

Company: NIGHTHAWK PRODUCTION LLC

Well: Mary Jane 8-5

Field: Arikaree Creek

County: Lincoln Country: USA

Platform Express Field Print

Triple Combo

Induction & Nuclear

County: Lincoln

Field: Arikaree Creek

Location: SWNE Sec.5, T7S,R54W

Well: Mary Jane 8-5

Company: NIGHTHAWK PRODUCTION LLC

Location:

SWNE Sec.5, T7S,R54W

FSL: 1870' FNL & 1518' FEL

LatLong: 39.471410-103.459390

Elev.: K.B. 5353.00 ft

G.L. 5338.00 ft

D.F. 5352.00 ft

Permanent Datum:

Ground Level

Elev.: 5338.00 f

Log Measured From:

Kelly Bushing

15.00 ft

above Perm.Datum

Drilling Measured From:

Kelly Bushing

API Serial No.

Section:

Township:

Range:

05-073-06667-0000

5

7S

54W

| | | | |
|-----------------------------|----------------------|-------------|-------------|
| Logging Date | 20-Jan-2015 | | |
| Run Number | ONE | | |
| Depth Driller | 8450.00 ft | | |
| Schlumberger Depth | 8460.00 ft | | |
| Bottom Log Interval | 8460.00 ft | | |
| Top Log Interval | 439.00 ft | | |
| Casing Driller Size @ Depth | 8.625 in @ 438.00 ft | | |
| Casing Schlumberger | 436 ft | | |
| Bit Size | 7.875 in | | |
| Type Fluid In Hole | Water | | |
| Density | 9.25 lbm/gal | 75 s | |
| Fluid Loss | 3.6 cm3 | 8.2 | |
| MUD | Active Tank | | |
| RM @ Meas Temp | 6.51 ohm.m | @ 59.4 degF | |
| RMF @ Meas Temp | 4.88 ohm.m | @ 59.4 degF | |
| RMC @ Meas Temp | 9.76 ohm.m | @ 59.4 degF | |
| Source RMF | Calculated | Calculated | |
| RM @ BHT | 2.1 @ 198 | 1.58 @ 198 | |
| Max Recorded Temperatures | 198 degF | | |
| Circulation Stopped | 19-Jan-2015 22:00:00 | | |
| Logger on Bottom | 20-Jan-2015 09:34:00 | | |
| Unit Number | Location: | 9108 | Fort Morgan |
| Recorded By | B Makinson/B Beggs | | |
| Witnessed By | Jim Weir | | |

Disclaimer

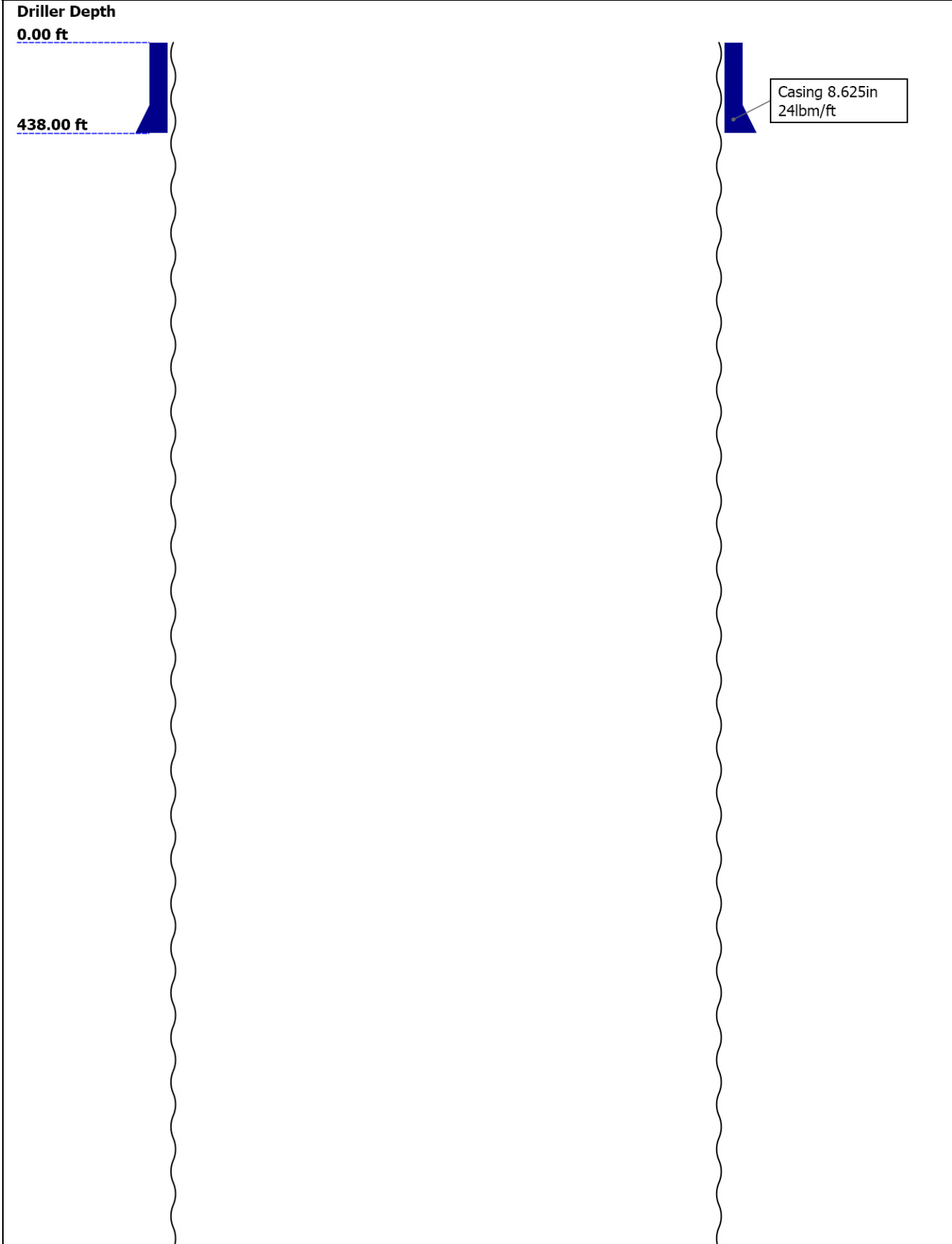
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Well Sketch





Borehole Size/Casing/Tubing Record

| | | | | | | |
|-----------------------|-------|--|--|--|--|--|
| Bit | | | | | | |
| Bit Size (in) | 7.875 | | | | | |
| Top Driller (ft) | 0 | | | | | |
| Top Logger (ft) | 0 | | | | | |
| Bottom Driller (ft) | 8450 | | | | | |
| Bottom Logger (ft) | 8460 | | | | | |
| Casing | | | | | | |
| Size (in) | 8.625 | | | | | |
| Weight (lbm/ft) | 24 | | | | | |
| Inner Diameter (in) | 8.097 | | | | | |
| Grade | J55 | | | | | |
| Top Driller (ft) | 0 | | | | | |
| Top Logger (ft) | 0 | | | | | |
| Bottom Driller (ft) | 438 | | | | | |
| Bottom Logger (ft) | 436 | | | | | |

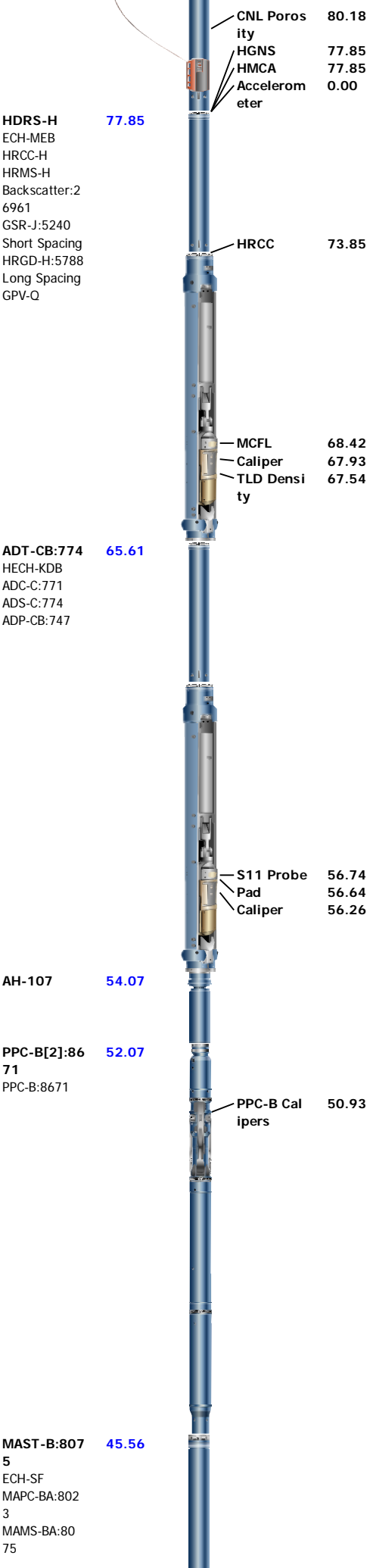
Borehole Fluids

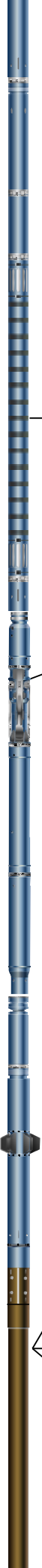
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|------------------------------------|----------------------|--|--|--|--|--|
| Parameter(unit) | ONE | | | | | |
| Fluid Type | Water | | | | | |
| Max Recorded Temperatures (degF) | 198 | | | | | |
| Source of Sample | Active Tank | | | | | |
| Salinity (ppm) | 1500 | | | | | |
| Density (lbm/gal) | 9.25 | | | | | |
| Funnel Viscosity (s) | 75 | | | | | |
| Fluid Loss (cm3) | 3.6 | | | | | |
| PH | 8.2 | | | | | |
| Date/Time Circulation Stopped | 19-Jan-2015 22:00:00 | | | | | |
| Date Logger on Bottom | 20-Jan-2015 | | | | | |
| Time Logger on Bottom | 09:34:00 | | | | | |
| Source RMF | Calculated | | | | | |
| RMC | Calculated | | | | | |
| RM @ Meas Temp (ohm.m@degF) | 6.51 @ 59.4 | | | | | |
| RMF @ Meas Temp (ohm.m@degF) | 4.88 @ 59.4 | | | | | |

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|-----------------------------------|-------------|--|--|--|--|--|
| RMC @ Meas Temp (ohm.m@degF) | 9.76 @ 59.4 | | | | | |
| RM @ BHT (ohm.m@degF) | 2.1 @ 198 | | | | | |
| RMF @ BHT (ohm.m@degF) | 1.58 @ 198 | | | | | |
| RMC @ BHT (ohm.m@degF) | 3.16 @ 198 | | | | | |
| Total Solid (%) | | | | | | |
| High Gravity Solids (%) | | | | | | |

Remarks and Equipment Summary

| ONE: Toolstring | | | | ONE: Remarks | |
|--------------------------------------|------------------|--|---------|--------------|-----------------------------------|
| Equip name LEH-QT LEH-QT | Length 113.34 | | MP name | Offset | Matrix: Limestone 2.71 g/cm3 |
| | | | | | Crew: Aaron Weber, David Marquez |
| | | | | | Rig: Extreme 11 |
| EDTC-B EDTH-B EDTG-A EDTC-B | 110.42 | | | | First Run in the well |
| | | | | | Toolstring run as per tool sketch |
| | | | | | TD: 8460 ft, CSG: 436 ft |
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MAMS 30.12

PPC-B[1]:8193 24.52
PPC-B:8193

PPC-B Calipers 23.37

AH-184 18.00

AIT-M:181 16.00
AMIS:181
AMRM:181

Power Supply 7.91
Induction 7.91
Temperature 7.91

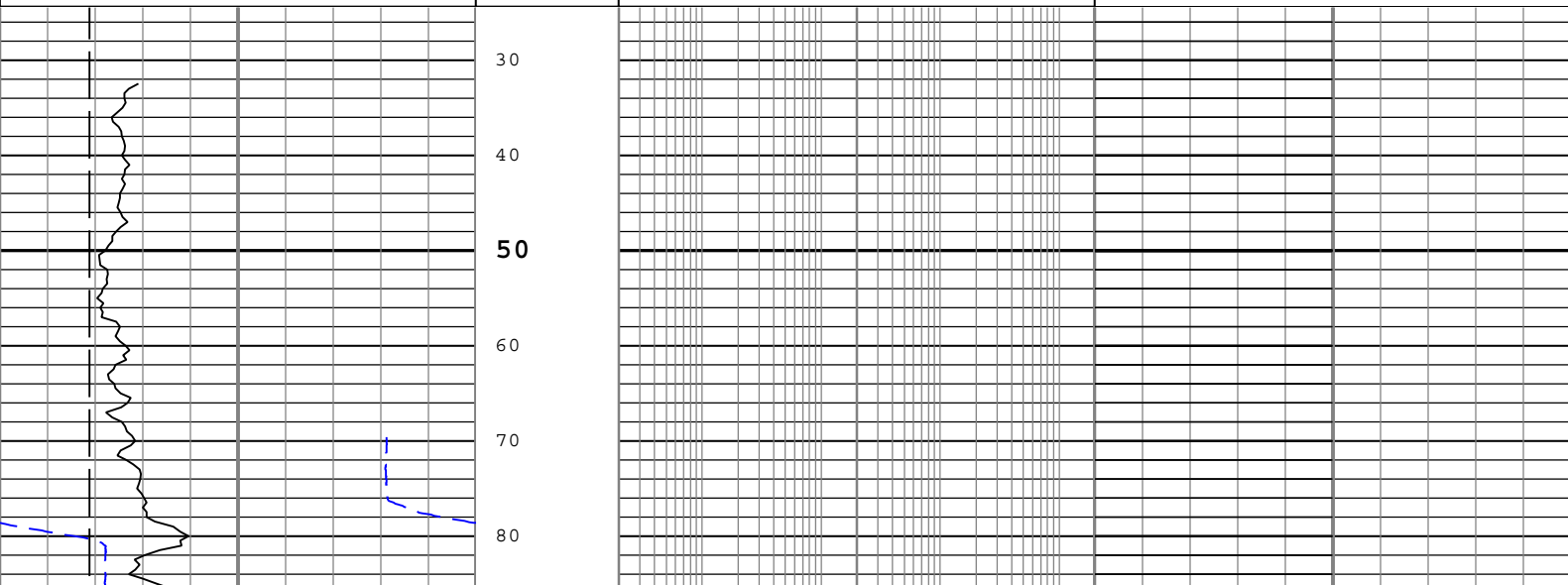
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|--|----------------------------------|-----------------------|-----------|--|-------------------------|------------------------|----------|-------------|-----------------------|
| <div></div> | | | | | | | | | |
| Depth Summary | | | | | | | | | |
| | | ONE | | | | | | | |
| Depth Measuring Device | | | | | | | | | |
| Type | | IDW-JA | | | | | | | |
| Serial Number | | 6780 | | | | | | | |
| Calibration Date | | 12-Nov-2014 | | | | | | | |
| Calibrator Serial Number | | | | | | | | | |
| Calibration Cable Type | | 7-46 AXS | | | | | | | |
| Wheel Correction 1 | | -2 | | | | | | | |
| Wheel Correction 2 | | -2 | | | | | | | |
| Tension Device | | | | | | | | | |
| Type | | CMTD-B/A | | | | | | | |
| Serial Number | | 147 | | | | | | | |
| Calibration Date | | 08-Jan-2015 | | | | | | | |
| Calibrator Serial Number | | 78135A | | | | | | | |
| Number of Calibration Points | | 10 | | | | | | | |
| Calibration Root Mean Square Error | | 23 | | | | | | | |
| Calibration Peak Error | | 47 | | | | | | | |
| Logging Cable | | | | | | | | | |
| Type | | 7-46A-XS | | | | | | | |
| Serial Number | | U714022 | | | | | | | |
| Length | | 18000.00 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 procedures followed | | | | | |
| Rig Up Length At Surface | | | | IDW used as primary depth control | | | | | |
| Rig Up Length At Bottom | | | | Z-Chart used as secondary depth control | | | | | |
| Rig Up Length Correction | | | | | | | | | |
| Stretch Correction | | 2.86 ft | | | | | | | |
| Tool Zero Check At Surface | | | | | | | | | |
| ONE | | | | | | | | | |
| 5" Triple Combo | | | | | | | | | |
| Software Version | | | | | | | | | |
| Acquisition System | | | | | Version | | | | |
| Maxwell | | | | | 5.1.33858.3100 | | | | |
| Pass Summary | | | | | | | | | |
| Run Name | Pass Objective | Direction | Top | Bottom | Start | Stop | DSC Mode | Depth Shift | Include Parallel Data |
| ONE | Log[5]:Up | Up | 137.47 ft | 8490.28 ft | 20-Jan-2015 11:25:38 AM | 20-Jan-2015 5:57:28 PM | ON | 0.00 ft | Yes |
| All depths are referenced to toolstring zero | | | | | | | | | |
| Log | Company:NIGHTHAWK PRODUCTION LLC | | | | Well:Mary Jane 8-5 | | | | |

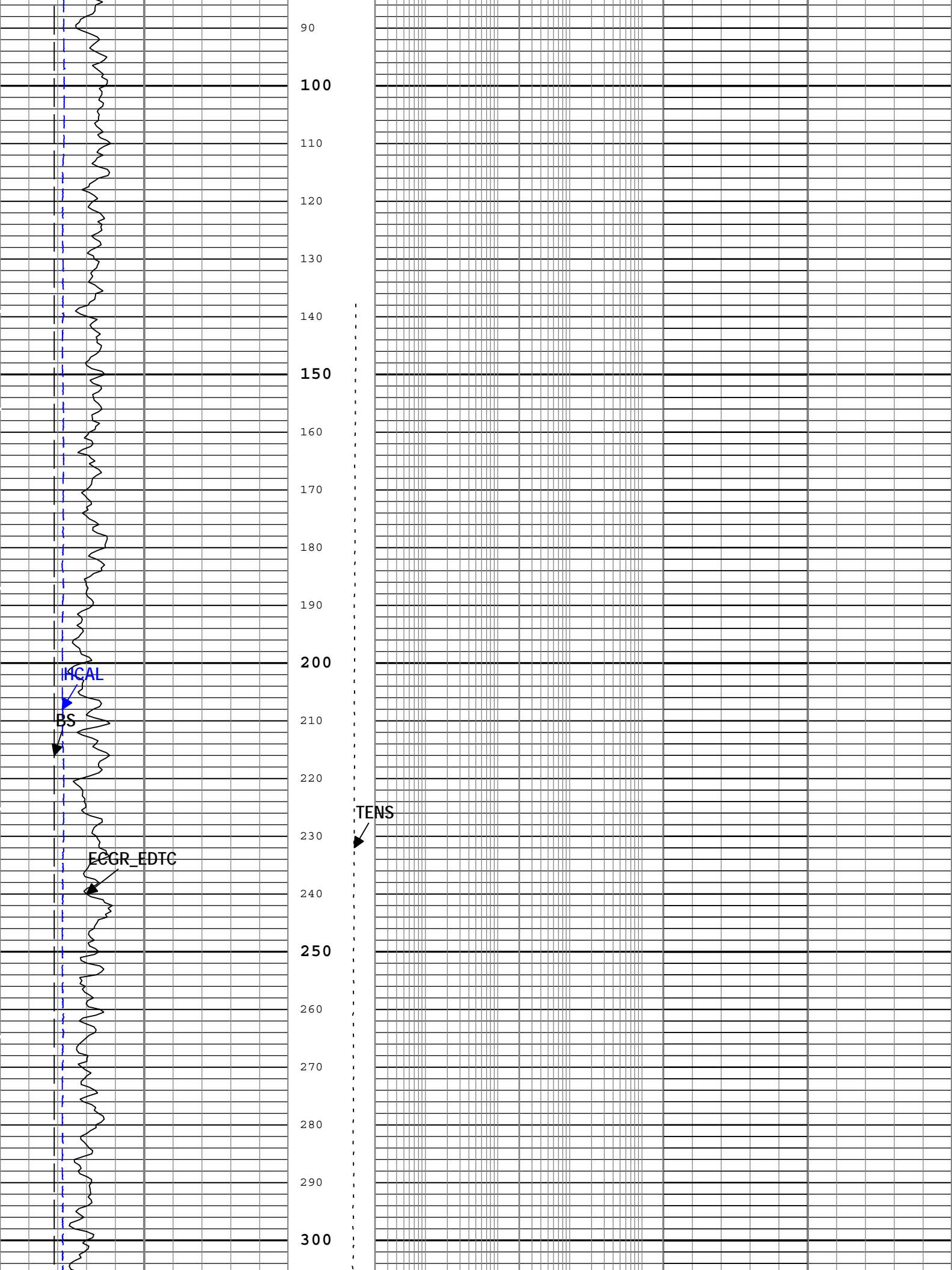
Description: HGNS standard resolution porosities for Platform Express Format: Log (EMD 5in Triple Combo Linear) Index Scale: 5 in per 100 ft Index Unit: ft Index Type: Measured Depth Creation Date: 20-Jan-2015 19:12:54

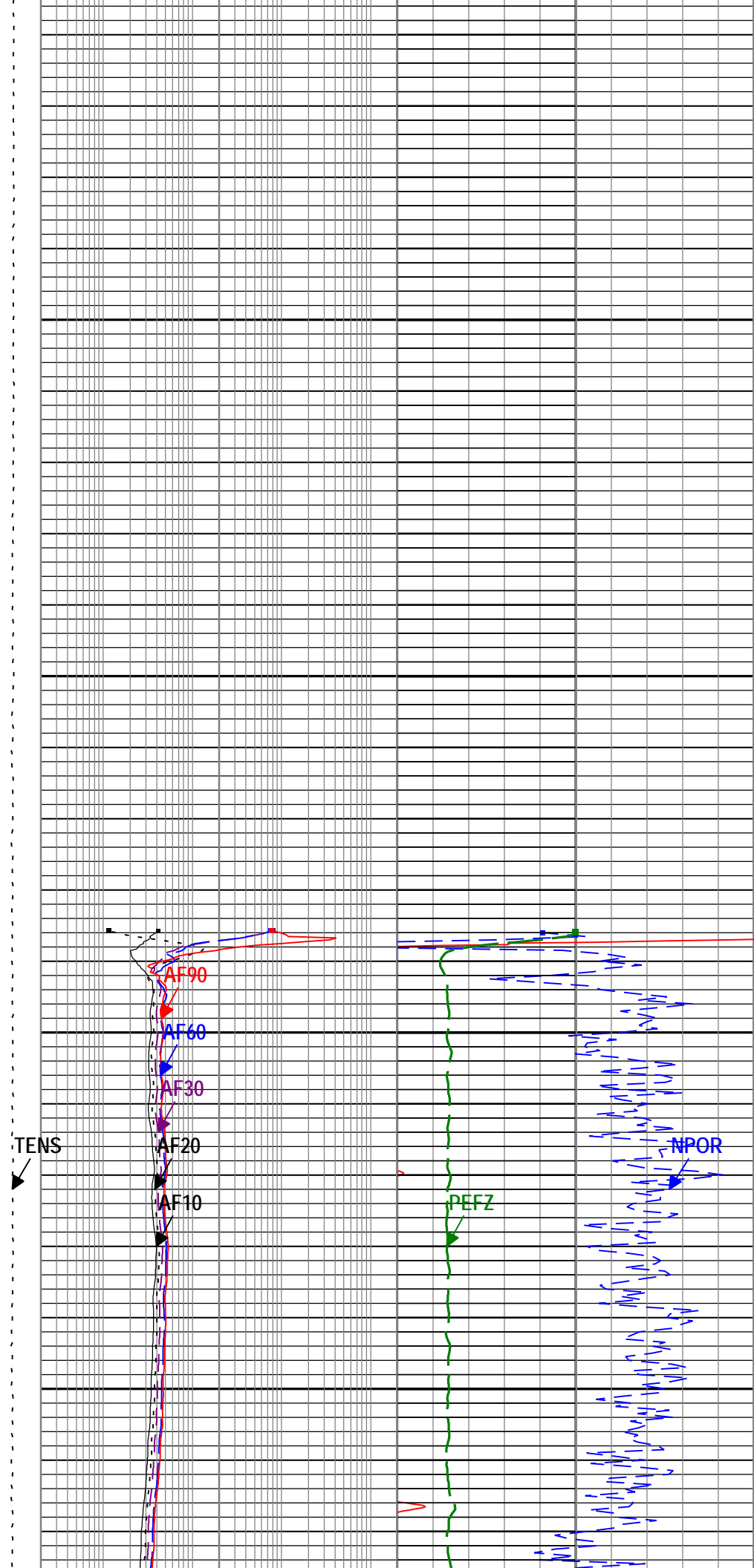
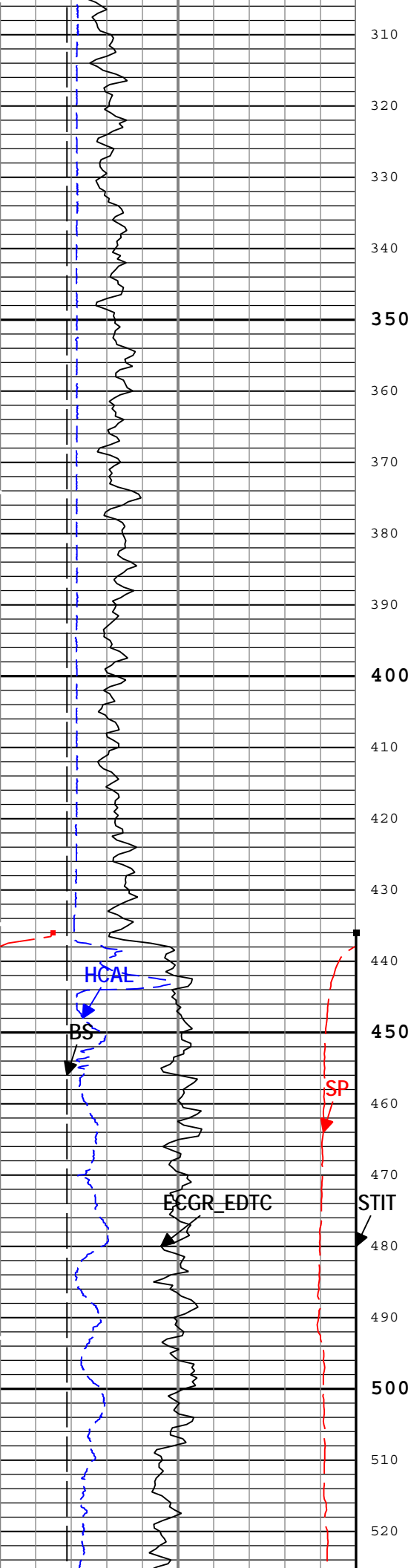
| Channel | Source | Sampling |
|-----------|----------------------|----------|
| AF10 | AIT-M:AMIS:AMIS | 3in |
| AF20 | AIT-M:AMIS:AMIS | 3in |
| AF30 | AIT-M:AMIS:AMIS | 3in |
| AF60 | AIT-M:AMIS:AMIS | 3in |
| AF90 | AIT-M:AMIS:AMIS | 3in |
| BS | Borehole | 6in |
| CALI | HDRS-H:HRCC-H:HRCC-H | 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 |
| SP | AIT-M:AMIS:AMIS | 6in |
| STIT | DepthCorrection | 6in |
| TENS | WLWorkflow | 6in |
| TIME_1900 | WLWorkflow | 0.1in |

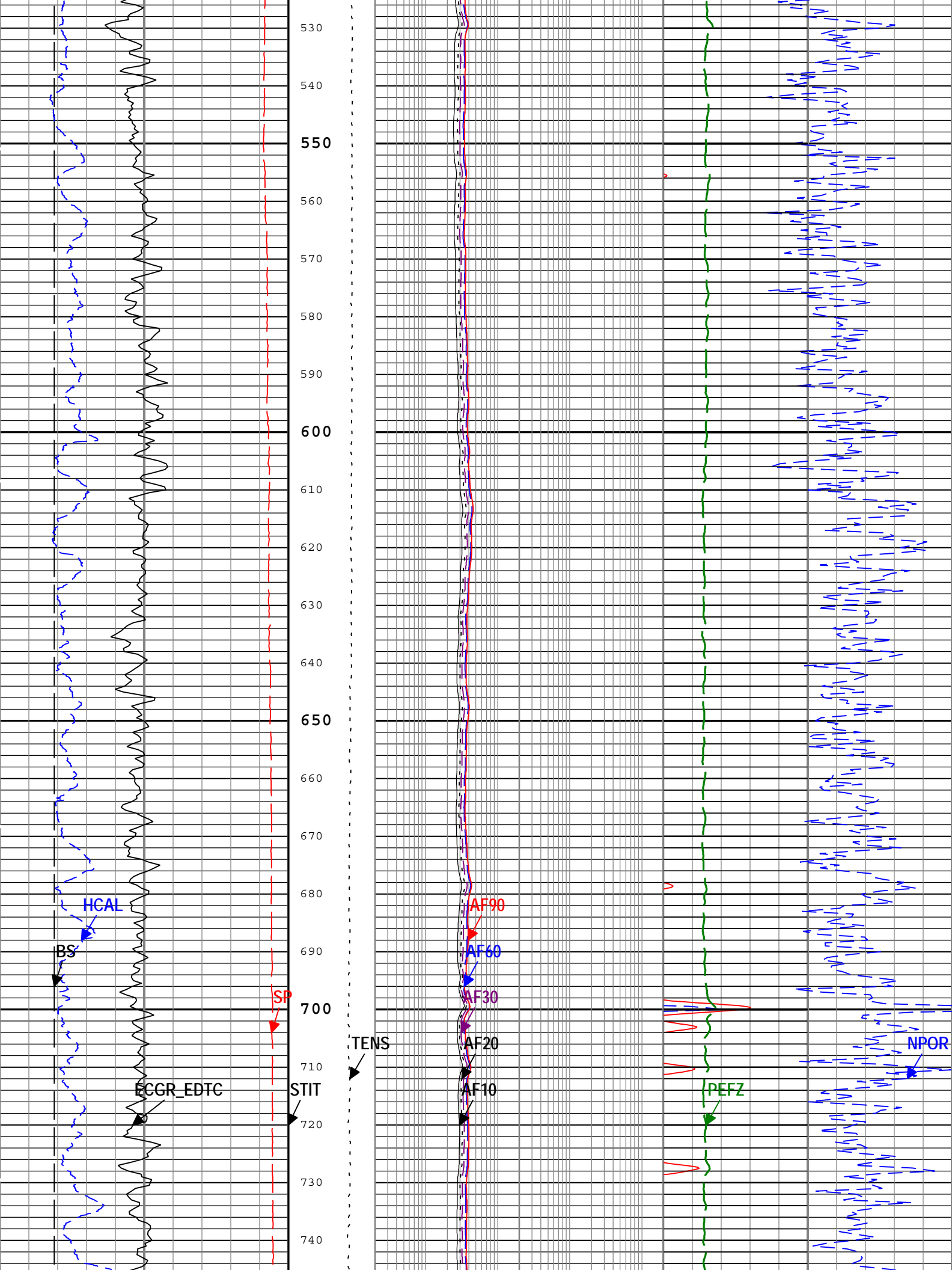
TIME_1900 - Time Marked every 60.00 (s)

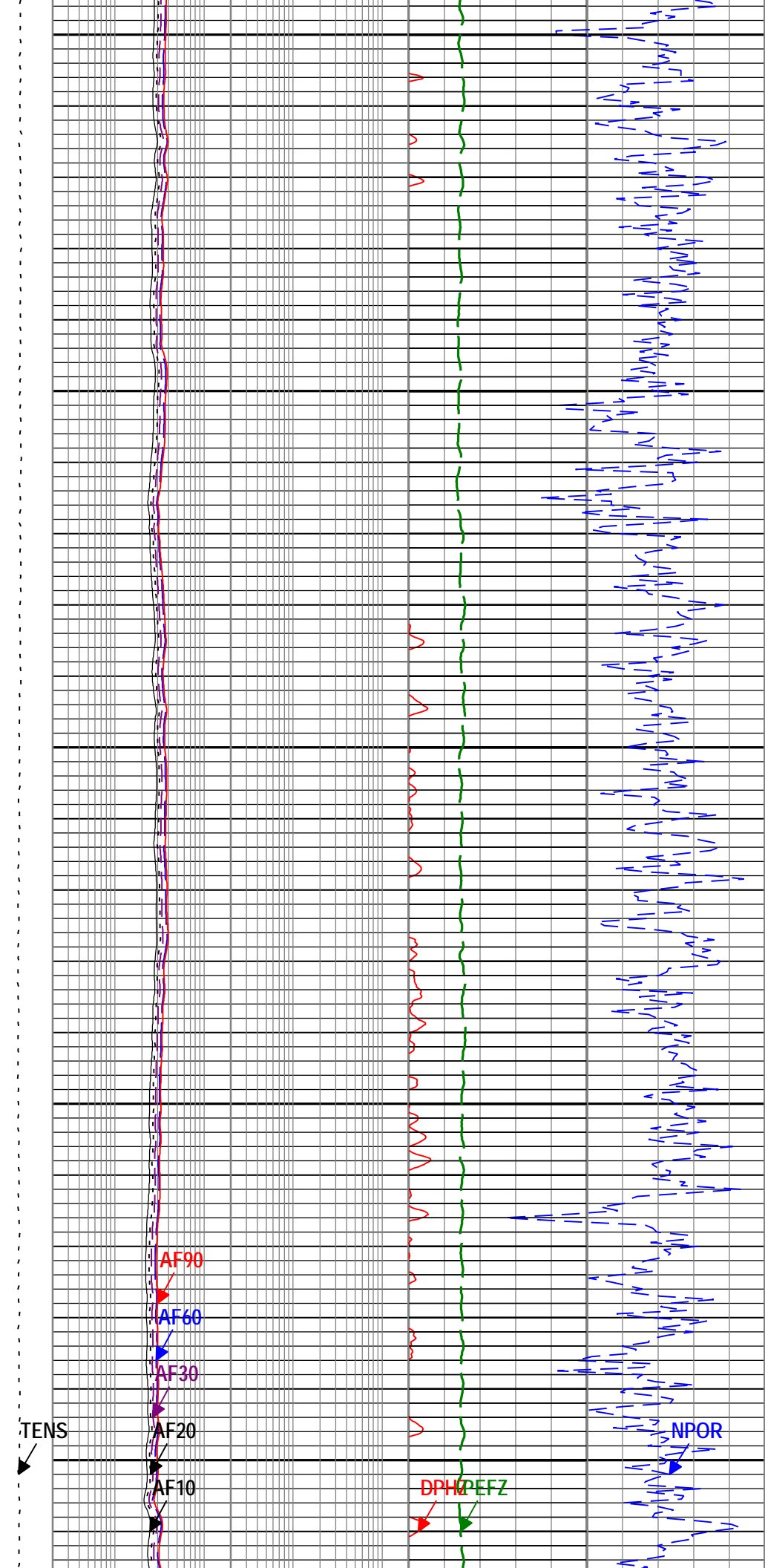
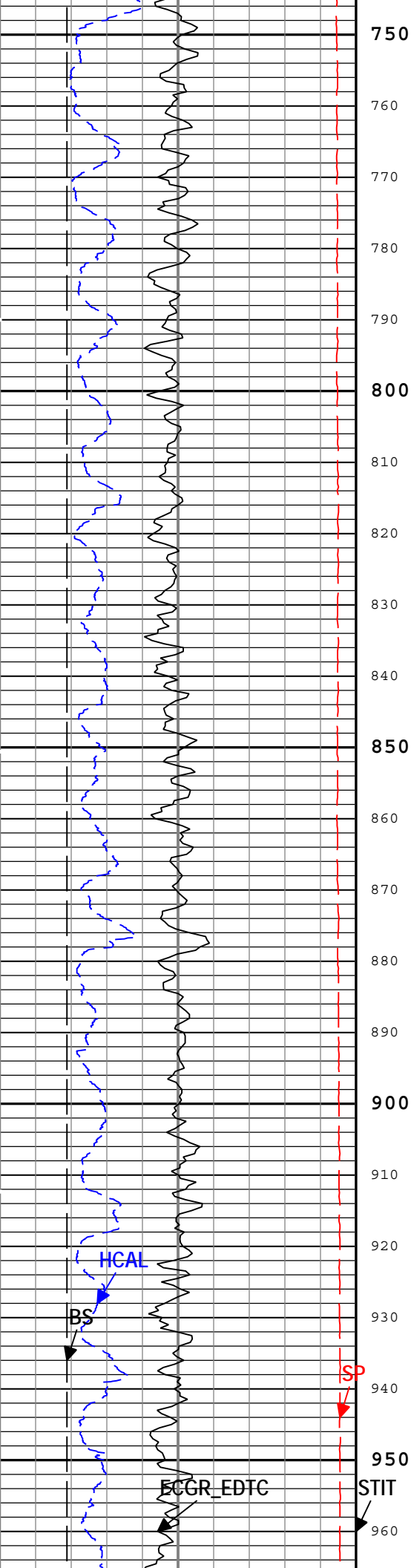
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|----------------------------------|--|--|---|---|--|---|--|--|--|
| | | | Array Induction Four Foot Resistivity A10 (AF10) AIT-M | | | Standard Resolution Formation Photoelectric Factor (PEFZ) HDRS-H <div><div>0</div><div>10</div></div> | | | |
| | | | 0.2 ohm.m 2000 | | | | | | |
| | | | Array Induction Four Foot Resistivity A20 (AF20) AIT-M | | | | | | |
| | | | 0.2 ohm.m 2000 | | | | | | |
| Gamma Ray Back up | | | Stuck Tool Indicator, Total (STIT) | Array Induction Four Foot Resistivity A30 (AF30) AIT-M | | | Gas Effect | | |
| Gamma Ray (ECGR_EDTC) EDTC-B | | | | 0.2 ohm.m 2000 | | | NPOR Backup | | |
| 0 gAPI 200 | | | | | | | | | |
| | | | | | | | | | |
| Spontaneous Potential (SP) AIT-M | | | Cable Tension (TENS) | Array Induction Four Foot Resistivity A60 (AF60) AIT-M | | | Standard Resolution Density Porosity (DPHZ) HDRS-H | | |
| -100 mV 200 | | | | 0.2 ohm.m 2000 | | | 0.3 ft3/ft3 -0.1 | | |
| Bit Size (BS) | | | | | | | | | |
| 6 in 16 | | | | | | | | | |
| Caliper (HCAL) HDRS-H | | | 10000 0 lbf | Array Induction Four Foot Resistivity A90 (AF90) AIT-M | | | Enhanced Thermal Neutron Porosity in Selected Lithology (NPOR) HGNS-H | | |
| 6 in 16 | | | | 0.2 ohm.m 2000 | | | 0.3 m3/m3 -0.1 | | |

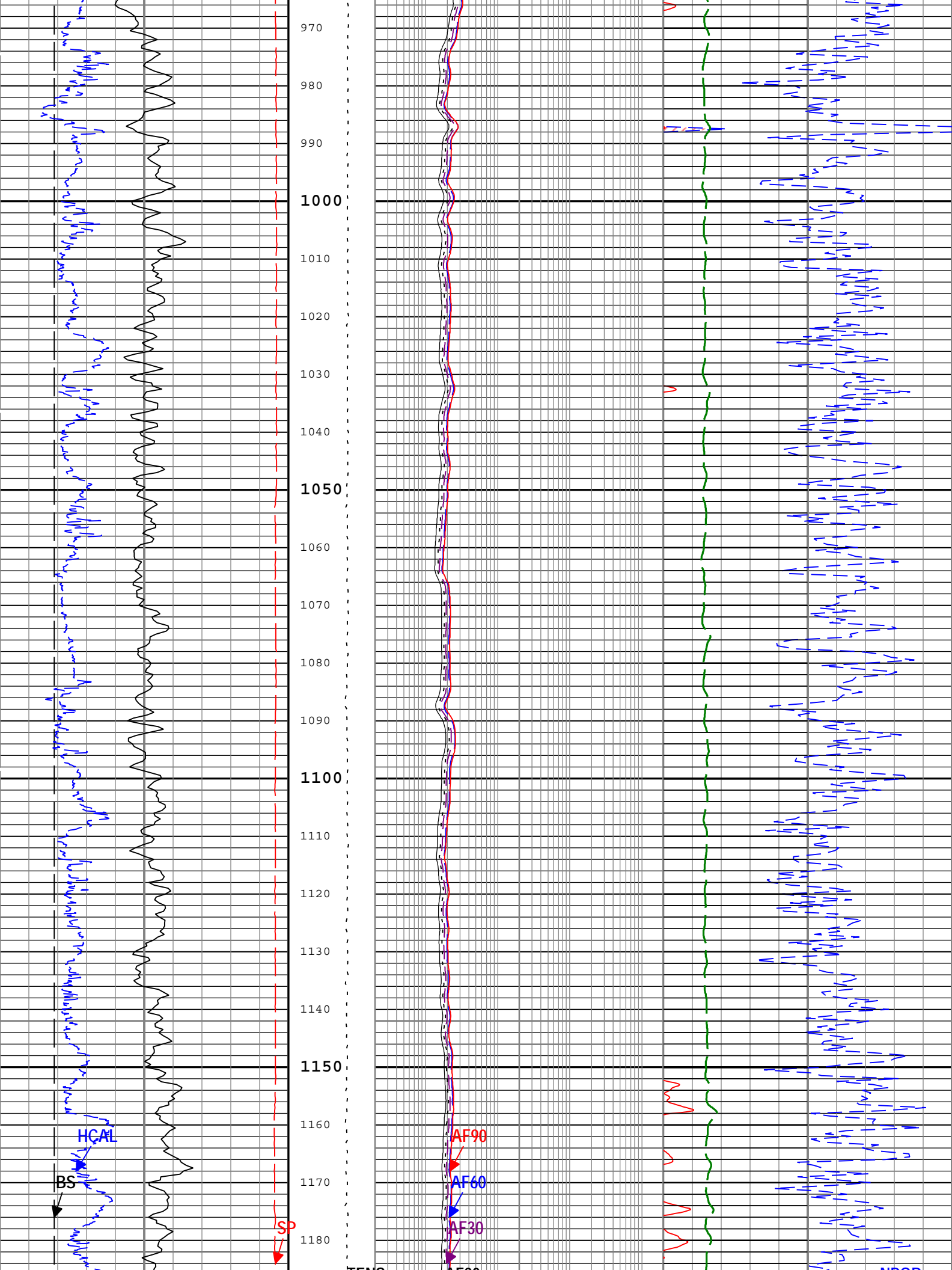


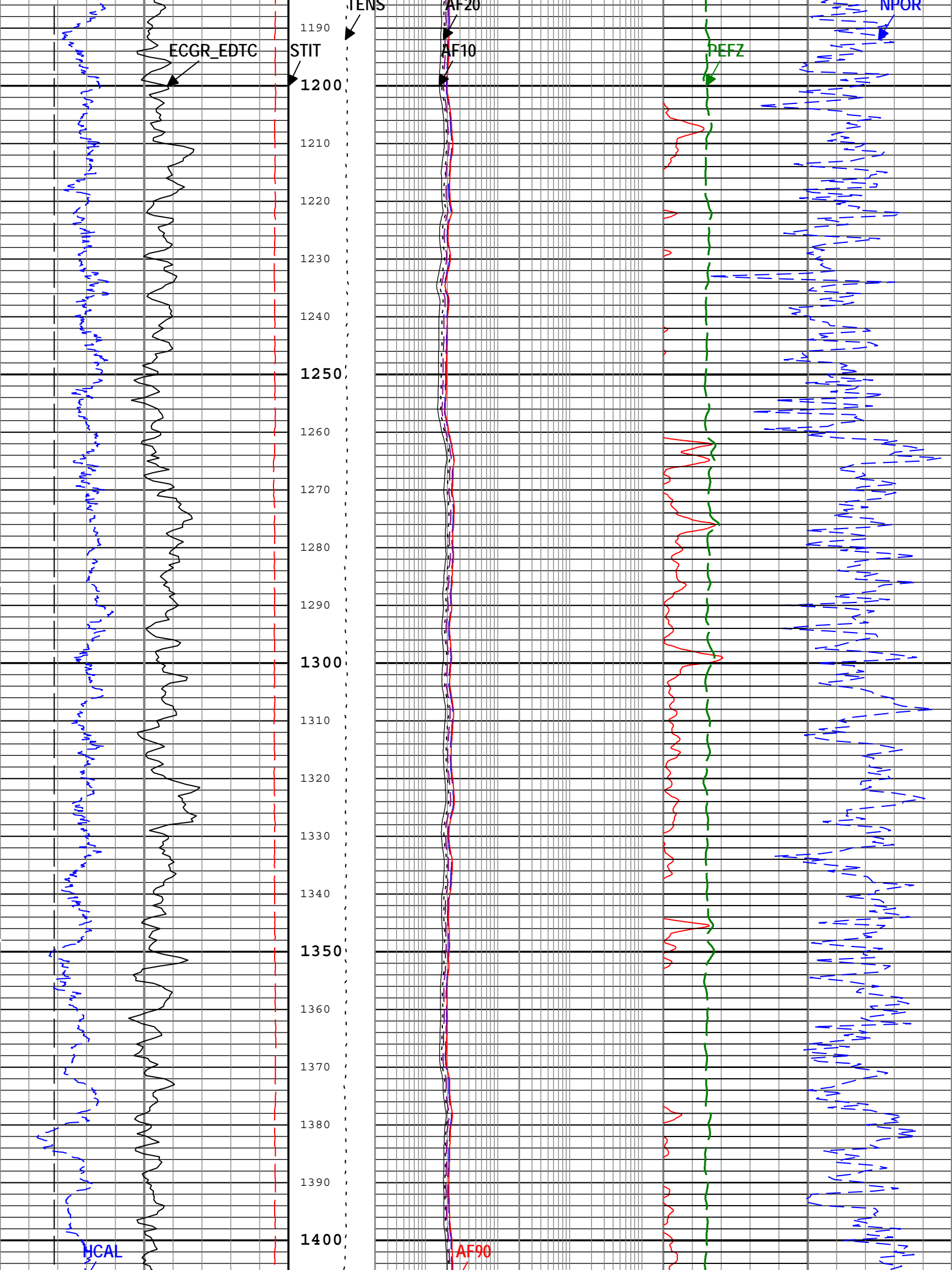


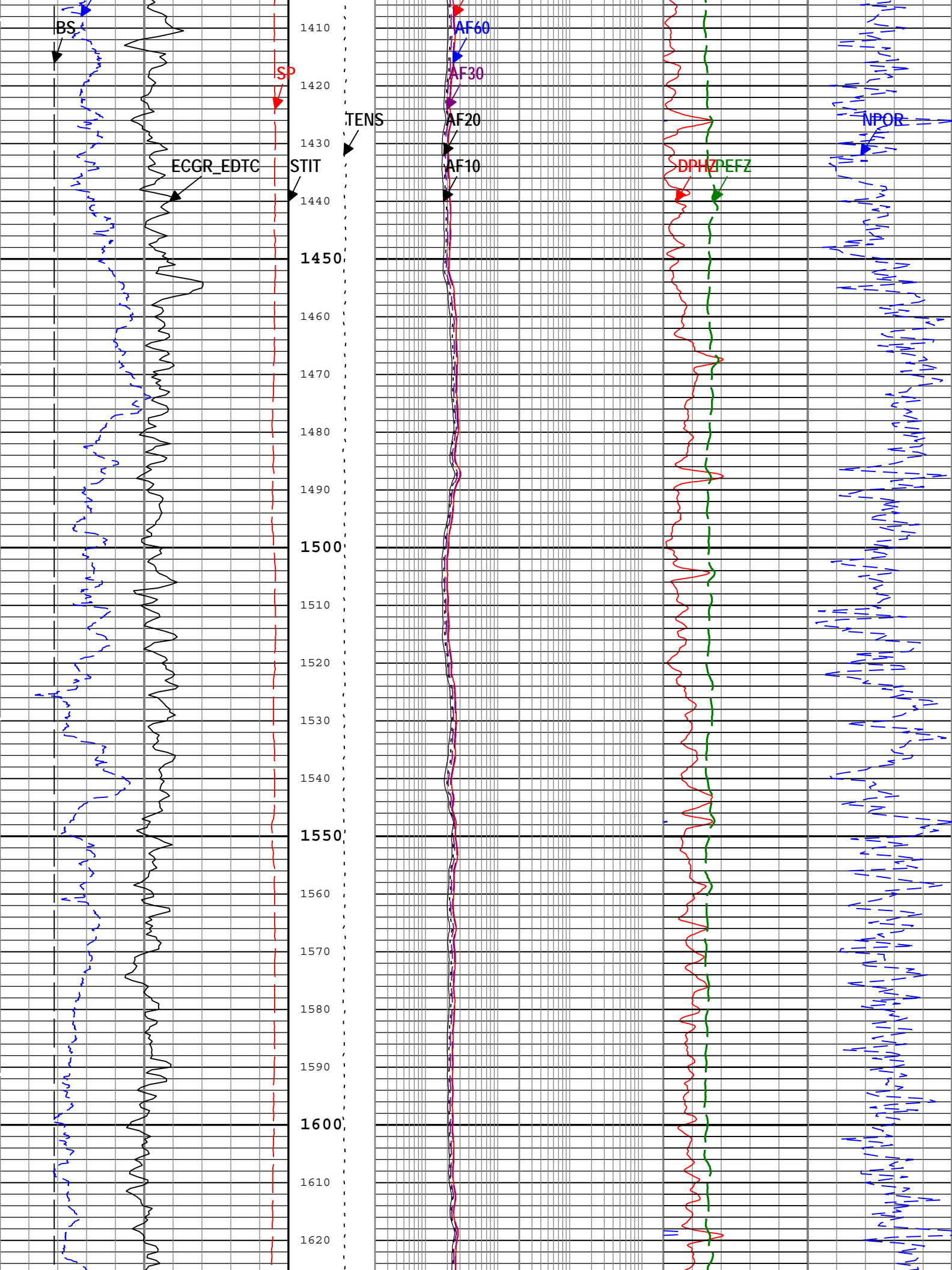


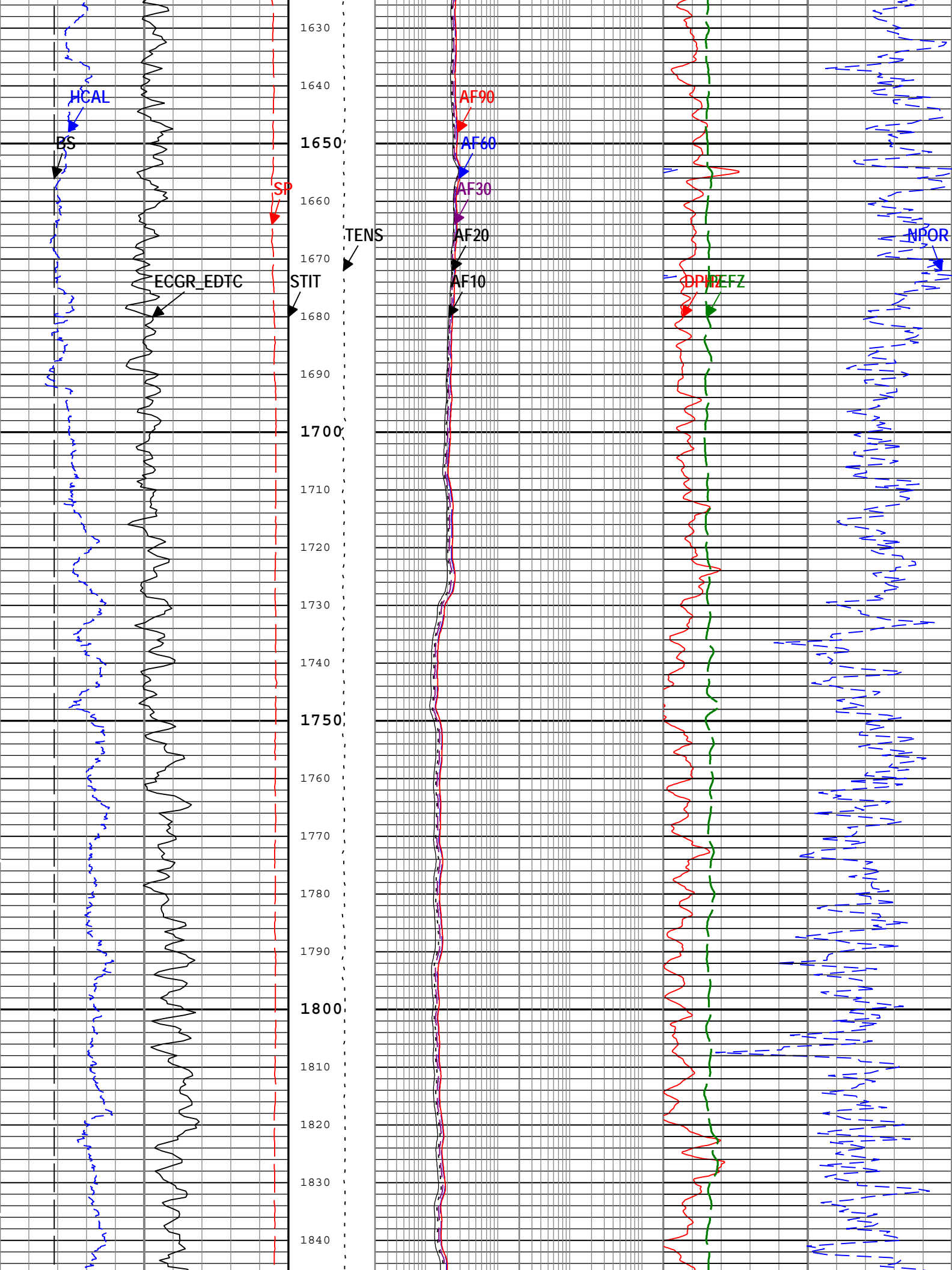


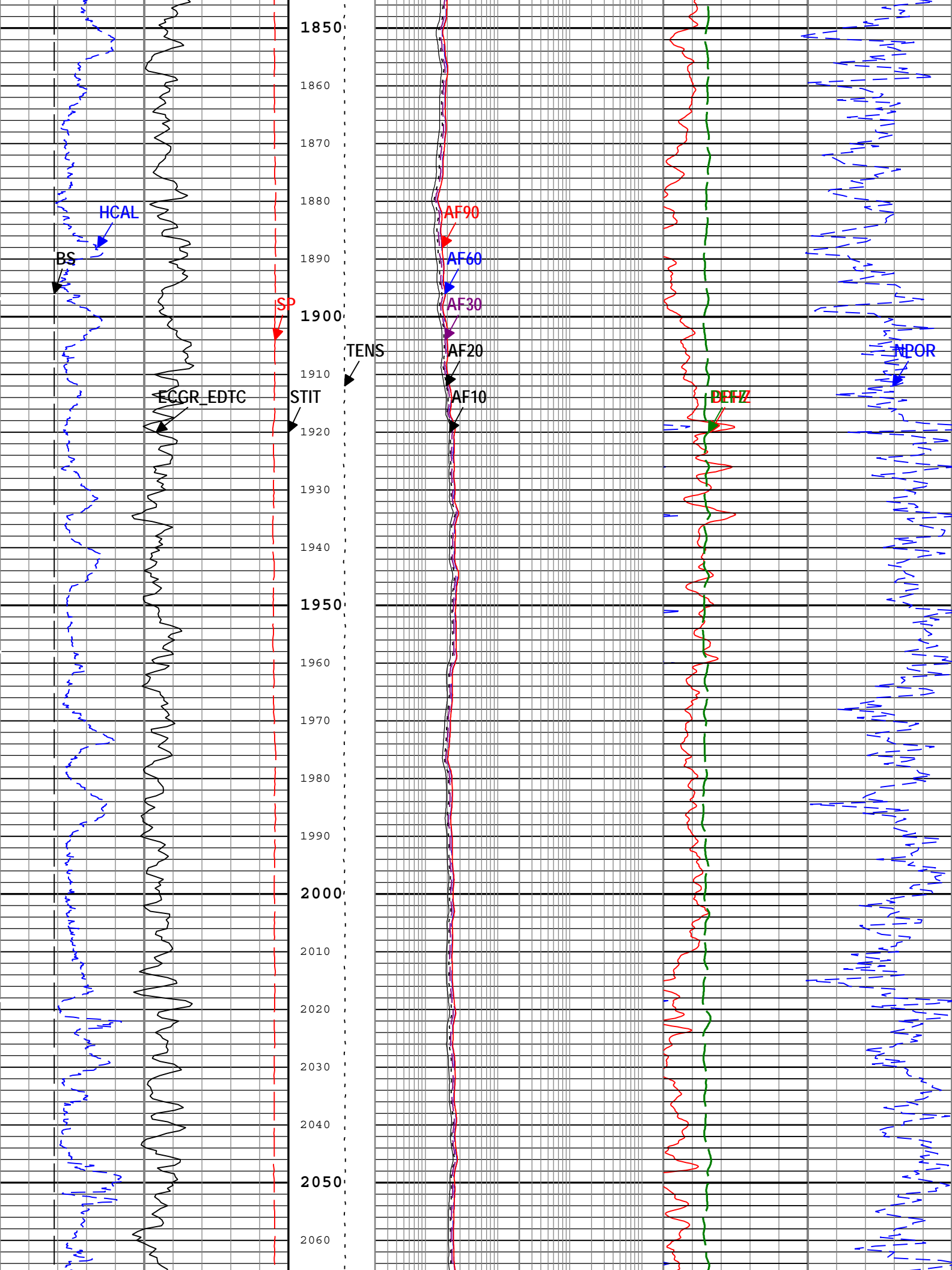


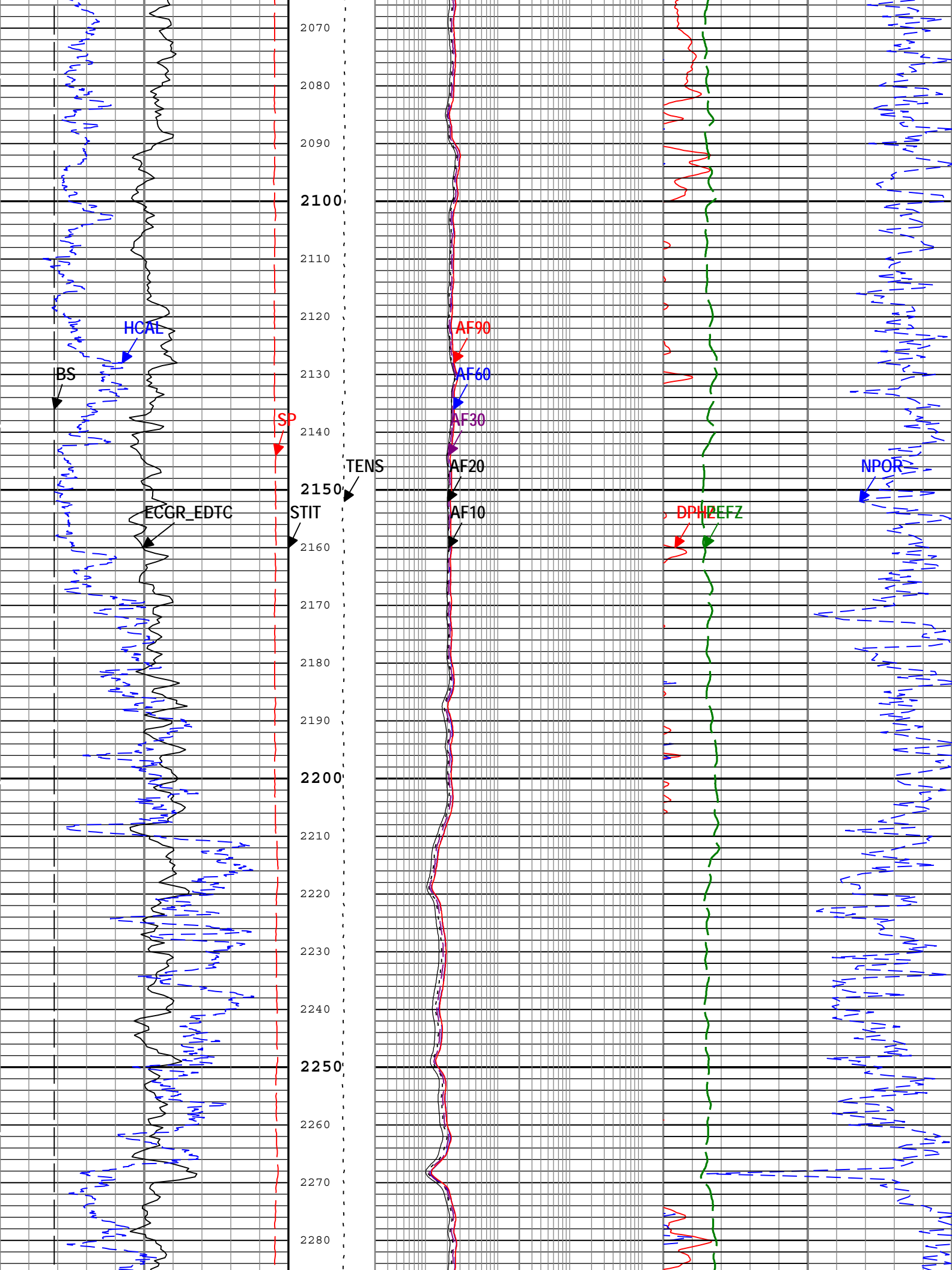


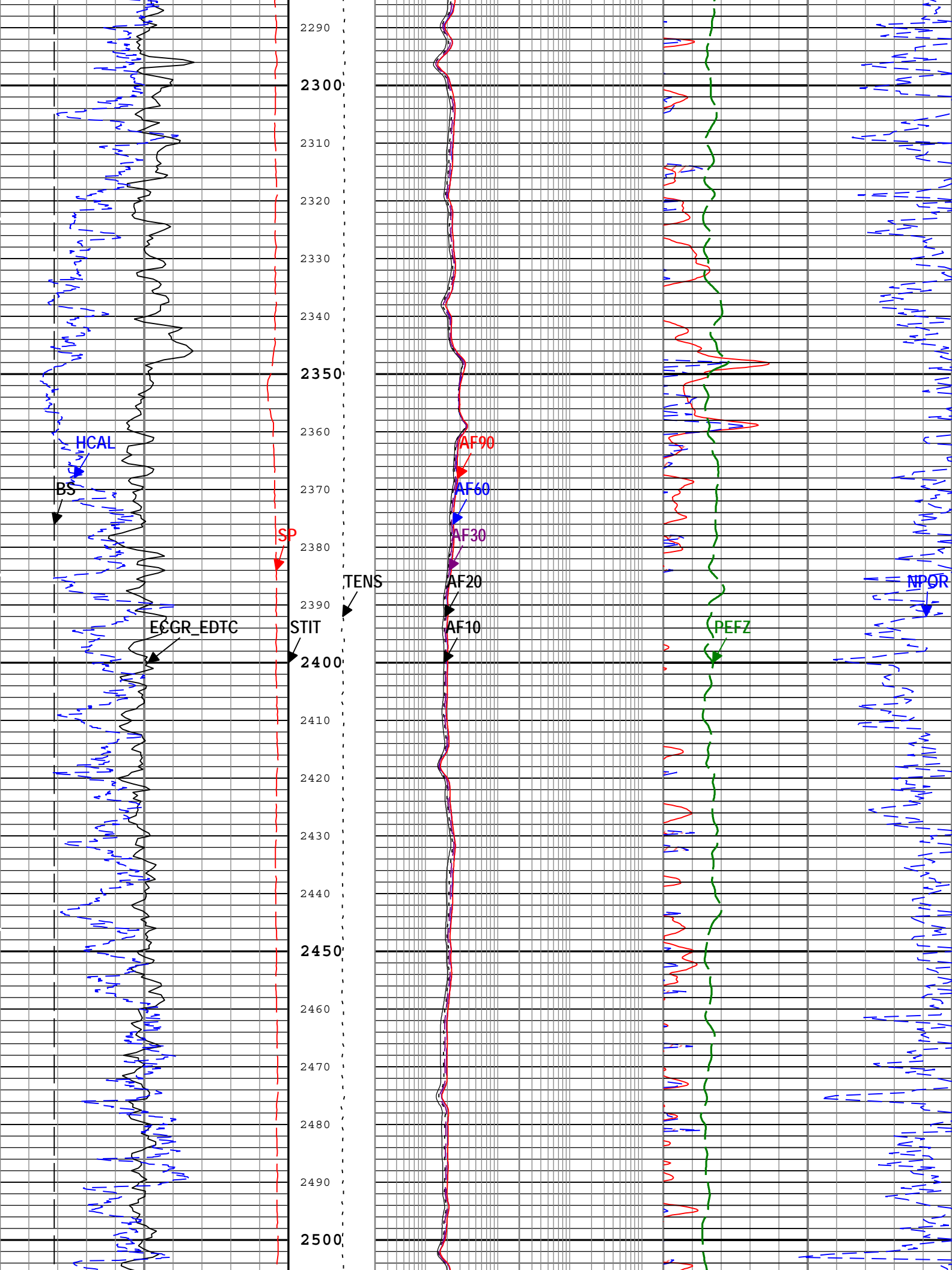


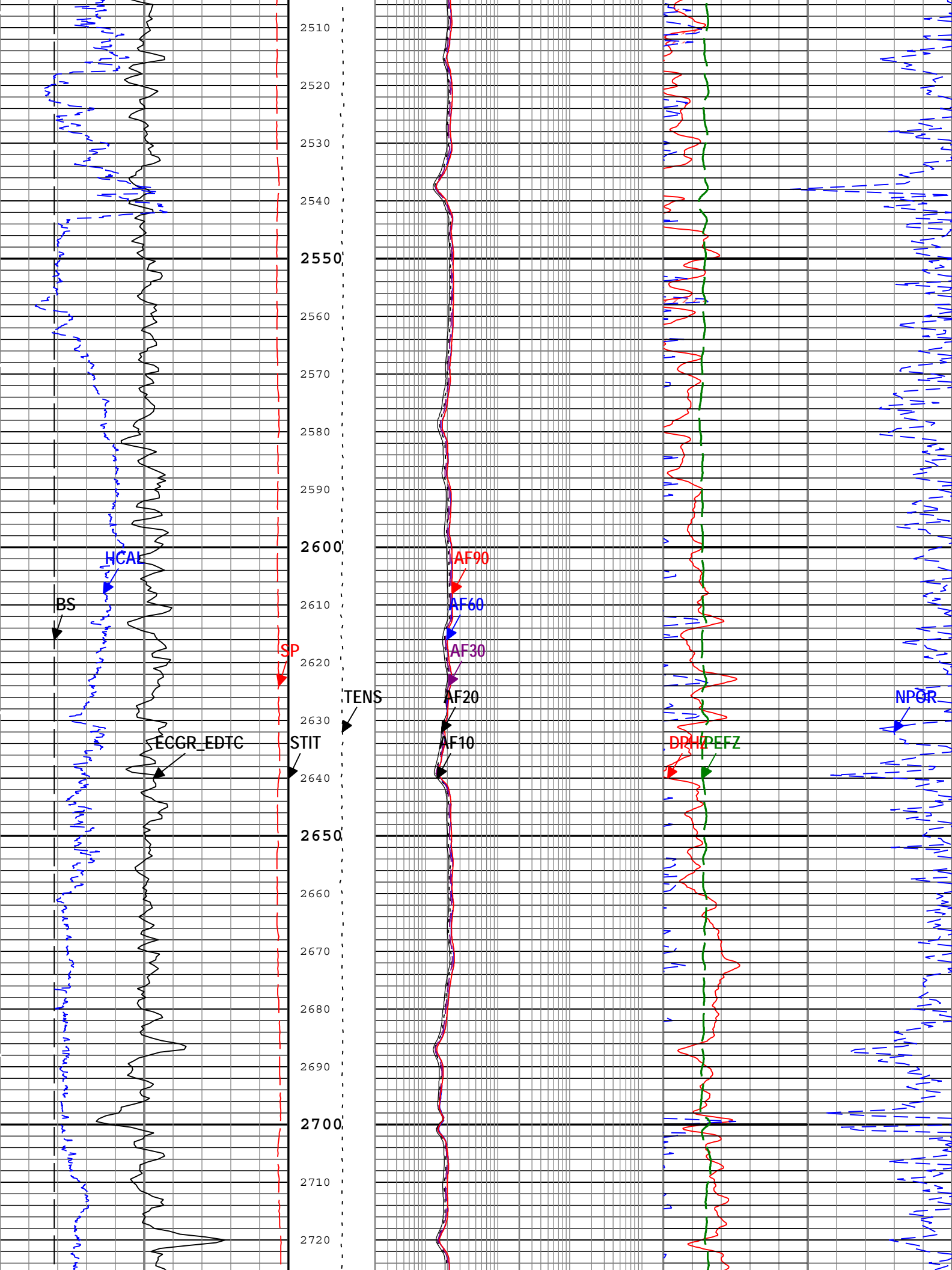


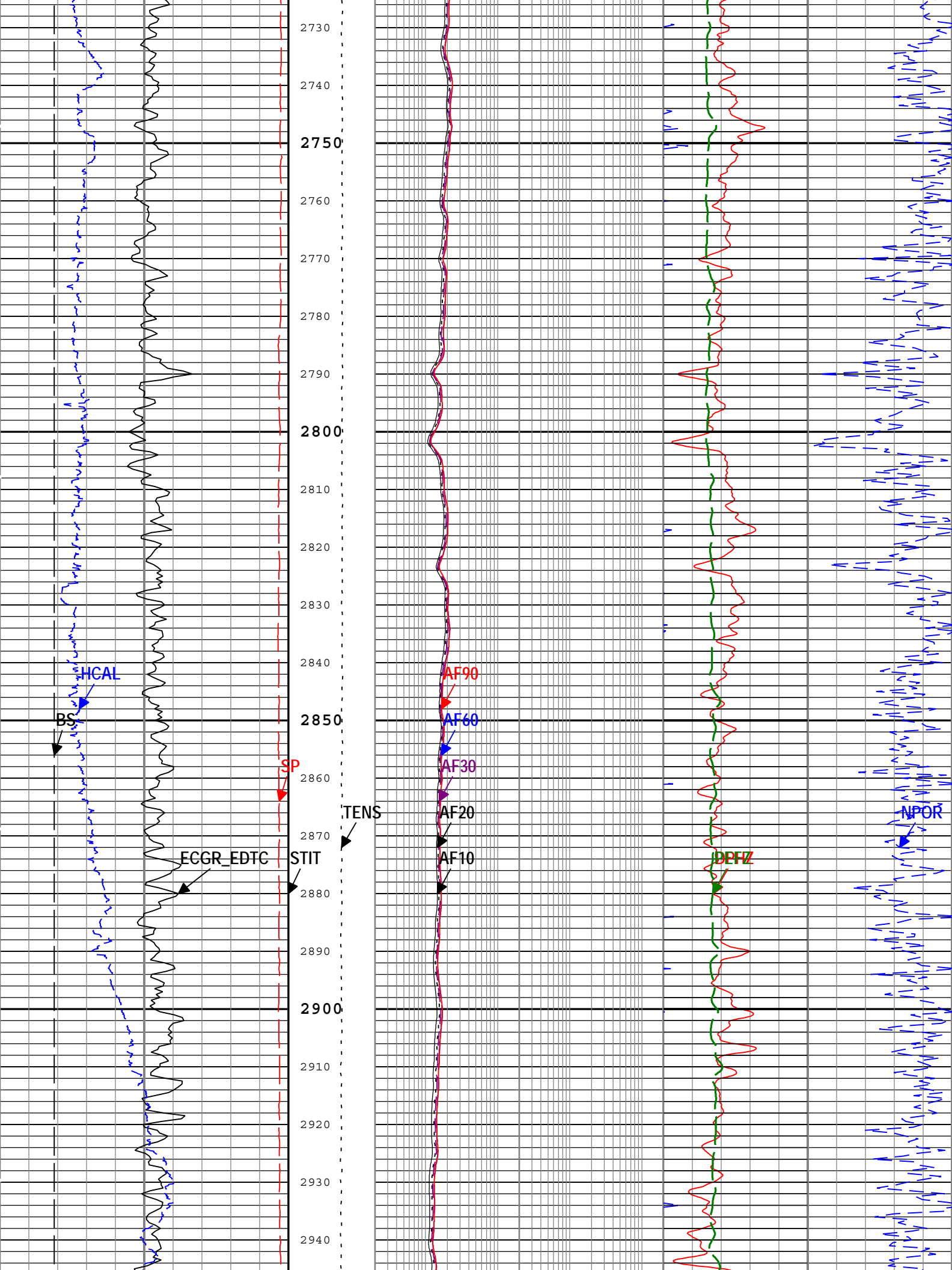


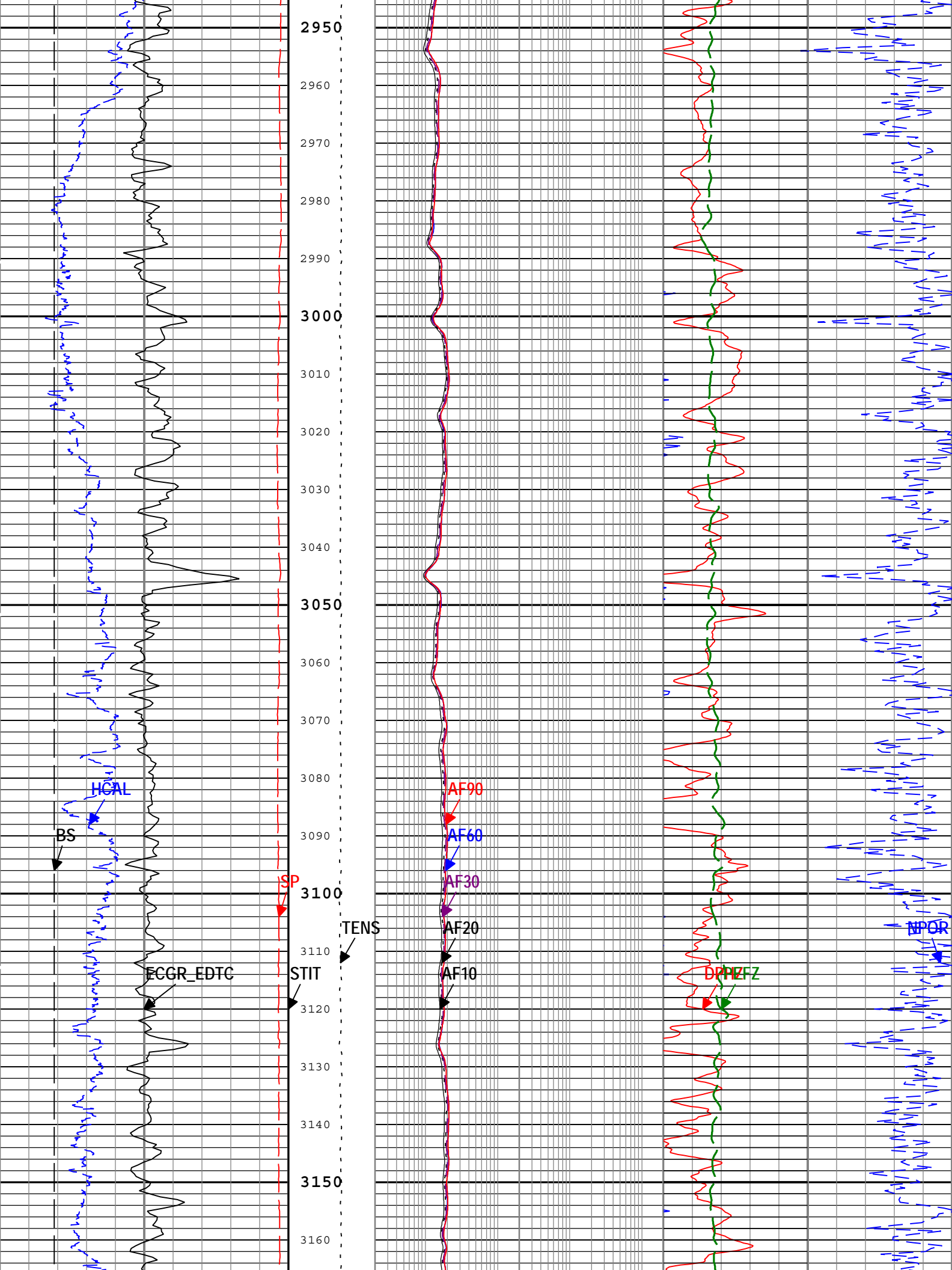


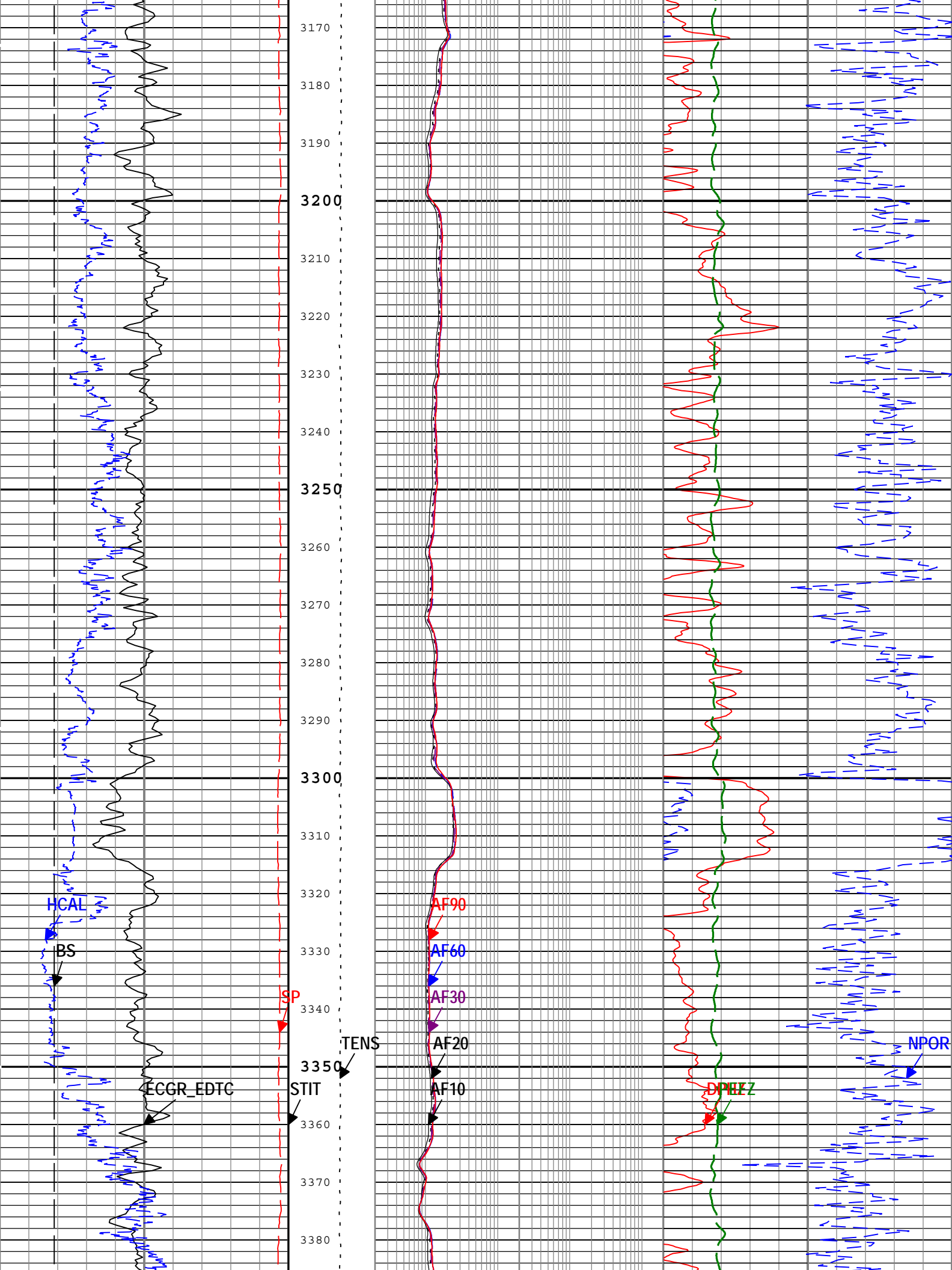


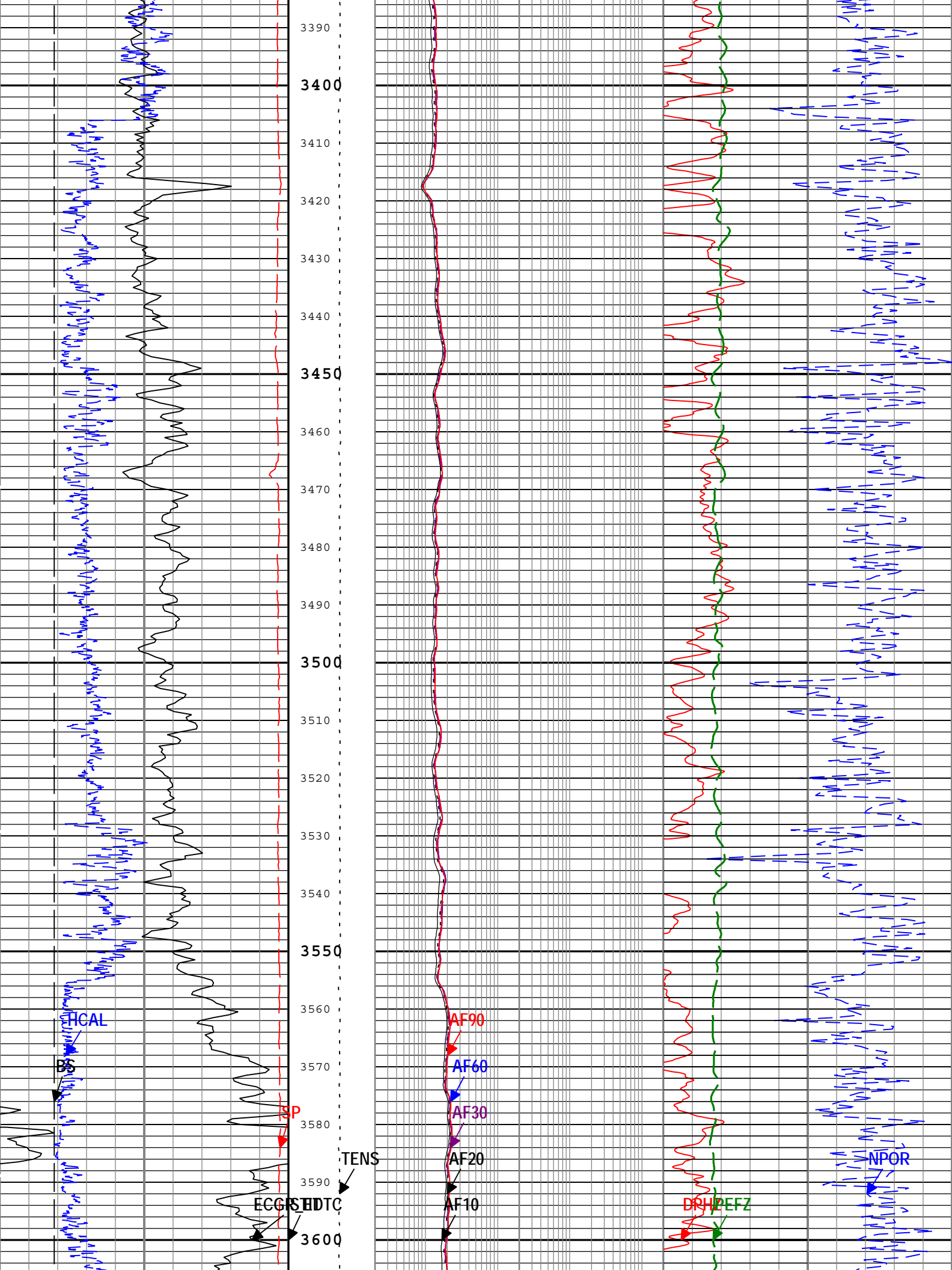


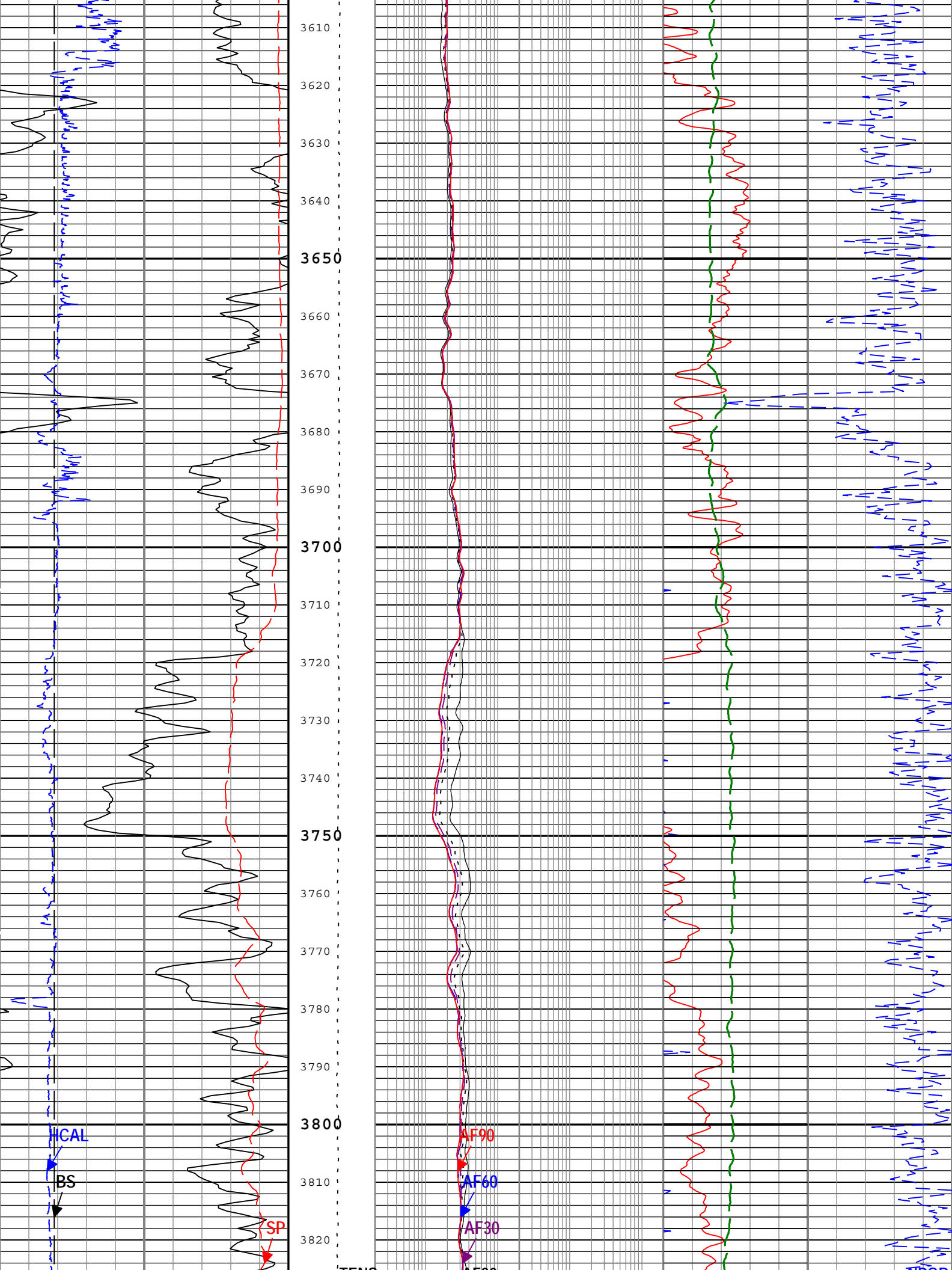


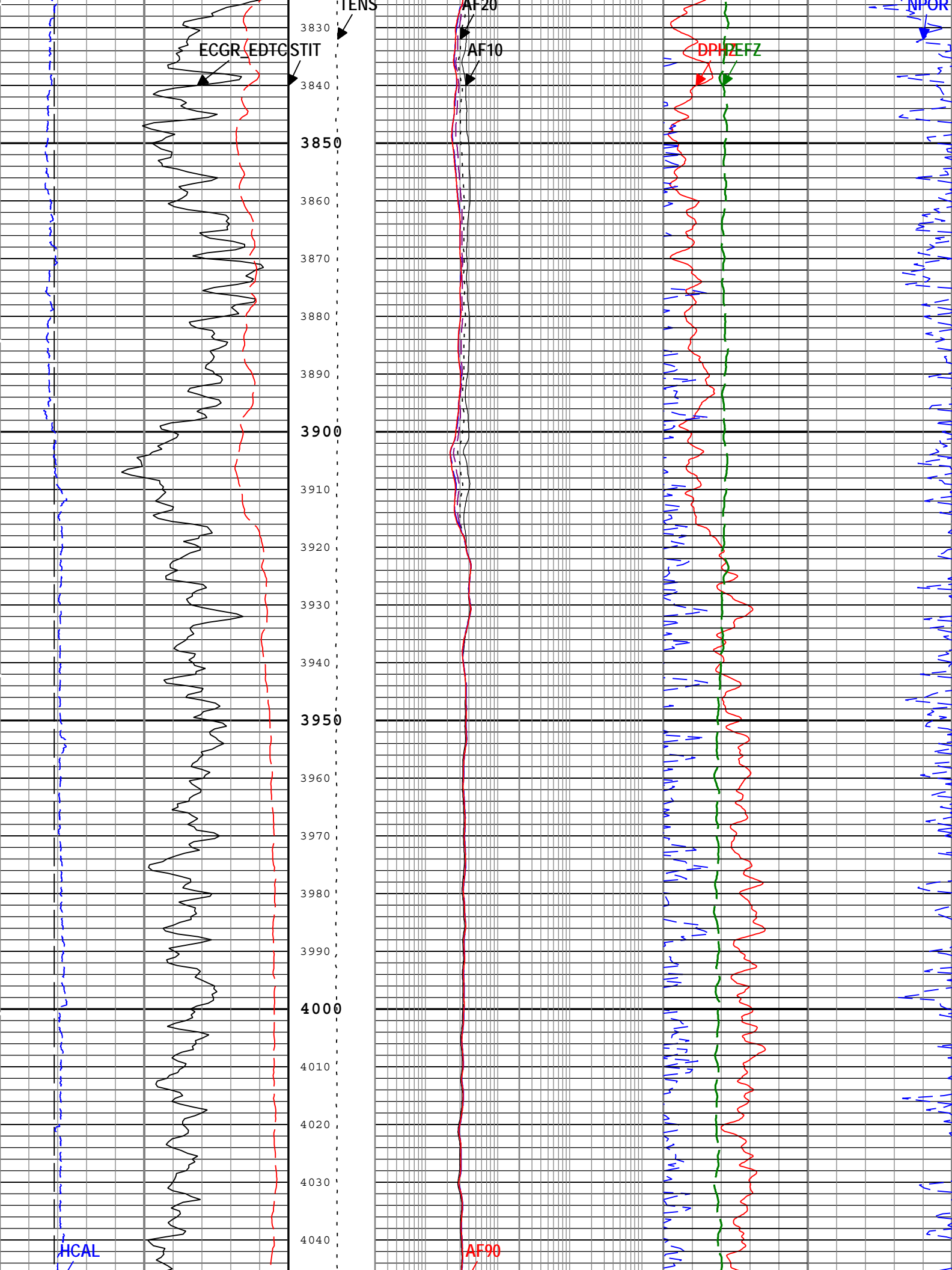


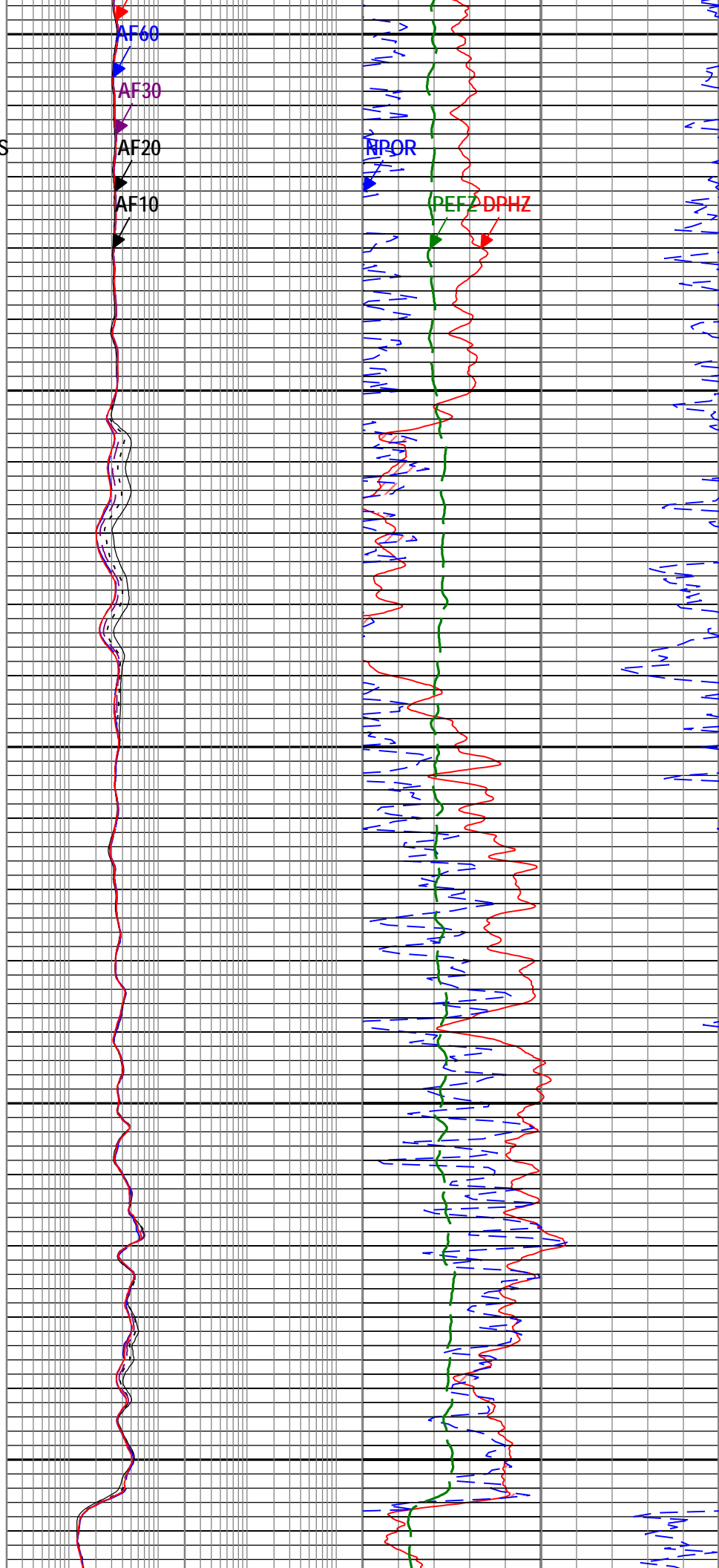
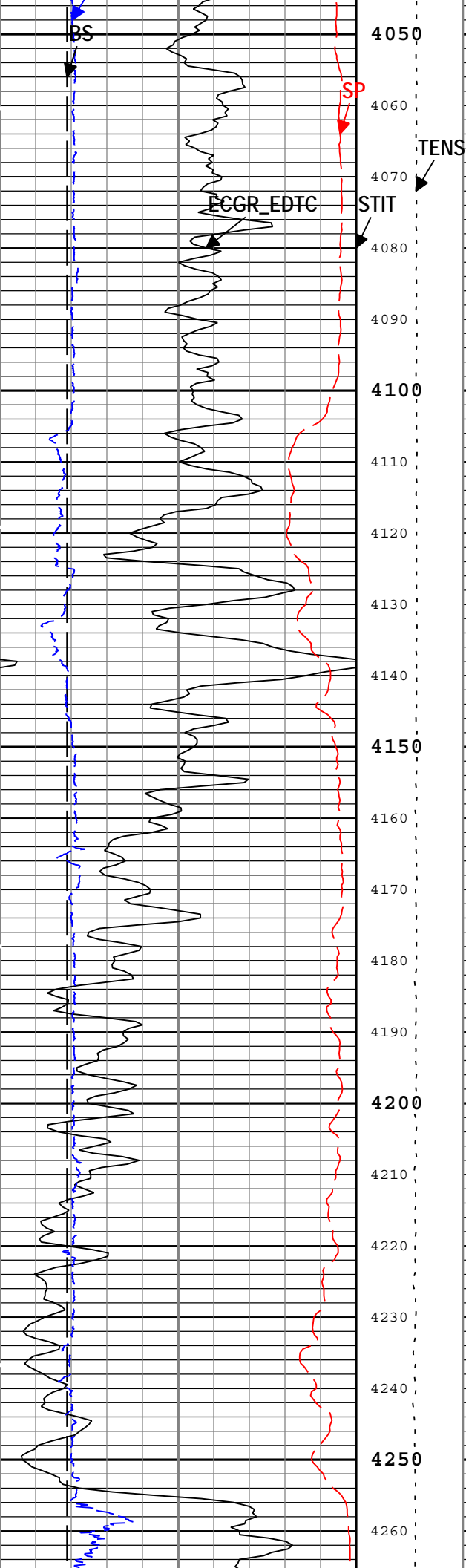


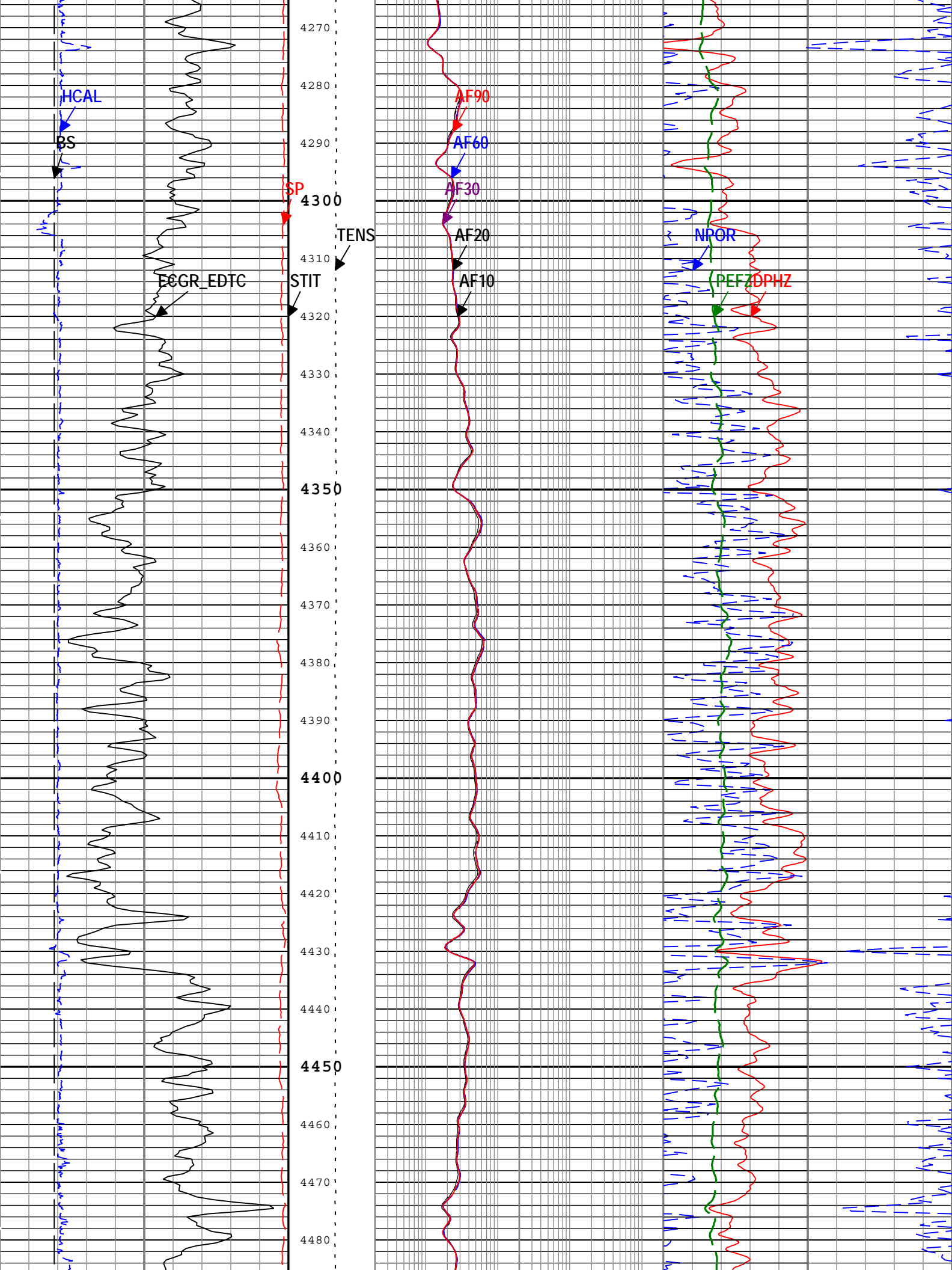


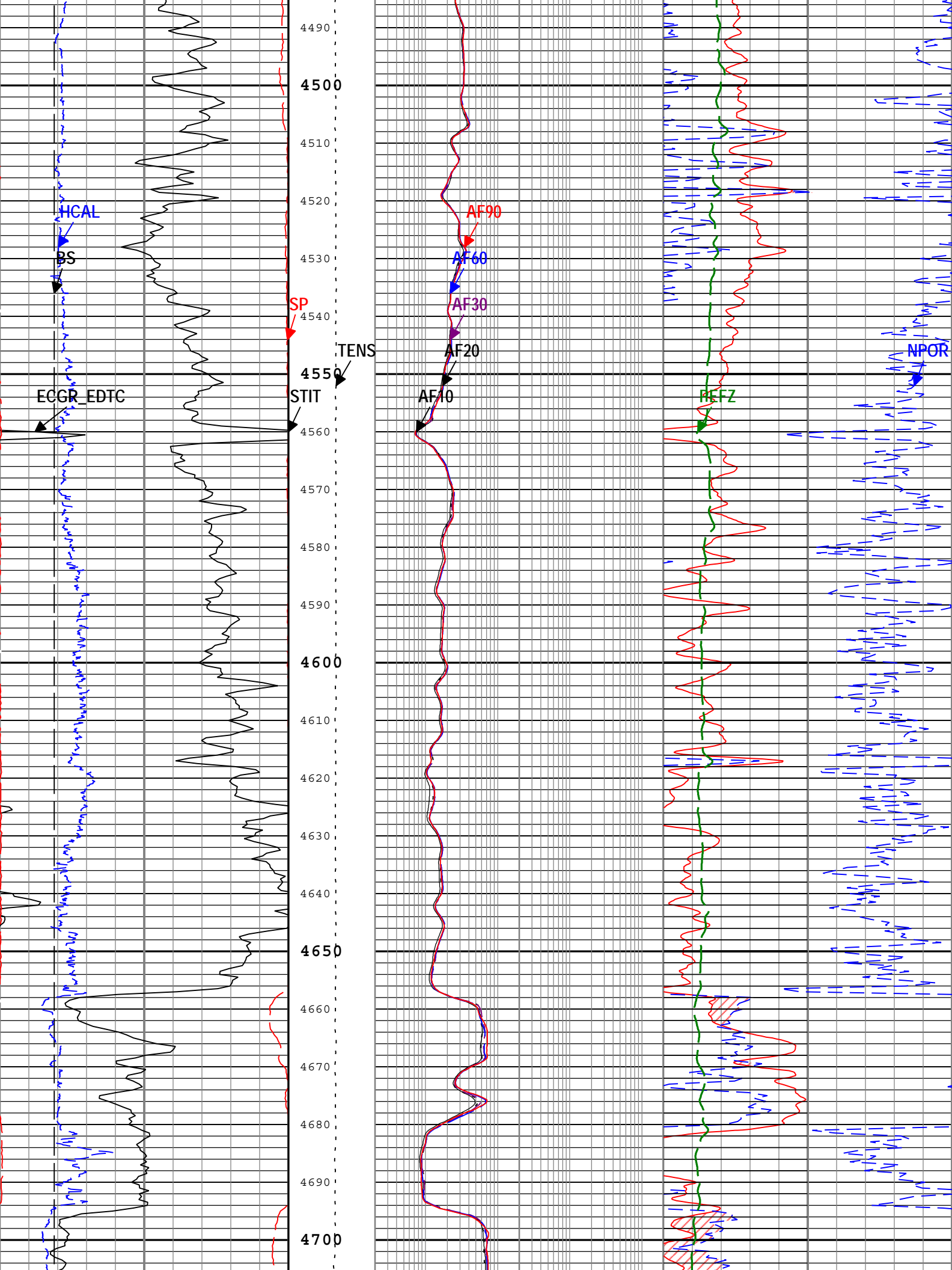


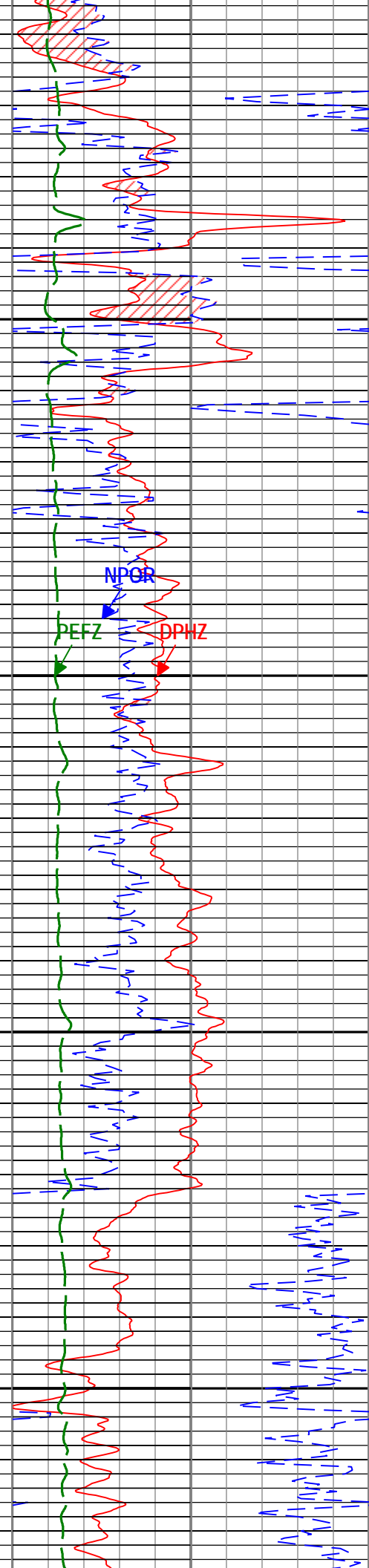
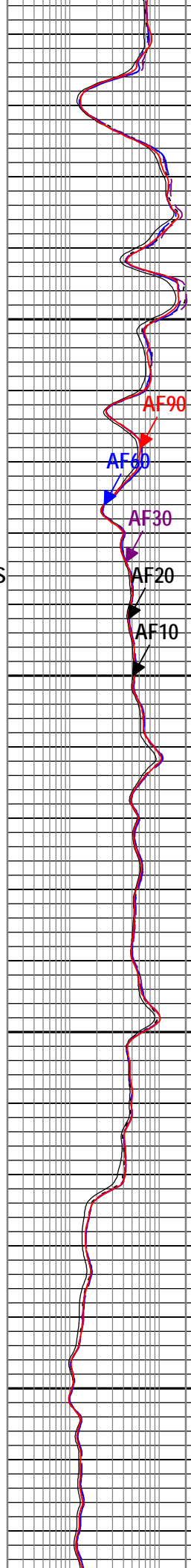
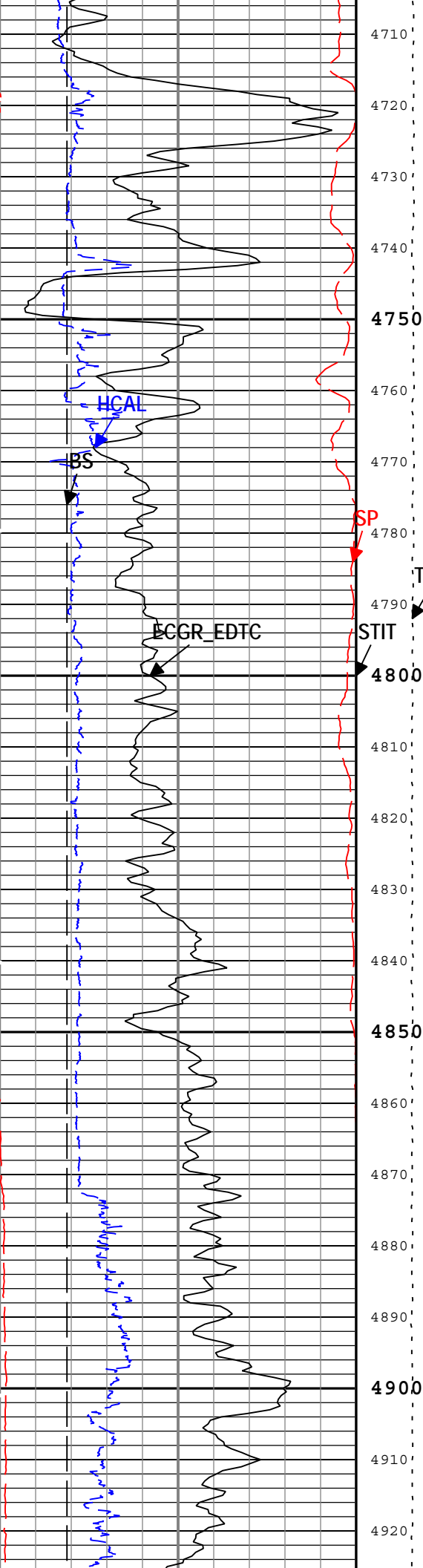


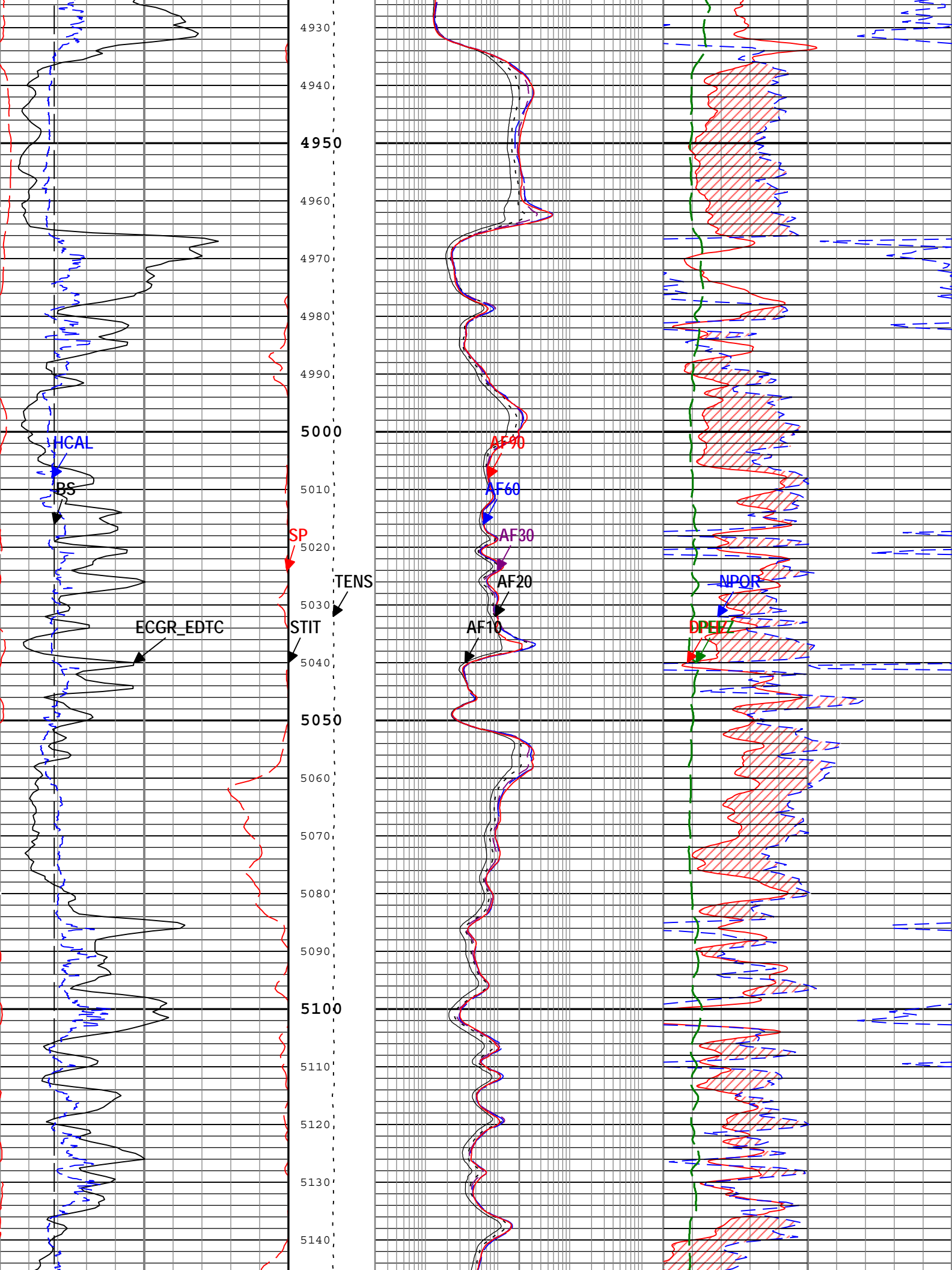


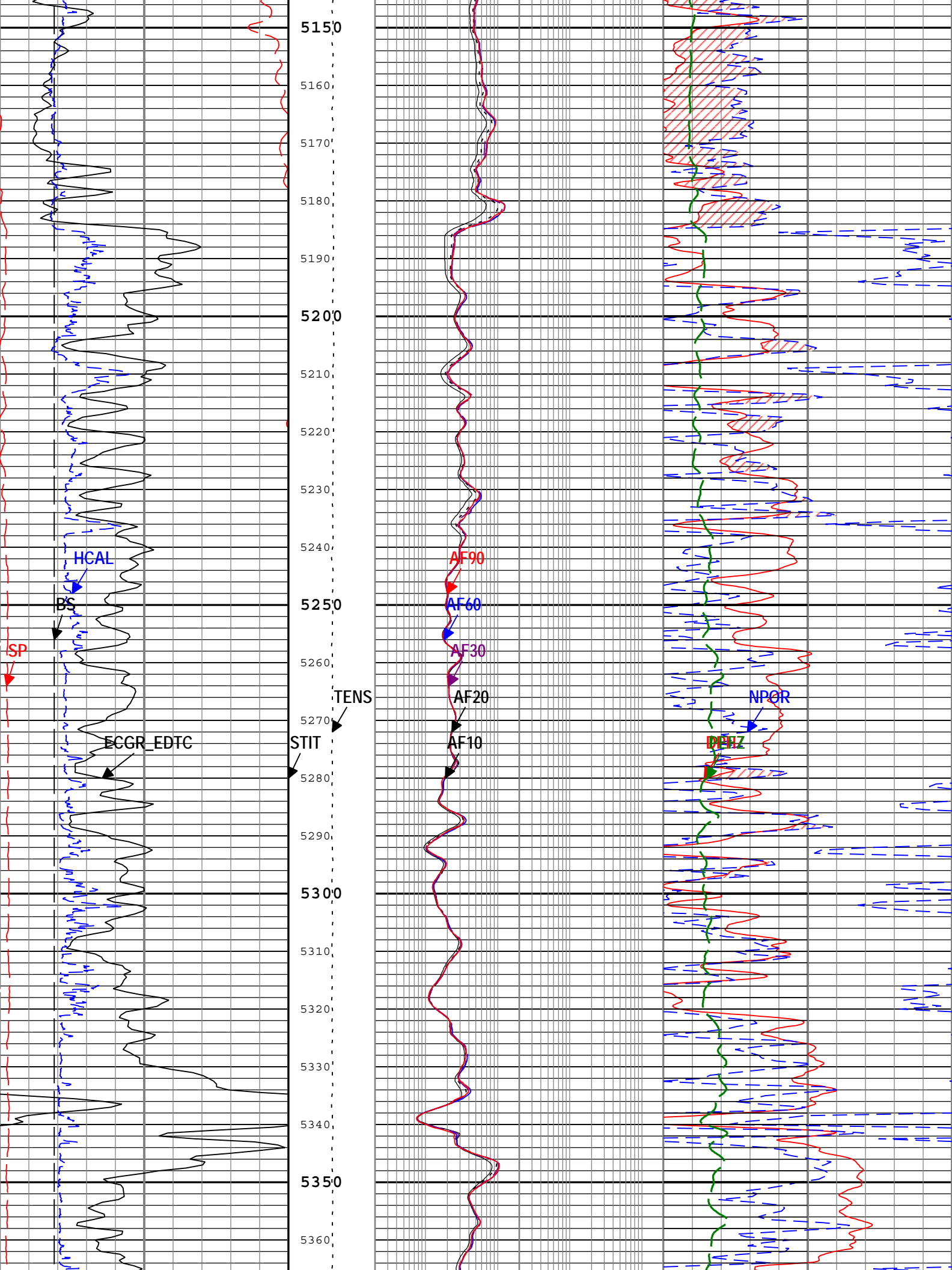


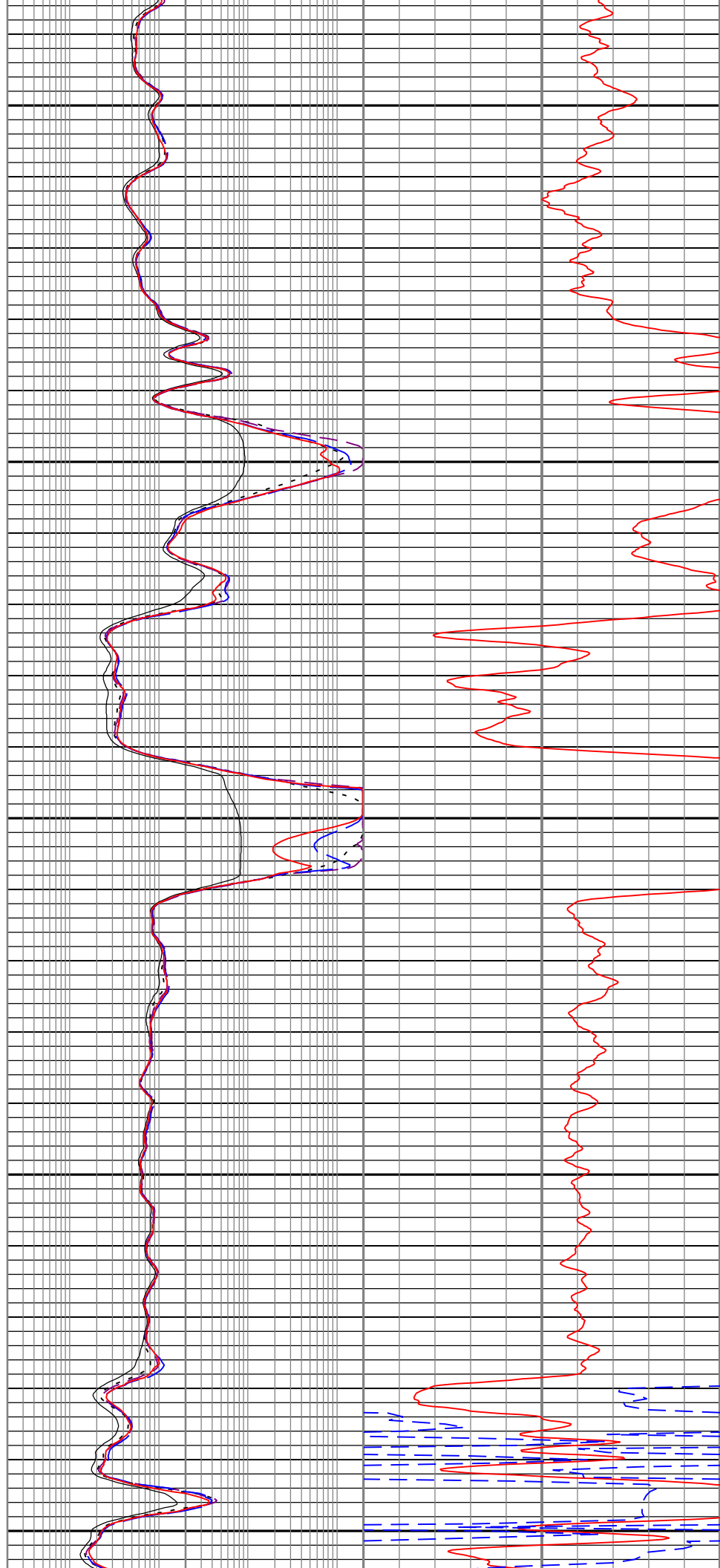
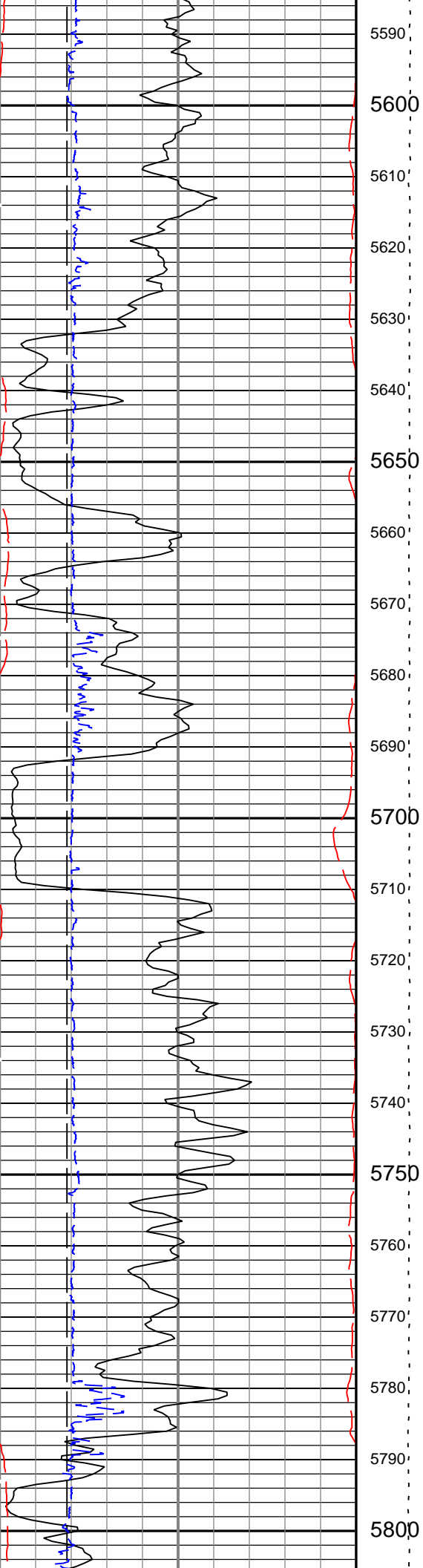


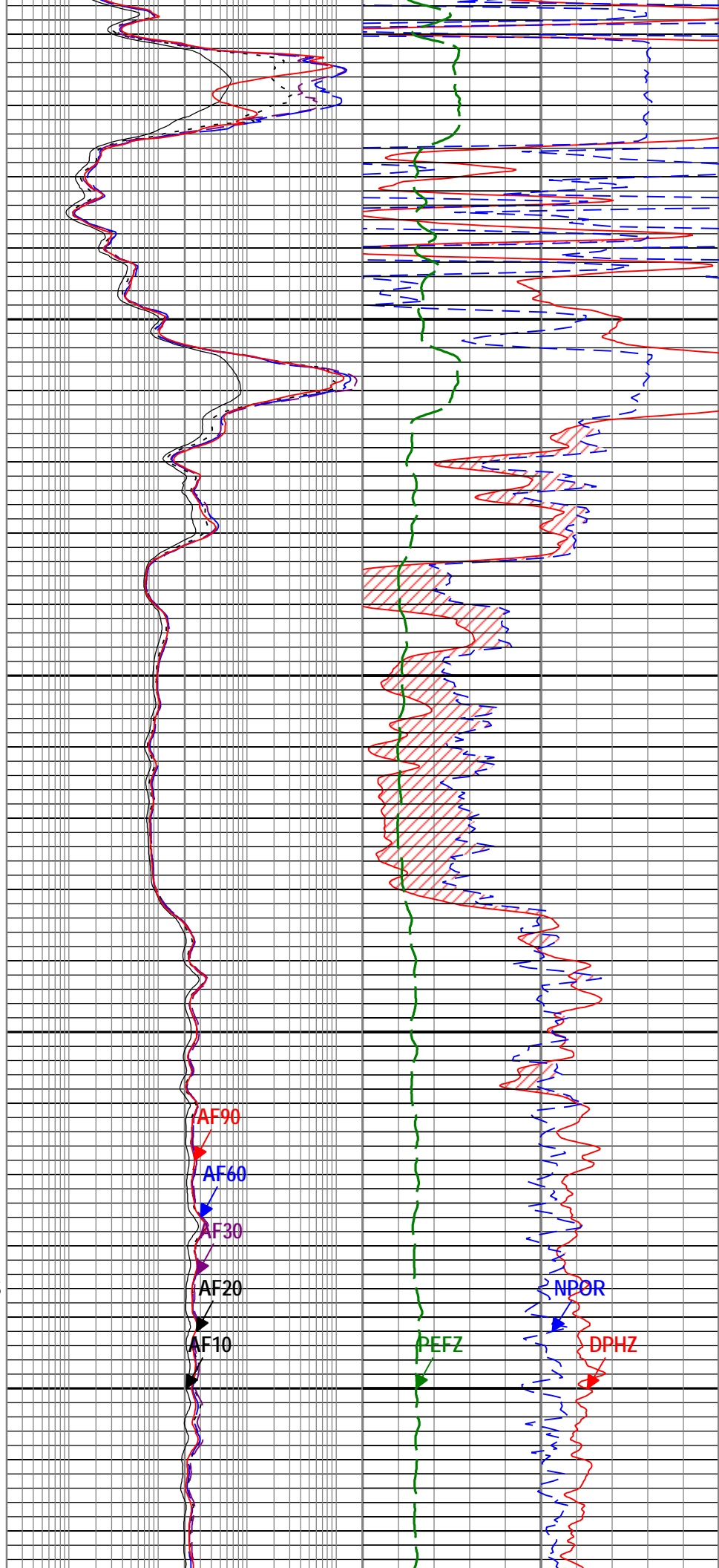
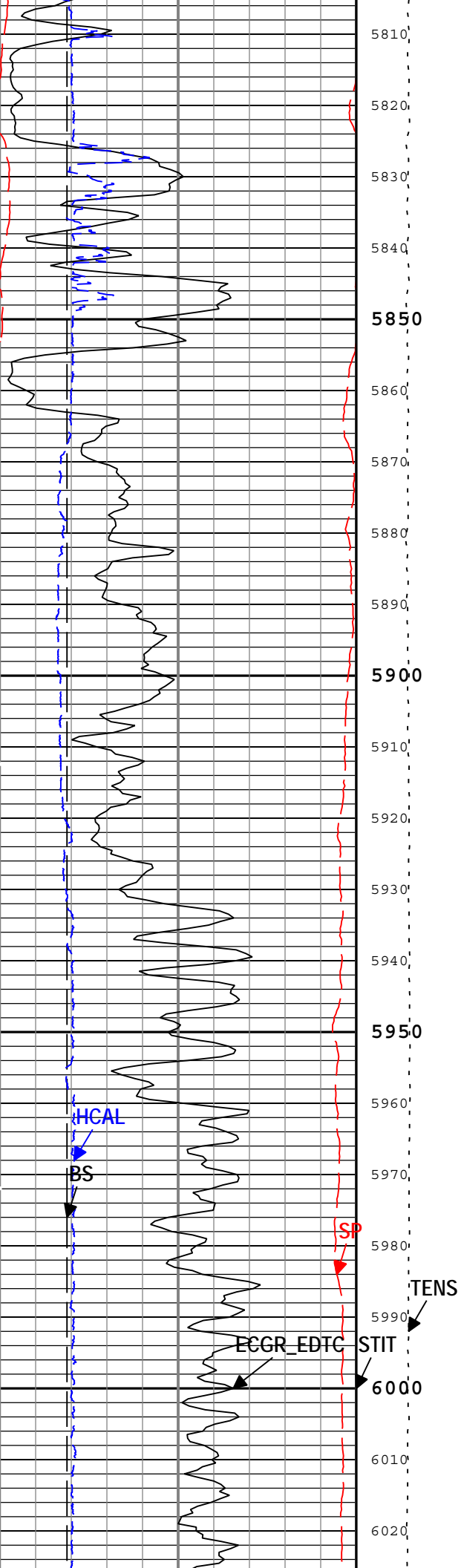


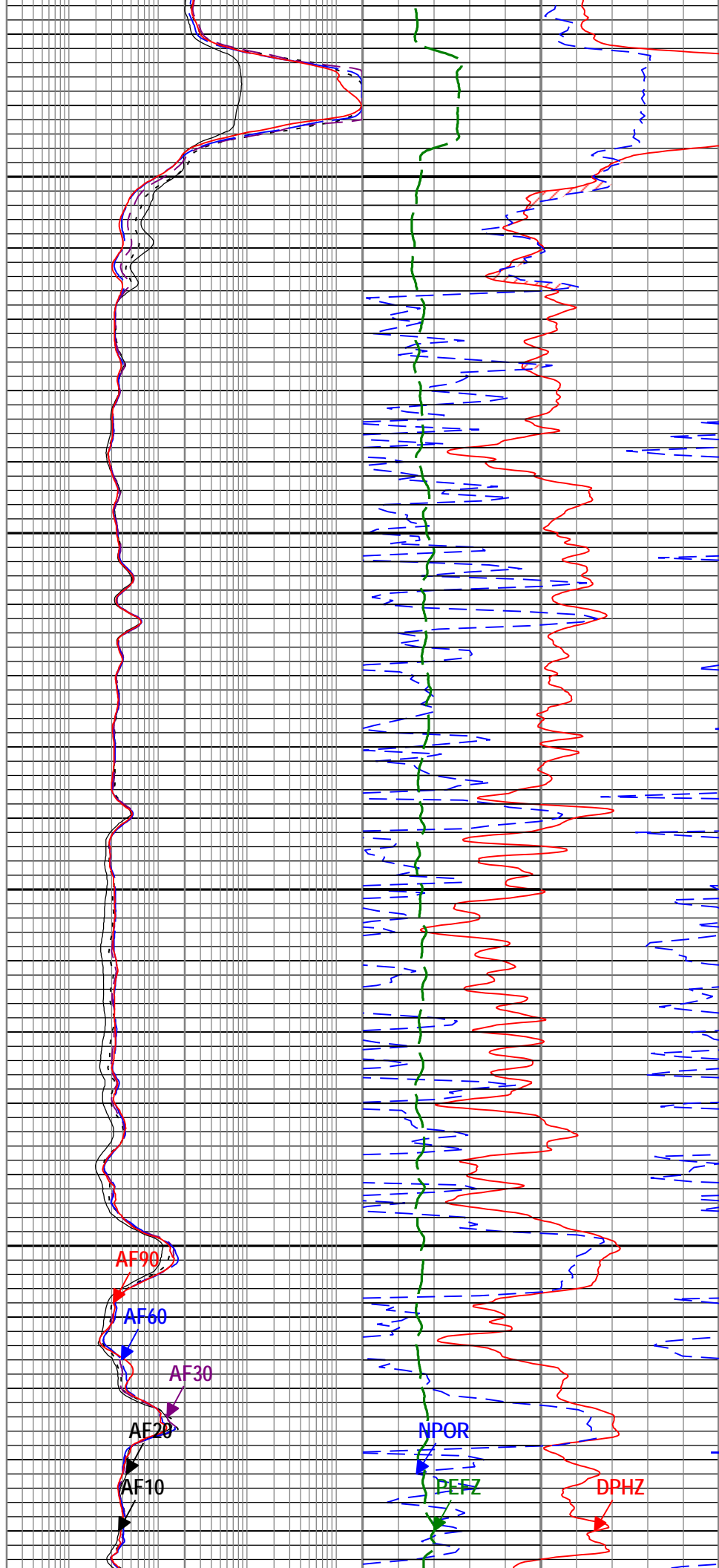
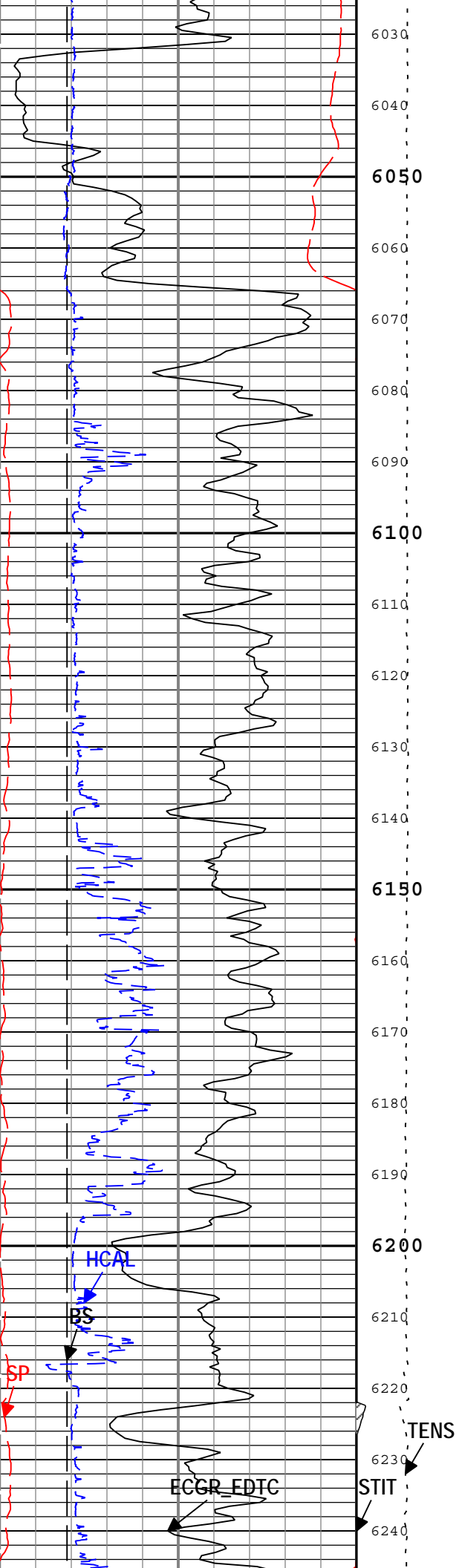


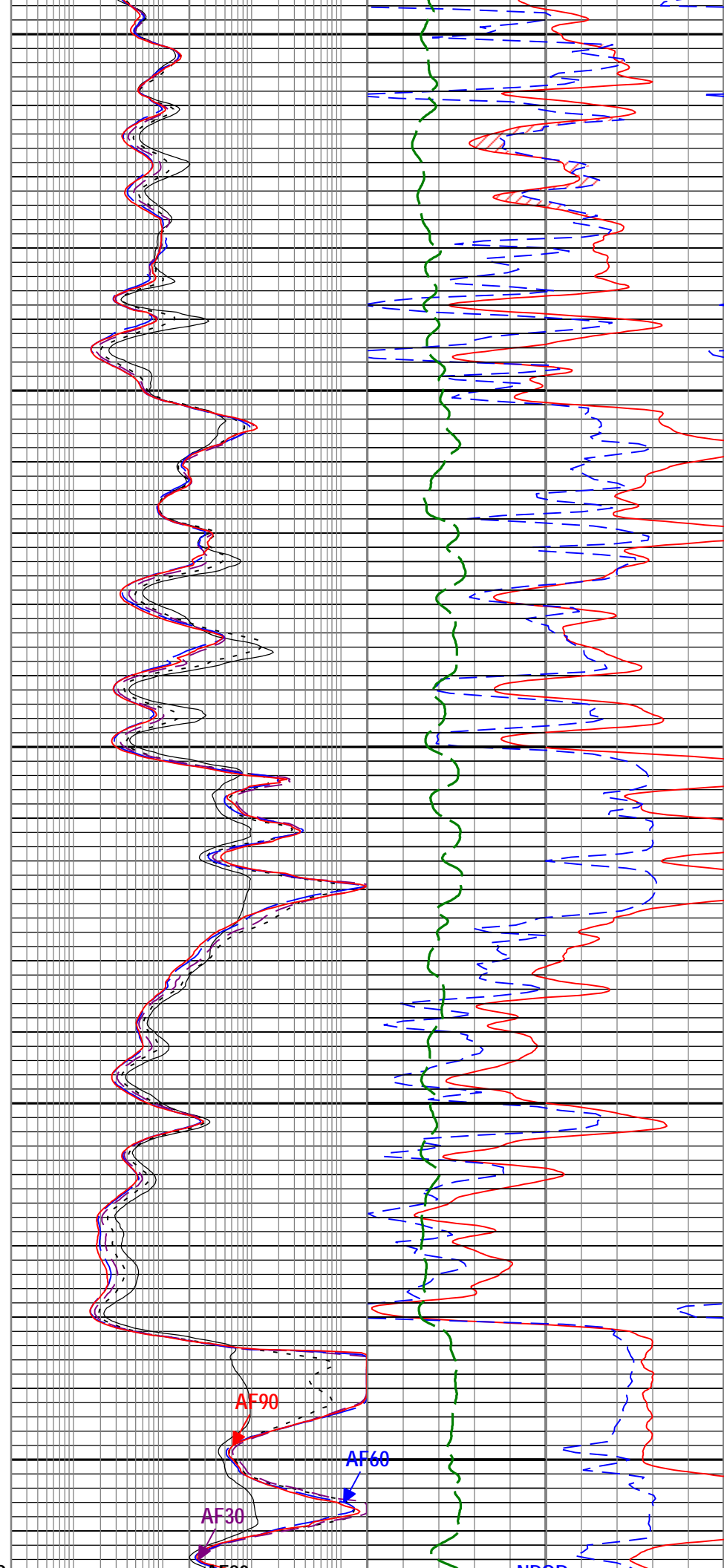
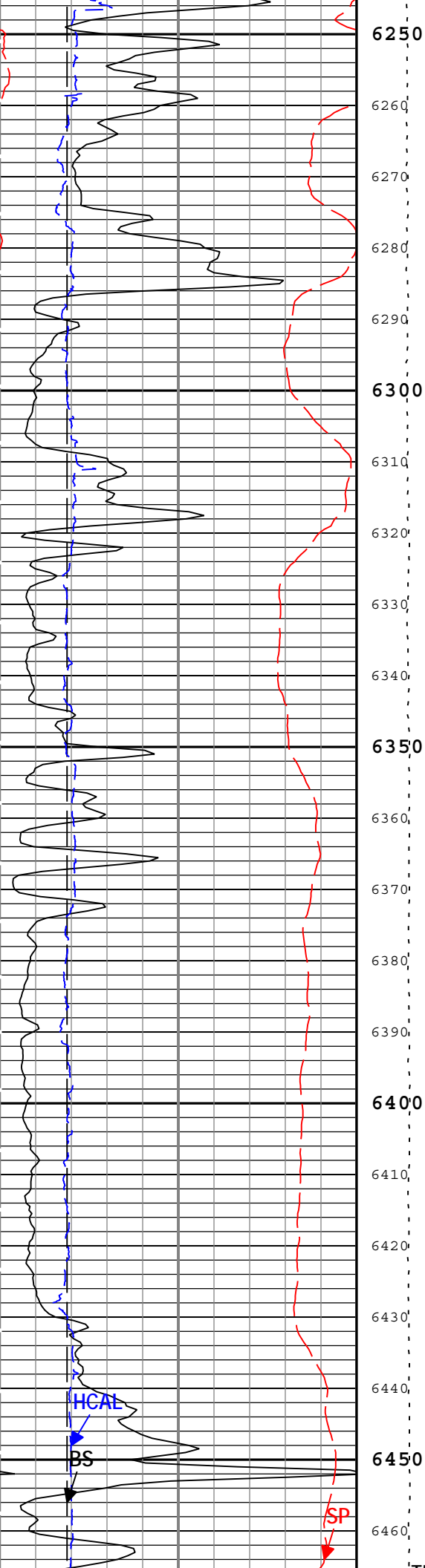


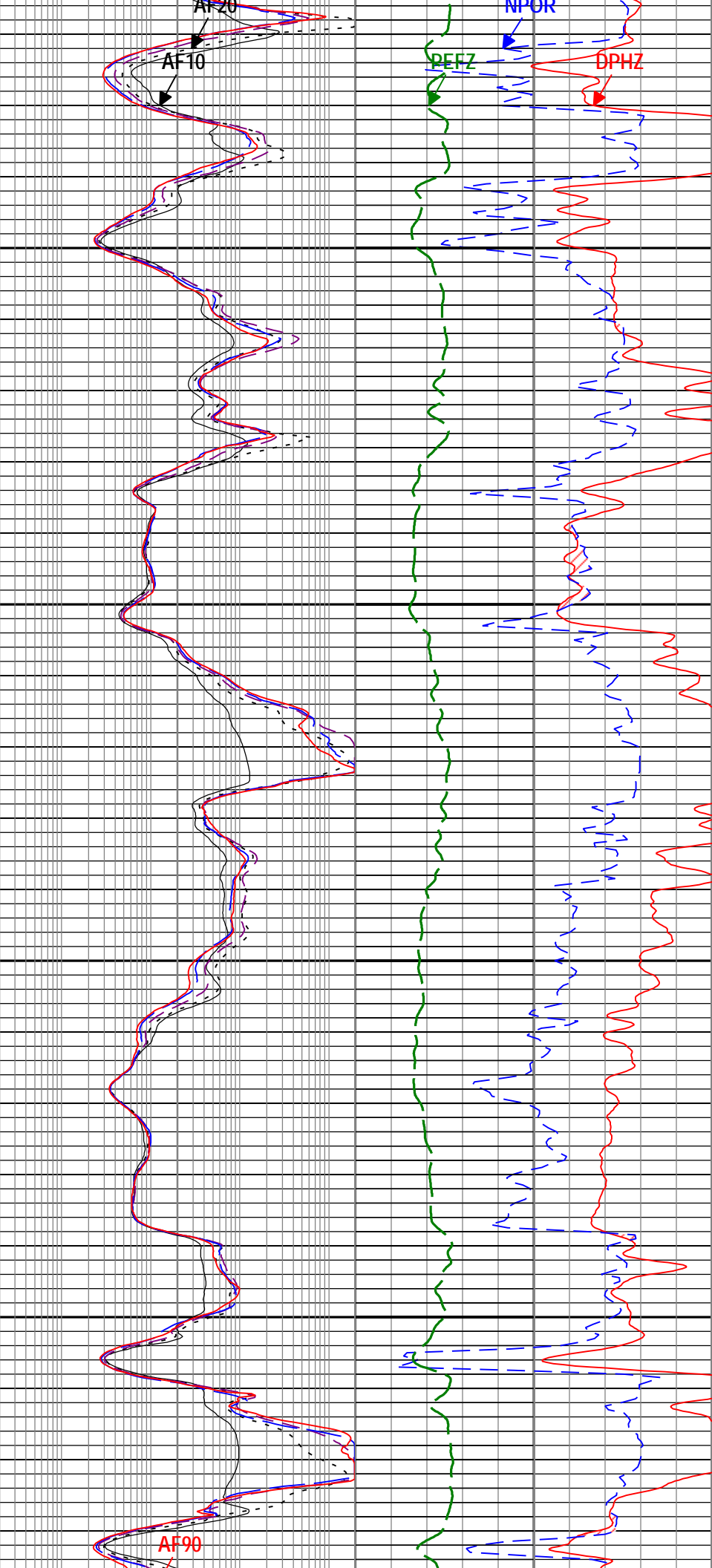
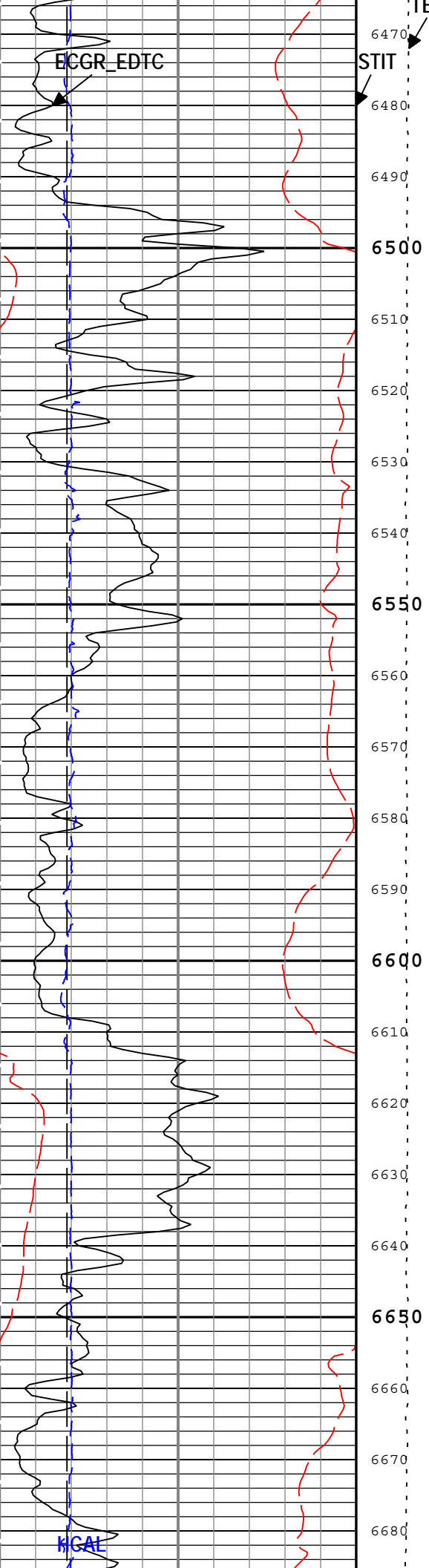


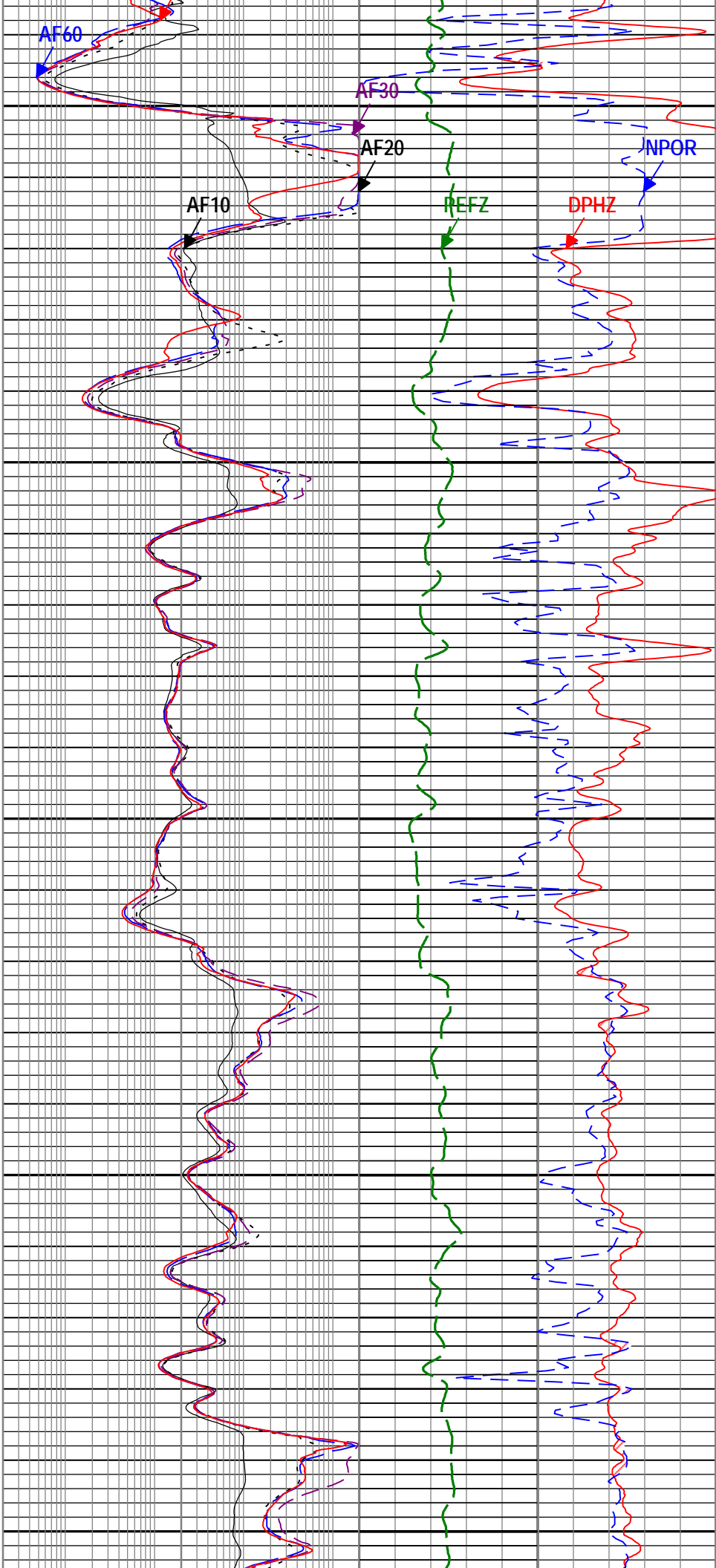
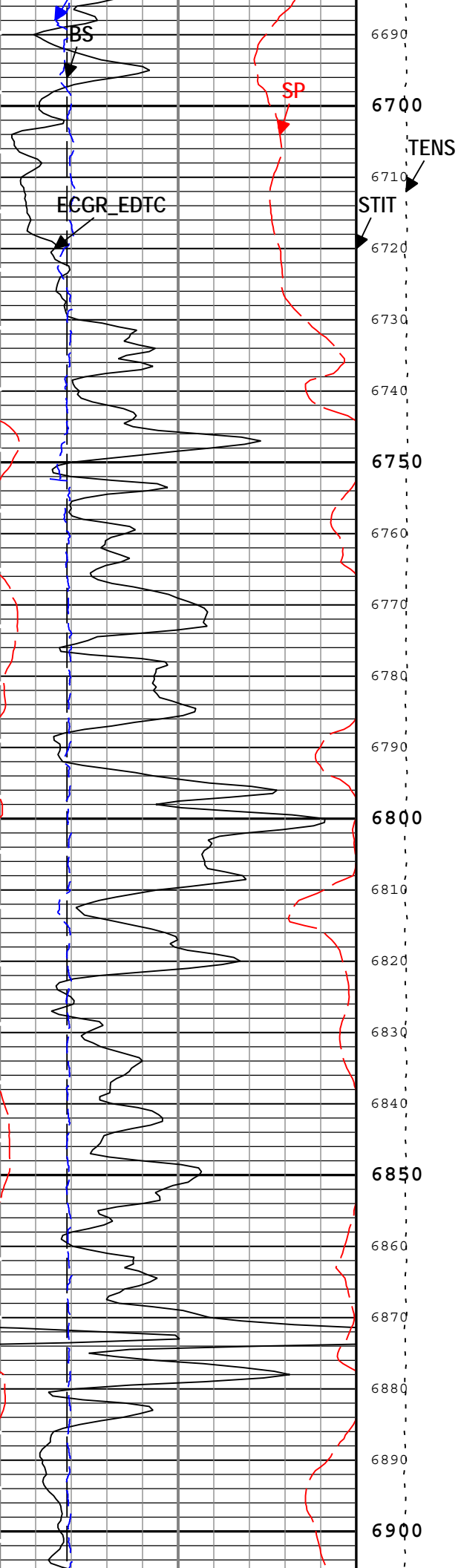


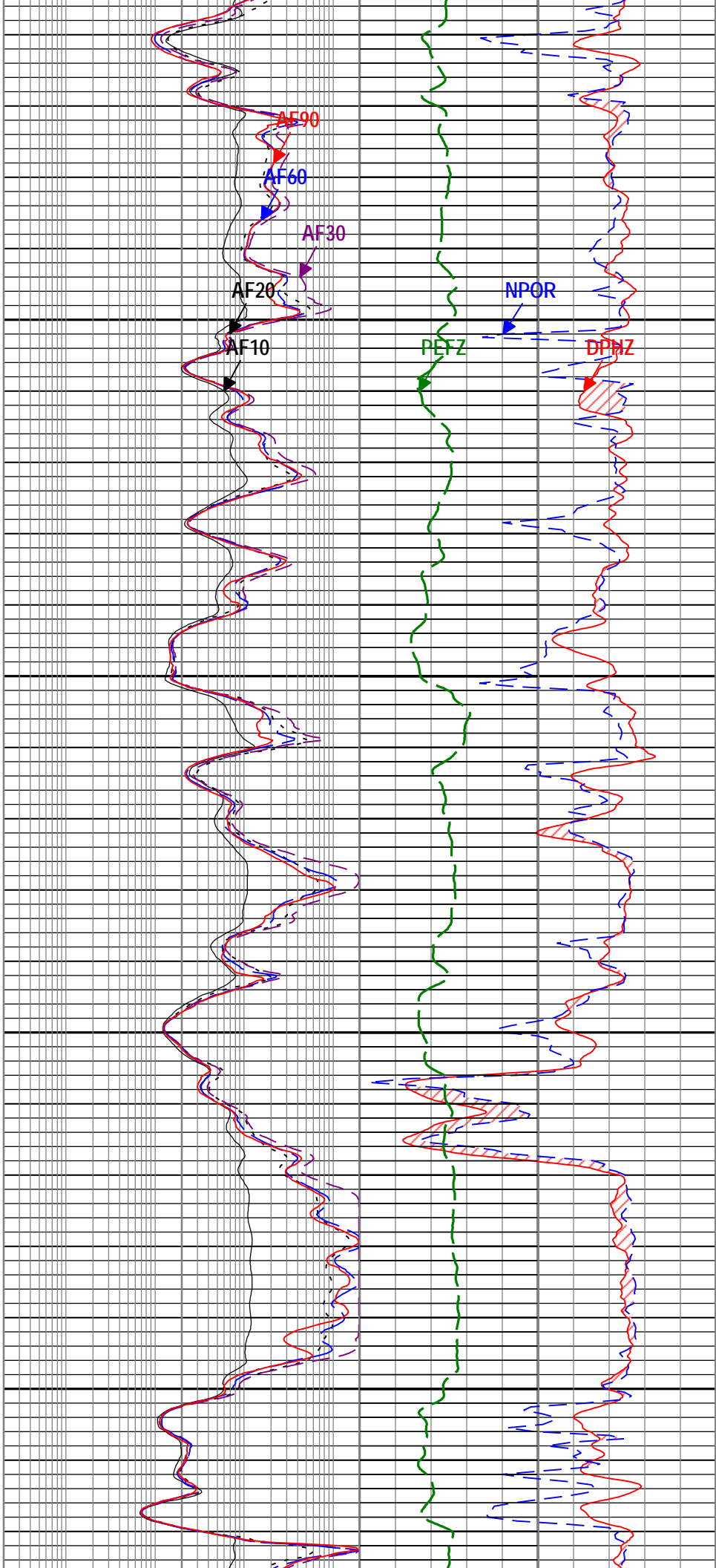
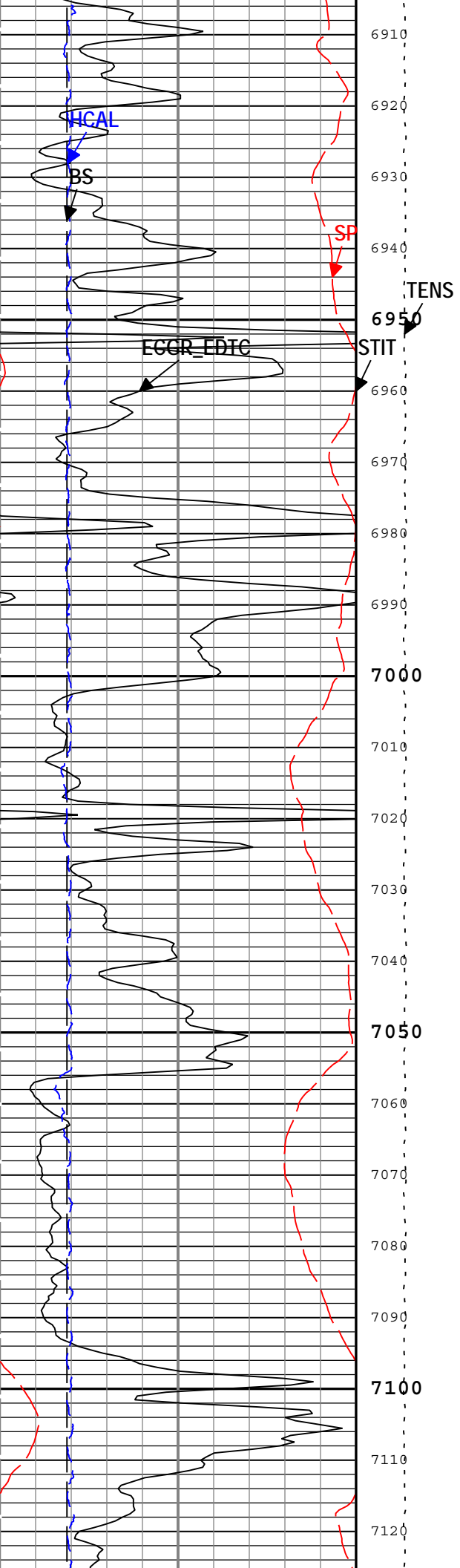


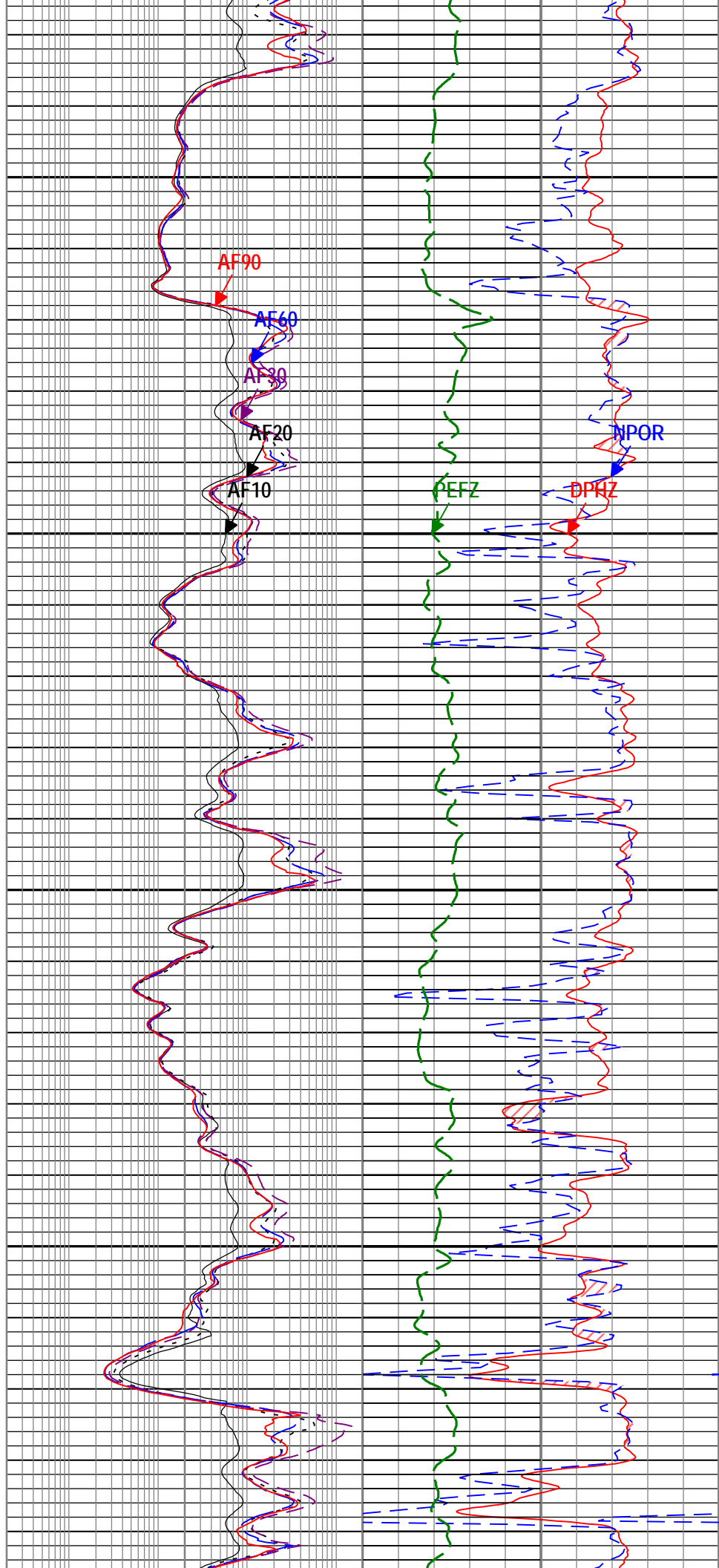
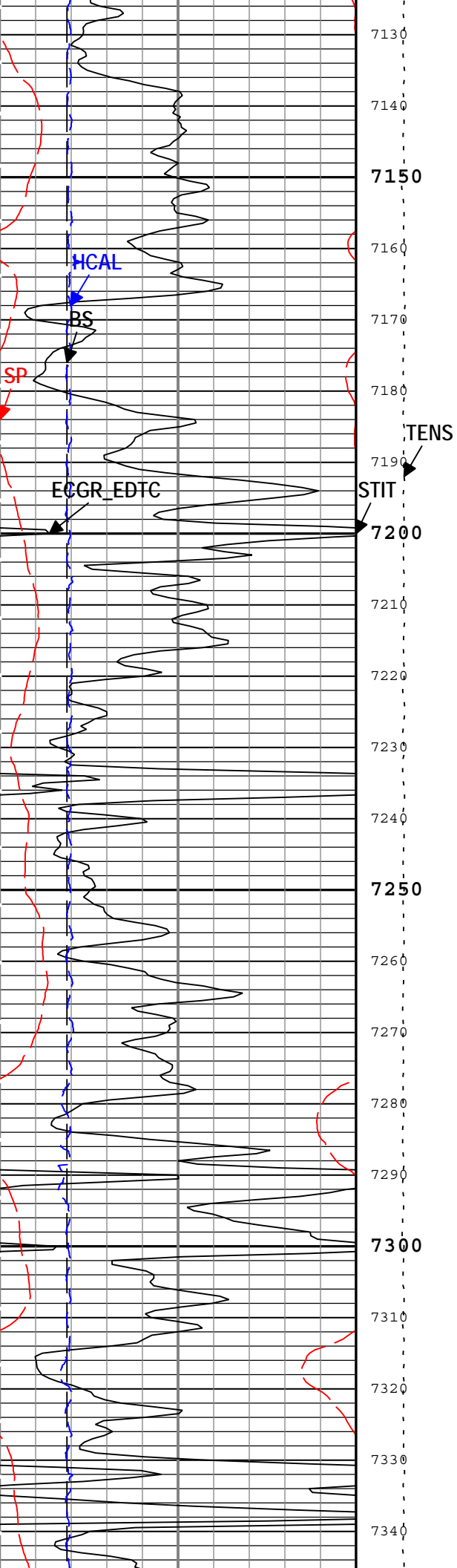


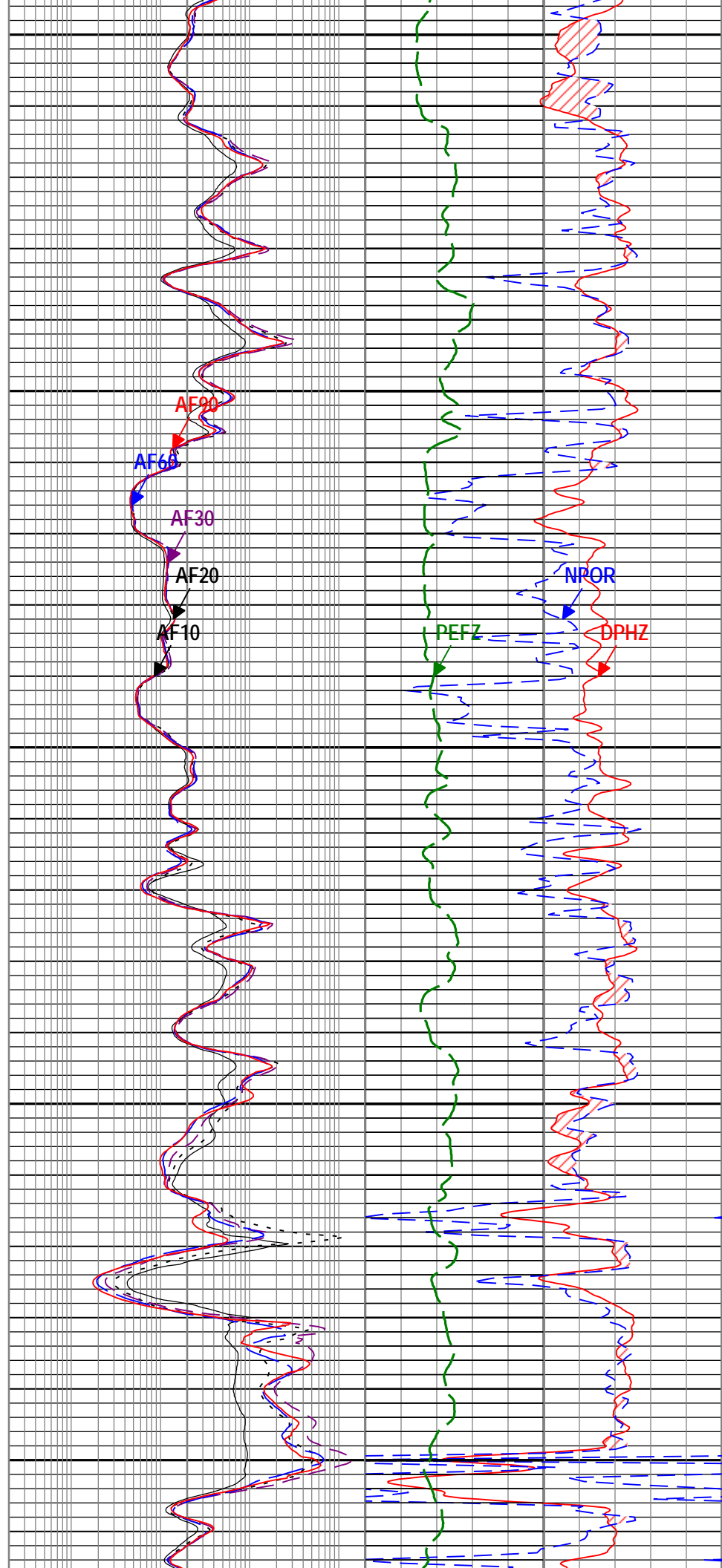
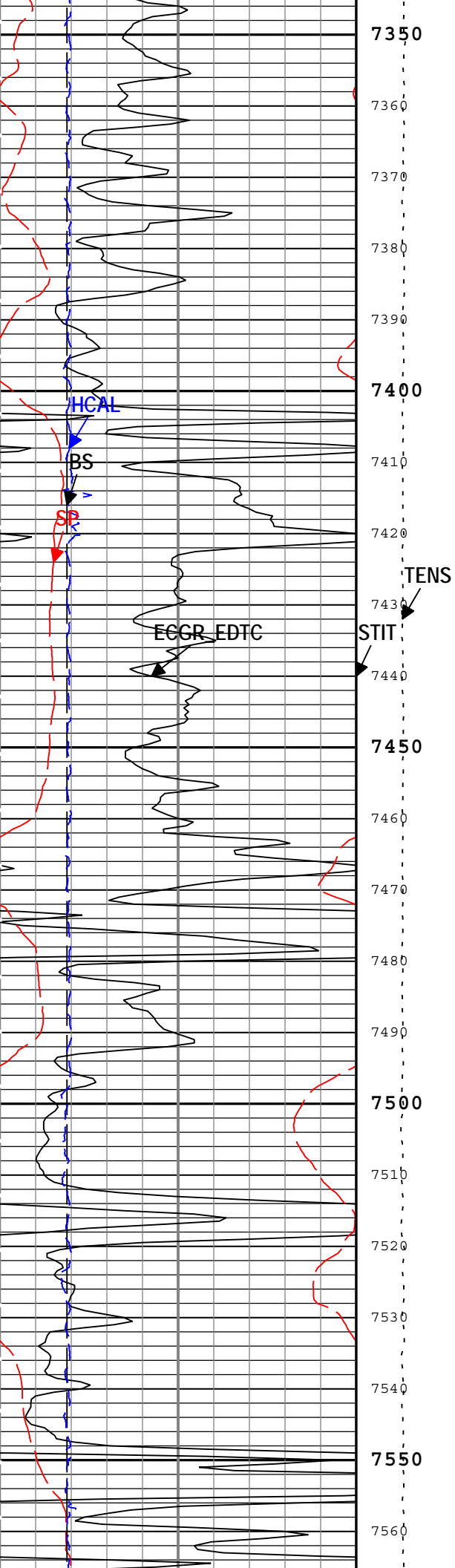


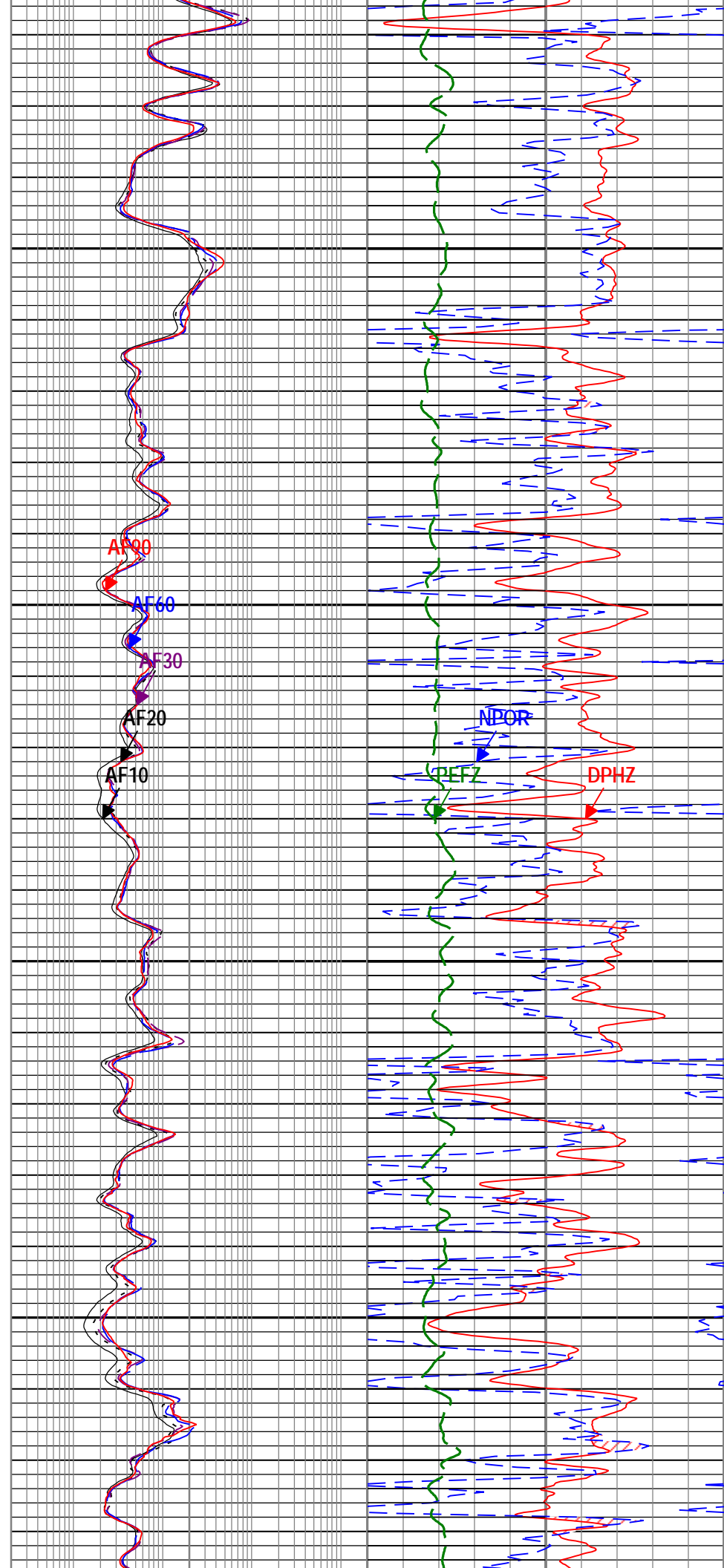
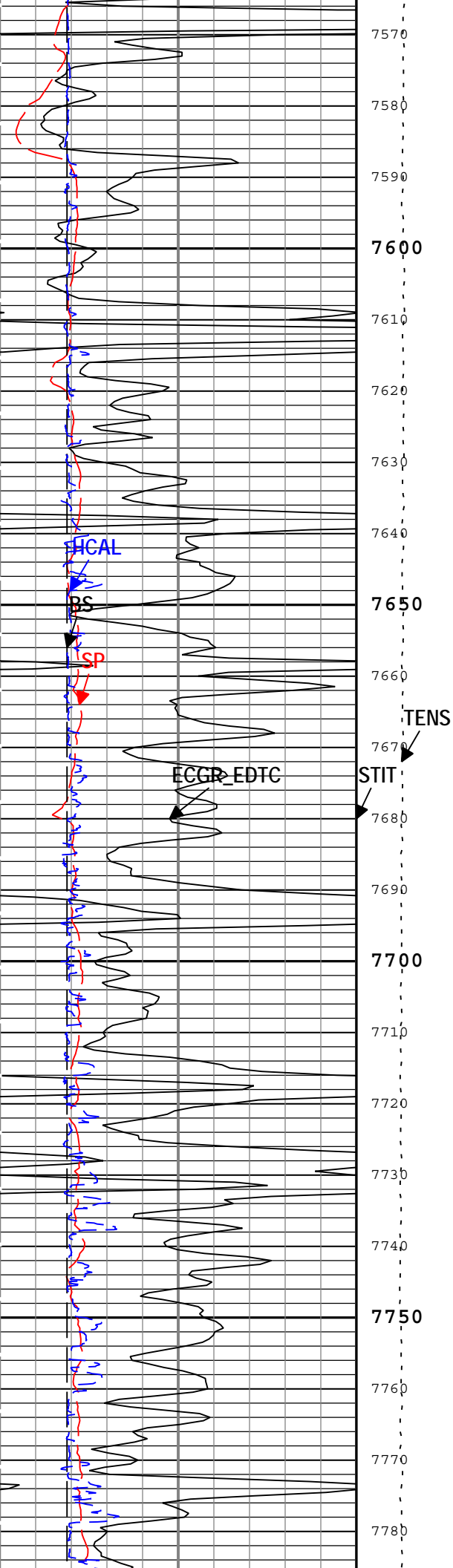


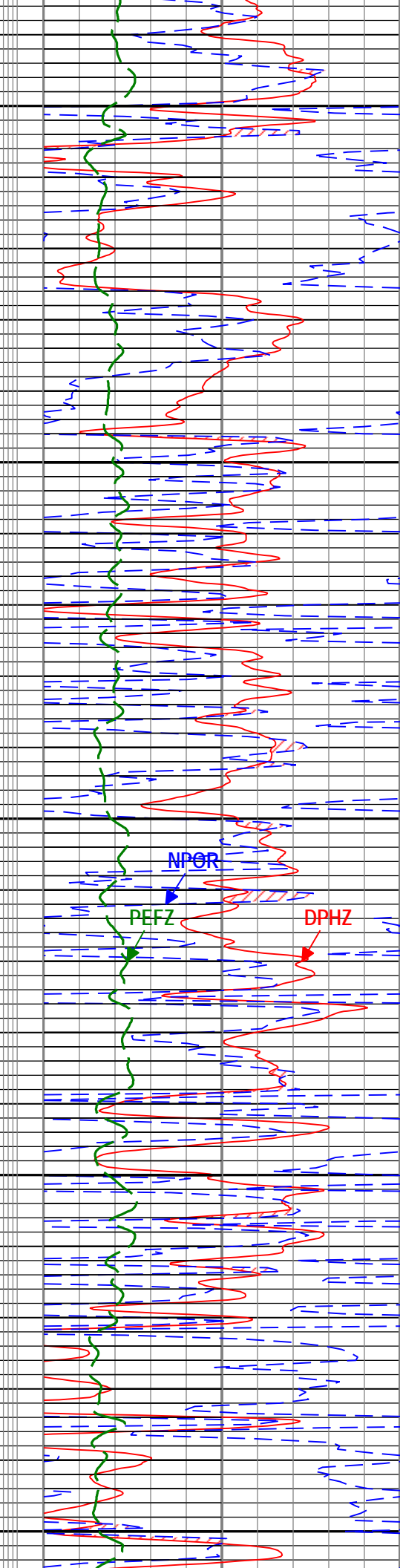
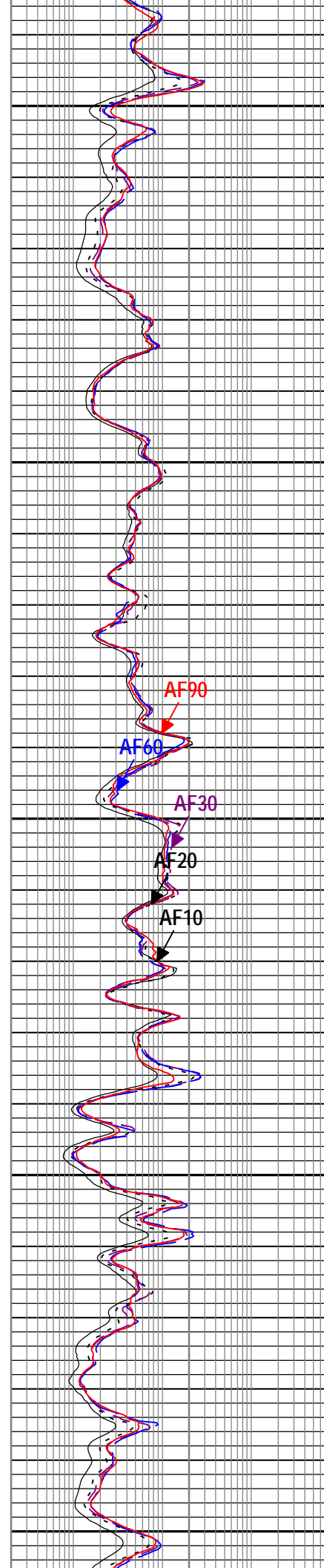
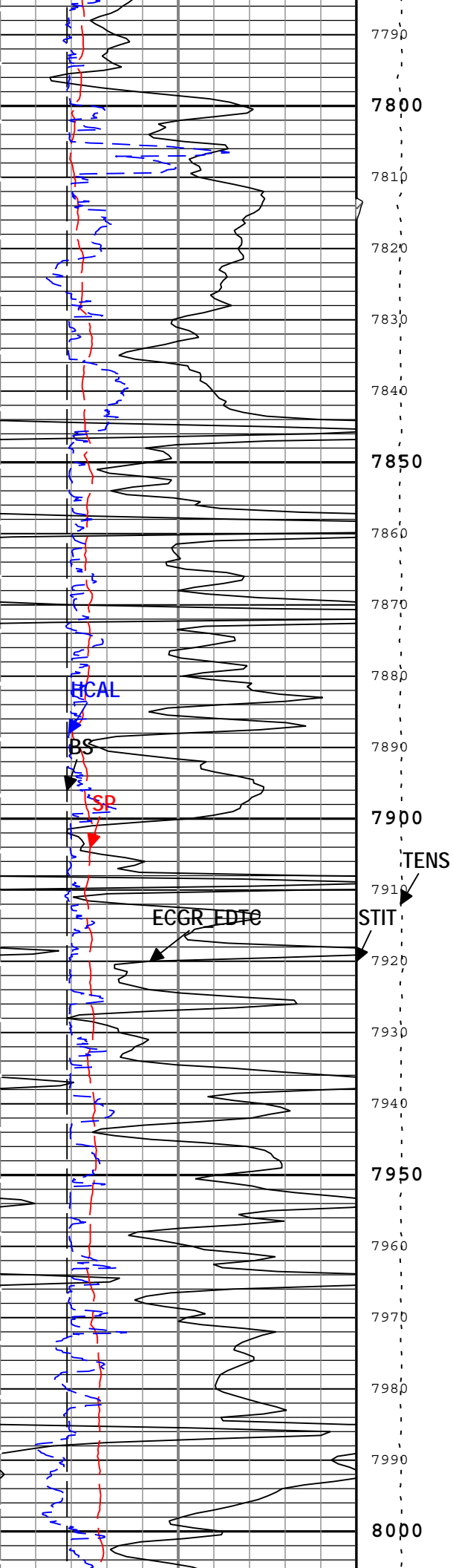


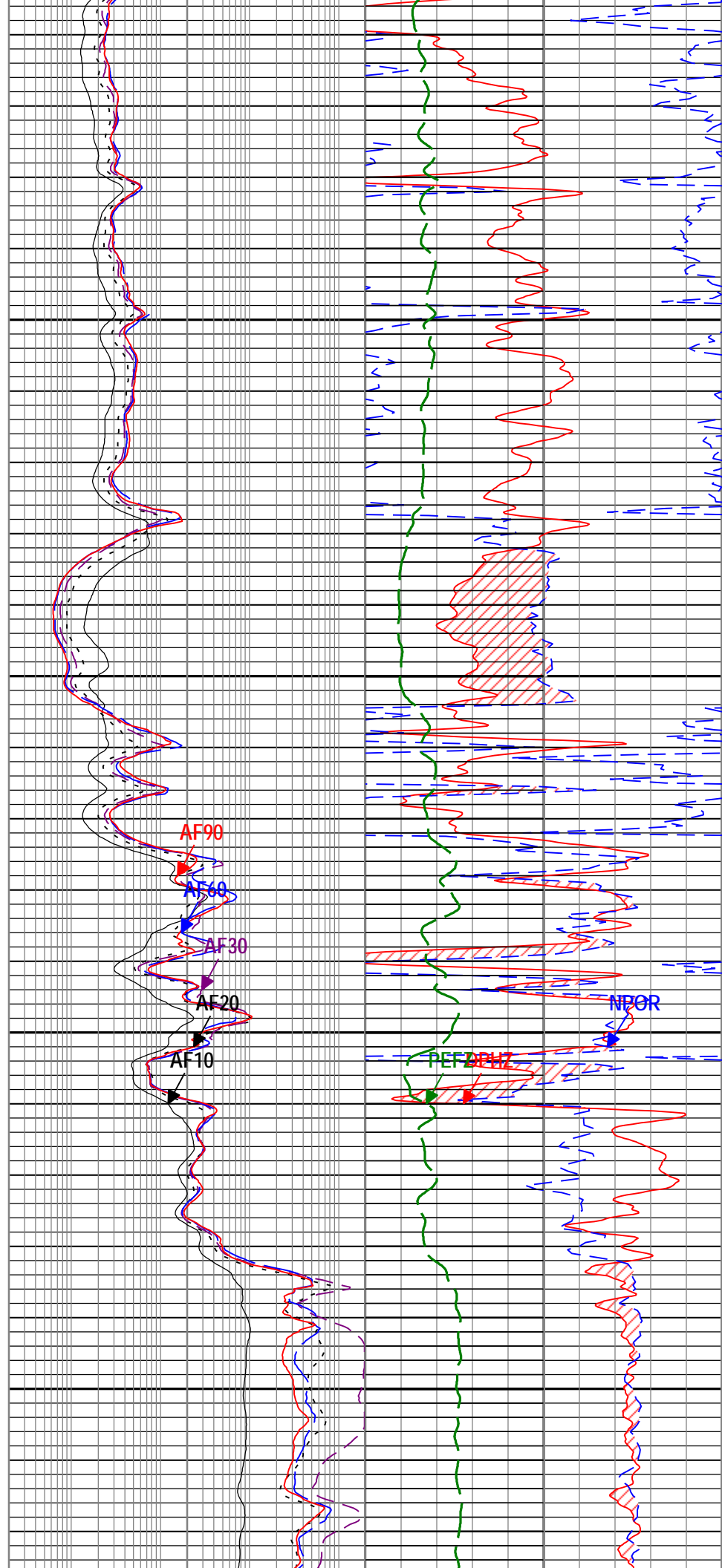
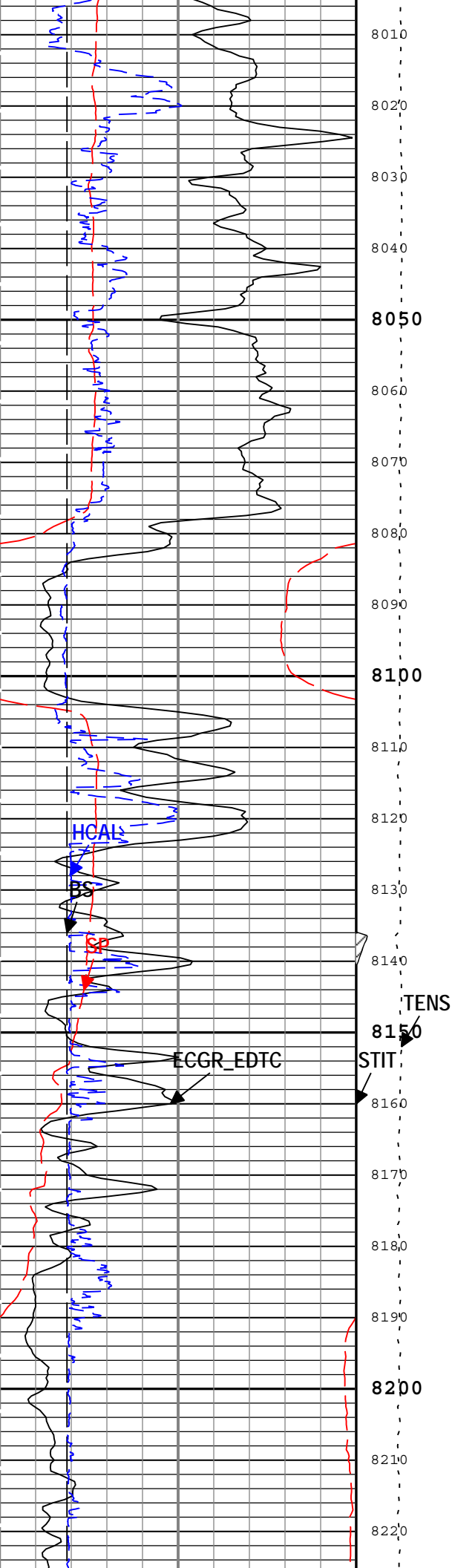


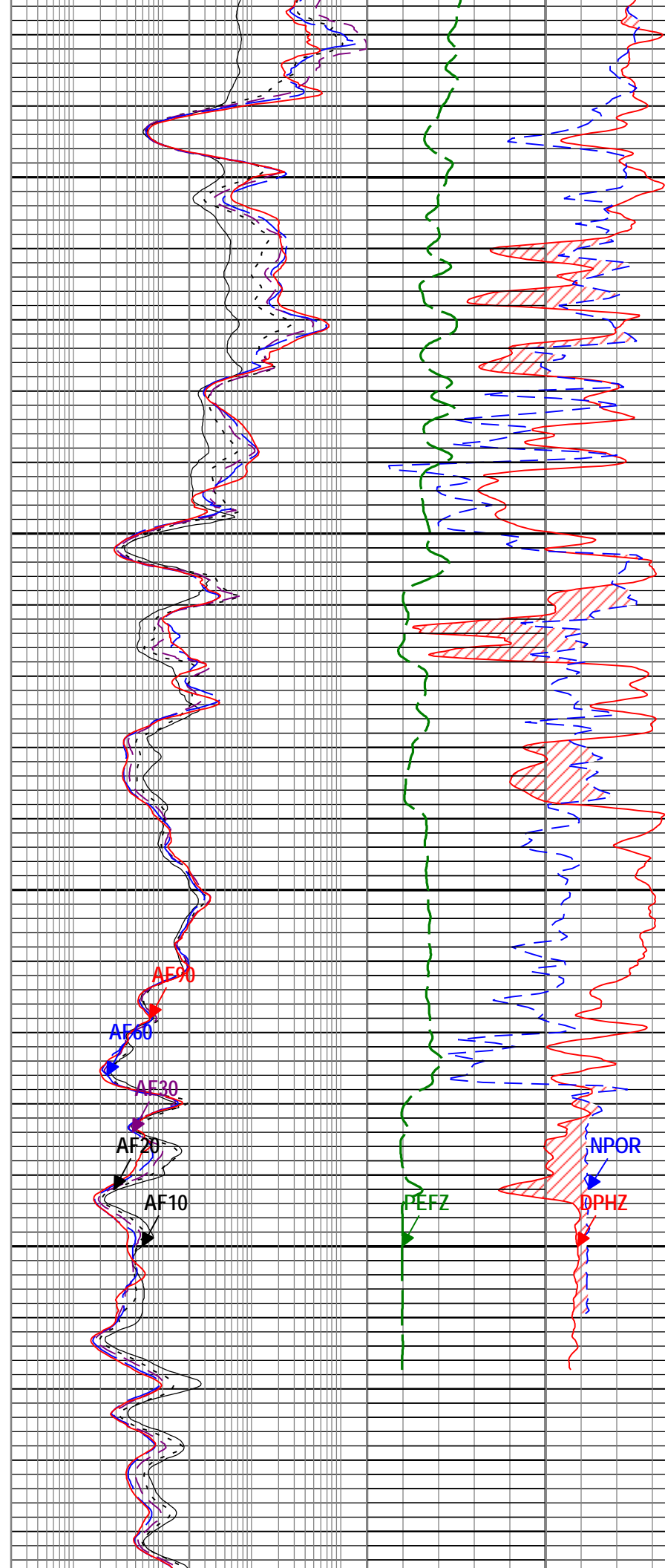
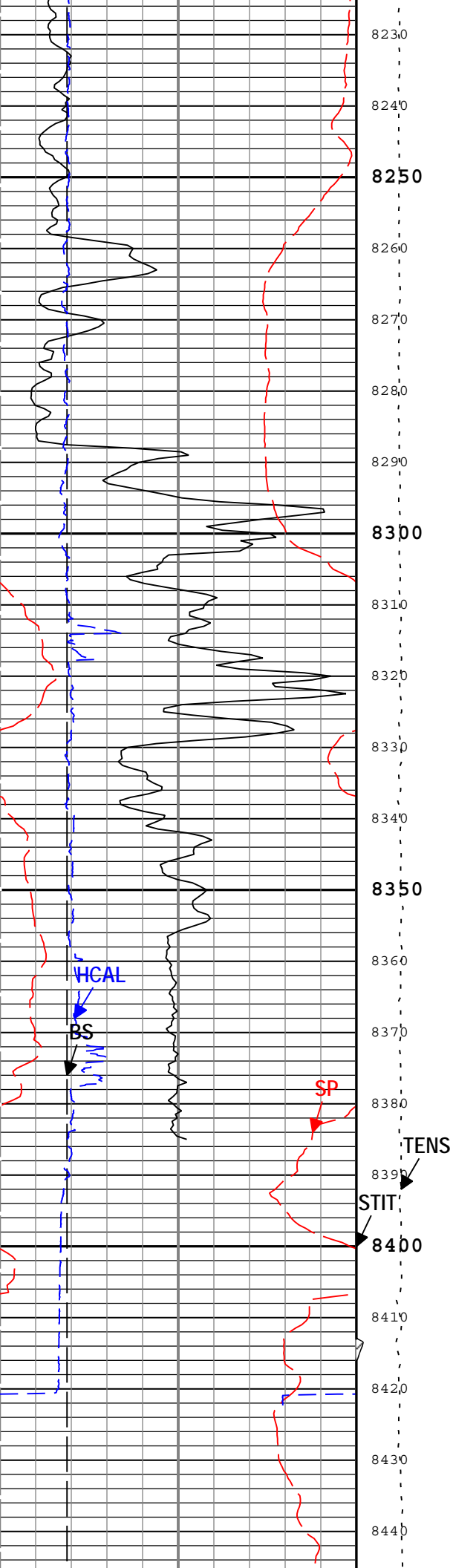


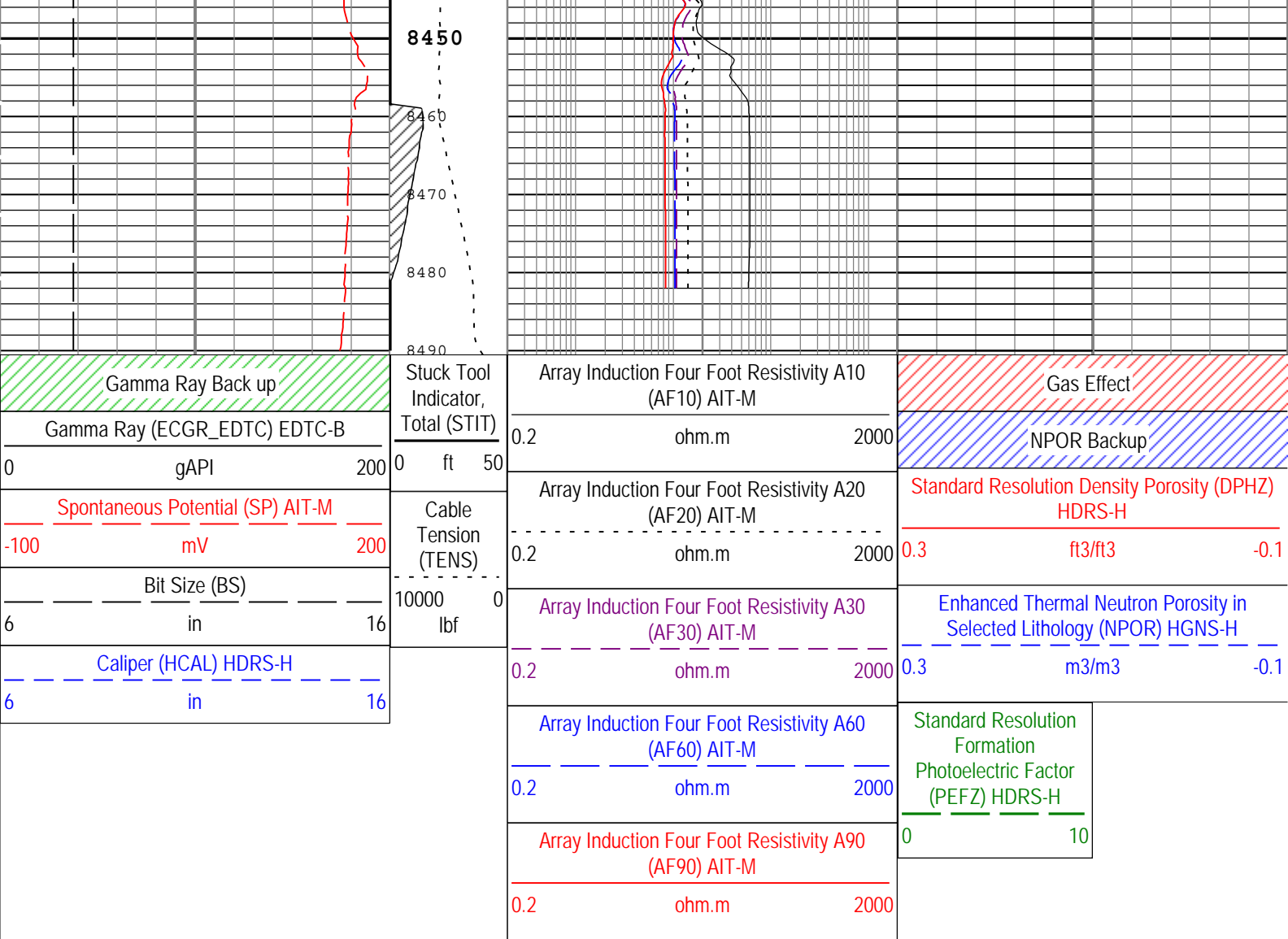












TIME_1900 - Time Marked every 60.00 (s)

Description: HGNS standard resolution porosities for Platform Express Format: Log (EMD 5in Triple Combo Linear) Index Scale: 5 in per 100 ft Index Unit: ft Index Type: Measured Depth Creation Date: 20-Jan-2015 19:12:54

| 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 | 0.75 | in |
| ISSBAR | Barite Mud Presence Flag | Borehole | No | |
| BHS | Borehole Status (Open or Cased Hole) | Borehole | Open | |
| BHT | Bottom Hole Temperature | Borehole | 198 | degF |
| BS | Bit Size | WLSESSION | 7.875 | in |
| BSAL | Borehole Salinity | Borehole | 1500 | ppm |
| CALI_SHIFT | CALI Supplementary Offset | HDRS-H | 0.41 | in |
| CBLO | Casing Bottom (Logger) | WLSESSION | 436 | ft |
| CDEN | Cement Density | EDTC-B | 2 | g/cm3 |
| DC_MODE | Depth Correction Mode | DepthCorrection | Real-time | |
| DFD | Drilling Fluid Density | Borehole | 9.25 | lbm/gal |
| DFT | Drilling Fluid Type | Borehole | Water | |
| 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 | |
| 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 | LIMESTONE | |
| MDEN | Matrix Density for Density Porosity | Borehole | 2.71 | g/cm3 |
| MFST | Mud Filtrate Sample Temperature | Borehole | 59.4 | degF |
| RMFS | Resistivity of Mud Filtrate Sample | Borehole | 4.88 | ohm.m |
| SOCO | Standoff Correction Option | HGNS-H | Yes | |
| SPDR | SP Drift Per Foot | AIT-M | 0 | mV/ft |
| TD | Total Measured Depth | Borehole | 8460 | 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 | 900 | ft/h |

ONE

5" Repeat Anaylsis

Pass Summary

| Run Name | Pass Objective | Direction | Top | Bottom | Start | Stop | DSC Mode | Depth Shift | Include Parallel Data |
|----------|----------------|-----------|------------|------------|-------------------------|-------------------------|----------|-------------|-----------------------|
| ONE | Log[4]:Up | Up | 6001.83 ft | 8487.08 ft | 20-Jan-2015 10:09:12 AM | 20-Jan-2015 10:55:52 AM | ON | -0.65 ft | Yes |
| ONE | Log[5]:Up | Up | 137.47 ft | 8490.28 ft | 20-Jan-2015 11:25:38 AM | 20-Jan-2015 5:57:28 PM | ON | 0.00 ft | Yes |

All depths are referenced to toolstring zero

Log

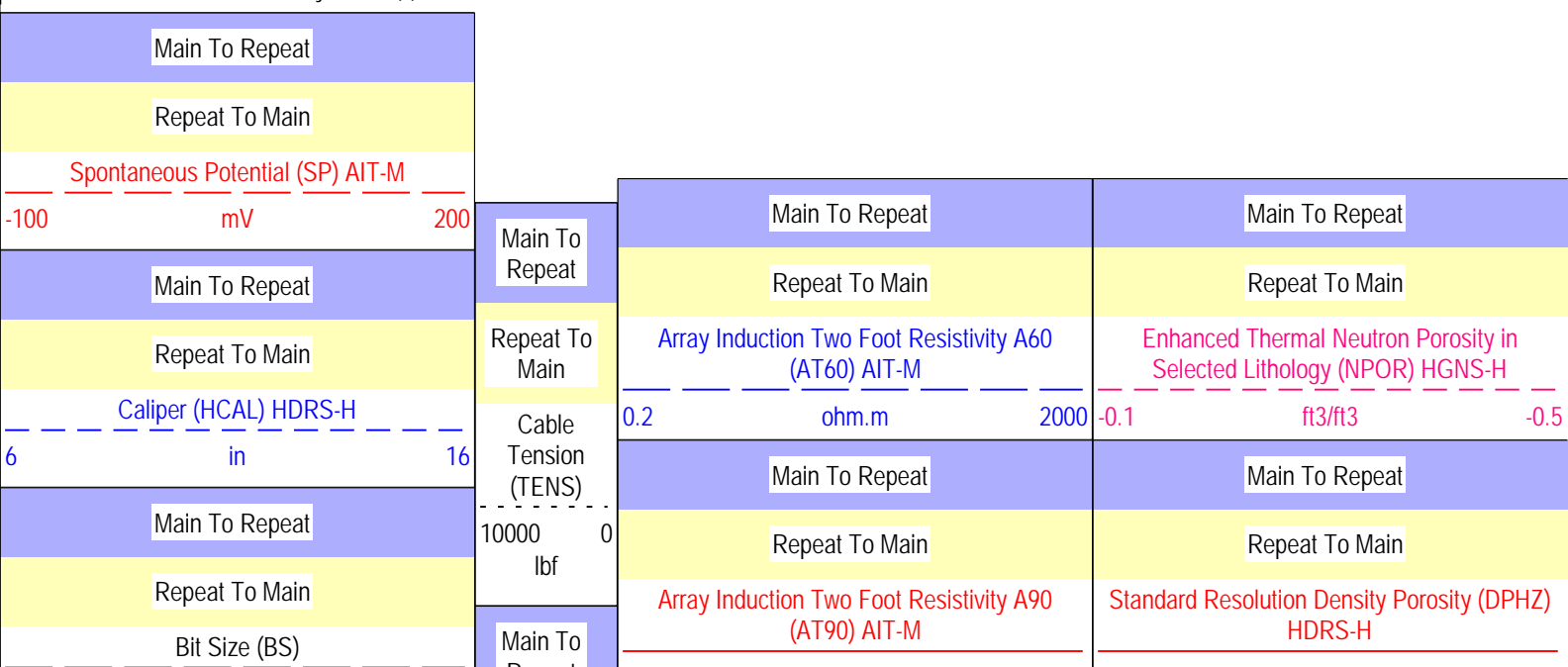
Company:NIGHTHAWK PRODUCTION LLC

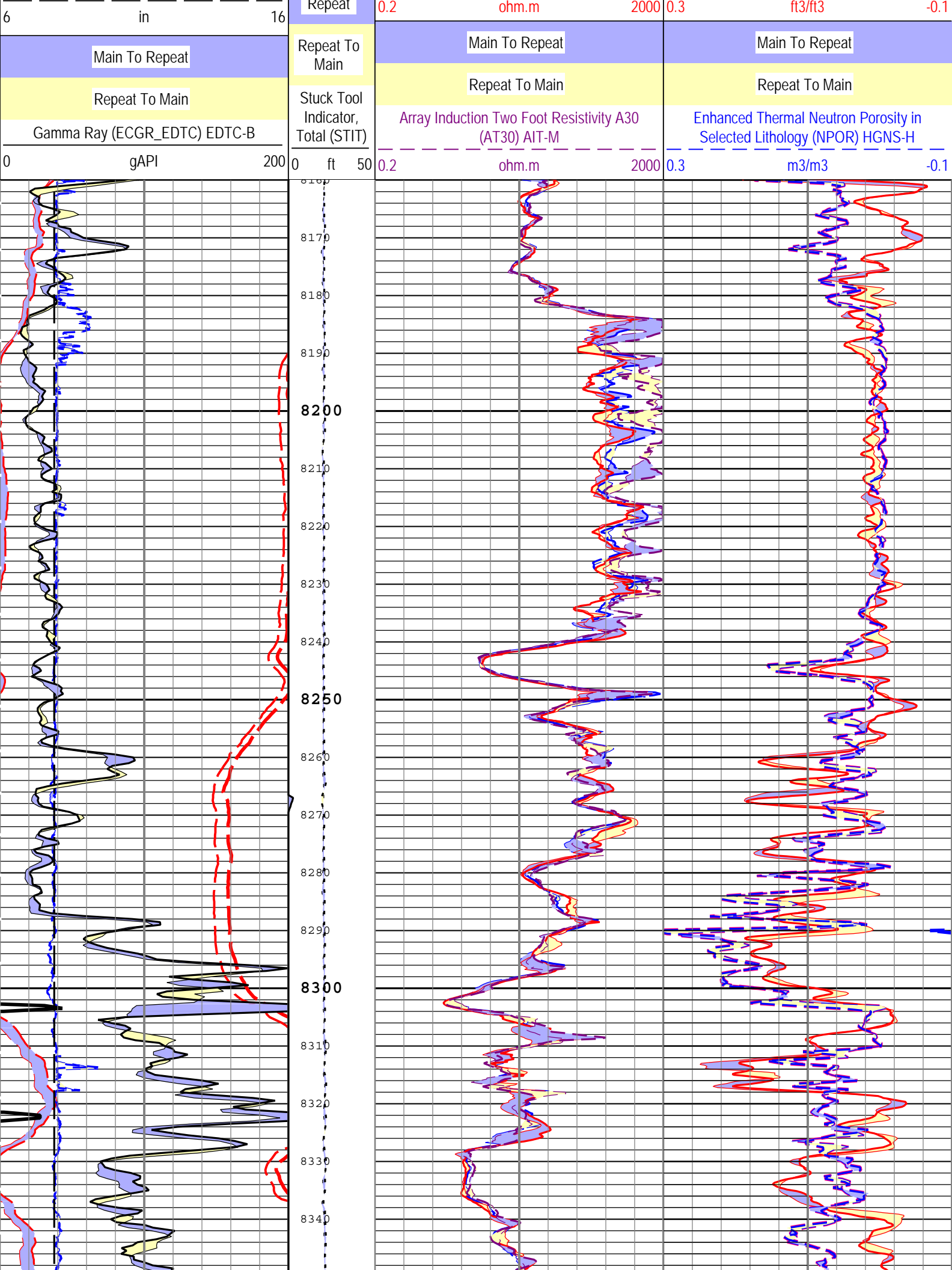
Well:Mary Jane 8-5

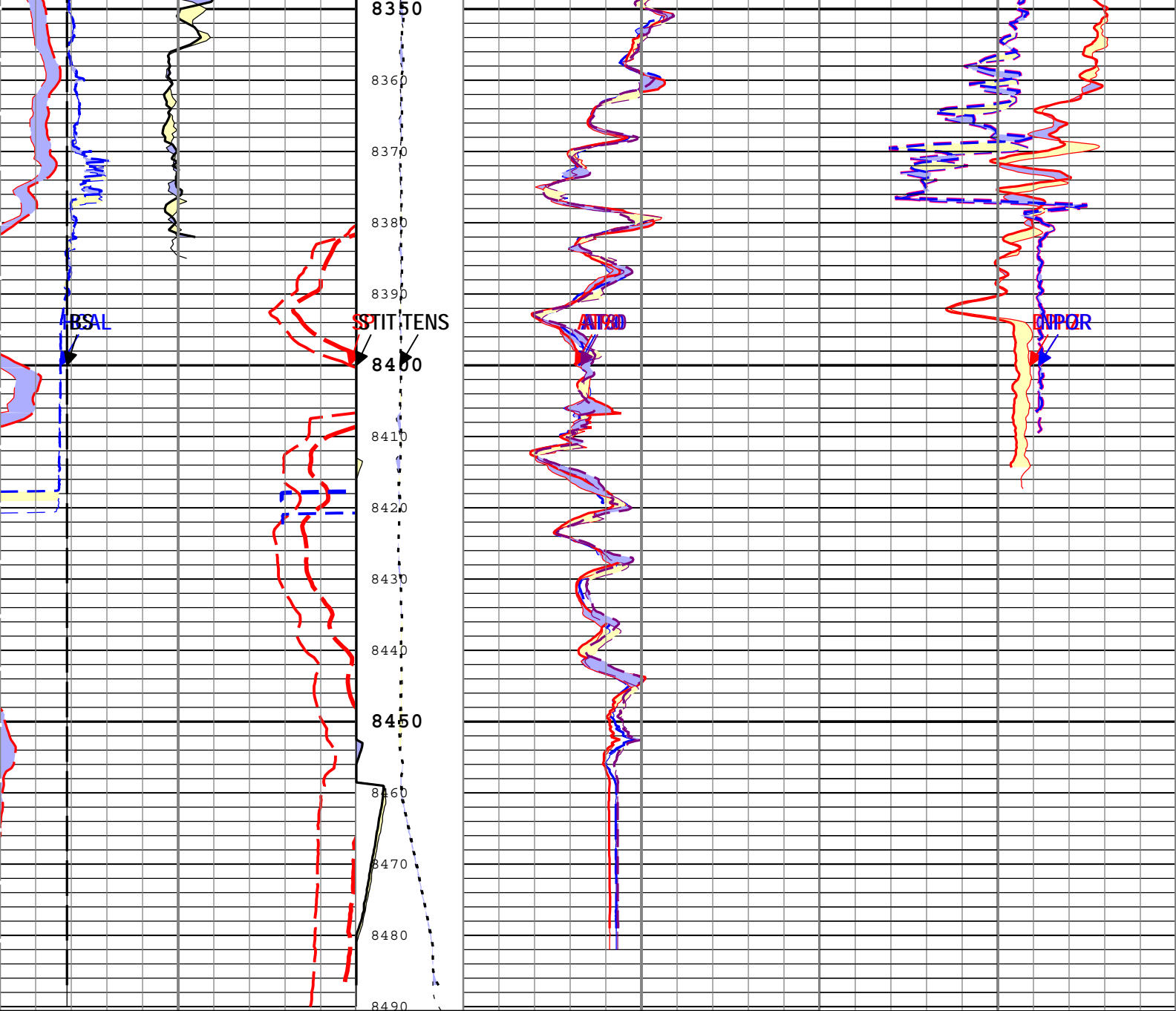
ONE: Log[5]:Up:S005

Description: HGNS standard resolution porosities for Platform Express
 Format: Log (EMD 5in Triple Combo Linear RA_1)
 Index Scale: 5 in per 100 ft
 Index Unit: ft
 Index Type: Measured Depth
 Creation Date: 20-Jan-2015 19:12:57

TIME_1900 - Time Marked every 60.00 (s)







| | | | |
|------------------------------------|-----|---|------|
| Main To Repeat | | Main To Repeat | |
| Repeat To Main | | Repeat To Main | |
| Spontaneous Potential (SP) AIT-M | | Array Induction Two Foot Resistivity A60 (AT60) AIT-M | |
| -100 | 200 | 0.2 | 2000 |
| mV | | ohm.m | |
| Main To Repeat | | Main To Repeat | |
| Repeat To Main | | Repeat To Main | |
| Caliper (HCAL) HDRS-H | | Array Induction Two Foot Resistivity A90 (AT90) AIT-M | |
| 6 | 16 | 0.2 | 2000 |
| in | | ohm.m | |
| Main To Repeat | | Main To Repeat | |
| Repeat To Main | | Repeat To Main | |
| Bit Size (BS) | | Array Induction Two Foot Resistivity A30 (AT30) AIT-M | |
| 6 | 16 | Enhanced Thermal Neutron Porosity in Selected Lithology (NPOR) HGNS-H | |
| in | | ft3/ft3 | |
| Main To Repeat | | Main To Repeat | |
| Repeat To Main | | Repeat To Main | |
| Stuck Tool Indicator, Total (STIT) | | Standard Resolution Density Porosity (DPHZ) HDRS-H | |
| 0 | 50 | 0.3 | -0.1 |
| ft | | ft3/ft3 | |
| Main To Repeat | | Main To Repeat | |
| Repeat To Main | | Repeat To Main | |
| | | Enhanced Thermal Neutron Porosity in Selected Lithology (NPOR) HGNS-H | |
| | | ft3/ft3 | |

| | | | | | | | | | | | | | | | | | | |
|--|------|----------------------|---------|-----------|----------|------------|--|--|--|--|--|--|--|--|--|--|--|--|
| Main To Repeat | | 0.2 | ohm.m | 2000 | 0.3 | m3/m3 | -0.1 | | | | | | | | | | | |
| Repeat To Main | | | | | | | | | | | | | | | | | | |
| Gamma Ray (ECGR_EDTC) EDTC-B | | | | | | | | | | | | | | | | | | |
| 0 | gAPI | 200 | | | | | | | | | | | | | | | | |
| TIME_1900 - Time Marked every 60.00 (s) | | | | | | | | | | | | | | | | | | |
| Description: HGNS standard resolution porosities for Platform Express Format: Log (EMD 5in Triple Combo Linear RA_1) Index Scale: 5 in per 100 ft Index Unit: ft Index Type: Measured Depth Creation Date: 20-Jan-2015 19:12:57 | | | | | | | | | | | | | | | | | | |
| Calibration Report | | | | | | | | | | | | | | | | | | |
| AIT-M (Array Induction Tool - M) Calibration - Run ONE | | | | | | | | | | | | | | | | | | |
| Primary Equipment : | | | | | | | | | | | | | | | | | | |
| File code for AIT-MA Sonde Tool Element | | | AMIS | | 181 | | | | | | | | | | | | | |
| Auxiliary Equipment : | | | | | | | | | | | | | | | | | | |
| AITM Rm/SP Bottom Nose | | | AMRM | | 181 | | | | | | | | | | | | | |
| AIT Sonde Calibration - Test Loop Gain | | | | | | | | | | | | | | | | | | |
| Master (EEPROM): | | 15:29:38 17-Dec-2014 | | | | | | | | | | | | | | | | |
| 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 | 1.016 | 1.050 | <div><div></div><div></div><div></div><div></div><div></div></div> | | | | | | | | | | | |
| Test Loop Phase - 0 | deg | Master | 0 | -3.000 | 0.617 | 3.000 | <div><div></div><div></div><div></div><div></div><div></div></div> | | | | | | | | | | | |
| Test Loop Gain - 1 | | Master | 1.000 | 0.950 | 1.017 | 1.050 | <div><div></div><div></div><div></div><div></div><div></div></div> | | | | | | | | | | | |
| Test Loop Phase - 1 | deg | Master | 0 | -3.000 | 0.696 | 3.000 | <div><div></div><div></div><div></div><div></div><div></div></div> | | | | | | | | | | | |
| Test Loop Gain - 2 | | Master | 1.000 | 0.950 | 1.017 | 1.050 | <div><div></div><div></div><div></div><div></div><div></div></div> | | | | | | | | | | | |
| Test Loop Phase - 2 | deg | Master | 0 | -3.000 | 0.142 | 3.000 | <div><div></div><div></div><div></div><div></div><div></div></div> | | | | | | | | | | | |
| Test Loop Gain - 3 | | Master | 1.000 | 0.950 | 1.016 | 1.050 | <div><div></div><div></div><div></div><div></div><div></div></div> | | | | | | | | | | | |
| Test Loop Phase - 3 | deg | Master | 0 | -3.000 | 0.203 | 3.000 | <div><div></div><div></div><div></div><div></div><div></div></div> | | | | | | | | | | | |
| Test Loop Gain - 4 | | Master | 1.000 | 0.950 | 0.996 | 1.050 | <div><div></div><div></div><div></div><div></div><div></div></div> | | | | | | | | | | | |
| Test Loop Phase - 4 | deg | Master | 0 | -3.000 | 0.151 | 3.000 | <div><div></div><div></div><div></div><div></div><div></div></div> | | | | | | | | | | | |
| Test Loop Gain - 5 | | Master | 1.000 | 0.950 | 0.990 | 1.050 | <div><div></div><div></div><div></div><div></div><div></div></div> | | | | | | | | | | | |
| Test Loop Phase - 5 | deg | Master | 0 | -3.000 | -0.037 | 3.000 | <div><div></div><div></div><div></div><div></div><div></div></div> | | | | | | | | | | | |
| Test Loop Gain - 6 | | Master | 1.000 | 0.950 | 0.997 | 1.050 | <div><div></div><div></div><div></div><div></div><div></div></div> | | | | | | | | | | | |
| Test Loop Phase - 6 | deg | Master | 0 | -3.000 | 0.286 | 3.000 | <div><div></div><div></div><div></div><div></div><div></div></div> | | | | | | | | | | | |
| Test Loop Gain - 7 | | Master | 1.000 | 0.950 | 1.010 | 1.050 | <div><div></div><div></div><div></div><div></div><div></div></div> | | | | | | | | | | | |
| Test Loop Phase - 7 | deg | Master | 0 | -3.000 | 0.038 | 3.000 | <div><div></div><div></div><div></div><div></div><div></div></div> | | | | | | | | | | | |
| AIT Sonde Calibration - Sonde Error Correction | | | | | | | | | | | | | | | | | | |
| Master (EEPROM): | | 15:29:38 17-Dec-2014 | | | | | | | | | | | | | | | | |
| Measurement | Unit | Phase | Nominal | Low Limit | Actual | High Limit | <div><div></div><div></div><div></div><div></div><div></div></div> | | | | | | | | | | | |
| Sonde Error Correction Real - 0 | mS/m | Master | ----- | -231.000 | -108.530 | 119.000 | <div><div></div><div></div><div></div><div></div><div></div></div> | | | | | | | | | | | |
| Sonde Error Correction Quad - 0 | | Master | ----- | -2250.000 | 126.707 | 2250.000 | <div><div></div><div></div><div></div><div></div><div></div></div> | | | | | | | | | | | |
| Sonde Error Correction Real - 1 | mS/m | Master | ----- | 114.000 | 158.972 | 204.000 | <div><div></div><div></div><div></div><div></div><div></div></div> | | | | | | | | | | | |
| Sonde Error Correction Quad - 1 | | Master | ----- | -625.000 | -129.079 | 625.000 | <div><div></div><div></div><div></div><div></div><div></div></div> | | | | | | | | | | | |
| Sonde Error Correction Real - 2 | mS/m | Master | ----- | 66.000 | 116.372 | 156.000 | <div><div></div><div></div><div></div><div></div><div></div></div> | | | | | | | | | | | |
| Sonde Error Correction Quad - 2 | | Master | ----- | -350.000 | -129.713 | 350.000 | <div><div></div><div></div><div></div><div></div><div></div></div> | | | | | | | | | | | |
| Sonde Error Correction Real - 3 | mS/m | Master | ----- | 39.000 | 50.201 | 89.000 | <div><div></div><div></div><div></div><div></div><div></div></div> | | | | | | | | | | | |
| Sonde Error Correction Quad - 3 | | Master | ----- | -250.000 | -3.030 | 250.000 | <div><div></div><div></div><div></div><div></div><div></div></div> | | | | | | | | | | | |
| Sonde Error Correction Real - 4 | mS/m | Master | ----- | 15.000 | 25.970 | 35.000 | <div><div></div><div></div><div></div><div></div><div></div></div> | | | | | | | | | | | |
| Sonde Error Correction Quad - 4 | | Master | ----- | -63.000 | -11.892 | 63.000 | <div><div></div><div></div><div></div><div></div><div></div></div> | | | | | | | | | | | |
| Sonde Error Correction Real - 5 | mS/m | Master | ----- | 4.000 | 10.938 | 24.000 | <div><div></div><div></div><div></div><div></div><div></div></div> | | | | | | | | | | | |
| Sonde Error Correction Quad - 5 | | Master | ----- | -50.000 | 18.763 | 50.000 | <div><div></div><div></div><div></div><div></div><div></div></div> | | | | | | | | | | | |
| Sonde Error Correction Real - 6 | mS/m | Master | ----- | 5.000 | 10.206 | 15.000 | <div><div></div><div></div><div></div><div></div><div></div></div> | | | | | | | | | | | |
| Sonde Error Correction Quad - 6 | | Master | ----- | -30.000 | 1.748 | 30.000 | <div><div></div><div></div><div></div><div></div><div></div></div> | | | | | | | | | | | |
| Sonde Error Correction Real - 7 | mS/m | Master | ----- | -5.000 | -1.494 | 5.000 | <div><div></div><div></div><div></div><div></div><div></div></div> | | | | | | | | | | | |
| Sonde Error Correction Quad - 7 | | Master | ----- | -30.000 | -0.398 | 30.000 | <div><div></div><div></div><div></div><div></div><div></div></div> | | | | | | | | | | | |
| AIT Mud Calibration - Mud Calibration Gain | | | | | | | | | | | | | | | | | | |
| Master (EEPROM): | | 15:29:38 17-Dec-2014 | | | | | | | | | | | | | | | | |
| Measurement | Unit | Phase | Nominal | Low Limit | Actual | High Limit | <div><div></div><div></div><div></div><div></div><div></div></div> | | | | | | | | | | | |
| Coarse Gain | | Master | 1.000 | 0.800 | 0.976 | 1.200 | <div><div></div><div></div><div></div><div></div><div></div></div> | | | | | | | | | | | |

| | | | | | | | |
|--|--|---------------|-------|-------|-------|-------|--|
| | | Before-Master | ----- | ----- | 0.000 | ----- | |
|--|--|---------------|-------|-------|-------|-------|--|

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

| | | | |
|-------------------------|---|---------------|-------|
| Primary Equipment : | | | |
| | HILT High-Resolution Control Cartridge, 150 degC | HRCC-H | |
| | HILT Resistivity Gamma-Ray Density Device, 150 degC | HRGD-H | 5788 |
| Auxiliary Equipment : | | | |
| | HRDD Backscatter Detector | Backscatter | 26961 |
| | HRDD Long Spacing Detector | Long Spacing | |
| | HRDD Short Spacing Detector | Short Spacing | |
| | Cesium 137 Gamma-Ray Logging Source | GSR-J | 5240 |
| | HILT High-Resolution Control Cartridge, 150 degC | HRCC-H | |
| | HILT High-Resolution Mechanical Sonde, 150 degC | HRMS-H | |
| 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): | | 21:37:43 19-Jan-2015 | | | | | |
|--------------------|------|----------------------|---------|-----------|--------|------------|--|
| Measurement | Unit | Phase | Nominal | Low Limit | Actual | High Limit | |
| Small Ring | in | Before | 8.00 | 6.00 | 7.52 | 10.00 | |
| Large Ring | in | Before | 12.00 | 9.00 | 11.80 | 15.00 | |

HDRS Density Calibration - Inversion Results

| Master (EEPROM): | | 12:50:40 17-Jan-2015 | | | | | |
|------------------|-------|----------------------|---------|-----------|--------|------------|--|
| Measurement | Unit | Phase | Nominal | Low Limit | Actual | High Limit | |
| Rho Aluminum | g/cm3 | Master | 2.596 | 2.586 | 2.595 | 2.606 | |
| Rho Magnesium | g/cm3 | Master | 1.686 | 1.676 | 1.687 | 1.696 | |
| Pe Aluminum | | Master | 2.570 | 2.470 | 2.534 | 2.670 | |
| Pe Magnesium | | Master | 2.650 | 2.550 | 2.639 | 2.750 | |

HDRS Density Calibration - Deviation Summary

| Master (EEPROM): | | 12:50:40 17-Jan-2015 | | | | | |
|----------------------|------|----------------------|---------|-----------|--------|------------|--|
| Measurement | Unit | Phase | Nominal | Low Limit | Actual | High Limit | |
| BS Average Deviation | % | Master | 0 | -0.6000 | 0.4562 | 0.6000 | |
| BS Max Deviation | % | Master | 0 | -1.6000 | 1.1025 | 1.6000 | |
| SS Average Deviation | % | Master | 0 | -1.0000 | 0.6886 | 1.0000 | |
| SS Max Deviation | % | Master | 0 | -2.5000 | 1.1613 | 2.5000 | |
| LS Average Deviation | % | Master | 0 | -1.5000 | 0.8410 | 1.5000 | |
| LS Max Deviation | % | Master | 0 | -3.5000 | 2.2069 | 3.5000 | |

HDRS Density Calibration - Background Summary

| Master (EEPROM): | | 12:50:40 17-Jan-2015 | | Before (Measured): | | 21:23:11 19-Jan-2015 | |
|------------------|------|----------------------|---------|--------------------|---------|----------------------|--|
| Measurement | Unit | Phase | Nominal | Low Limit | Actual | High Limit | |
| BS Window Ratio | | Master | 1.0000 | | 0.7516 | | |
| | | Before | 0.7516 | 0.7140 | 0.7475 | 0.7892 | |
| | | Before-Master | ----- | ----- | -0.0041 | ----- | |
| BS Window Sum | 1/s | Master | 1 | | 24880 | | |
| | | Before | 24880 | 23636 | 24864 | 26124 | |
| | | Before-Master | ----- | ----- | -16 | ----- | |
| SS Window Ratio | | Master | 1.0000 | | 0.4903 | | |
| | | Before | 0.4903 | 0.4658 | 0.4901 | 0.5148 | |
| | | Before-Master | ----- | ----- | -0.0002 | ----- | |
| SS Window Sum | 1/s | Master | 1 | | 11903 | | |
| | | Before | 11903 | 11308 | 11899 | 12499 | |
| | | Before-Master | ----- | ----- | -4 | ----- | |
| LS Window Ratio | | Master | 1.0000 | | 0.2980 | | |
| | | Before | 0.2980 | 0.2831 | 0.3006 | 0.3129 | |
| | | Before-Master | ----- | ----- | 0.0026 | ----- | |

| | | | | | | | |
|---------------|-----|---------------|-------|-------|------|-------|--|
| LS Window Sum | 1/s | Master | 1 | 1278 | 1345 | 1413 | |
| | | Before | 1345 | | | | |
| | | Before-Master | ----- | ----- | -4 | ----- | |

HDRS Density Calibration - Photo-multiplier High Voltages

| Master (EEPROM): | | 12:50:40 17-Jan-2015 | | Before (Measured): | | 21:23:11 19-Jan-2015 | |
|--------------------|------|----------------------|---------|--------------------|--------|----------------------|--|
| Measurement | Unit | Phase | Nominal | Low Limit | Actual | High Limit | |
| BS PM High Voltage | V | Master | | 1000 | 1542 | 2400 | |
| | | Before | | 1000 | 1547 | 2400 | |
| | | Before-Master | ----- | -100 | 5 | 100 | |
| SS PM High Voltage | V | Master | | 1000 | 1904 | 2400 | |
| | | Before | | 1000 | 1919 | 2400 | |
| | | Before-Master | ----- | -100 | 15 | 100 | |
| LS PM High Voltage | V | Master | | 1000 | 1263 | 2400 | |
| | | Before | | 1000 | 1271 | 2400 | |
| | | Before-Master | ----- | -100 | 8 | 100 | |

HDRS Density Calibration - Crystal Quality Resolutions

| Master (EEPROM): | | 12:50:40 17-Jan-2015 | | Before (Measured): | | 21:23:11 19-Jan-2015 | |
|-----------------------|------|----------------------|---------|--------------------|--------|----------------------|--|
| Measurement | Unit | Phase | Nominal | Low Limit | Actual | High Limit | |
| BS Crystal Resolution | % | Master | | 5.00 | 10.90 | 25.00 | |
| | | Before | | 5.00 | 10.91 | 25.00 | |
| | | Before-Master | ----- | -1.00 | 0.01 | 1.00 | |
| SS Crystal Resolution | % | Master | | 5.00 | 9.80 | 20.00 | |
| | | Before | | 5.00 | 9.75 | 20.00 | |
| | | Before-Master | ----- | -1.00 | -0.05 | 1.00 | |
| LS Crystal Resolution | % | Master | | 5.00 | 8.32 | 20.00 | |
| | | Before | | 5.00 | 8.27 | 20.00 | |
| | | Before-Master | ----- | -1.00 | -0.05 | 1.00 | |

HDRS MCFL Calibration - MCFL Accumulations

| Before (Measured): | | 21:19:39 19-Jan-2015 | | | | | |
|---------------------|-------|----------------------|---------|-----------|--------|------------|--|
| Measurement | Unit | Phase | Nominal | Low Limit | Actual | High Limit | |
| Main Resistivity | ohm.m | Before | 3875 | 3565 | 3889 | 4185 | |
| Deep Resistivity | ohm.m | Before | 3830 | 3524 | 3825 | 4136 | |
| Shallow Resistivity | ohm.m | Before | 3830 | 3524 | 3847 | 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 | 4810 | |
| Auxiliary Equipment : | | | |
| HGNS Accelerometer, 150 degC | HACCZ-H | 5955 | |
| AmBe Neutron Logging Source | NSR-F | 5215 | |
| Calibration Parameter : | | | |
| Water Temperature | | | |
| Housing Size | | | |
| JIG-BKG (Jig minus background reference) | 165 | | |

HGNS Accelerometer Calibration - Accelerometer Accumulations

| Before (Measured): | | 08:10:03 20-Jan-2015 | | | | | |
|-------------------------|-------|----------------------|---------|-----------|--------|------------|--|
| Measurement | Unit | Phase | Nominal | Low Limit | Actual | High Limit | |
| AZ Vertical Measurement | ft/s2 | Before | 32.2 | 31.5 | 32.0 | 32.8 | |

HGNS Accelerometer EEPROM - Accelerometer EEPROM Read

| Master (EEPROM): | | 00:00:00 15-Jan-2007 | | | | | |
|-------------------------------------|------|----------------------|---------|-----------|----------|------------|--|
| 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 | ----- | ----- | 1155.700 | ----- | |
| Accelerometer Coefficients - 1 | | Master | ----- | ----- | 26.890 | ----- | |

| | | | | | | | |
|--------------------------------|--|--------|------|------|---------|------|--|
| Accelerometer Coefficients - 2 | | Master | ---- | ---- | -0.008 | ---- | |
| Accelerometer Coefficients - 3 | | Master | ---- | ---- | 0.000 | ---- | |
| Accelerometer Coefficients - 4 | | Master | ---- | ---- | 2.748 | ---- | |
| Accelerometer Coefficients - 5 | | Master | ---- | ---- | 0.000 | ---- | |
| Accelerometer Coefficients - 6 | | Master | ---- | ---- | 0.000 | ---- | |
| Accelerometer Coefficients - 7 | | Master | ---- | ---- | 0.000 | ---- | |
| Accelerometer Coefficients - 8 | | Master | ---- | ---- | 298.600 | ---- | |
| Accelerometer Coefficients - 9 | | Master | ---- | ---- | 0.983 | ---- | |

HGNS Neutron Calibration - HGNS Neutron Accumulations

| Master (EEPROM): | | 10:43:32 31-Oct-2014 | | Before (Measured): | | 21:22:02 19-Jan-2015 | |
|---------------------------------|------|----------------------|---------|--------------------|--------|----------------------|--|
| Measurement | Unit | Phase | Nominal | Low Limit | Actual | High Limit | |
| Near Zero Measurement | 1/s | Master | 0 | 5.0 | 24.4 | 40.0 | |
| | | Before | 0 | 5.0 | 24.6 | 40.0 | |
| | | Before-Master | ---- | -3.7 | 0.2 | 3.7 | |
| Far Zero Measurement | 1/s | Master | 0 | 5.0 | 28.7 | 40.0 | |
| | | Before | 0 | 5.0 | 27.3 | 40.0 | |
| | | Before-Master | ---- | -4.3 | -1.4 | 4.3 | |
| Near Plus Measurement | 1/s | Master | 6031.0 | 4700.0 | 5257.0 | 6900.0 | |
| | | Before | ---- | ---- | ---- | ---- | |
| | | Before-Master | ---- | ---- | ---- | ---- | |
| Far Plus Measurement | 1/s | Master | 2793.0 | 1900.0 | 2224.0 | 2900.0 | |
| | | Before | ---- | ---- | ---- | ---- | |
| | | Before-Master | ---- | ---- | ---- | ---- | |
| Near Corrected Plus Measurement | 1/s | Master | | 4700.0 | 5330.0 | 6900.0 | |
| | | Before | ---- | ---- | ---- | ---- | |
| | | Before-Master | ---- | ---- | ---- | ---- | |
| Far Corrected Plus Measurement | 1/s | Master | | 1900.0 | 2259.0 | 2900.0 | |
| | | Before | ---- | ---- | ---- | ---- | |
| | | Before-Master | ---- | ---- | ---- | ---- | |

HGNS Gamma-Ray Calibration - Gamma-Ray Accumulations

| Before (Measured): | | 21:34:36 19-Jan-2015 | | | | | |
|----------------------|------|----------------------|---------|-----------|--------|------------|--|
| Measurement | Unit | Phase | Nominal | Low Limit | Actual | High Limit | |
| RGR Zero Measurement | gAPI | Before | 30.0 | 0 | 73.4 | 120.0 | |
| RGR Plus Measurement | gAPI | Before | 185.4 | 157.1 | 171.3 | 206.3 | |
| GR Calibration Gain | | Before | 0.89 | 0.80 | 0.96 | 1.05 | |

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

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

EDTC-B Accelerometer Calibration - EDTC-B Accelerometer Calibration

| Before (Measured): | | 08:08:03 20-Jan-2015 | | | | | |
|-------------------------|-------|----------------------|---------|-----------|--------|------------|--|
| Measurement | Unit | Phase | Nominal | Low Limit | Actual | High Limit | |
| AZ Vertical Measurement | ft/s2 | Before | 32.19 | 31.53 | 32.49 | 32.84 | |

EDTC-B Memory Data - EDTC-B Memory Data

| Master (EEPROM): | | 12:59:07 19-Jan-2015 | | | | | |
|--------------------------------|------|----------------------|---------|-----------|----------|------------|--|
| Measurement | Unit | Phase | Nominal | Low Limit | Actual | High Limit | |
| Initial PMT HV | V | Master | | | 1434.000 | | |
| Accelerometer Serial Number | | Master | | | 390 | | |
| Accelerometer Coefficients - 0 | | Master | ---- | ---- | 2.894 | ---- | |
| Accelerometer Coefficients - 1 | | Master | ---- | ---- | 0.000 | ---- | |
| Accelerometer Coefficients - 2 | | Master | ---- | ---- | 0.000 | ---- | |
| Accelerometer Coefficients - 3 | | Master | ---- | ---- | 0.000 | ---- | |
| Accelerometer Coefficients - 4 | | Master | ---- | ---- | 0.000 | ---- | |
| Accelerometer Coefficients - 5 | | Master | ---- | ---- | 0.000 | ---- | |
| Accelerometer Coefficients - 6 | | Master | ---- | ---- | 0.000 | ---- | |
| Accelerometer Coefficients - 7 | | Master | ---- | ---- | -0.005 | ---- | |

| | | | | | | | |
|----------------------------------|--|--------|------|------|-------|------|------------------------|
| Accelerometer Coefficients - 8 | | Master | ---- | ---- | 0.000 | ---- | <div><div></div></div> |
| Accelerometer Coefficients - 9 | | Master | ---- | ---- | 0.000 | ---- | <div><div></div></div> |
| Accelerometer Coefficients - 10 | | Master | ---- | ---- | 0.000 | ---- | <div><div></div></div> |
| Accelerometer Coefficients - 11 | | Master | ---- | ---- | 0.000 | ---- | <div><div></div></div> |
| Gamma-Ray Detector Serial Number | | Master | | | 7240 | | <div><div></div></div> |

EDTC-B Gamma-Ray Calibration - Gamma Ray Coefficients

| Before (Measured): | | 10:50:29 19-Jan-2015 | | | | | |
|--------------------|------|----------------------|---------|-----------|--------|------------|------------------------|
| Measurement | Unit | Phase | Nominal | Low Limit | Actual | High Limit | <div><div></div></div> |
| Gamma Ray Gain | | Before | 1.000 | 0.900 | 1.090 | 1.100 | <div><div></div></div> |

EDTC-B Gamma-Ray Calibration - Gamma Ray Accumulations

| Before (Measured): | | 10:50:29 19-Jan-2015 | | | | | |
|----------------------|------|----------------------|---------|-----------|---------|------------|------------------------|
| Measurement | Unit | Phase | Nominal | Low Limit | Actual | High Limit | <div><div></div></div> |
| RGR Zero Measurement | gAPI | Before | | 0 | 76.383 | 120.000 | <div><div></div></div> |
| RGR Plus Measurement | gAPI | Before | 165.000 | 150.000 | 151.342 | 180.000 | <div><div></div></div> |

| | | |
|----------|--------------------------|--------------|
| Company: | NIGHTHAWK PRODUCTION LLC | Schlumberger |
| Well: | Mary Jane 8-5 | |
| Field: | Arikaree Creek | |
| County: | Lincoln | |
| Country: | USA | |

Platform Express Field Print
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Induction & Nuclear