

State: **Victoria**

|   |   |  |          |                                     |                           |         |          |
|---|---|--|----------|-------------------------------------|---------------------------|---------|----------|
| Rig: ISDL 453<br>Field: Tuna<br>Location: Bass Strait<br>Well: TNA A-30<br>Company: Esso Australia Ltd. | VISION Neutron Density<br>1:500 Measured Depth<br>Recorded Mode Log |  |          |                                     |                           |         |          |
|   | Location  | Total depth: 2862.0 m                              |          |                                     | Elevation                 | K.B.    | 31.32 m  |
|   |   | Spud date: 22-August-02                            |          |                                     |                           | G.L.    | -59.40 m |
|   |   | Runs: 4 To 5                                       |          |                                     |                           | D.F.    | 31.32 m  |
|   |   | Permanent datum: Mean Sea Level                    |          |                                     | Elev.: 59.40 m            |         |          |
|   |   | Log measured from: Drill Floor                     |          |                                     | 31.32 m above Perm. datum |         |          |
|   | Depth reference: Driller's Depth                                    |  |          |                                     |                           |         |          |
| API serial no.  |   | y = 5774227.340m (North)<br>x = 624229.320m (East) |          | Longitude Latitude                  |                           |         |          |
|   |   |  |          | E 148° 25' 5.588" S 38° 10' 16.235" |                           |         |          |
| Depth logged: 832.1 m To 2848.3 m   |   | Mag decl: 13.16 deg.                               |          | Other services:                     |                           |         |          |
| Date logged: 27-Aug-02 To 02-Sept-02  |   | Mag dip: -68.69 deg.                               |          | Directional Drilling, D&I           |                           |         |          |
| Bore hole record  |   |  |          | Casing record                       |                           |         |          |
| Hole size   |   | from   | to       | Size                                | Density                   | from    | to       |
| 12 1/4 in.  |   | 222.8 m  | 838.4 m  | 20 in.                              | 285 lbm/m                 | 0.0 m   | 148.8 m  |
| 8 1/2 in.   |   | 838.4 m  | 2862.0 m | 9 5/8 in.                           | 154 lbm/m                 | 0.0 m   | 832.1 m  |
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| Mud record  |   |  |          | Borehole deviation record           |                           |         |          |
| Type  |   | from   | to       | Min                                 | Max                       | from    | to       |
| Sea Water   |   | 164.9 m  | 838.4 m  | 0.95 deg.                           | 68.2 deg.                 | 222.8 m | 838.4 m  |
| KCL/PHPA/Glycol   |   | 838.4 m  | 2862.0 m | 68.2 deg.                           | 68.7 deg.                 | 838.4 m | 2862.0 m |
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# Bit Run Summary

[illegible]

|                           |          |                 |           |            |  |  |  |  |  |  |  |
|---------------------------|----------|-----------------|-----------|------------|--|--|--|--|--|--|--|
| Type                      |          | KCL/PHPA/GLYCOL |           |            |  |  |  |  |  |  |  |
| Mud weight                | ppg      | 10.5            | 10.1      |            |  |  |  |  |  |  |  |
| Solids                    | %        | 10.6            | 8.3       |            |  |  |  |  |  |  |  |
| Chlorides                 | mg/l     | 45,500          | 39,500    |            |  |  |  |  |  |  |  |
| Rm                        | ohm-m@°C | 0.1382@21       | 0.1477@20 |            |  |  |  |  |  |  |  |
| Rmf                       | ohm-m@°C | 0.0992@22       | 0.1136@20 |            |  |  |  |  |  |  |  |
| Rmc                       | ohm-m@°C | 0.271@22        | 0.338@21  |            |  |  |  |  |  |  |  |
| Potassium                 | %        | 4.0             | 3.75      |            |  |  |  |  |  |  |  |
| <b>Environmental data</b> |          |                 |           |            |  |  |  |  |  |  |  |
| <b>GR</b>                 |          |                 |           |            |  |  |  |  |  |  |  |
| Mud weight                | ppg      | 10.5            | 10.1      |            |  |  |  |  |  |  |  |
| Bit size                  | in.      | 8.5             | 8.5       |            |  |  |  |  |  |  |  |
| <b>Resistivity</b>        |          |                 |           |            |  |  |  |  |  |  |  |
| <b>Neutron porosity</b>   |          |                 |           |            |  |  |  |  |  |  |  |
| Hole Size                 | in.      | 8.5             | 8.5       |            |  |  |  |  |  |  |  |
| Mud weight                | ppg      | 10.5            | 10.1      |            |  |  |  |  |  |  |  |
| Temperature               | °C       | 70              | 70        |            |  |  |  |  |  |  |  |
| Mud salinity              | ppk      | 75.1            | 66.0      |            |  |  |  |  |  |  |  |
| Formation salinity        |          |                 |           |            |  |  |  |  |  |  |  |
| Recording rate 1          | SEC      | 10              | 10        |            |  |  |  |  |  |  |  |
| Recording rate 2          | SEC      | 10              | 10        |            |  |  |  |  |  |  |  |
| Filtering GR              |          | 3 pt            | 3 pt      |            |  |  |  |  |  |  |  |
| Filtering density         |          | 3 pt            | 3 pt      |            |  |  |  |  |  |  |  |
| Filtering Neutron         |          | 3 pt            | 3 pt      |            |  |  |  |  |  |  |  |
| Company representative    |          | B. Steel        | B. Davies |            |  |  |  |  |  |  |  |
| Anadrill personnel        |          | L. Bon          | J. Dolan  | K. Handley |  |  |  |  |  |  |  |

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|  |  |                        |
|--|--|------------------------|
| OTHER SERVICES FOR RUN4<br>Directional Surveys<br>Directional Drilling   | OTHER SERVICES FOR RUN5<br>Directional Surveys<br>Directional Drilling   | OTHER SERVICES FOR RUN |
| REMARKS: RUN NUMBER 4<br>8-1/2 in. Hole section was drilled from 843.0 m to 2421.5 m.<br><br>Depth is referenced to the Driller's Depth.<br><br>All data presented is from tool memory.<br><br>GR corrected for mud weight, tool and bit size.<br><br>GVR6* resistivity is corrected for the bit size, mud resistivity and borehole temperature.<br><br>Bottom quadrant density is presented.<br>Neutron porosity is calculated with a limestone matrix and is corrected for the bit size, borehole salinity, temperature and mud hydrogen index.<br><br>Mud type is water-based KCl/PHPA/Glycol.<br>Barite was present in the mud system.<br><br>GVR6* Shallow, Medium and Deep Button Resistivity curves not presented due to failure. | REMARKS: RUN NUMBER 5<br>8-1/2 in. Hole section was drilled between 2421.5 m to 2862.0 m.<br><br>Depth is referenced to the Driller's Depth.<br><br>All data presented is from tool memory.<br><br>GR corrected for mud weight, tool and bit size.<br><br>GVR6* resistivity is corrected for the bit size, mud resistivity and borehole temperature.<br><br>Bottom quadrant density is presented.<br>Neutron porosity is calculated with a limestone matrix and is corrected for the bit size, borehole salinity, temperature and mud hydrogen index.<br><br>Mud type is water-based KCl/PHPA/Glycol.<br>Barite was present in the mud system. | REMARKS: RUN NUMBER    |

Resistivity curves not presented due to failure.

GVR6\* downhole software: 6.1B14  
ADN6\* downhole software: 6.2B08

GVR6\* downhole software: 6.1B14  
ADN6\* downhole software: 6.2B08

## EQUIPMENT DESCRIPTION

RUN4

RUN5

RUN

### DOWNHOLE EQ

6 3/4 in. AD Neutron 28.730.5  
ADSE Neutron 28.6  
8 1/4 in. S Density 27.7  
NSR-M Density 27.6  
GSR-J A UltraSo 27.2  
R-O P 26.4  
Software: 6

6 3/4 in. Pow 24.3  
MDC AC-  
MDI 116  
MEC 115  
Software: 6 D&I 20.1

6 3/4 in. G Shallo 14.5  
S/N: 1 Medium 14.4  
Software: 6 Deep 14.2  
Ring R 14.0  
R-O p 13.9  
GR 13.7

Cross Over Sub 12.9

NM Pony 12.3  
S/N: ASS1

NM Pony 9.59  
S/N: ANA9

PowerPak\* Mu 7.89  
A675XP S/N: A  
0.78 deg

### DOWNHOLE EQ

6 3/4 in. AD Neutron 28.730.5  
ADSE Neutron 28.6  
8 1/4 in. S Density 27.7  
NSR-M Density 27.6  
GSR-J A UltraSo 27.2  
R-O P 26.5  
Software: 6

6 3/4 in. Pow 24.3  
MDC AC-  
MDI 116  
MEC 115  
Software: 6 D&I 20.2

6 3/4 in. G Shallo 14.5  
S/N: 1 Medium 14.4  
Software: 6 Deep 14.2  
Ring R 14.0  
R-O p 13.9  
GR 13.7

Cross Over Sub 12.9

NM Pony 12.3  
S/N: ASS1

NM Pony 9.59  
S/N: ANA9

PowerPak\* Mu 7.89  
A675XP S/N: A  
0.78 deg

0.78 deg



0.78 deg



GeoDiamond  
S75HVPX S/N

MAXIMUM STRING DI

ALL LENGTHS I

0.20

GeoDiamond  
S75HVPX S/N

MAXIMUM STRING DI

ALL LENGTHS I

0.20

## IDEAL Version: ID7\_0C\_02

IDF

RAB  
ADN

IDEAL Version: ID7\_0C\_02  
IDEAL Version: ID7\_0C\_02

MWD\_10

IDEAL Version: ID7\_0C\_02

Format: A-30 GeoVISION Density Neutron

Vertical Scale: 1:500

Graphics File Created: 09-Sep-2002 17:17

## Parameters

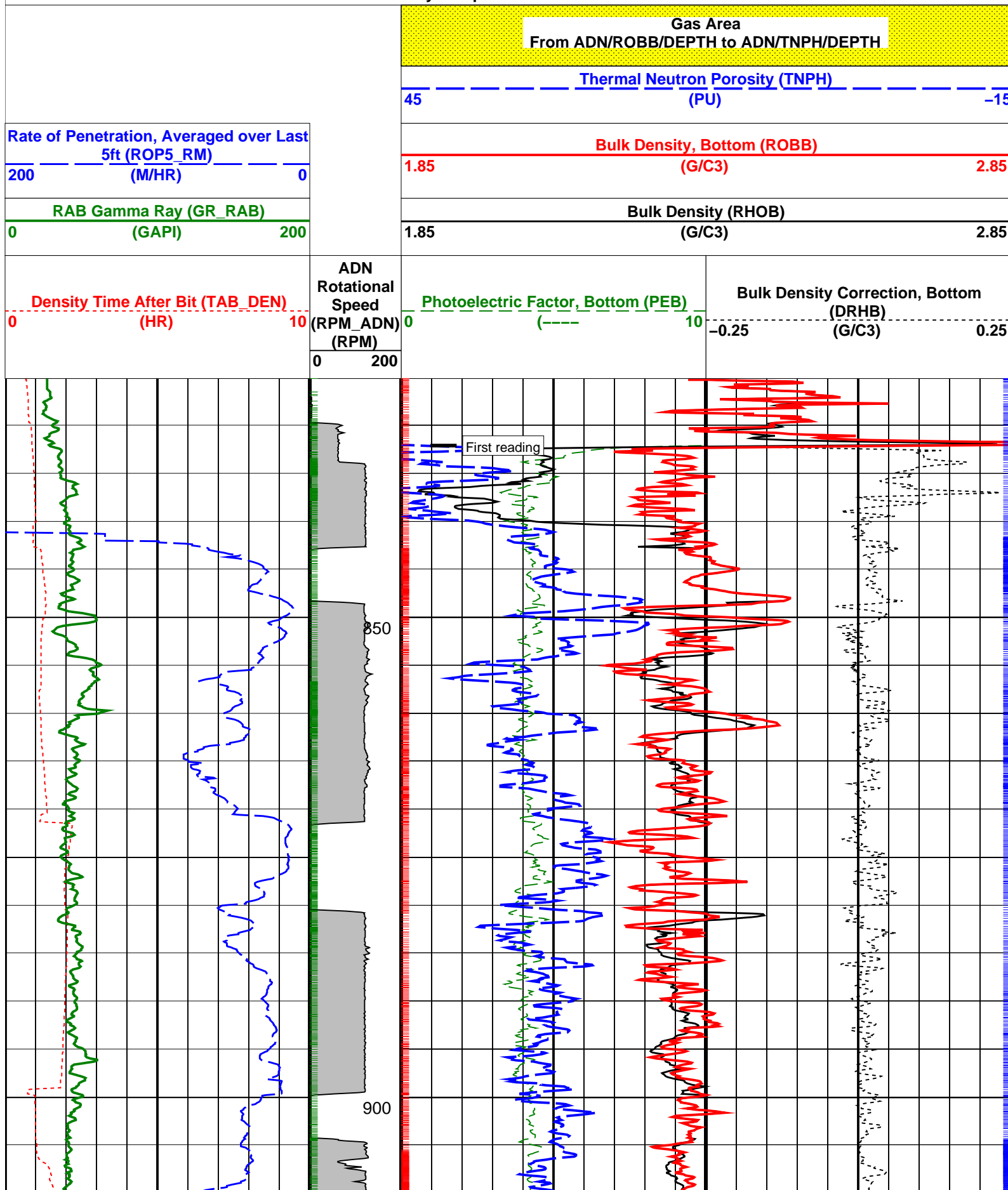
| DLIS Name       | Description  | Value          |
|-----------------|--|----------------|
| ADN_COLLAR_STR  | ADN Collar Type String                                 | ADDC-AA: Slick |
| ADN_STAB_STR    | ADN Stabilizer Type String                             | None           |
| AVE_ADN         | ADN/Array Channels: perform averaging(RM) :            | YES            |
| A_DHS           | ADN Down Hole Software Version String                  | V6.2B          |
| BHA_COEF_VER    | RAB: BHA Coef Generator Version                        | 62012.0        |
| BHT_RM          | Bottom Hole Temperature (RM)                           | 70.000 degC    |
| BSAL_RM         | Mud Salinity (RM)                                      | 66.000 ppk     |
| BS_RM           | Bit Size (RM)  | 8.500 in       |
| DEVI            | Well Section Deviation                                 | 58.900 deg     |
| DHS_VERSION     | RAB: DownHole Software Version                         | 6.101          |
| DO              | Depth Offset   | 0.0 m          |
| ENVCOR          | Neutron Quadrant Processing: Environmental Correction? | YES            |
| GRDC            | Grid corr angle  | -0.880 deg     |
| LITHO_TYPE_ADN  | Lithology (RM)   | LIME           |
| MST_RM          | Mud Sample temperature (RM)                            | 20.500 degC    |
| MW_RM           | Mud Weight (RM)  | 10.100 lbm/gal |
| OBM             | RAB: Oil base Mud                                      | NO             |
| OBMF_RM         | Oil Based Mud  | NO             |
| RAB_TEMP_SELECT | RAB Temperature Selection                              | MEAS           |
| READOUT_PORT_MP | RAB: ROP to Bit Face Distance                          | 13.940 m       |
| RHOF_RM         | Mud Filtrate Density (RM)                              | 1.000 g/cm3    |
| RHOM_RM         | Matrix density (RM)                                    | 2.710 g/cm3    |
| RMS_RM          | Resistivity of Mud Sample (RM)                         | 0.148 ohm.m    |
| RWS_RM          | Resistivity of Connate Water (RM)                      | 1.000 ohm.m    |
| SHT_RM          | Surface Hole Temperature (RM)                          | 18.000 degC    |
| SSIZ_ADN        | ADN Stabilizer Size                                    | 8.250 in       |
| STAB            | RAB: Run with Stabilizer                               | YES            |
| TD_RM           | Total Measured Depth (RM)                              | 2862.0 m       |
| TOOLTYPE        | RAB: Azimuthal Tool                                    | YES            |
| TRPM_RM         | Average Tool Rotational Speed                          | 20.000 c/min   |
| TSIZ_ADN        | ADN Tool Size  | 6.750 in       |
| TS_VERSION      | RAB: ToolScope Software Version                        | 6.101          |
| TWS_RM          | Temperature of Connate Water (RM)                      | 23.889 degC    |
| VERS_ADN        | ADN Downhole Software Version                          | 6.200          |
| VRAB6           | Rab Tool type (ENP/PILOT)                              | RAB6_C_SERIES  |

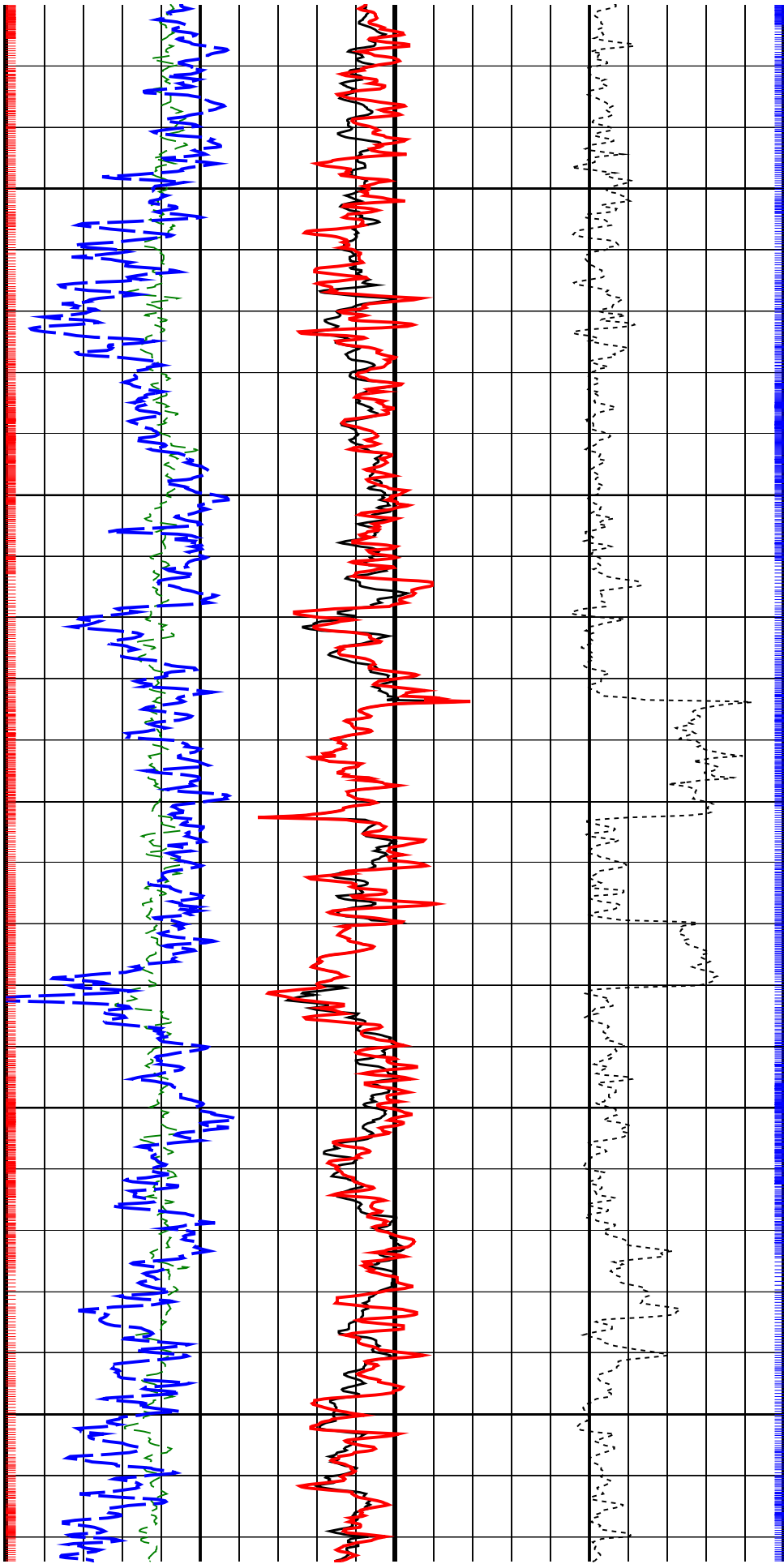
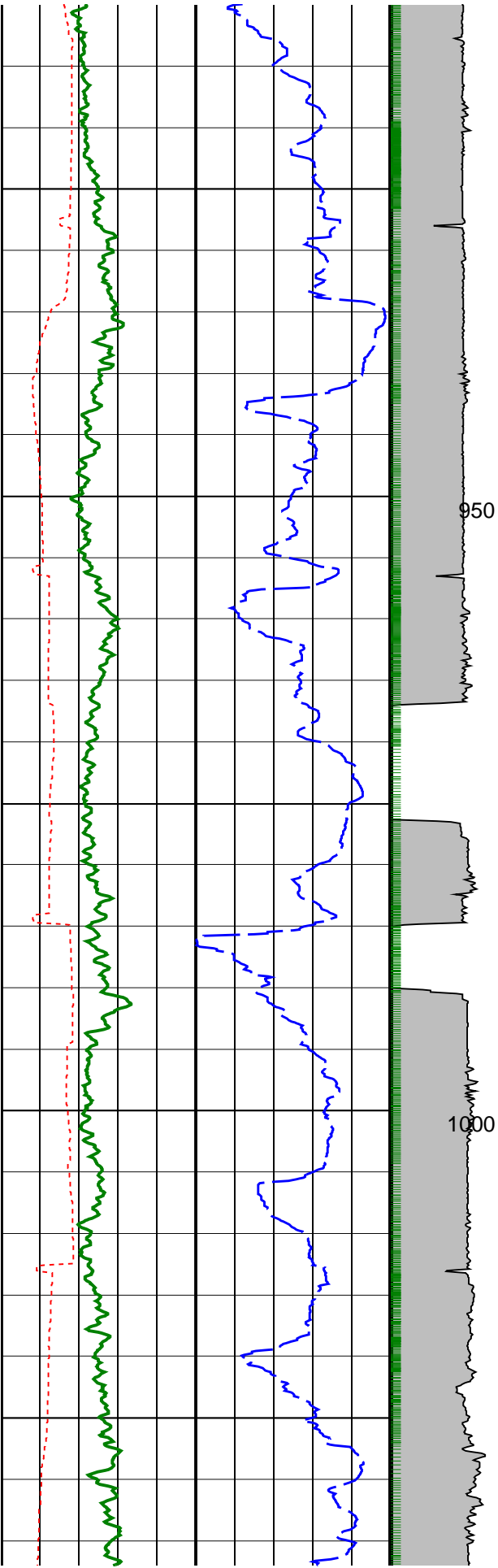
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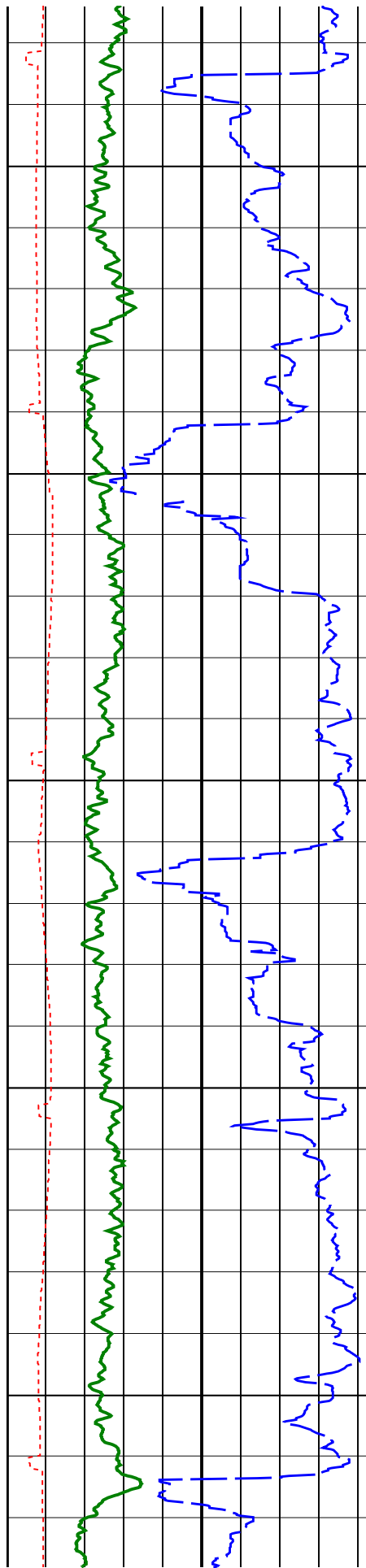
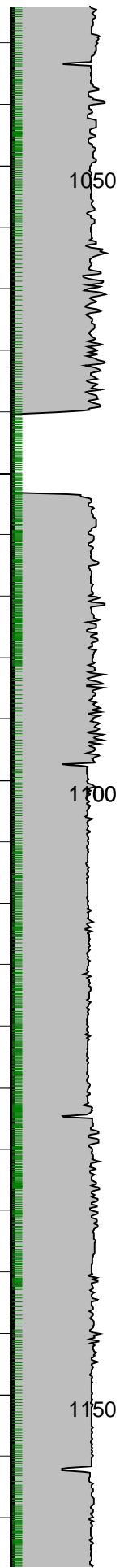
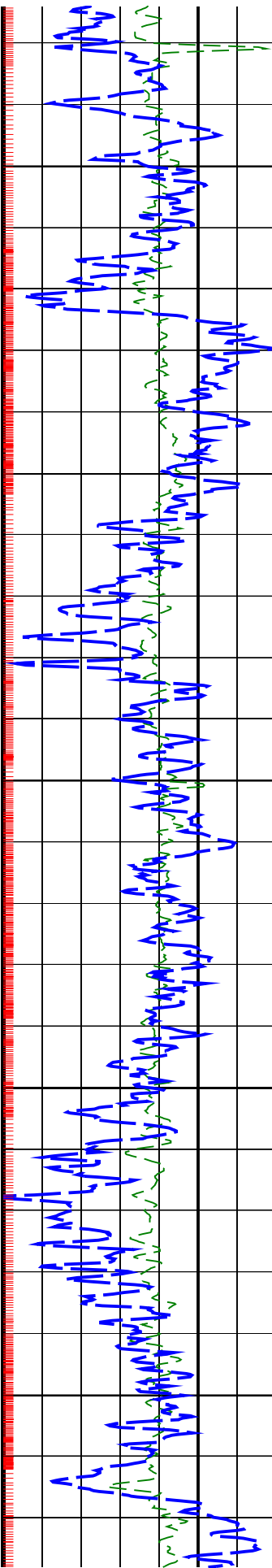
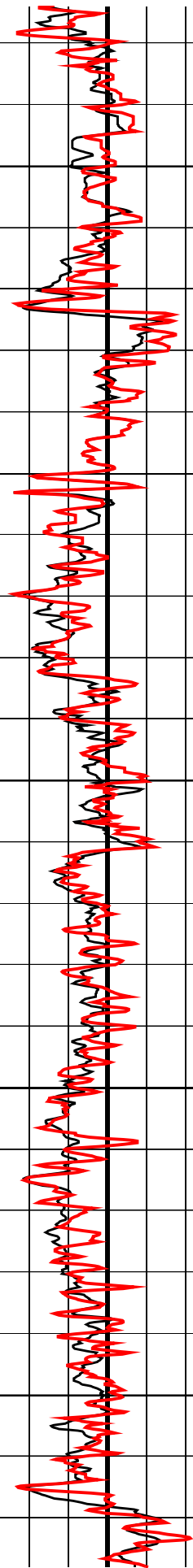
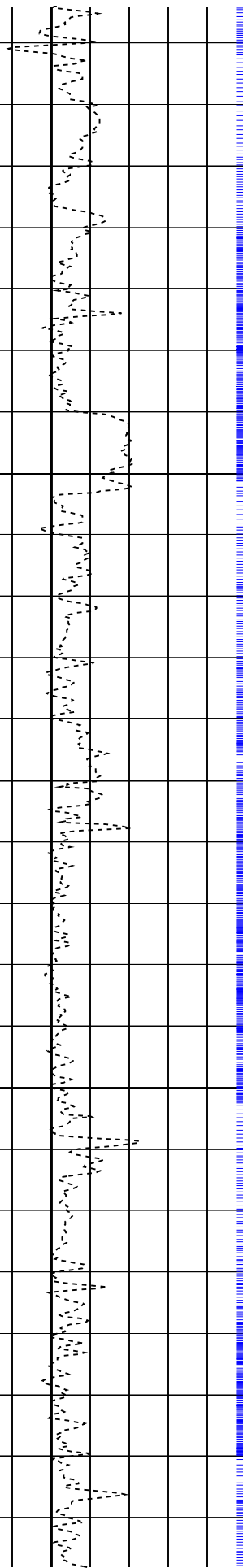
└ Density Ticks, 0.1 ft

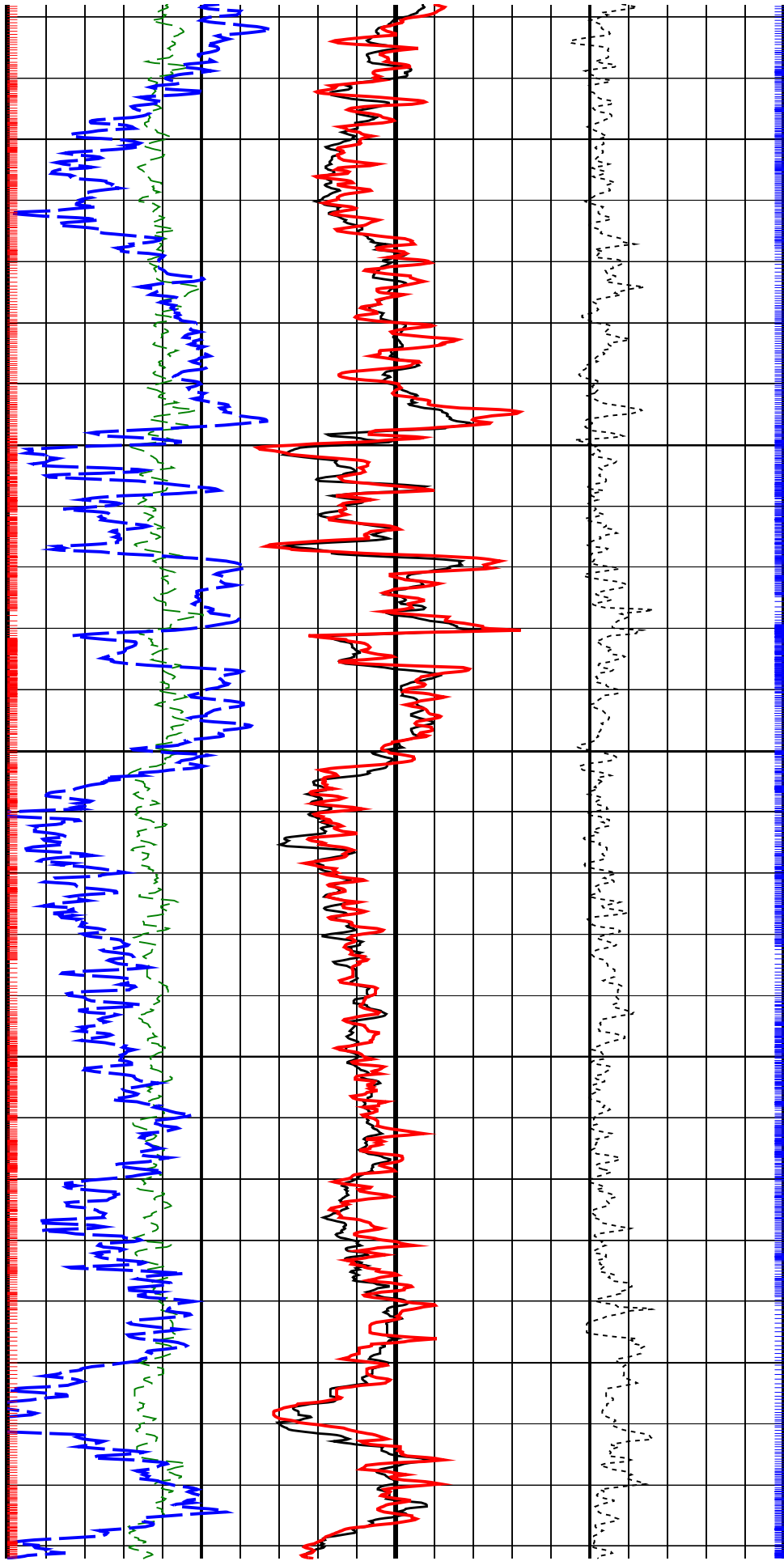
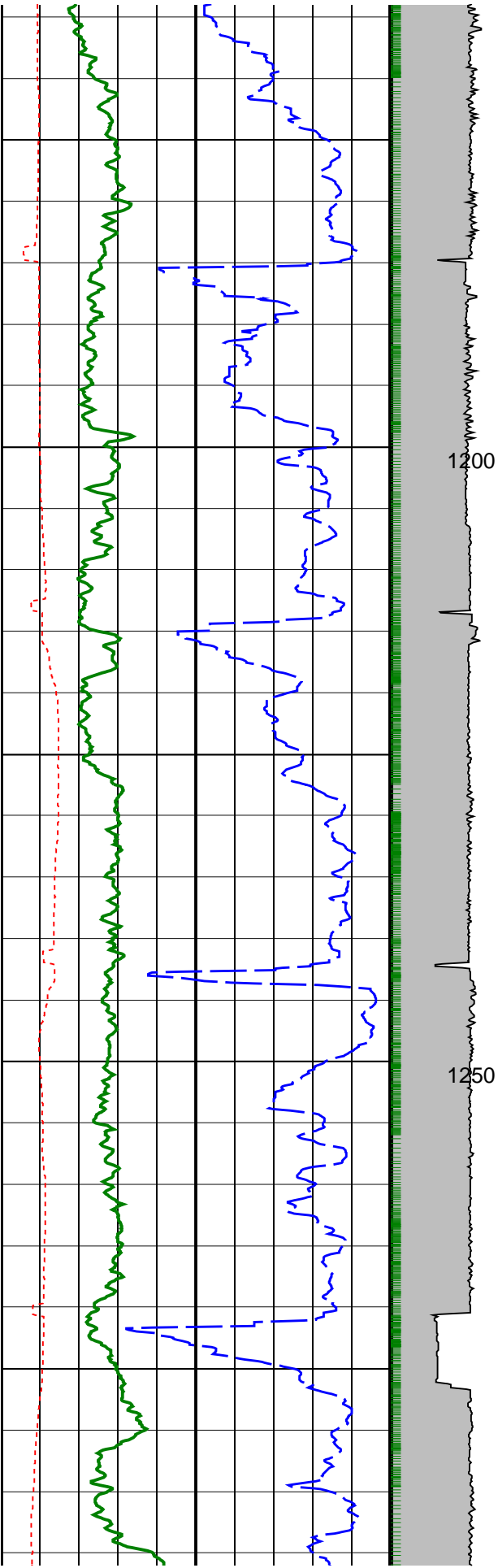
Neutron Ticks, 0.1 ft

## Gamma Ray Samples

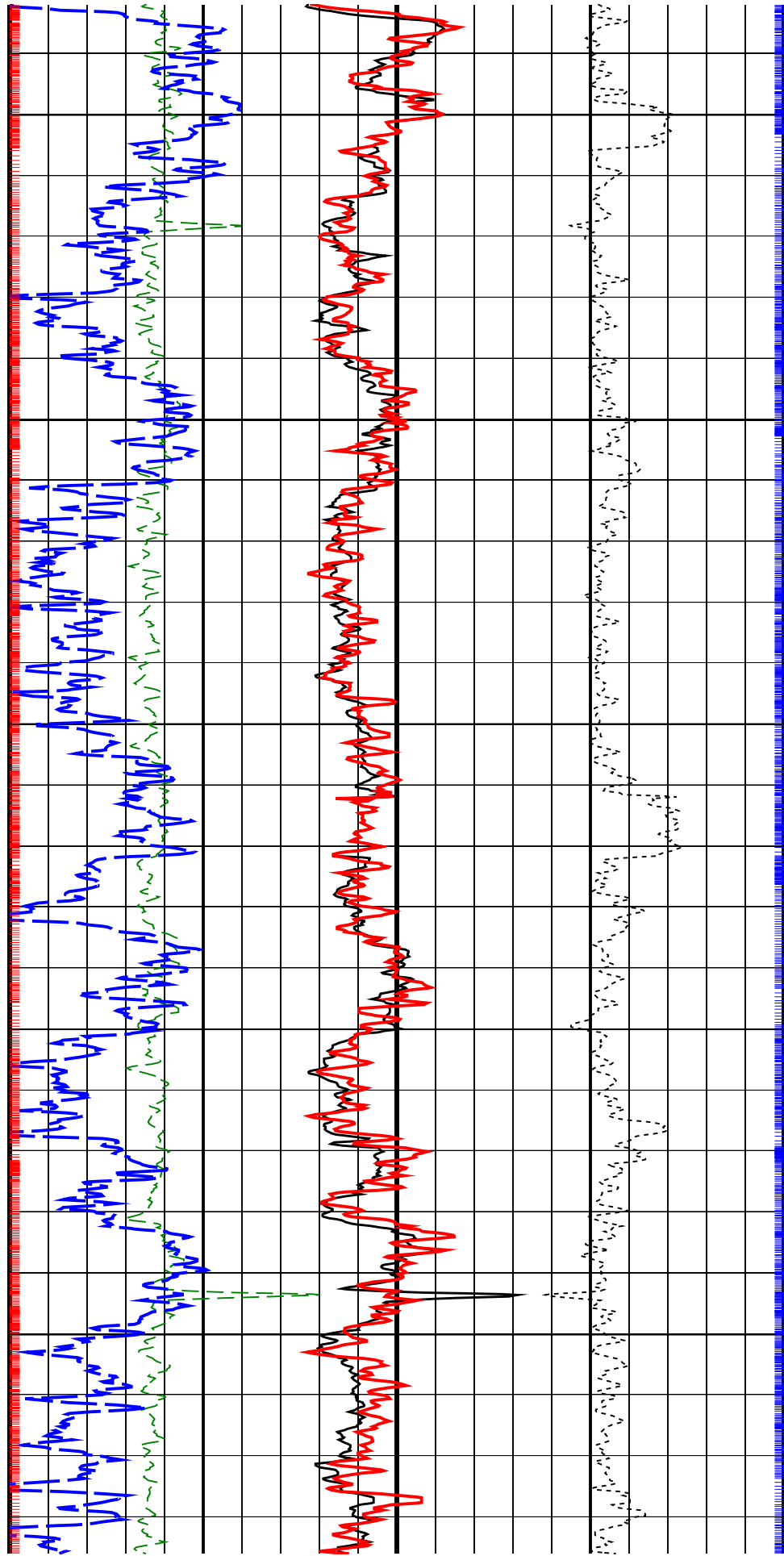
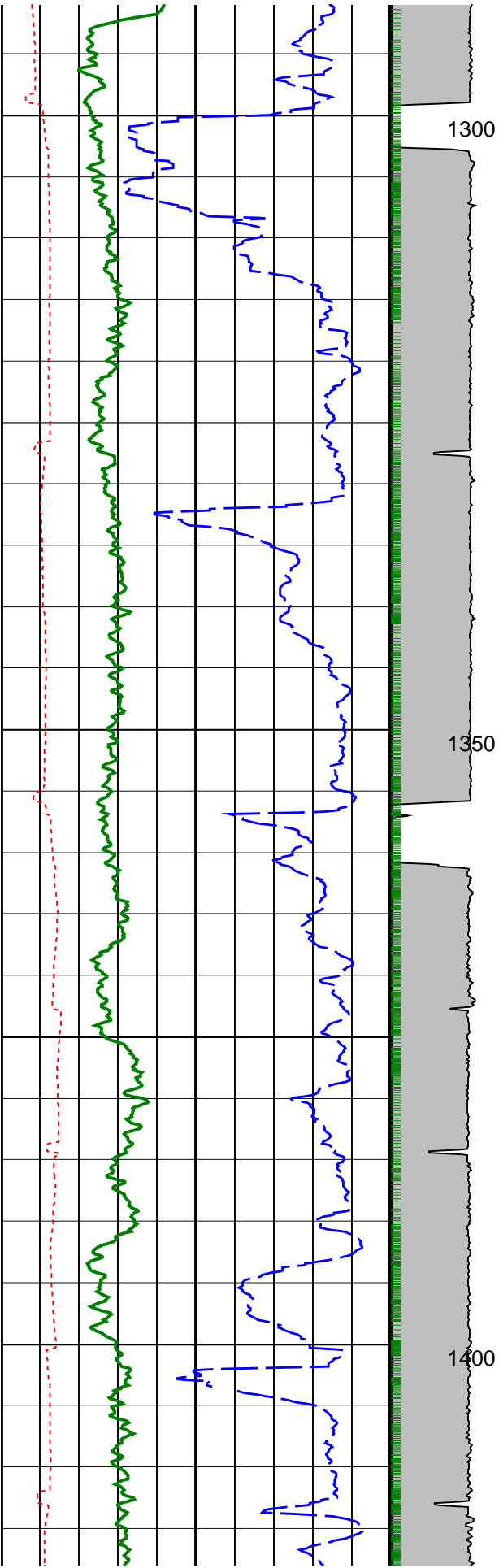


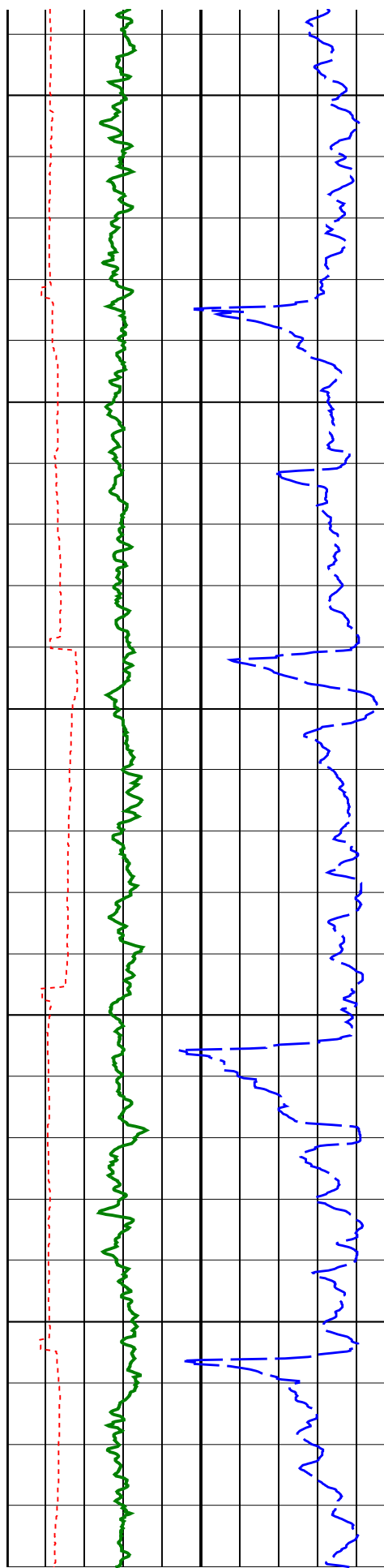
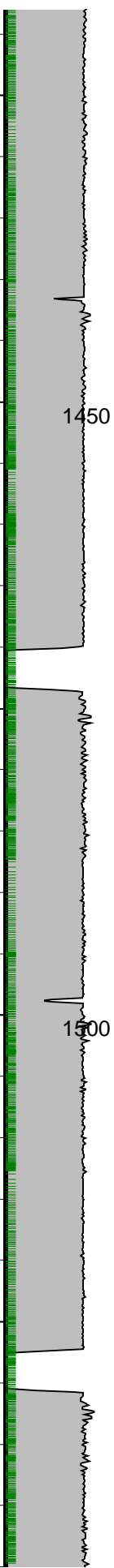
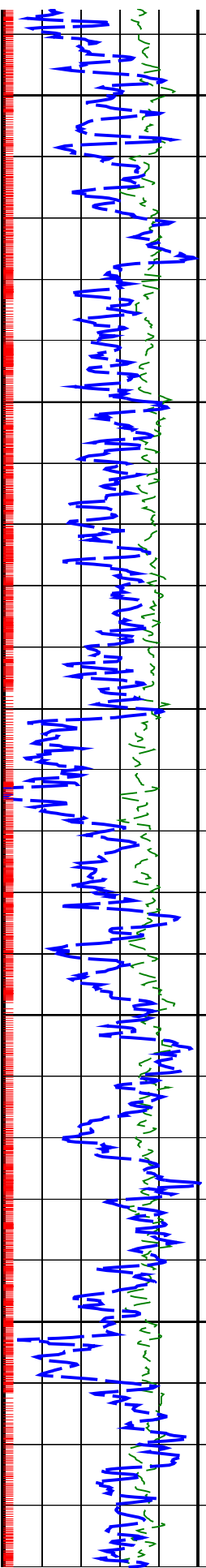
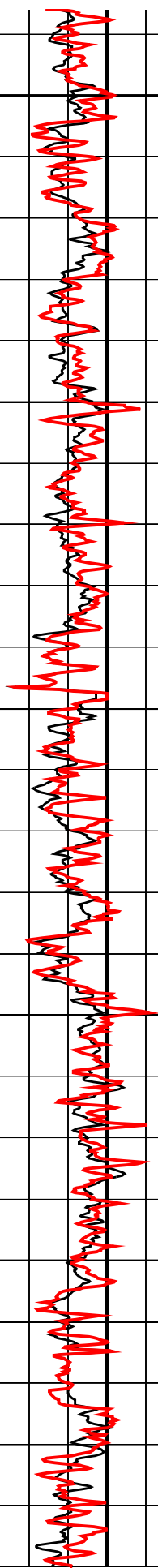
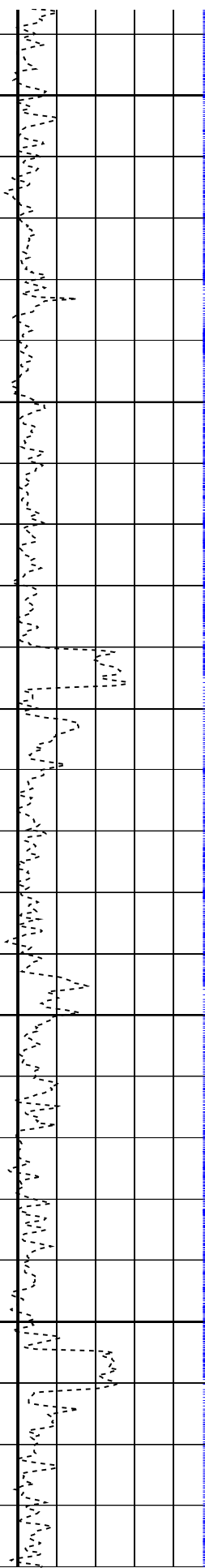


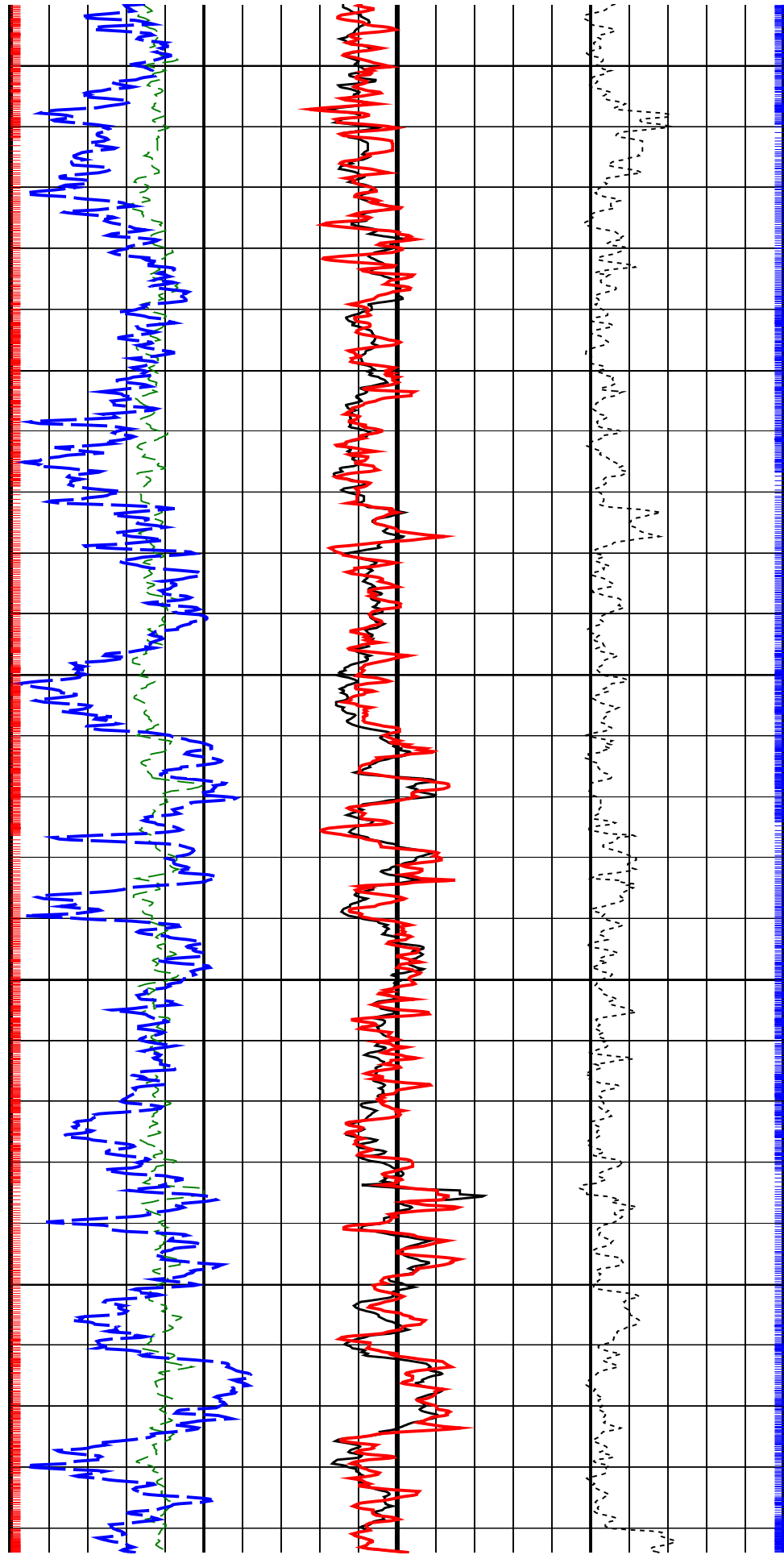
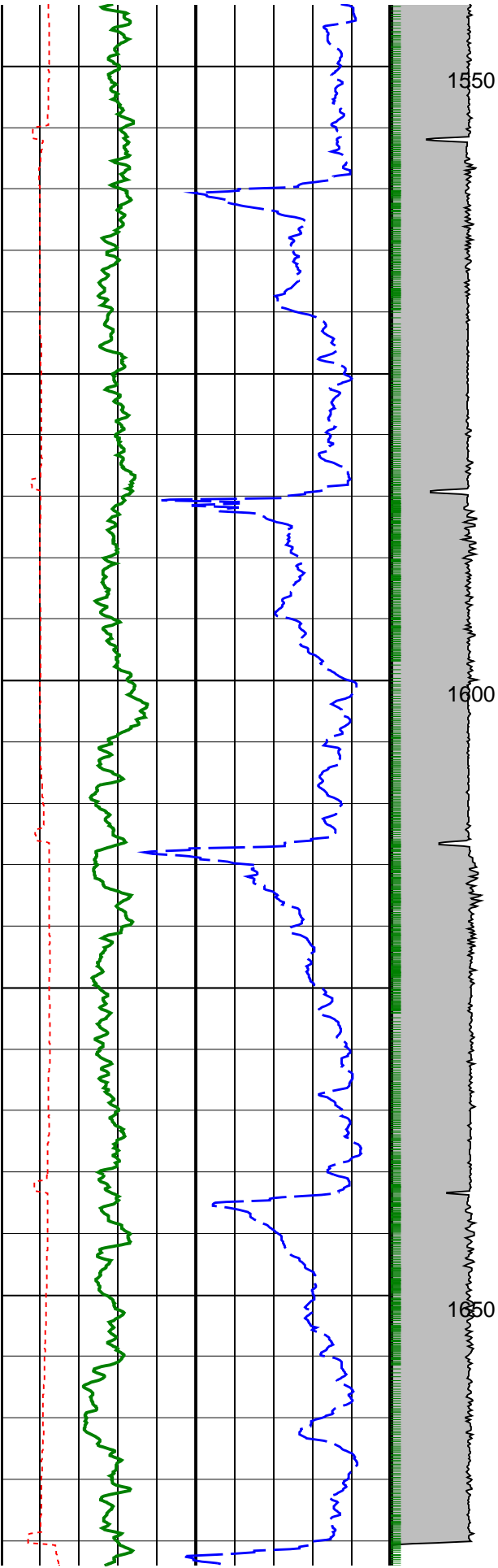


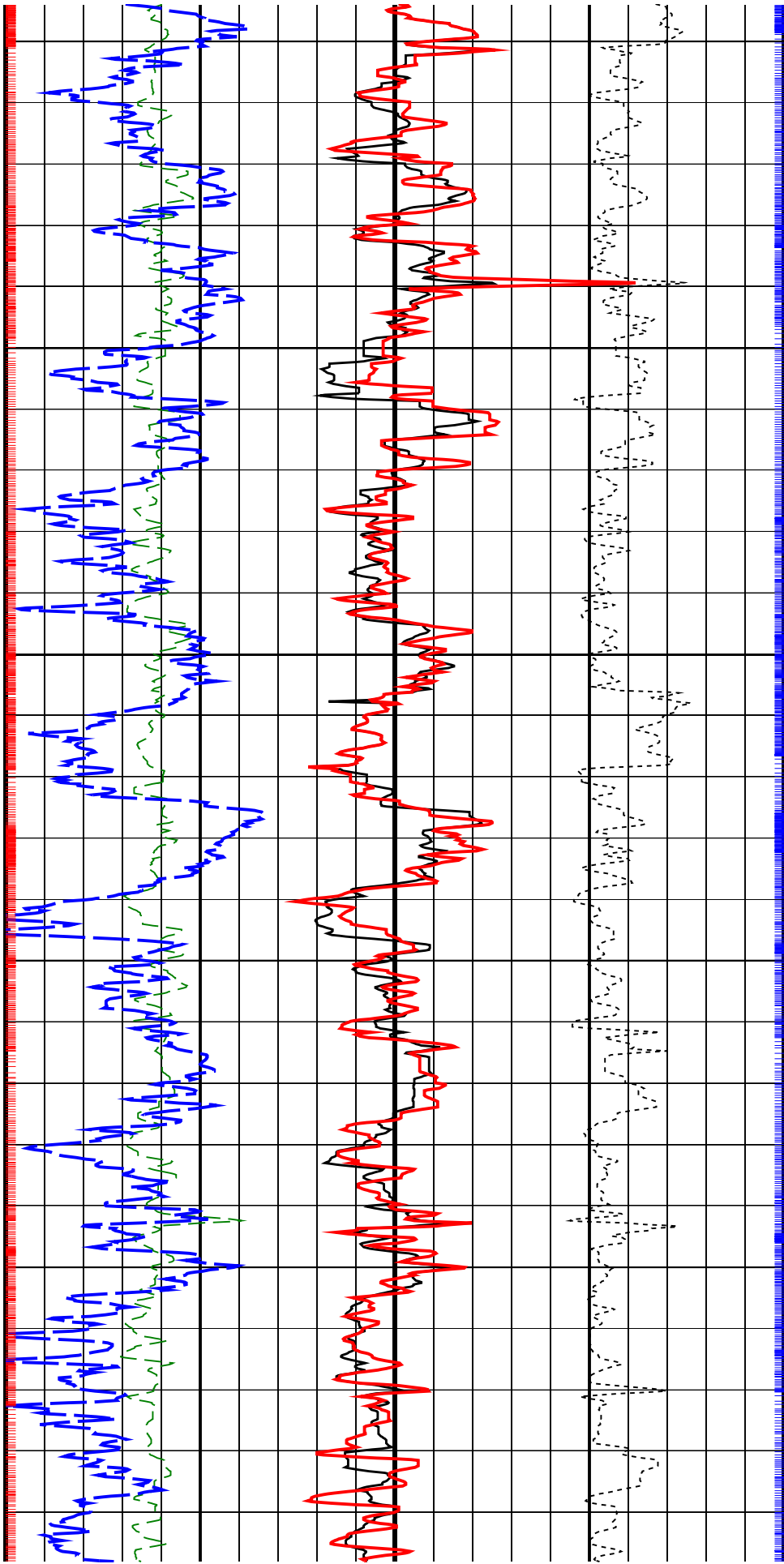
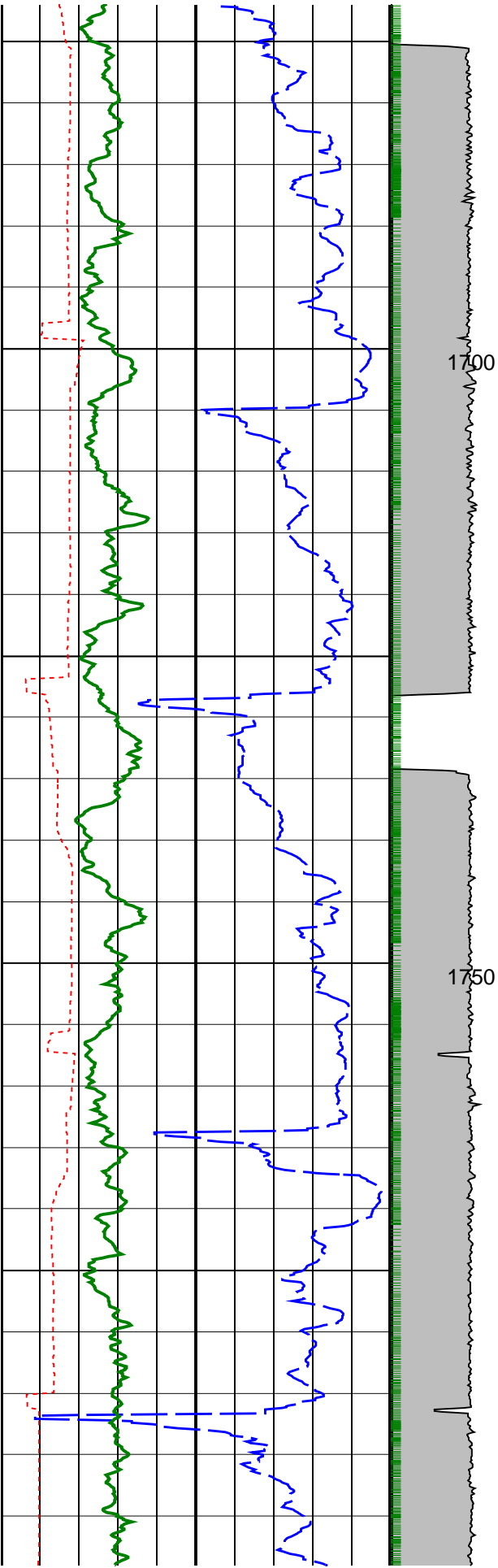


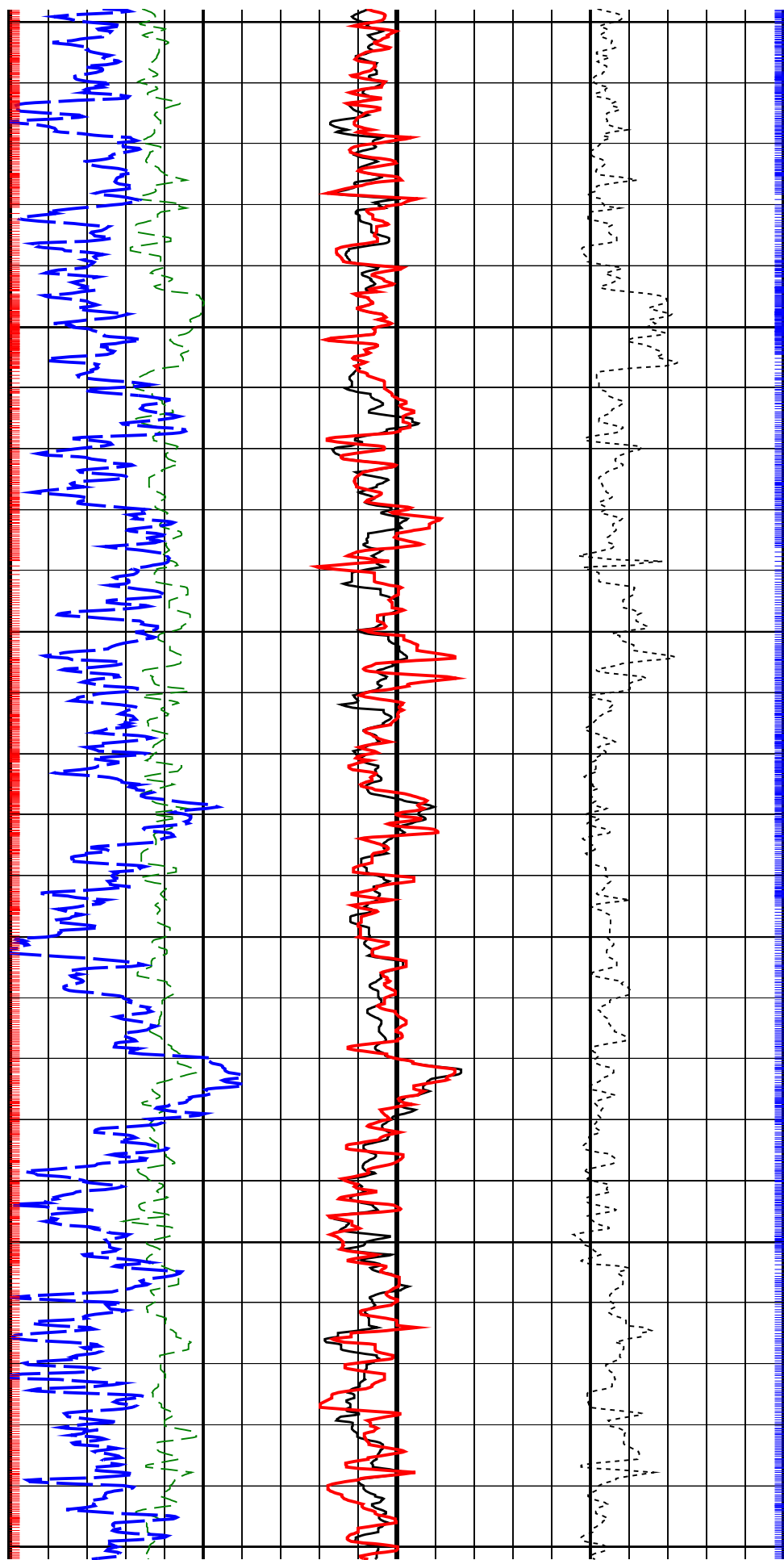
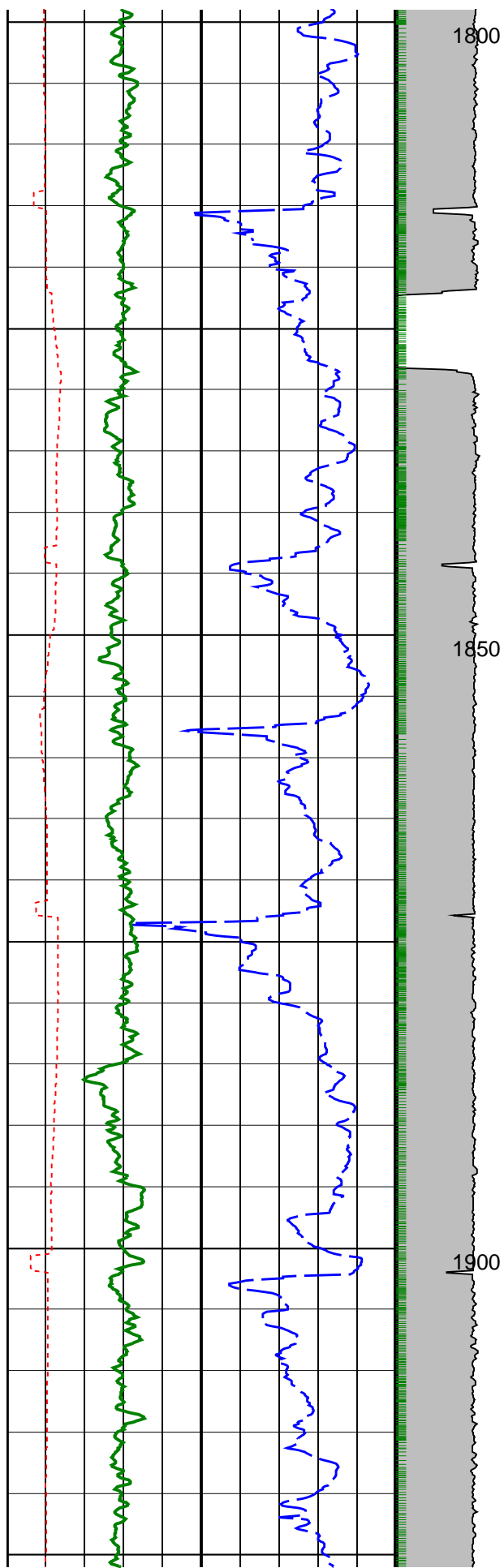


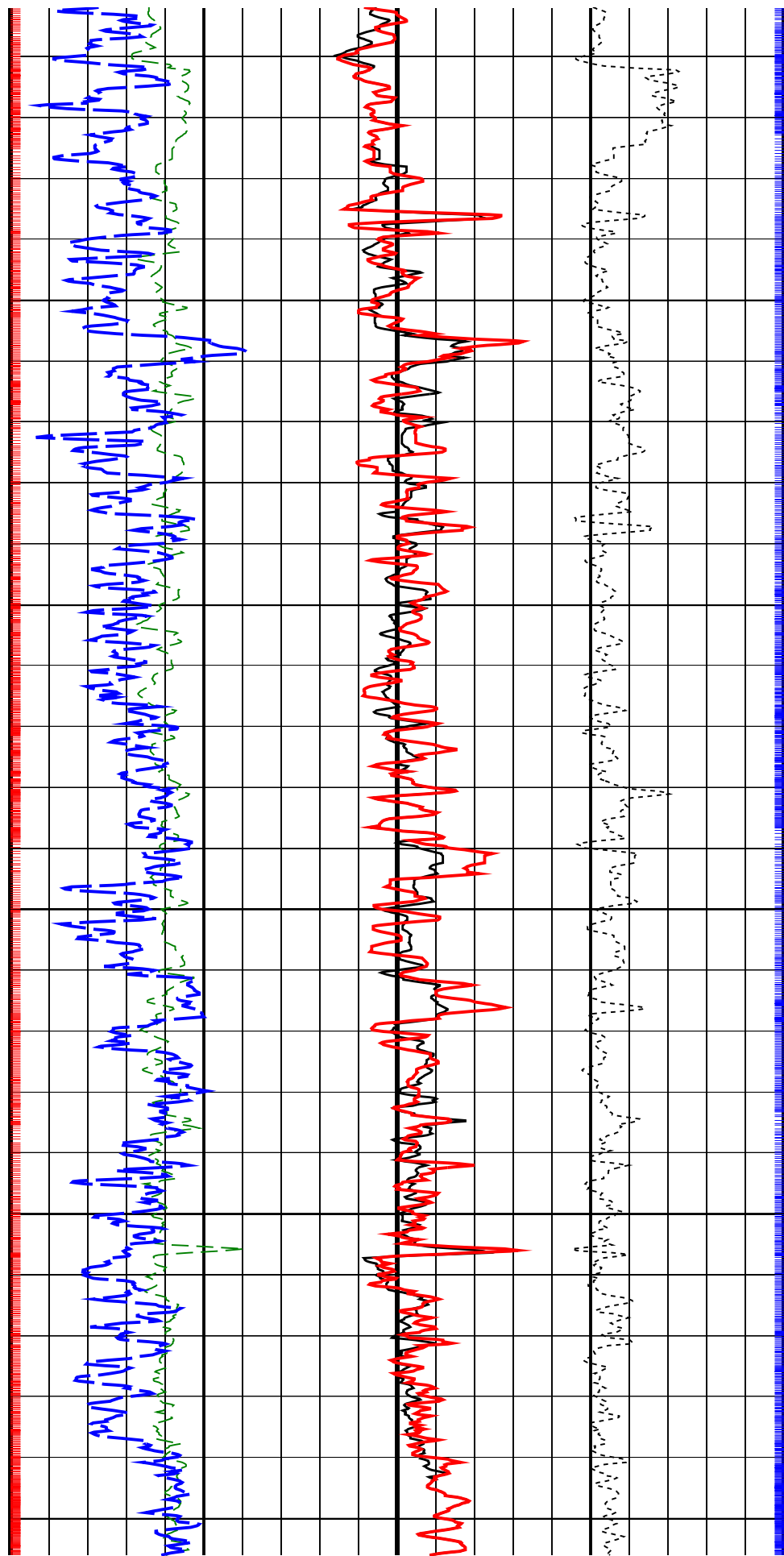
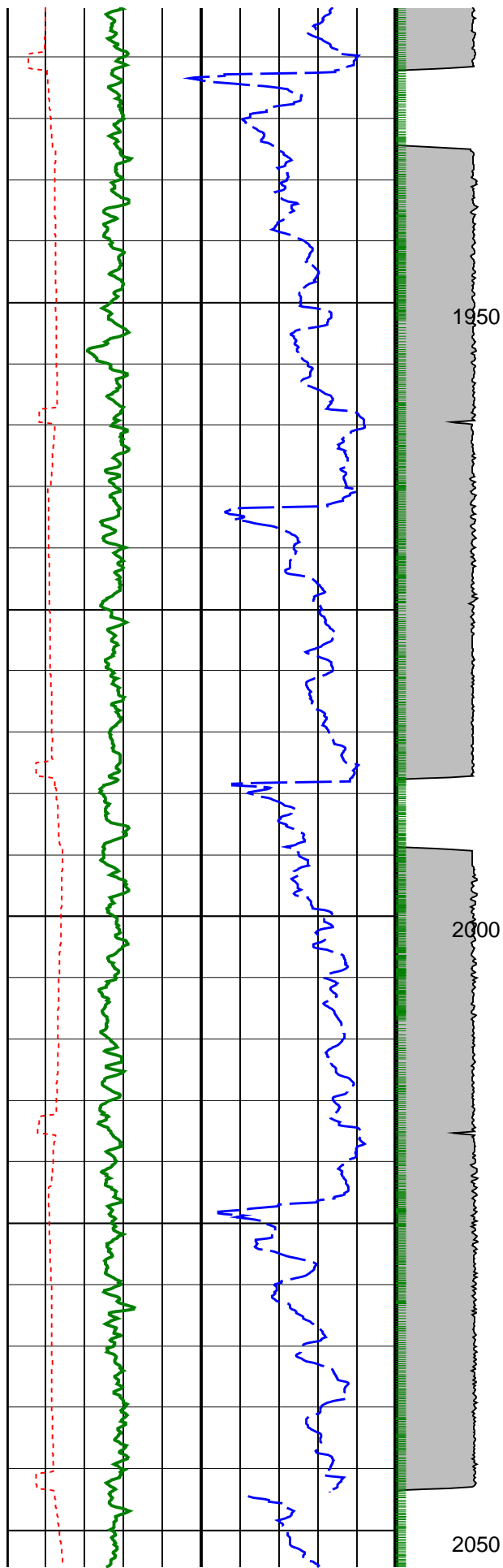


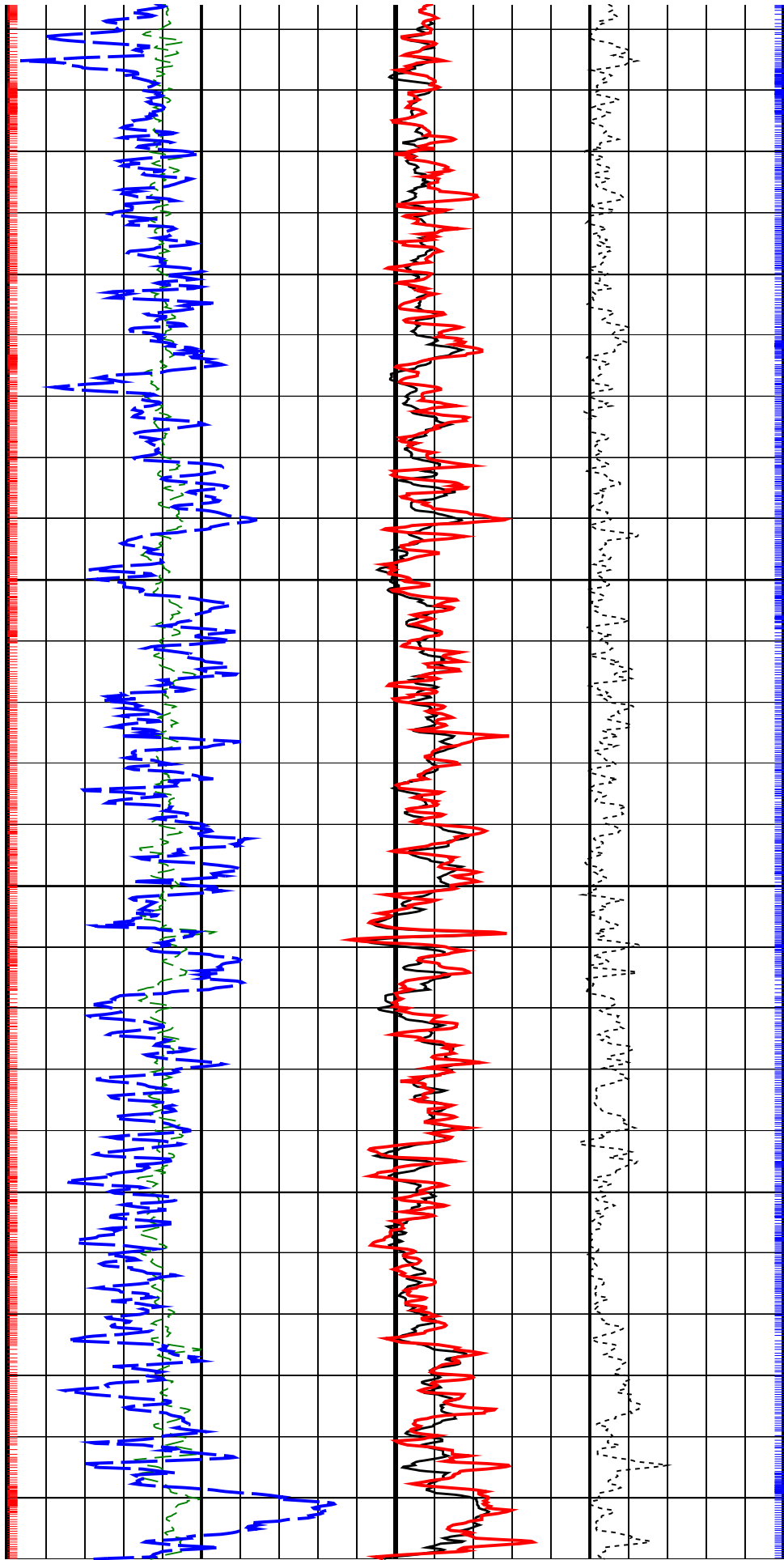
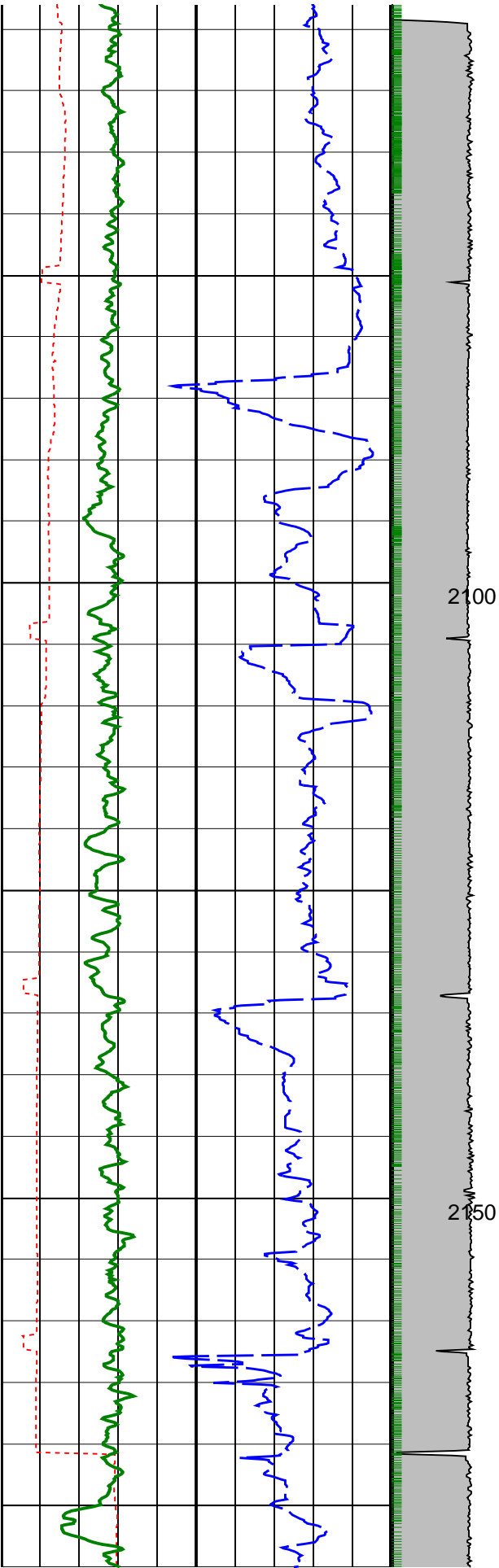


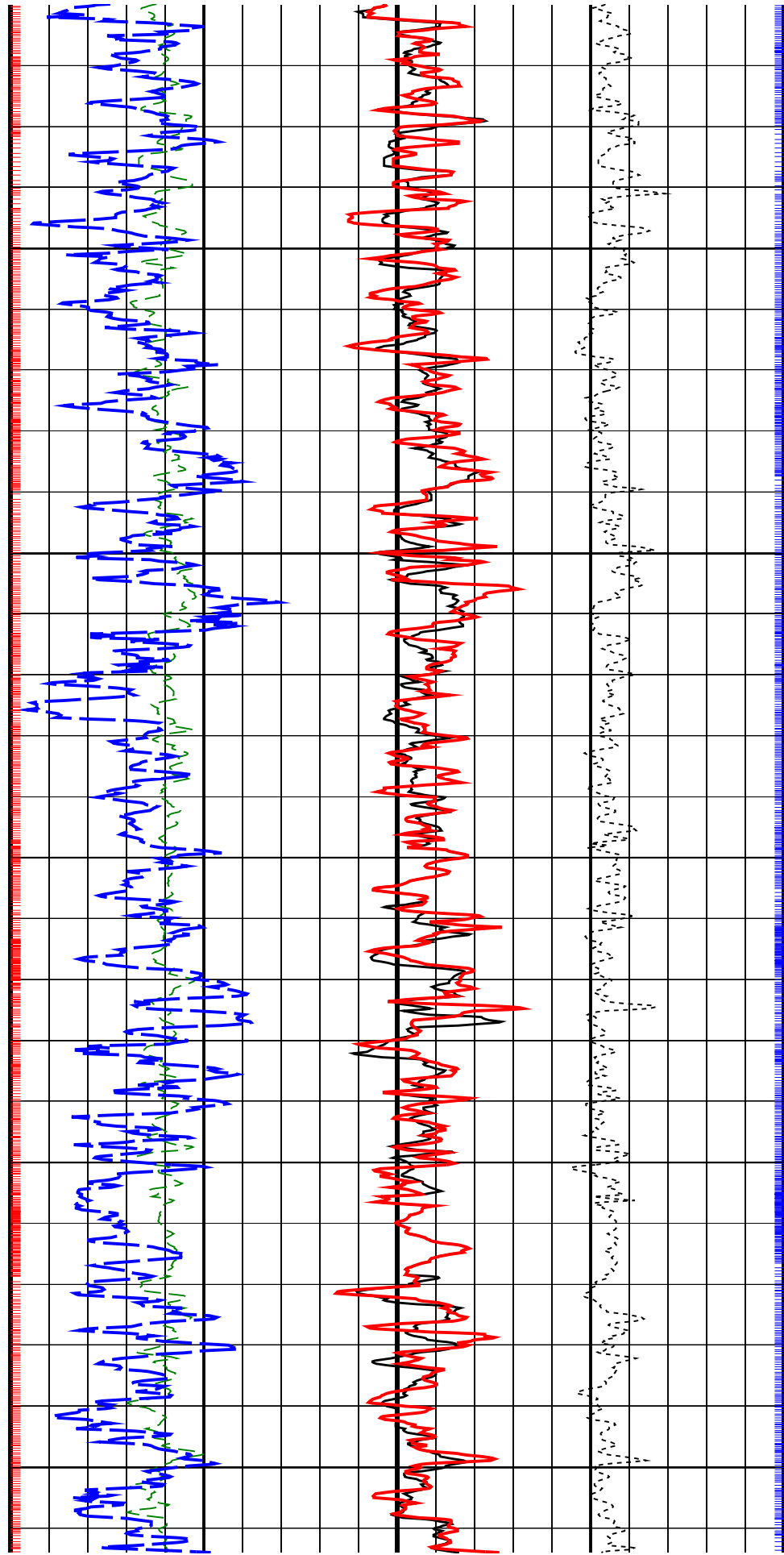
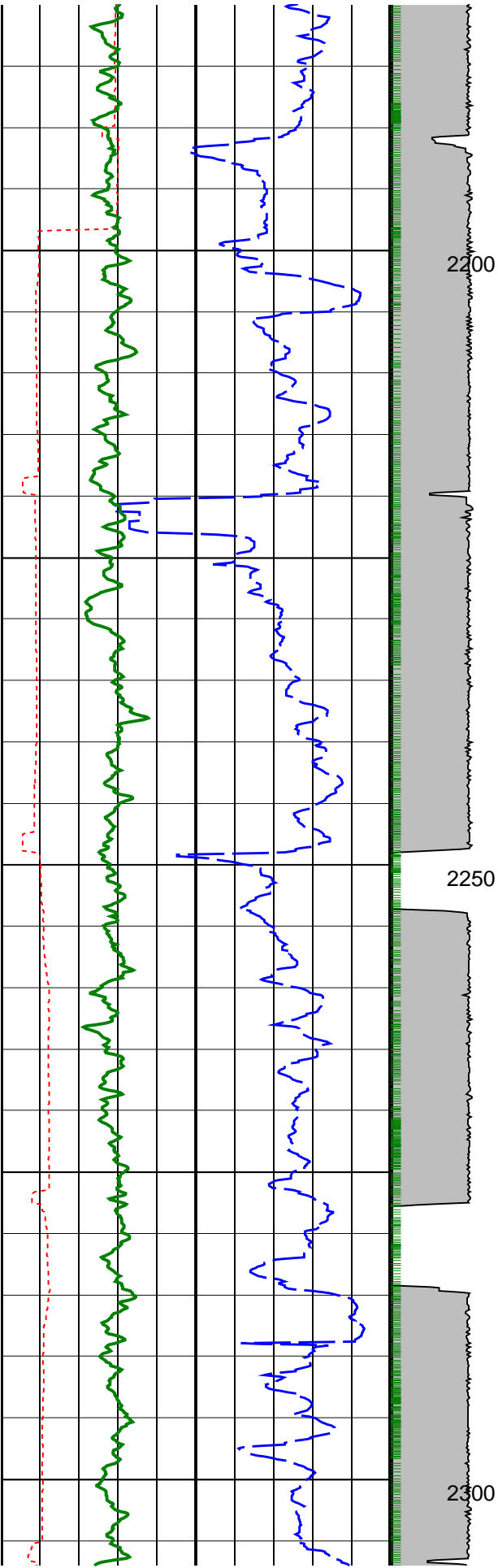




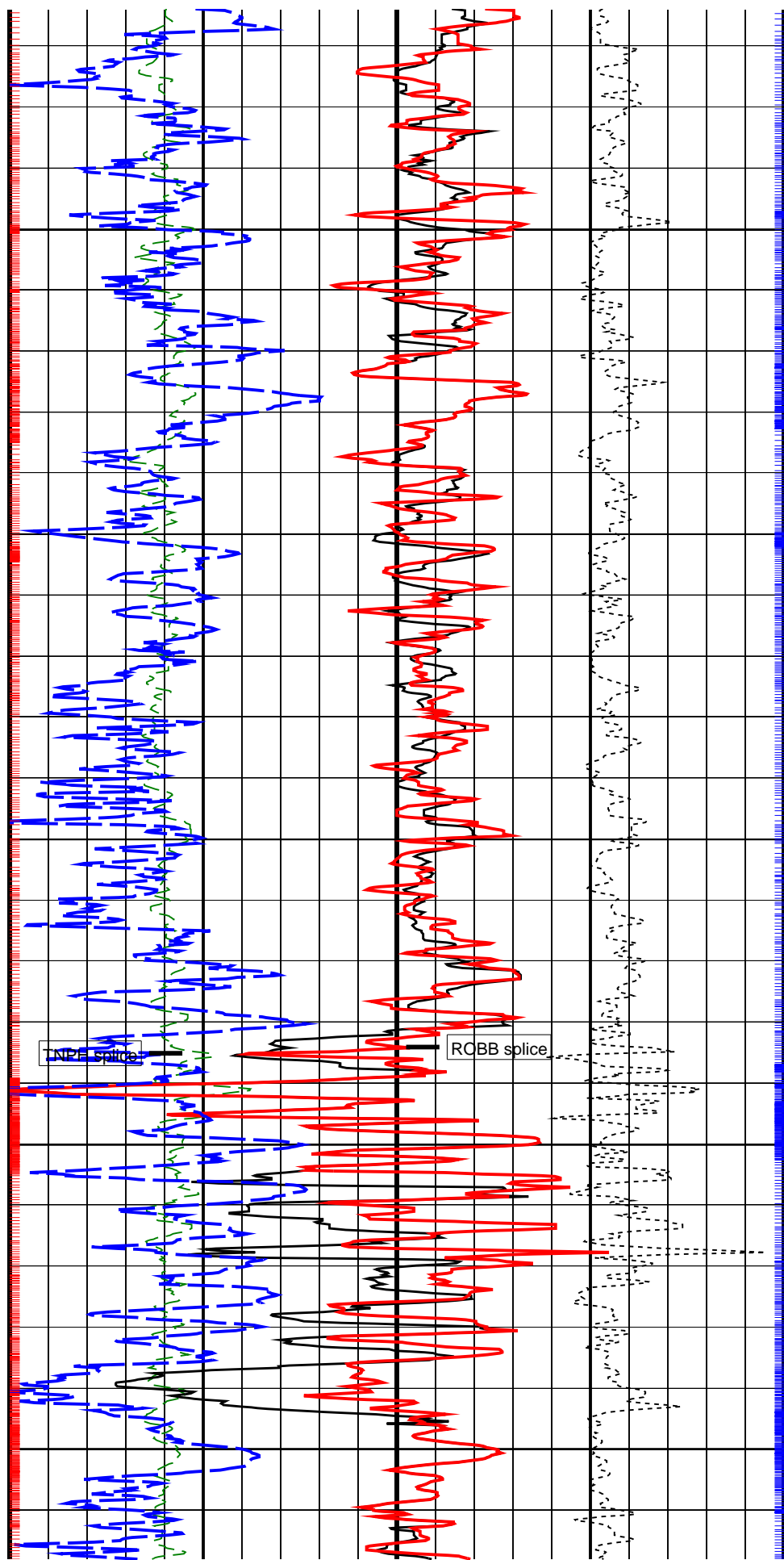
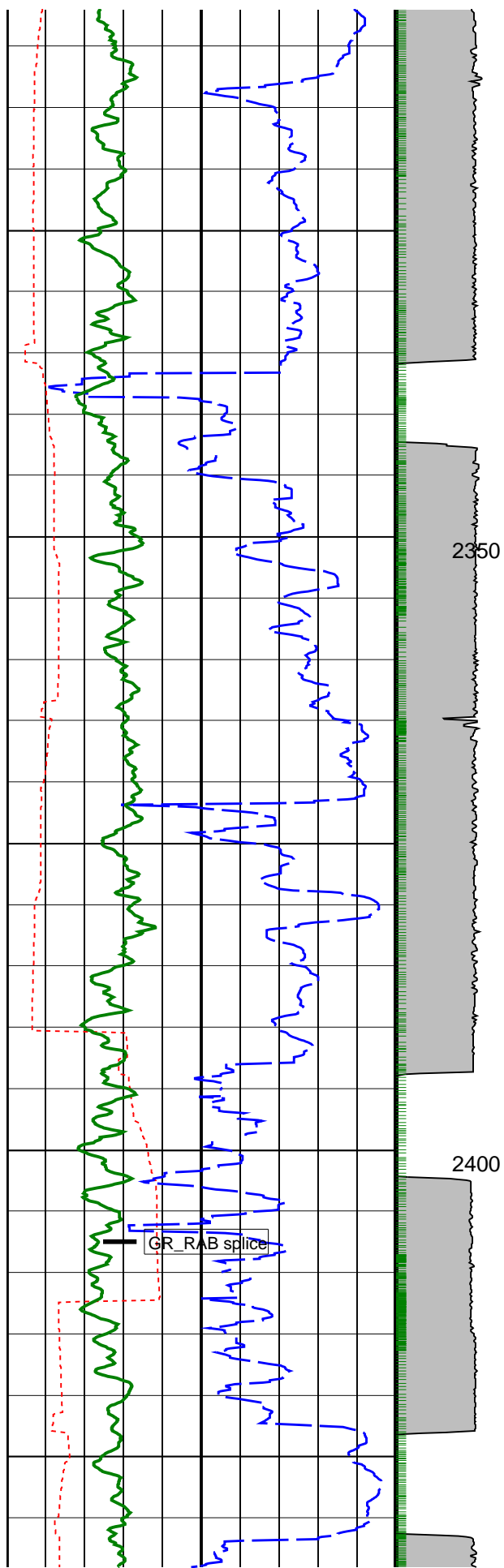


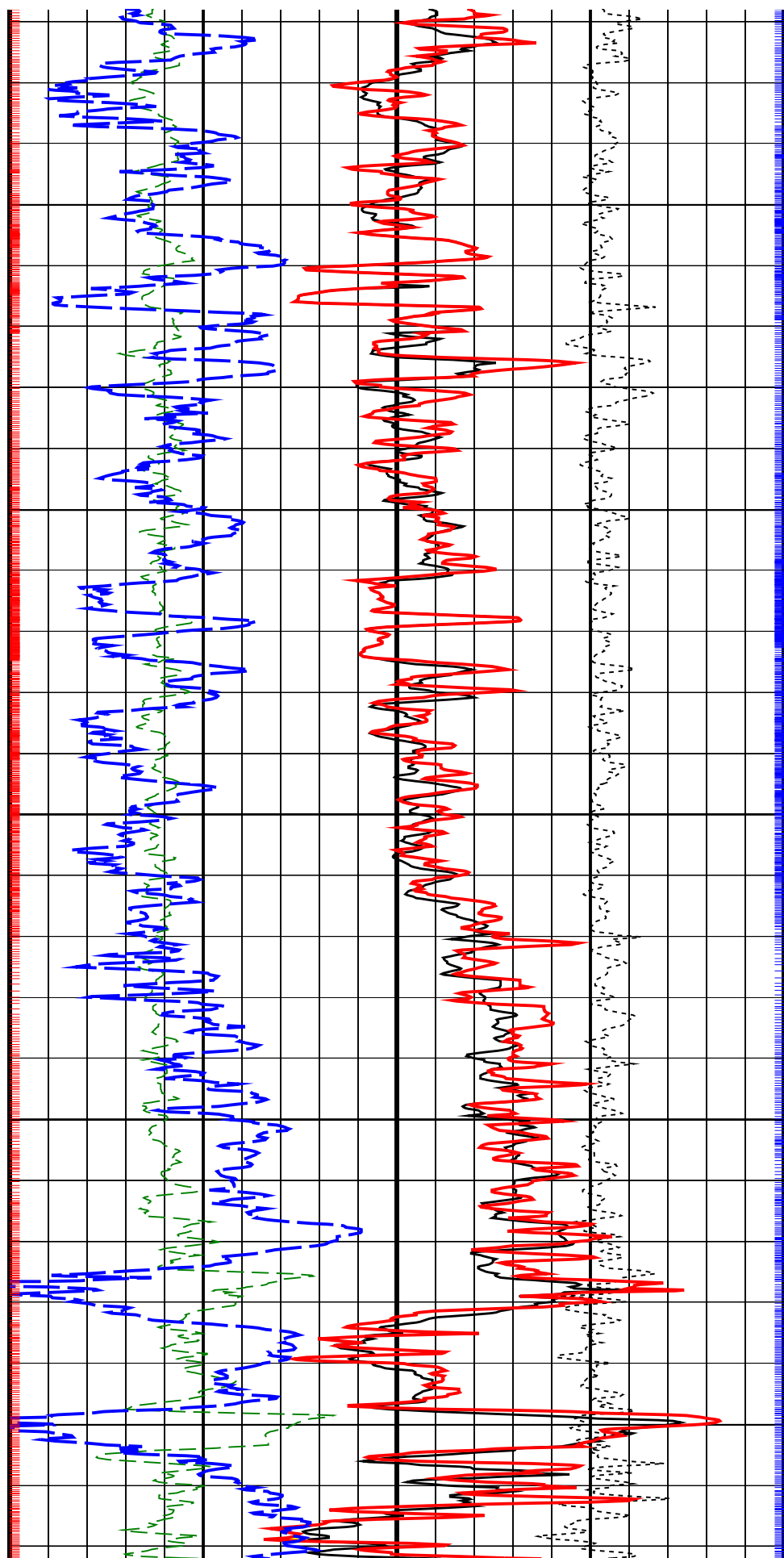
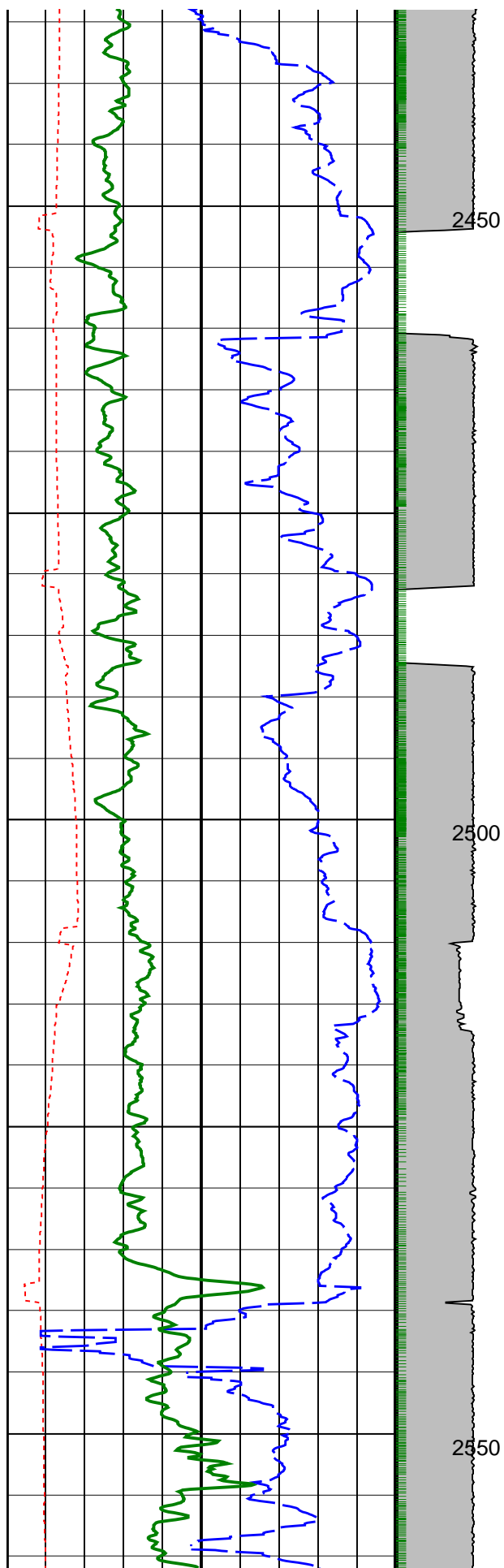


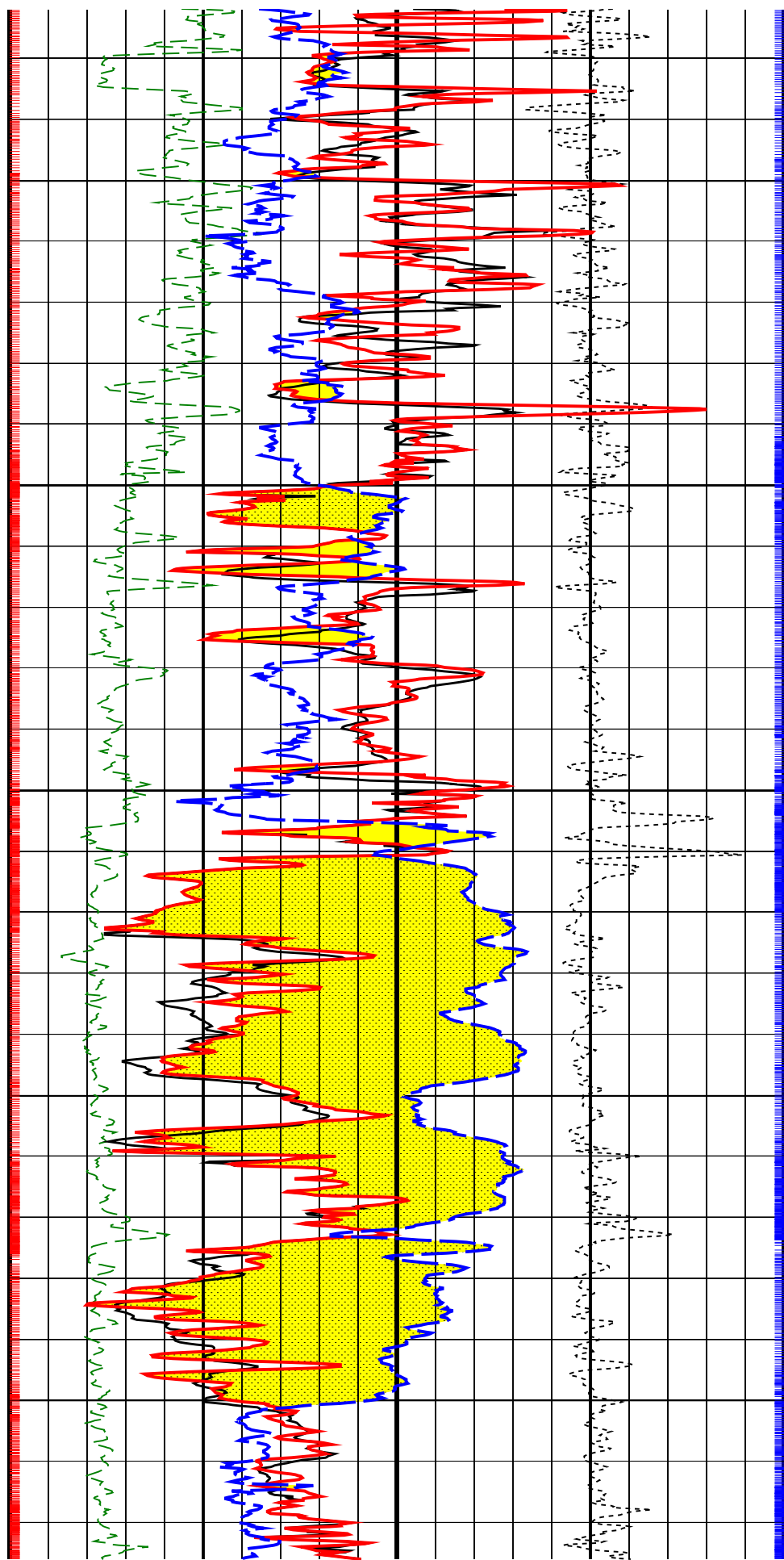
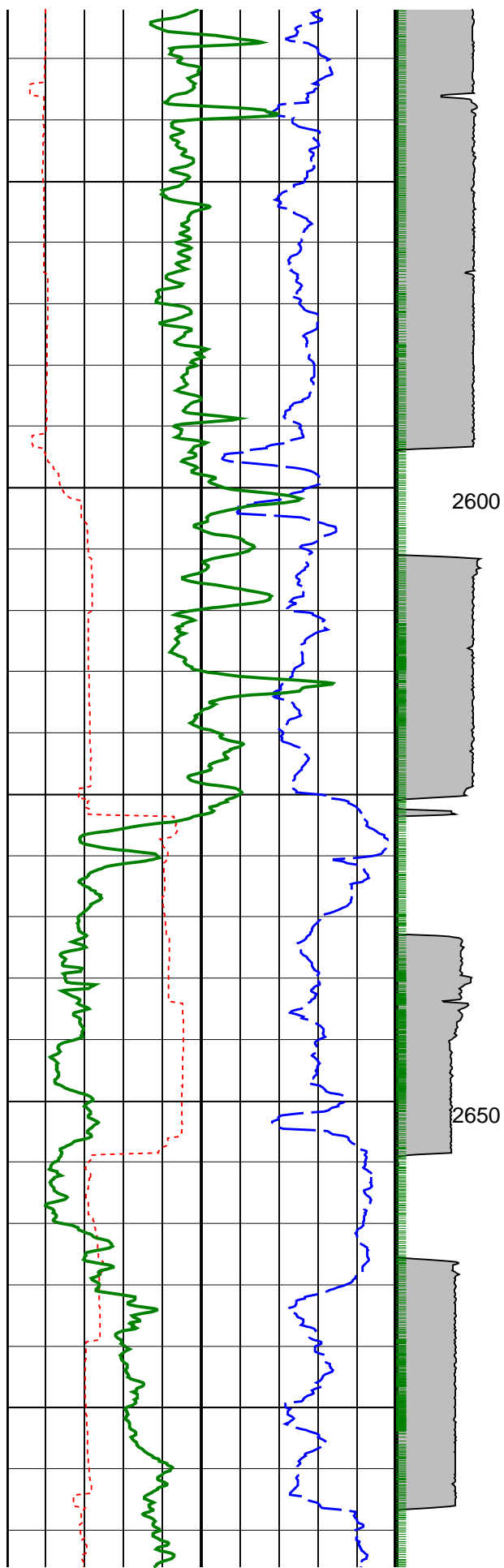


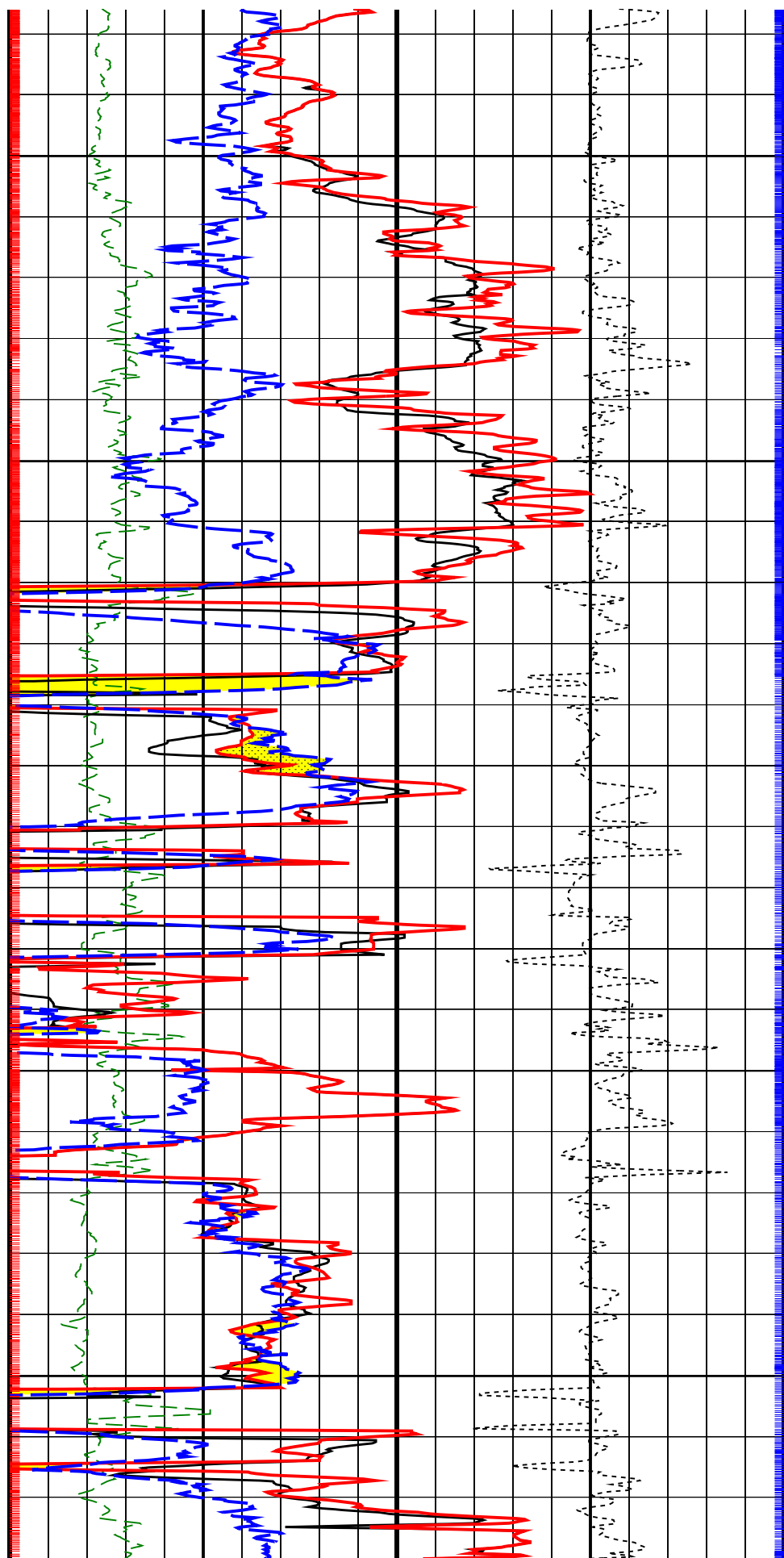
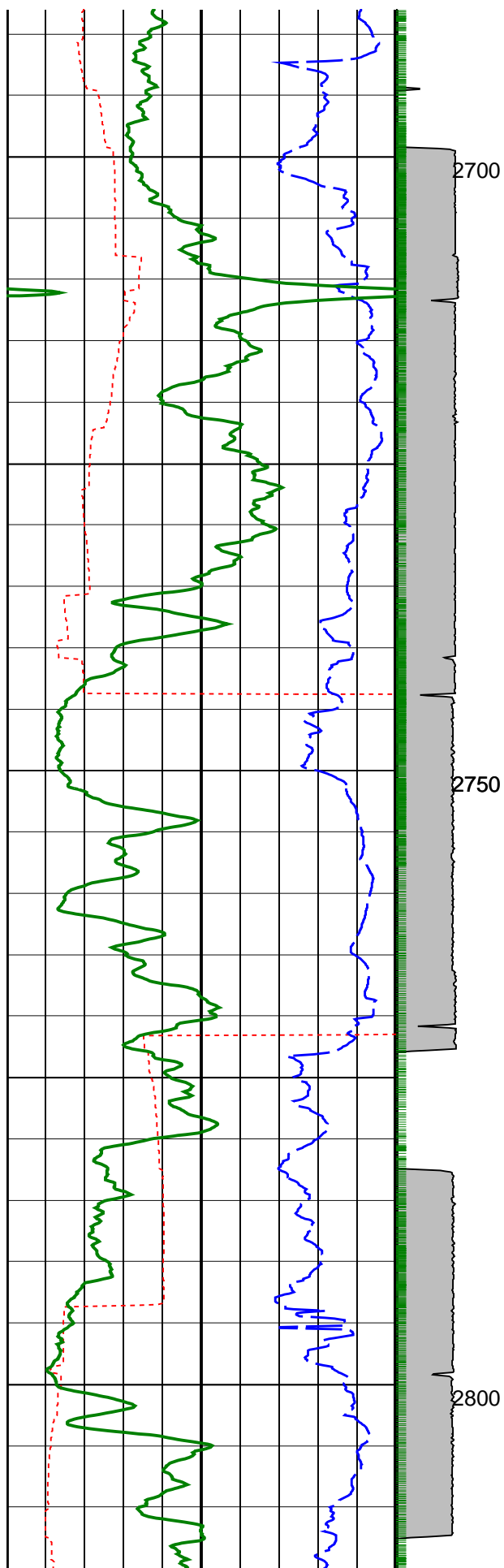


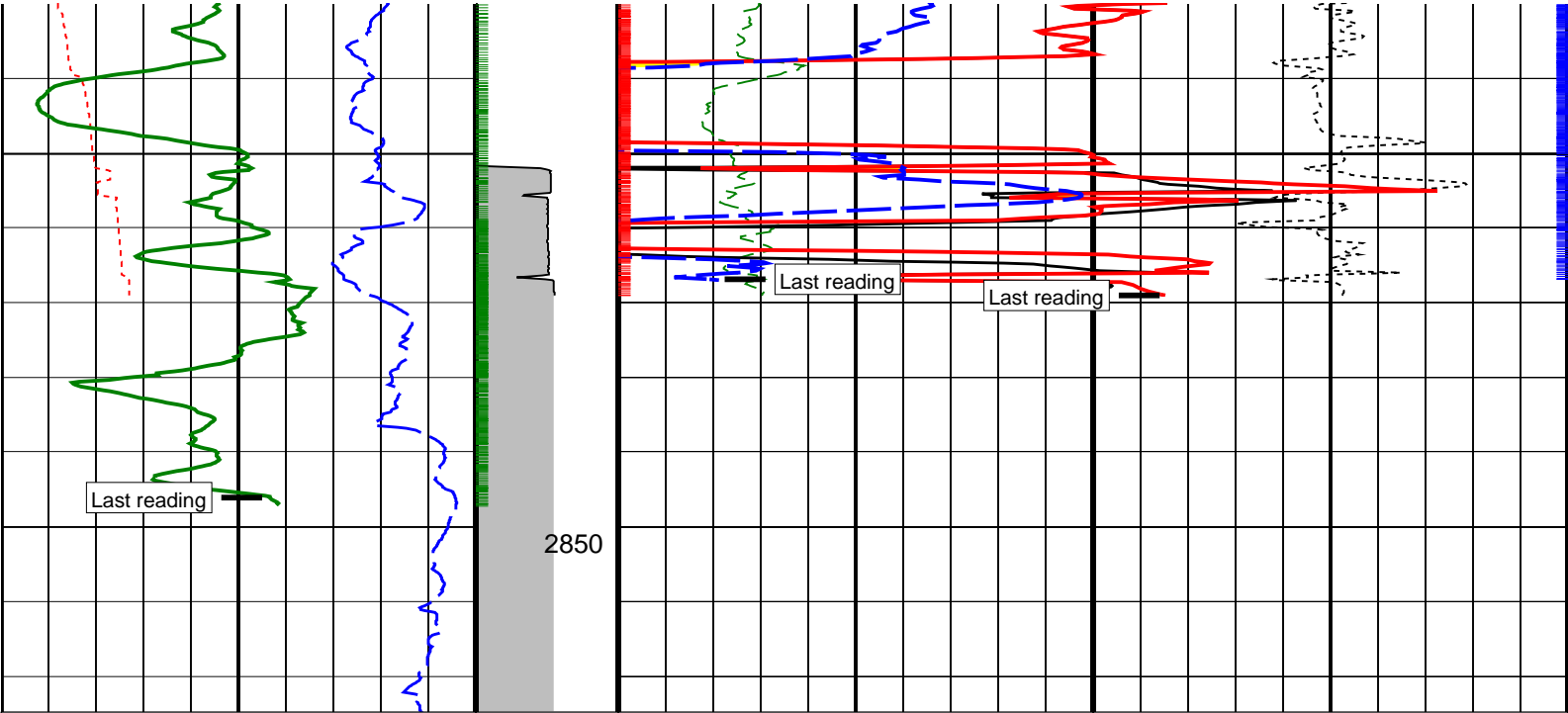












|  |  |   |   |  |  |  |
|--|--|---|---|--|--|--|
| <div>Density Time After Bit (TAB_DEN)</div> <div>(HR)</div> <div>010</div>                             |  | ADN<br>Rotational<br>Speed<br>(RPM_ADN)<br>(RPM)<br><div>0200</div> | <div>Photoelectric Factor, Bottom (PEB)</div> <div>(----</div> <div>010</div> |  | <div>Bulk Density Correction, Bottom<br/>(DRHB)</div> <div>(G/C3)</div> <div>-0.250.25</div> |  |
| <div>RAB Gamma Ray (GR_RAB)</div> <div>(GAPI)</div> <div>0200</div>                                    |  |   | <div>Bulk Density (RHOB)</div> <div>(G/C3)</div> <div>1.852.85</div>          |  |  |  |
| <div>Rate of Penetration, Averaged over Last<br/>5ft (ROP5_RM)</div> <div>(M/HR)</div> <div>2000</div> |  |   | <div>Bulk Density, Bottom (ROBB)</div> <div>(G/C3)</div> <div>1.852.85</div>  |  |  |  |
|  |  |   | <div>Thermal Neutron Porosity (TNPH)</div> <div>(PU)</div> <div>45-15</div>   |  |  |  |
|  |  |   | <div>Gas Area</div> <div>From ADN/ROBB/DEPTH to ADN/TNPH/DEPTH</div>          |  |  |  |

|             |                       |                         |
|-------------|-----------------------|-------------------------|
| PIP SUMMARY |                       |                         |
| ┐           | Density Ticks, 0.1 ft | Neutron Ticks, 0.1 ft ┐ |
| ┐           | Gamma Ray Samples     |                         |

|                                 |  |        |                          |
|---------------------------------|--|--------|--------------------------|
| IDEAL Version: ID7_OC_02<br>IDF |  |        |                          |
| RAB<br>ADN                      | IDEAL Version: ID7_OC_02<br>IDEAL Version: ID7_OC_02 | MWD_10 | IDEAL Version: ID7_OC_02 |

|   |  |            |        |
|---|--|------------|--------|
| 6.75-in. Azimuthal Density Neutron / Equipment Identification |  |            |        |
| Primary Equipment:  |  |            |        |
| Tool Name and Serial Number                                   |  | ADN6 - CA  | 289    |
| Collar Type and Serial Number                                 |  | ADDC - AA  |        |
| Chassis Type and Serial Number                                |  | ADSE -     |        |
| Stabilizer Type and Serial Number                             |  | Clamp-On   | 699051 |
| Neutron Logging Source  |  | NSR - M    | A161   |
| Density Logging Source  |  | GSR - J/Z  | A2125  |
| Stabilizer Size   |  | 8.25 - in. |        |
| Calibration Status  |  | Valid      |        |





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|--|----------------------|-------------------|-------------------|-------|--------------------|----------------------|--------------------|--|-------------------|--------------------|----------------------|--|--|-------|
| Master: 21-Aug-2002 2:00                       |                      |                   |                   |       |                    |                      |                    |  |                   |                    |                      |  |  |       |
| 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   |                      |                   |                   | 1286  | Master             |                      |                    |  | 2974              | Master             |                      |  |  | 7375  |
|  | 250.0<br>(Minimum)   | 4125<br>(Nominal) | 8000<br>(Maximum) |       | 700.0<br>(Minimum) | 9350<br>(Nominal)    | 18000<br>(Maximum) |  | 2500<br>(Minimum) | 23750<br>(Nominal) | 45000<br>(Maximum)   |  |  |       |



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|--|----------------------|--------------------|-------------------|-------|--------------------|----------------------|-------------------|--|-------------------|--------------------|----------------------|--|--|-------|
| Master: 21-Aug-2002 2:00                       |                      |                    |                   |       |                    |                      |                   |  |                   |                    |                      |  |  |       |
| 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   |                      |                    |                   | 199.3 | Master             |                      |                   |  | 1579              | Master             |                      |  |  | 4746  |
|  | 50.00<br>(Minimum)   | 725.0<br>(Nominal) | 1400<br>(Maximum) |       | 500.0<br>(Minimum) | 4250<br>(Nominal)    | 8000<br>(Maximum) |  | 1500<br>(Minimum) | 15750<br>(Nominal) | 30000<br>(Maximum)   |  |  |       |

|  |                          |                    |                    |       |        |                          |                    |                    |       |        |                          |                    |                   |       |
|--|--------------------------|--------------------|--------------------|-------|--------|--------------------------|--------------------|--------------------|-------|--------|--------------------------|--------------------|-------------------|-------|
| Master: 21-Aug-2002 2:00                       |                          |                    |                    |       |        |                          |                    |                    |       |        |                          |                    |                   |       |
| 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   |                          |                    |                    | 51.89 | Master |                          |                    |                    | 125.3 | Master |                          |                    |                   | 546.5 |
|  | 15.00<br>(Minimum)       | 82.50<br>(Nominal) | 150.0<br>(Maximum) |       |        | 40.00<br>(Minimum)       | 220.0<br>(Nominal) | 400.0<br>(Maximum) |       |        | 150.0<br>(Minimum)       | 825.0<br>(Nominal) | 1500<br>(Maximum) |       |













|  |                                 |                    |                    |        |                                  |                    |                    |  |  |
|--|---------------------------------|--------------------|--------------------|--------|----------------------------------|--------------------|--------------------|--|--|
| Master: 21-Aug-2002 2:00                       |                                 |                    |                    |        |                                  |                    |                    |  |  |
| 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   |                                 |                    | 1.034              | Master |                                  |                    | 1.130              |  |  |
|  | 1.011<br>(Minimum)              | 1.026<br>(Nominal) | 1.041<br>(Maximum) |        | 1.093<br>(Minimum)               | 1.118<br>(Nominal) | 1.143<br>(Maximum) |  |  |


|  |                     |                    |                    |        |                         |                      |                      |  |  |
|--|---------------------|--------------------|--------------------|--------|-------------------------|----------------------|----------------------|--|--|
| Master: 21-Aug-2002 2:00                       |                     |                    |                    |        |                         |                      |                      |  |  |
| 6.75-in. Azimuthal Density Neutron Calibration |                     |                    |                    |        |                         |                      |                      |  |  |
| Neutron: Water Tank                            |                     |                    |                    |        |                         |                      |                      |  |  |
| Phase  | Far 1 tube 1 gain   |                    | Value              | Phase  | Far 1 tube 1 offset CPS |                      | Value                |  |  |
| Master   |                     |                    | 1.102              | Master |                         |                      | -0.8340              |  |  |
|  | 0.9000<br>(Minimum) | 1.100<br>(Nominal) | 1.300<br>(Maximum) |        | -1.200<br>(Minimum)     | -0.9000<br>(Nominal) | -0.6000<br>(Maximum) |  |  |
| Phase  | Far 1 tube 2 gain   |                    | Value              | Phase  | Far 1 tube 2 offset CPS |                      | Value                |  |  |
| Master   |                     |                    | 1.048              | Master |                         |                      | -0.9090              |  |  |
|  | 0.9000<br>(Minimum) | 1.100<br>(Nominal) | 1.300<br>(Maximum) |        | -1.200<br>(Minimum)     | -0.9000<br>(Nominal) | -0.6000<br>(Maximum) |  |  |
| Phase  | Far 1 tube 3 gain   |                    | Value              | Phase  | Far 1 tube 3 offset CPS |                      | Value                |  |  |
| Master   |                     |                    | 1.071              | Master |                         |                      | -0.7690              |  |  |
|  | 0.9000<br>(Minimum) | 1.100<br>(Nominal) | 1.300<br>(Maximum) |        | -1.200<br>(Minimum)     | -0.9000<br>(Nominal) | -0.6000<br>(Maximum) |  |  |
| Phase  | Far 2 tube 1 gain   |                    | Value              | Phase  | Far 2 tube 1 offset CPS |                      | Value                |  |  |
| Master   |                     |                    | 1.107              | Master |                         |                      | -0.7220              |  |  |
|  | 0.9000<br>(Minimum) | 1.100<br>(Nominal) | 1.300<br>(Maximum) |        | -1.200<br>(Minimum)     | -0.9000<br>(Nominal) | -0.6000<br>(Maximum) |  |  |
| Phase  | Far 2 tube 2 gain   |                    | Value              | Phase  | Far 2 tube 2 offset CPS |                      | Value                |  |  |
| Master   |                     |                    | 1.000              | Master |                         |                      | -0.8370              |  |  |
|  | 0.9000<br>(Minimum) | 1.100<br>(Nominal) | 1.300<br>(Maximum) |        | -1.200<br>(Minimum)     | -0.9000<br>(Nominal) | -0.6000<br>(Maximum) |  |  |
| Phase  | Far 2 tube 3 gain   |                    | Value              | Phase  | Far 2 tube 3 offset CPS |                      | Value                |  |  |
| Master   |                     |                    | 1.108              | Master |                         |                      | -0.7300              |  |  |
|  | 0.9000<br>(Minimum) | 1.100<br>(Nominal) | 1.300<br>(Maximum) |        | -1.200<br>(Minimum)     | -0.9000<br>(Nominal) | -0.6000<br>(Maximum) |  |  |

| (Minimum)           | (Nominal)   | (Maximum)          | (Minimum)           | (Nominal)   | (Maximum)          |
|---------------------|---|--------------------|---------------------|---|--------------------|
| Phase               | Near 1 tube 1 gain  | Value              | Phase               | Near 1 tube 1 offset CPS  | Value              |
| Master              |  | 1.088              | Master              |  | 0                  |
| 0.9000<br>(Minimum) | 1.100<br>(Nominal)  | 1.300<br>(Maximum) | -50.00<br>(Minimum) | 0<br>(Nominal)  | 50.00<br>(Maximum) |
| Phase               | Near 2 tube 1 gain  | Value              | Phase               | Near 2 tube 1 offset CPS  | Value              |
| Master              |  | 1.062              | Master              |  | 0                  |
| 0.9000<br>(Minimum) | 1.100<br>(Nominal)  | 1.300<br>(Maximum) | -50.00<br>(Minimum) | 0<br>(Nominal)  | 50.00<br>(Maximum) |

|  |   |                    |                     |   |                    |
|--|---|--------------------|---------------------|---|--------------------|
| Master: 21–Aug–2002 2:00                       |   |                    |                     |   |                    |
| 6.75–in. Azimuthal Density Neutron Calibration |   |                    |                     |   |                    |
| Neutron: Water Block Check                     |   |                    |                     |   |                    |
| Phase  | Far Neutron water porosity V/V  | Value              | Phase               | Near Neutron water porosity V/V   | Value              |
| Master   |  | 1.000              | Master              |  | 1.000              |
| 0.9000<br>(Minimum)                            | 1.000<br>(Nominal)  | 1.150<br>(Maximum) | 0.9000<br>(Minimum) | 1.000<br>(Nominal)  | 1.150<br>(Maximum) |

|  |  |           |     |
|--|--|-----------|-----|
| 6.75–in. Resistivity At–the–Bit / Equipment Identification |  |           |     |
| Primary Equipment:   |  |           |     |
| Tool Name and Serial Number                                |  | RAB6 – CA | 136 |
| Calibration Status   |  | Valid     |     |

|   |   |                    |        |                     |   |                    |        |                     |   |                    |        |
|---|---|--------------------|--------|---------------------|---|--------------------|--------|---------------------|---|--------------------|--------|
| Master: 22–Aug–2002 13:30                   |   |                    |        |                     |   |                    |        |                     |   |                    |        |
| 6.75–in. Resistivity At–the–Bit Calibration |   |                    |        |                     |   |                    |        |                     |   |                    |        |
| Resistivity: Fixture                        |   |                    |        |                     |   |                    |        |                     |   |                    |        |
| Phase                                       | Ring/T1 factor  |                    | Value  | Phase               | Ring/T2 factor  |                    | Value  | Phase               | M0/T1 factor  |                    | Value  |
| Master                                      |  |                    | 0.9969 | Master              |  |                    | 0.9980 | Master              |  |                    | 0.9945 |
| 0.9750<br>(Minimum)                         | 1.000<br>(Nominal)  | 1.025<br>(Maximum) |        | 0.9750<br>(Minimum) | 1.000<br>(Nominal)  | 1.025<br>(Maximum) |        | 0.9750<br>(Minimum) | 1.000<br>(Nominal)  | 1.025<br>(Maximum) |        |
| Phase                                       | M0/T2 factor  |                    | Value  | Phase               | M2/T1 factor  |                    | Value  | Phase               | M2/T2 factor  |                    | Value  |
| Master                                      |  |                    | 0.9952 | Master              |  |                    | 0.9930 | Master              |  |                    | 0.9935 |
| 0.9750<br>(Minimum)                         | 1.000<br>(Nominal)  | 1.025<br>(Maximum) |        | 0.9750<br>(Minimum) | 1.000<br>(Nominal)  | 1.025<br>(Maximum) |        | 0.9750<br>(Minimum) | 1.000<br>(Nominal)  | 1.025<br>(Maximum) |        |
| Phase                                       | BTN shallow/T1 factor   |                    | Value  | Phase               | BTN shallow/T2 factor   |                    | Value  | Phase               | BTN medium/T1 factor  |                    | Value  |
| Master                                      |  |                    | 0.9977 | Master              |  |                    | 0.9982 | Master              |  |                    | 0.9983 |
| 0.9750<br>(Minimum)                         | 1.000<br>(Nominal)  | 1.025<br>(Maximum) |        | 0.9750<br>(Minimum) | 1.000<br>(Nominal)  | 1.025<br>(Maximum) |        | 0.9750<br>(Minimum) | 1.000<br>(Nominal)  | 1.025<br>(Maximum) |        |
| Phase                                       | BTN medium/T2 factor  |                    | Value  | Phase               | BTN deep/T1 factor  |                    | Value  | Phase               | BTN deep/T2 factor  |                    | Value  |
| Master                                      |  |                    | 0.9989 | Master              |  |                    | 0.9936 | Master              |  |                    | 0.9942 |
| 0.9750<br>(Minimum)                         | 1.000<br>(Nominal)  | 1.025<br>(Maximum) |        | 0.9750<br>(Minimum) | 1.000<br>(Nominal)  | 1.025<br>(Maximum) |        | 0.9750<br>(Minimum) | 1.000<br>(Nominal)  | 1.025<br>(Maximum) |        |

|   |   |                    |                    |
|---|---|--------------------|--------------------|
| Master: 22–Aug–2002 13:30                   |   |                    |                    |
| 6.75–in. Resistivity At–the–Bit Calibration |   |                    |                    |
| Gamma Ray: Blanket                          |   |                    |                    |
| Phase                                       | Gamma ray factor  |                    | Value              |
| Master                                      |  |                    | 0.8809             |
|   | 0.7500<br>(Minimum)   | 1.000<br>(Nominal) | 1.250<br>(Maximum) |

# 6.75-in. Resistivity At-the-Bit / Equipment Identification

Primary Equipment:  
Tool Name and Serial Number  
Calibration Status













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Valid

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## 6.75-in. Resistivity At-the-Bit Calibration

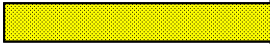
### Resistivity: Fixture

| Phase  | Ring/T1 factor  | Value              | Phase  | Ring/T2 factor  | Value              | Phase  | M0/T1 factor  | Value              |
|--------|---|--------------------|--------|---|--------------------|--------|---|--------------------|
| Master |  | 0.9974             | Master |  | 0.9993             | Master |  | 1.002              |
|        | 0.9750<br>(Minimum)   | 1.000<br>(Nominal) |        | 0.9750<br>(Minimum)   | 1.000<br>(Nominal) |        | 0.9750<br>(Minimum)   | 1.000<br>(Nominal) |
|        |   | 1.025<br>(Maximum) |        |   | 1.025<br>(Maximum) |        |   | 1.025<br>(Maximum) |
| Phase  | M0/T2 factor  | Value              | Phase  | M2/T1 factor  | Value              | Phase  | M2/T2 factor  | Value              |
| Master |  | 1.003              | Master |  | 0.9986             | Master |  | 0.9997             |
|        | 0.9750<br>(Minimum)   | 1.000<br>(Nominal) |        | 0.9750<br>(Minimum)   | 1.000<br>(Nominal) |        | 0.9750<br>(Minimum)   | 1.000<br>(Nominal) |
|        |   | 1.025<br>(Maximum) |        |   | 1.025<br>(Maximum) |        |   | 1.025<br>(Maximum) |
| Phase  | BTN shallow/T1 factor   | Value              | Phase  | BTN shallow/T2 factor   | Value              | Phase  | BTN medium/T1 factor  | Value              |
| Master |  | 1.006              | Master |  | 1.007              | Master |  | 1.002              |
|        | 0.9750<br>(Minimum)   | 1.000<br>(Nominal) |        | 0.9750<br>(Minimum)   | 1.000<br>(Nominal) |        | 0.9750<br>(Minimum)   | 1.000<br>(Nominal) |
|        |   | 1.025<br>(Maximum) |        |   | 1.025<br>(Maximum) |        |   | 1.025<br>(Maximum) |
| Phase  | BTN medium/T2 factor  | Value              | Phase  | BTN deep/T1 factor  | Value              | Phase  | BTN deep/T2 factor  | Value              |
| Master |  | 1.004              | Master |  | 1.012              | Master |  | 1.013              |
|        | 0.9750<br>(Minimum)   | 1.000<br>(Nominal) |        | 0.9750<br>(Minimum)   | 1.000<br>(Nominal) |        | 0.9750<br>(Minimum)   | 1.000<br>(Nominal) |
|        |   | 1.025<br>(Maximum) |        |   | 1.025<br>(Maximum) |        |   | 1.025<br>(Maximum) |

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## 6.75-in. Resistivity At-the-Bit Calibration

### Gamma Ray: Blanket

| Phase  | Gamma ray factor  | Value              |
|--------|---|--------------------|
| Master |  | 0.8590             |
|        | 0.7500<br>(Minimum)   | 1.000<br>(Nominal) |
|        |   | 1.250<br>(Maximum) |

ANADRILL

SCHLUMBERGER

Survey report

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Client.....: Esso Australia Ltd.  
Field.....: Tuna

Well.....: TNA A-30

Spud date.....: 22-Aug-2002



Well.....: TNA A-30  
API number.....:  
Engineers.....: L. Bon, J. Dolan, K. Handley  
  
RIG:.....: ISDL 453  
STATE:.....: Victoria

Spud date.....: 22-Aug-2002  
Last survey date.....: 02-Sep-02  
Total accepted surveys...: 103  
MD of first survey.....: 141.57 m  
MD of last survey.....: 2862.00 m

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

----- Geomagnetic data -----  
Magnetic model.....: BGM version 2001  
Magnetic date.....: 20-Aug-2002  
Magnetic field strength...: 1200.32 HCNT  
Magnetic dec (+E/W-).....: 13.16 degrees  
Magnetic dip.....: -68.69 degrees

----- Depth reference -----  
Permanent datum.....: MEAN SEA LEVEL

Depth reference.....: Driller's Pipe Tally  
GL above permanent.....: -59.40 m  
KB above permanent.....: 31.32 m  
DF above permanent.....: 31.32 m

----- MWD survey Reference Criteria -----  
Reference G.....: 1000.02 mGal  
Reference H.....: 1200.32 HCNT  
Reference Dip.....: -68.69 degrees  
Tolerance of G.....: (+/-) 2.50 mGal  
Tolerance of H.....: (+/-) 6.00 HCNT  
Tolerance of Dip.....: (+/-) 0.45 degrees

----- Corrections -----  
Magnetic dec (+E/W-).....: 13.16 degrees  
Grid convergence (+E/W-)..: -0.88 degrees  
Total az corr (+E/W-).....: 14.04 degrees  
(Total az corr = magnetic dec - grid conv)  
Sag applied (Y/N).....: No degree: 0.00

Azimuth from rotary table to target: 64.25 degrees

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| Seq<br># | Measured<br>depth<br>(m) | Incl<br>angle<br>(deg) | Azimuth<br>angle<br>(deg) | Course<br>length<br>(m) | TVD<br>depth<br>(m) | Vertical<br>section<br>(m) | Displ<br>+N/S-<br>(m) | Displ<br>+E/W-<br>(m) | Total<br>displ<br>(m) | At<br>Azim<br>(deg) | DLS<br>(deg/<br>10m) | Srvy<br>tool<br>type | Tool<br>qual<br>type |
|----------|--------------------------|------------------------|---------------------------|-------------------------|---------------------|----------------------------|-----------------------|-----------------------|-----------------------|---------------------|----------------------|----------------------|----------------------|
| 1        | 141.57                   | 5.19                   | 335.25                    | 0.00                    | 141.51              | 0.77                       | 3.67                  | 4.40                  | 1.87                  | 50.17               | 5.40                 | TIP                  | -                    |
| 2        | 161.00                   | 3.86                   | 321.90                    | 19.43                   | 160.88              | 0.65                       | 4.99                  | 3.63                  | 3.29                  | 36.06               | 0.87                 | GYR                  | -                    |
| 3        | 170.00                   | 2.48                   | 290.70                    | 9.00                    | 169.87              | 0.45                       | 5.29                  | 3.26                  | 3.69                  | 31.64               | 2.40                 | GYR                  | -                    |
| 4        | 180.30                   | 2.44                   | 282.10                    | 10.30                   | 180.16              | 0.12                       | 5.42                  | 2.83                  | 3.96                  | 27.65               | 0.36                 | GYR                  | -                    |
| 5        | 190.00                   | 1.95                   | 232.10                    | 9.70                    | 189.85              | -0.20                      | 5.36                  | 2.50                  | 4.05                  | 25.06               | 1.97                 | GYR                  | -                    |
| 6        | 198.60                   | 2.04                   | 226.50                    | 8.60                    | 198.45              | -0.49                      | 5.16                  | 2.28                  | 4.00                  | 23.81               | 0.25                 | GYR                  | -                    |
| 7        | 202.00                   | 1.95                   | 196.30                    | 3.40                    | 201.85              | -0.59                      | 5.07                  | 2.22                  | 3.95                  | 23.65               | 3.07                 | GYR                  | -                    |
| 8        | 215.60                   | 2.10                   | 181.10                    | 13.60                   | 215.44              | -0.85                      | 4.60                  | 2.15                  | 3.62                  | 25.06               | 0.41                 | GYR                  | -                    |
| 9        | 230.00                   | 0.95                   | 286.20                    | 14.40                   | 229.83              | -1.06                      | 4.37                  | 2.03                  | 3.52                  | 24.94               | 1.75                 | GYR                  | -                    |
| 10       | 245.00                   | 4.08                   | 326.00                    | 15.00                   | 244.82              | -1.23                      | 4.84                  | 1.61                  | 4.16                  | 18.40               | 2.27                 | GYR                  | -                    |
| 11       | 262.60                   | 6.81                   | 328.10                    | 17.60                   | 262.34              | -1.44                      | 6.25                  | 0.71                  | 5.81                  | 6.47                | 1.56                 | GYR                  | -                    |
| 12       | 298.48                   | 13.78                  | 346.48                    | 35.88                   | 297.63              | -0.76                      | 12.22                 | -1.42                 | 11.95                 | 353.38              | 2.12                 | MWD                  | 6-axis               |
| 13       | 329.37                   | 14.54                  | 3.03                      | 30.89                   | 327.59              | 1.88                       | 19.67                 | -2.08                 | 19.02                 | 354.00              | 1.33                 | MWD                  | 6-axis               |
| 14       | 364.34                   | 16.63                  | 21.01                     | 34.97                   | 361.29              | 7.64                       | 28.73                 | -0.05                 | 27.30                 | 359.91              | 1.50                 | MWD                  | 6-axis               |
| 15       | 384.29                   | 17.03                  | 34.38                     | 19.95                   | 380.39              | 12.25                      | 33.81                 | 2.63                  | 32.06                 | 4.45                | 1.95                 | MWD                  | 6-axis               |
| 16       | 412.85                   | 19.71                  | 52.41                     | 28.56                   | 407.52              | 20.59                      | 40.21                 | 8.81                  | 38.65                 | 12.36               | 2.19                 | MWD                  | 6-axis               |
| 17       | 441.27                   | 24.95                  | 63.98                     | 28.42                   | 433.81              | 31.29                      | 45.76                 | 18.01                 | 46.01                 | 21.48               | 2.40                 | MWD                  | 6-axis               |
| 18       | 469.94                   | 30.52                  | 68.22                     | 28.67                   | 459.18              | 44.61                      | 51.12                 | 30.21                 | 55.65                 | 30.58               | 2.06                 | MWD                  | 6-axis               |
| 19       | 498.49                   | 35.29                  | 68.48                     | 28.55                   | 483.14              | 60.08                      | 56.84                 | 44.62                 | 68.15                 | 38.14               | 1.67                 | MWD                  | 6-axis               |
| 20       | 526.92                   | 39.31                  | 68.78                     | 28.43                   | 505.75              | 77.25                      | 63.12                 | 60.66                 | 83.19                 | 43.87               | 1.42                 | MWD                  | 6-axis               |
| 21       | 555.02                   | 40.81                  | 69.02                     | 28.10                   | 527.26              | 95.28                      | 69.63                 | 77.54                 | 99.72                 | 48.08               | 0.54                 | MWD                  | 6-axis               |
| 22       | 584.04                   | 42.58                  | 68.14                     | 29.02                   | 548.93              | 114.53                     | 76.68                 | 95.50                 | 117.90                | 51.24               | 0.64                 | MWD                  | 6-axis               |
| 23       | 612.19                   | 46.18                  | 63.18                     | 28.15                   | 569.05              | 134.19                     | 84.81                 | 113.42                | 136.99                | 53.21               | 1.78                 | MWD                  | 6-axis               |
| 24       | 641.18                   | 49.79                  | 61.45                     | 28.99                   | 588.45              | 155.71                     | 94.82                 | 132.48                | 158.26                | 54.41               | 1.32                 | MWD                  | 6-axis               |
| 25       | 669.84                   | 55.31                  | 61.95                     | 28.66                   | 605.87              | 178.44                     | 105.60                | 152.51                | 180.83                | 55.30               | 1.93                 | MWD                  | 6-axis               |
| 26       | 697.69                   | 59.09                  | 62.71                     | 27.85                   | 620.96              | 201.83                     | 116.47                | 173.24                | 204.06                | 56.09               | 1.38                 | MWD                  | 6-axis               |
| 27       | 725.97                   | 62.88                  | 63.64                     | 28.28                   | 634.67              | 226.55                     | 127.62                | 195.30                | 228.61                | 56.84               | 1.37                 | MWD                  | 6-axis               |
| 28       | 754.87                   | 65.08                  | 63.77                     | 28.90                   | 647.35              | 252.52                     | 139.13                | 218.59                | 254.40                | 57.52               | 0.76                 | MWD                  | 6-axis               |
| 29       | 783.26                   | 67.76                  | 63.40                     | 28.39                   | 658.70              | 278.53                     | 150.70                | 241.89                | 280.27                | 58.08               | 0.95                 | MWD                  | 6-axis               |
| 30       | 812.07                   | 68.20                  | 63.20                     | 28.81                   | 669.50              | 305.24                     | 162.70                | 265.75                | 306.87                | 58.52               | 0.17                 | MWD                  | 6-axis               |

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| Seq<br># | Measured<br>depth<br>(m) | Incl<br>angle<br>(deg) | Azimuth<br>angle<br>(deg) | Course<br>length<br>(m) | TVD<br>depth<br>(m) | Vertical<br>section<br>(m) | Displ<br>+N/S-<br>(m) | Displ<br>+E/W-<br>(m) | Total<br>displ<br>(m) | At<br>Azim<br>(deg) | DLS<br>(deg/<br>10m) | Srvy<br>tool<br>type | Tool<br>qual<br>type |
|----------|--------------------------|------------------------|---------------------------|-------------------------|---------------------|----------------------------|-----------------------|-----------------------|-----------------------|---------------------|----------------------|----------------------|----------------------|
| 31       | 849.18                   | 67.93                  | 64.03                     | 37.11                   | 683.37              | 339.66                     | 178.00                | 296.58                | 341.17                | 59.03               | 0.22                 | MWD                  | 6-axis               |
| 32       | 877.21                   | 66.92                  | 63.52                     | 28.03                   | 694.13              | 365.54                     | 189.44                | 319.80                | 366.96                | 59.36               | 0.40                 | MWD                  | 6-axis               |
| 33       | 905.55                   | 66.11                  | 63.23                     | 28.34                   | 705.42              | 391.53                     | 201.09                | 343.04                | 392.89                | 59.62               | 0.30                 | MWD                  | 6-axis               |
| 34       | 934.29                   | 65.40                  | 62.76                     | 28.74                   | 717.22              | 417.72                     | 212.98                | 366.39                | 419.05                | 59.83               | 0.29                 | MWD                  | 6-axis               |
| 35       | 962.68                   | 65.13                  | 62.61                     | 28.39                   | 729.10              | 443.50                     | 224.82                | 389.30                | 444.80                | 59.99               | 0.11                 | MWD                  | 6-axis               |
| 36       | 991.59                   | 64.40                  | 62.43                     | 28.91                   | 741.43              | 469.64                     | 236.88                | 412.50                | 470.93                | 60.13               | 0.26                 | MWD                  | 6-axis               |
| 37       | 1019.43                  | 67.41                  | 63.46                     | 27.84                   | 752.79              | 495.04                     | 248.44                | 435.13                | 496.31                | 60.28               | 1.13                 | MWD                  | 6-axis               |
| 38       | 1047.66                  | 66.80                  | 63.49                     | 28.23                   | 763.78              | 521.04                     | 260.05                | 458.40                | 522.28                | 60.43               | 0.22                 | MWD                  | 6-axis               |
| 39       | 1076.02                  | 66.44                  | 63.42                     | 28.36                   | 775.03              | 547.07                     | 271.69                | 481.68                | 548.27                | 60.58               | 0.13                 | MWD                  | 6-axis               |
| 40       | 1105.19                  | 67.44                  | 64.15                     | 29.17                   | 786.45              | 573.91                     | 283.54                | 505.76                | 575.07                | 60.72               | 0.41                 | MWD                  | 6-axis               |
| 41       | 1133.55                  | 67.19                  | 64.42                     | 28.36                   | 797.39              | 600.08                     | 294.90                | 529.34                | 601.18                | 60.88               | 0.12                 | MWD                  | 6-axis               |
| 42       | 1161.95                  | 67.09                  | 64.68                     | 28.40                   | 808.43              | 626.24                     | 306.14                | 552.97                | 627.30                | 61.03               | 0.09                 | MWD                  | 6-axis               |
| 43       | 1191.26                  | 67.10                  | 64.60                     | 29.31                   | 819.83              | 653.24                     | 317.70                | 577.36                | 654.25                | 61.18               | 0.03                 | MWD                  | 6-axis               |
| 44       | 1219.45                  | 66.89                  | 65.03                     | 28.19                   | 830.85              | 679.19                     | 328.75                | 600.85                | 680.14                | 61.32               | 0.16                 | MWD                  | 6-axis               |

|    |         |       |       |       |         |         |        |        |         |       |      |     |        |
|----|---------|-------|-------|-------|---------|---------|--------|--------|---------|-------|------|-----|--------|
| 44 | 1219.45 | 66.89 | 65.03 | 28.19 | 830.85  | 679.19  | 328.75 | 600.85 | 680.14  | 61.32 | 0.16 | MWD | 6-axis |
| 45 | 1248.06 | 66.61 | 65.07 | 28.61 | 842.14  | 705.47  | 339.83 | 624.68 | 706.37  | 61.45 | 0.10 | MWD | 6-axis |
| 46 | 1276.46 | 66.23 | 65.05 | 28.40 | 853.50  | 731.50  | 350.81 | 648.28 | 732.35  | 61.58 | 0.13 | MWD | 6-axis |
| 47 | 1304.92 | 66.25 | 64.81 | 28.46 | 864.97  | 757.55  | 361.85 | 671.87 | 758.35  | 61.69 | 0.08 | MWD | 6-axis |
| 48 | 1333.37 | 66.16 | 65.44 | 28.45 | 876.45  | 783.58  | 372.80 | 695.49 | 784.34  | 61.81 | 0.21 | MWD | 6-axis |
| 49 | 1361.83 | 65.70 | 65.35 | 28.46 | 888.06  | 809.56  | 383.62 | 719.12 | 810.28  | 61.92 | 0.16 | MWD | 6-axis |
| 50 | 1390.44 | 66.21 | 65.57 | 28.61 | 899.71  | 835.68  | 394.47 | 742.88 | 836.35  | 62.03 | 0.19 | MWD | 6-axis |
| 51 | 1419.15 | 66.41 | 65.75 | 28.71 | 911.39  | 862.29  | 405.44 | 767.14 | 862.92  | 62.14 | 0.09 | MWD | 6-axis |
| 52 | 1447.72 | 65.92 | 65.66 | 28.57 | 922.79  | 888.09  | 416.06 | 790.66 | 888.68  | 62.25 | 0.17 | MWD | 6-axis |
| 53 | 1476.39 | 65.69 | 65.98 | 28.67 | 934.54  | 914.23  | 426.77 | 814.51 | 914.78  | 62.35 | 0.13 | MWD | 6-axis |
| 54 | 1505.10 | 65.99 | 65.73 | 28.71 | 946.29  | 940.41  | 437.48 | 838.42 | 940.92  | 62.44 | 0.13 | MWD | 6-axis |
| 55 | 1533.68 | 65.71 | 65.54 | 28.58 | 957.99  | 966.49  | 448.24 | 862.17 | 966.96  | 62.53 | 0.12 | MWD | 6-axis |
| 56 | 1562.36 | 66.13 | 65.45 | 28.68 | 969.69  | 992.66  | 459.10 | 886.00 | 993.11  | 62.61 | 0.15 | MWD | 6-axis |
| 57 | 1590.84 | 65.99 | 65.21 | 28.48 | 981.25  | 1018.69 | 469.97 | 909.65 | 1019.11 | 62.68 | 0.09 | MWD | 6-axis |
| 58 | 1618.84 | 65.74 | 65.32 | 28.00 | 992.69  | 1044.24 | 480.66 | 932.86 | 1044.64 | 62.74 | 0.10 | MWD | 6-axis |
| 59 | 1647.57 | 65.52 | 65.65 | 28.73 | 1004.55 | 1070.40 | 491.52 | 956.67 | 1070.78 | 62.81 | 0.13 | MWD | 6-axis |
| 60 | 1676.76 | 64.94 | 65.63 | 29.19 | 1016.78 | 1096.90 | 502.45 | 980.82 | 1097.25 | 62.88 | 0.20 | MWD | 6-axis |

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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/10m) | Srvy tool type | Tool qual type |
|-------|--------------------|------------------|---------------------|-------------------|---------------|----------------------|-----------------|-----------------|-----------------|---------------|---------------|----------------|----------------|
| 61    | 1705.38            | 65.72            | 65.83               | 28.62             | 1028.73       | 1122.90              | 513.14          | 1004.52         | 1123.23         | 62.94         | 0.28          | MWD            | 6-axis         |
| 62    | 1734.91            | 65.29            | 65.75               | 29.53             | 1040.97       | 1149.76              | 524.16          | 1029.03         | 1150.07         | 63.01         | 0.15          | MWD            | 6-axis         |
| 63    | 1763.45            | 66.14            | 65.53               | 28.54             | 1052.71       | 1175.77              | 534.89          | 1052.73         | 1176.05         | 63.07         | 0.31          | MWD            | 6-axis         |
| 64    | 1792.45            | 66.19            | 65.58               | 29.00             | 1064.43       | 1202.29              | 545.87          | 1076.88         | 1202.55         | 63.12         | 0.02          | MWD            | 6-axis         |
| 65    | 1821.50            | 66.09            | 65.72               | 29.05             | 1076.18       | 1228.85              | 556.82          | 1101.08         | 1229.10         | 63.17         | 0.06          | MWD            | 6-axis         |
| 66    | 1850.59            | 66.42            | 65.81               | 29.09             | 1087.89       | 1255.47              | 567.75          | 1125.37         | 1255.70         | 63.23         | 0.12          | MWD            | 6-axis         |
| 67    | 1879.80            | 67.05            | 65.93               | 29.21             | 1099.43       | 1282.29              | 578.72          | 1149.86         | 1282.50         | 63.28         | 0.22          | MWD            | 6-axis         |
| 68    | 1908.64            | 66.75            | 65.97               | 28.84             | 1110.74       | 1308.81              | 589.53          | 1174.08         | 1309.00         | 63.34         | 0.10          | MWD            | 6-axis         |
| 69    | 1937.75            | 65.98            | 66.36               | 29.11             | 1122.41       | 1335.46              | 600.31          | 1198.47         | 1335.64         | 63.39         | 0.29          | MWD            | 6-axis         |
| 70    | 1966.62            | 67.05            | 66.51               | 28.87             | 1133.92       | 1361.92              | 610.89          | 1222.74         | 1362.08         | 63.45         | 0.37          | MWD            | 6-axis         |
| 71    | 1995.42            | 66.59            | 66.77               | 28.80             | 1145.25       | 1388.38              | 621.39          | 1247.05         | 1388.51         | 63.51         | 0.18          | MWD            | 6-axis         |
| 72    | 2024.42            | 66.81            | 66.27               | 29.00             | 1156.72       | 1414.99              | 632.00          | 1271.48         | 1415.11         | 63.57         | 0.18          | MWD            | 6-axis         |
| 73    | 2053.46            | 66.76            | 66.60               | 29.04             | 1168.17       | 1441.66              | 642.67          | 1295.94         | 1441.77         | 63.62         | 0.11          | MWD            | 6-axis         |
| 74    | 2082.33            | 67.22            | 65.10               | 28.87             | 1179.46       | 1468.22              | 653.55          | 1320.19         | 1468.32         | 63.66         | 0.50          | MWD            | 6-axis         |
| 75    | 2111.48            | 67.19            | 65.27               | 29.15             | 1190.75       | 1495.09              | 664.82          | 1344.58         | 1495.18         | 63.69         | 0.05          | MWD            | 6-axis         |
| 76    | 2140.12            | 66.80            | 65.51               | 28.64             | 1201.94       | 1521.45              | 675.80          | 1368.55         | 1521.53         | 63.72         | 0.16          | MWD            | 6-axis         |
| 77    | 2168.53            | 66.62            | 65.72               | 28.41             | 1213.18       | 1547.54              | 686.58          | 1392.31         | 1547.61         | 63.75         | 0.09          | MWD            | 6-axis         |
| 78    | 2197.38            | 66.66            | 66.19               | 28.85             | 1224.62       | 1574.01              | 697.37          | 1416.50         | 1574.08         | 63.79         | 0.15          | MWD            | 6-axis         |
| 79    | 2226.14            | 66.83            | 66.87               | 28.76             | 1235.97       | 1600.42              | 707.89          | 1440.74         | 1600.47         | 63.83         | 0.23          | MWD            | 6-axis         |
| 80    | 2255.30            | 66.78            | 67.69               | 29.16             | 1247.46       | 1627.18              | 718.24          | 1465.46         | 1627.23         | 63.89         | 0.26          | MWD            | 6-axis         |
| 81    | 2283.87            | 67.01            | 66.98               | 28.57             | 1258.67       | 1653.43              | 728.37          | 1489.71         | 1653.46         | 63.94         | 0.24          | MWD            | 6-axis         |
| 82    | 2313.12            | 67.24            | 65.84               | 29.25             | 1270.04       | 1680.36              | 739.15          | 1514.41         | 1680.38         | 63.98         | 0.37          | MWD            | 6-axis         |
| 83    | 2341.98            | 67.19            | 66.22               | 28.86             | 1281.22       | 1706.95              | 749.96          | 1538.72         | 1706.97         | 64.02         | 0.12          | MWD            | 6-axis         |
| 84    | 2370.96            | 67.60            | 65.23               | 28.98             | 1292.35       | 1733.70              | 760.96          | 1563.11         | 1733.72         | 64.04         | 0.35          | MWD            | 6-axis         |
| 85    | 2399.92            | 67.81            | 65.95               | 28.96             | 1303.34       | 1760.48              | 772.04          | 1587.51         | 1760.50         | 64.07         | 0.24          | MWD            | 6-axis         |
| 86    | 2429.90            | 68.23            | 65.11               | 29.98             | 1314.56       | 1788.28              | 783.55          | 1612.81         | 1788.29         | 64.09         | 0.30          | MWD            | 6-axis         |
| 87    | 2458.75            | 67.43            | 64.73               | 28.85             | 1325.45       | 1815.00              | 794.88          | 1637.02         | 1815.02         | 64.10         | 0.30          | MWD            | 6-axis         |
| 88    | 2487.78            | 66.52            | 64.83               | 29.03             | 1336.80       | 1841.71              | 806.26          | 1661.18         | 1841.72         | 64.11         | 0.32          | MWD            | 6-axis         |
| 89    | 2516.91            | 65.73            | 64.81               | 29.13             | 1348.59       | 1868.35              | 817.59          | 1685.28         | 1868.36         | 64.12         | 0.27          | MWD            | 6-axis         |
| 90    | 2545.34            | 65.89            | 65.33               | 28.43             | 1360.24       | 1894.28              | 828.52          | 1708.80         | 1894.29         | 64.13         | 0.18          | MWD            | 6-axis         |

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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/10m) | Srvy tool type | Tool qual type   |
|-------|--------------------|------------------|---------------------|-------------------|---------------|----------------------|-----------------|-----------------|-----------------|---------------|---------------|----------------|------------------|
| 91    | 2574.33            | 66.74            | 65.56               | 28.98             | 1371.88       | 1920.81              | 839.55          | 1732.94         | 1920.82         | 64.15         | 0.30          | MWD            | 6-axis           |
| 92    | 2603.16            | 67.82            | 65.51               | 28.84             | 1383.02       | 1947.41              | 850.57          | 1757.15         | 1947.41         | 64.17         | 0.37          | MWD            | 6-axis           |
| 93    | 2631.64            | 68.29            | 65.15               | 28.48             | 1393.67       | 1973.82              | 861.60          | 1781.16         | 1973.82         | 64.19         | 0.20          | MWD            | 6-axis           |
| 94    | 2660.62            | 68.44            | 65.11               | 28.98             | 1404.35       | 2000.75              | 872.93          | 1805.60         | 2000.76         | 64.20         | 0.05          | MWD            | 6-axis           |
| 95    | 2689.47            | 69.00            | 65.79               | 28.85             | 1414.82       | 2027.63              | 884.09          | 1830.05         | 2027.63         | 64.22         | 0.29          | MWD            | 6-axis           |
| 96    | 2718.62            | 69.14            | 65.98               | 29.15             | 1425.24       | 2054.85              | 895.22          | 1854.90         | 2054.85         | 64.24         | 0.08          | MWD            | 6-axis           |
| 97    | 2747.58            | 68.33            | 66.24               | 28.96             | 1435.74       | 2081.82              | 906.15          | 1879.58         | 2081.82         | 64.26         | 0.29          | MWD            | 6-axis           |
| 98    | 2771.75            | 68.29            | 66.10               | 23.42             | 1444.67       | 2104.27              | 915.21          | 1900.12         | 2104.27         | 64.28         | 0.02          | MWD            | 6-axis           |
| 99    | 2776.06            | 68.54            | 66.10               | 4.31              | 1446.26       | 2108.27              | 916.84          | 1903.79         | 2108.27         | 64.28         | 0.06          | MWD            | 6-axis           |
| 100   | 2805.45            | 68.37            | 65.90               | 29.39             | 1457.05       | 2135.60              | 927.97          | 1928.76         | 2135.60         | 64.28         | 0.09          | MWD            | 6-axis           |
| 101   | 2834.52            | 68.94            | 65.80               | 29.07             | 1467.63       | 2162.66              | 939.04          | 1953.46         | 2162.66         | 64.28         | 0.02          | MWD            | 6-axis           |
| 102   | 2841.21            | 68.73            | 65.90               | 6.69              | 1470.05       | 2168.90              | 941.59          | 1959.16         | 2168.90         | 64.28         | 0.32          | MWD            | 6-axis           |
| 103   | 2862.00            | 68.20            | 65.90               | 20.79             | 1477.68       | 2188.23              | 949.49          | 1976.81         | 2188.23         | 64.28         | 0.26          | MWD            | Projection to TD |

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**Well: TNA A-30**  
**Field: Tuna**  
**Rig: ISDL 453**  
**State: Victoria**

**VISION Neutron Density**  
**1:500 Measured Depth**  
**Recorded Mode Log**