

Company: **ESSO Australia Ltd.**

Well: **WTN-W48 A**

# Field: Tuna

Rig: **NABORS 453** State: **Victoria**

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

Rig: NABORS 453  
Field: Tuna  
Location: Bass Strait  
Well: WTN-W48 A  
Company: ESSO Australia Ltd.

| Location           |                           |
|--------------------|---------------------------|
| Total depth:       | 2268 m                    |
| Spud date:         | 19-Jan-02                 |
| Runs:              | 1 To 2                    |
| Permanent datum:   | Mean Sea Level            |
| Log measured from: | Drill Floor               |
| Depth reference:   | Driller's Depth           |
|                    | Elev.: 0 m                |
|                    | 34.69 m above Perm. datum |

| API serial no. | x = 5,771,791.69 m | Longitude         | Latitude         |
|----------------|--------------------|-------------------|------------------|
|                | y = 621,538.528 m  | E 148 23' 16.531" | S 38 11' 36.558" |

|               |           |    |           |           |            |                     |
|---------------|-----------|----|-----------|-----------|------------|---------------------|
| Depth logged: | 622 m     | To | 2253 m    | Mag decl: | 13.18 deg  | Other services:     |
| Date logged:  | 20-Jan-02 | To | 24-Jan-02 | Mag dip:  | -68.71 deg | Directional Surveys |

## Bore hole record

## Casing record

| Hole size | from  | to     | Size      | Density     | from    | to    |
|-----------|-------|--------|-----------|-------------|---------|-------|
| 8.5 in.   | 622 m | 2268 m | 10.75 in. | 40.5 lbm/ft | Surface | 622 m |

[illegible]

|  |  |  |  |  |  |  |
|--|--|--|--|--|--|--|
|  |  |  |  |  |  |  |
|  |  |  |  |  |  |  |
|  |  |  |  |  |  |  |
|  |  |  |  |  |  |  |

[illegible]

| Type  | Porehole deviation record |           |       |     |
|-------|---------------------------|-----------|-------|-----|
|       | Min                       | Max       | from  | to  |
| from  |                           |           |       |     |
| 622 m | 25.60 deg                 | 25.67 deg | 628 m | 617 |

|         |       |        |           |           |       |        |
|---------|-------|--------|-----------|-----------|-------|--------|
| KCl/PPA | 647 m | 2268 m | 25.67 deg | 66.50 deg | 647 m | 2268 m |
|---------|-------|--------|-----------|-----------|-------|--------|

[illegible]

## Surface equipment

Software record

Unit OLU-FB-924

## IDEAL WiS

id6\_1c\_10

## Depth system

PDA

SPM

id6\_1c\_10

**IDEAL**  
services from  
**Anadrill**

## DISCLAIMER

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OTHER SERVICES FOR RUN1  
Directional Surveys

## OTHER SERVICES FOR RUN2

### Directional Surveys

OTHER SERVICES FOR RUN

REMARKS: RUN NUMBER 1  
622 to 637 m interval was drilled in sliding mode.  
All data presented is from memory.  
GR is corrected for mud weight and bit size.  
GVR Resistivity is corrected for bit size, mud resistivity and borehole temperature.  
Neutron porosity is calculated with a limestone matrix, and is corrected for bit size, borehole salinity (from  $R_m$ ), temperature, and mud hydrogen index (from mud weight, temperature and pressure).

REMARKS: RUN NUMBER 2  
637 to 2268 m interval was drilled in rotating and sliding mode.  
All data presented is from memory.  
GR is corrected for mud weight and bit size.  
GVR Resistivity is corrected for bit size, mud resistivity and borehole temperature.  
There was barite in the mud.  
The PEF curve is not presented.  
Bottom quadrant density is presented.  
Neutron porosity is calculated with a limestone matrix, and is corrected for bit size, borehole

REMARKS: RUN NUMBER

Pulled out of the hole at 637 m to change the bit and motor bend after kicking off.

Pulled out of the hole at 2268 m to run casing after reaching TD.

13.0



**Environmental data**

|                         |            |          |         |          |          |         |  |  |  |  |  |
|-------------------------|------------|----------|---------|----------|----------|---------|--|--|--|--|--|
| <b>GR</b>               |            |          |         |          |          |         |  |  |  |  |  |
| Mud weight              | lbm/gal    | 8.5      | 10.5    |          |          |         |  |  |  |  |  |
| Bit size                | in.        | 8.5      | 8.5     |          |          |         |  |  |  |  |  |
| <b>Resistivity</b>      |            |          |         |          |          |         |  |  |  |  |  |
| <b>Neutron porosity</b> |            |          |         |          |          |         |  |  |  |  |  |
| Hole Size               | in.        | 8.5      | 8.5     |          |          |         |  |  |  |  |  |
| Mud weight              | lbm/gal    | 8.5      | 10.5    |          |          |         |  |  |  |  |  |
| Temperature             | deg C      | 30       | 74.5    |          |          |         |  |  |  |  |  |
| Mud salinity            | mg/l       | 0.0      | 72,600  |          |          |         |  |  |  |  |  |
| Formation salinity      | mg/l       | n/a      | n/a     |          |          |         |  |  |  |  |  |
| Recording rate 1        | SEC        | 10       | 10      | GR/Res   |          |         |  |  |  |  |  |
| Recording rate 2        | SEC        | 10       | 10      | Den/Neut |          |         |  |  |  |  |  |
| Filtering GR            |            | 3 pt.    | 3 pt.   |          |          |         |  |  |  |  |  |
| Filtering density       |            | 3 pt.    | 3 pt.   |          |          |         |  |  |  |  |  |
| Filtering Neutron       |            | 3 pt.    | 3 pt.   |          |          |         |  |  |  |  |  |
| Company representative  | B.Woodward | J.Booker | B.Davis |          |          |         |  |  |  |  |  |
| Anadrill personnel      | T.Sims     | T.Ford   | L.Bon   | C.Soper  | T.Harvey | C.Cocks |  |  |  |  |  |

## IDEAL Version: ID6\_1C\_10

IDF

RAB id6\_1c\_10 MWD\_10 id6\_1c\_10  
ADN id6\_1c\_10

Format: ADNDetailLog Vertical Scale: 1:500

Graphics File Created: 28-Jan-2002 21:54

### Parameters

| DLIS Name       | Description  | Value          |
|-----------------|--|----------------|
| AVE_ADN         | ADN/Array Channels: perform averaging(RM) :            | YES            |
| BHA_COEF_VER    | RAB: BHA Coef Generator Version                        | 62012.0        |
| BHT_RM          | Bottom Hole Temperature (RM)                           | 74.500 degC    |
| BSAL_RM         | Mud Salinity (RM)                                      | 57.700 ppk     |
| BS_RM           | Bit Size (RM)  | 8.500 in       |
| DEVI            | Average angle of the hole (RM)                         | 61.000 deg     |
| DHS_VERSION     | RAB: DownHole Software Version                         | 6.101          |
| DO              | Depth Offset   | 0.0 m          |
| DTMUD           | Delta-T for Mud  | 645.2 us/m     |
| ENVCOR          | Neutron Quadrant Processing: Environmental Correction? | YES            |
| LITHO_TYPE_ADN  | Lithology (RM)   | LIME           |
| MST_RM          | Mud Sample temperature (RM)                            | 21.000 degC    |
| MW_RM           | Mud Weight (RM)  | 10.500 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                          | 14.718 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)                         | 0.130 ohm.m    |
| RWS_RM          | Resistivity of Connate Water (RM)                      | 1.000 ohm.m    |
| SHT_RM          | Surface Hole Temperature (RM)                          | 23.889 degC    |
| SSIZ_ADN        | ADN:Stabilizer Size (RM)                               | 8.250 in       |
| STAB            | RAB: Run with Stabilizer                               | YES            |
| TD_RM           | Total Measured Depth (RM)                              | 2268.0 m       |
| TOOLTYPE        | RAB: Azimuthal Tool                                    | YES            |
| TRPM_RM         | Average Tool rotational Speed (RM)                     | 20.000 c/min   |
| TSIZ_ADN        | ADN:Tool Size (RM)                                     | 6.750 in       |
| TS_VERSION      | RAB: ToolScope Software Version                        | 6.101          |
| TWS_RM          | Temperature of Connate Water (RM)                      | 23.889 degC    |
| USMIN_RM        | ADN:Minimum ultra-sonic standoff (RM)                  | 0.300 in       |
| VERS_ADN        | ADN downhole software                                  | 6.200          |
| VRAB6           | Rab Tool type (ENP/PILOT)                              | RAB6_C_SERIES  |

#### PIP SUMMARY

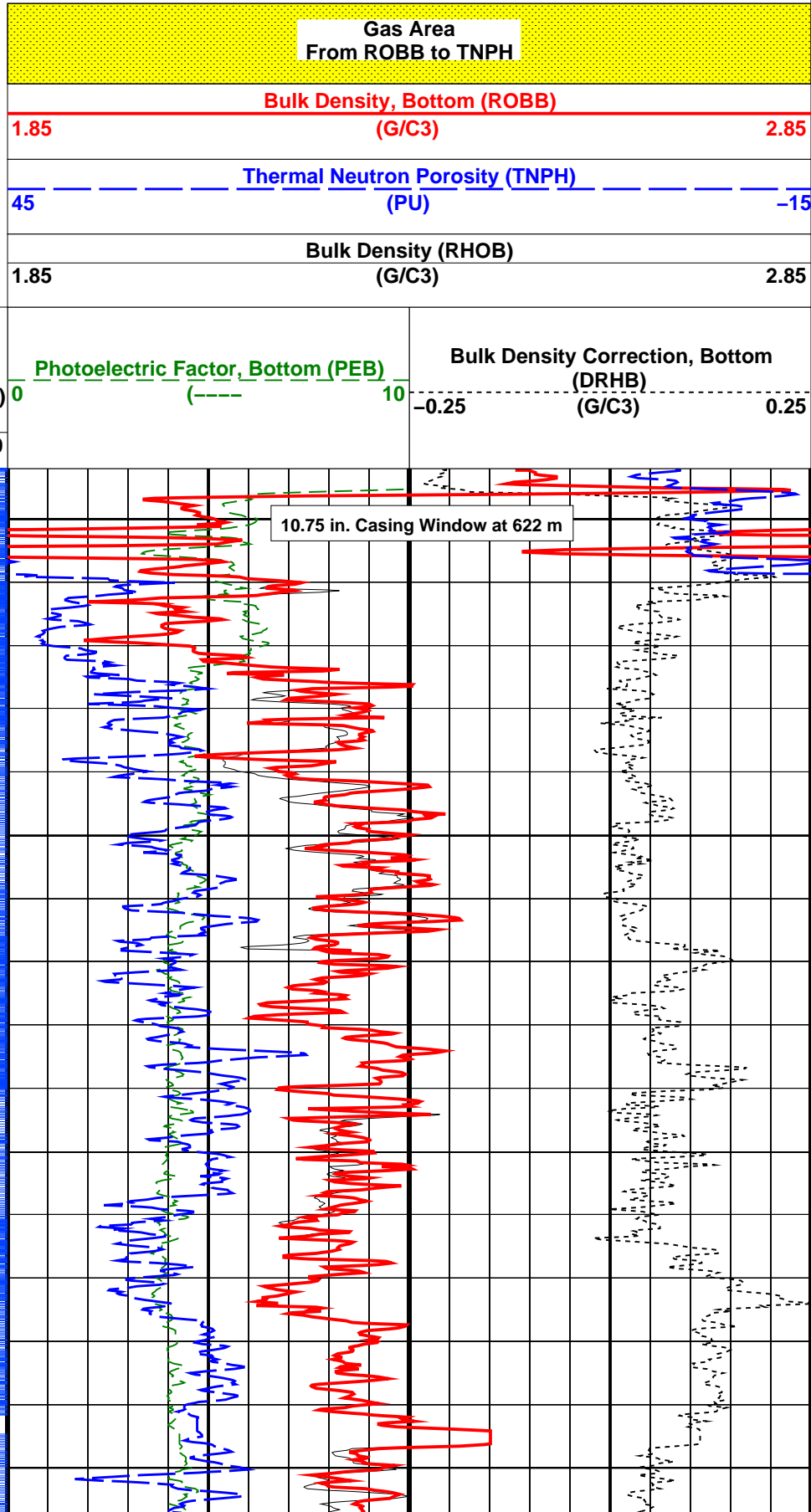
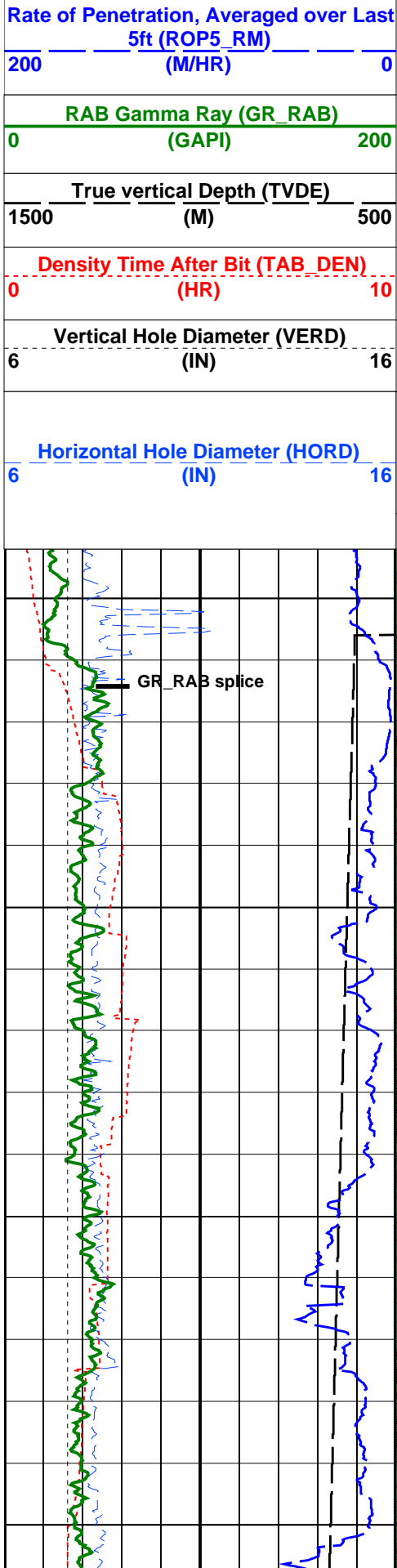
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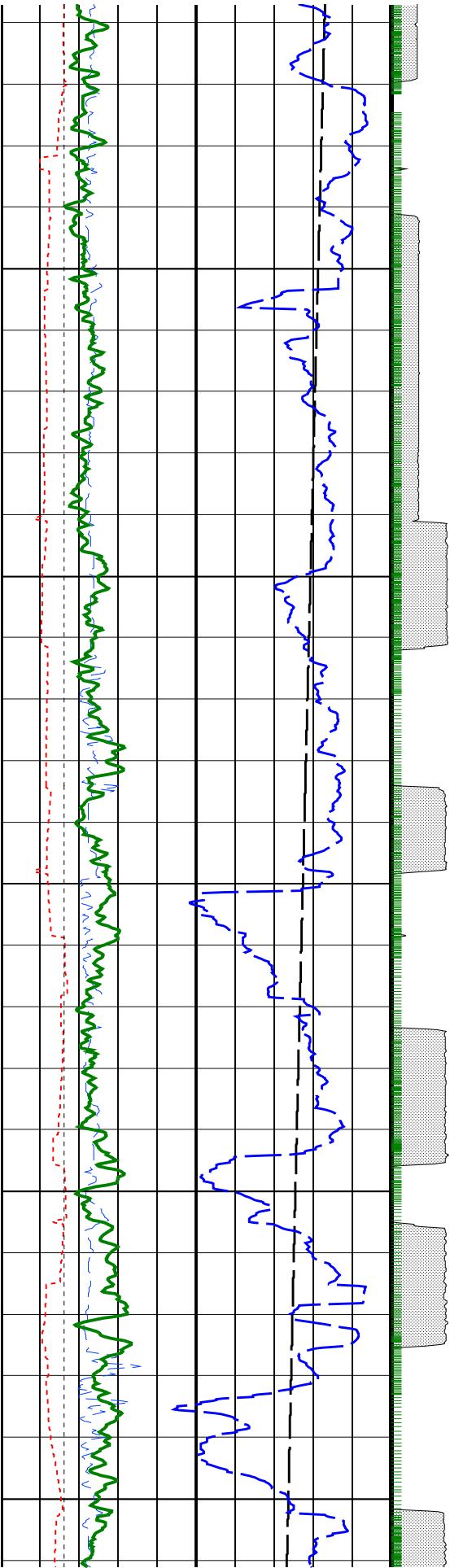
Density Samples

+ Gamma Ray Samples

Rate of Penetration, Averaged over Last

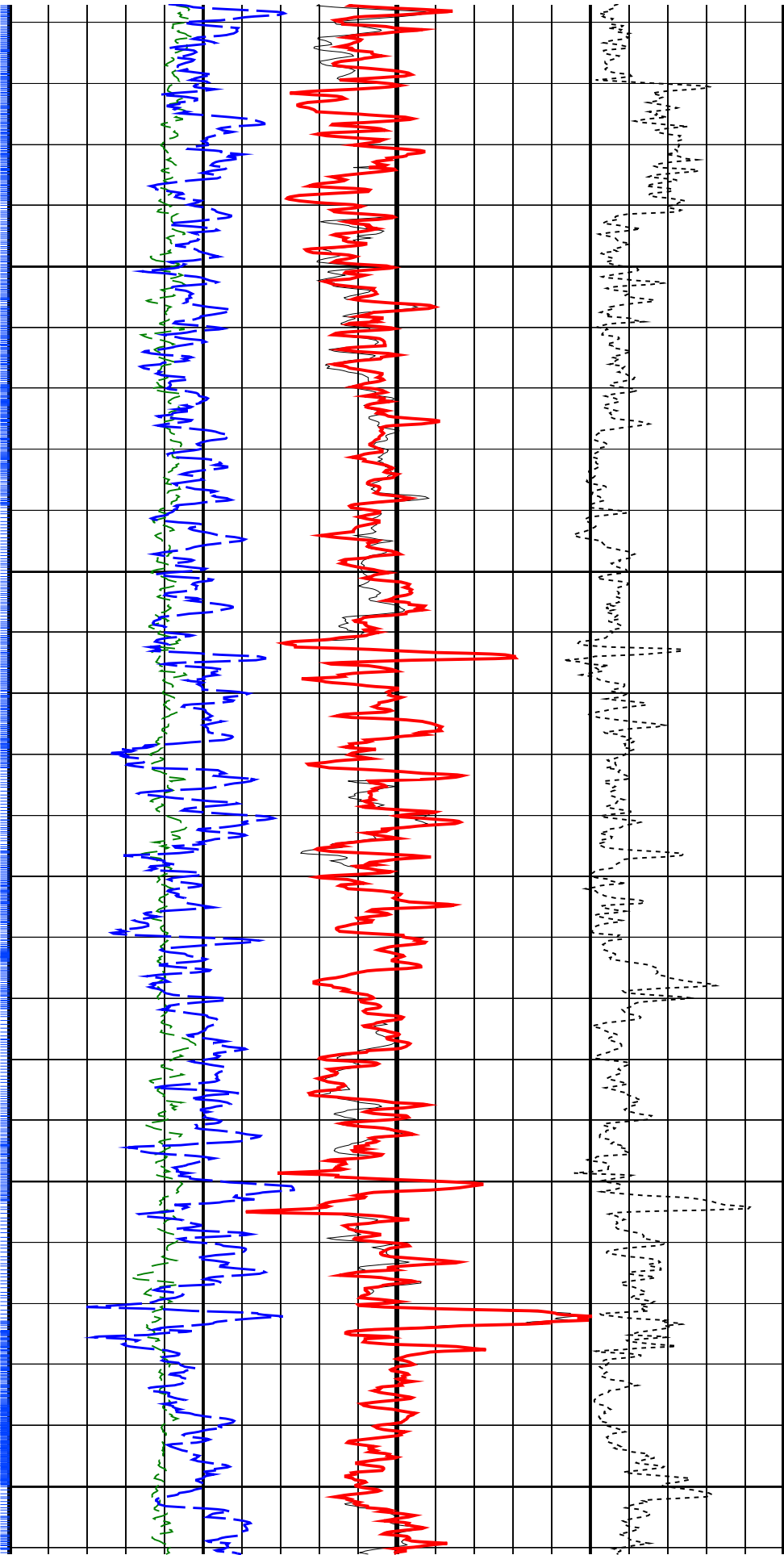
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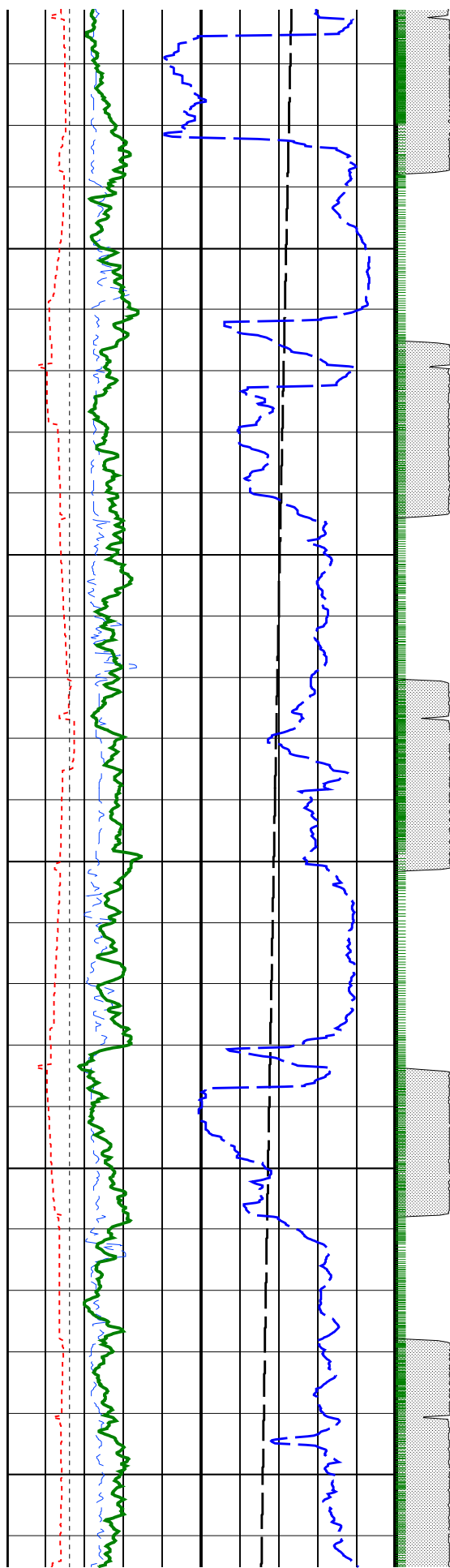




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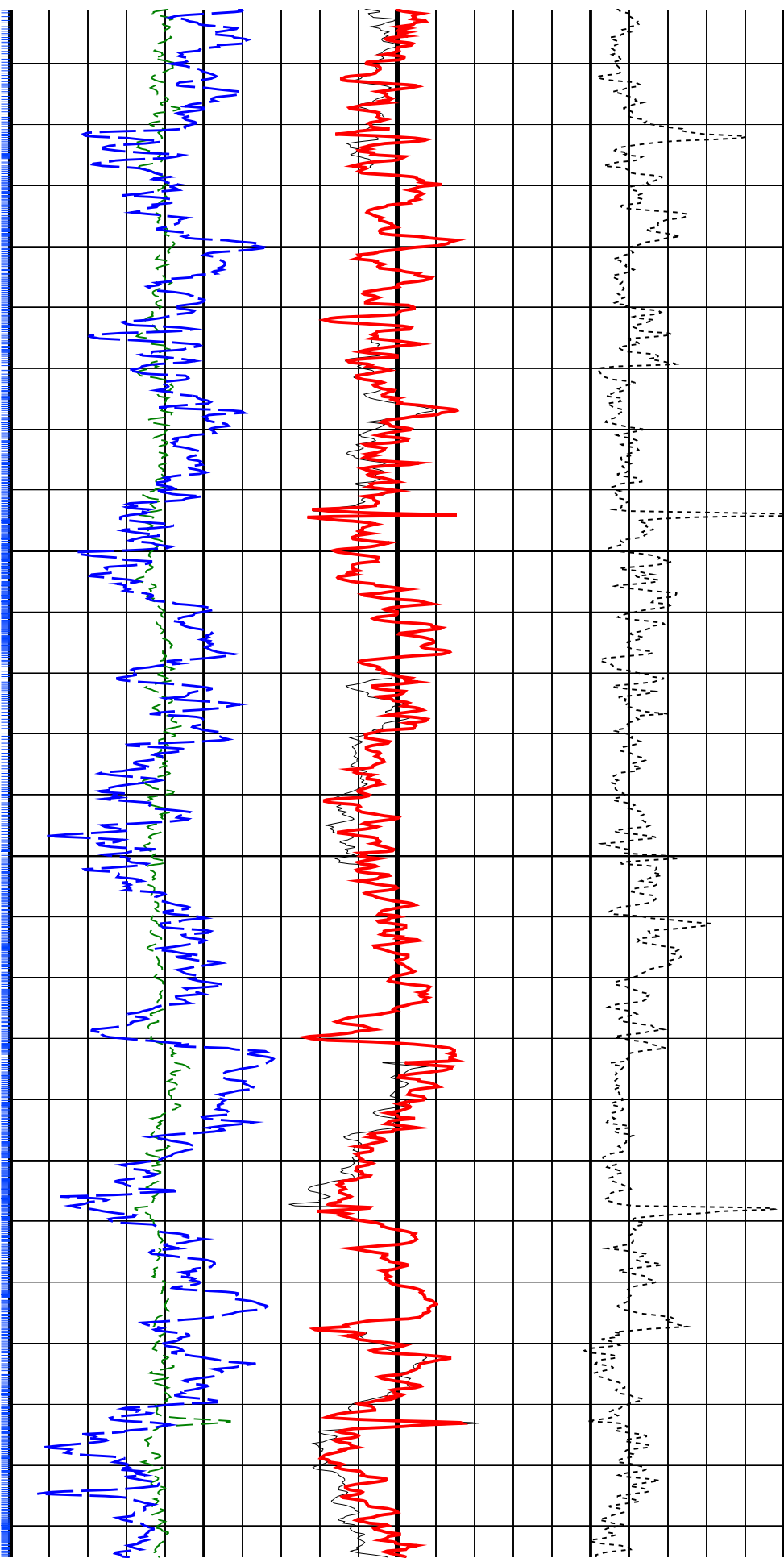


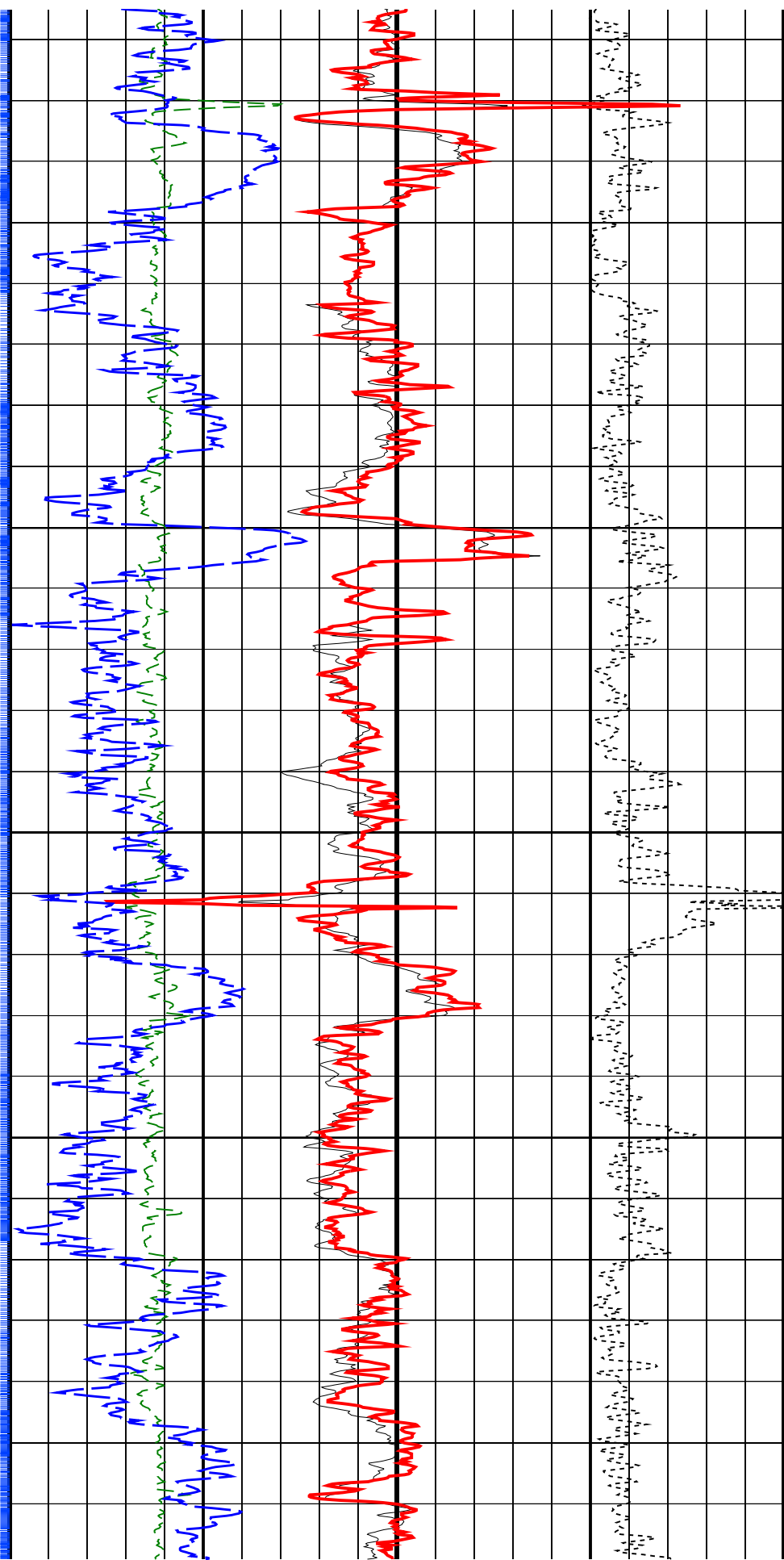
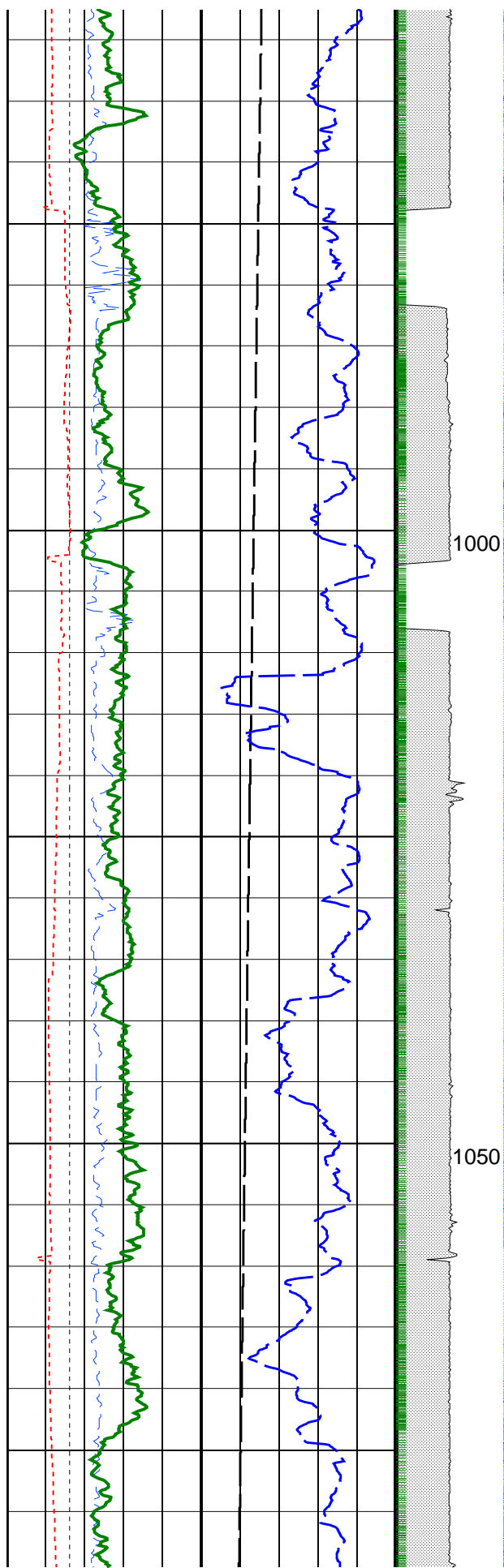


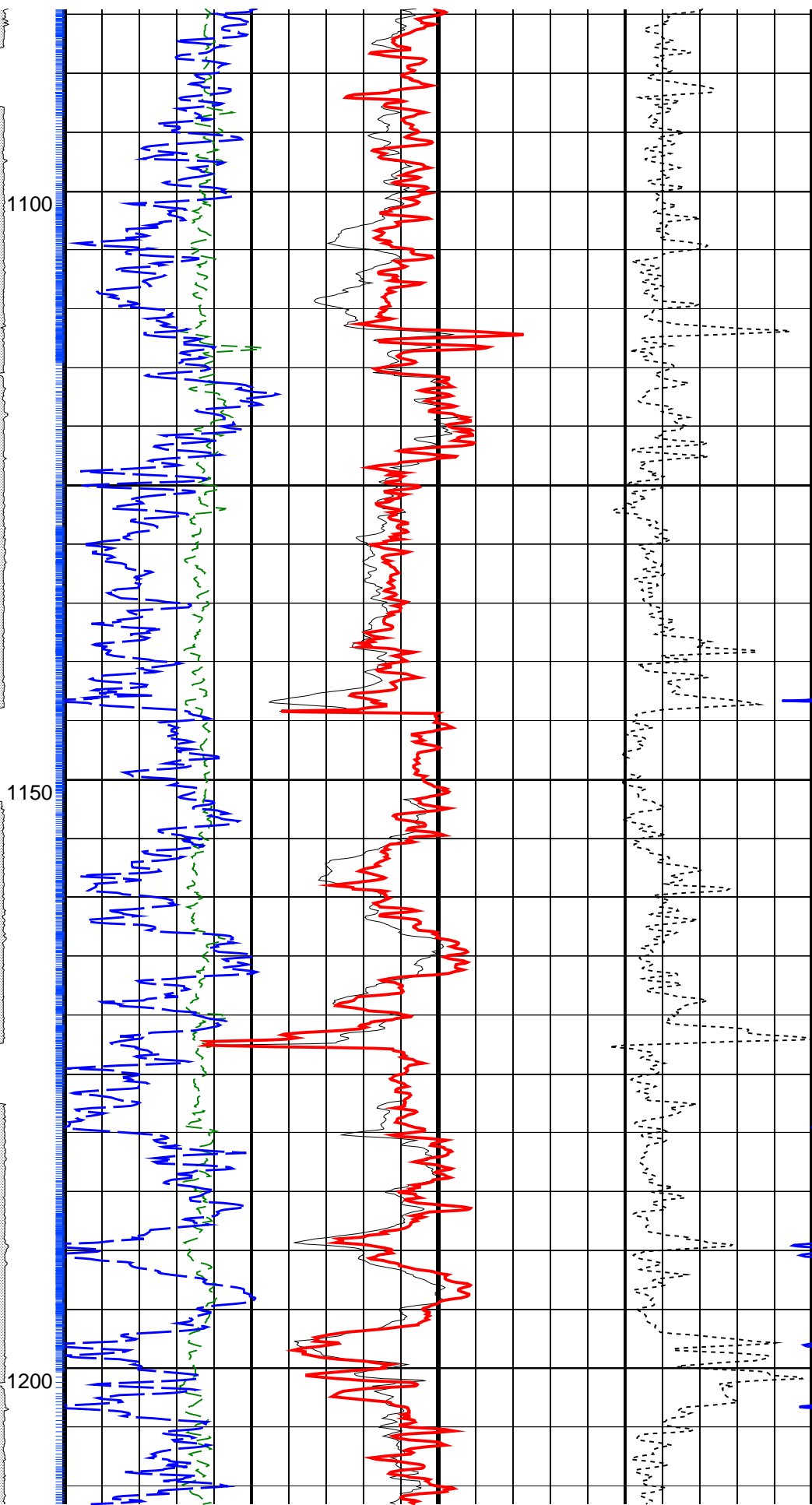
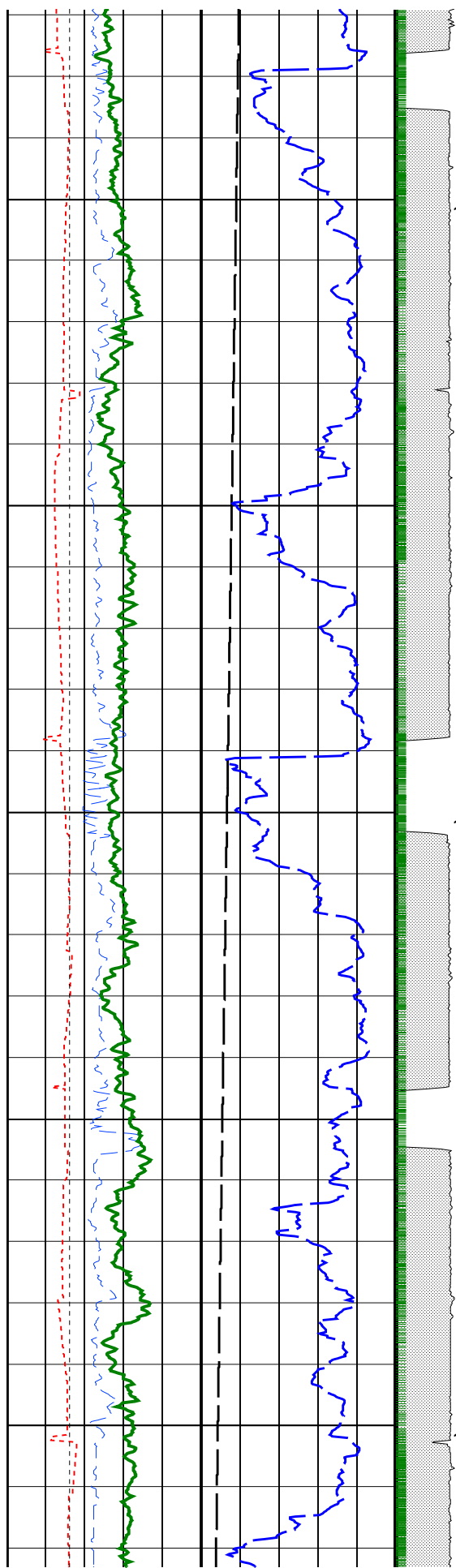
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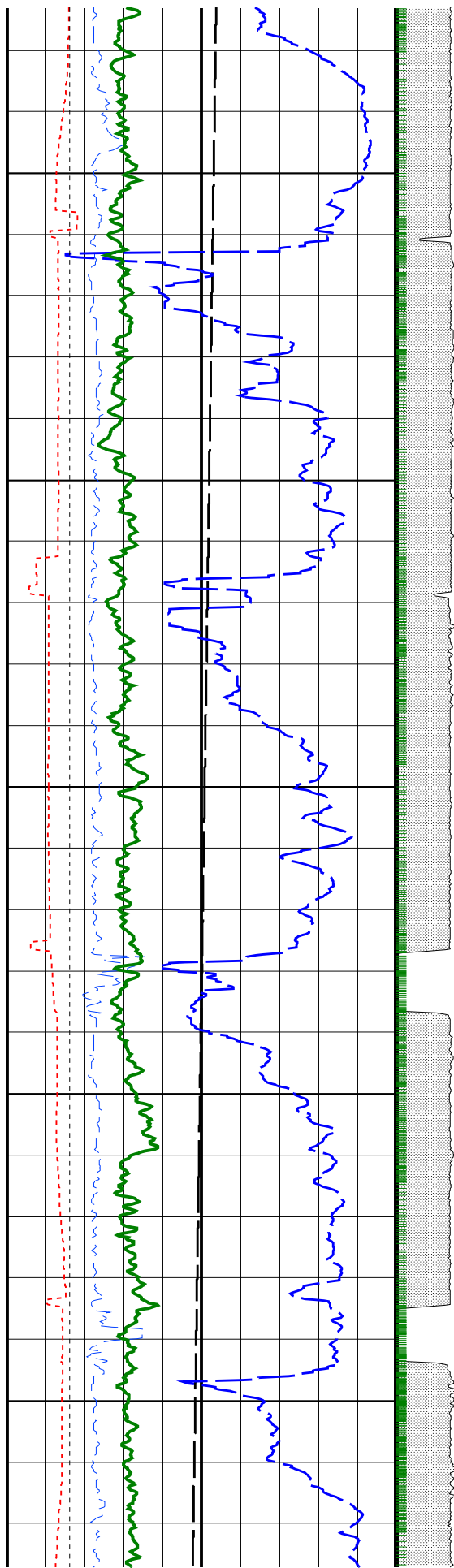
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950



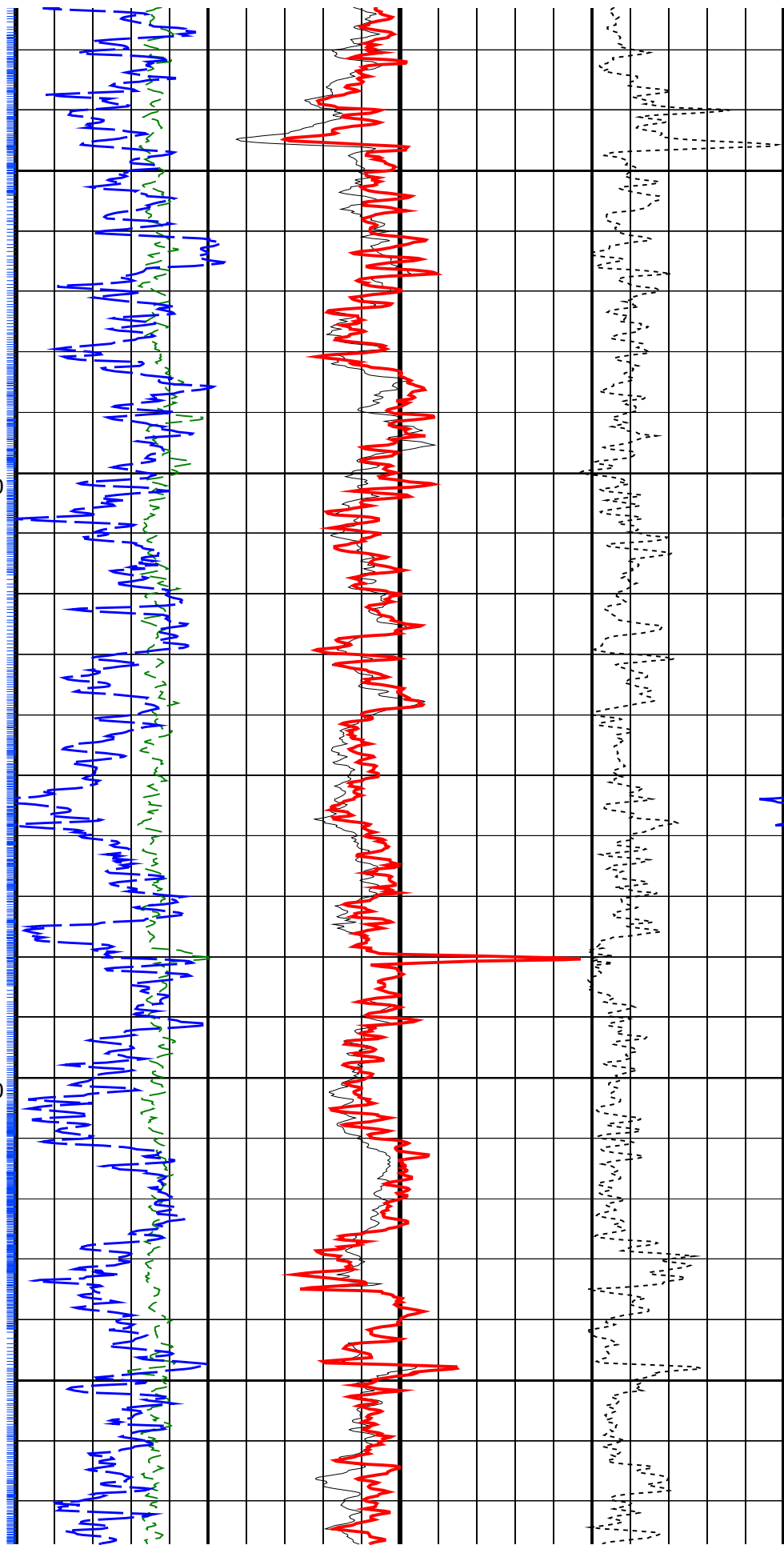


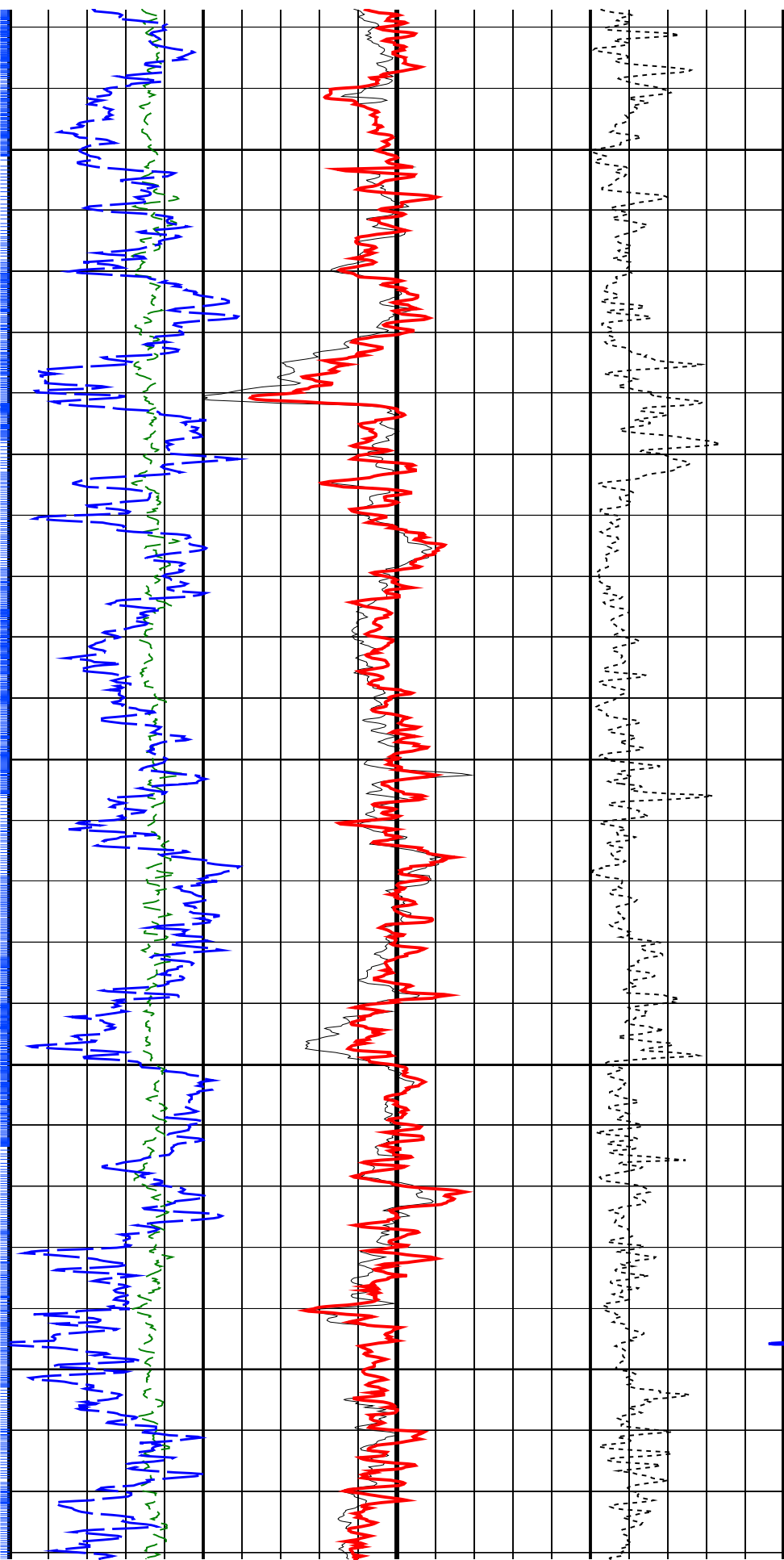
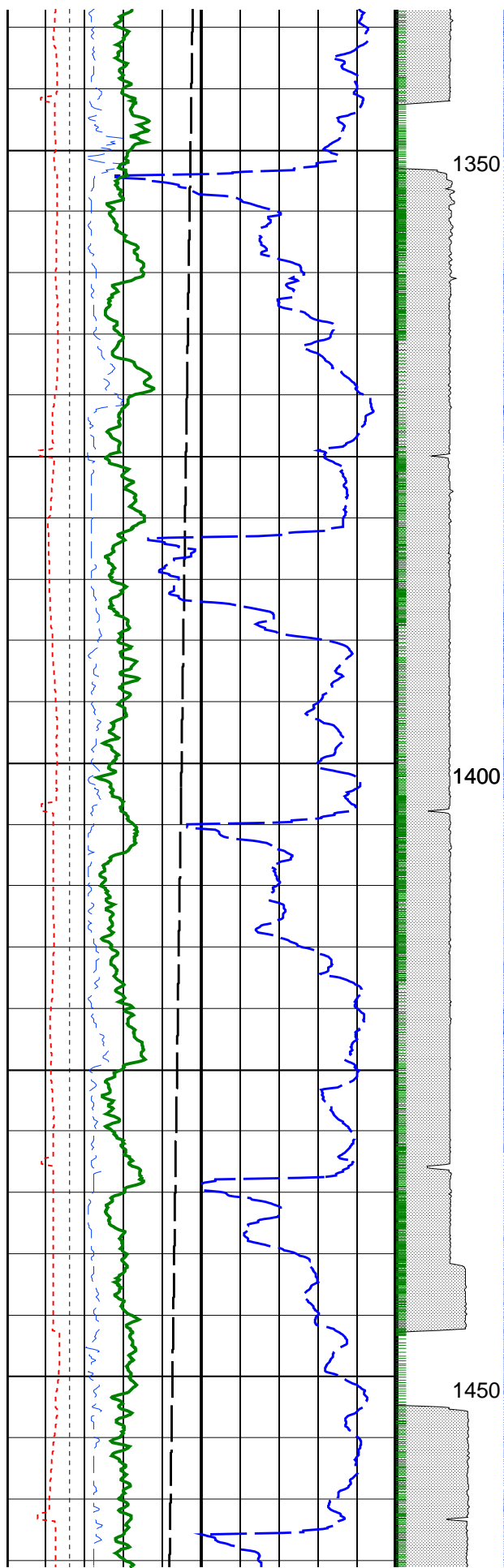


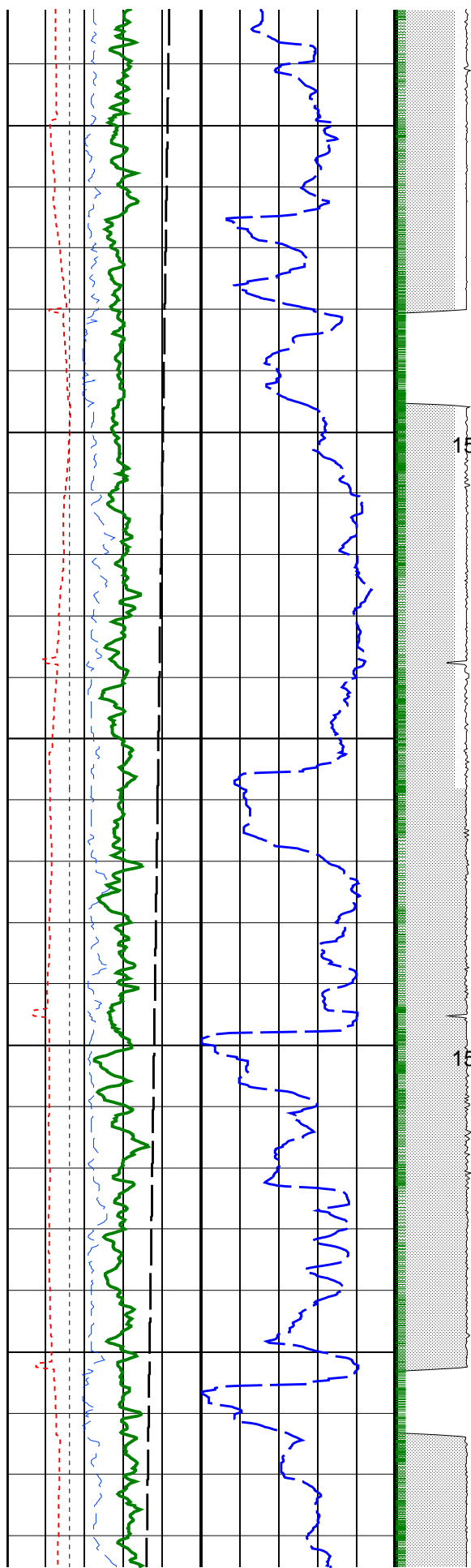


1250

1300

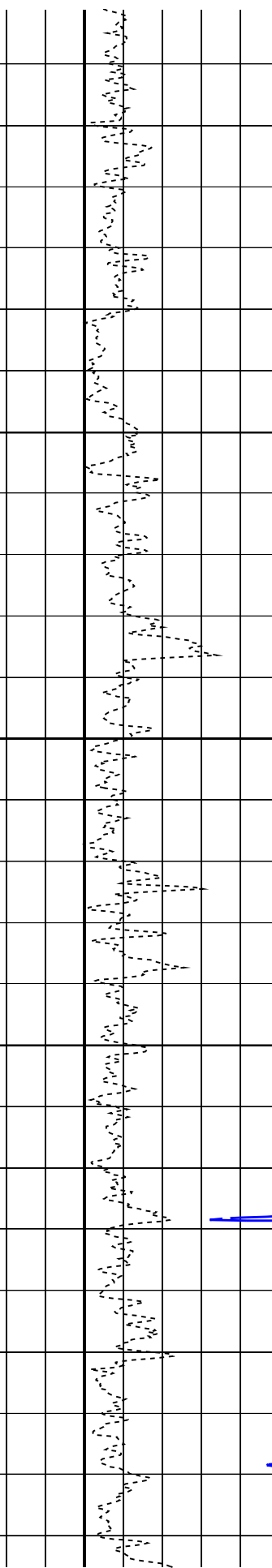
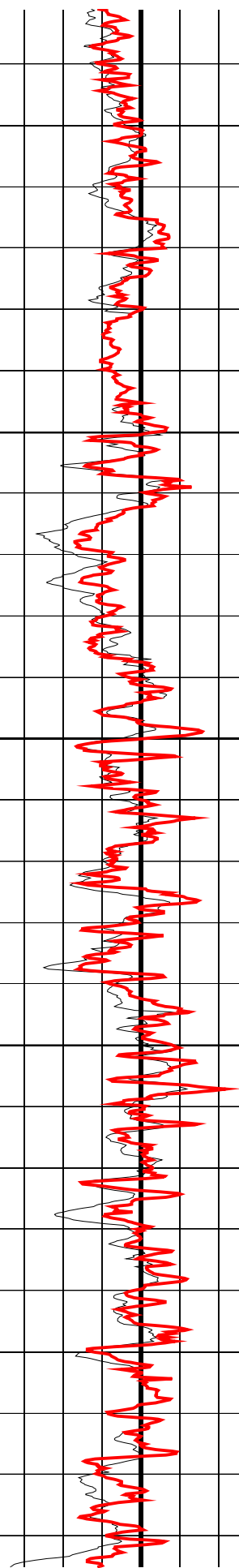
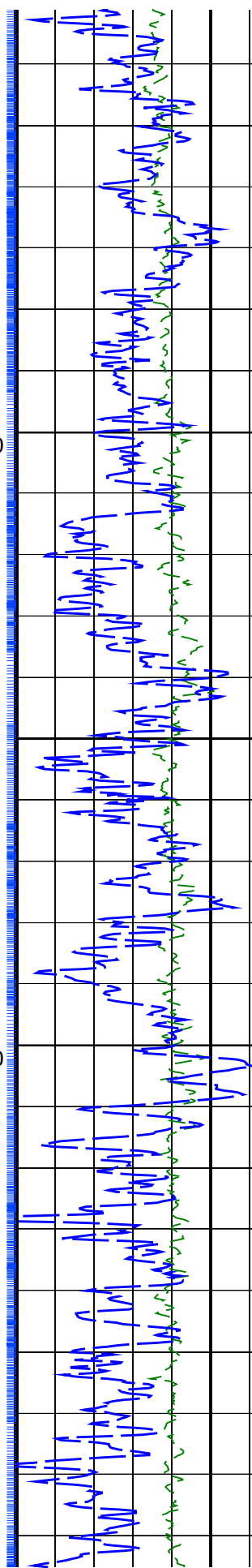


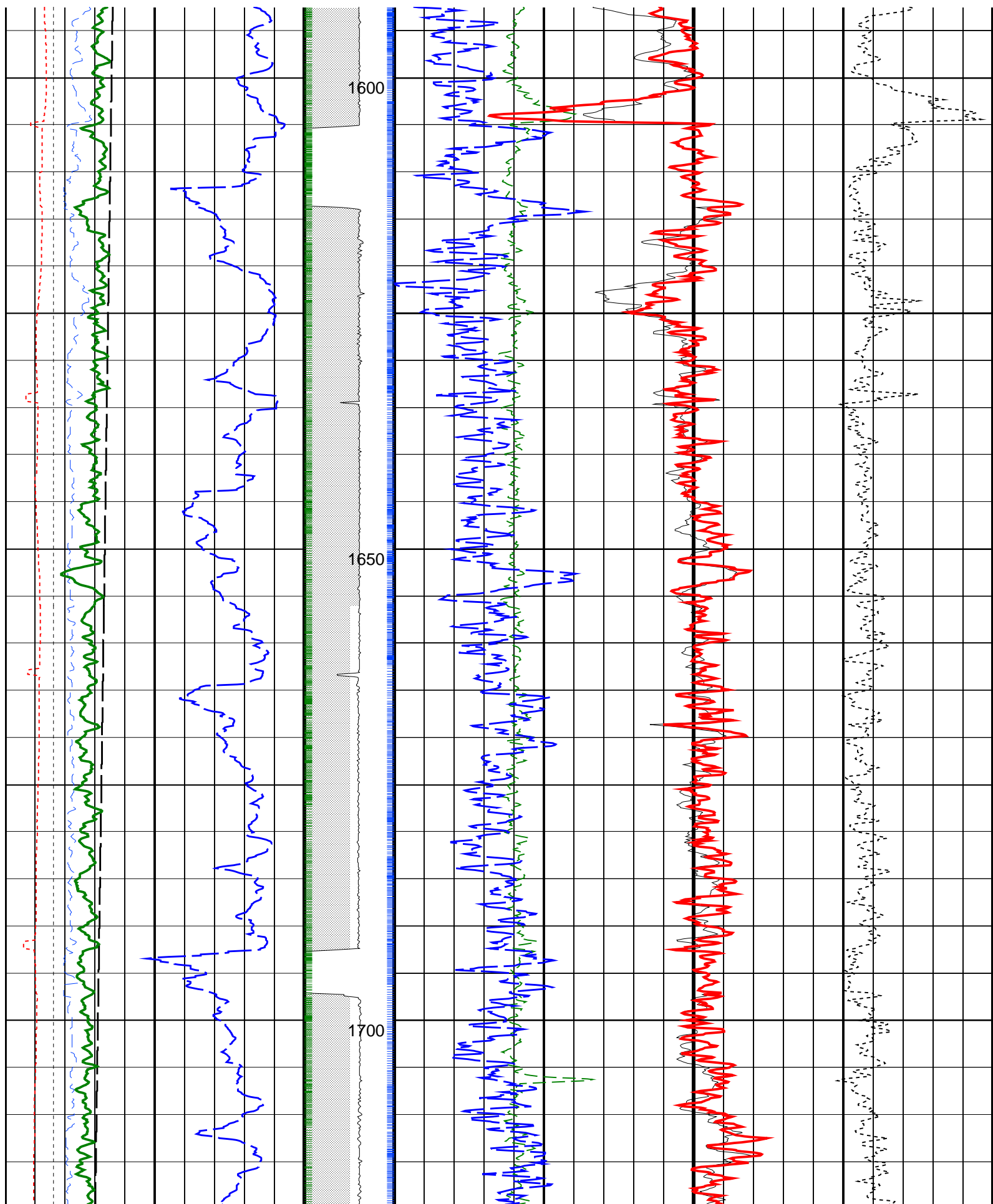


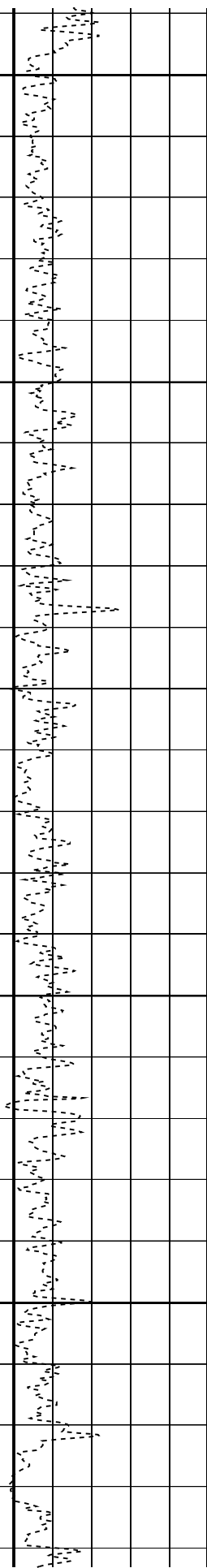
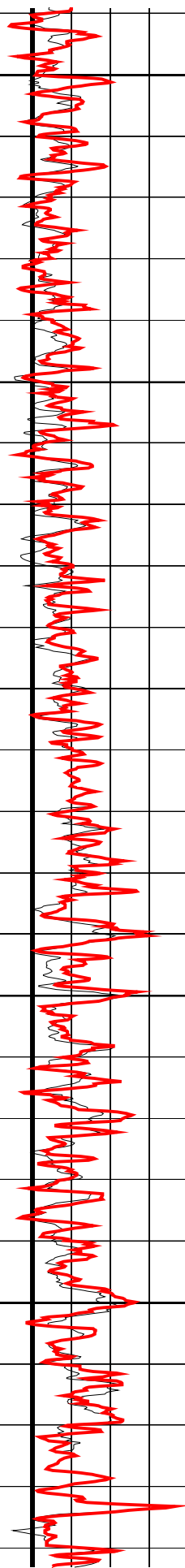
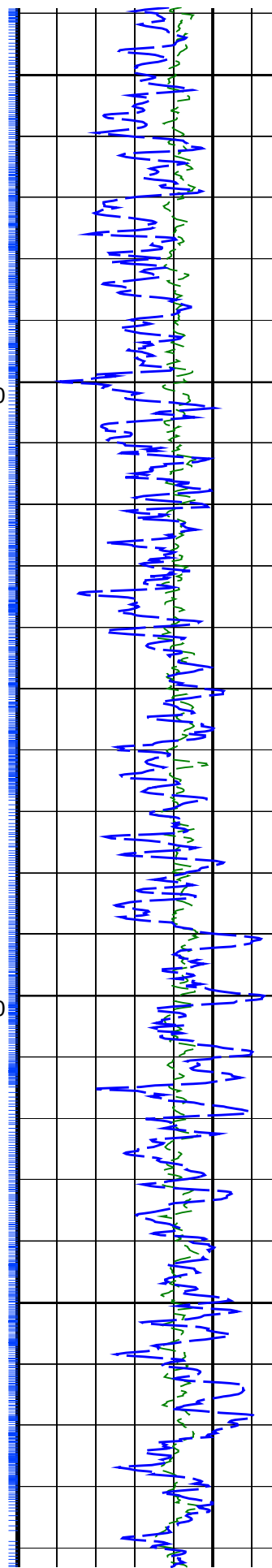
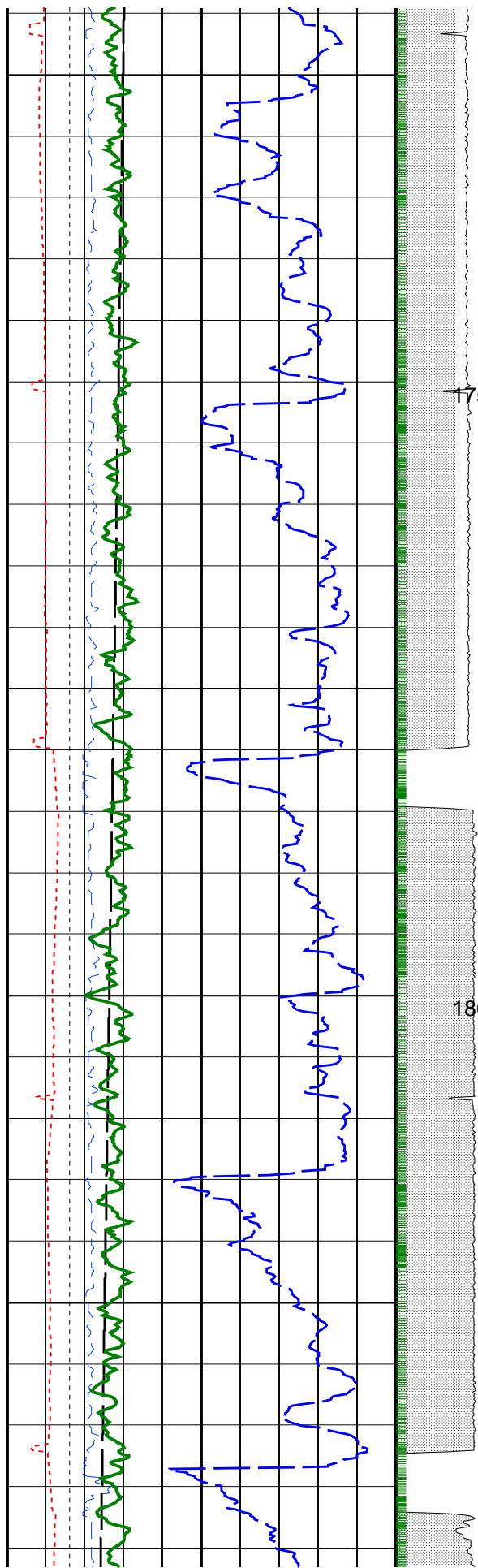


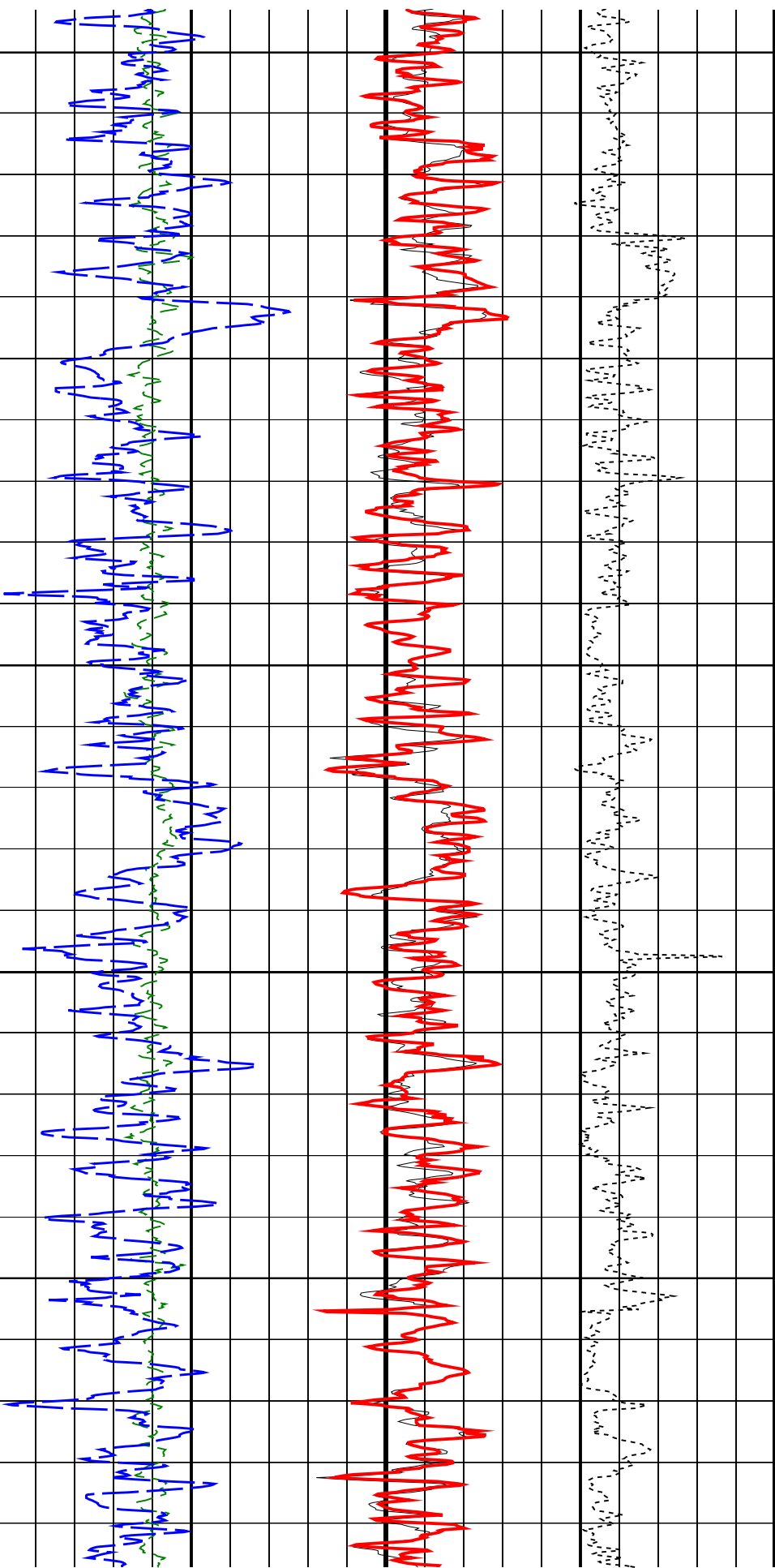
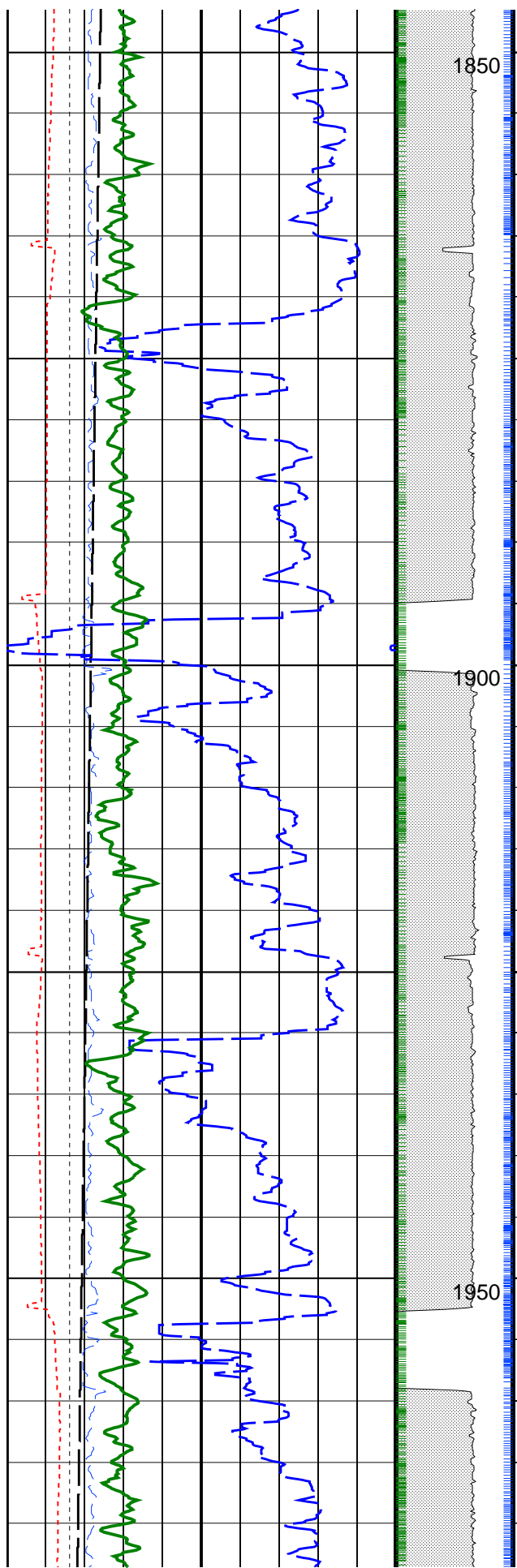
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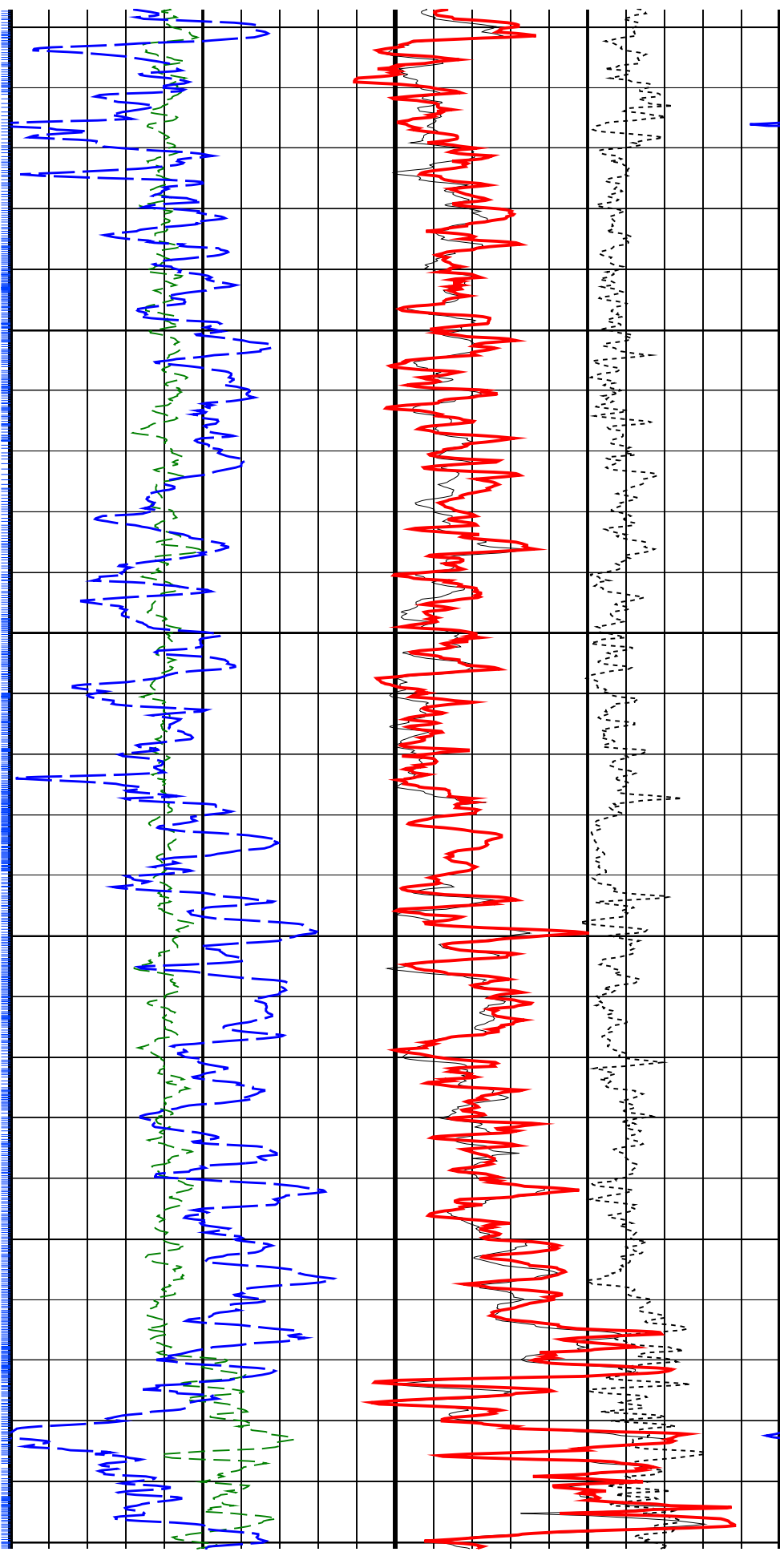
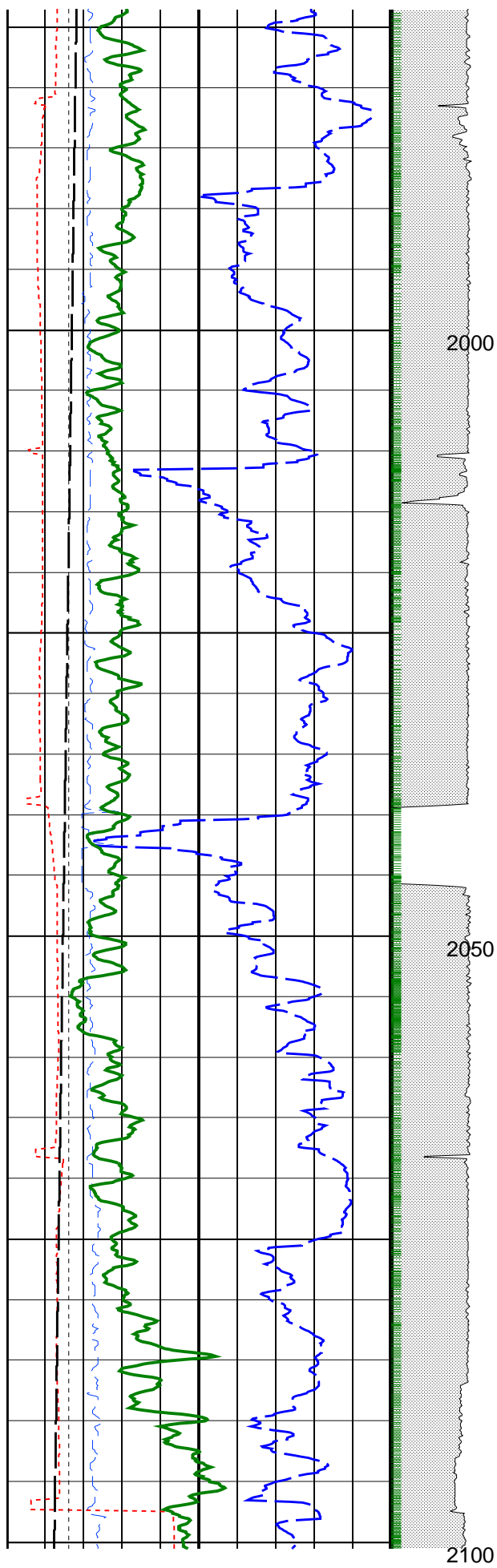
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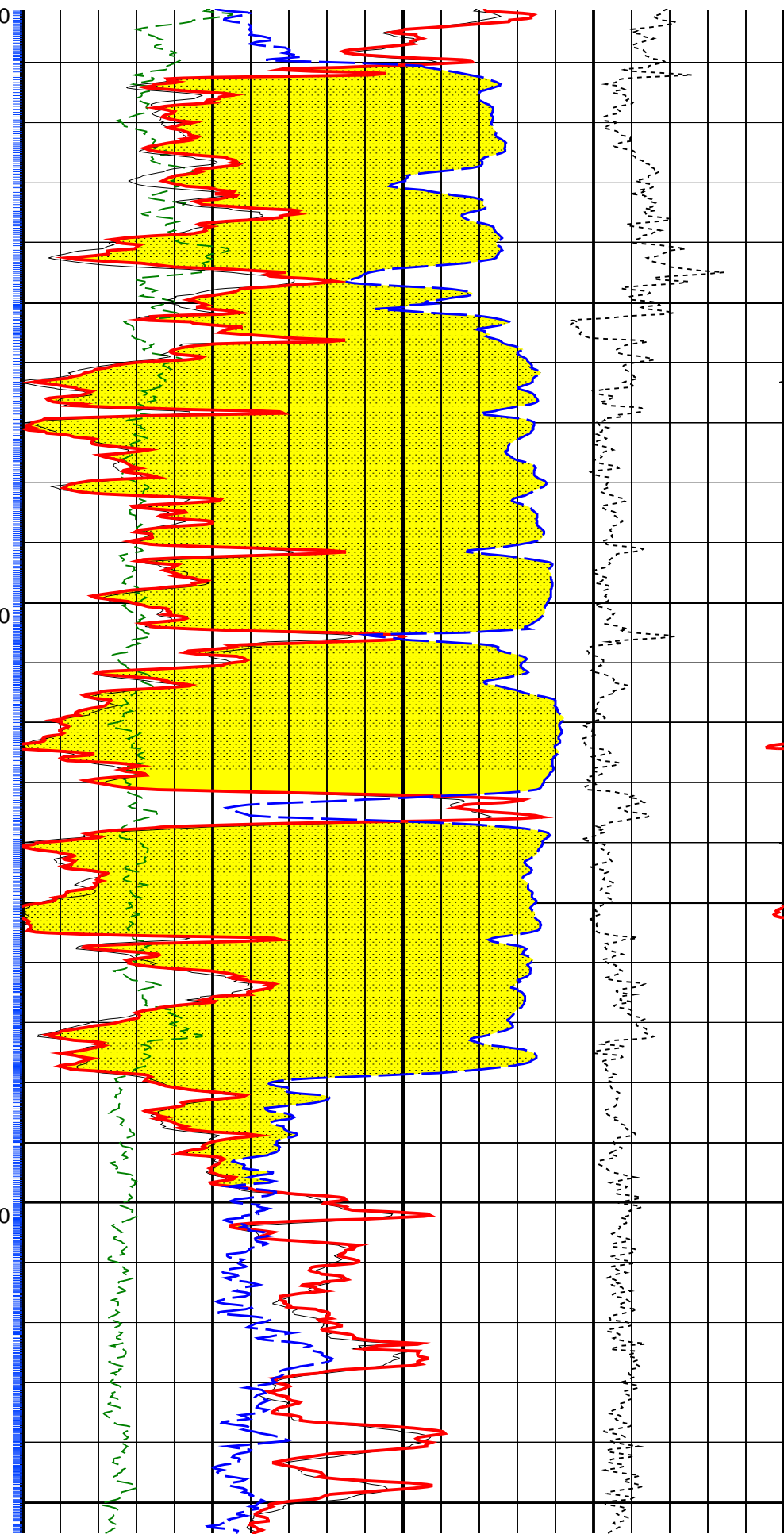
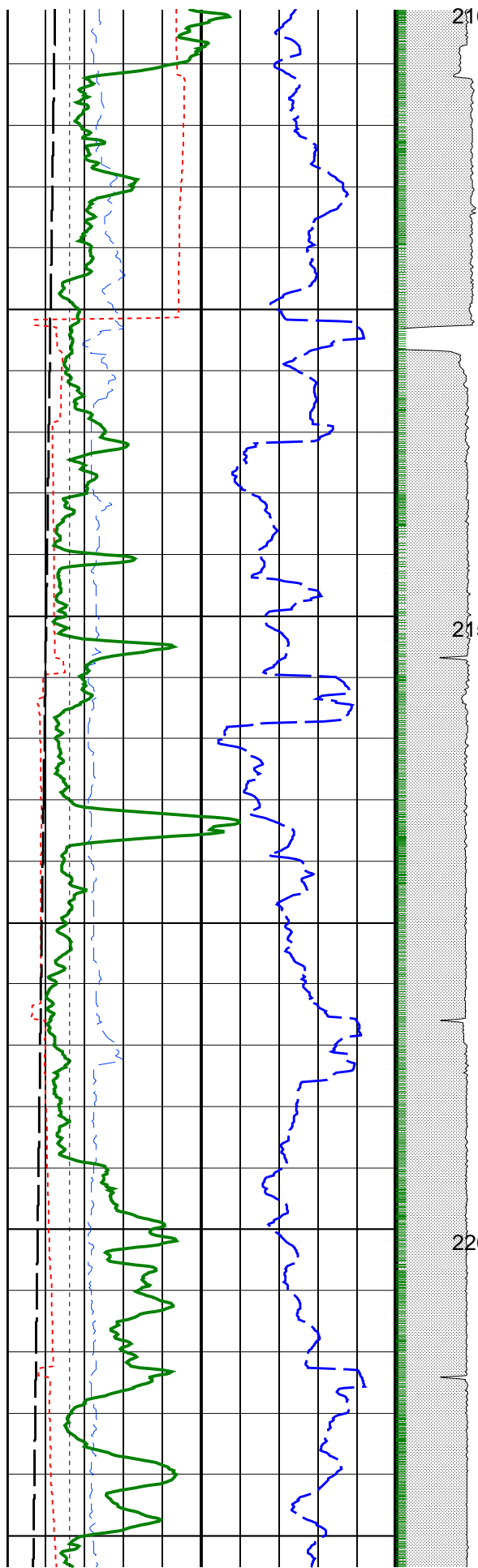


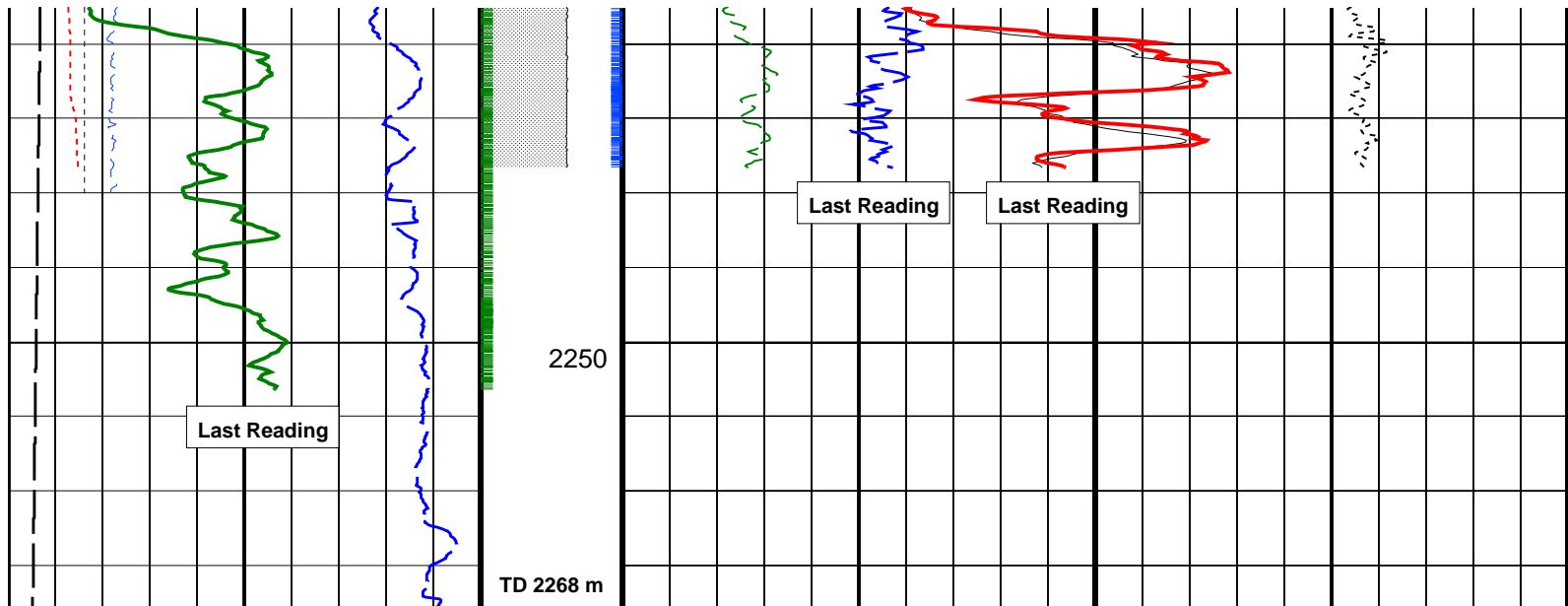












|  |  |  |   |  |  |  |  |
|--|--|--|---|--|--|--|--|
| <div>Horizontal Hole Diameter (HORD)</div> <div>6 (IN) 16</div>                              |  |  | ADN<br>Rotational<br>Speed<br>(RPM_ADN)<br>(RPM)<br>0 200 | <div>Photoelectric Factor, Bottom (PEB)</div> <div>0 (----) 10</div> |  | <div>Bulk Density Correction, Bottom<br/>(DRHB)</div> <div>-0.25 (G/C3) 0.25</div> |  |
|  |  |  |   |  |  |  |  |
| <div>Vertical Hole Diameter (VERD)</div> <div>6 (IN) 16</div>                                |  |  |   | <div>Bulk Density (RHOB)</div> <div>1.85 (G/C3) 2.85</div>           |  |  |  |
| <div>Density Time After Bit (TAB_DEN)</div> <div>0 (HR) 10</div>                             |  |  |   | <div>Thermal Neutron Porosity (TNPH)</div> <div>45 (PU) -15</div>    |  |  |  |
| <div>True vertical Depth (TVDE)</div> <div>1500 (M) 500</div>                                |  |  |   | <div>Bulk Density, Bottom (ROBB)</div> <div>1.85 (G/C3) 2.85</div>   |  |  |  |
| <div>RAB Gamma Ray (GR_RAB)</div> <div>0 (GAPI) 200</div>                                    |  |  |   | <div>Gas Area<br/>From ROBB to TNPH</div>                            |  |  |  |
| <div>Rate of Penetration, Averaged over Last<br/>5ft (ROP5_RM)</div> <div>200 (M/HR) 0</div> |  |  |   |  |  |  |  |

|                     |  |                 |
|---------------------|--|-----------------|
| PIP SUMMARY         |  |                 |
| + Neutron Samples   |  | Density Samples |
| + Gamma Ray Samples |  |                 |

|                          |           |        |           |
|--------------------------|-----------|--------|-----------|
| IDEAL Version: ID6_1C_10 |           |        |           |
| IDF                      |           |        |           |
| RAB                      | id6_1c_10 | MWD_10 | id6_1c_10 |
| ADN                      | id6_1c_10 |        |           |

|   |  |            |      |
|---|--|------------|------|
| 6.75-in. Azimuthal Density Neutron / Equipment Identification |  |            |      |
| Primary Equipment:  |  |            |      |
| Tool Name and Serial Number                                   |  | ADN6 - CA  | 289  |
| Neutron Logging Source  |  | NSR - M    | 161  |
| Density Logging Source  |  | GSR - J/Z  | 2125 |
| Stabilizer Size   |  | 8.25 - in. |      |
| Calibration Status  |  | Valid      |      |

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| 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   |                      |                   |                   | 1325  | Master             |                      |                    |  | 3006              | Master             |                      |  |  | 7495  |
|  | 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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| 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   |                      |                    |                   | 207.4 | Master             |                      |                   |  | 1606  | Master            |                      |                    |  | 4870  |
|  | 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) |  |       |

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

| 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   |                          |                    |                    |     | 53.02 | Master |                          |                    |                    |     | 122.8 | Master |                          |                    |                   |     | 539.2 |
|  | 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) |     |       |

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| 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   |                                 |                    | 1.033              | Master |                                  |                    | 1.116              |  |
|  | 1.011<br>(Minimum)              | 1.026<br>(Nominal) | 1.041<br>(Maximum) |        | 1.093<br>(Minimum)               | 1.118<br>(Nominal) | 1.143<br>(Maximum) |  |

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| 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   |                     |                    | 1.108              | Master |                         |                      | -0.7570              |  |
|  | 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   |                     |                    | 1.045              | Master |                         |                      | -0.9770              |  |
|  | 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   |                     |                    | 1.070              | Master |                         |                      | -0.7650              |  |
|  | 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   |                     |                    | 1.104              | Master |                         |                      | -0.7610              |  |
|  | 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   |                     |                    | 0.9970             | Master |                         |                      | -0.8130              |  |
|  | 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   |                     |                    | 1.097              | Master |                         |                      | -0.7910              |  |
|  | 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  | Near 1 tube 1 gain  |                    | Value              |        |                         |                      |                      |  |

| Phase  | Near 1 tube 1 gain  |                    | Value              |
|--------|---|--------------------|--------------------|
| Master |  |                    | 1.073              |
|        | 0.9000<br>(Minimum)   | 1.100<br>(Nominal) | 1.300<br>(Maximum) |
| Phase  | Near 2 tube 1 gain  |                    | Value              |
| Master |  |                    | 1.054              |
|        | 0.9000<br>(Minimum)   | 1.100<br>(Nominal) | 1.300<br>(Maximum) |

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

Primary Equipment:

Tool Name and Serial Number













Calibration Status

RAB6 - CA


125

Valid

Master: Calibration out of date 20-MAY-2001 9:46

| 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                                      |    |                    | 1.001              | Master |    |                    | 0.9962             | Master |    |                    | 1.004              |
|   | 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                                      |   |                    | 0.9992             | Master |   |                    | 0.9975             | Master |   |                    | 0.9926             |
|   | 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                                      |  |                    | 1.003              | Master |  |                    | 0.9987             | Master |  |                    | 1.006              |
|   | 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                                      |  |                    | 1.001              | Master |  |                    | 1.005              | Master |  |                    | 1.000              |
|   | 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: Calibration out of date 20-MAY-2001 9:46

| 6.75-in. Resistivity At-the-Bit Calibration |   |  |                    |  |                    |  |  |  |  |  |        |
|---|---|--|--------------------|--|--------------------|--|--|--|--|--|--------|
| Gamma Ray: Blanket                          |   |  |                    |  |                    |  |  |  |  |  |        |
| Phase                                       | Gamma ray factor  |  |                    |  |                    |  |  |  |  |  | Value  |
| Master                                      |  |  |                    |  |                    |  |  |  |  |  | 0.8812 |
|   | 0.7500<br>(Minimum)   |  | 1.000<br>(Nominal) |  | 1.250<br>(Maximum) |  |  |  |  |  |        |

ANADRILL

SCHLUMBERGER

Survey report

24-Jan-2002 04:41:48

Page 1 of 3

Client.....: ESSO Australia Ltd.  
Field.....: Tuna

Well.....: WTN-W48 A  
API number.....:  
Engineer.....: T.Sims

Rig.....: NABORS 453  
STATE.....: Victoria

Spud date.....: 19-Jan-02  
Last survey date.....: 24-Jan-02  
Total accepted surveys...: 59  
MD of first survey.....: 628.00 m  
MD of last survey.....: 2268.00 m

STATE:.....: Victoria

----- Survey calculation methods-----

Method for positions.....: Minimum curvature  
Method for DLS.....: Mason & Taylor

----- Depth reference-----

Permanent datum.....: Mean Sea Level  
Depth reference.....: Driller's Depth  
GL above permanent.....: -61.00 m  
KB above permanent.....: 34.70 m  
DF above permanent.....: 34.70 m

----- Vertical section origin-----

Latitude (+N/S-).....: 0.00 m  
Departure (+E/W-).....: 0.00 m

----- Platform reference point-----

Latitude (+N/S-).....: -5.06 m  
Departure (+E/W-).....: 55.86 m

Azimuth from rotary table to target: 64.64 degrees

----- Geomagnetic data -----

Magnetic model.....: BGGM version 2000  
Magnetic date.....: 31-Dec-2001  
Magnetic field strength...: 1200.65 HCNT  
Magnetic dec (+E/W-).....: 13.18 degrees  
Magnetic dip.....: -68.71 degrees

----- MWD survey Reference Criteria -----

Reference G.....: 1000.02 mGal  
Reference H.....: 1200.65 HCNT  
Reference Dip.....: -68.71 degrees  
Tolerance of G.....: (+/-) 2.50 mGal  
Tolerance of H.....: (+/-) 6.00 HCNT  
Tolerance of Dip.....: (+/-) 0.45 degrees

----- Corrections -----

Magnetic dec (+E/W-).....: 13.18 degrees  
Grid convergence (+E/W-)..: -0.86 degrees  
Total az corr (+E/W-).....: 14.04 degrees  
(Total az corr = magnetic dec - grid conv)  
Sag applied (Y/N).....: No degree: 0.00

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ANADRILL SCHLUMBERGER Survey Report

24-Jan-2002 04:41:48

Page 2 of 3

| 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 |
|-------|--------------------|------------------|---------------------|-------------------|---------------|----------------------|-----------------|-----------------|-----------------|---------------|---------------|----------------|----------------|
| 1     | 628.00             | 25.50            | 95.71               | 0.00              | 607.03        | 144.98               | -32.99          | 176.08          | 179.14          | 100.61        | 0.00          | TIP            | -              |
| 2     | 637.42             | 25.67            | 90.66               | 9.42              | 615.53        | 148.55               | -33.22          | 180.14          | 183.17          | 100.45        | 2.32          | MWD            | 6-axis         |
| 3     | 665.50             | 32.04            | 84.68               | 28.08             | 640.11        | 161.03               | -32.59          | 193.65          | 196.38          | 99.55         | 2.49          | MWD            | 6-axis         |
| 4     | 695.37             | 33.51            | 81.07               | 29.87             | 665.23        | 176.39               | -30.58          | 209.69          | 211.91          | 98.30         | 0.82          | MWD            | 6-axis         |
| 5     | 723.88             | 36.79            | 76.42               | 28.51             | 688.54        | 192.30               | -27.35          | 225.77          | 227.42          | 96.91         | 1.48          | MWD            | 6-axis         |
| 6     | 751.52             | 38.73            | 72.29               | 27.64             | 710.40        | 208.97               | -22.78          | 242.06          | 243.13          | 95.38         | 1.15          | MWD            | 6-axis         |
| 7     | 780.30             | 38.69            | 71.34               | 28.78             | 732.85        | 226.83               | -17.16          | 259.16          | 259.72          | 93.79         | 0.21          | MWD            | 6-axis         |
| 8     | 808.87             | 43.85            | 69.48               | 28.57             | 754.32        | 245.57               | -10.83          | 276.90          | 277.11          | 92.24         | 1.86          | MWD            | 6-axis         |
| 9     | 837.41             | 45.97            | 69.57               | 28.54             | 774.53        | 265.65               | -3.78           | 295.77          | 295.80          | 90.73         | 0.74          | MWD            | 6-axis         |
| 10    | 865.79             | 48.92            | 67.80               | 28.38             | 793.72        | 286.50               | 3.82            | 315.24          | 315.26          | 89.31         | 1.14          | MWD            | 6-axis         |
| 11    | 893.98             | 52.42            | 65.60               | 28.19             | 811.59        | 308.29               | 12.46           | 335.26          | 335.49          | 87.87         | 1.38          | MWD            | 6-axis         |
| 12    | 923.17             | 55.44            | 63.56               | 29.19             | 828.78        | 331.87               | 22.59           | 356.56          | 357.28          | 86.38         | 1.18          | MWD            | 6-axis         |
| 13    | 952.07             | 59.26            | 60.72               | 28.90             | 844.37        | 356.18               | 33.97           | 378.06          | 379.58          | 84.87         | 1.56          | MWD            | 6-axis         |
| 14    | 980.67             | 61.56            | 59.44               | 28.60             | 858.49        | 380.96               | 46.37           | 399.61          | 402.29          | 83.38         | 0.89          | MWD            | 6-axis         |
| 15    | 1009.06            | 62.87            | 59.54               | 28.39             | 871.72        | 405.98               | 59.12           | 421.25          | 425.38          | 82.01         | 0.46          | MWD            | 6-axis         |
| 16    | 1037.57            | 64.15            | 59.67               | 28.51             | 884.44        | 431.40               | 72.03           | 443.26          | 449.07          | 80.77         | 0.45          | MWD            | 6-axis         |
| 17    | 1066.26            | 63.79            | 59.11               | 28.69             | 897.03        | 457.07               | 85.16           | 465.45          | 473.17          | 79.63         | 0.22          | MWD            | 6-axis         |
| 18    | 1094.51            | 63.16            | 58.43               | 28.25             | 909.64        | 482.21               | 98.27           | 487.06          | 496.87          | 78.59         | 0.31          | MWD            | 6-axis         |
| 19    | 1122.19            | 61.98            | 59.38               | 27.68             | 922.40        | 506.66               | 110.95          | 508.10          | 520.07          | 77.68         | 0.52          | MWD            | 6-axis         |
| 20    | 1150.39            | 61.14            | 59.16               | 28.20             | 935.83        | 531.34               | 123.63          | 529.41          | 543.65          | 76.86         | 0.31          | MWD            | 6-axis         |
| 21    | 1178.94            | 62.03            | 60.19               | 28.55             | 949.41        | 556.36               | 136.30          | 551.09          | 567.69          | 76.11         | 0.44          | MWD            | 6-axis         |
| 22    | 1207.15            | 63.15            | 60.28               | 28.21             | 962.40        | 581.33               | 148.73          | 572.83          | 591.82          | 75.44         | 0.40          | MWD            | 6-axis         |
| 23    | 1236.27            | 62.43            | 59.97               | 29.12             | 975.71        | 607.15               | 161.63          | 595.28          | 616.83          | 74.81         | 0.26          | MWD            | 6-axis         |
| 24    | 1265.12            | 62.15            | 59.81               | 28.85             | 989.13        | 632.60               | 174.45          | 617.38          | 641.55          | 74.22         | 0.11          | MWD            | 6-axis         |
| 25    | 1293.99            | 61.08            | 59.79               | 28.87             | 1002.85       | 657.91               | 187.22          | 639.33          | 666.18          | 73.68         | 0.37          | MWD            | 6-axis         |
| 26    | 1323.58            | 61.56            | 59.93               | 29.59             | 1017.05       | 683.78               | 200.26          | 661.78          | 691.41          | 73.16         | 0.17          | MWD            | 6-axis         |
| 27    | 1351.66            | 61.96            | 60.22               | 28.08             | 1030.34       | 708.44               | 212.60          | 683.22          | 715.53          | 72.72         | 0.17          | MWD            | 6-axis         |
| 28    | 1380.99            | 62.87            | 60.44               | 29.33             | 1043.92       | 734.36               | 225.47          | 705.80          | 740.94          | 72.28         | 0.32          | MWD            | 6-axis         |
| 29    | 1410.08            | 62.26            | 60.33               | 29.09             | 1057.32       | 760.10               | 238.22          | 728.25          | 766.22          | 71.89         | 0.21          | MWD            | 6-axis         |
| 30    | 1439.00            | 62.01            | 60.44               | 28.92             | 1070.84       | 785.60               | 250.86          | 750.48          | 791.29          | 71.52         | 0.09          | MWD            | 6-axis         |

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ANADRILL SCHLUMBERGER Survey Report

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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 |
|-------|--------------------|------------------|---------------------|-------------------|---------------|----------------------|-----------------|-----------------|-----------------|---------------|---------------|----------------|----------------|
| 31    | 1468.28            | 60.88            | 60.22               | 29.28             | 1084.84       | 811.25               | 263.59          | 772.82          | 816.54          | 71.17         | 0.39          | MWD            | 6-axis         |
| 32    | 1496.90            | 62.33            | 59.64               | 28.62             | 1098.45       | 836.34               | 276.20          | 794.61          | 841.25          | 70.83         | 0.54          | MWD            | 6-axis         |
| 33    | 1525.62            | 63.33            | 59.19               | 28.72             | 1111.56       | 861.78               | 289.21          | 816.61          | 866.31          | 70.50         | 0.38          | MWD            | 6-axis         |
| 34    | 1554.18            | 62.76            | 59.51               | 28.56             | 1124.51       | 887.13               | 302.18          | 838.51          | 891.30          | 70.18         | 0.22          | MWD            | 6-axis         |
| 35    | 1583.01            | 62.03            | 59.58               | 28.83             | 1137.87       | 912.58               | 315.13          | 860.53          | 916.42          | 69.89         | 0.25          | MWD            | 6-axis         |
| 36    | 1612.06            | 62.03            | 59.85               | 29.05             | 1151.49       | 938.14               | 328.07          | 882.68          | 941.68          | 69.61         | 0.08          | MWD            | 6-axis         |
| 37    | 1641.08            | 63.64            | 58.36               | 29.02             | 1164.74       | 963.84               | 341.33          | 904.84          | 967.08          | 69.33         | 0.72          | MWD            | 6-axis         |
| 38    | 1670.28            | 63.05            | 58.63               | 29.20             | 1177.84       | 989.78               | 354.97          | 927.09          | 992.72          | 69.05         | 0.22          | MWD            | 6-axis         |
| 39    | 1699.28            | 62.23            | 58.75               | 29.00             | 1191.17       | 1015.40              | 368.35          | 949.09          | 1018.07         | 68.79         | 0.29          | MWD            | 6-axis         |
| 40    | 1728.42            | 62.83            | 59.01               | 29.14             | 1204.61       | 1041.12              | 381.71          | 971.23          | 1043.54         | 68.54         | 0.22          | MWD            | 6-axis         |
| 41    | 1757.48            | 62.30            | 59.03               | 29.06             | 1218.00       | 1066.79              | 394.99          | 993.34          | 1068.99         | 68.32         | 0.18          | MWD            | 6-axis         |
| 42    | 1785.41            | 61.38            | 59.30               | 27.93             | 1231.18       | 1091.30              | 407.61          | 1014.48         | 1093.31         | 68.11         | 0.34          | MWD            | 6-axis         |
| 43    | 1814.52            | 61.98            | 59.01               | 29.11             | 1244.99       | 1116.81              | 420.75          | 1036.48         | 1118.63         | 67.91         | 0.22          | MWD            | 6-axis         |
| 44    | 1843.43            | 61.56            | 59.12               | 28.91             | 1258.66       | 1142.16              | 433.84          | 1058.33         | 1143.80         | 67.71         | 0.15          | MWD            | 6-axis         |
| 45    | 1871.96            | 62.19            | 59.37               | 28.53             | 1272.11       | 1167.21              | 446.71          | 1079.95         | 1168.69         | 67.53         | 0.23          | MWD            | 6-axis         |
| 46    | 1900.95            | 61.63            | 59.56               | 28.99             | 1285.76       | 1192.68              | 459.70          | 1101.98         | 1194.02         | 67.36         | 0.20          | MWD            | 6-axis         |
| 47    | 1929.89            | 62.51            | 59.14               | 28.94             | 1299.32       | 1218.14              | 472.74          | 1123.98         | 1219.35         | 67.19         | 0.33          | MWD            | 6-axis         |
| 48    | 1958.60            | 61.74            | 59.42               | 28.71             | 1312.74       | 1243.41              | 485.70          | 1145.79         | 1244.49         | 67.03         | 0.28          | MWD            | 6-axis         |
| 49    | 1987.71            | 62.93            | 59.29               | 29.11             | 1326.26       | 1269.08              | 498.85          | 1167.98         | 1270.04         | 66.87         | 0.41          | MWD            | 6-axis         |

|    |         |       |       |       |         |         |        |         |         |       |      |     |            |
|----|---------|-------|-------|-------|---------|---------|--------|---------|---------|-------|------|-----|------------|
| 48 | 1958.60 | 61.74 | 59.42 | 28.71 | 1312.74 | 1243.41 | 485.70 | 1145.79 | 1244.49 | 67.03 | 0.28 | MWD | 6-axis     |
| 49 | 1987.71 | 62.93 | 59.29 | 29.11 | 1326.26 | 1269.08 | 498.85 | 1167.98 | 1270.04 | 66.87 | 0.41 | MWD | 6-axis     |
| 50 | 2016.29 | 62.64 | 59.41 | 28.58 | 1339.33 | 1294.39 | 511.80 | 1189.84 | 1295.25 | 66.73 | 0.11 | MWD | 6-axis     |
| 51 | 2045.59 | 61.94 | 59.77 | 29.30 | 1352.95 | 1320.23 | 524.93 | 1212.21 | 1320.99 | 66.59 | 0.26 | MWD | 6-axis     |
| 52 | 2074.80 | 63.76 | 59.47 | 29.21 | 1366.28 | 1346.12 | 538.08 | 1234.63 | 1346.79 | 66.45 | 0.63 | MWD | 6-axis     |
| 53 | 2103.81 | 63.69 | 60.18 | 29.01 | 1379.12 | 1372.04 | 551.15 | 1257.12 | 1372.63 | 66.33 | 0.22 | MWD | 6-axis     |
| 54 | 2130.96 | 62.44 | 60.29 | 27.15 | 1391.42 | 1396.17 | 563.17 | 1278.13 | 1396.70 | 66.22 | 0.46 | MWD | 6-axis     |
| 55 | 2160.05 | 63.95 | 59.90 | 29.09 | 1404.54 | 1422.05 | 576.11 | 1300.64 | 1422.52 | 66.11 | 0.53 | MWD | 6-axis     |
| 56 | 2189.53 | 64.50 | 59.77 | 29.48 | 1417.36 | 1448.51 | 589.45 | 1323.59 | 1448.91 | 65.99 | 0.19 | MWD | 6-axis     |
| 57 | 2218.85 | 65.72 | 59.79 | 29.32 | 1429.70 | 1475.01 | 602.84 | 1346.57 | 1475.35 | 65.88 | 0.42 | MWD | 6-axis     |
| 58 | 2243.88 | 66.47 | 59.87 | 25.03 | 1439.84 | 1497.81 | 614.34 | 1366.35 | 1498.11 | 65.79 | 0.30 | MWD | 6-axis     |
| 59 | 2268.00 | 66.50 | 59.90 | 24.12 | 1449.46 | 1519.85 | 625.44 | 1385.49 | 1520.11 | 65.70 | 0.02 | MWD | Projection |

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Company: **ESSO Australia Ltd.**

Well: **WTN-W48 A**

Field: **Tuna**

Rig: **NABORS 453**

State: **Victoria**

**IDEAL** services from **Anadrill**

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

**Schlumberger**