

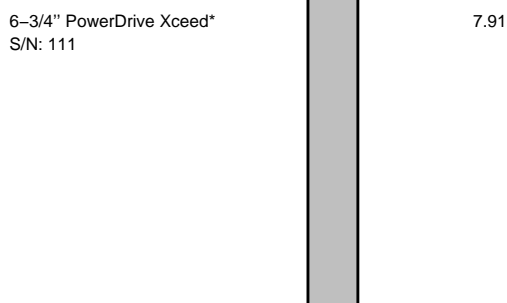
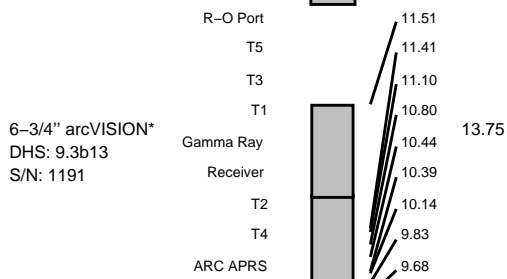
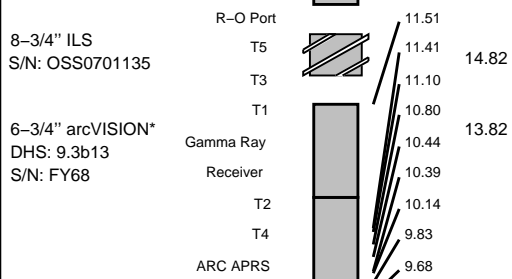
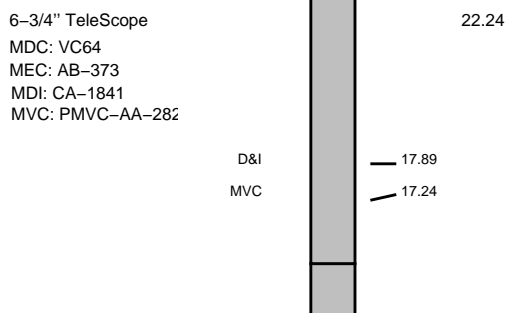
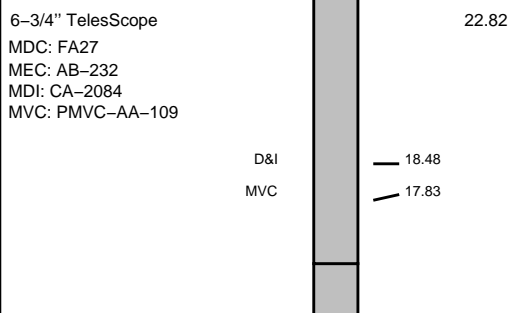
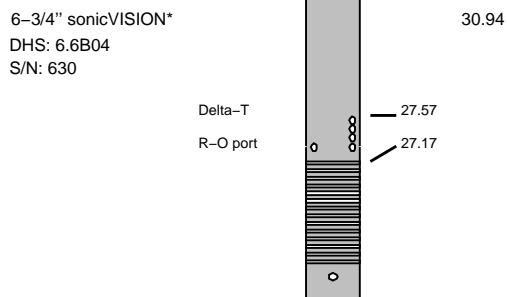
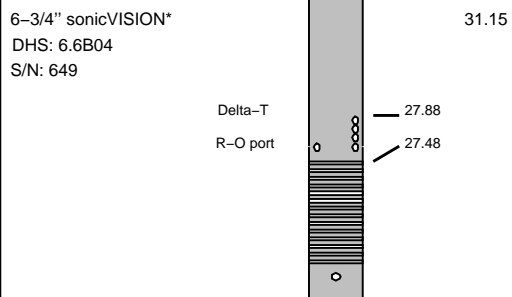
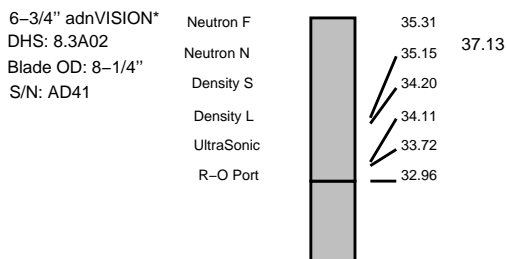
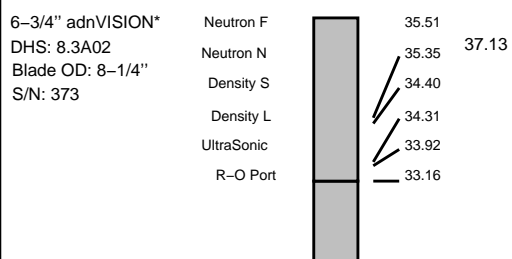
| | | | | | | | | | | | |
|----------------------------|-----|--------------|--------------|-------|----------|--------|--|--|--|--|--|
| Potassium | % | n/a | n/a | | | | | | | | |
| Environmental data | | | | | | | | | | | |
| GR | | | | | | | | | | | |
| Mud weight | ppg | 10.60 | 10.65 | | | | | | | | |
| Bit size | in. | 8.5 | 8.5 | | | | | | | | |
| Resistivity | | | | | | | | | | | |
| Neutron porosity | | | | | | | | | | | |
| Hole Size | in. | 8.5 | 8.5 | | | | | | | | |
| Mud weight | ppg | 10.60 | 10.65 | | | | | | | | |
| Temperature | °C | 47.0 | 90.0 | | | | | | | | |
| Mud salinity | ppk | 58.368 | 57.942 | | | | | | | | |
| Formation salinity | | n/a | n/a | | | | | | | | |
| Recording rate 1 | SEC | 5 (ADN, SON) | 5 (ADN, SON) | | | | | | | | |
| Recording rate 2 | SEC | 6 (ARC) | 6 (ARC) | | | | | | | | |
| Filtering GR | | 3 pts | 3 pts | | | | | | | | |
| Filtering density | | 3 pts | 3 pts | | | | | | | | |
| Filtering Neutron | | 3 pts | 3 pts | | | | | | | | |
| Company representative | | D. Daniels | G. Campbell | | | | | | | | |
| Schlumberger D&M Personnel | | M. Y. Tan | M. Amarasena | M. Lu | C. Soper | M. How | | | | | |

| | | | | | | | | | | | |
|--|--|--|--|--|--|--|--|-------------------------------|--|--|--|
| <p style="text-align: center;">DISCLAIMER</p> <p>THE USE OF AND RELIANCE UPON THIS RECORDED-DATA BY THE HEREIN NAMED COMPANY (AND ANY OF ITS AFFILIATES, PARTNERS, REPRESENTATIVES, AGENTS, CONSULTANTS AND EMPLOYEES) IS SUBJECT TO THE TERMS AND CONDITIONS AGREED UPON BETWEEN SCHLUMBERGER AND THE COMPANY, INCLUDING: (a) RESTRICTIONS ON USE OF THE RECORDED-DATA; (b) DISCLAIMERS AND WAIVERS OF WARRANTIES AND REPRESENTATIONS REGARDING COMPANY'S USE OF AND RELIANCE UPON THE RECORDED-DATA; AND (c) CUSTOMER'S FULL AND SOLE RESPONSIBILITY FOR ANY INFERENCE DRAWN OR DECISION MADE IN CONNECTION WITH THE USE OF THIS RECORDED-DATA.</p> | | | | | | | | | | | |
| OTHER SERVICES FOR RUN 3 Directional Drilling Directional Surveys Annular Pressure & Temperature Shock & Vibrations | | | | OTHER SERVICES FOR RUN 4 Directional Drilling Directional Surveys Annular Pressure & Temperature Shock & Vibrations | | | | OTHER SERVICES FOR RUN | | | |
| REMARKS: RUN NUMBER 3 Depth is referenced to Driller's Depth. Gamma ray is corrected for mud weight, tool size and bit size. Resistivity is borehole compensated and environmentally corrected. Neutron porosity is corrected for the effects of borehole size (bit size), temperature, mud salinity, and mud hydrogen index (a factor of mud weight, mud temperature and pressure). Neutron porosity is calculated using a limestone matrix density of 2.71 g/cm3. POOH due to loss of MWD signal. | | | | REMARKS: RUN NUMBER 4 Depth is referenced to Driller's Depth. Gamma ray is corrected for mud weight, tool size and bit size. Resistivity is borehole compensated and environmentally corrected. Neutron porosity is corrected for the effects of borehole size (bit size), temperature, mud salinity, and mud hydrogen index (a factor of mud weight, mud temperature and pressure). Neutron porosity is calculated using a limestone matrix density of 2.71 g/cm3 POOH due to reaching TD of FTA A17A. | | | | REMARKS: RUN NUMBER | | | |

| | | | | | | | | | | | |
|------------------------------|--|--|--|--------------|--|--|--|------------|--|--|--|
| EQUIPMENT DESCRIPTION | | | | | | | | | | | |
| RUN 3 | | | | RUN 4 | | | | RUN | | | |
| | | | | | | | | | | | |

DOWNHOLE EQUIPMENT

DOWNHOLE EQUIPMENT



Maximum string diameter 8-1/2 in.

All lengths in Meters

Maximum string diameter 8-1/2 in.

All lengths in Meters

| Variable Name | Variable Description | Run Name & Value | |
|----------------------|--|------------------|--------------|
| Run Number | | 3 | 4 |
| General Information | | | |
| BHT_RM | Bottom Hole Temperature (RM) | 47.000000 | 90.000000 |
| BSAL_RM | Mud Salinity (RM) | 58.367577 | 57.291042 |
| BS_RM | Bit Size (RM) | 8.500000 | 8.500000 |
| COEF_M | User Defined FEXP in Clean Sand | 1.650000 | 1.650000 |
| C_WS | Overpressure correction to Sw and M | 1.000000 | 1.000000 |
| FEXP | Formation Factor Exponent (RM) | 2.000000 | 2.000000 |
| FNUM | Formation Factor Enumerator (RM) | 1.000000 | 1.000000 |
| FPHI_RM | Formation Factor Porosity Source (RM) | XPLOT | XPLOT |
| MST_RM | Mud Sample temperature (RM) | 23.88889 | 23.88889 |
| MW_RM | Mud Weight (RM) | 10.600000 | 10.650000 |
| OBFM_RM | Oil Based Mud (RM) | YES | YES |
| RHOF_RM | Mud Filtrate Density (RM) | 1.000000 | 1.000000 |
| RHOM_RM | Matrix density (RM) | 2.710000 | 2.710000 |
| RMS_RM | Resistivity of Mud Sample (RM) | 1000.000000 | 1000.000000 |
| RWA_COMP_M | Rwa computation model | BASIC | BASIC |
| RWA_DEN_AD | Rwa Density Input ADN | ROBB | ROBB |
| RWA_DEN_CD | Rwa Density Input CDN | RHOB | RHOB |
| RWA_DEN_IN | Rwa Density Input | ROBB | ROBB |
| RWA_FORM_M | Rwa computation formation model | CLASTIC | CLASTIC |
| RWA_RES_IN | Rwa computation resistivity input | P34H | P34H |
| RWS_RM | Resistivity of Connate Water (RM) | 1.000000 | 1.000000 |
| SHT_RM | Surface Hole Temperature (RM) | 10.000000 | 10.000000 |
| TD_RM | Total Measured Depth (RM) | 812.000000 | 3036.00000 |
| TWS_RM | Temperature of Connate Water (RM) | 23.88889 | 23.88889 |
| VF_ILLI | Fraction of illite in shales | 0.500000 | 0.500000 |
| VF_KAOL | Fraction of kaolinite in shales | 0.500000 | 0.500000 |
| VF_MONT | Fraction of montmorillonite in shales | 0.000000 | 0.000000 |
| XPDM_RM | Cross plot density porosity multiplier | 0.675000 | 0.675000 |
| XPNM_RM | Cross plot neutron porosity multiplier | 0.325000 | 0.325000 |
| ARC | | | |
| LWD_RM/STATION_FILE/ | PARAMETERStation Time-frame file name | Station | Station |
| A12A | ARC Air Cal Attenuation From T1 at 2 MHz | 8.980860 | 8.459310 |
| A14A | ARC Air Cal Attenuation From T1 at 400 KHz | 8.986440 | 8.437310 |
| A22A | ARC Air Cal Attenuation From T2 at 2 MHz | 5.964700 | 6.484980 |
| A24A | ARC Air Cal Attenuation From T2 at 400 KHz | 5.966310 | 6.515550 |
| A32A | ARC Air Cal Attenuation From T3 at 2 MHz | 5.607090 | 5.085840 |
| A34A | ARC Air Cal Attenuation From T3 at 400 KHz | 5.602970 | 5.054970 |
| A42A | ARC Air Cal Attenuation From T4 at 2 MHz | 3.871990 | 4.389600 |
| A44A | ARC Air Cal Attenuation From T4 at 400 KHz | 3.869330 | 4.413140 |
| A52A | ARC Air Cal Attenuation From T5 at 2 MHz | 4.157310 | 3.635930 |
| A54A | ARC Air Cal Attenuation From T5 at 400 KHz | 4.162690 | 3.617580 |
| ABNT | Abnormal Transmitter Indicator | No_Tx_Failed | No_Tx_Failed |
| ADHS | ARC Down Hole Software Version | No_Tx_Failed | No_Tx_Failed |
| ANISO_COMP | Anisotropy Computation Option | YES | YES |
| APICG | ARC5 Gamma Ray Gain Factor | 1.039250 | 1.095470 |
| APIG | ARC Gamma Ray API Gain Factor | -1.000000 | -1.000000 |
| ATMP_ARC | ARC Select Temperature Channel | Annulus_Temp | Annulus_Temp |
| ATRN | ARC Tool Run Number | 3 | 4 |
| ATSN | ARC Tool Serial Number | Annulus_Temp | Annulus_Temp |
| AZMF | Formation DIP Azimuth | 0.000000 | 0.000000 |
| BH_COMPUTE | Borehole Inversion Computation Option | YES | YES |
| CALG | ARC Gamma Ray Cal Gain Factor | 1.039250 | 1.095470 |
| CALI_SLCT | ARC Caliper Selection | BITSIZE | BITSIZE |
| CDPTH_ARC | Process Start Depth | 100.000000 | 100.000000 |
| DIELEC_COM | Dielectric Computation Option | YES | YES |
| DIPF | Formation DIP Angle | 0.000000 | 0.000000 |
| ERRCT | Percentage Error Cutoff | 4.500000 | 4.500000 |
| GRSH | GR Shale (Invasion Computation Cutoff) | 1000.000000 | 1000.000000 |
| HIGH_BLEND | High Resistivity Threshold for Blending | 2.000000 | 2.000000 |
| INCLIN_B0 | ARC Bias Constant (mg) | 0.000000 | 0.000000 |
| INCLIN_B1 | ARC Bias First-order Coefficient (mg/degC) | 0.000000 | 0.000000 |
| INCLIN_B2 | ARC Bias Secod-order Coeeficient (mg/degC) | 0.000000 | 0.000000 |
| INCLIN_B3 | ARC Bias Third-order Coeeficient (mg/degC) | 0.000000 | 0.000000 |
| INCLIN_C0 | ARC Current Scale Factor Constant (mA/g) | 1.000000 | 1.000000 |
| INCLIN_C1 | ARC Scale First-order Coeeficient (mA/g/degC) | 0.000000 | 0.000000 |
| INCLIN_C2 | ARC Scale Second-order Coeeficient (mA/g/degC) | 0.000000 | 0.000000 |
| INCLIN_C3 | ARC Scale Third-order Coeeficient (mA/g/degC) | 0.000000 | 0.000000 |
| INVAS_COMP | Invasion Computation Option | YES | YES |
| JSD_ARC | ARC Acquisition start date | YES | YES |
| KPER | Potassium Concentration (RM) | 0.000000 | 0.000000 |
| LOW_BLEND | Low Resistivity Threshold for Blending | 1.000000 | 1.000000 |
| MSWS | ARC Wizard Model Switch Window | 5.000000 | 5.000000 |
| MULTIEFFEC | Multi Effect Option | YES | YES |
| P12A | ARC Air Cal Phase-Shift From T1 at 2 MHz | 1.019090 | 1.831860 |
| P14A | ARC Air Cal Phase-Shift From T1 at 400 KHz | -0.350909 | -0.359529 |
| P22A | ARC Air Cal Phase-Shift From T2 at 2 MHz | -0.927967 | -1.713500 |
| P24A | ARC Air Cal Phase-Shift From T2 at 400 KHz | 0.284876 | 0.241835 |
| P32A | ARC Air Cal Phase-Shift From T3 at 2 MHz | 0.923579 | 1.759360 |
| P34A | ARC Air Cal Phase-Shift From T3 at 400 KHz | -0.322901 | -0.329207 |
| P42A | ARC Air Cal Phase-Shift From T4 at 2 MHz | -0.977645 | -1.751440 |
| P44A | ARC Air Cal Phase-Shift From T4 at 400 KHz | 0.287438 | 0.229570 |
| P52A | ARC Air Cal Phase-Shift From T5 at 2 MHz | 0.906331 | 1.735070 |
| P54A | ARC Air Cal Phase-Shift From T5 at 400 KHz | -0.357818 | -0.326719 |
| POFFSET_AR | ARC: Pressure Offset | 0.000000 | 0.000000 |
| PRTD | Preferred Resistivity Log for Rt Display while Multi-Effects | P34B | P34B |
| PSOF_ADJ_T | ARC: User Input Phase offset | 0.000000 | 0.000000 |

| | | | |
|------------|---|------------|------------|
| RESTIK | ARC resistivity tick source | Phase | Phase |
| SHIG | ARC High Shock Risk Level | 0.500000 | 0.500000 |
| SHT_RM | Ground Level Temperature (Mud-Line When Offshore) (RM) | 10.000000 | 10.000000 |
| SMED | ARC Medium Shock Risk Level | 0.330000 | 0.330000 |
| SMIN | ARC Minimum Shock Risk Level | 0.160000 | 0.160000 |
| SUPD | ARC Real Time Shock Update Rate | 30.000000 | 30.000000 |
| TCODE_ARC | ARC Tool File Code | 30.000000 | 30.000000 |
| TSIZ_ARC | ARC Tool Size | 6.750000 | 6.750000 |
| UNIFORM_CO | Uniform Rock Option | YES | YES |
| VERS_ARC | ARC Down hole software version Number | 9.300000 | 9.300000 |
| WRK | Way to Report Potassium Concentration (RM) | K_by_Wgt_% | K_by_Wgt_% |

ISONIC

| | | | |
|---------|--------------------------------------|-------------|-------------|
| FP_SD | First Sample delay | 400.00 | 400.00 |
| STC_CF | Center frequency of Filter | 13.00 | 13.00 |
| STC_BW | Bandwidth (kHz) | Default | Default |
| STC_RWI | Receiver waveform ignored | None | None |
| PM_TOFF | Tool Time offset from surface system | 0.00 | 0.00 |
| DT_COH | Delta-T Coherence Cutoff Value | 0.70 | 0.70 |
| PPC_PF | Porosity Formula | Raymer-Hunt | Raymer-Hunt |
| PPC_PS | Sonic Porosity Source | DTRA | DTRA |
| PPC_MDT | Matrix Delta-T | 47.60 | 47.60 |
| PPC_FDT | Fluid Delta-T | 189.00 | 189.00 |

ADN

| | | | |
|------------|--|------------|------------|
| ADN_CHASSI | ADN Chassis Type String | ADN | ADN |
| ADN_COLLAR | ADN Collar Type String | ADN | ADN |
| ADN_STAB_S | ADN Stabilizer Type String | ADN | ADN |
| ALPHA_COMP | Perform Density Enhanced Vertical Resolution process ? | YES | YES |
| ALPHA_COMP | Perform Neutron Enhanced Vertical Resolution process ? | YES | YES |
| AVE_ADN | ADN/Array Channels: perform averaging(RM) : | YES | YES |
| A_DHS | ADN Down Hole Software Version String | YES | YES |
| CHI_RM | Caliper High limit from BS (RM) | 3.000000 | 3.000000 |
| CLO_RM | Caliper Low limit from BS (RM) | 0.000000 | 0.000000 |
| DEVI | Well Section Deviation | 26.219999 | 35.270000 |
| DTIK_SEL | ADN: Density Tick Channel Name | LSAZ | LSAZ |
| DTMUD | Delta-T for Mud | 208.699997 | 210.020004 |
| DYN_IMG_CO | Generate Dynamic Normalized Image? | YES | YES |
| ECC_CORR_A | Perform Eccentering Correction for TNPH? | YES | YES |
| ENVCOR | Neutron Quadrant Processing: Environmental Correction? | YES | YES |
| EVRL | EVR Process averaging number of samples (RM) | 49 | 49 |
| FCD | Future Casing (Outer) Diameter | 0.000000 | 0.000000 |
| GCSE | Generalized Caliper Selection | BS | BS |
| HPS | ADSE-EB (High Pressure Inconel Chassis)? | NO | NO |
| IBS | Integral Blade Stabilizer Collar? | YES | YES |
| IDQT | Image Derived Quality Threshold | 1.000000 | 1.000000 |
| IHVS | Integrated Hole Volume Start Value(RM) | 0.000000 | 0.000000 |
| IMAGE_MAX_ | Image SOA (Quadrant) Right Scale | 2.500000 | 2.500000 |
| IMAGE_MAX_ | Image PEF(Segment) Right Scale | 6.000000 | 6.000000 |
| IMAGE_MAX_ | Image RHOB(Segment) Right Scale | 2.650000 | 2.650000 |
| IMAGE_MIN_ | Image SOA (Quadrant) Left Scale | 0.000000 | 0.000000 |
| IMAGE_MIN_ | Image PEF(Segment) Left Scale | 2.000000 | 2.000000 |
| IMAGE_MIN_ | Image RHOB(Segment) Left Scale | 2.050000 | 2.050000 |
| JSD_ADN | ADN Acquisition start date | 2.050000 | 2.050000 |
| LITHO_TYPE | Lithology (RM) | LIME | LIME |
| N1FTU_6_RM | ADN: Neutron Bank 1 Far Tubes used : | 1-2-3 | 1-2-3 |
| N2FTU_6_RM | ADN: Neutron Bank 2 Far Tubes used : | 1-2-3 | 1-2-3 |
| NNTU_RM | ADN Neutron Near Banks Used | 1-2 | 1-2 |
| NTIK_SEL | ADN: Neutron Tick Channel Name | FR11 | FR11 |
| SOCNL | Standoff Distance of the CNL Tool | 1.000000 | 1.000000 |
| SSIZ_ADN | ADN Stabilizer Size | 8.250000 | 8.250000 |
| STOH | ADN Density Top of Hole Sector (Left Boundary): | SECTOR_0 | SECTOR_0 |
| TRPM_RM | Average Tool Rotational Speed | 20.000000 | 20.000000 |
| USMIN_RM | ADN:Minimum Ultrasonic standoff (RM) | 0.180000 | 0.180000 |
| USWF_RM | ADN:Process Ultrasonic Waveform? | YES | YES |
| VERS_ADN | ADN Downhole Software Version | 8.300000 | 8.300000 |
| WSDI | Window Size of Dynamic Normalization Image | 15.000000 | 15.000000 |

Schlumberger Drilling & Measurements

Parameter Insert Header Software version 2.0c

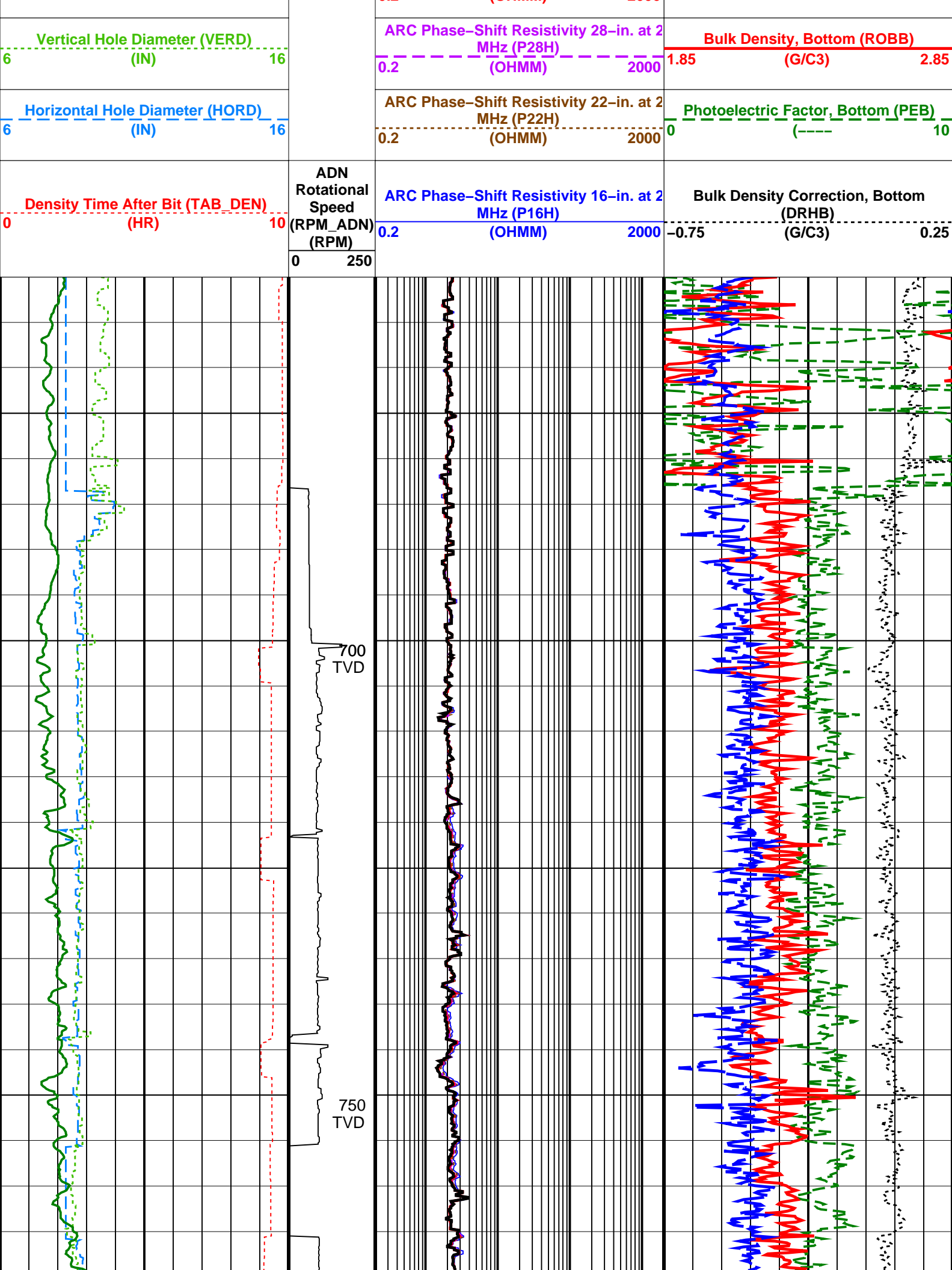
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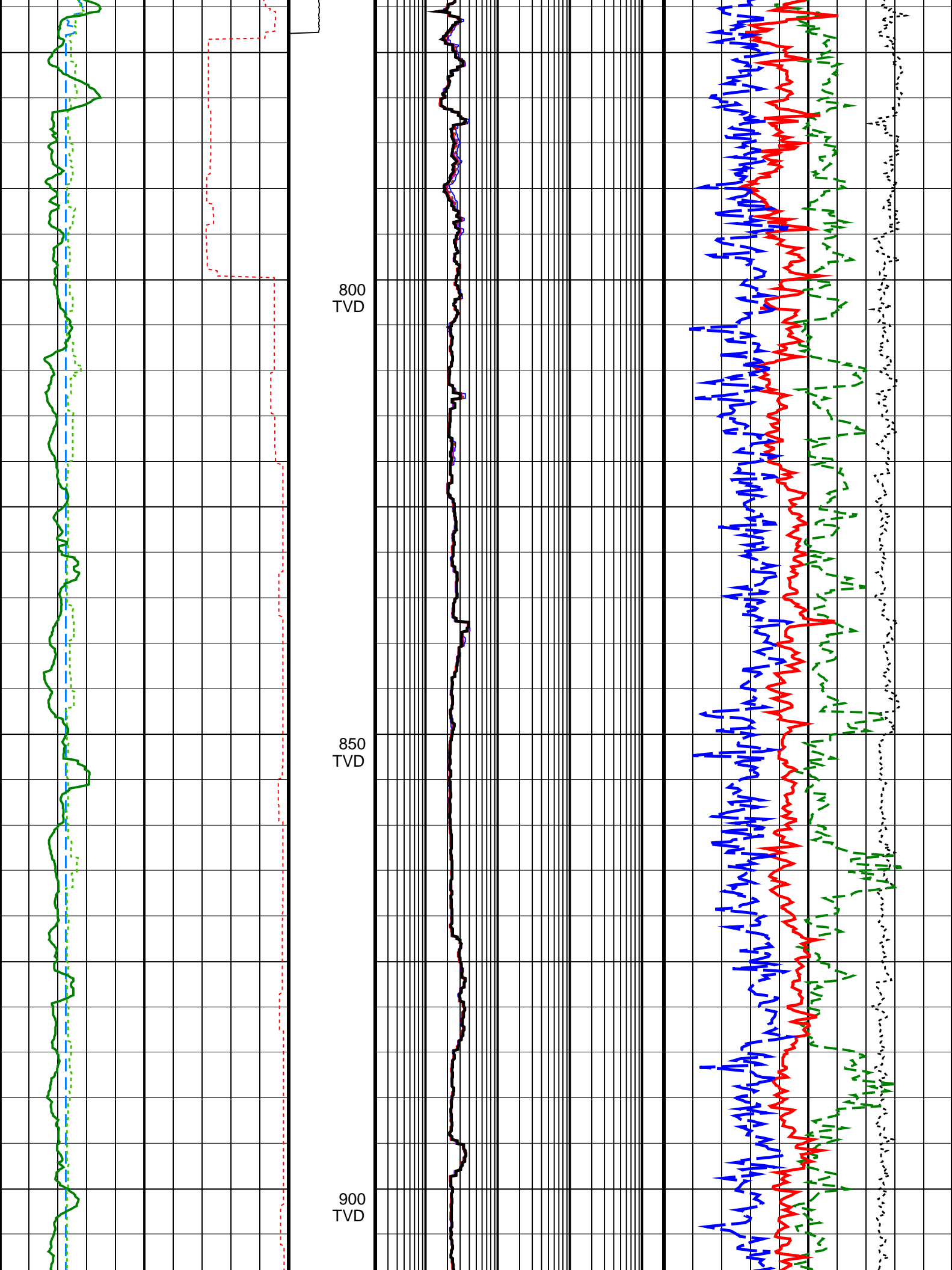
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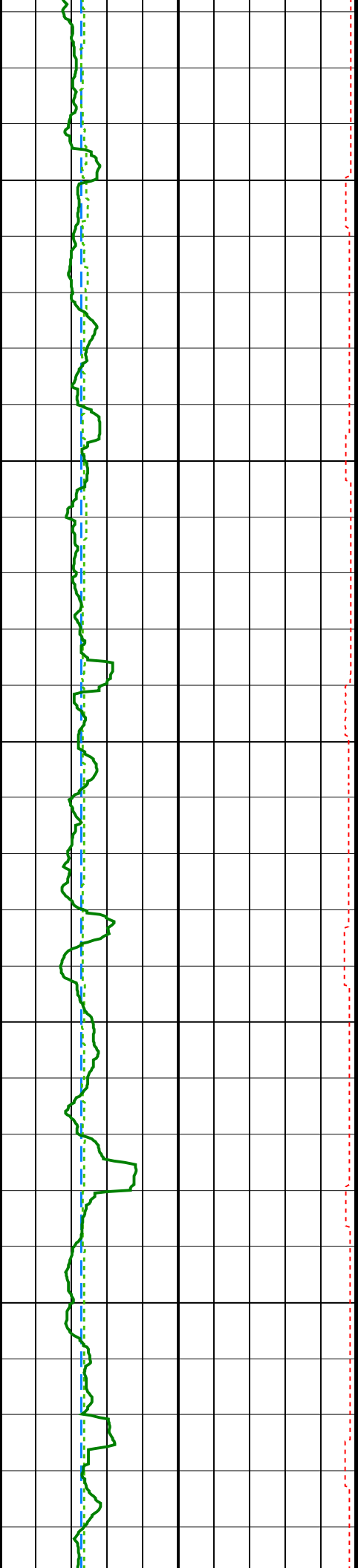
IDF

Format: VISION Service RM Log Vertical Scale: 1:500 Graphics File Created: 20-Sep-2007 12:04

| | | | | | |
|------------------------|------------|--|-------------|---------------------------------|----------|
| | | ARC Phase-Shift Resistivity 40-in. at 2 MHz (P40H) | | | |
| | | 0.2 | (OHMM) 2000 | | |
| ARC Gamma Ray (GR_ARC) | | ARC Phase-Shift Resistivity 34-in. at 2 MHz (P34H) | | Thermal Neutron Porosity (TNPH) | |
| 0 | (GAPI) 200 | 0.2 | (OHMM) 2000 | 45 | (PU) -15 |

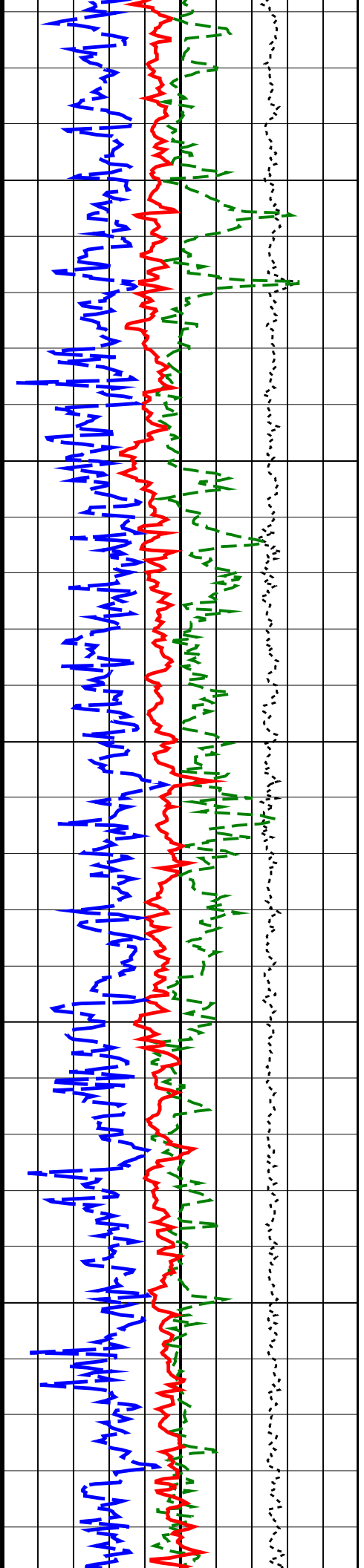
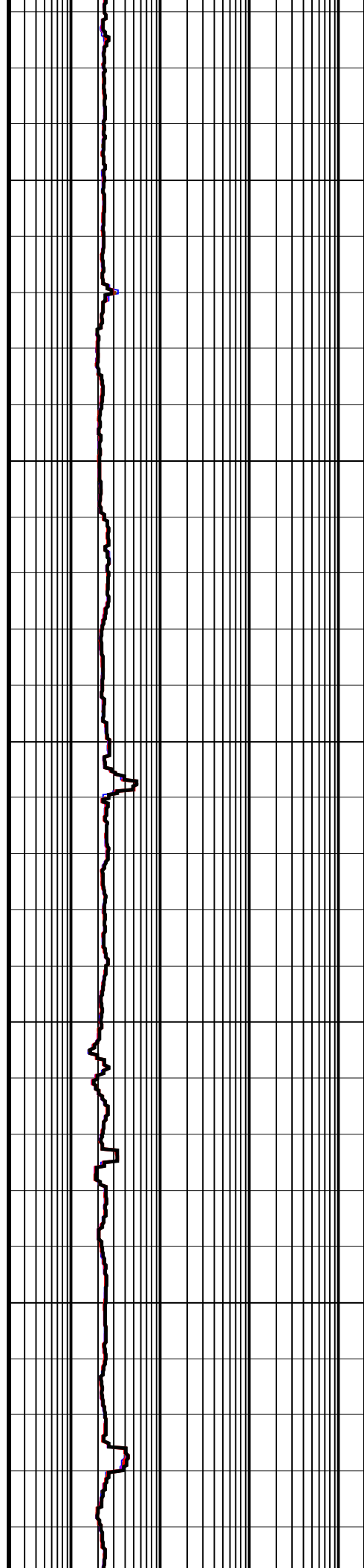


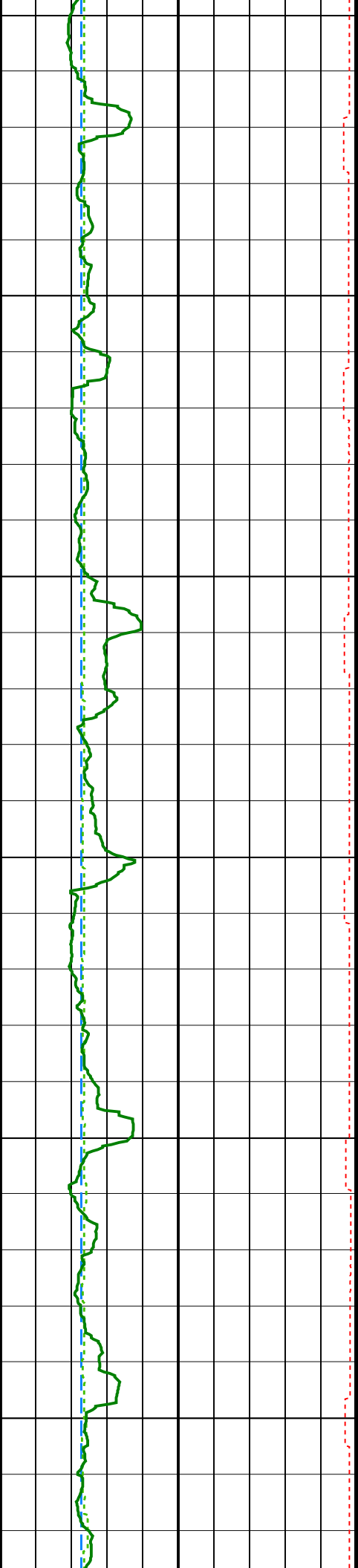




950
TVD

1000
TVD

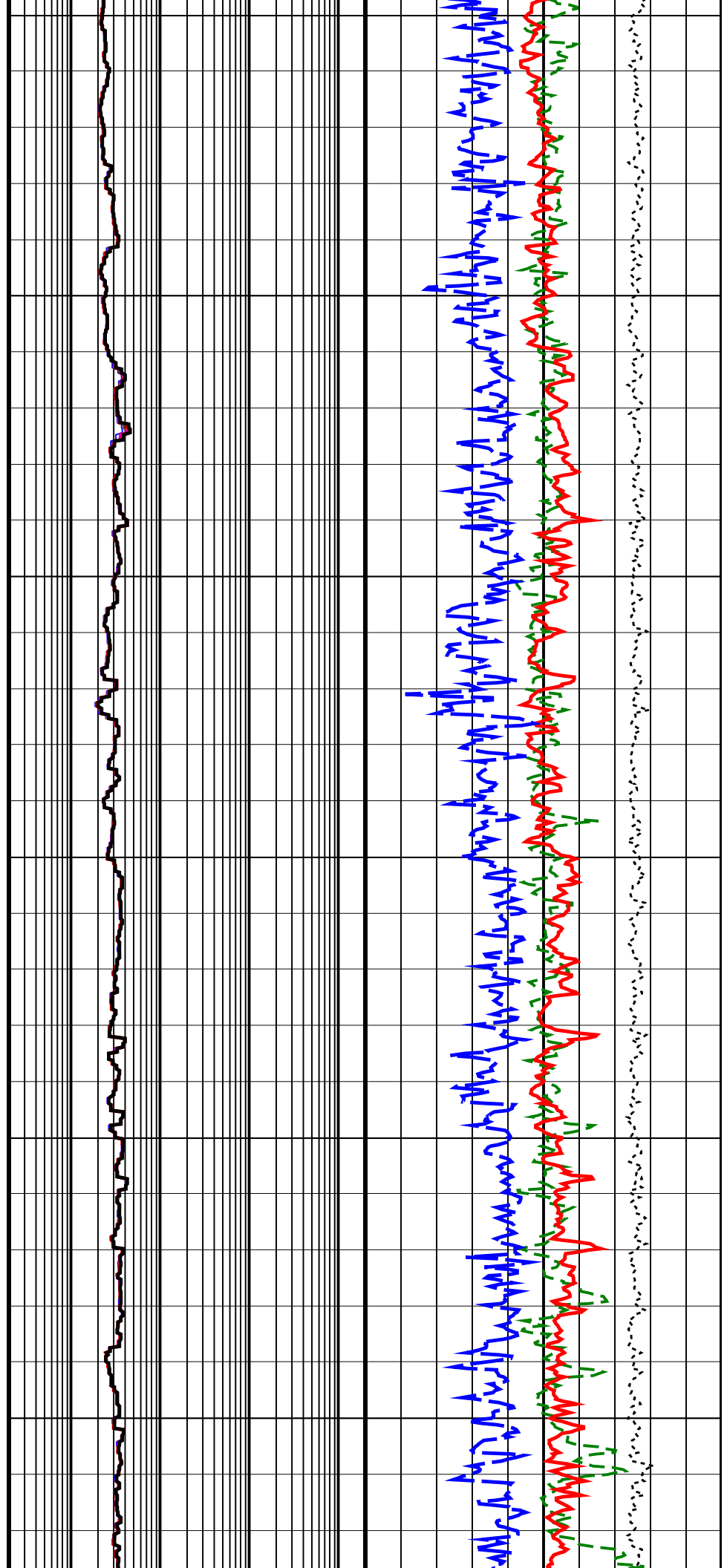


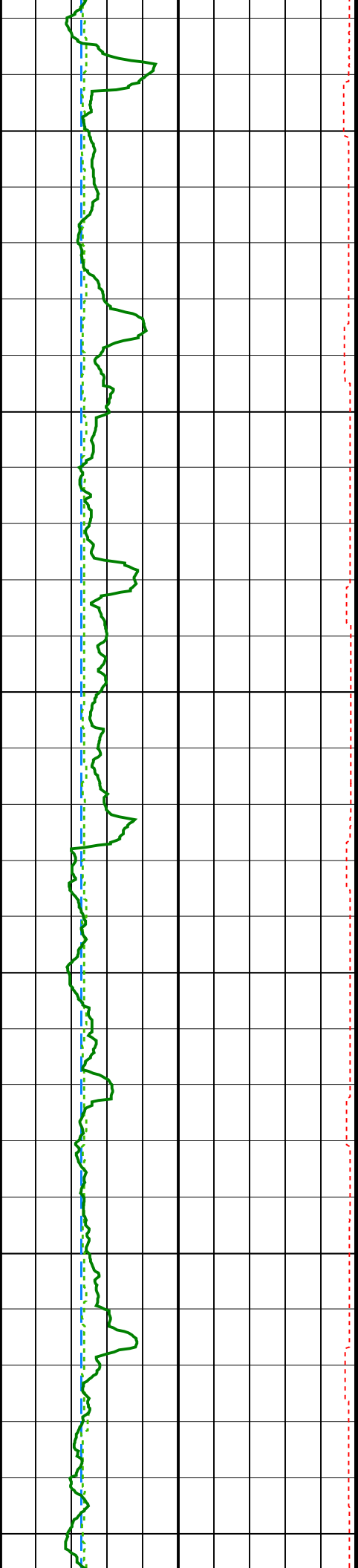


1050
TVD

1100
TVD

1150
TVD

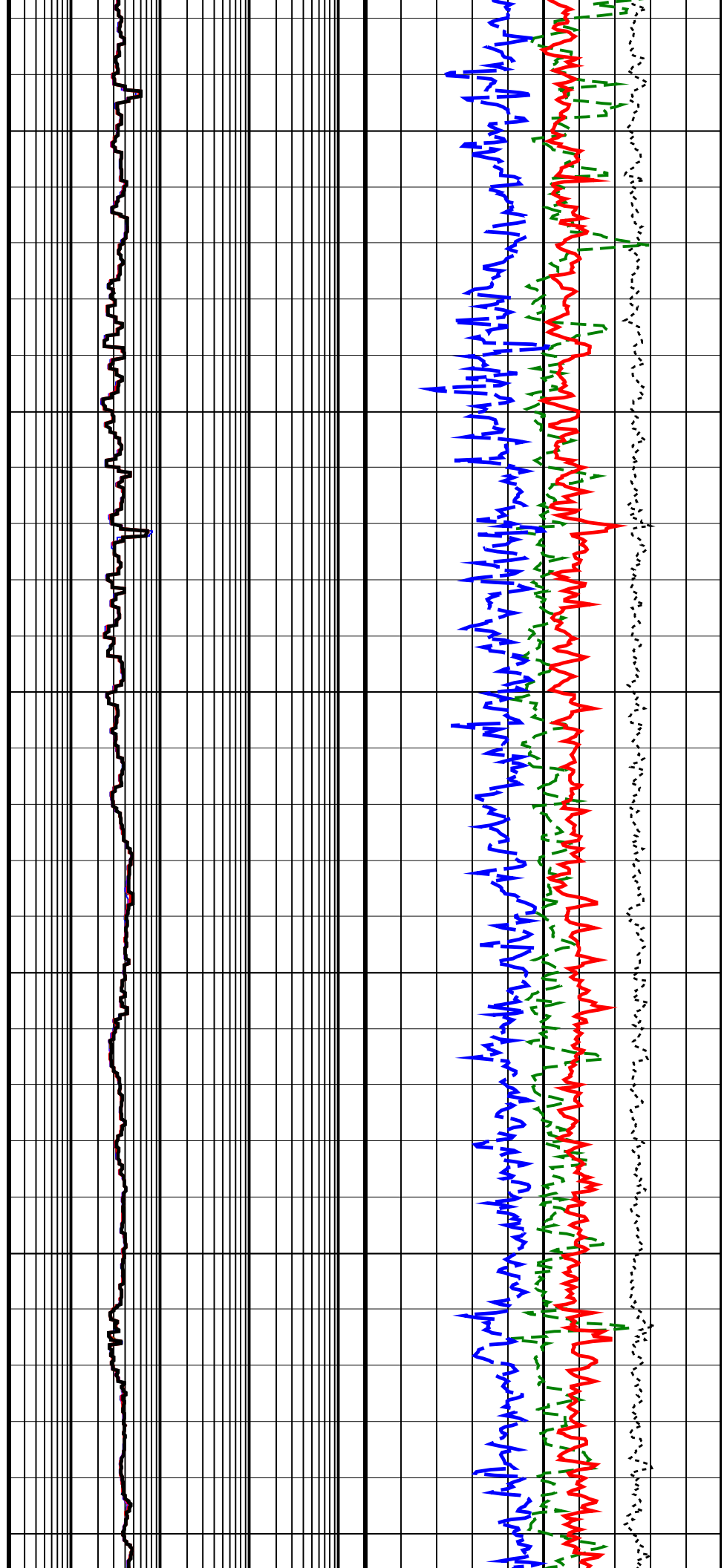


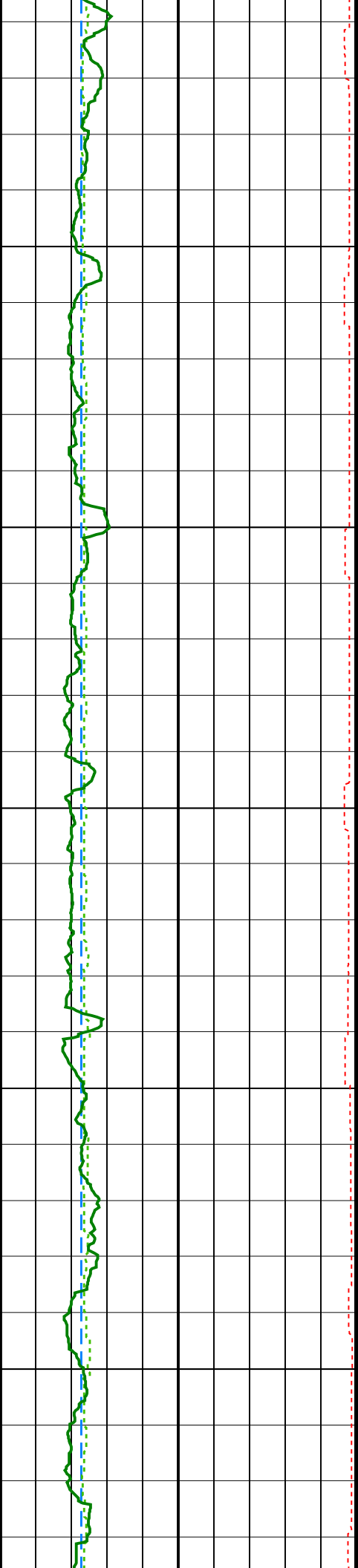


1200
TVD

1250
TVD

1300
TVD

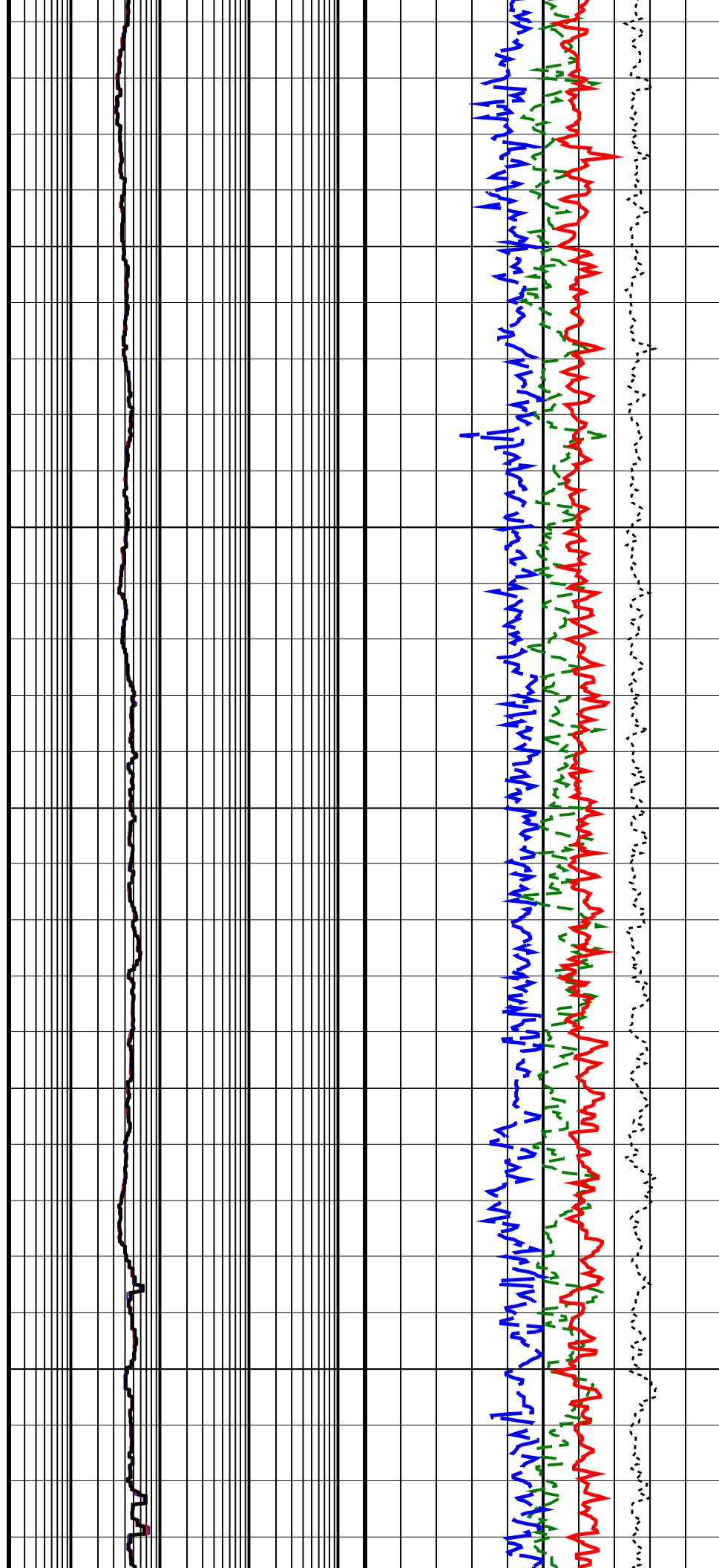


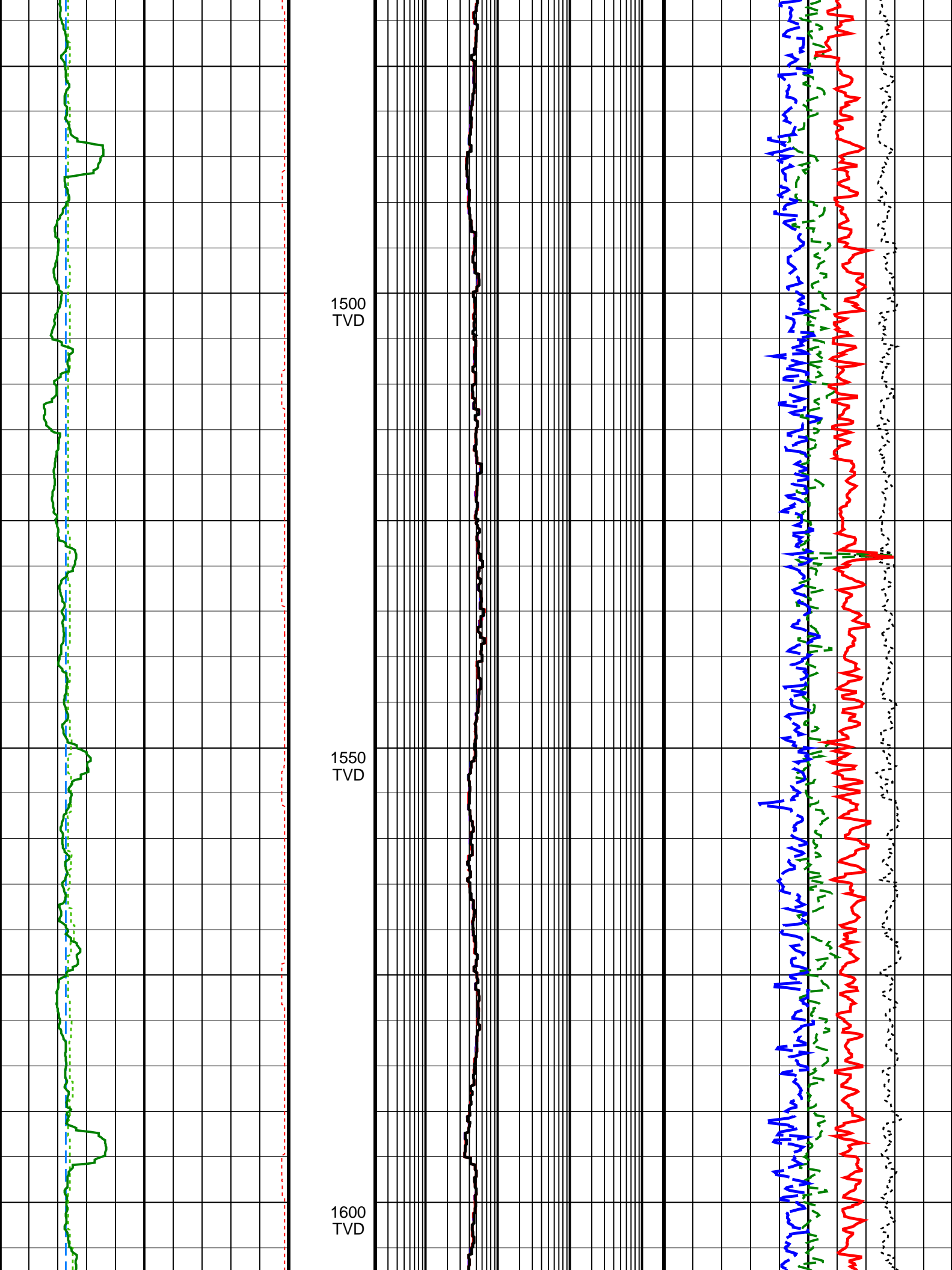


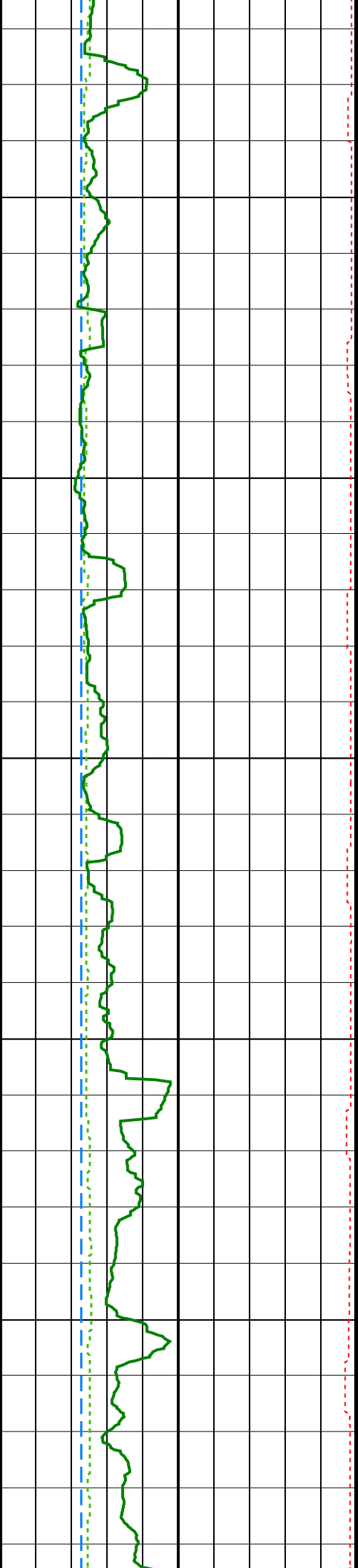
1350
TVD

1400
TVD

1450
TVD

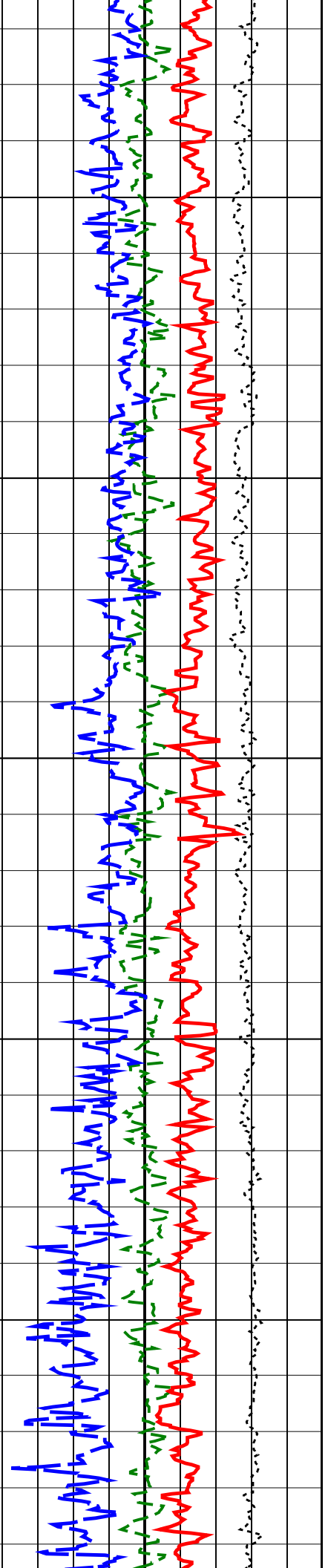
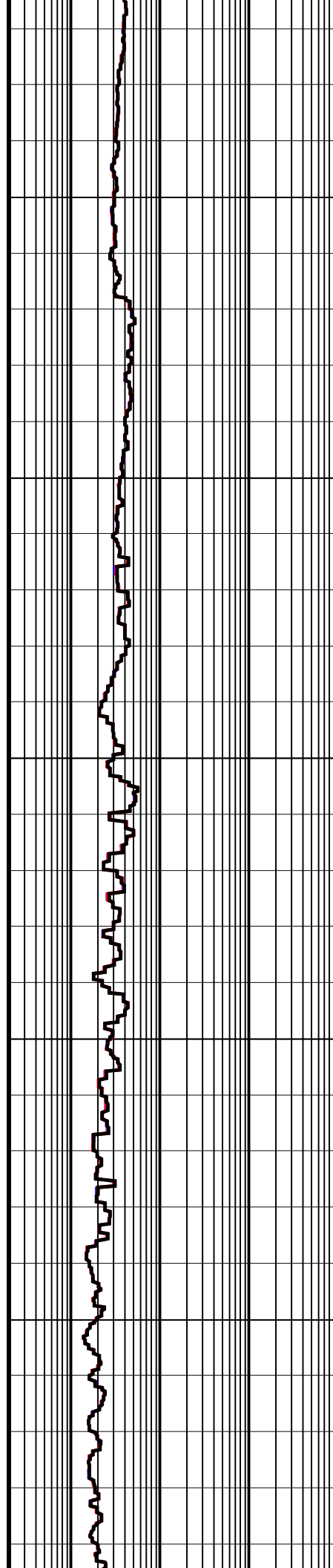


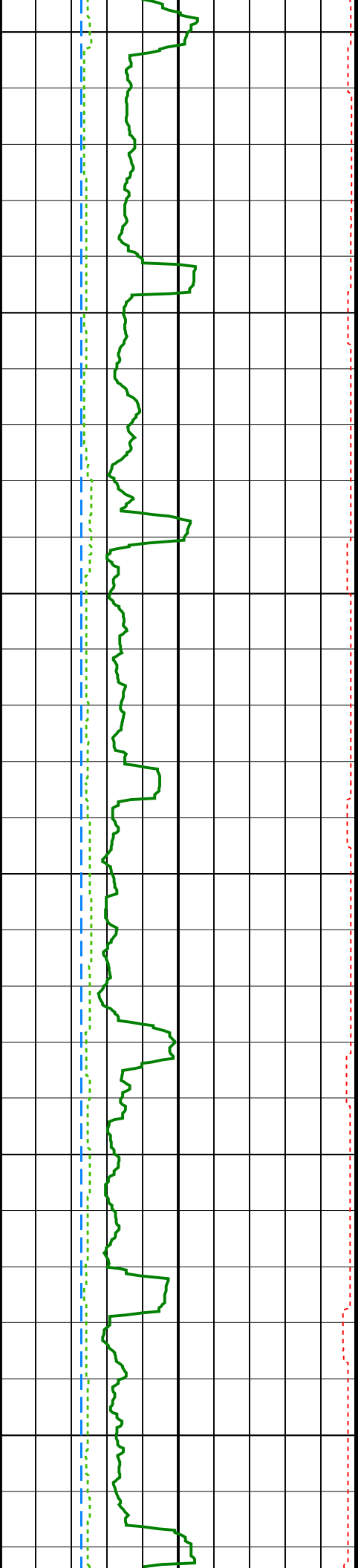




1650
TVD

1700
TVD

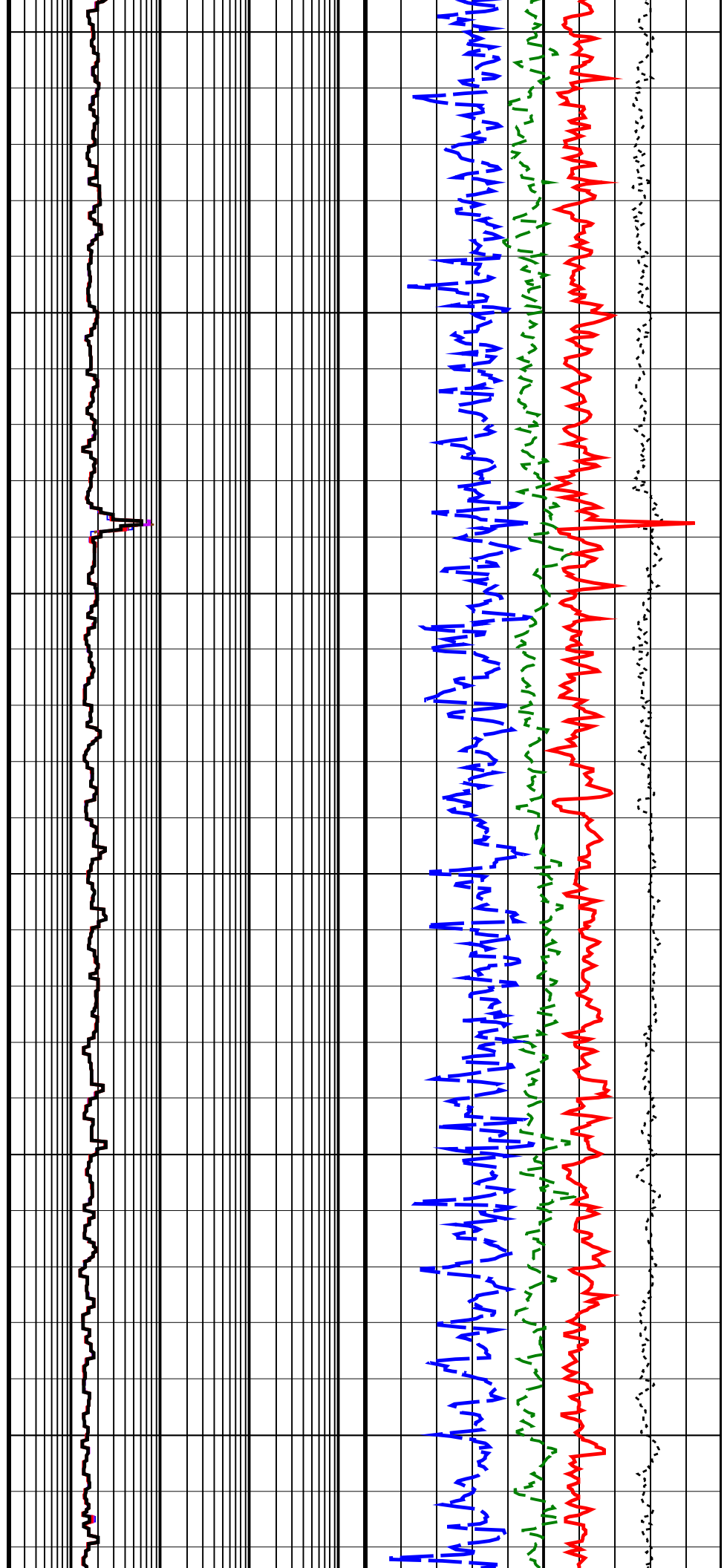


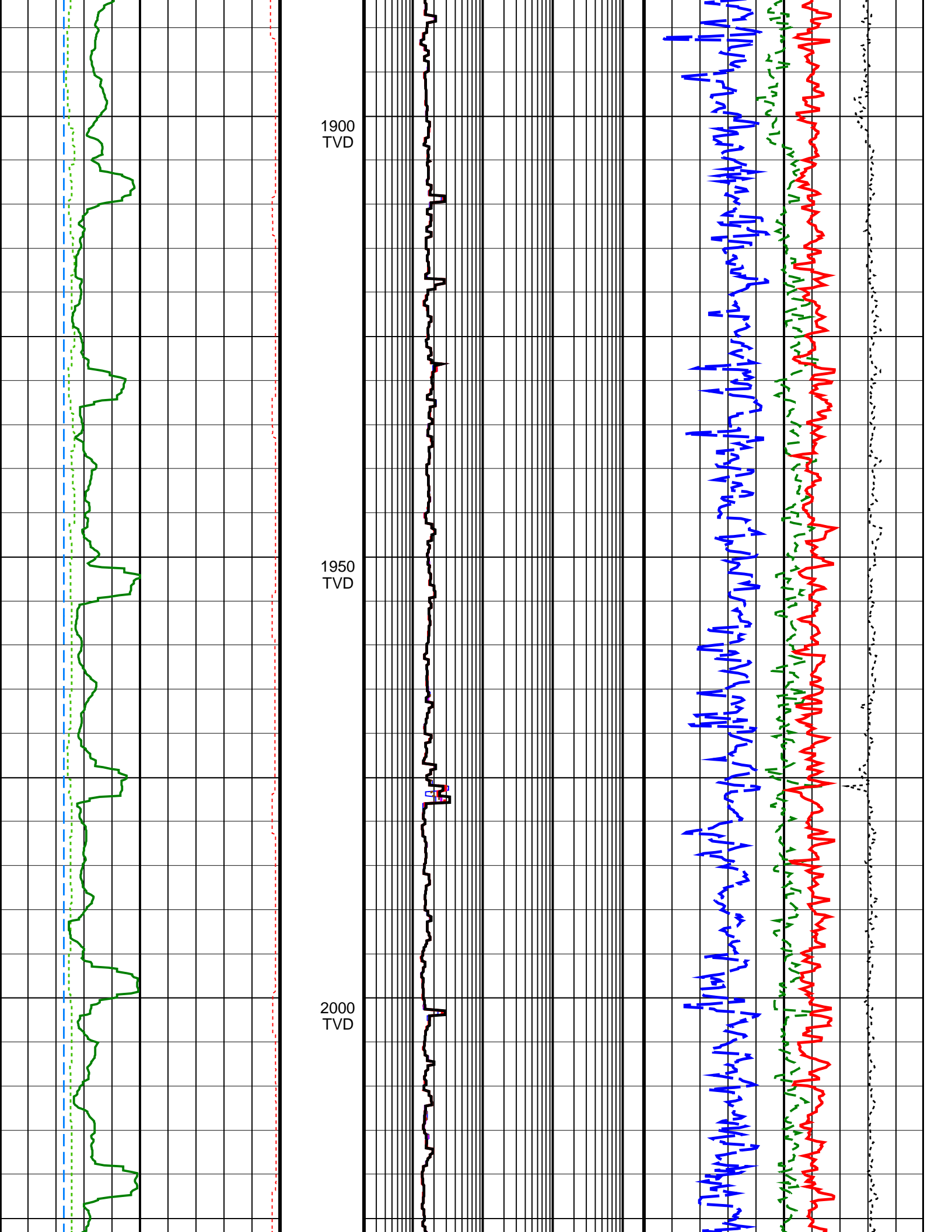


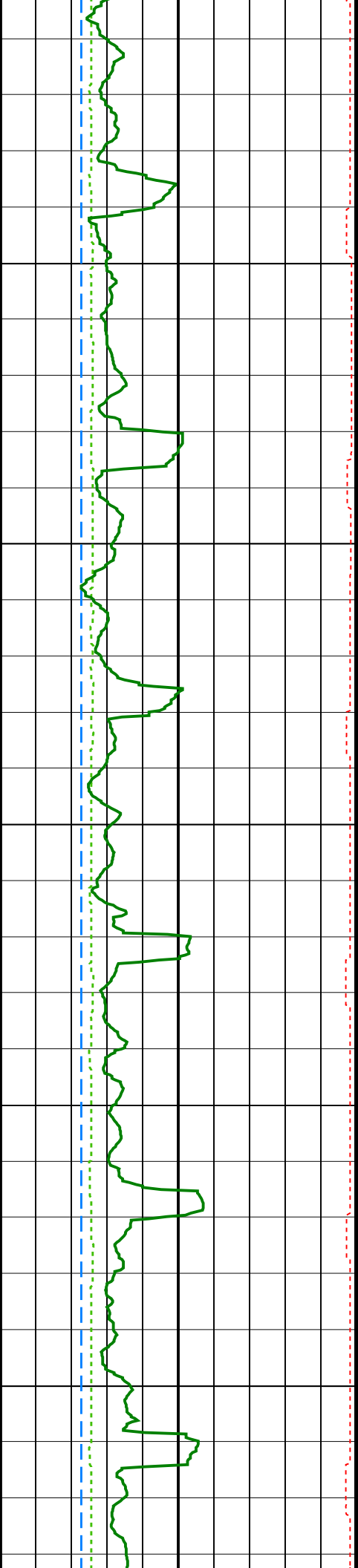
1750
TVD

1800
TVD

1850
TVD



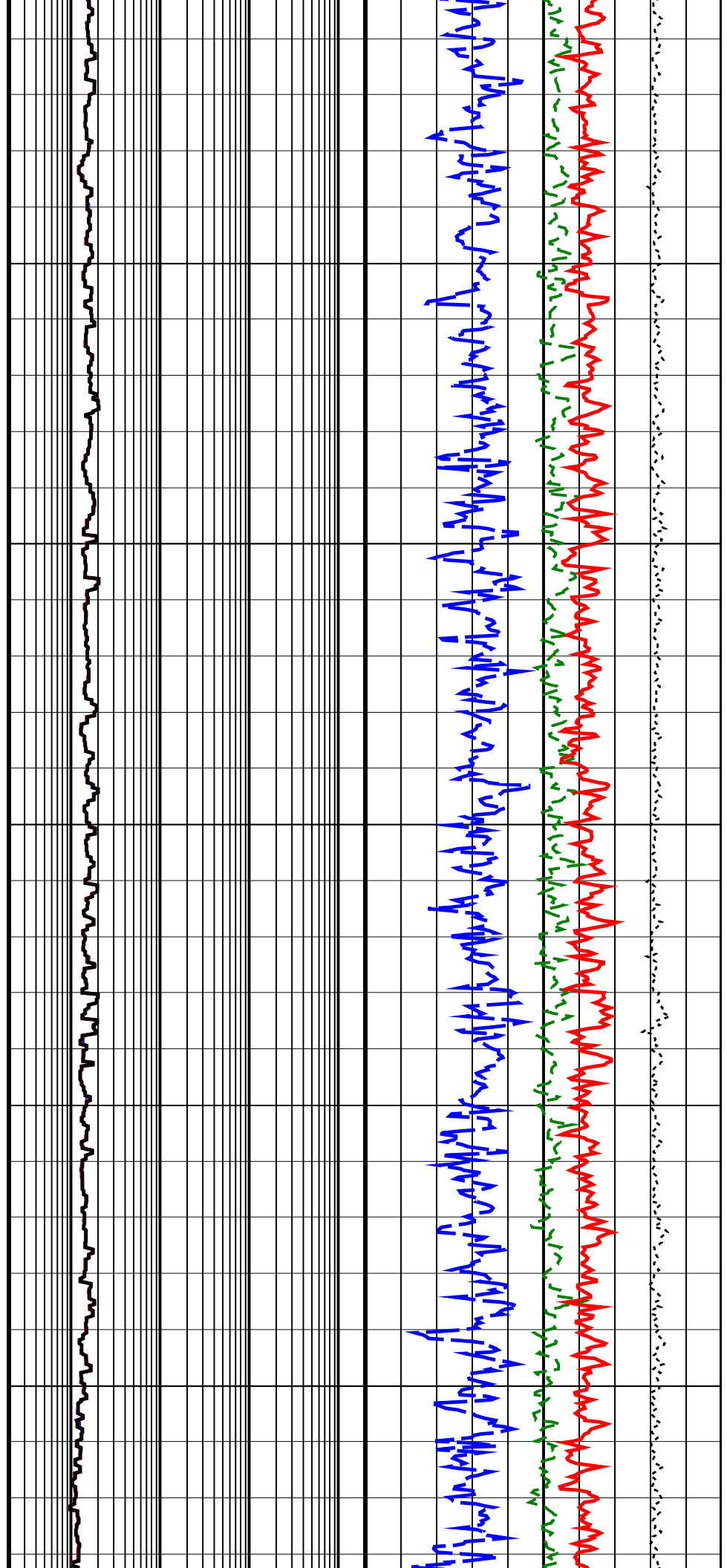


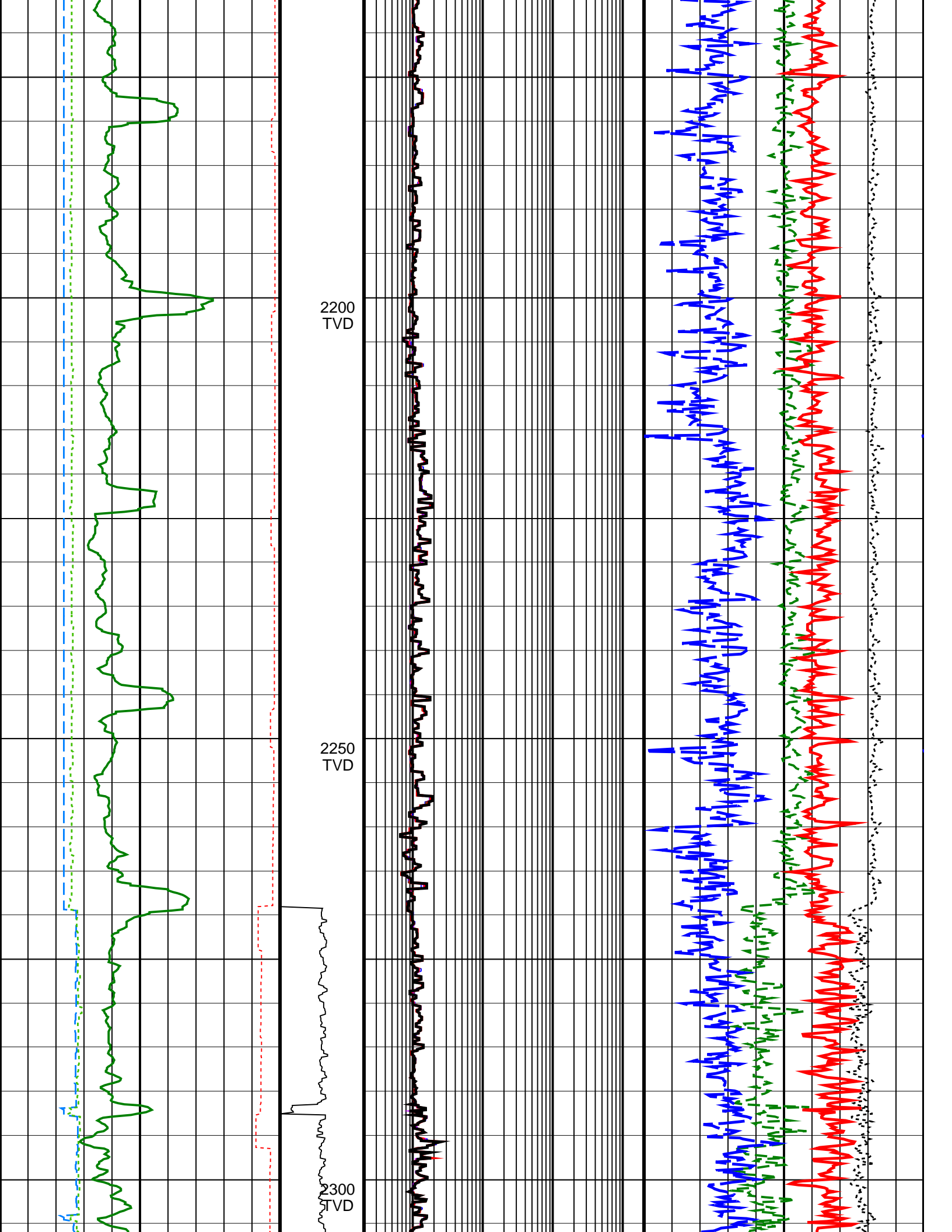


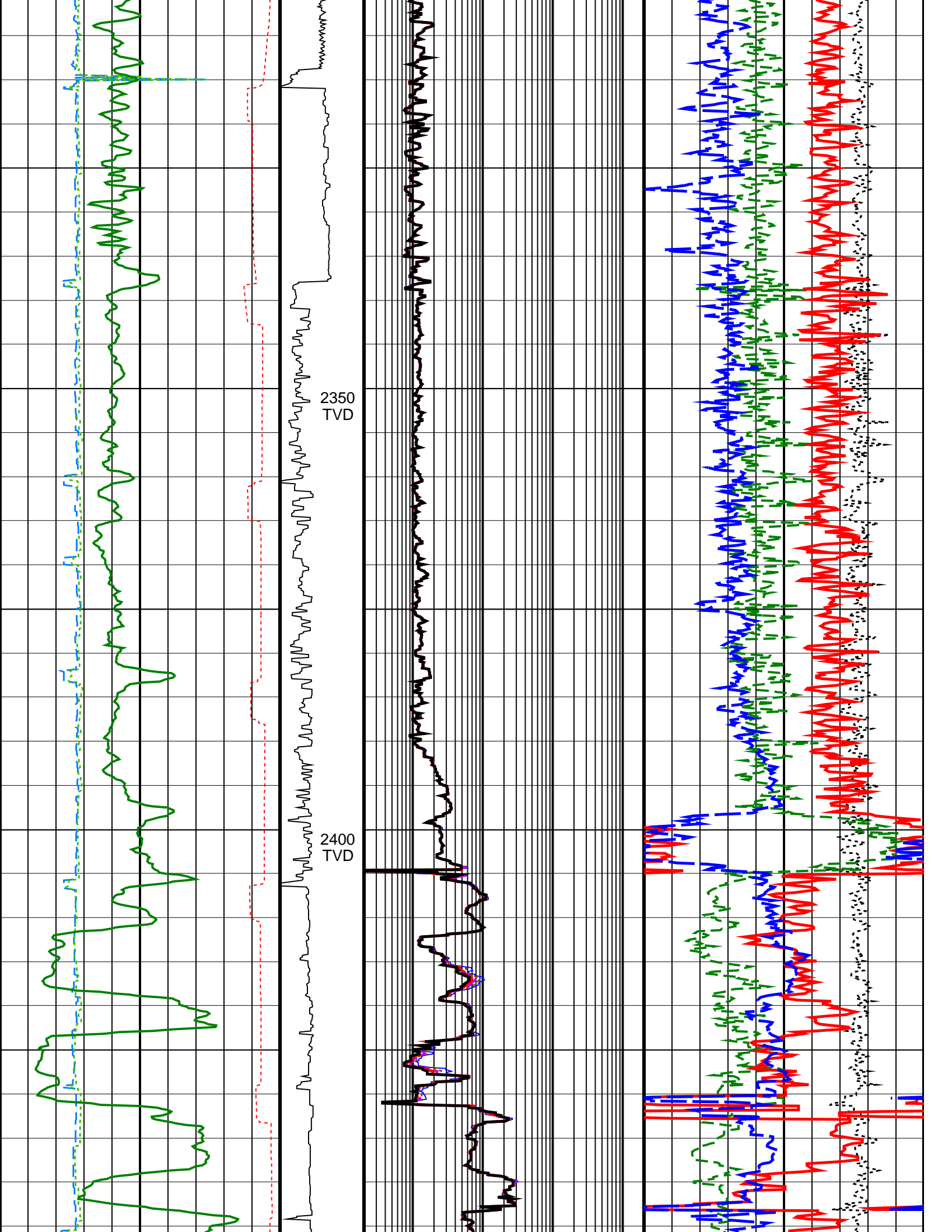
2050
TVD

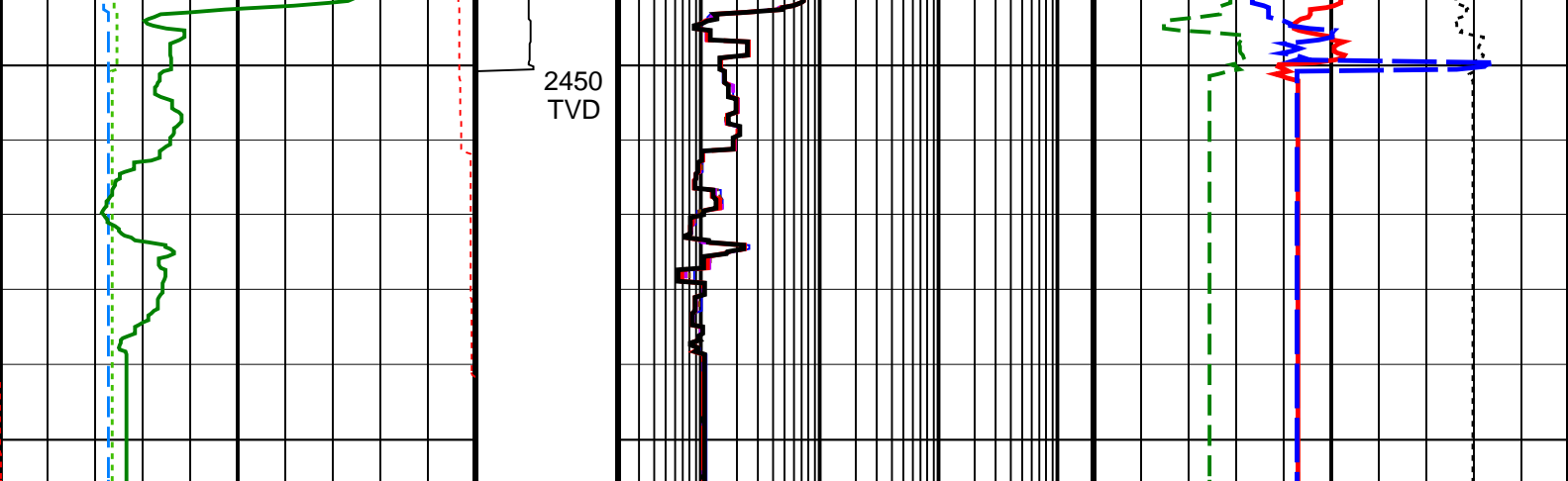
2100
TVD

2150
TVD









| | | | |
|---|---|--|---|
| <div>Density Time After Bit (TAB_DEN) (HR)</div> <div>010</div> | <div>ADN Rotational Speed (RPM_ADN) (RPM)</div> <div>0250</div> | <div>ARC Phase-Shift Resistivity 16-in. at 2 MHz (P16H)</div> <div>0.2(OHMM)2000</div> | <div>Bulk Density Correction, Bottom (DRHB) (G/C3)</div> <div>-0.750.25</div> |
| | | | |
| | | | |
| | | | |
| | | | |
| <div>Horizontal Hole Diameter (HORD) (IN)</div> <div>616</div> | | <div>ARC Phase-Shift Resistivity 22-in. at 2 MHz (P22H)</div> <div>0.2(OHMM)2000</div> | <div>Photoelectric Factor, Bottom (PEB) (-----)</div> <div>010</div> |
| <div>Vertical Hole Diameter (VERD) (IN)</div> <div>616</div> | | <div>ARC Phase-Shift Resistivity 28-in. at 2 MHz (P28H)</div> <div>0.2(OHMM)2000</div> | <div>Bulk Density, Bottom (ROBB) (G/C3)</div> <div>1.852.85</div> |
| <div>ARC Gamma Ray (GR_ARC) (GAPI)</div> <div>0200</div> | | <div>ARC Phase-Shift Resistivity 34-in. at 2 MHz (P34H)</div> <div>0.2(OHMM)2000</div> | <div>Thermal Neutron Porosity (TNPH) (PU)</div> <div>45-15</div> |
| | | <div>ARC Phase-Shift Resistivity 40-in. at 2 MHz (P40H)</div> <div>0.2(OHMM)2000</div> | |
| | | | |

IDEAL Version: ID12_0C_11
IDF

True Vertical Depth Log

6.75-in. Azimuthal Density Neutron / Equipment Identification

Primary Equipment:
Tool Name and Serial Number
Collar Type and Serial Number
Chassis Type and Serial Number
Stabilizer Type and Serial Number
Neutron Logging Source
Density Logging Source
Stabilizer Size
Calibration Status

ADN6 - CA 373
ADDC - AA
ADSE - EA
IBS
NSR - M 181
GSR - J/Z 2152
8.25-in.
Valid

Master: 6-Jul-2007 23:40

6.75-in. Azimuthal Density Neutron Calibration

Density: Magnesium Block




| Phase | LS window 3 - Mg CPS | Value | Phase | SS window 1 - Mg CPS | Value | Phase | SS window 3 - Mg CPS | Value |
|--------|--|-------|--------|---|-------|--------|---|-------|
| Master | <div>250.0 (Minimum)4125 (Nominal)8000 (Maximum)</div> | 1234 | Master | <div>700.0 (Minimum)9350 (Nominal)18000 (Maximum)</div> | 3101 | Master | <div>2500 (Minimum)23750 (Nominal)45000 (Maximum)</div> | 7425 |




Master: 6-Jul-2007 23:40


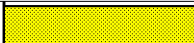
6.75-in. Azimuthal Density Neutron Calibration

























Density: Aluminum Block


| Phase | LS window 3 - Al CPS | Value | Phase | SS window 1 - Al CPS | Value | Phase | SS window 3 - Al CPS | Value |
|--------|--|-------|--------|--|-------|--------|--|-------|
| Master | <div>100.0 (Minimum)1000 (Nominal)2000 (Maximum)</div> | 1000 | Master | <div>100.0 (Minimum)1000 (Nominal)2000 (Maximum)</div> | 1555 | Master | <div>100.0 (Minimum)1000 (Nominal)2000 (Maximum)</div> | 1000 |

| | | | | | | | | |
|--------------------|--|-------------------|--------------------|--|-------------------|-------------------|--|--------------------|
| Master |  | 183.8 | Master |  | 1555 | Master |  | 4633 |
| 50.00 (Minimum) | 725.0 (Nominal) | 1400 (Maximum) | 500.0 (Minimum) | 4250 (Nominal) | 8000 (Maximum) | 1500 (Minimum) | 15750 (Nominal) | 30000 (Maximum) |

| | | | | | | | | | | | | | | |
|--|---|--------------------|--------------------|-------|--------|---|--------------------|--------------------|-------|--------|---|--------------------|-------------------|-------|
| Master: 6-Jul-2007 23:40 | | | | | | | | | | | | | | |
| 6.75-in. Azimuthal Density Neutron Calibration | | | | | | | | | | | | | | |
| Density: Background | | | | | | | | | | | | | | |
| Phase | LS window 3 – Background | | CPS | Value | Phase | SS window 1 – Background | | CPS | Value | Phase | SS window 3 – Background | | CPS | Value |
| Master |  | | | 50.04 | Master |  | | | 117.0 | Master |  | | | 519.0 |
| | 15.00 (Minimum) | 82.50 (Nominal) | 150.0 (Maximum) | | | 40.00 (Minimum) | 220.0 (Nominal) | 400.0 (Maximum) | | | 150.0 (Minimum) | 825.0 (Nominal) | 1500 (Maximum) | |

| | | | | | | | | | |
|--|---|--|--------------------|--------------------|--------|---|--|--------------------|--------------------|
| Master: 6-Jul-2007 23:40 | | | | | | | | | |
| 6.75-in. Azimuthal Density Neutron Calibration | | | | | | | | | |
| Density: Water Block Check | | | | | | | | | |
| Phase | Long spacing water density G/C3 | | | Value | Phase | Short spacing water density G/C3 | | | Value |
| Master |  | | | 1.040 | Master |  | | | 1.151 |
| | 1.024 (Minimum) | | 1.039 (Nominal) | 1.054 (Maximum) | | 1.096 (Minimum) | | 1.126 (Nominal) | 1.156 (Maximum) |

| | | | | | | | | | | | |
|--|---|--------------------|--------------------|--------|---|--------------------|--------------------|--------|---|--------------------|--------------------|
| Master: 6-Jul-2007 23:40 | | | | | | | | | | | |
| 6.75-in. Azimuthal Density Neutron Calibration | | | | | | | | | | | |
| Neutron: 3-Point Calibration | | | | | | | | | | | |
| Phase | Far 1 tube 1 Air Point Measure | CPS | Value | Phase | Far 1 tube 1 Rod Point Measure | CPS | Value | Phase | Far 1 tube 1 H2O Point Measure | CPS | Value |
| Master |  | | 17.64 | Master |  | | 4.361 | Master |  | | 2.045 |
| | 13.30 (Minimum) | 19.05 (Nominal) | 24.70 (Maximum) | | 3.400 (Minimum) | 4.857 (Nominal) | 6.200 (Maximum) | | 1.600 (Minimum) | 2.363 (Nominal) | 3.100 (Maximum) |
| Phase | Far 1 tube 2 Air Point Measure | CPS | Value | Phase | Far 1 tube 2 Rod Point Measure | CPS | Value | Phase | Far 1 tube 2 H2O Point Measure | CPS | Value |
| Master |  | | 18.63 | Master |  | | 4.548 | Master |  | | 2.193 |
| | 13.30 (Minimum) | 19.05 (Nominal) | 24.70 (Maximum) | | 3.400 (Minimum) | 4.857 (Nominal) | 6.200 (Maximum) | | 1.600 (Minimum) | 2.363 (Nominal) | 3.100 (Maximum) |
| Phase | Far 1 tube 3 Air Point Measure | CPS | Value | Phase | Far 1 tube 3 Rod Point Measure | CPS | Value | Phase | Far 1 tube 3 H2O Point Measure | CPS | Value |
| Master |  | | 17.55 | Master |  | | 4.417 | Master |  | | 2.165 |
| | 13.30 (Minimum) | 19.05 (Nominal) | 24.70 (Maximum) | | 3.400 (Minimum) | 4.857 (Nominal) | 6.200 (Maximum) | | 1.600 (Minimum) | 2.363 (Nominal) | 3.100 (Maximum) |
| Phase | Far 2 tube 1 Air Point Measure | CPS | Value | Phase | Far 2 tube 1 Rod Point Measure | CPS | Value | Phase | Far 2 tube 1 H2O Point Measure | CPS | Value |
| Master |  | | 17.33 | Master |  | | 4.720 | Master |  | | 2.210 |
| | 13.30 (Minimum) | 19.05 (Nominal) | 24.70 (Maximum) | | 3.400 (Minimum) | 4.857 (Nominal) | 6.200 (Maximum) | | 1.600 (Minimum) | 2.363 (Nominal) | 3.100 (Maximum) |
| Phase | Far 2 tube 2 Air Point Measure | CPS | Value | Phase | Far 2 tube 2 Rod Point Measure | CPS | Value | Phase | Far 2 tube 2 H2O Point Measure | CPS | Value |
| Master |  | | 18.63 | Master |  | | 4.693 | Master |  | | 2.260 |
| | 13.30 (Minimum) | 19.05 (Nominal) | 24.70 (Maximum) | | 3.400 (Minimum) | 4.857 (Nominal) | 6.200 (Maximum) | | 1.600 (Minimum) | 2.363 (Nominal) | 3.100 (Maximum) |
| Phase | Far 2 tube 3 Air Point Measure | CPS | Value | Phase | Far 2 tube 3 Rod Point Measure | CPS | Value | Phase | Far 2 tube 3 H2O Point Measure | CPS | Value |
| Master |  | | 17.85 | Master |  | | 4.397 | Master |  | | 2.199 |
| | 13.30 (Minimum) | 19.05 (Nominal) | 24.70 (Maximum) | | 3.400 (Minimum) | 4.857 (Nominal) | 6.200 (Maximum) | | 1.600 (Minimum) | 2.363 (Nominal) | 3.100 (Maximum) |
| Phase | Near 1 tube 1 Air Point Measure | CPS | Value | Phase | Near 1 tube 1 Rod Point Measure | CPS | Value | Phase | Near 1 tube 1 H2O Point Measure | CPS | Value |
| Master |  | | 478.6 | Master |  | | 763.5 | Master |  | | 336.3 |
| | 345.0 (Minimum) | 487.5 (Nominal) | 595.0 (Maximum) | | 535.0 (Minimum) | 768.8 (Nominal) | 925.0 (Maximum) | | 230.0 (Minimum) | 343.7 (Nominal) | 430.0 (Maximum) |
| Phase | Near 2 tube 1 Air Point Measure | CPS | Value | Phase | Near 2 tube 1 Rod Point Measure | CPS | Value | Phase | Near 2 tube 1 H2O Point Measure | CPS | Value |
| Master |  | | 484.6 | Master |  | | 758.4 | Master |  | | 337.5 |
| | 345.0 (Minimum) | 487.5 (Nominal) | 595.0 (Maximum) | | 535.0 (Minimum) | 768.8 (Nominal) | 925.0 (Maximum) | | 230.0 (Minimum) | 343.7 (Nominal) | 430.0 (Maximum) |

| | | | | | | | | | | |
|--|---|--|--|--------------------|--|--|--|--------------------|-------|--|
| Master: 6-Jul-2007 23:40 | | | | | | | | | | |
| 6.75-in. Azimuthal Density Neutron Calibration | | | | | | | | | | |
| Neutron: Water Block Check | | | | | | | | | | |
| Phase | Far Neutron water porosity PU | | | | | | | | Value | |
| Master |  | | | | | | | | 99.51 | |
| | 90.00 (Minimum) | | | 100.0 (Nominal) | | | | 125.0 (Maximum) | | |

6.75-in. Array Resistivity Compensated / Equipment Identification

Primary Equipment:

Tool Name and Serial Number

ARC6 – BA

460











ARC675 Calibration Status

Valid

Master: 6-Jul-2007 11:12

6.75-in. Array Resistivity Compensated Calibration











Resistivity: Air

| Phase | Phase-Shift T1 | Value | Phase | Phase-Shift T2 | Value | Phase | Phase-Shift T3 | Value |
|--------|---|---------|--------|---|---------|--------|---|---------|
| Master |  | 1.019 | Master |  | -0.9280 | Master |  | 0.9236 |
| | -3.900 (Minimum) 0.1000 (Nominal) 4.100 (Maximum) | | | -3.900 (Minimum) 0.1000 (Nominal) 4.100 (Maximum) | | | -3.900 (Minimum) 0.1000 (Nominal) 4.100 (Maximum) | |
| Phase | Phase-Shift T4 | Value | Phase | Phase-Shift T5 | Value | Phase | Phase-Shift T1 at 400KHz | Value |
| Master |  | -0.9776 | Master |  | 0.9063 | Master |  | -0.3509 |
| | -3.900 (Minimum) 0.1000 (Nominal) 4.100 (Maximum) | | | -3.900 (Minimum) 0.1000 (Nominal) 4.100 (Maximum) | | | -3.900 (Minimum) 0.1000 (Nominal) 4.100 (Maximum) | |
| Phase | Phase-Shift T2 at 400KHz | Value | Phase | Phase-Shift T3 at 400KHz | Value | Phase | Phase-Shift T4 at 400KHz | Value |
| Master |  | 0.2849 | Master |  | -0.3229 | Master |  | 0.2874 |
| | -3.900 (Minimum) 0.1000 (Nominal) 4.100 (Maximum) | | | -3.900 (Minimum) 0.1000 (Nominal) 4.100 (Maximum) | | | -3.900 (Minimum) 0.1000 (Nominal) 4.100 (Maximum) | |
| Phase | Phase-Shift T5 at 400KHz | Value | | | | | | |
| Master |  | -0.3578 | | | | | | |
| | -3.900 (Minimum) 0.1000 (Nominal) 4.100 (Maximum) | | | | | | | |

Master: 6-Jul-2007 11:12

6.75-in. Array Resistivity Compensated Calibration


Resistivity: Air

| Phase | Attenuation T1 | Value | Phase | Attenuation T2 | Value | Phase | Attenuation T3 | Value |
|--------|---|-------|--------|---|-------|--------|---|-------|
| Master |  | 8.981 | Master |  | 5.965 | Master |  | 5.607 |
| | 6.500 (Minimum) 8.500 (Nominal) 10.50 (Maximum) | | | 4.500 (Minimum) 6.500 (Nominal) 8.500 (Maximum) | | | 2.500 (Minimum) 4.500 (Nominal) 6.500 (Maximum) | |
| Phase | Attenuation T4 | Value | Phase | Attenuation T5 | Value | Phase | Attenuation T1 at 400KHz | Value |
| Master |  | 3.872 | Master |  | 4.157 | Master |  | 8.986 |
| | 2.600 (Minimum) 4.600 (Nominal) 6.600 (Maximum) | | | 1.600 (Minimum) 3.600 (Nominal) 5.600 (Maximum) | | | 6.500 (Minimum) 8.500 (Nominal) 10.50 (Maximum) | |
| Phase | Attenuation T2 at 400KHz | Value | Phase | Attenuation T3 at 400KHz | Value | Phase | Attenuation T4 at 400KHz | Value |
| Master |  | 5.966 | Master |  | 5.603 | Master |  | 3.869 |
| | 4.500 (Minimum) 6.500 (Nominal) 8.500 (Maximum) | | | 2.500 (Minimum) 4.500 (Nominal) 6.500 (Maximum) | | | 2.600 (Minimum) 4.600 (Nominal) 6.600 (Maximum) | |
| Phase | Attenuation T5 at 400KHz | Value | | | | | | |
| Master |  | 4.163 | | | | | | |
| | 1.600 (Minimum) 3.600 (Nominal) 5.600 (Maximum) | | | | | | | |

Master: 6-Jul-2007 11:59

6.75-in. Array Resistivity Compensated Calibration

Gamma Ray: Blanket

| Phase | Gamma ray factor (equals Calibration Gain multiplied by API Gain Factor) CPS | Value |
|--------|---|-------|
| Master |  | 4.988 |
| | 2.780 (Minimum) 4.800 (Nominal) 6.000 (Maximum) | |

6.75-in. Azimuthal Density Neutron / Equipment Identification

Primary Equipment:

Tool Name and Serial Number

ADN6 – CA

437

Collar Type and Serial Number
Chassis Type and Serial Number
Stabilizer Type and Serial Number
Neutron Logging Source
Density Logging Source
Stabilizer Size
Calibration Status

ADD - AA
ADSE - EA
NSR - M
GSR - J/Z
8.25 - in.
Valid

AD41
A181
A2152

| | | | | | | | | | | | | | | |
|--|----------------------|-------------------|-------------------|-------|--------------------|----------------------|--------------------|--|-------------------|--------------------|----------------------|--|--|-------|
| Master: 12-Aug-2007 20:19 | | | | | | | | | | | | | | |
| 6.75-in. Azimuthal Density Neutron Calibration | | | | | | | | | | | | | | |
| Density: Magnesium Block | | | | | | | | | | | | | | |
| Phase | LS window 3 – Mg CPS | | | Value | Phase | SS window 1 – Mg CPS | | | Value | Phase | SS window 3 – Mg CPS | | | Value |
| Master | | | | 1259 | Master | | | | 3081 | Master | | | | 7740 |
| | 250.0 (Minimum) | 4125 (Nominal) | 8000 (Maximum) | | 700.0 (Minimum) | 9350 (Nominal) | 18000 (Maximum) | | 2500 (Minimum) | 23750 (Nominal) | 45000 (Maximum) | | | |

| | | | | | | | | | | | | | | |
|--|----------------------|--------------------|-------------------|-------|--------------------|----------------------|-------------------|--|-------------------|--------------------|----------------------|--|--|-------|
| Master: 12-Aug-2007 20:19 | | | | | | | | | | | | | | |
| 6.75-in. Azimuthal Density Neutron Calibration | | | | | | | | | | | | | | |
| Density: Aluminum Block | | | | | | | | | | | | | | |
| Phase | LS window 3 – Al CPS | | | Value | Phase | SS window 1 – Al CPS | | | Value | Phase | SS window 3 – Al CPS | | | Value |
| Master | | | | 190.0 | Master | | | | 1584 | Master | | | | 4908 |
| | 50.00 (Minimum) | 725.0 (Nominal) | 1400 (Maximum) | | 500.0 (Minimum) | 4250 (Nominal) | 8000 (Maximum) | | 1500 (Minimum) | 15750 (Nominal) | 30000 (Maximum) | | | |

| | | | | | | | | | | | | | | |
|--|--------------------------|--------------------|--------------------|-------|--------------------|--------------------------|--------------------|-----|-------|--------------------|--------------------------|-------------------|-----|-------|
| Master: 12-Aug-2007 20:19 | | | | | | | | | | | | | | |
| 6.75-in. Azimuthal Density Neutron Calibration | | | | | | | | | | | | | | |
| Density: Background | | | | | | | | | | | | | | |
| Phase | LS window 3 – Background | | CPS | Value | Phase | SS window 1 – Background | | CPS | Value | Phase | SS window 3 – Background | | CPS | Value |
| Master | | | | 45.83 | Master | | | | 129.6 | Master | | | | 558.4 |
| | 15.00 (Minimum) | 82.50 (Nominal) | 150.0 (Maximum) | | 40.00 (Minimum) | 220.0 (Nominal) | 400.0 (Maximum) | | | 150.0 (Minimum) | 825.0 (Nominal) | 1500 (Maximum) | | |

| | | | | | | | | | |
|--|---------------------------------|--------------------|--------------------|-------|--------|----------------------------------|--------------------|--------------------|-------|
| Master: 12-Aug-2007 20:19 | | | | | | | | | |
| 6.75-in. Azimuthal Density Neutron Calibration | | | | | | | | | |
| Density: Water Block Check | | | | | | | | | |
| Phase | Long spacing water density G/C3 | | | Value | Phase | Short spacing water density G/C3 | | | Value |
| Master | | | | 1.041 | Master | | | | 1.145 |
| | 1.024 (Minimum) | 1.039 (Nominal) | 1.054 (Maximum) | | | 1.096 (Minimum) | 1.126 (Nominal) | 1.156 (Maximum) | |

| | | | | | | | | | | | | | | |
|--|--------------------|--------------------|--------------------|-------|--------|--------------------|--------------------|--------------------|-------|--------|--------------------|--------------------|--------------------|-------|
| Master: 12-Aug-2007 20:19 | | | | | | | | | | | | | | |
| 6.75-in. Azimuthal Density Neutron Calibration | | | | | | | | | | | | | | |
| Neutron: 3-Point Calibration | | | | | | | | | | | | | | |
| Phase | Far 1 tube 1 | Air Point Measure | CPS | Value | Phase | Far 1 tube 1 | Rod Point Measure | CPS | Value | Phase | Far 1 tube 1 | H2O Point Measure | CPS | Value |
| Master | | <div></div> | | 22.74 | Master | | <div></div> | | 5.557 | Master | | <div></div> | | 2.603 |
| | 13.30 (Minimum) | 19.05 (Nominal) | 24.70 (Maximum) | | | 3.400 (Minimum) | 4.857 (Nominal) | 6.200 (Maximum) | | | 1.600 (Minimum) | 2.363 (Nominal) | 3.100 (Maximum) | |
| Phase | Far 1 tube 2 | Air Point Measure | CPS | Value | Phase | Far 1 tube 2 | Rod Point Measure | CPS | Value | Phase | Far 1 tube 2 | H2O Point Measure | CPS | Value |
| Master | | <div></div> | | 23.88 | Master | | <div></div> | | 5.851 | Master | | <div></div> | | 2.840 |
| | 13.30 (Minimum) | 19.05 (Nominal) | 24.70 (Maximum) | | | 3.400 (Minimum) | 4.857 (Nominal) | 6.200 (Maximum) | | | 1.600 (Minimum) | 2.363 (Nominal) | 3.100 (Maximum) | |
| Phase | Far 1 tube 3 | Air Point Measure | CPS | Value | Phase | Far 1 tube 3 | Rod Point Measure | CPS | Value | Phase | Far 1 tube 3 | H2O Point Measure | CPS | Value |
| Master | | <div></div> | | 23.52 | Master | | <div></div> | | 5.821 | Master | | <div></div> | | 2.854 |
| | 13.30 (Minimum) | 19.05 (Nominal) | 24.70 (Maximum) | | | 3.400 (Minimum) | 4.857 (Nominal) | 6.200 (Maximum) | | | 1.600 (Minimum) | 2.363 (Nominal) | 3.100 (Maximum) | |
| Phase | Far 2 tube 1 | Air Point Measure | CPS | Value | Phase | Far 2 tube 1 | Rod Point Measure | CPS | Value | Phase | Far 2 tube 1 | H2O Point Measure | CPS | Value |
| Master | | <div></div> | | 22.91 | Master | | <div></div> | | 5.718 | Master | | <div></div> | | 2.752 |
| | 13.30 (Minimum) | 19.05 (Nominal) | 24.70 (Maximum) | | | 3.400 (Minimum) | 4.857 (Nominal) | 6.200 (Maximum) | | | 1.600 (Minimum) | 2.363 (Nominal) | 3.100 (Maximum) | |
| Phase | Far 2 tube 2 | Air Point Measure | CPS | Value | Phase | Far 2 tube 2 | Rod Point Measure | CPS | Value | Phase | Far 2 tube 2 | H2O Point Measure | CPS | Value |
| Master | | <div></div> | | 24.04 | Master | | <div></div> | | 5.735 | Master | | <div></div> | | 2.816 |
| | 13.30 (Minimum) | 19.05 (Nominal) | 24.70 (Maximum) | | | 3.400 (Minimum) | 4.857 (Nominal) | 6.200 (Maximum) | | | 1.600 (Minimum) | 2.363 (Nominal) | 3.100 (Maximum) | |
| Phase | Far 2 tube 3 | Air Point Measure | CPS | Value | Phase | Far 2 tube 3 | Rod Point Measure | CPS | Value | Phase | Far 2 tube 3 | H2O Point Measure | CPS | Value |
| Master | | <div></div> | | 22.37 | Master | | <div></div> | | 5.544 | Master | | <div></div> | | 2.726 |
| | 13.30 (Minimum) | 19.05 (Nominal) | 24.70 (Maximum) | | | 3.400 (Minimum) | 4.857 (Nominal) | 6.200 (Maximum) | | | 1.600 (Minimum) | 2.363 (Nominal) | 3.100 (Maximum) | |

| | | | | | | | | |
|---------------------------------------|--------------------|--------------------|---------------------------------------|--------------------|--------------------|---------------------------------------|--------------------|--------------------|
| Master | | 552.4 | Master | | 870.0 | Master | | 382.9 |
| 345.0 (Minimum) | 487.5 (Nominal) | 595.0 (Maximum) | 535.0 (Minimum) | 768.8 (Nominal) | 925.0 (Maximum) | 230.0 (Minimum) | 343.7 (Nominal) | 430.0 (Maximum) |
| Phase Near 2 tube 1 Air Point Measure | CPS | Value | Phase Near 2 tube 1 Rod Point Measure | CPS | Value | Phase Near 2 tube 1 H2O Point Measure | CPS | Value |
| Master | | 555.6 | Master | | 862.9 | Master | | 382.5 |
| 345.0 (Minimum) | 487.5 (Nominal) | 595.0 (Maximum) | 535.0 (Minimum) | 768.8 (Nominal) | 925.0 (Maximum) | 230.0 (Minimum) | 343.7 (Nominal) | 430.0 (Maximum) |

| | | | | | | | | |
|--|-------------------------------|--|--|--------------------|--|--|--------------------|--|
| Master: 12–Aug–2007 20:19 | | | | | | | | |
| 6.75–in. Azimuthal Density Neutron Calibration | | | | | | | | |
| Neutron: Water Block Check | | | | | | | | |
| Phase | Far Neutron water porosity PU | | | | | | Value | |
| Master | | | | | | | 94.25 | |
| | 90.00 (Minimum) | | | 100.0 (Nominal) | | | 125.0 (Maximum) | |

| | | | | | | | | |
|---|--|--|--|-----------|--|------|--|--|
| 6.75–in. Array Resistivity Compensated / Equipment Identification | | | | | | | | |
| Primary Equipment: | | | | | | | | |
| Tool Name and Serial Number | | | | ARC6 – BA | | 1708 | | |
| ARC675 Calibration Status | | | | Valid | | | | |

| | | | | | | | | | | | | | | |
|--|--------------------------|---------------------|--------------------|---------|---------------------|--------------------------|--------------------|--|---------------------|---------------------|--------------------------|--|--|---------|
| Master: 13–Aug–2007 12:10 | | | | | | | | | | | | | | |
| 6.75–in. Array Resistivity Compensated Calibration | | | | | | | | | | | | | | |
| Resistivity: Air | | | | | | | | | | | | | | |
| Phase | Phase–Shift T1 | | | Value | Phase | Phase–Shift T2 | | | Value | Phase | Phase–Shift T3 | | | Value |
| Master | | | | 1.832 | Master | | | | –1.714 | Master | | | | 1.759 |
| | –3.900 (Minimum) | 0.1000 (Nominal) | 4.100 (Maximum) | | –3.900 (Minimum) | 0.1000 (Nominal) | 4.100 (Maximum) | | –3.900 (Minimum) | 0.1000 (Nominal) | 4.100 (Maximum) | | | |
| Phase | Phase–Shift T4 | | | Value | Phase | Phase–Shift T5 | | | Value | Phase | Phase–Shift T1 at 400KHz | | | Value |
| Master | | | | –1.751 | Master | | | | 1.735 | Master | | | | –0.3595 |
| | –3.900 (Minimum) | 0.1000 (Nominal) | 4.100 (Maximum) | | –3.900 (Minimum) | 0.1000 (Nominal) | 4.100 (Maximum) | | –3.900 (Minimum) | 0.1000 (Nominal) | 4.100 (Maximum) | | | |
| Phase | Phase–Shift T2 at 400KHz | | | Value | Phase | Phase–Shift T3 at 400KHz | | | Value | Phase | Phase–Shift T4 at 400KHz | | | Value |
| Master | | | | 0.2418 | Master | | | | –0.3292 | Master | | | | 0.2296 |
| | –3.900 (Minimum) | 0.1000 (Nominal) | 4.100 (Maximum) | | –3.900 (Minimum) | 0.1000 (Nominal) | 4.100 (Maximum) | | –3.900 (Minimum) | 0.1000 (Nominal) | 4.100 (Maximum) | | | |
| Phase | Phase–Shift T5 at 400KHz | | | Value | | | | | | | | | | |
| Master | | | | –0.3267 | | | | | | | | | | |
| | –3.900 (Minimum) | 0.1000 (Nominal) | 4.100 (Maximum) | | | | | | | | | | | |

| | | | | | | | | | | | | | | |
|--|--------------------------|--|--|-------|---|--------------------------|--|--|-------|---|--------------------------|--|--|-------|
| Master: 13–Aug–2007 12:10 | | | | | | | | | | | | | | |
| 6.75–in. Array Resistivity Compensated Calibration | | | | | | | | | | | | | | |
| Resistivity: Air | | | | | | | | | | | | | | |
| Phase | Attenuation T1 | | | Value | Phase | Attenuation T2 | | | Value | Phase | Attenuation T3 | | | Value |
| Master | | | | 8.459 | Master | | | | 6.485 | Master | | | | 5.086 |
| 6.500 (Minimum) 8.500 (Nominal) 10.50 (Maximum) | | | | | 4.500 (Minimum) 6.500 (Nominal) 8.500 (Maximum) | | | | | 2.500 (Minimum) 4.500 (Nominal) 6.500 (Maximum) | | | | |
| Phase | Attenuation T4 | | | Value | Phase | Attenuation T5 | | | Value | Phase | Attenuation T1 at 400KHz | | | Value |
| Master | | | | 4.390 | Master | | | | 3.636 | Master | | | | 8.437 |
| 2.600 (Minimum) 4.600 (Nominal) 6.600 (Maximum) | | | | | 1.600 (Minimum) 3.600 (Nominal) 5.600 (Maximum) | | | | | 6.500 (Minimum) 8.500 (Nominal) 10.50 (Maximum) | | | | |
| Phase | Attenuation T2 at 400KHz | | | Value | Phase | Attenuation T3 at 400KHz | | | Value | Phase | Attenuation T4 at 400KHz | | | Value |
| Master | | | | 6.516 | Master | | | | 5.055 | Master | | | | 4.413 |
| 4.500 (Minimum) 6.500 (Nominal) 8.500 (Maximum) | | | | | 2.500 (Minimum) 4.500 (Nominal) 6.500 (Maximum) | | | | | 2.600 (Minimum) 4.600 (Nominal) 6.600 (Maximum) | | | | |

| Phase | Attenuation T5 at 400KHz | | Value |
|--------|--------------------------|--------------------|--------------------|
| Master | | | 3.618 |
| | 1.600 (Minimum) | 3.600 (Nominal) | 5.600 (Maximum) |

| Master: 12-Aug-2007 10:43 | | | |
|--|--|--------------------|--------------------|
| 6.75-in. Array Resistivity Compensated Calibration | | | |
| Gamma Ray: Blanket | | | |
| Phase | Gamma ray factor (equals Calibration Gain multiplied by API Gain Factor) CPS | | Value |
| Master | | | 5.258 |
| | 2.780 (Minimum) | 4.800 (Nominal) | 6.000 (Maximum) |

SCHLUMBERGER

Survey report

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Client..... ESSO Australia Pty Ltd
Field..... Fortescue

Well..... FTA A17A
API number.....
Engineer..... MYT/MA/ML

Spud date..... 02-Sep-07
Last survey date..... 15-Sep-07
Total accepted surveys... 85
MD of first survey..... 660.00 m
MD of last survey..... 3036.00 m

RIG:..... ISDL 175
STATE:..... Victoria

----- Survey calculation methods-----
Method for positions..... Minimum curvature
Method for DLS..... Mason & Taylor

----- Geomagnetic data -----
Magnetic model..... BGGM version 2007
Magnetic date..... 03-Sep-2007
Magnetic field strength... 1199.44 HCNT
Magnetic dec (+E/W-)..... 13.21 degrees
Magnetic dip..... -68.86 degrees

----- Depth reference -----
Permanent datum..... Mean Sea Level
Depth reference..... Driller's Depth
GL above permanent..... -69.00 m
KB above permanent..... Top Drive
DF above permanent..... 42.50 m

----- MWD survey Reference Criteria -----
Reference G..... 1000.04 mGal
Reference H..... 1199.44 HCNT
Reference Dip..... -68.86 degrees
Tolerance of G..... (+/-) 2.50 mGal
Tolerance of H..... (+/-) 6.00 HCNT
Tolerance of Dip..... (+/-) 0.45 degrees

----- Vertical section origin-----
Latitude (+N/S-)..... -4.05 m
Departure (+E/W-)..... 4.49 m

----- Corrections -----
Magnetic dec (+E/W-)..... 13.21 degrees
Grid convergence (+E/W-).. -0.79 degrees
Total az corr (+E/W-)..... 14.00 degrees
(Total az corr = magnetic dec - grid conv)

----- Platform reference point-----
Latitude (+N/S-).....
Departure (+E/W-).....

Azimuth from Vsect Origin to target: 126.84 degrees

Survey Correction Type ...:
I=Sag Corrected Inclination
M=Schlumberger Magnetic Correction
S=Shell Magnetic Correction
F=Failed Axis Correction
R=Magnetic Resonance Tool Correction
D=Dmag Magnetic Correction

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| Seq # | Measured depth (m) | Incl angle (deg) | Azimuth angle (deg) | Course length (m) | TVD depth (m) | Vertical section (m) | Displ +N/S- (m) | Displ +E/W- (m) | Total displ (m) | At Azim (deg) | DLS (deg/100f) | Srvy tool type | Tool Corr (deg) |
|-------|--------------------|------------------|---------------------|-------------------|---------------|----------------------|-----------------|-----------------|-----------------|---------------|----------------|----------------|-----------------|
| 1 | 660.00 | 43.73 | 170.72 | 0.00 | 612.64 | 133.65 | -180.10 | 39.59 | 184.40 | 167.60 | 0.00 | TIP | None |
| 2 | 687.00 | 45.37 | 160.65 | 27.00 | 631.90 | 148.38 | -198.40 | 44.28 | 203.28 | 167.42 | 8.18 | PUP | None |
| 3 | 715.14 | 41.29 | 153.00 | 28.14 | 652.38 | 165.05 | -216.14 | 51.83 | 222.27 | 166.52 | 7.20 | PUP | None |
| 4 | 743.13 | 38.36 | 149.47 | 27.99 | 673.88 | 181.36 | -231.85 | 60.43 | 239.60 | 165.39 | 4.03 | PUP | None |
| 5 | 771.30 | 38.83 | 149.67 | 28.17 | 695.90 | 197.57 | -247.01 | 69.33 | 256.55 | 164.32 | 0.53 | PUP | None |
| 6 | 799.42 | 39.10 | 149.36 | 28.12 | 717.76 | 213.88 | -262.24 | 78.30 | 273.69 | 163.37 | 0.36 | PUP | None |
| 7 | 827.52 | 39.46 | 149.08 | 28.10 | 739.51 | 230.33 | -277.53 | 87.41 | 290.97 | 162.52 | 0.44 | PUP | None |
| 8 | 856.31 | 40.00 | 148.79 | 28.79 | 761.65 | 247.38 | -293.29 | 96.90 | 308.89 | 161.72 | 0.60 | PUP | None |
| 9 | 884.72 | 40.15 | 144.57 | 28.41 | 783.40 | 264.58 | -308.57 | 106.95 | 326.57 | 160.88 | 2.92 | PUP | None |
| 10 | 913.55 | 39.38 | 139.55 | 28.83 | 805.56 | 282.36 | -323.10 | 118.27 | 344.07 | 159.89 | 3.49 | PUP | None |
| 11 | 941.59 | 37.91 | 135.61 | 28.04 | 827.47 | 299.55 | -336.03 | 130.07 | 360.33 | 158.84 | 3.11 | PUP | None |
| 12 | 969.73 | 35.92 | 129.16 | 28.14 | 849.97 | 316.35 | -347.43 | 142.53 | 375.52 | 157.70 | 4.72 | PUP | None |
| 13 | 998.09 | 35.46 | 124.47 | 28.36 | 873.01 | 332.89 | -357.34 | 155.76 | 389.81 | 156.45 | 2.98 | PUP | None |
| 14 | 1026.34 | 35.73 | 120.07 | 28.25 | 895.99 | 349.27 | -366.11 | 169.66 | 403.51 | 155.14 | 2.78 | PUP | None |
| 15 | 1055.05 | 36.17 | 115.56 | 28.71 | 919.23 | 365.91 | -373.97 | 184.56 | 417.03 | 153.73 | 2.85 | PUP | None |
| 16 | 1083.06 | 37.35 | 113.45 | 28.01 | 941.67 | 382.28 | -380.91 | 199.81 | 430.14 | 152.32 | 1.88 | PUP | None |
| 17 | 1111.75 | 38.03 | 114.28 | 28.69 | 964.38 | 399.37 | -388.01 | 215.85 | 444.01 | 150.91 | 0.90 | PUP | None |
| 18 | 1139.82 | 38.02 | 116.07 | 28.07 | 986.49 | 416.30 | -395.37 | 231.50 | 458.15 | 149.65 | 1.20 | PUP | None |
| 19 | 1168.37 | 38.15 | 117.86 | 28.55 | 1008.96 | 433.65 | -403.35 | 247.19 | 473.07 | 148.50 | 1.19 | PUP | None |
| 20 | 1196.91 | 38.43 | 118.41 | 28.54 | 1031.36 | 451.13 | -411.69 | 262.79 | 488.41 | 147.45 | 0.47 | PUP | None |
| 21 | 1225.68 | 38.08 | 118.17 | 28.77 | 1053.95 | 468.75 | -420.13 | 278.47 | 504.04 | 146.46 | 0.40 | PUP | None |
| 22 | 1254.40 | 37.78 | 118.21 | 28.72 | 1076.61 | 486.20 | -428.47 | 294.03 | 519.66 | 145.54 | 0.32 | PUP | None |
| 23 | 1282.15 | 37.10 | 118.92 | 27.75 | 1098.64 | 502.89 | -436.54 | 308.85 | 534.75 | 144.72 | 0.88 | PUP | None |
| 24 | 1310.69 | 35.83 | 119.76 | 28.54 | 1121.59 | 519.71 | -444.85 | 323.63 | 550.12 | 143.96 | 1.46 | PUP | None |
| 25 | 1338.31 | 36.07 | 119.61 | 27.62 | 1143.95 | 535.80 | -452.88 | 337.72 | 564.94 | 143.29 | 0.28 | PUP | None |

| | | | | | | | | | | | | | |
|----|---------|-------|--------|-------|---------|--------|---------|--------|--------|--------|------|-----|------|
| 26 | 1367.80 | 36.15 | 119.73 | 29.49 | 1167.78 | 553.04 | -461.48 | 352.82 | 580.90 | 142.60 | 0.11 | PUP | None |
| 27 | 1396.39 | 36.99 | 119.10 | 28.59 | 1190.74 | 569.93 | -469.85 | 367.66 | 596.60 | 141.96 | 0.98 | PUP | None |
| 28 | 1424.23 | 38.52 | 117.23 | 27.84 | 1212.75 | 586.78 | -477.89 | 382.69 | 612.23 | 141.31 | 2.09 | PUP | None |
| 29 | 1452.46 | 38.59 | 117.40 | 28.23 | 1234.83 | 604.13 | -485.96 | 398.32 | 628.35 | 140.66 | 0.14 | PUP | None |
| 30 | 1481.68 | 37.43 | 117.54 | 29.22 | 1257.85 | 621.89 | -494.26 | 414.29 | 644.92 | 140.03 | 1.21 | PUP | None |

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| Seq # | Measured depth (m) | Incl angle (deg) | Azimuth angle (deg) | Course length (m) | TVD depth (m) | Vertical section (m) | Displ +N/S- (m) | Displ +E/W- (m) | Total displ (m) | At Azim (deg) | DLS (deg/100f) | Srvy tool type | Tool Corr (deg) |
|-------|--------------------|------------------|---------------------|-------------------|---------------|----------------------|-----------------|-----------------|-----------------|---------------|----------------|----------------|-----------------|
| 31 | 1510.46 | 37.27 | 117.52 | 28.78 | 1280.73 | 639.12 | -502.33 | 429.77 | 661.09 | 139.45 | 0.17 | PUP | None |
| 32 | 1538.73 | 37.53 | 117.80 | 28.27 | 1303.18 | 656.07 | -510.30 | 444.98 | 677.06 | 138.91 | 0.33 | PUP | None |
| 33 | 1566.81 | 38.82 | 118.34 | 28.08 | 1325.26 | 673.22 | -518.47 | 460.29 | 693.31 | 138.40 | 1.45 | PUP | None |
| 34 | 1595.00 | 39.21 | 118.81 | 28.19 | 1347.16 | 690.78 | -526.96 | 475.88 | 710.03 | 137.92 | 0.53 | PUP | None |
| 35 | 1623.56 | 38.55 | 118.75 | 28.56 | 1369.39 | 708.53 | -535.59 | 491.59 | 726.99 | 137.45 | 0.71 | PUP | None |
| 36 | 1651.81 | 38.21 | 117.82 | 28.25 | 1391.54 | 725.88 | -543.90 | 507.03 | 743.58 | 137.01 | 0.72 | PUP | None |
| 37 | 1680.22 | 38.26 | 117.49 | 28.41 | 1413.86 | 743.23 | -552.06 | 522.61 | 760.19 | 136.57 | 0.23 | PUP | None |
| 38 | 1708.96 | 38.99 | 116.80 | 28.74 | 1436.31 | 760.92 | -560.25 | 538.57 | 777.13 | 136.13 | 0.90 | PUP | None |
| 39 | 1737.21 | 39.94 | 115.58 | 28.25 | 1458.12 | 778.56 | -568.17 | 554.68 | 794.03 | 135.69 | 1.32 | PUP | None |
| 40 | 1765.70 | 39.99 | 116.13 | 28.49 | 1479.95 | 796.53 | -576.15 | 571.15 | 811.27 | 135.25 | 0.38 | PUP | None |
| 41 | 1793.80 | 40.23 | 117.14 | 28.10 | 1501.44 | 814.34 | -584.26 | 587.33 | 828.45 | 134.85 | 0.75 | PUP | None |
| 42 | 1822.48 | 40.84 | 117.86 | 28.68 | 1523.24 | 832.74 | -592.87 | 603.87 | 846.26 | 134.47 | 0.82 | PUP | None |
| 43 | 1851.42 | 40.26 | 118.35 | 28.94 | 1545.23 | 851.33 | -601.73 | 620.46 | 864.32 | 134.12 | 0.70 | PUP | None |
| 44 | 1880.34 | 41.14 | 118.01 | 28.92 | 1567.16 | 869.97 | -610.64 | 637.08 | 882.47 | 133.79 | 0.96 | PUP | None |
| 45 | 1907.88 | 41.63 | 117.36 | 27.54 | 1587.82 | 887.95 | -619.10 | 653.21 | 899.98 | 133.46 | 0.72 | PUP | None |
| 46 | 1935.98 | 42.48 | 116.31 | 28.10 | 1608.68 | 906.48 | -627.59 | 670.00 | 918.03 | 133.13 | 1.20 | PUP | None |
| 47 | 1965.09 | 39.30 | 113.83 | 29.11 | 1630.69 | 925.14 | -635.68 | 687.25 | 936.16 | 132.77 | 3.74 | PUP | None |
| 48 | 1993.68 | 35.90 | 114.81 | 28.59 | 1653.34 | 942.16 | -642.86 | 703.15 | 952.72 | 132.44 | 3.68 | PUP | None |
| 49 | 2022.04 | 34.84 | 117.69 | 28.36 | 1676.46 | 958.29 | -650.11 | 717.87 | 968.49 | 132.16 | 2.12 | PUP | None |
| 50 | 2050.17 | 36.50 | 119.08 | 28.13 | 1699.32 | 974.52 | -657.91 | 732.30 | 984.43 | 131.94 | 2.00 | PUP | None |
| 51 | 2079.41 | 37.84 | 119.35 | 29.24 | 1722.62 | 992.03 | -666.53 | 747.72 | 1001.67 | 131.71 | 1.41 | PUP | None |
| 52 | 2107.37 | 38.50 | 118.68 | 27.96 | 1744.60 | 1009.14 | -674.91 | 762.83 | 1018.53 | 131.50 | 0.85 | PUP | None |
| 53 | 2136.33 | 38.59 | 118.46 | 28.96 | 1767.25 | 1027.00 | -683.54 | 778.68 | 1036.13 | 131.28 | 0.17 | PUP | None |
| 54 | 2164.51 | 37.93 | 118.78 | 28.18 | 1789.37 | 1044.27 | -691.90 | 793.99 | 1053.16 | 131.07 | 0.75 | PUP | None |
| 55 | 2192.55 | 37.27 | 118.25 | 28.04 | 1811.59 | 1061.20 | -700.07 | 809.03 | 1069.87 | 130.87 | 0.80 | PUP | None |
| 56 | 2220.97 | 36.42 | 118.58 | 28.42 | 1834.33 | 1078.06 | -708.18 | 824.01 | 1086.52 | 130.68 | 0.94 | PUP | None |
| 57 | 2249.50 | 36.44 | 119.32 | 28.53 | 1857.29 | 1094.84 | -716.38 | 838.84 | 1103.11 | 130.50 | 0.47 | PUP | None |
| 58 | 2277.75 | 36.84 | 121.02 | 28.25 | 1879.96 | 1111.58 | -724.85 | 853.41 | 1119.70 | 130.34 | 1.18 | PUP | None |
| 59 | 2305.75 | 37.44 | 122.32 | 28.00 | 1902.28 | 1128.42 | -733.73 | 867.80 | 1136.41 | 130.21 | 1.08 | PUP | None |
| 60 | 2334.40 | 37.22 | 121.22 | 28.65 | 1925.06 | 1145.73 | -742.88 | 882.57 | 1153.60 | 130.09 | 0.75 | PUP | None |

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| Seq # | Measured depth (m) | Incl angle (deg) | Azimuth angle (deg) | Course length (m) | TVD depth (m) | Vertical section (m) | Displ +N/S- (m) | Displ +E/W- (m) | Total displ (m) | At Azim (deg) | DLS (deg/100f) | Srvy tool type | Tool Corr (deg) |
|-------|--------------------|------------------|---------------------|-------------------|---------------|----------------------|-----------------|-----------------|-----------------|---------------|----------------|-----------------|-----------------|
| 61 | 2362.79 | 36.69 | 117.35 | 28.39 | 1947.75 | 1162.64 | -751.22 | 897.45 | 1170.36 | 129.93 | 2.56 | PUP | None |
| 62 | 2389.95 | 36.62 | 116.10 | 27.16 | 1969.54 | 1178.60 | -758.52 | 911.93 | 1186.15 | 129.75 | 0.84 | PUP | None |
| 63 | 2417.94 | 37.08 | 116.97 | 27.99 | 1991.94 | 1195.11 | -766.02 | 926.95 | 1202.50 | 129.57 | 0.76 | PUP | None |
| 64 | 2446.07 | 36.80 | 117.57 | 28.13 | 2014.42 | 1211.78 | -773.76 | 941.97 | 1219.02 | 129.40 | 0.49 | PUP | None |
| 65 | 2474.11 | 36.23 | 117.97 | 28.04 | 2036.96 | 1228.26 | -781.53 | 956.74 | 1235.37 | 129.24 | 0.67 | PUP | None |
| 66 | 2502.44 | 38.25 | 117.50 | 28.33 | 2059.51 | 1245.19 | -789.51 | 971.91 | 1252.17 | 129.09 | 2.19 | PUP | None |
| 67 | 2531.37 | 39.64 | 117.87 | 28.93 | 2082.01 | 1263.14 | -797.96 | 988.01 | 1270.00 | 128.93 | 1.48 | PUP | None |
| 68 | 2559.98 | 39.78 | 118.54 | 28.61 | 2104.02 | 1281.21 | -806.60 | 1004.12 | 1287.97 | 128.77 | 0.48 | PUP | None |
| 69 | 2588.17 | 38.68 | 118.97 | 28.19 | 2125.85 | 1298.86 | -815.18 | 1019.75 | 1305.53 | 128.64 | 1.23 | PUP | None |
| 70 | 2617.01 | 38.16 | 118.71 | 28.84 | 2148.45 | 1316.61 | -823.82 | 1035.45 | 1323.19 | 128.51 | 0.58 | PUP | None |
| 71 | 2645.27 | 38.52 | 118.20 | 28.26 | 2170.61 | 1333.95 | -832.17 | 1050.86 | 1340.46 | 128.38 | 0.52 | PUP | None |
| 72 | 2674.42 | 39.10 | 118.05 | 29.15 | 2193.33 | 1352.01 | -840.78 | 1066.97 | 1358.44 | 128.24 | 0.61 | PUP | None |
| 73 | 2702.52 | 39.10 | 117.27 | 28.10 | 2215.14 | 1369.51 | -849.01 | 1082.67 | 1375.86 | 128.10 | 0.53 | PUP | None |
| 74 | 2731.28 | 37.85 | 117.19 | 28.76 | 2237.65 | 1387.15 | -857.20 | 1098.58 | 1393.44 | 127.96 | 1.33 | PUP | None |
| 75 | 2760.06 | 36.63 | 118.45 | 28.78 | 2260.56 | 1404.35 | -865.32 | 1113.98 | 1410.58 | 127.84 | 1.52 | PUP | None |
| 76 | 2788.47 | 36.29 | 120.03 | 28.41 | 2283.41 | 1421.08 | -873.57 | 1128.72 | 1427.28 | 127.74 | 1.07 | PUP | None |
| 77 | 2817.01 | 37.24 | 118.98 | 28.54 | 2306.28 | 1438.02 | -881.98 | 1143.58 | 1444.19 | 127.64 | 1.22 | PUP | None |
| 78 | 2845.58 | 38.07 | 117.86 | 28.57 | 2328.89 | 1455.29 | -890.29 | 1158.93 | 1461.41 | 127.53 | 1.15 | PUP | None |
| 79 | 2871.86 | 38.33 | 117.10 | 26.28 | 2349.55 | 1471.32 | -897.78 | 1173.35 | 1477.42 | 127.42 | 0.62 | PUP | None |
| 80 | 2902.30 | 37.94 | 116.95 | 30.44 | 2373.49 | 1489.84 | -906.33 | 1190.09 | 1495.91 | 127.29 | 0.40 | PUP | None |
| 81 | 2931.13 | 37.24 | 118.15 | 28.83 | 2396.33 | 1507.20 | -914.46 | 1205.69 | 1513.25 | 127.18 | 1.07 | PUP | None |
| 82 | 2960.01 | 37.98 | 118.12 | 28.88 | 2419.21 | 1524.62 | -922.77 | 1221.23 | 1530.65 | 127.07 | 0.78 | PUP | None |
| 83 | 2988.74 | 38.14 | 118.12 | 28.73 | 2441.83 | 1542.13 | -931.12 | 1236.85 | 1548.15 | 126.97 | 0.17 | PUP | None |
| 84 | 3014.84 | 38.56 | 117.68 | 26.10 | 2462.30 | 1558.12 | -938.69 | 1251.16 | 1564.15 | 126.88 | 0.58 | PUP | None |
| 85 | 3036.00 | 38.85 | 117.38 | 21.16 | 2478.81 | 1571.18 | -944.81 | 1262.90 | 1577.20 | 126.80 | 0.50 | Projected to TD | |

[(c)2007 IDEAL ID12_OC_12]

| | | |
|--|------------------|------------------------|
| Field: | Fortescue | |
| Rig: | ISDL 175 | 8.5 in. Section |
| State: | Victoria | |
| VISION Service 1:500 True Vertical Depth Recorded Mode Log (Trip-Out) | | |