yes	
RMFS	Resistivity of Mud Filtrate Sample	Borehole	0.15	ohm.m
SP_SHIFT	SP Shift	AIT-M	500	mV
SPDR	SP Drift Per Foot	AIT-M	0	mV/ft
TD	Total Measured Depth	Borehole	4504	ft

Depth Zone Parameters

Parameter	Value	Start ( ft )	Stop ( ft )
BS	12.25	50	325
BS	7.875	325	4504

All depth are actual.

Tool Control Parameters

ONE: Parameters

Parameter	Description	Tool	Value	Unit
HMCA_BOARD_TYPE	HMCA Board Type	HGNS-H	1	
HRGD_BOARD_TYPE	HRGD Board Type	HDRS-H	WITH_HET	
MAX_LOG_SPEED	Tool Bit Maximum Logging Speed	WLSESSION	2222	in/s

MAX_LOG_SPEED	Toolstring Maximum Logging Speed	WLSESSION	3600	ft/h
NPUC	Nuclear Pile-Up Correction	HDRS-H	On	

ONE

5" Triple Combo

Pass Summary									
Run Name	Pass Objective	Direction	Top	Bottom	Start	Stop	DSC Mode	Depth Shift	Include Parallel Data
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
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

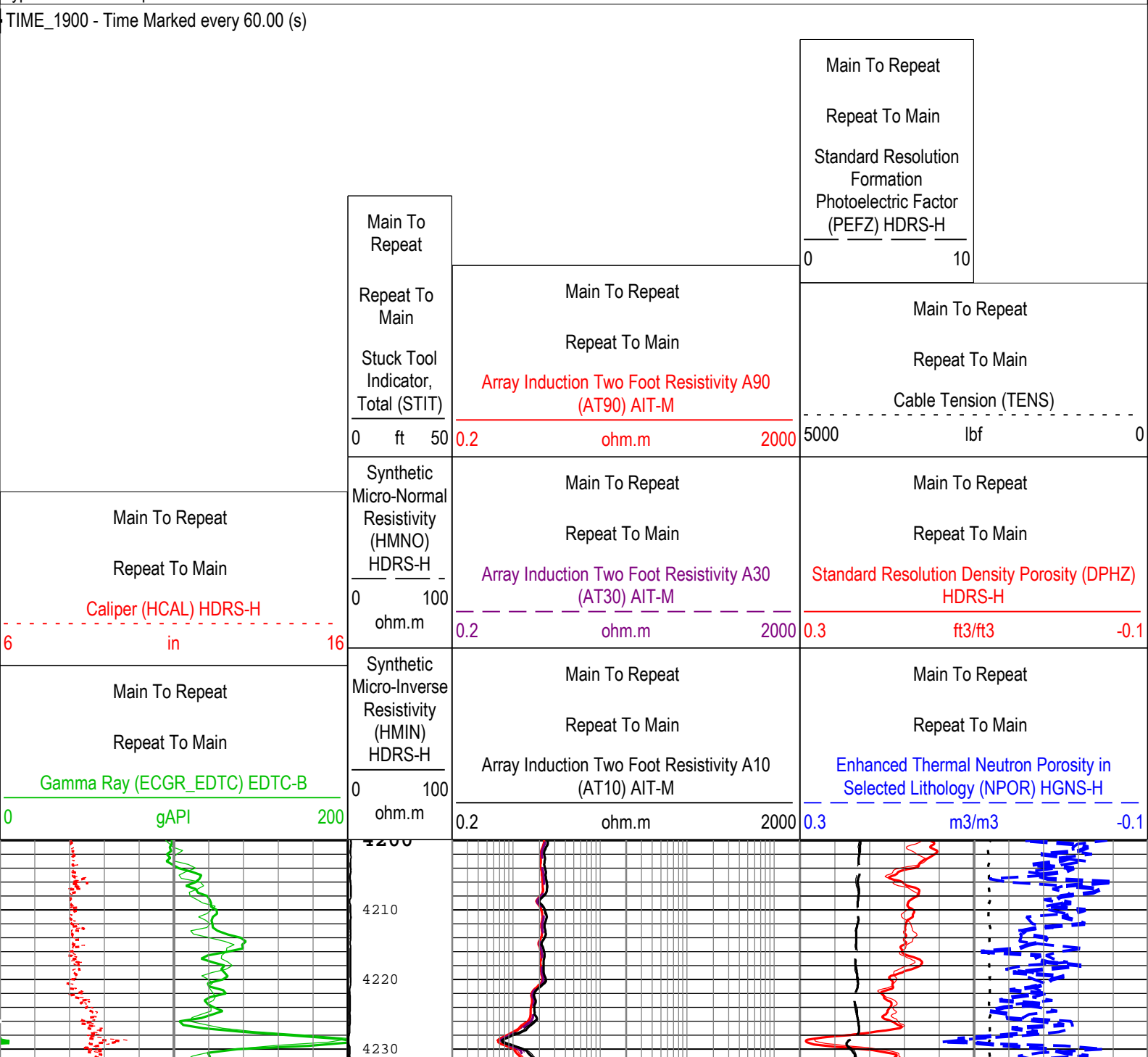
Log

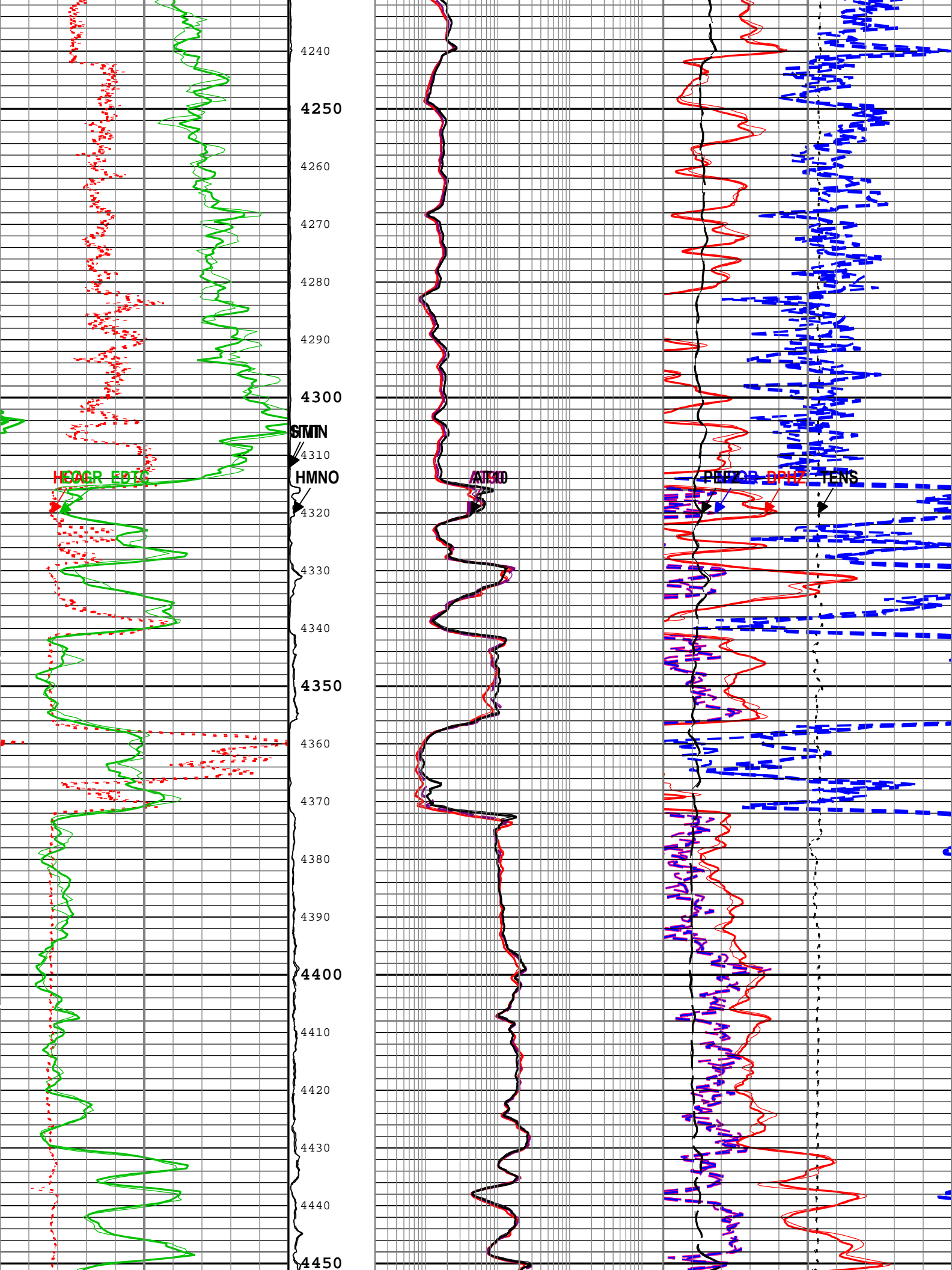
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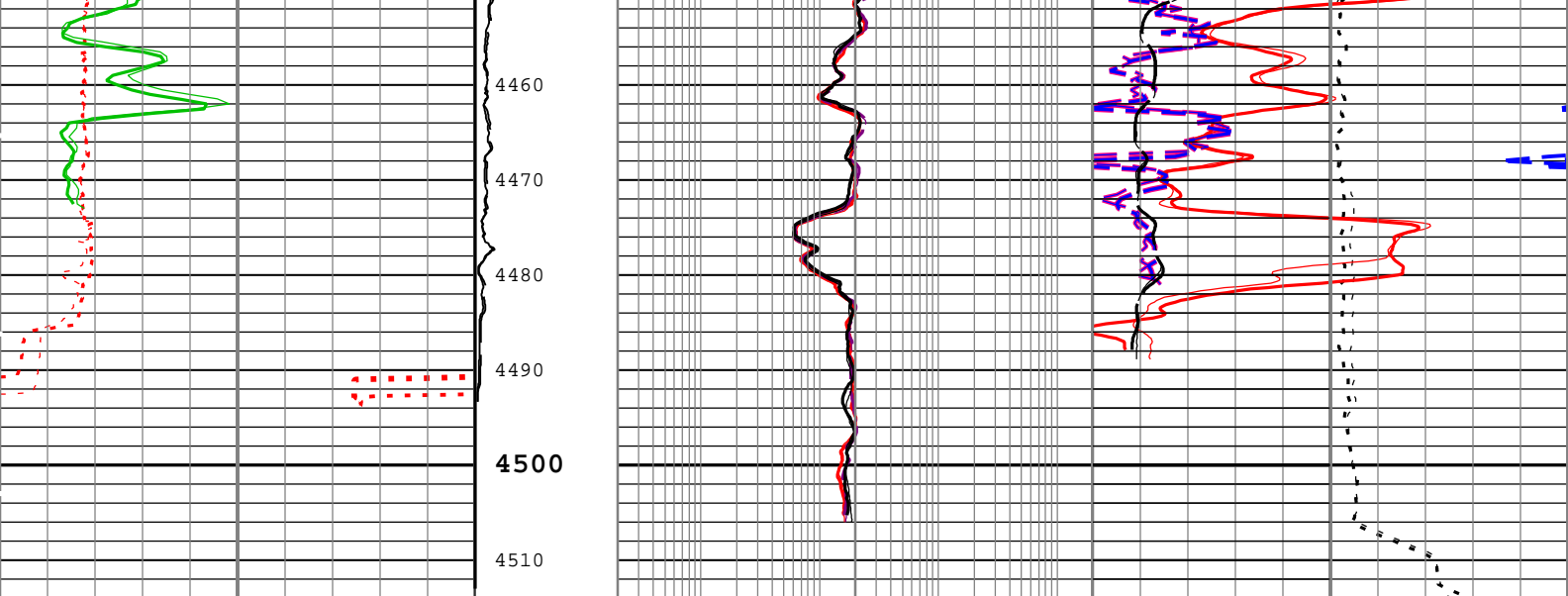
Well:State 3-16

ONE: Log[3]:Up:S004

Description: HGNS standard resolution porosities for Platform Express
 Format: Log ( TripleCombo-5 RA )
 Index Scale: 5 in per 100 ft
 Index Unit: ft
 Type: Measured Depth
 Creation Date: 10-Jun-2018 04:04:35







<div><div>Main To Repeat</div><div>Repeat To Main</div><div>Caliper (HCAL) HDRS-H</div><div>6in16</div></div> <div><div>Main To Repeat</div><div>Repeat To Main</div><div>Gamma Ray (ECGR_EDTC) EDTC-B</div><div>0gAPI200</div></div>	<div><div>Main To Repeat</div><div>Repeat To Main</div><div>Stuck Tool Indicator, Total (STIT)</div><div>0ft50</div></div> <div><div>Synthetic Micro-Normal Resistivity (HMNO) HDRS-H</div><div>0100ohm.m</div></div> <div><div>Synthetic Micro-Inverse Resistivity (HMIN) HDRS-H</div><div>0100ohm.m</div></div>	<div><div>Main To Repeat</div><div>Repeat To Main</div><div>Array Induction Two Foot Resistivity A90 (AT90) AIT-M</div><div>0.2ohm.m2000</div></div>	<div><div>Main To Repeat</div><div>Repeat To Main</div><div>Cable Tension (TENS)</div><div>5000lbf0</div></div>
		<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>	<div><div>Main To Repeat</div><div>Repeat To Main</div><div>Standard Resolution Density Porosity (DPHZ) HDRS-H</div><div>0.3ft3/ft3-0.1</div></div>
		<div><div>Main To Repeat</div><div>Repeat To Main</div><div>Array Induction Two Foot Resistivity A10 (AT10) AIT-M</div><div>0.2ohm.m2000</div></div>	<div><div>Main To Repeat</div><div>Repeat To Main</div><div>Enhanced Thermal Neutron Porosity in Selected Lithology (NPOR) HGNS-H</div><div>0.3m3/m3-0.1</div></div>
			<div><div>Main To Repeat</div><div>Repeat To Main</div><div>Standard Resolution Formation Photoelectric Factor (PEFZ) HDRS-H</div><div>010</div></div>

TIME\_1900 - Time Marked every 60.00 (s)

Description: HGNS standard resolution porosities for Platform Express    Format: Log ( TripleCombo-5 RA )    Index Scale: 5 in per 100 ft    Index Unit: ft    Index Type: Measured Depth    Creation Date: 10-Jun-2018 04:04:35

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	

BHT	Bottom Hole Temperature	Borehole	125.11	degF
BS	Bit Size	WLSESSION	7.875	in
BSAL	Borehole Salinity	Borehole	600	ppm
BSCO	Borehole Salinity Correction Option	HGNS-H	Yes	
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
DC_MODE	Depth Correction Mode	DepthCorrection	Real-time	
DFD	Drilling Fluid Density	Borehole	9.1	lbm/gal
DFT_CATEGORY	Drilling Fluid Type	Borehole	Water	
DFT_WATER	Drilling Fluid Water Type	Borehole	WBM	
DHC	Density Hole Correction	HDRS-H	Bit Size	
FD	Fluid Density	Borehole	1	g/cm3
FSAL	Formation Salinity	Borehole	0	ppm
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	
GTSE	Generalized Temperature Selection, from Measured or Computed Temperature	Borehole	CTEM	
HSCO	Hole Size Correction Option	HGNS-H	Yes	
MATR	Rock Matrix for Neutron Porosity Corrections	Borehole	SANDSTONE	
MDEN	Matrix Density for Density Porosity	Borehole	2.65	g/cm3
MFST	Mud Filtrate Sample Temperature	Borehole	68	degF
PTCO	Pressure Temperature Correction Option	HGNS-H	Yes	
RMFS	Resistivity of Mud Filtrate Sample	Borehole	0.15	ohm.m
TD	Total Measured Depth	Borehole	4504	ft

## Tool Control Parameters

### ONE: Parameters

Parameter	Description	Tool	Value	Unit
HMCA_BOARD_TYPE	HMCA Board Type	HGNS-H	1	
HRGD_BOARD_TYPE	HRGD Board Type	HDRS-H	WITH_HET	
MAX_LOG_SPEED	Toolstring Maximum Logging Speed	WLSESSION	3600	ft/h
NPUC	Nuclear Pile-Up Correction	HDRS-H	On	

## 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	<div><div></div><div></div><div></div><div></div><div></div></div>
Test Loop Gain - 0		Master	1.000	0.950	1.018	1.050	<div><div></div><div></div><div></div><div></div><div></div></div>
Test Loop Phase - 0	deg	Master	0	-3.000	0.466	3.000	<div><div></div><div></div><div></div><div></div><div></div></div>
Test Loop Gain - 1		Master	1.000	0.950	1.016	1.050	<div><div></div><div></div><div></div><div></div><div></div></div>
Test Loop Phase - 1	deg	Master	0	-3.000	0.592	3.000	<div><div></div><div></div><div></div><div></div><div></div></div>
Test Loop Gain - 2		Master	1.000	0.950	1.018	1.050	<div><div></div><div></div><div></div><div></div><div></div></div>
Test Loop Phase - 2	deg	Master	0	-3.000	-0.168	3.000	<div><div></div><div></div><div></div><div></div><div></div></div>
Test Loop Gain - 3		Master	1.000	0.950	1.014	1.050	<div><div></div><div></div><div></div><div></div><div></div></div>
Test Loop Phase - 3	deg	Master	0	-3.000	-0.081	3.000	<div><div></div><div></div><div></div><div></div><div></div></div>
Test Loop Gain - 4		Master	1.000	0.950	1.000	1.050	<div><div></div><div></div><div></div><div></div><div></div></div>

Test Loop Phase - 4	deg	Master	0	-3.000	0.271	3.000	<div><div></div><div></div><div></div><div></div><div></div></div>
Test Loop Gain - 5		Master	1.000	0.950	0.986	1.050	<div><div></div><div></div><div></div><div></div><div></div></div>
Test Loop Phase - 5	deg	Master	0	-3.000	0.500	3.000	<div><div></div><div></div><div></div><div></div><div></div></div>
Test Loop Gain - 6		Master	1.000	0.950	0.999	1.050	<div><div></div><div></div><div></div><div></div><div></div></div>
Test Loop Phase - 6	deg	Master	0	-3.000	0.312	3.000	<div><div></div><div></div><div></div><div></div><div></div></div>
Test Loop Gain - 7		Master	1.000	0.950	1.015	1.050	<div><div></div><div></div><div></div><div></div><div></div></div>
Test Loop Phase - 7	deg	Master	0	-3.000	-0.002	3.000	<div><div></div><div></div><div></div><div></div><div></div></div>
AIT Sonde Calibration - Sonde Error Correction							
Master (EEPROM): 19:47:51 02-Jan-2018							
Measurement	Unit	Phase	Nominal	Low Limit	Actual	High Limit	<div><div></div><div></div></div>
Sonde Error Correction Real - 0	mS/m	Master	----	-231.000	-84.140	119.000	<div><div></div><div></div><div></div><div></div><div></div></div>
Sonde Error Correction Quad - 0		Master	----	-2250.000	-111.537	2250.000	<div><div></div><div></div><div></div><div></div><div></div></div>
Sonde Error Correction Real - 1	mS/m	Master	----	114.000	189.149	204.000	<div><div></div><div></div><div></div><div></div><div></div></div>
Sonde Error Correction Quad - 1		Master	----	-625.000	-132.092	625.000	<div><div></div><div></div><div></div><div></div><div></div></div>
Sonde Error Correction Real - 2	mS/m	Master	----	66.000	96.476	156.000	<div><div></div><div></div><div></div><div></div><div></div></div>
Sonde Error Correction Quad - 2		Master	----	-350.000	-197.375	350.000	<div><div></div><div></div><div></div><div></div><div></div></div>
Sonde Error Correction Real - 3	mS/m	Master	----	39.000	56.388	89.000	<div><div></div><div></div><div></div><div></div><div></div></div>
Sonde Error Correction Quad - 3		Master	----	-250.000	-3.688	250.000	<div><div></div><div></div><div></div><div></div><div></div></div>
Sonde Error Correction Real - 4	mS/m	Master	----	15.000	26.947	35.000	<div><div></div><div></div><div></div><div></div><div></div></div>
Sonde Error Correction Quad - 4		Master	----	-63.000	-16.050	63.000	<div><div></div><div></div><div></div><div></div><div></div></div>
Sonde Error Correction Real - 5	mS/m	Master	----	4.000	11.514	24.000	<div><div></div><div></div><div></div><div></div><div></div></div>
Sonde Error Correction Quad - 5		Master	----	-50.000	23.280	50.000	<div><div></div><div></div><div></div><div></div><div></div></div>
Sonde Error Correction Real - 6	mS/m	Master	----	5.000	10.454	15.000	<div><div></div><div></div><div></div><div></div><div></div></div>
Sonde Error Correction Quad - 6		Master	----	-30.000	-5.840	30.000	<div><div></div><div></div><div></div><div></div><div></div></div>
Sonde Error Correction Real - 7	mS/m	Master	----	-5.000	-1.634	5.000	<div><div></div><div></div><div></div><div></div><div></div></div>
Sonde Error Correction Quad - 7		Master	----	-30.000	3.752	30.000	<div><div></div><div></div><div></div><div></div><div></div></div>
AIT Mud Calibration - Mud Calibration Gain							
Master (EEPROM): 19:47:51 02-Jan-2018							
Measurement	Unit	Phase	Nominal	Low Limit	Actual	High Limit	<div><div></div><div></div></div>
Coarse Gain		Master	1.000	0.800	0.872	1.200	<div><div></div><div></div><div></div><div></div><div></div></div>
Fine Gain		Master	1.000	0.800	0.863	1.200	<div><div></div><div></div><div></div><div></div><div></div></div>
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	<div><div></div><div></div></div>
Thru Cal Mag - 0	V	Master	----	0.366	0.607	0.854	<div><div></div><div></div><div></div><div></div><div></div></div>
		Before	----	0.366	0.607	0.854	<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>
Thru Cal Phase - 0	deg	Master	----	137.000	-172.033	-103.000	<div><div></div><div></div><div></div><div></div><div></div></div>
		Before	----	137.000	-173.892	-103.000	<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	----	----	-1.859	----	<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 Mag - 1	V	Master	----	0.762	1.245	1.778	<div><div></div><div></div><div></div><div></div><div></div></div>
		Before	----	0.762	1.244	1.778	<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	----	----	-0.001	----	<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 - 1	deg	Master	----	136.000	-172.976	-104.000	<div><div></div><div></div><div></div><div></div><div></div></div>
		Before	----	136.000	-174.837	-104.000	<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	----	----	-1.861	----	<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 Mag - 2	V	Master	----	0.372	0.617	0.868	<div><div></div><div></div><div></div><div></div><div></div></div>
		Before	----	0.372	0.616	0.868	<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	----	----	-0.001	----	<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 - 2	deg	Master	----	132.000	-176.357	-108.000	<div><div></div><div></div><div></div><div></div><div></div></div>
		Before	----	132.000	-178.218	-108.000	<div><div></div><div></div><div></div><div></div><div></div></div>



		After	----	----	----	----	
		Before-Master	----	----	-1.861	----	
		After-Before	----	----	----	----	
Thru Cal Mag - 3	V	Master	----	0.420	0.699	0.980	
		Before	----	0.420	0.698	0.980	
		After	----	----	----	----	
		Before-Master	----	----	-0.001	----	
		After-Before	----	----	----	----	
Thru Cal Phase - 3	deg	Master	----	131.000	-177.087	-109.000	
		Before	----	131.000	-178.952	-109.000	
		After	----	----	----	----	
		Before-Master	----	----	-1.865	----	
		After-Before	----	----	----	----	
Thru Cal Mag - 4	V	Master	----	0.804	1.309	1.876	
		Before	----	0.804	1.307	1.876	
		After	----	----	----	----	
		Before-Master	----	----	-0.002	----	
		After-Before	----	----	----	----	
Thru Cal Phase - 4	deg	Master	----	125.000	177.118	-115.000	
		Before	----	125.000	175.239	-115.000	
		After	----	----	----	----	
		Before-Master	----	----	-1.879	----	
		After-Before	----	----	----	----	
Thru Cal Mag - 5	V	Master	----	1.176	1.905	2.744	
		Before	----	1.176	1.904	2.744	
		After	----	----	----	----	
		Before-Master	----	----	-0.001	----	
		After-Before	----	----	----	----	
Thru Cal Phase - 5	deg	Master	----	122.000	175.565	-118.000	
		Before	----	122.000	173.679	-118.000	
		After	----	----	----	----	
		Before-Master	----	----	-1.886	----	
		After-Before	----	----	----	----	
Thru Cal Mag - 6	V	Master	----	1.176	1.903	2.744	
		Before	----	1.176	1.901	2.744	
		After	----	----	----	----	
		Before-Master	----	----	-0.002	----	
		After-Before	----	----	----	----	
Thru Cal Phase - 6	deg	Master	----	121.000	175.599	-119.000	
		Before	----	121.000	173.713	-119.000	
		After	----	----	----	----	
		Before-Master	----	----	-1.886	----	
		After-Before	----	----	----	----	
Thru Cal Mag - 7	V	Master	----	0.846	1.375	1.974	
		Before	----	0.846	1.373	1.974	
		After	----	----	----	----	
		Before-Master	----	----	-0.002	----	
		After-Before	----	----	----	----	
Thru Cal Phase - 7	deg	Master	----	115.000	174.690	-125.000	
		Before	----	115.000	172.726	-125.000	
		After	----	----	----	----	
		Before-Master	----	----	-1.964	----	
		After-Before	----	----	----	----	
SPA Zero	mV	Master		-50.000	-0.123	50.000	
		Before		-50.000	-0.119	50.000	
		After	----	----	----	----	
		Before-Master	----	----	0.004	----	
		After-Before	----	----	----	----	
SPA Plus	mV	Master		941.000	1002.225	1040.000	
		Before		941.000	1003.250	1040.000	
		After	----	----	----	----	
		Before-Master	----	----	1.025	----	
		After-Before	----	----	----	----	
Temperature Zero	V	Master		-0.050	0.000	0.050	

		Before		-0.050	0.000	0.050	
		After	----	----	----	----	
		Before-Master	----	----	0.000	----	
		After-Before	----	----	----	----	
Temperature Plus	V	Master		0.870	0.929	0.960	
		Before		0.870	0.929	0.960	
		After	----	----	----	----	
		Before-Master	----	----	0.000	----	
		After-Before	----	----	----	----	

## 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	
Small Ring	in	Before	8.00	6.00	8.42	10.00	
Large Ring	in	Before	12.00	9.00	12.41	15.00	

## HDRS Density Calibration - Inversion Results

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

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

## HDRS Density Calibration - Deviation 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 Before-Master	0.4852 -----	0.4610 -----	0.4855 0.0003	0.5095 -----	<div><div></div><div></div><div></div><div></div><div></div><div></div></div>
SS Window Sum	1/s	Master Before Before-Master	1 10478 -----	9954 -----	10478 10460 -18	11002 -----	<div><div></div><div></div><div></div><div></div><div></div><div></div></div>
LS Window Ratio		Master Before Before-Master	1.0000 0.2972 -----	0.2824 -----	0.2972 0.2990 0.0018	0.3121 -----	<div><div></div><div></div><div></div><div></div><div></div><div></div></div>
LS Window Sum	1/s	Master Before Before-Master	1 1178 -----	1119 -----	1178 1173 -5	1237 -----	<div><div></div><div></div><div></div><div></div><div></div><div></div></div>

## 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	<div><div></div><div></div><div></div><div></div><div></div><div></div></div>
BS PM High Voltage	V	Master		1000	1564	2400	<div><div></div><div></div><div></div><div></div><div></div><div></div></div>
		Before		1000	1592	2400	<div><div></div><div></div><div></div><div></div><div></div><div></div></div>
		Before-Master	-----	-100	28	100	<div><div></div><div></div><div></div><div></div><div></div><div></div></div>
SS PM High Voltage	V	Master		1000	1653	2400	<div><div></div><div></div><div></div><div></div><div></div><div></div></div>
		Before		1000	1651	2400	<div><div></div><div></div><div></div><div></div><div></div><div></div></div>
		Before-Master	-----	-100	-2	100	<div><div></div><div></div><div></div><div></div><div></div><div></div></div>
LS PM High Voltage	V	Master		1000	1570	2400	<div><div></div><div></div><div></div><div></div><div></div><div></div></div>
		Before		1000	1570	2400	<div><div></div><div></div><div></div><div></div><div></div><div></div></div>
		Before-Master	-----	-100	0	100	<div><div></div><div></div><div></div><div></div><div></div><div></div></div>

## 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	<div><div></div><div></div><div></div><div></div><div></div><div></div></div>
BS Crystal Resolution	%	Master		5.00	12.12	25.00	<div><div></div><div></div><div></div><div></div><div></div><div></div></div>
		Before		5.00	12.31	25.00	<div><div></div><div></div><div></div><div></div><div></div><div></div></div>
		Before-Master	-----	-1.00	0.19	1.00	<div><div></div><div></div><div></div><div></div><div></div><div></div></div>
SS Crystal Resolution	%	Master		5.00	8.92	20.00	<div><div></div><div></div><div></div><div></div><div></div><div></div></div>
		Before		5.00	8.83	20.00	<div><div></div><div></div><div></div><div></div><div></div><div></div></div>
		Before-Master	-----	-1.00	-0.09	1.00	<div><div></div><div></div><div></div><div></div><div></div><div></div></div>
LS Crystal Resolution	%	Master		5.00	8.88	20.00	<div><div></div><div></div><div></div><div></div><div></div><div></div></div>
		Before		5.00	9.08	20.00	<div><div></div><div></div><div></div><div></div><div></div><div></div></div>
		Before-Master	-----	-1.00	0.20	1.00	<div><div></div><div></div><div></div><div></div><div></div><div></div></div>

## HDRS MCFL Calibration - MCFL Accumulations

Before (Measured): 01:21:05 10-Jun-2018							
Measurement	Unit	Phase	Nominal	Low Limit	Actual	High Limit	<div><div></div><div></div><div></div><div></div><div></div><div></div></div>
Main Resistivity	ohm.m	Before	3875	3565	3850	4185	<div><div></div><div></div><div></div><div></div><div></div><div></div></div>
Deep Resistivity	ohm.m	Before	3830	3524	3798	4136	<div><div></div><div></div><div></div><div></div><div></div><div></div></div>
Shallow Resistivity	ohm.m	Before	3830	3524	3798	4136	<div><div></div><div></div><div></div><div></div><div></div><div></div></div>

## 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			
Housing Size			
JIG-BKG			

## HGNS Accelerometer Calibration - Accelerometer Accumulations

Before (Measured): 01:21:40 10-Jun-2018							
Measurement	Unit	Phase	Nominal	Low Limit	Actual	High Limit	<div><div></div><div></div><div></div><div></div><div></div><div></div></div>
AZ Vertical Measurement	ft/s2	Before	32.2	31.5	31.7	32.8	<div><div></div><div></div><div></div><div></div><div></div><div></div></div>

## HGNS Accelerometer EEPROM - Accelerometer EEPROM Read



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

## EDTC-B Accelerometer Calibration - EDTC-B Accelerometer Calibration

Before (Measured): 01:21:00 10-Jun-2018

Measurement	Unit	Phase	Nominal	Low Limit	Actual	High Limit		
AZ Vertical Measurement	ft/s2	Before	32.19	31.53	32.37	32.84		

## 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	----	----	-5.869E-009	----		
Accelerometer Coefficients - 10		Master	----	----	1.195E-009	----		
Accelerometer Coefficients - 11		Master	----	----	-4.589E-012	----		
Gamma-Ray Detector Serial Number		Master			7434			

## EDTC-B Gamma-Ray Calibration - Gamma Ray Coefficients

Before: After:

Measurement	Unit	Phase	Nominal	Low Limit	Actual	High Limit		
Gamma Ray Gain		Before	1.000	0.900	NOT DONE	1.100		
		After	----	----	----	----		
		After-Before	----	----	----	----		

## EDTC-B Gamma-Ray Calibration - Gamma Ray Accumulations

Before: After:

Measurement	Unit	Phase	Nominal	Low Limit	Actual	High Limit		
RGR Zero Measurement - 0	gAPI	Before	----	----	----	----		
		After	----	----	----	----		
		After-Before	----	----	----	----		
RGR Plus Measurement	gAPI	Before			NOT DONE			
		After			NOT DONE			
		After-Before	----	----	----	----		

## LEH-QT (Logging Equipment Head - QT, 3-3/8 inch 31 pin HPHT with Tension Sensor) Calibration - Run ONE

Primary Equipment :							
Logging Equipment Head - QT, 3-3/8 inch 31 pin HPHT with Tension Sensor				LEH-QT			

## HTEN Master Calibration - HTEN Master Calibration

Master:

Measurement	Unit	Phase	Nominal	Low Limit	Actual	High Limit		
HTEN Shop Gain		Master	1.000	0.800	NOT DONE	4.500		
HTEN Shop Offset	lbf	Master	0	-1000.000	NOT DONE	1000.000		

## HTEN Before Calibration - HTEN Before Calibration

Before:

Measurement	Unit	Phase	Nominal	Low Limit	Actual	High Limit		
RHTE Zero Measurement - 0	lbf	Before	----	----	----	----		

RHTE Plus Measurement - 0	lbf	Before	----	----	----	----		
HTEN Gain - 0		Before	----	----	----	----		
HTEN Offset - 0	lbf	Before	----	----	----	----		

Company:

St. Croix Operating, Inc.

Schlumberger

Well:

State 3-16

Field:

Wildcat

County:

Washington

State:

Colorado

Platform Express

Triple Combo