



1 : 240

[illegible]

WELL INFORMATION

| | | | | | |
|----------------------------------|-------------------|--|--|--|--|
| MWD Run Number | 200 | | | | |
| Date run completed | 28-Sep-13 | | | | |
| Rig Bit Number | 0200 | | | | |
| Bit Size (in) | 6.125 | | | | |
| Tool Nominal OD (in) | 4.750 | | | | |
| Log Start Depth (MD, ft) | 7,707.00 | | | | |
| Log End Depth (MD, ft) | 14,452.00 | | | | |
| Drill or Wipe | Drill | | | | |
| Drill/Wipe Start Date and Time | 24-Sep-13 01:00 | | | | |
| Drill/Wipe End Date and Time | 28-Sep-13 03:30 | | | | |
| Min Inc (deg) @ Depth (MD, ft) | 87.53 @ 9,851.00 | | | | |
| Max Inc (deg) @ Depth (MD, ft) | 92.84 @ 11,651.00 | | | | |
| Bit TFA(in2) / Bit Type | .59 / PDC | | | | |
| Flow Rate (gpm) | 270.94 | | | | |
| Max AV (fpm) / CV (fpm) @ MWD | N/A / N/A | | | | |
| Fluid Type | Fresh Water Gel | | | | |
| Density (ppg) / Viscosity (spqt) | 9.30 / 42.00 | | | | |
| Filtrate CL (ppm) | 1,600.00 | | | | |
| pH / Fluid Loss (mptm) | 9.50 / 14 | | | | |
| PV (cP) / YP (lbf2) | 12 / 12.00 | | | | |
| % Solids / % Sand | 5.3 / .10 | | | | |
| % Oil / Oil:Water Ratio | N/A / N/A | | | | |
| Rm @ Measured Temp (degF) | N/A @ N/A | | | | |
| Rmf @ Measured Temp (degF) | N/A @ N/A | | | | |
| Rmc @ Measured Temp (degF) | N/A @ N/A | | | | |
| Max Tool Temp (deg F) / S | 648.88 / 40.00 | | | | |

| | | | | | |
|-------------------------------|---------------|--|--|--|--|
| Max Tool Temp (degF) / Source | 240.23 / HCIM | | | | |
| Rm @ Max Tool Temp (degF) | N/A @ 240.23 | | | | |
| Lead MWD Engineer | Patrick Lane | | | | |
| Customer Representative | Stan Walters | | | | |

SENSOR INFORMATION

Downhole Processor Information

| | | | | | |
|---------------------------|-----------------|--|--|--|--|
| Tool Type | HCIM | | | | |
| Software Version | 88.56 | | | | |
| Sub Serial Number | 11512738 | | | | |
| Insert Serial Number | 11062260 | | | | |
| Date and Time Initialized | 24-Sep-13 00:55 | | | | |
| Date and Time Read | 28-Sep-13 16:36 | | | | |
| ECMB SW Version | N/A | | | | |

Directional Sensor Information

| | | | | | |
|------------------------|----------|--|--|--|--|
| Tool Type | PCDC | | | | |
| Distance From Bit (ft) | 49.33 | | | | |
| Software Version | 6.21 | | | | |
| Sub Serial Number | 11122415 | | | | |
| Sonde Serial Number | 11833237 | | | | |
| Sensor ID Number | N/A | | | | |
| Toolface Offset (deg) | 101.56 | | | | |

Gamma Ray Sensor Information

| | | | | | |
|------------------------------|----------|--|--|--|--|
| Tool Type | DGR | | | | |
| Distance From Bit (ft) | 71.28 | | | | |
| Recorded Sample Period (sec) | 8 | | | | |
| Software Version | N/A | | | | |
| Sub Serial Number | 11512738 | | | | |
| Insert/Sonde Serial Number | 11184661 | | | | |

Resistivity Sensor Information

| | | | | | |
|----------------------------------|----------|--|--|--|--|
| Tool Type | Slim P4 | | | | |
| Distance From Bit (ft) | 64.30 | | | | |
| Recorded Sample Period (sec) | 6 | | | | |
| Software Version | 5.55 | | | | |
| Sub Serial Number | 47296 | | | | |
| Receiver Insert Serial Number | 260883 | | | | |
| Transmitter Insert Serial Number | 11062260 | | | | |
| Receiver Orientation | Down | | | | |

DDSr-DGR Sensor Information

| | | | | | |
|------------------------------|----------|--|--|--|--|
| Tool Type | DDSr-DGR | | | | |
| Distance From Bit (ft) | 74.20 | | | | |
| Recorded Sample Period (sec) | 12 | | | | |
| Software Version | 10.88 | | | | |
| Sub Serial Number | 11512738 | | | | |
| Insert Serial Number | 11270370 | | | | |
| Sensor ID Number | 7035 | | | | |

REMARKS

1. All depths are measured bit depths referenced to the Driller's pipe tally

1. All depths are measured bit depths referenced to the Driller's pipe tally and are measured from the Drill Floor, unless otherwise specified.

- 2. No depth corrections have been made for pipe stretch or compression.
- 3. All data presented is recorded data unless otherwise specified
- 4. The following smoothing parameters have been applied to the data:

Slim-Phase 4 (Electromagnetic Wave Resistivity):

Interval Resolution: 0.5ft
Interval Distance: 0.6ft
Gap Fill: 3.0ft

DGR (Corrected Gamma Ray):

Interval Resolution: 0.5 ft
Interval Distance: 0.6 ft
Gap Fill: 3.0 ft

R0PA (Average Rate of Penetration):

Interval Resolution: 0.5 ft
Interval Distance: 1.2 ft
Gap Fill : 3.0 ft

5. INSITE version 7.4.1

WARRANTY

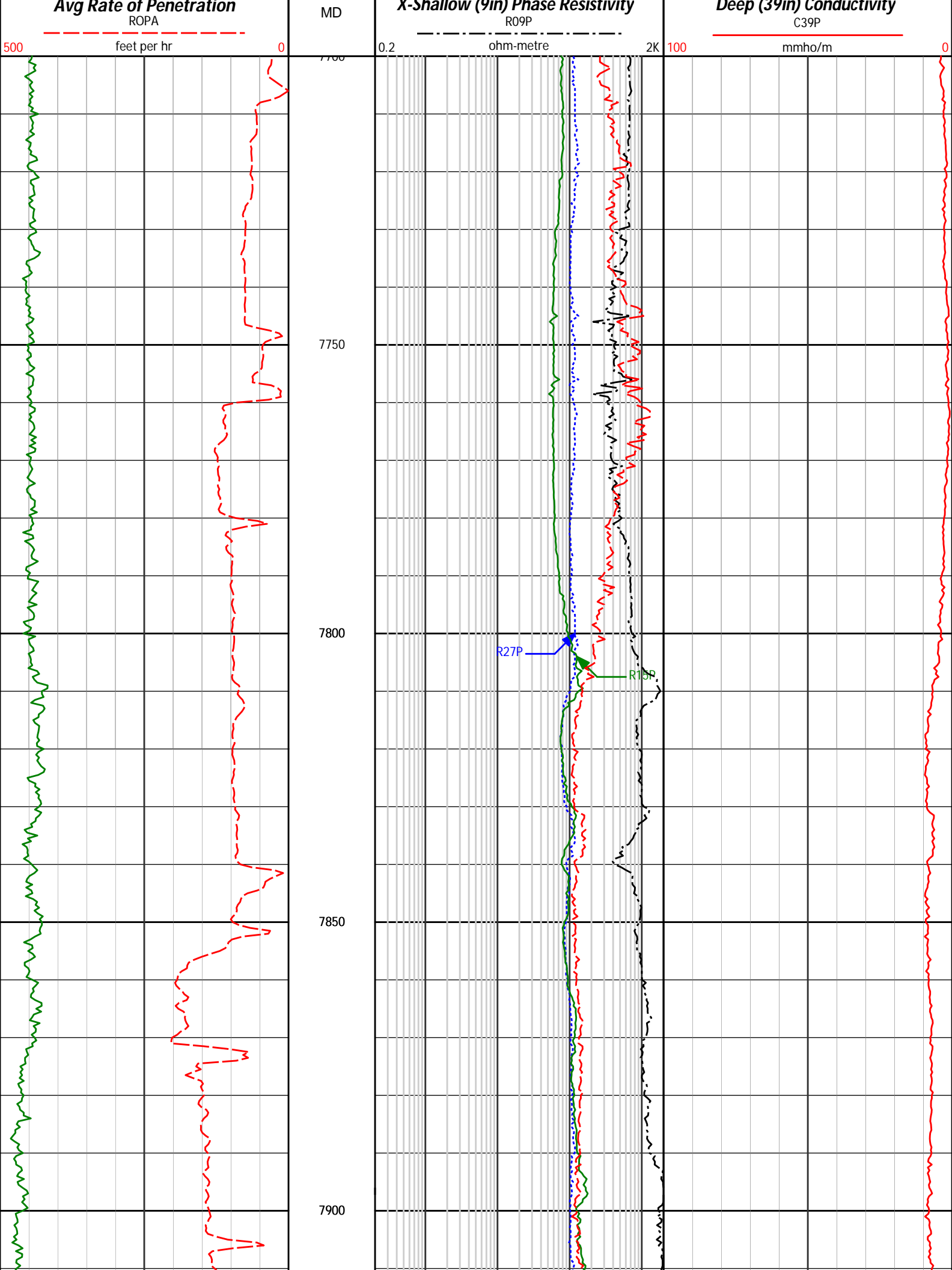
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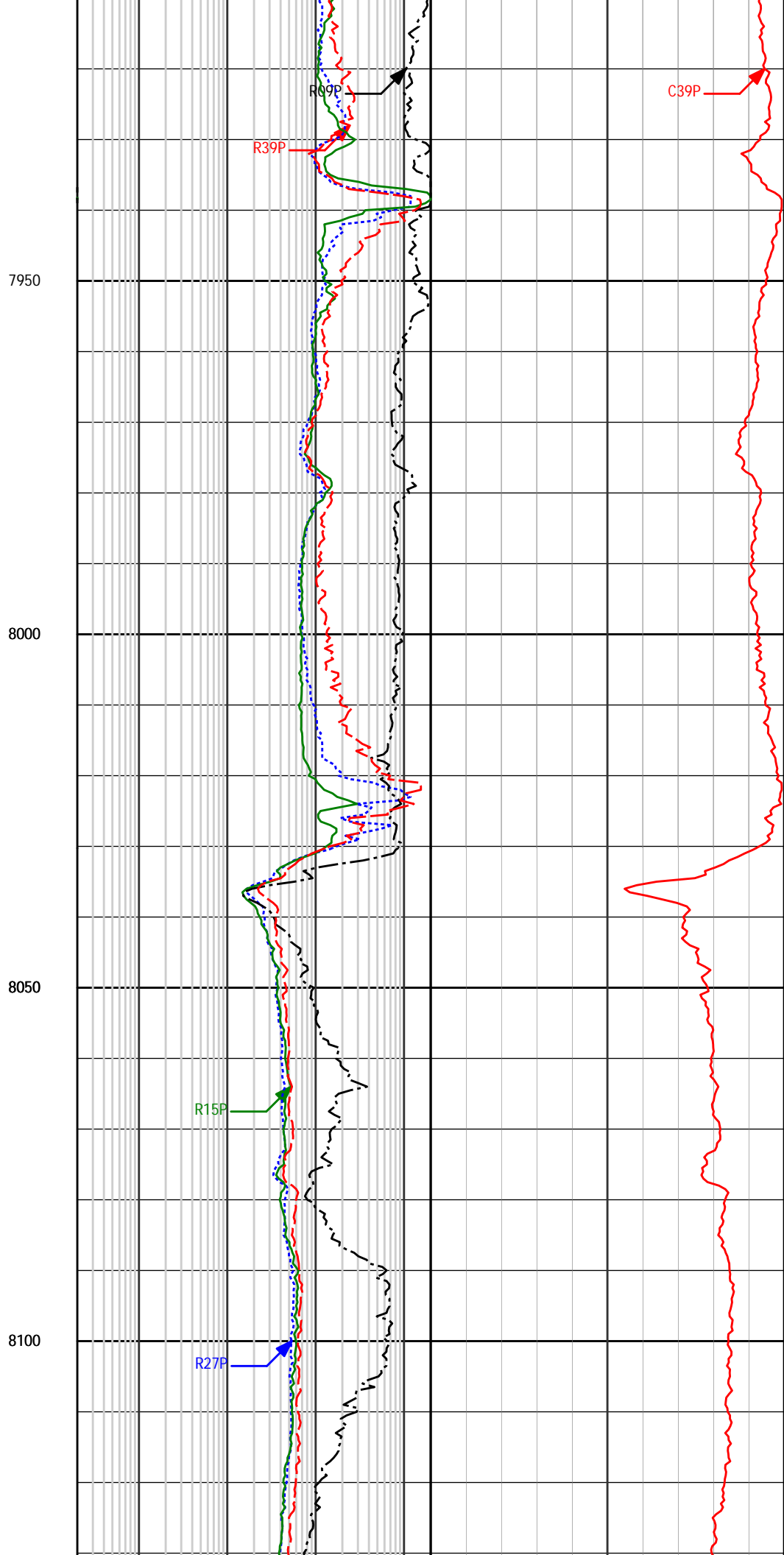
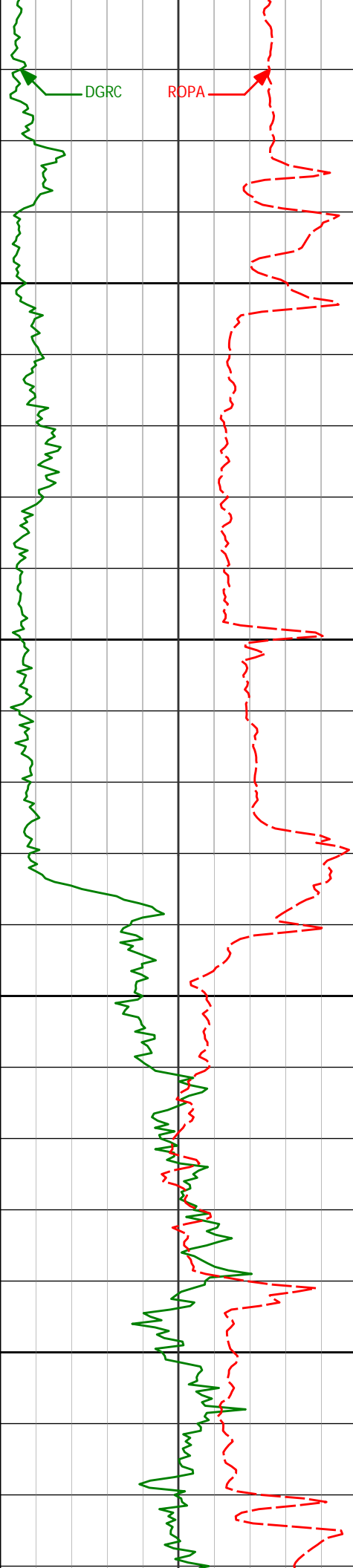
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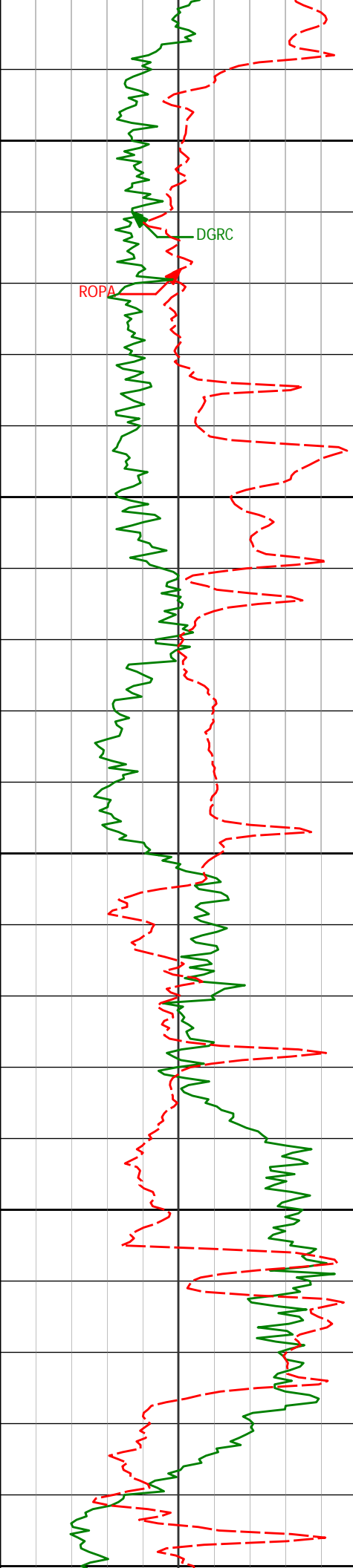
Sperry Drilling Services

MD Detail Log 1:240

| | | | | | |
|--------------------------------------------------------------------------------------------------------------------|--|---------------------------------------------------------------------------------------------------------------------------------|--|-------------------------------------------------------------------------------------------------------------------------|--|
| | | <div><div>BC Deep PS Res</div><div>R39P</div><div><div>0.2</div><div>ohm-metre</div><div>2K</div></div></div> | | | |
| | | <div><div>Medium (27in) Phase Resistivity</div><div>R27P</div><div><div>0.2</div><div>ohm-metre</div><div>2K</div></div></div> | | | |
| <div><div>Gamma Ray Combined</div><div>DGRC</div><div><div>0</div><div>api</div><div>300</div></div></div> | | <div><div>Shallow (15in) Phase Resistivity</div><div>R15P</div><div><div>0.2</div><div>ohm-metre</div><div>2K</div></div></div> | | <div><div>EWR Formation Exposure Time</div><div>EWXT</div><div><div>0</div><div>minutes</div><div>100</div></div></div> | |
| <div><div>Formation Dip (Degrees)</div><div>R0DP</div><div><div>0</div><div>degrees</div><div>90</div></div></div> | | <div><div>Formation Resistivity (ohm-metre)</div><div>R0FR</div><div><div>0</div><div>ohm-metre</div><div>100</div></div></div> | | <div><div>Formation Dip (Degrees)</div><div>R0FD</div><div><div>0</div><div>degrees</div><div>90</div></div></div> | |







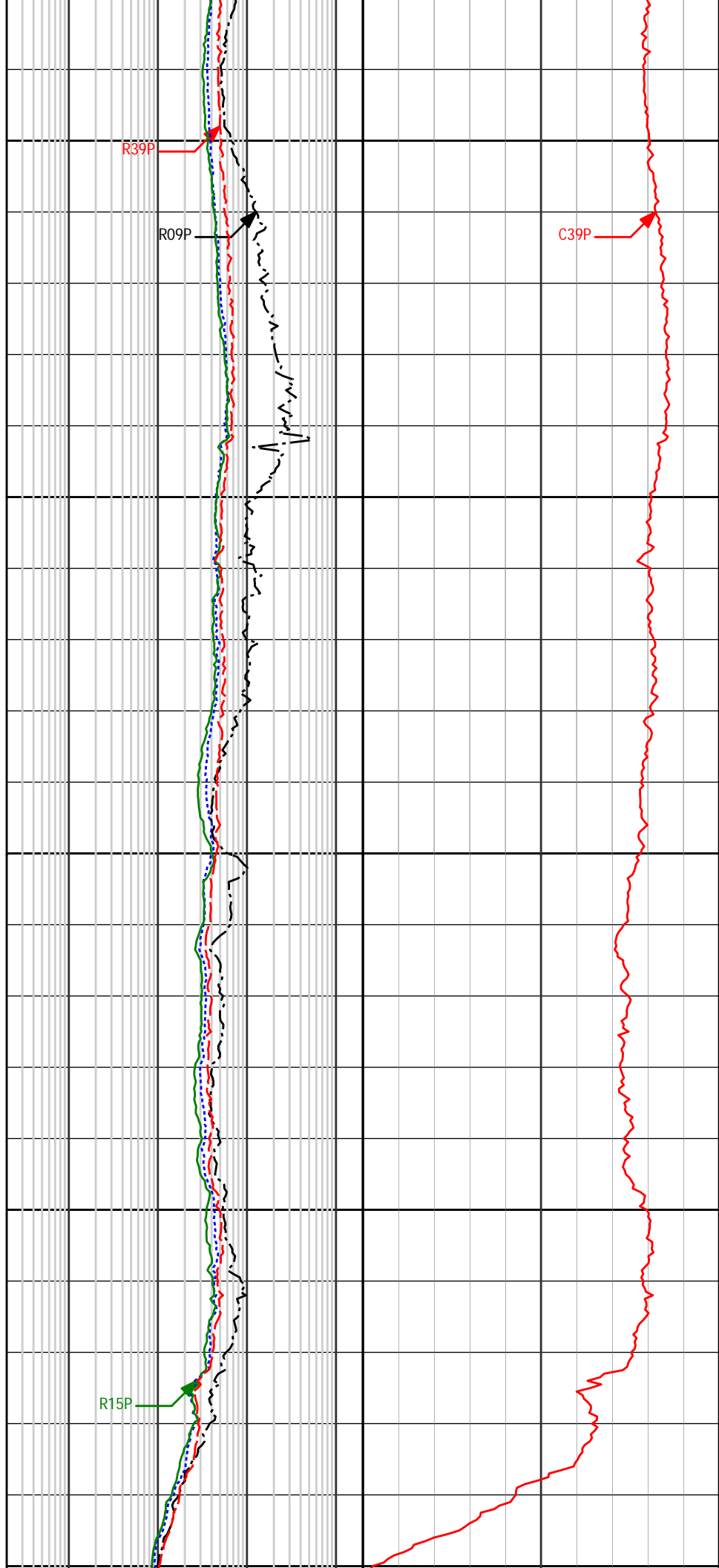
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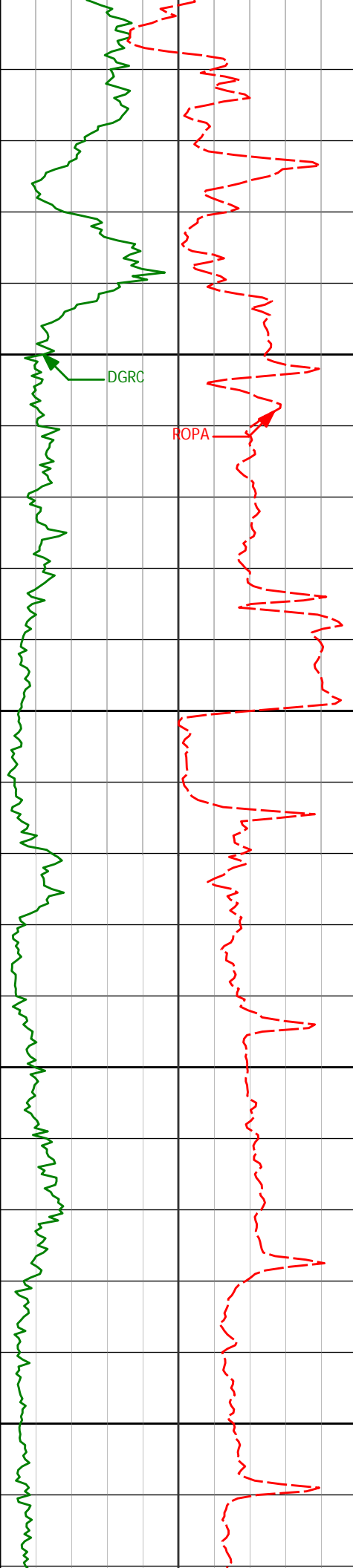


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R15P



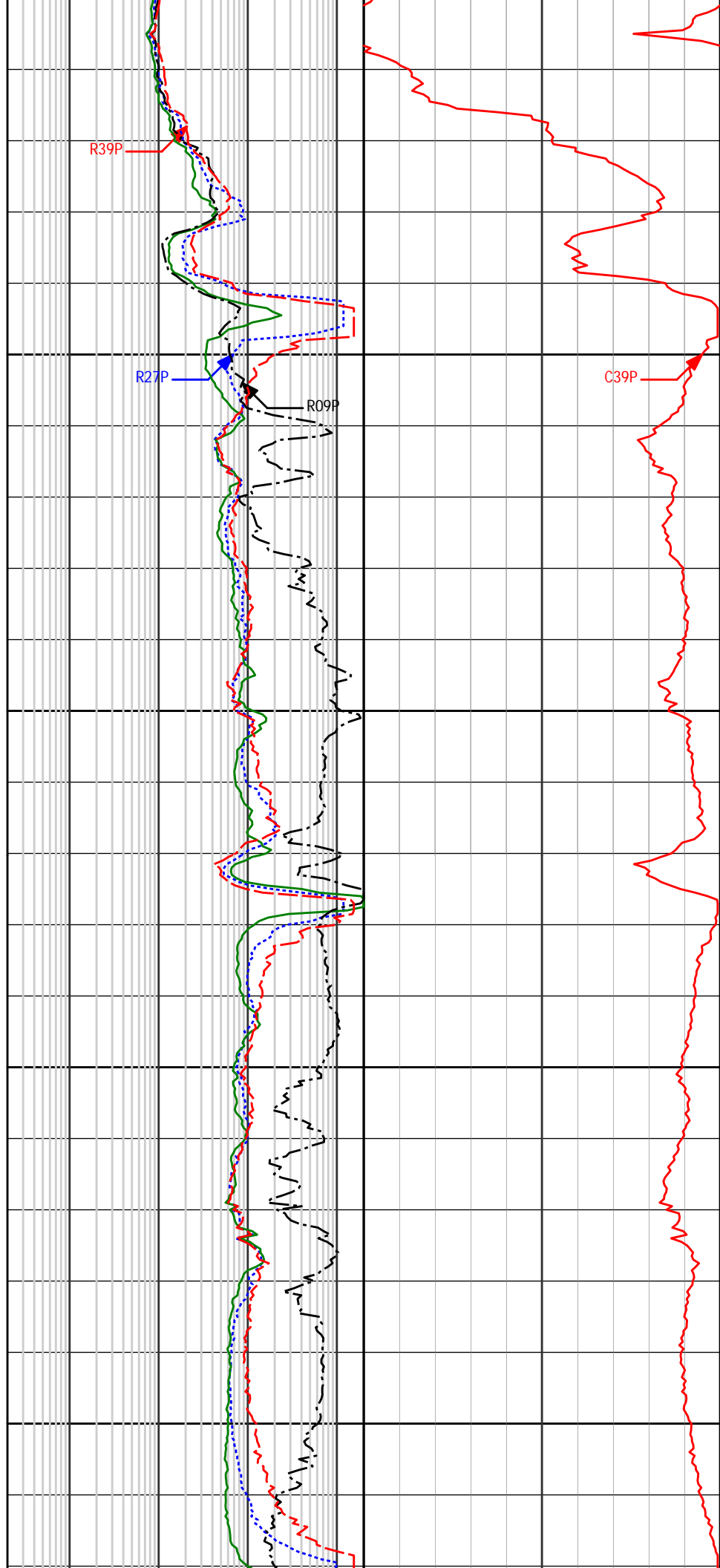
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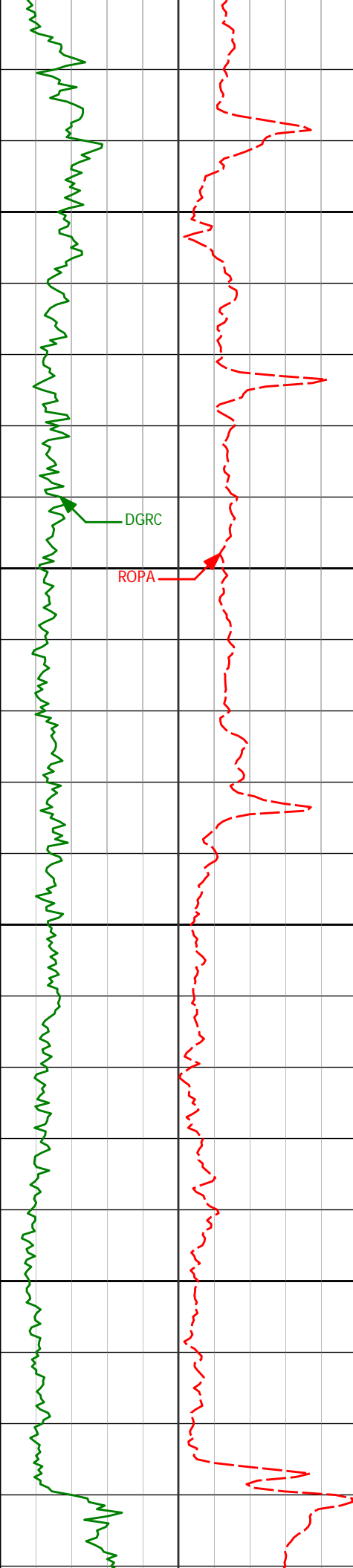
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DGRC

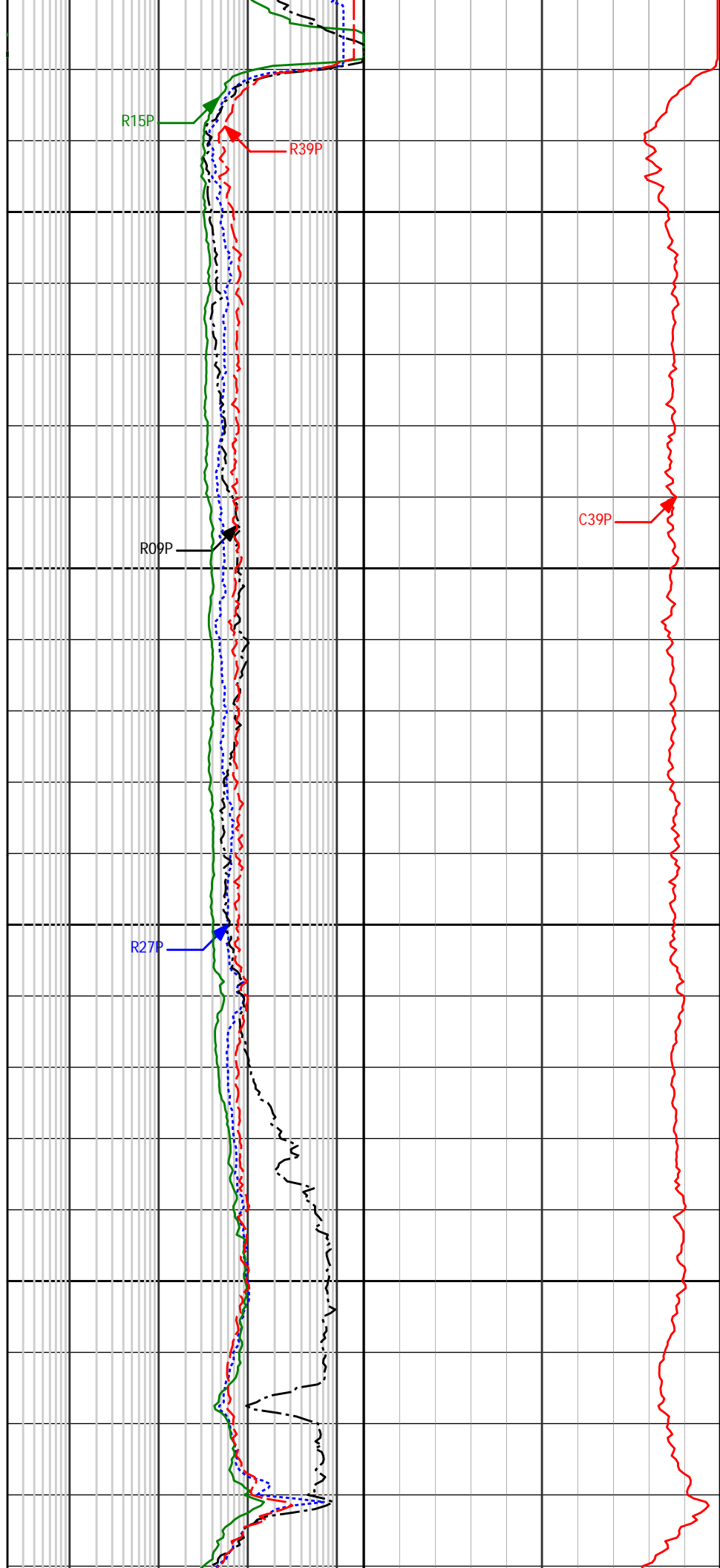
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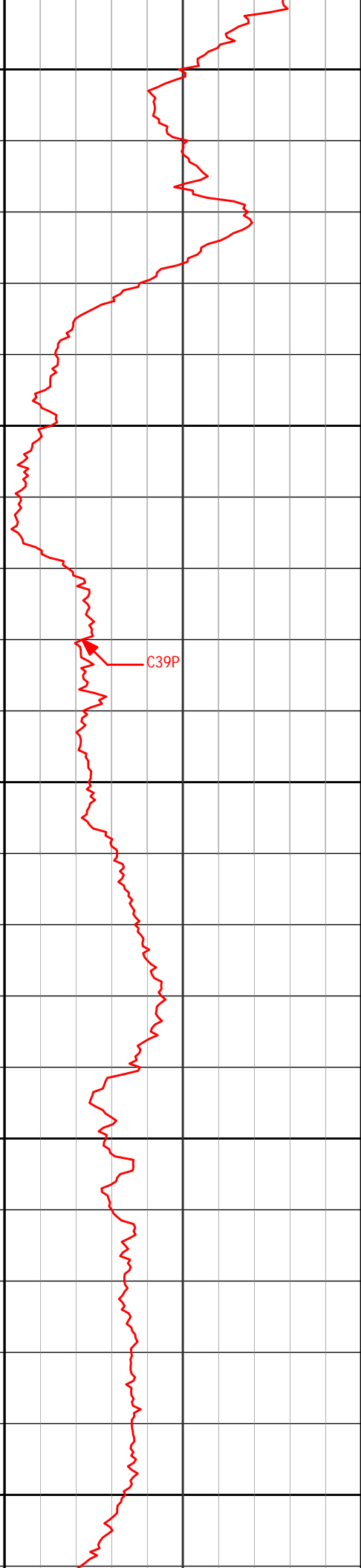
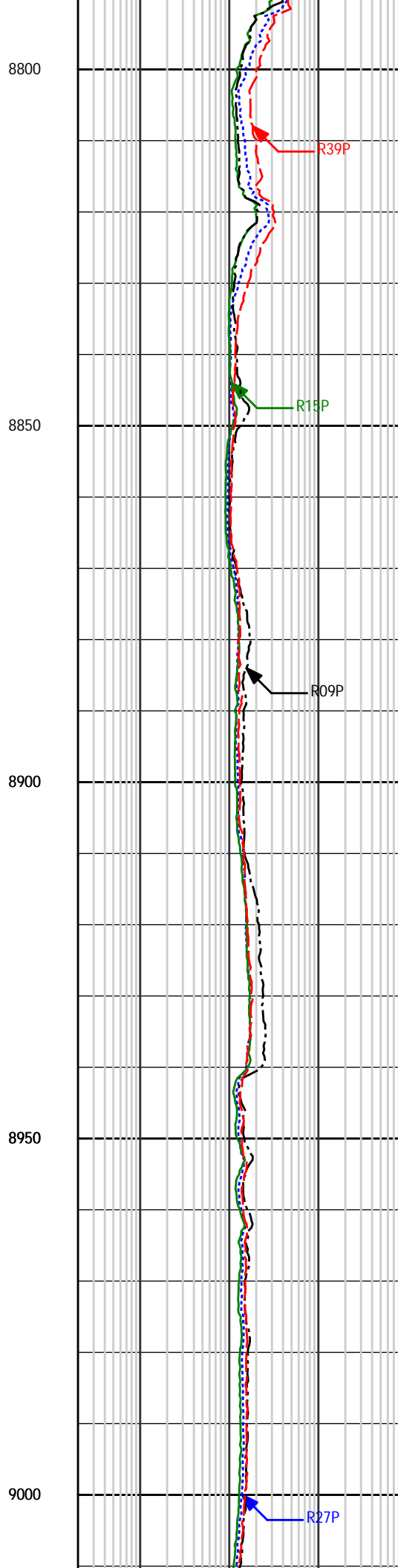
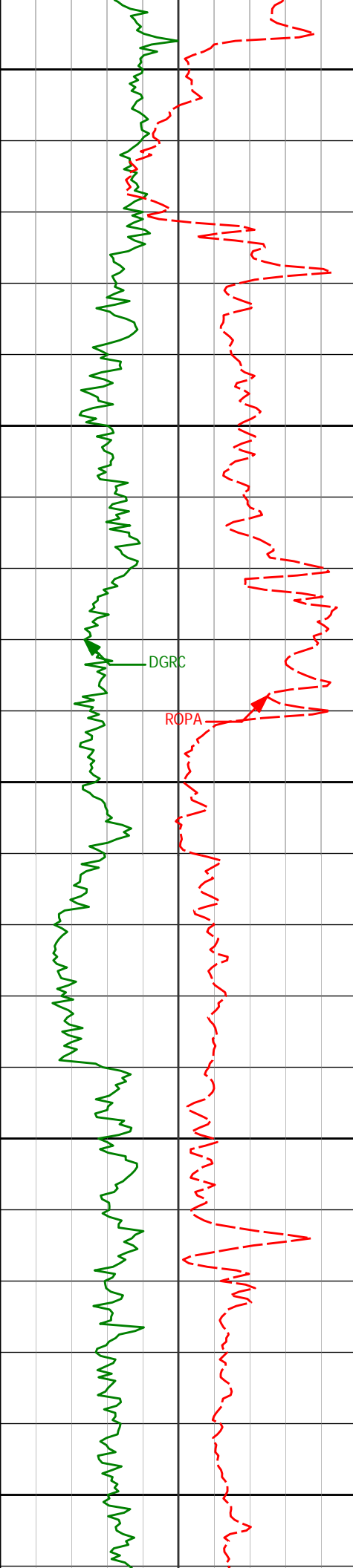
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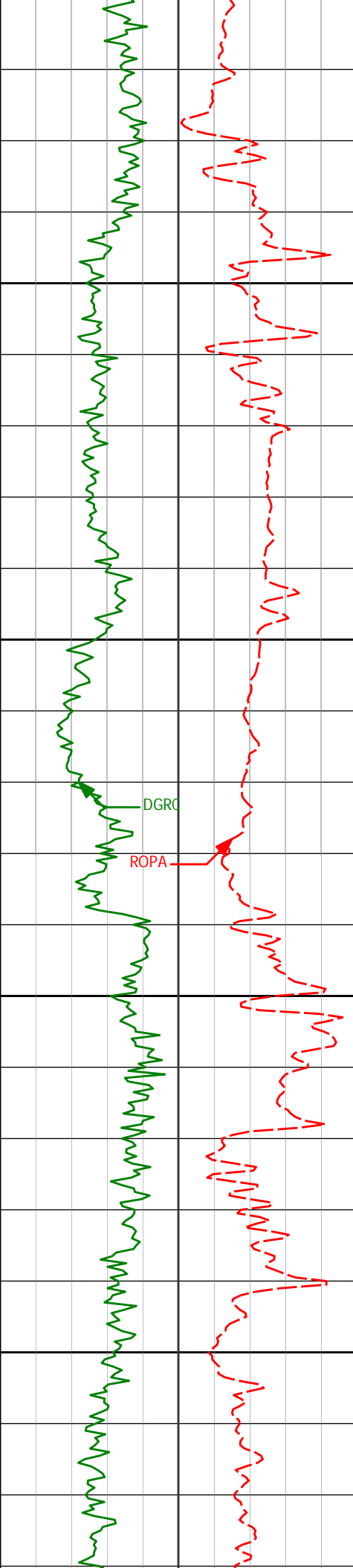
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R09P

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R27P



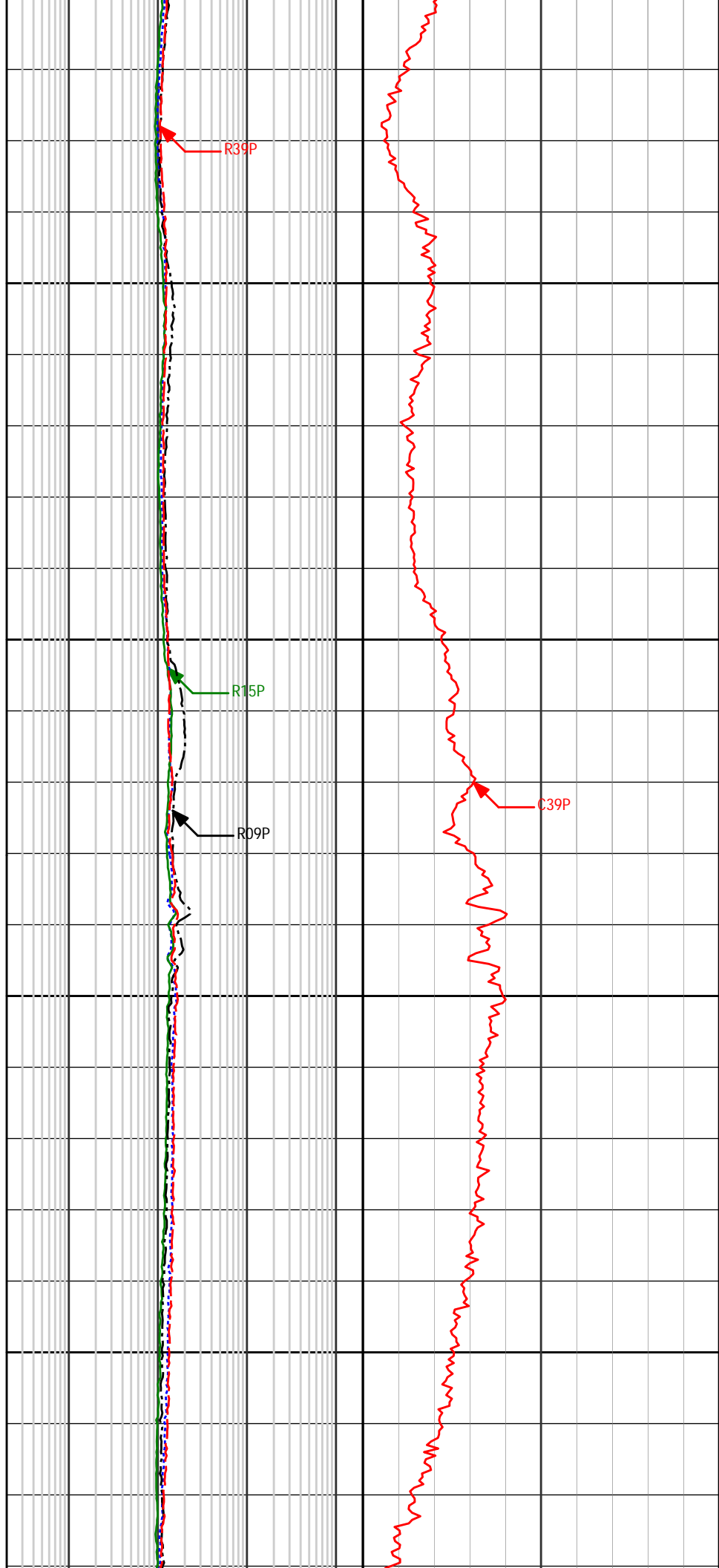


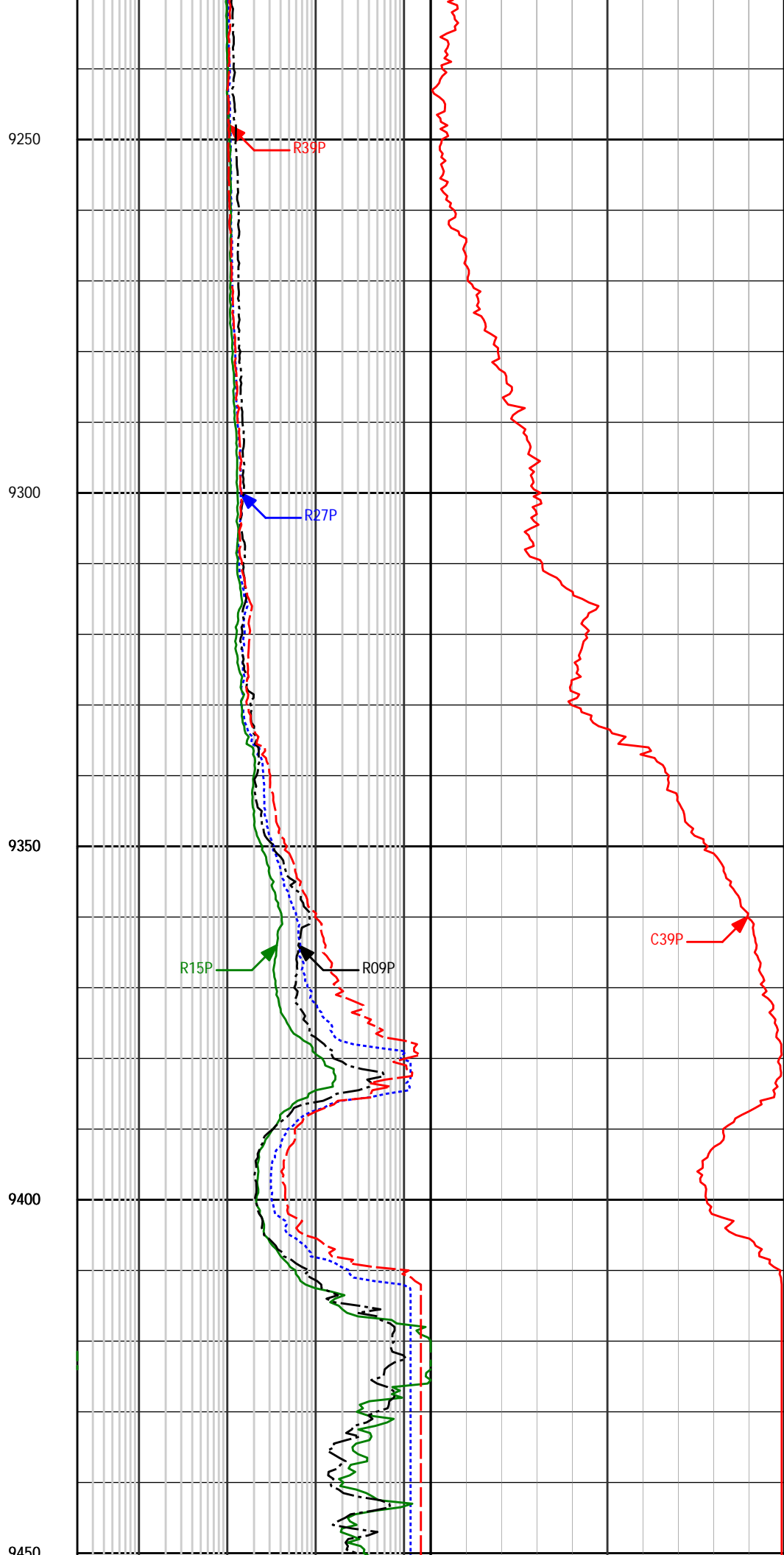
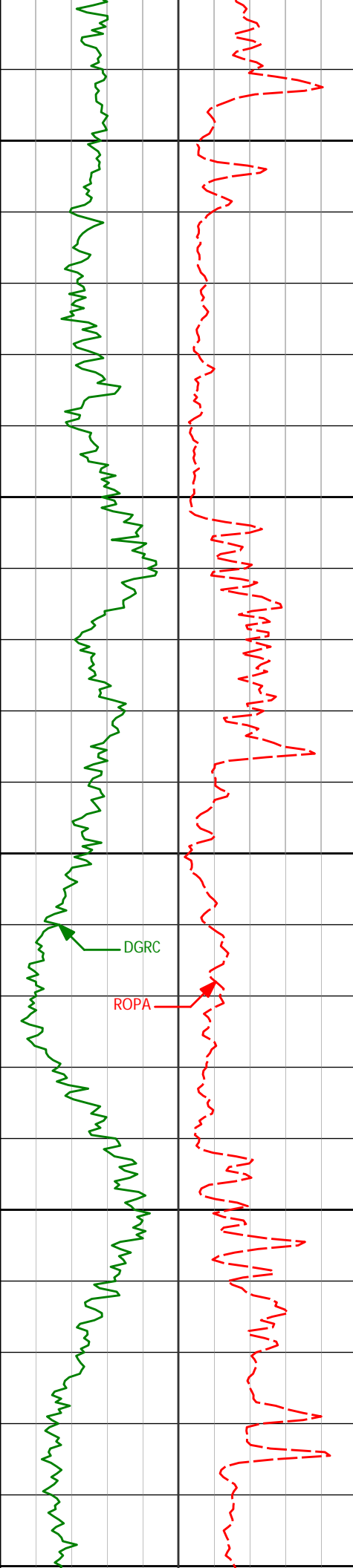
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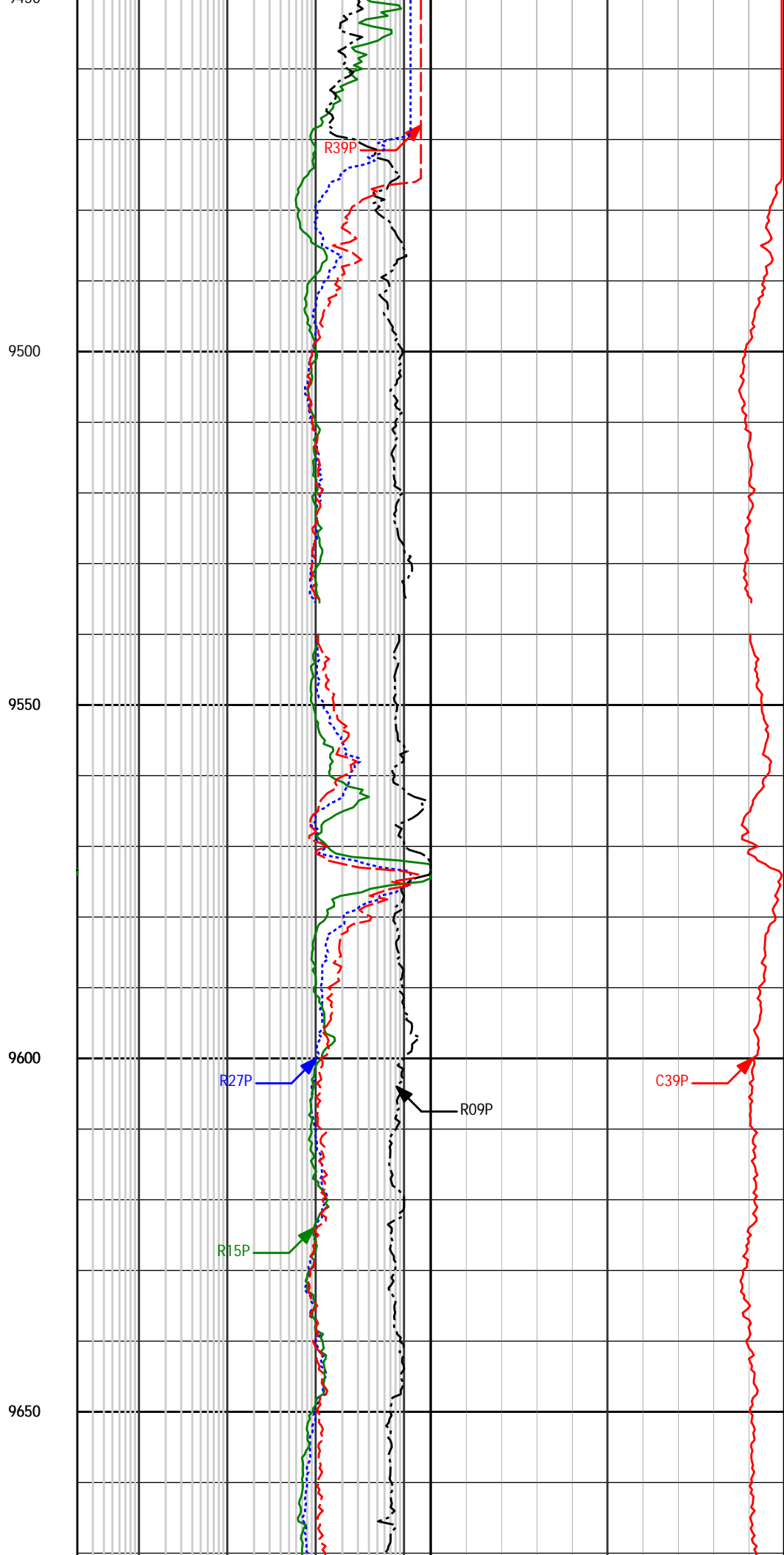
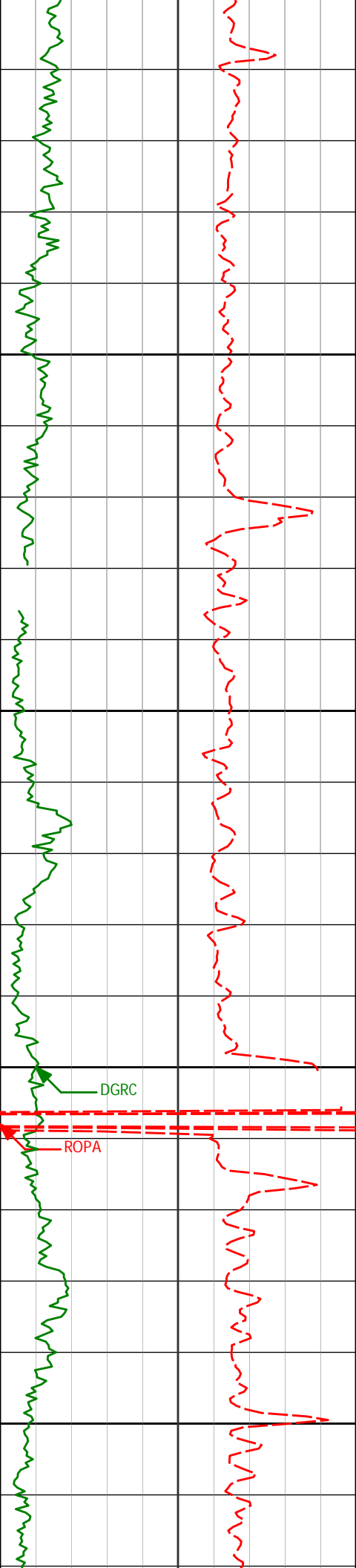
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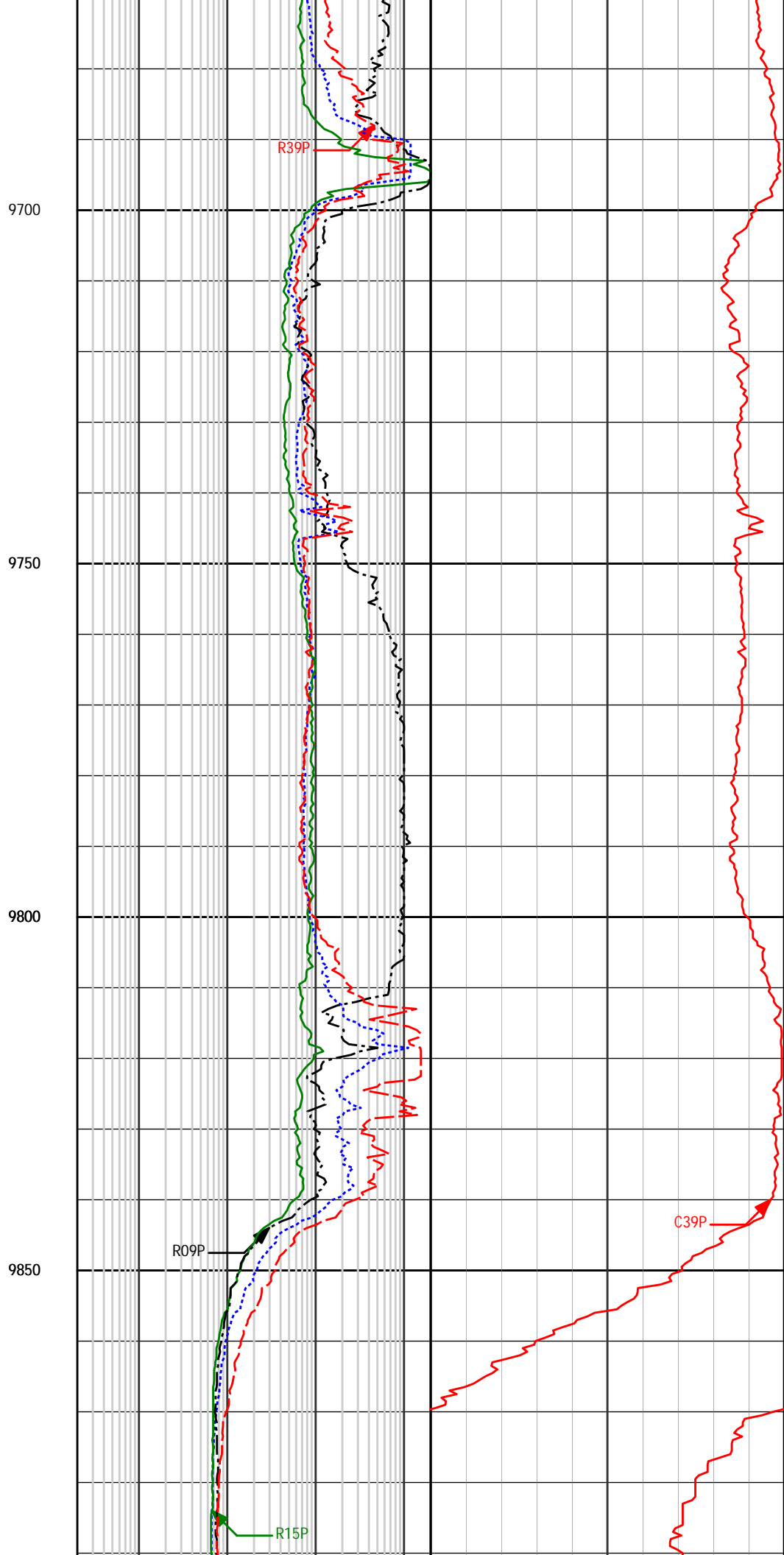
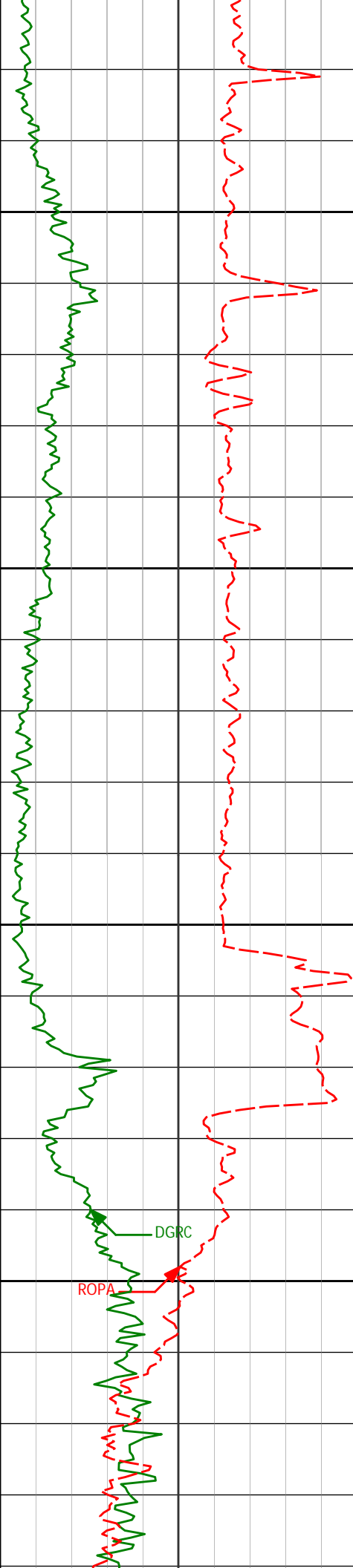
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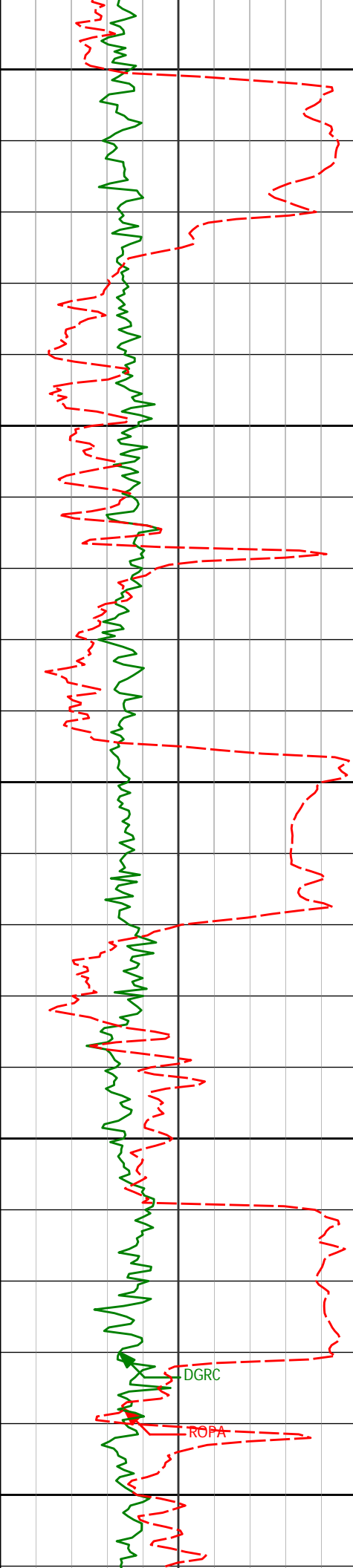
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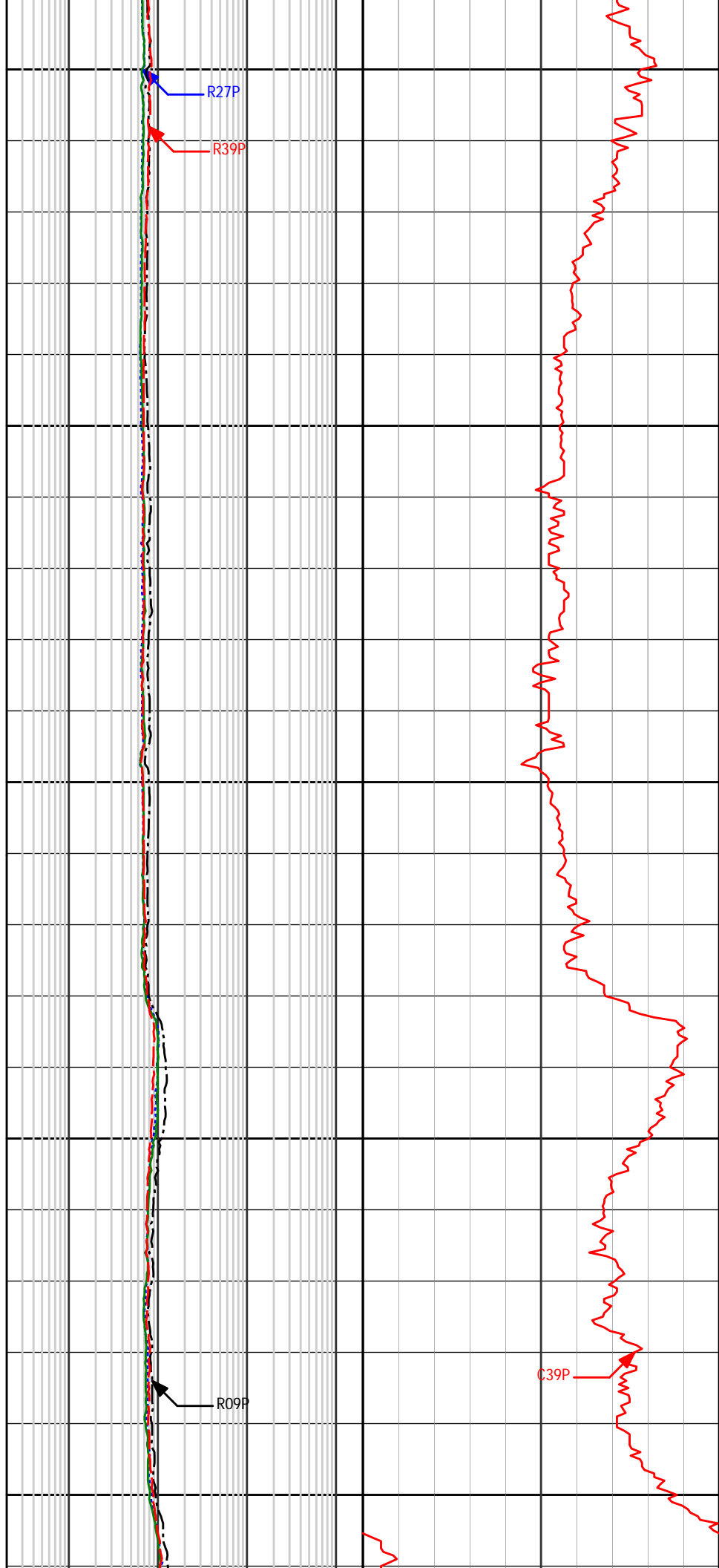
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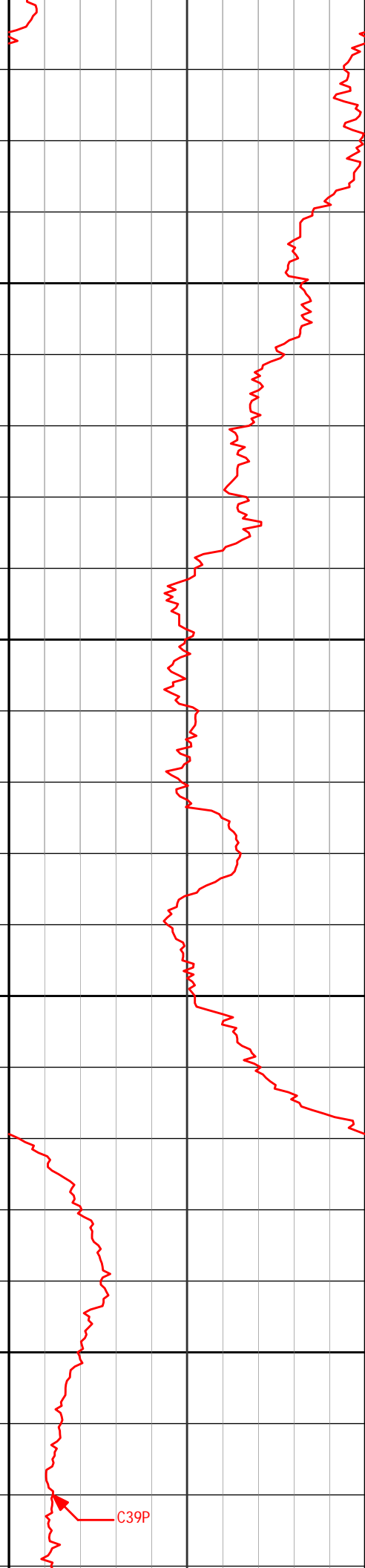
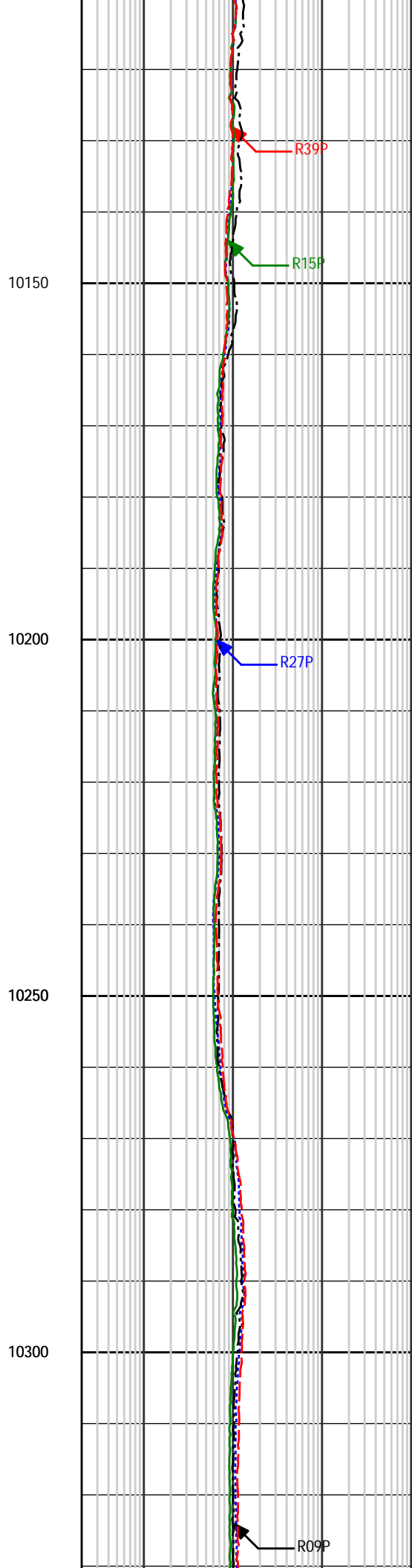
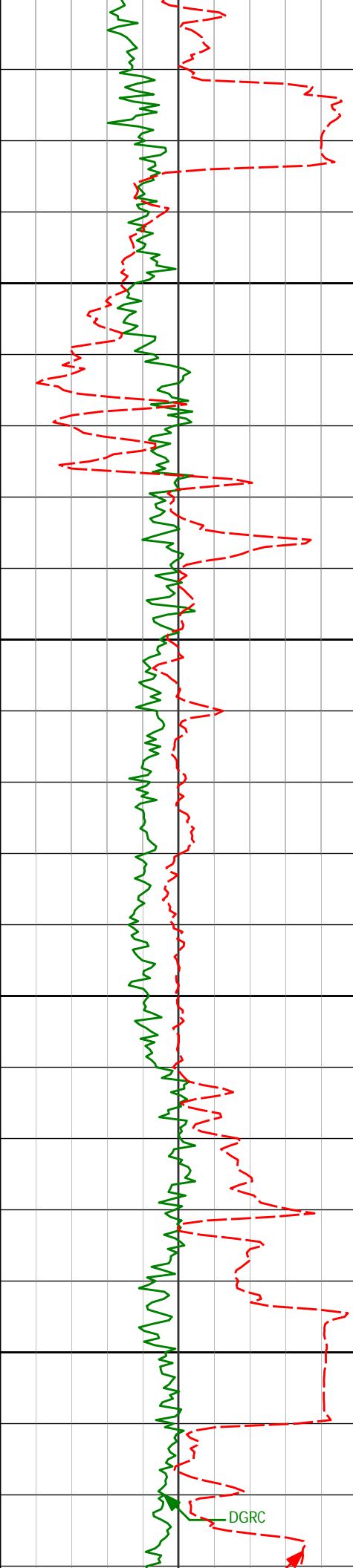


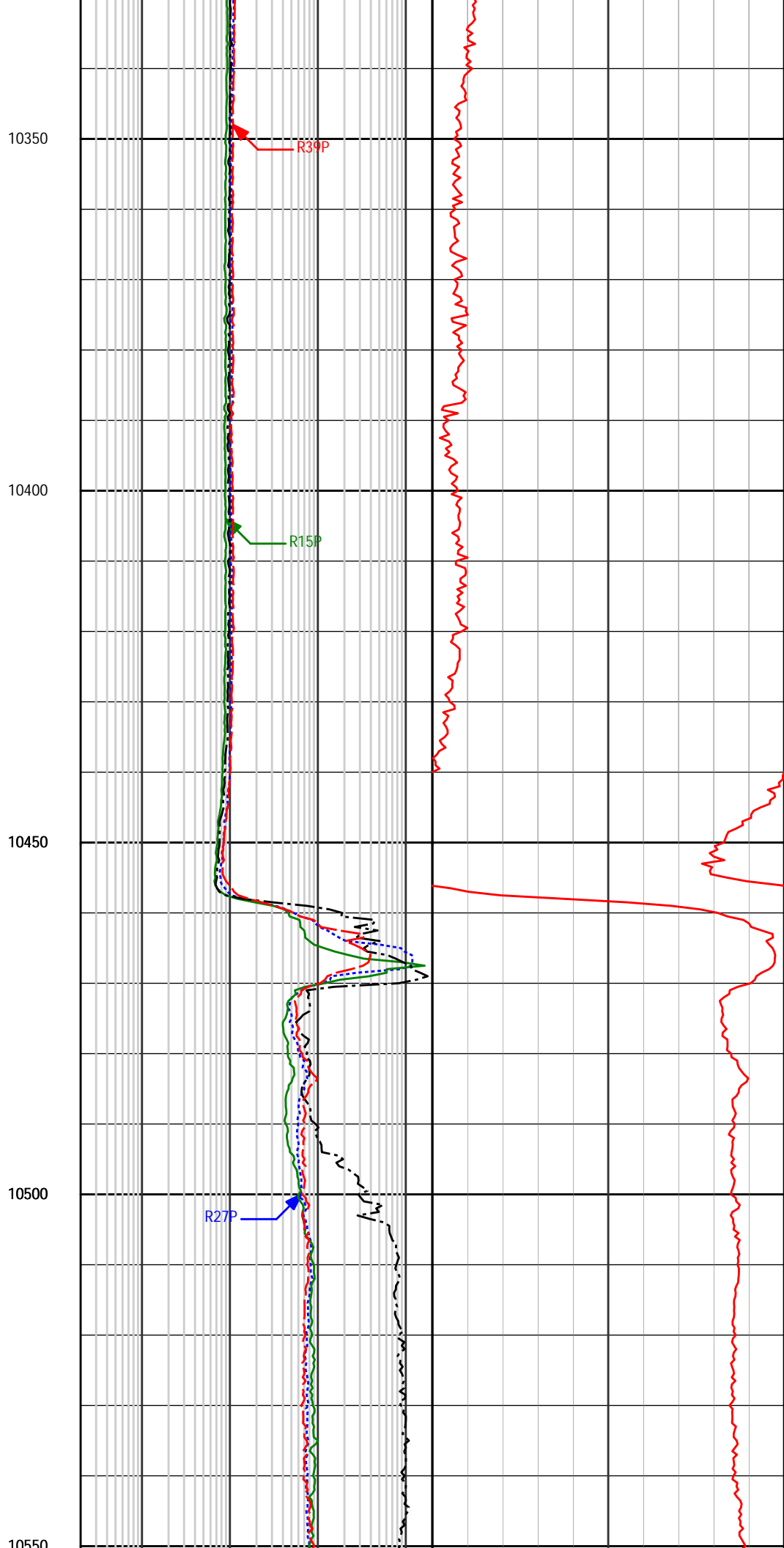
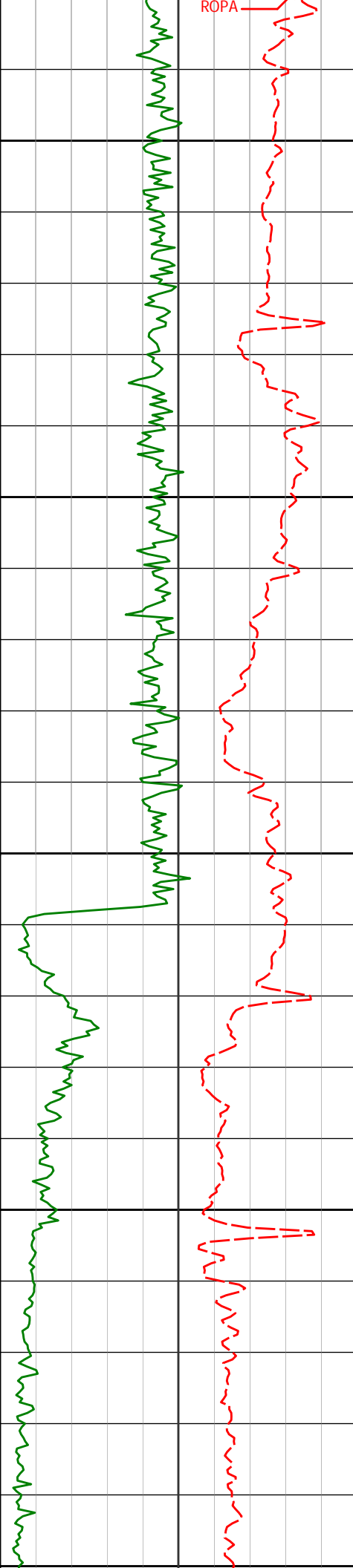
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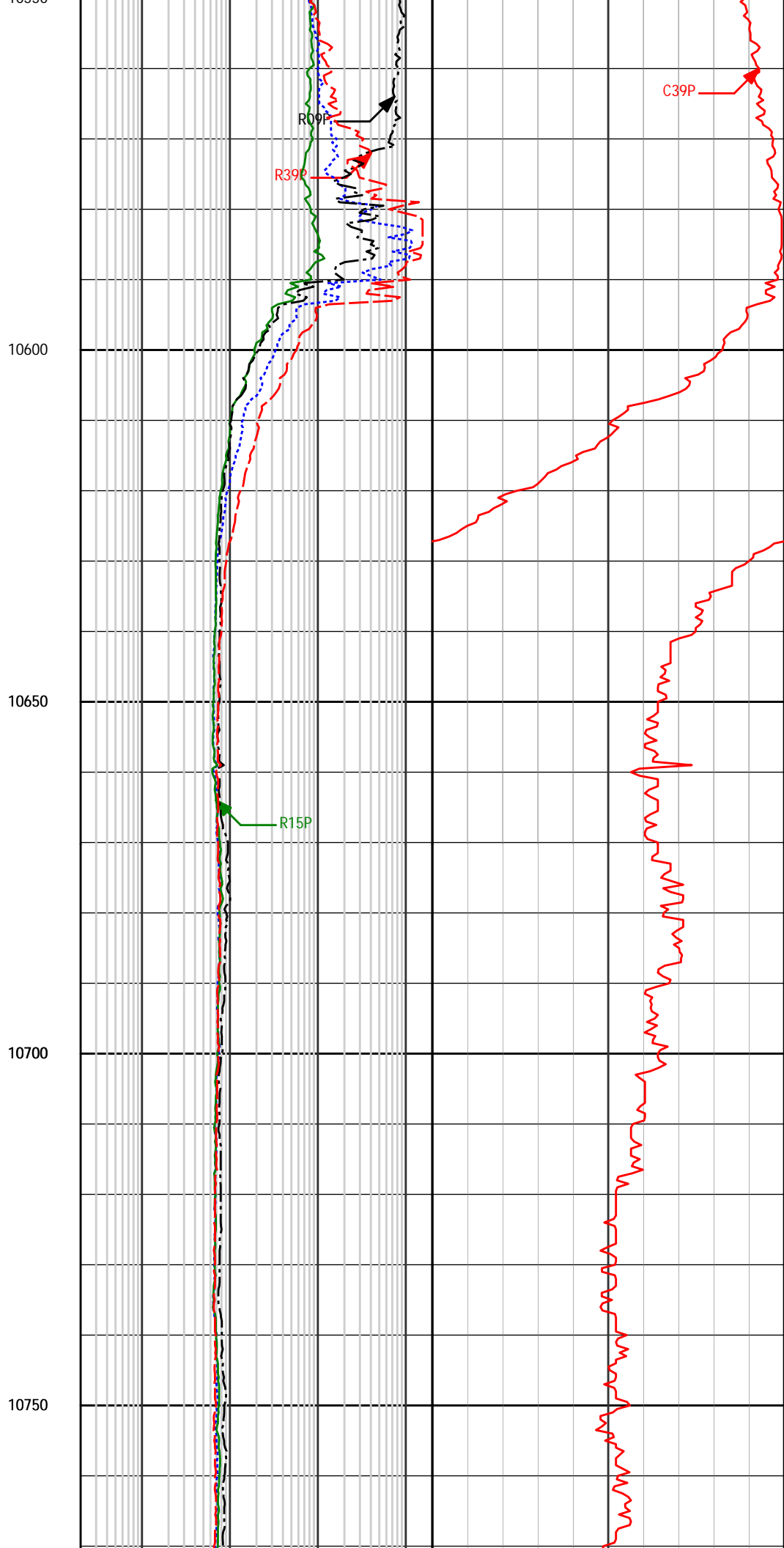
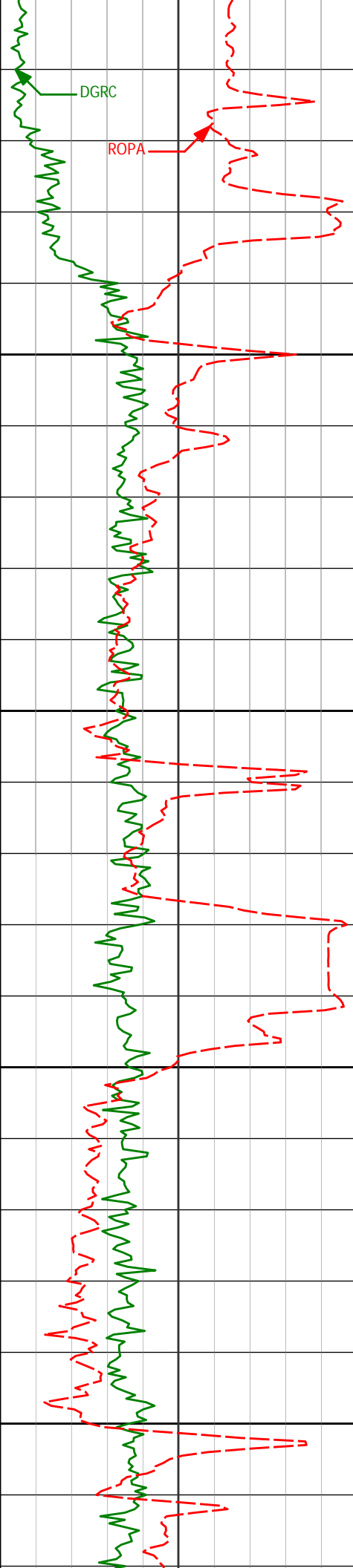
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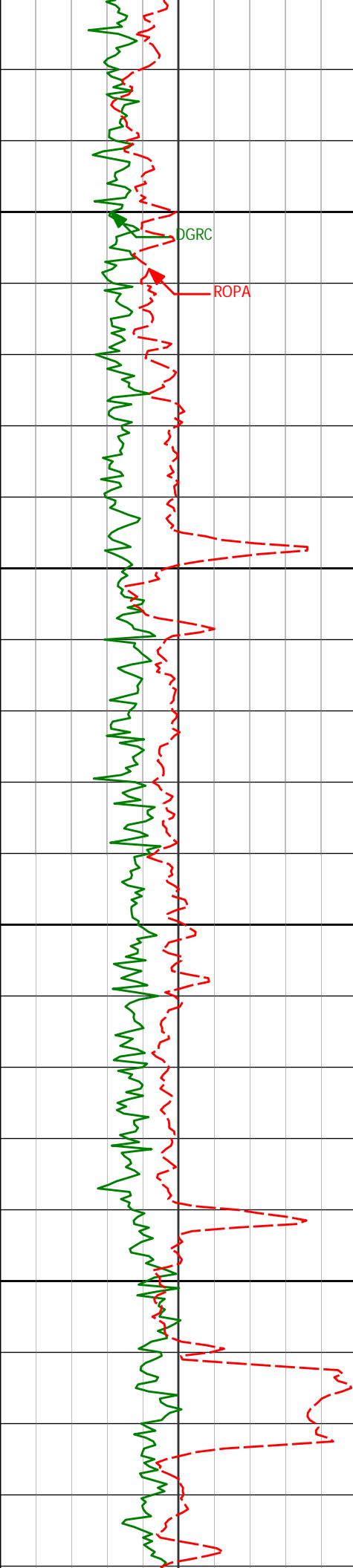
R09P

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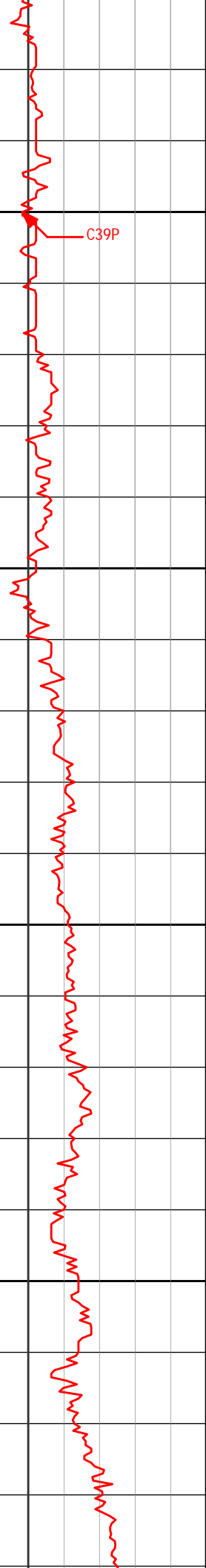
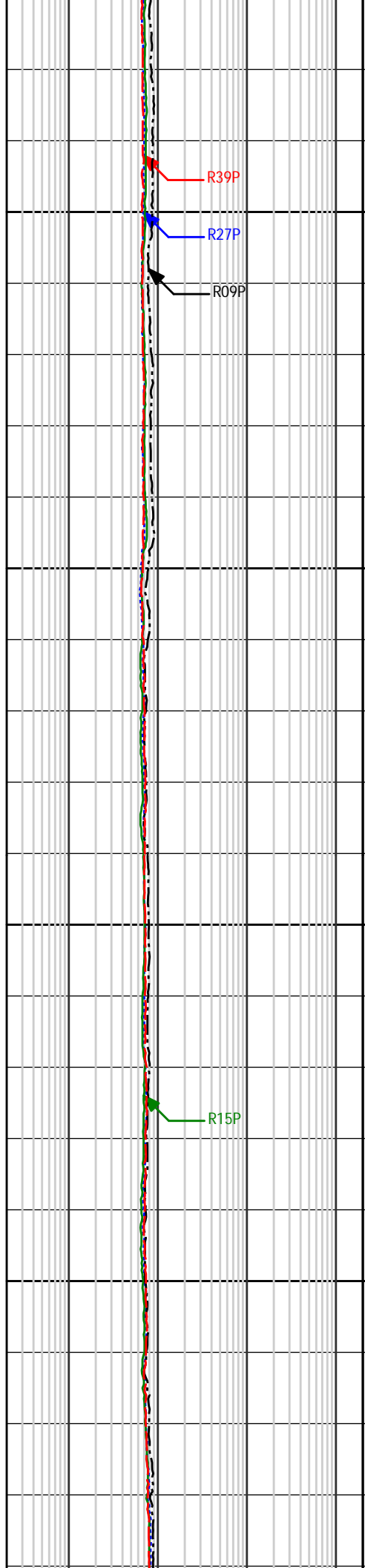


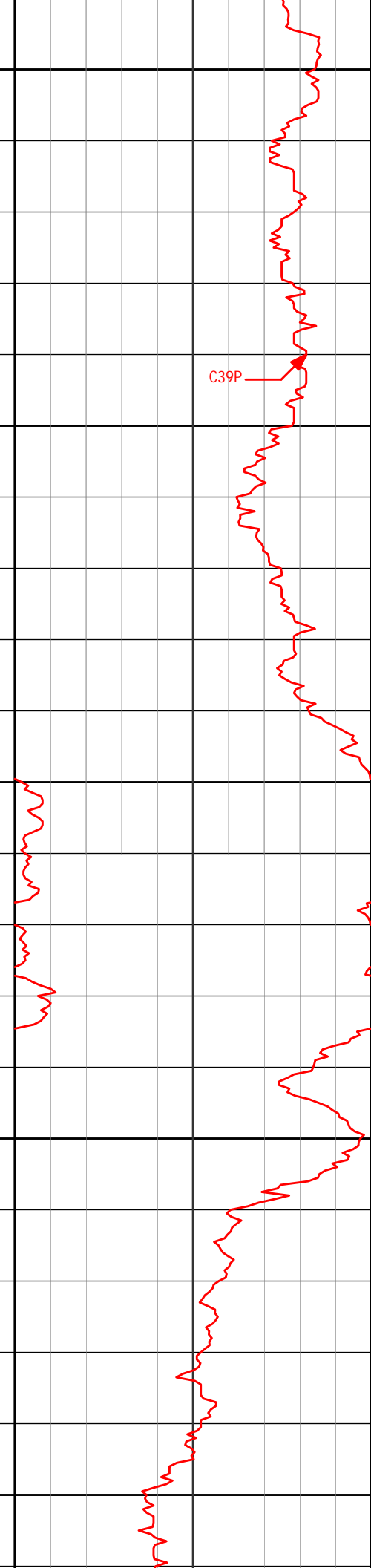
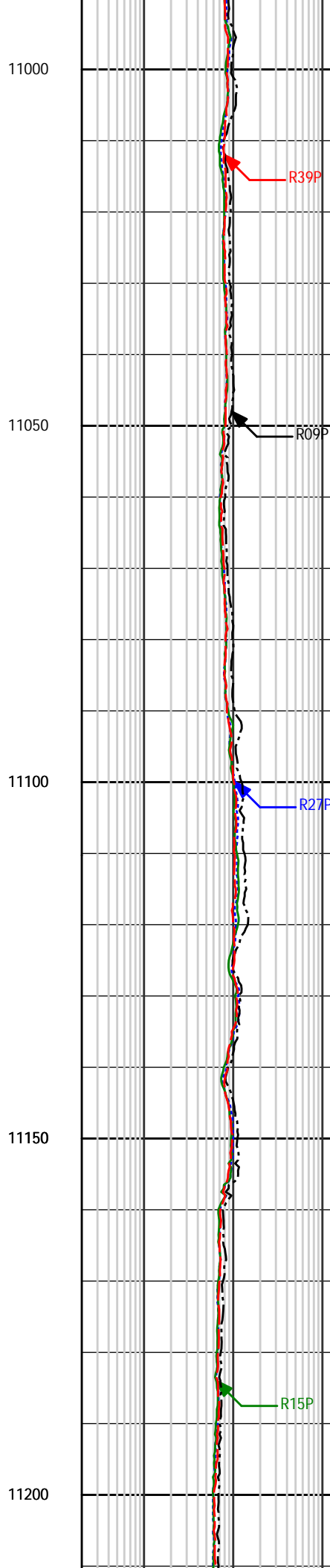
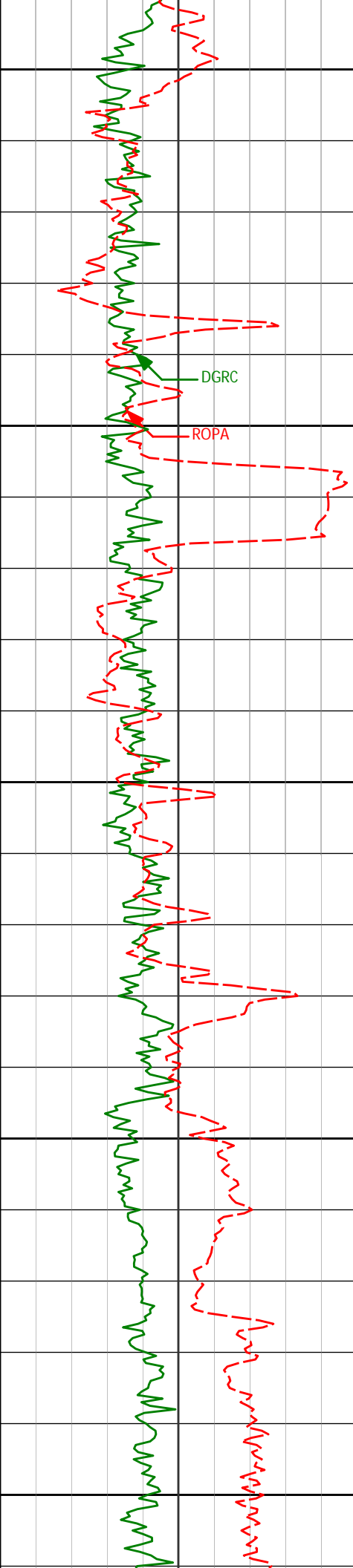
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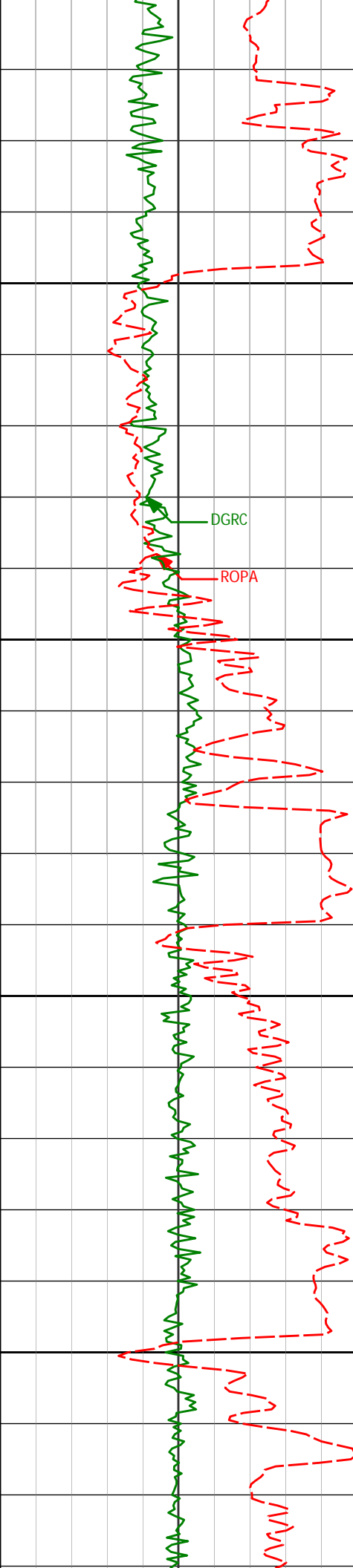
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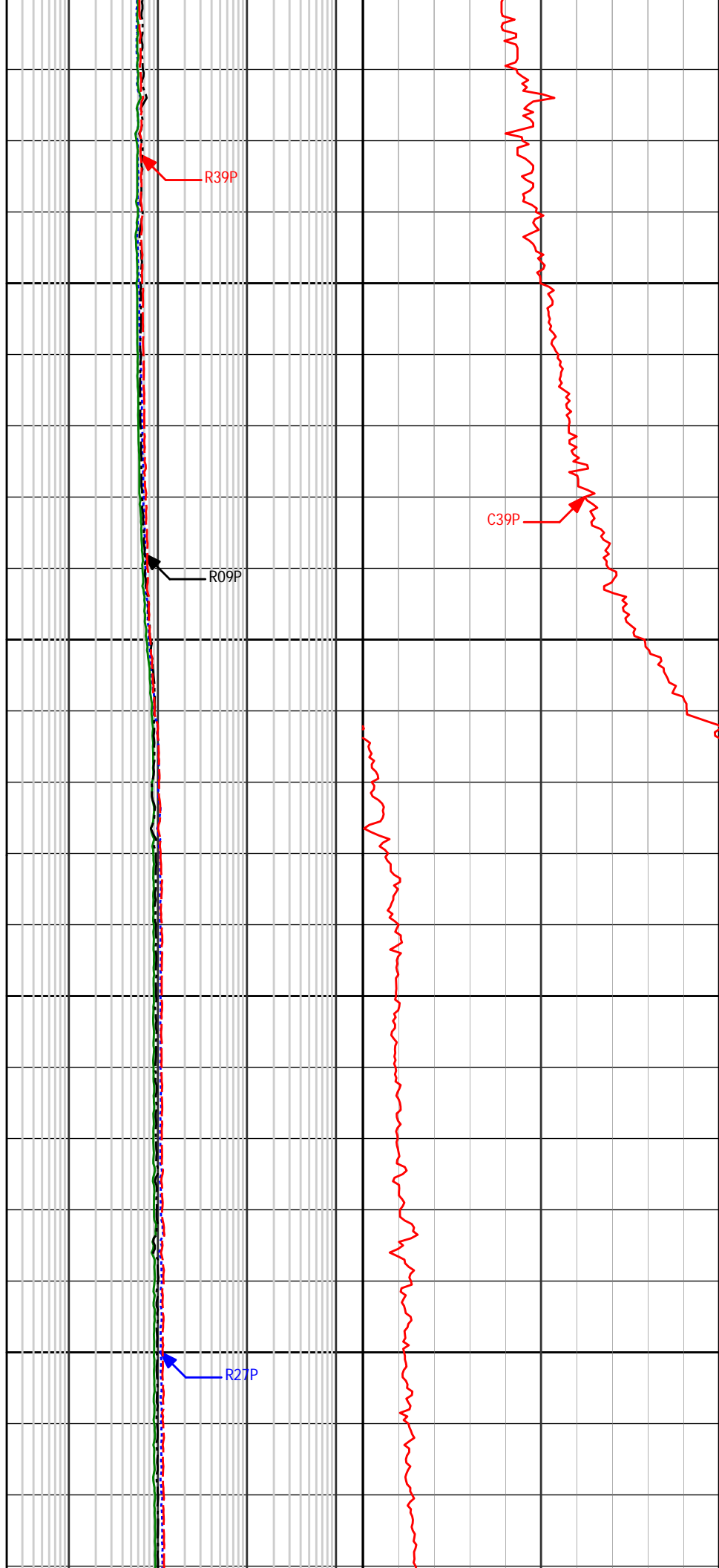


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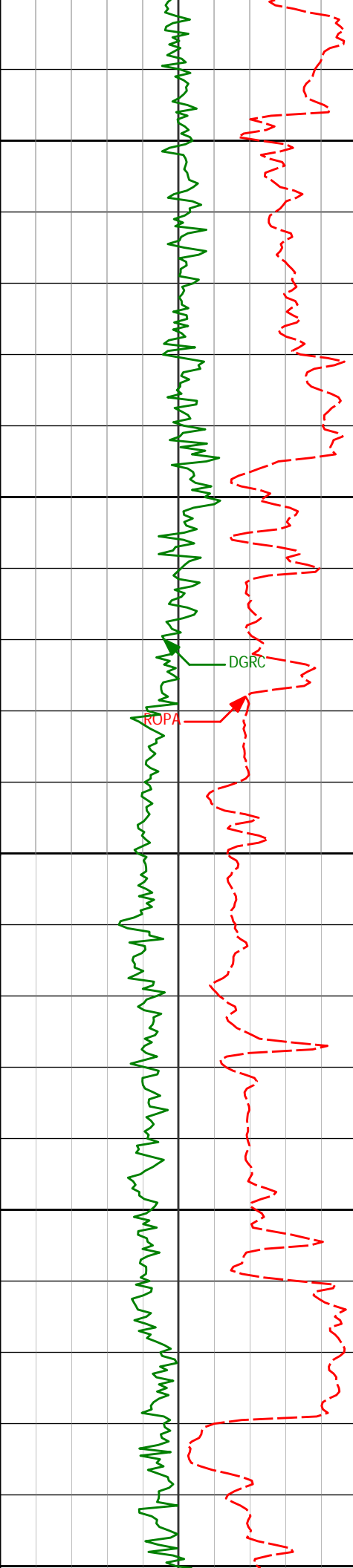


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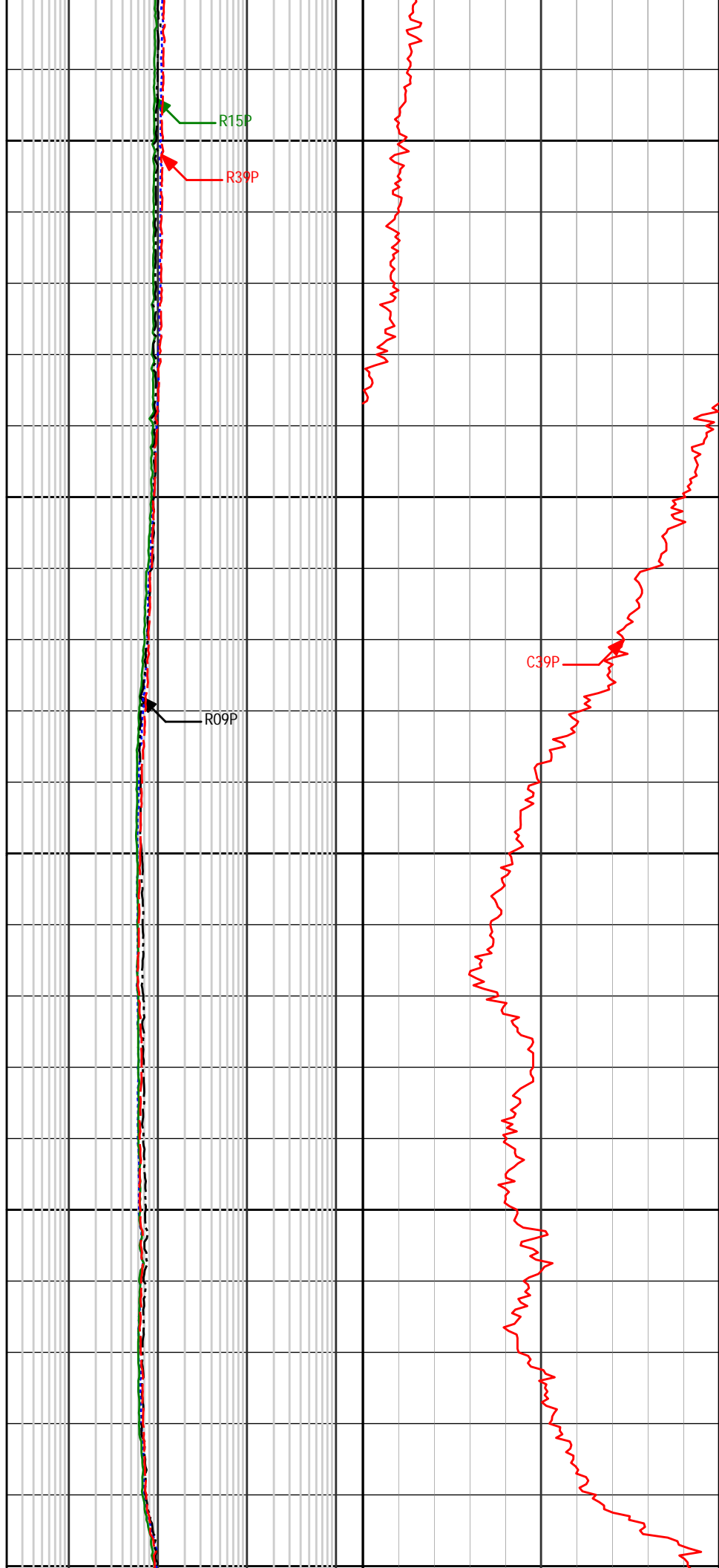
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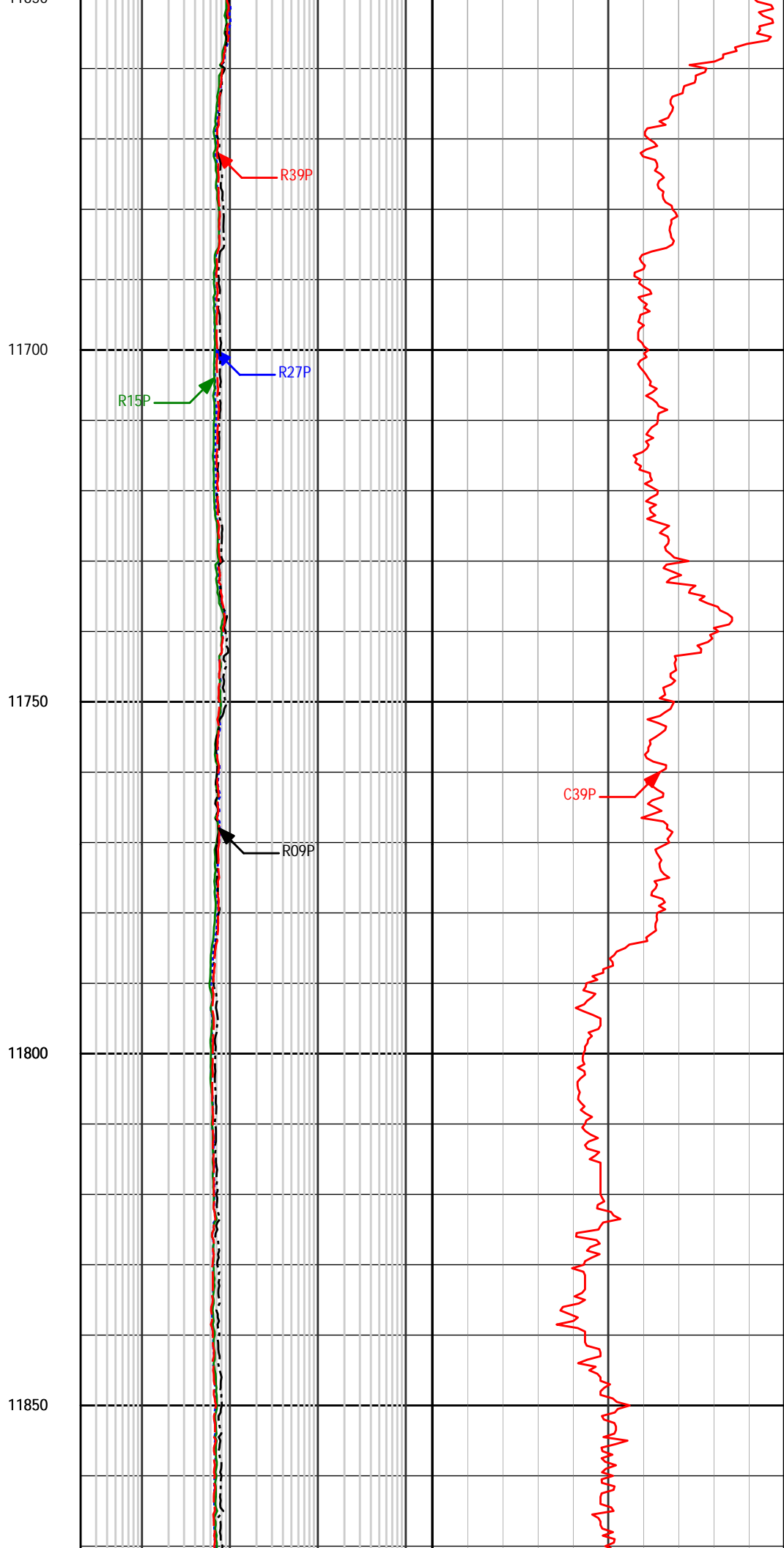
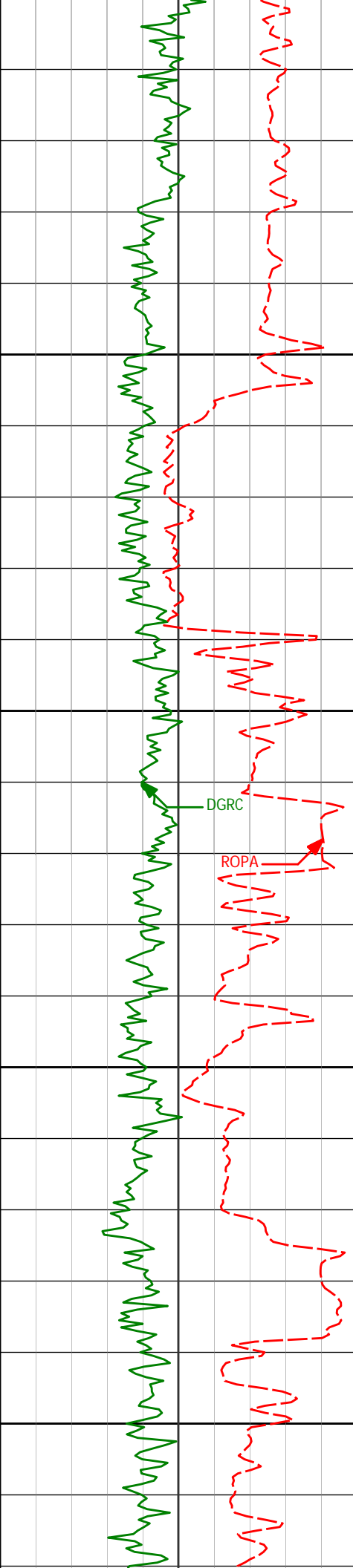
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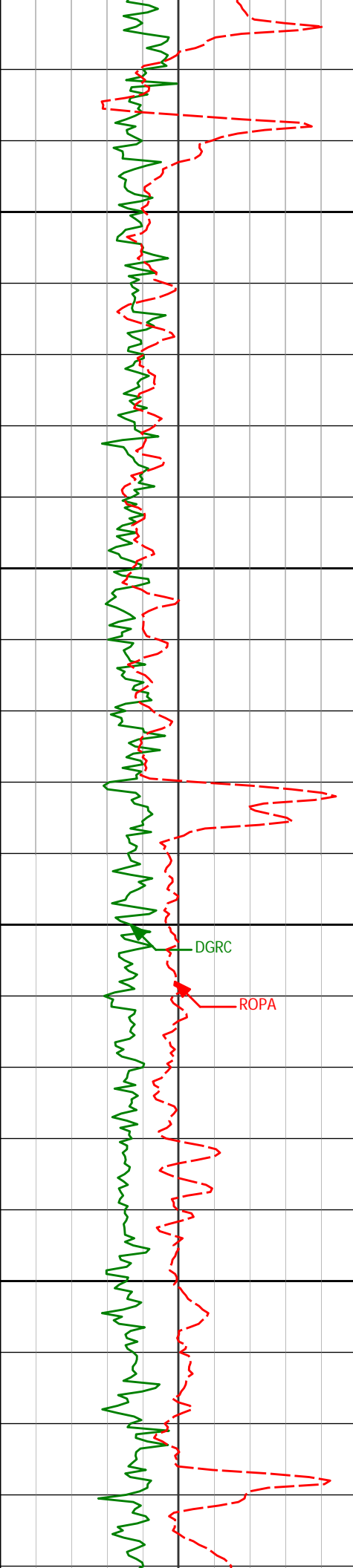
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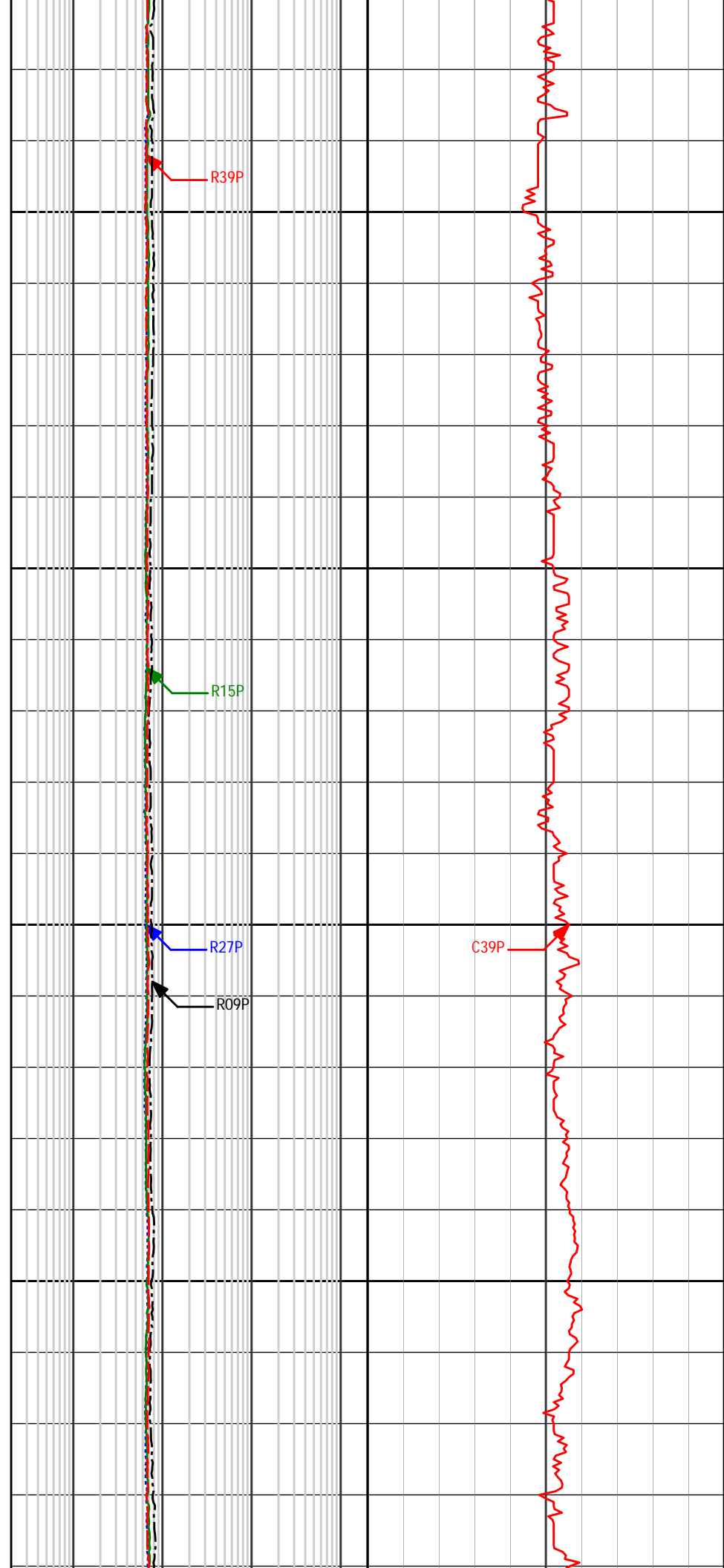


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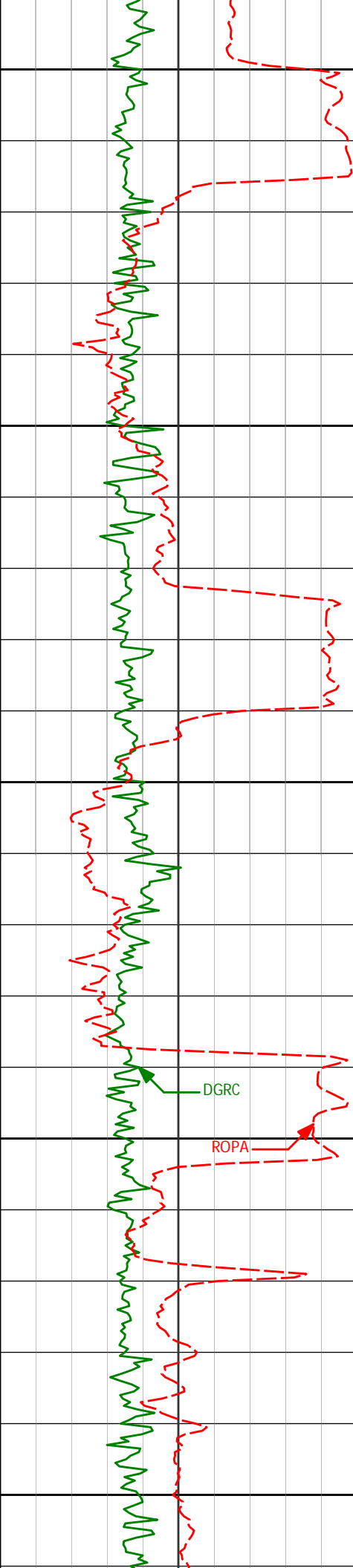
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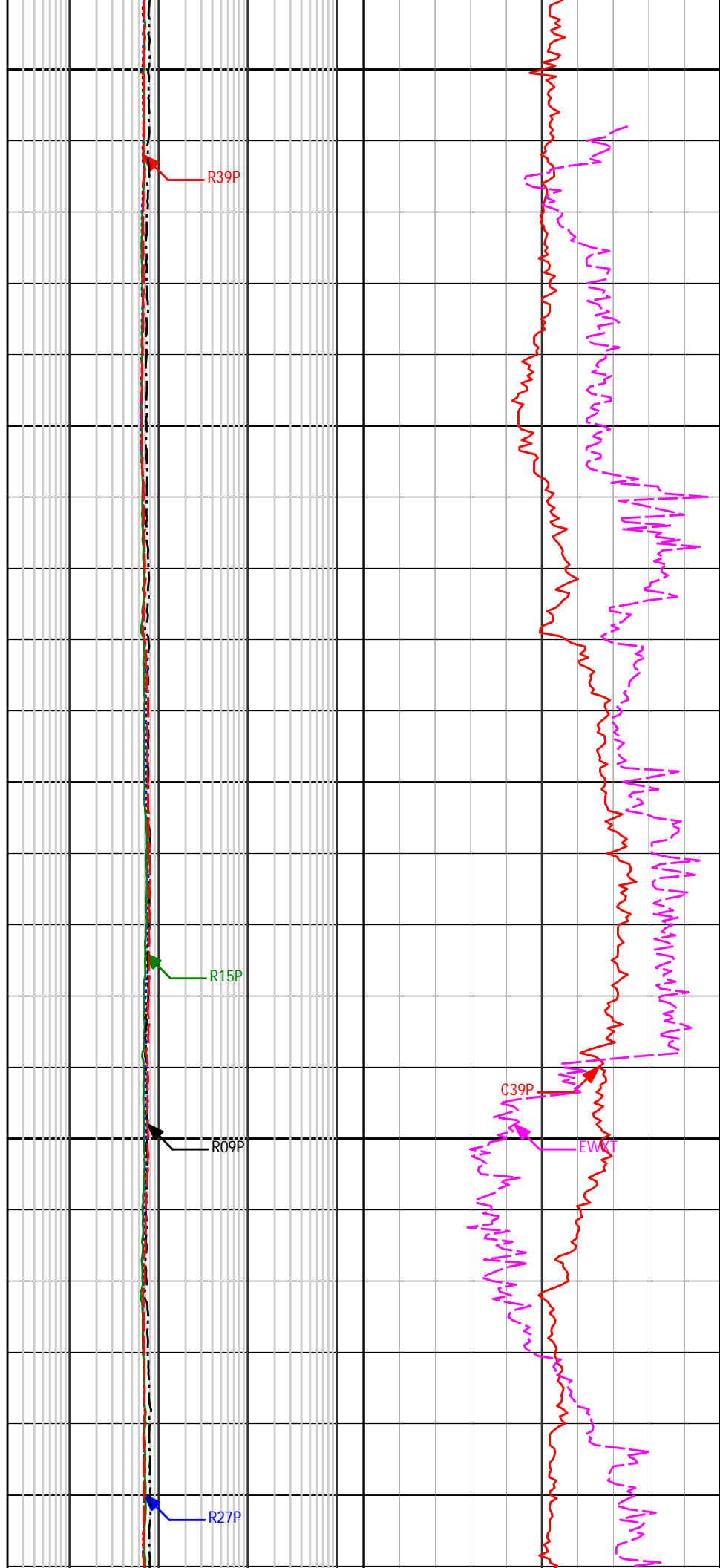
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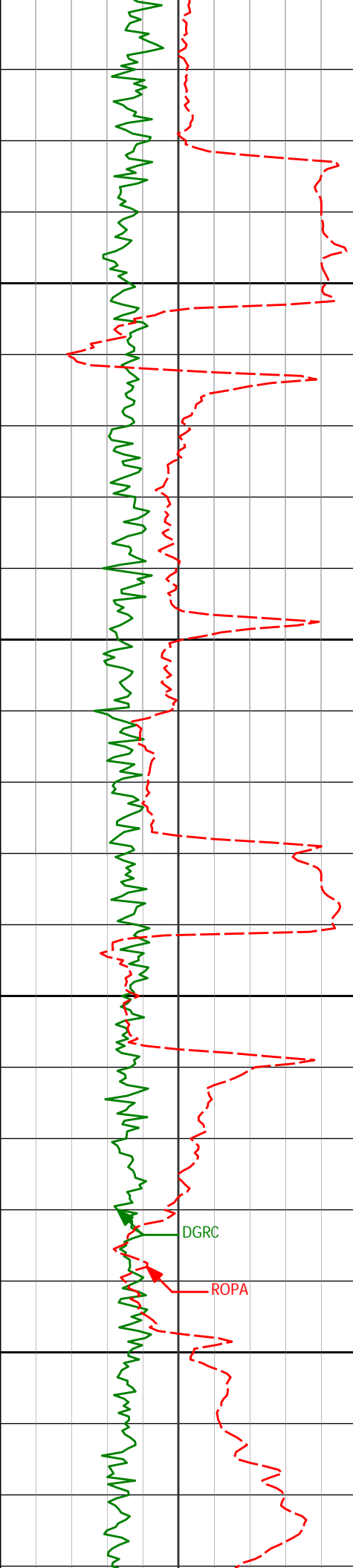
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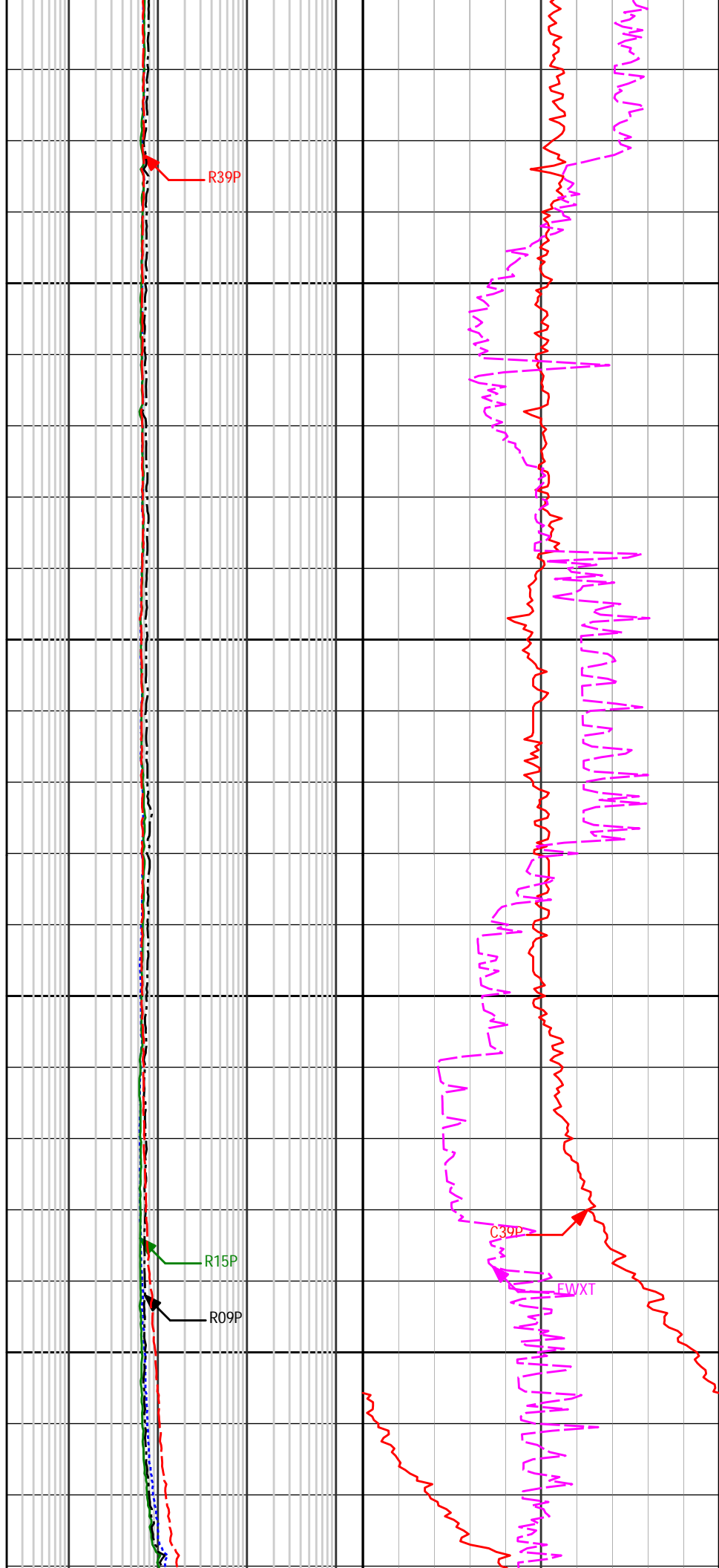


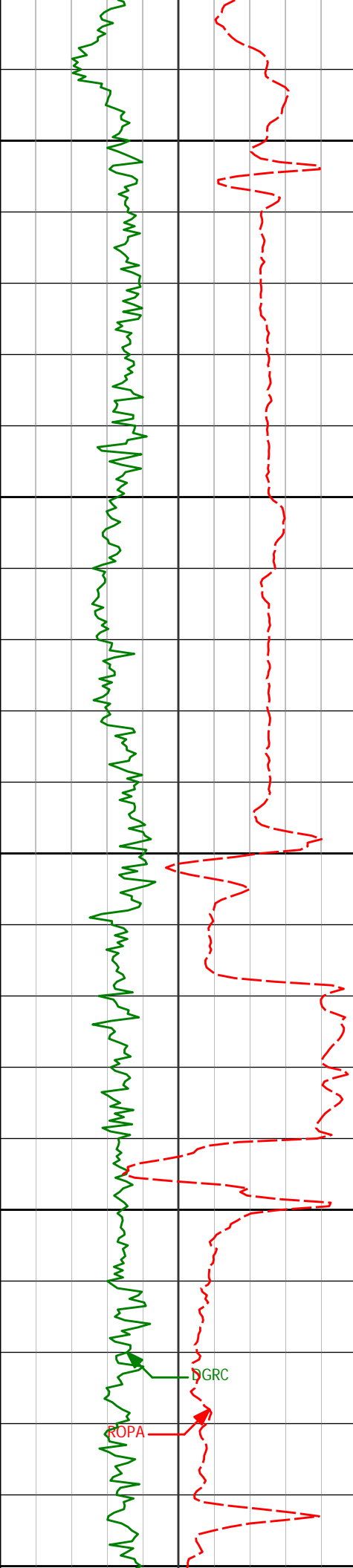
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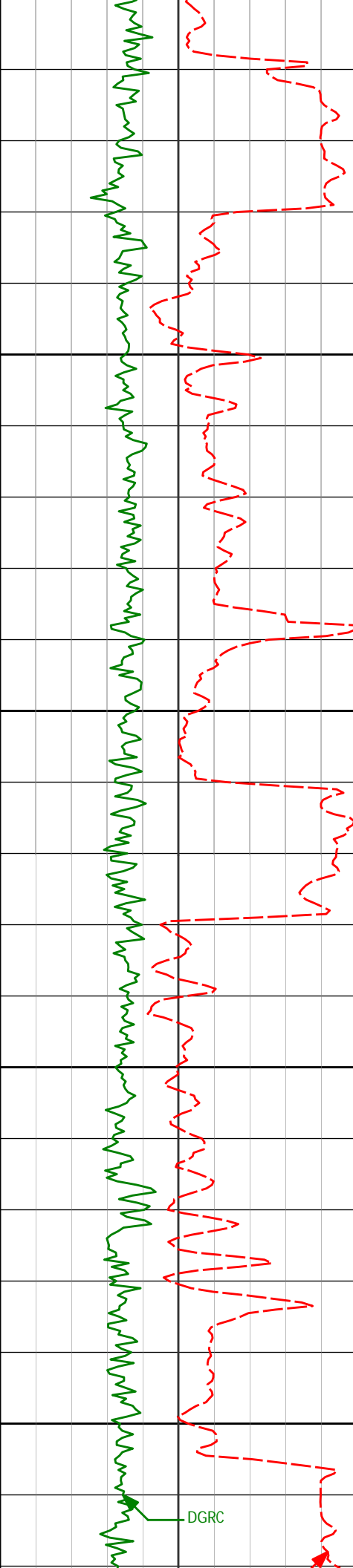
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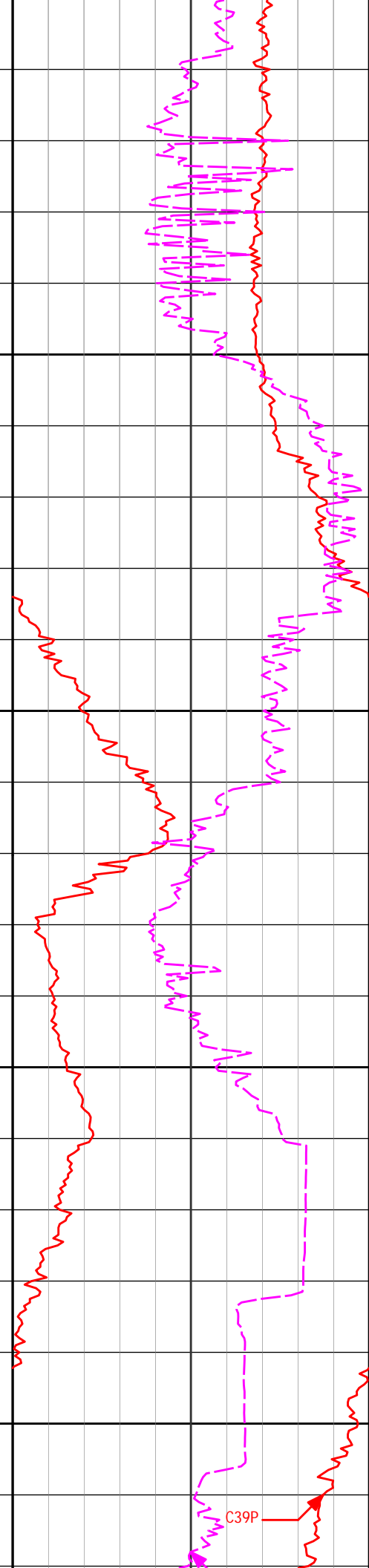
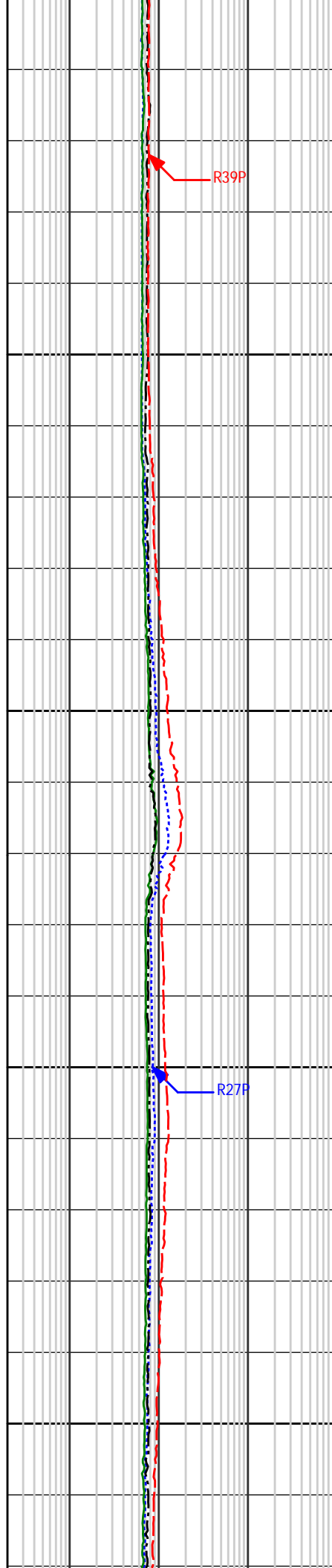
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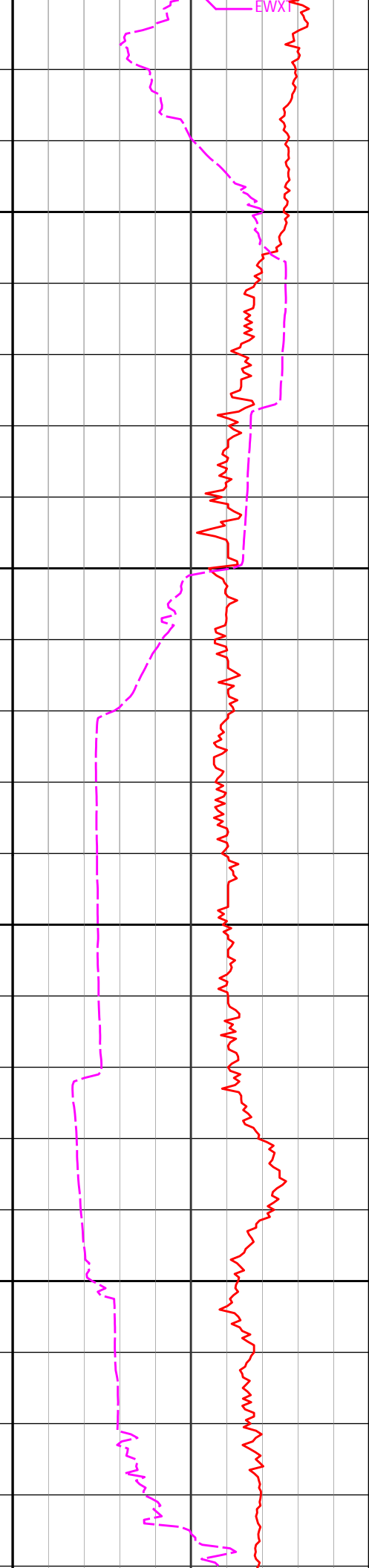
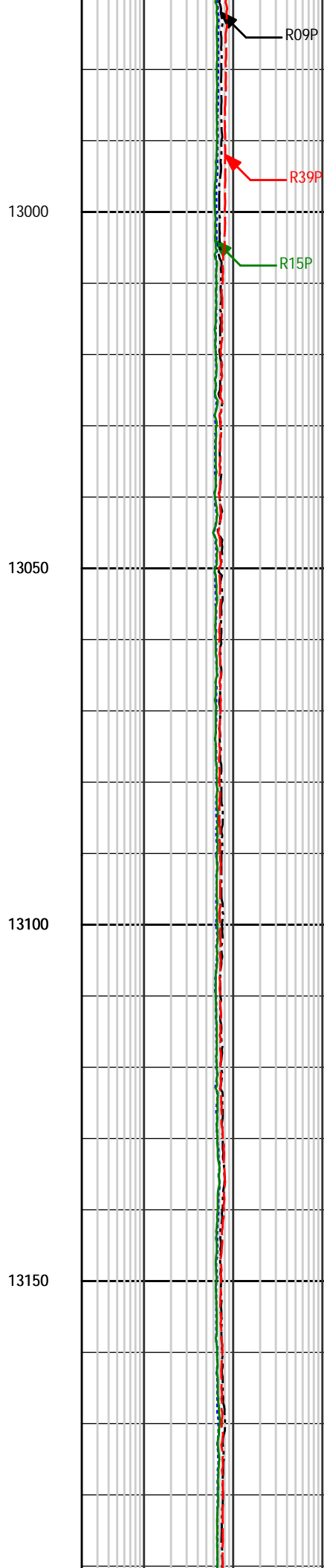
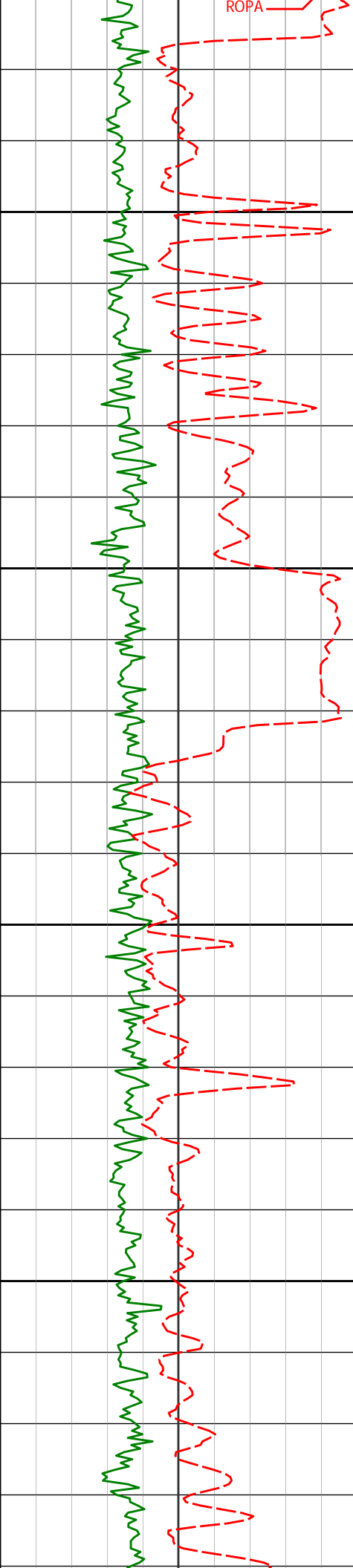
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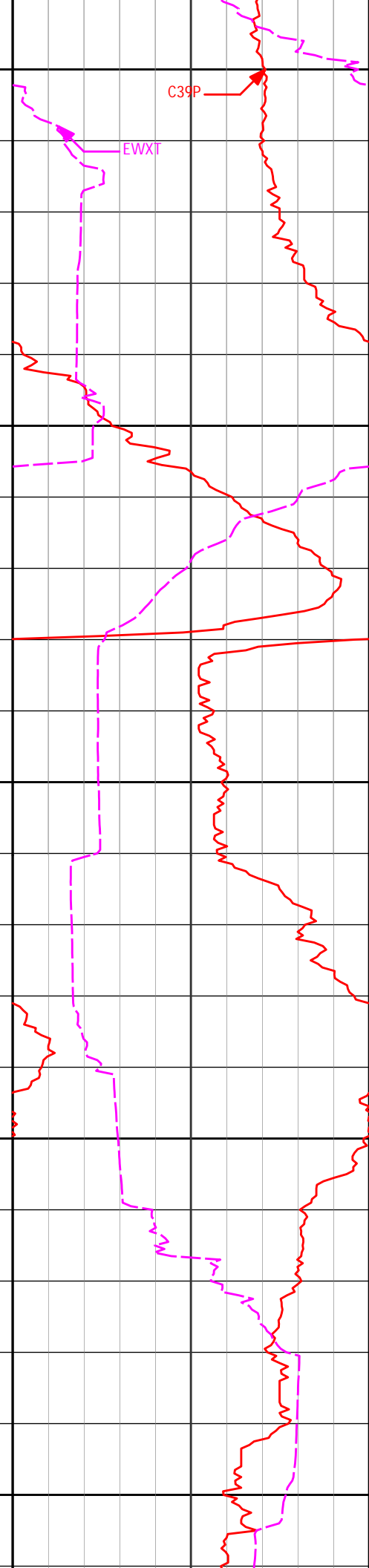
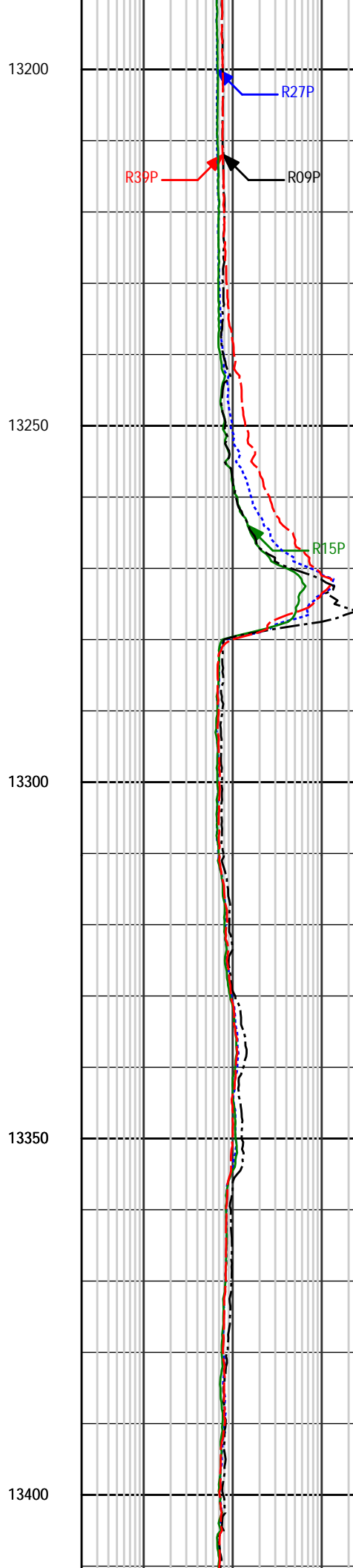
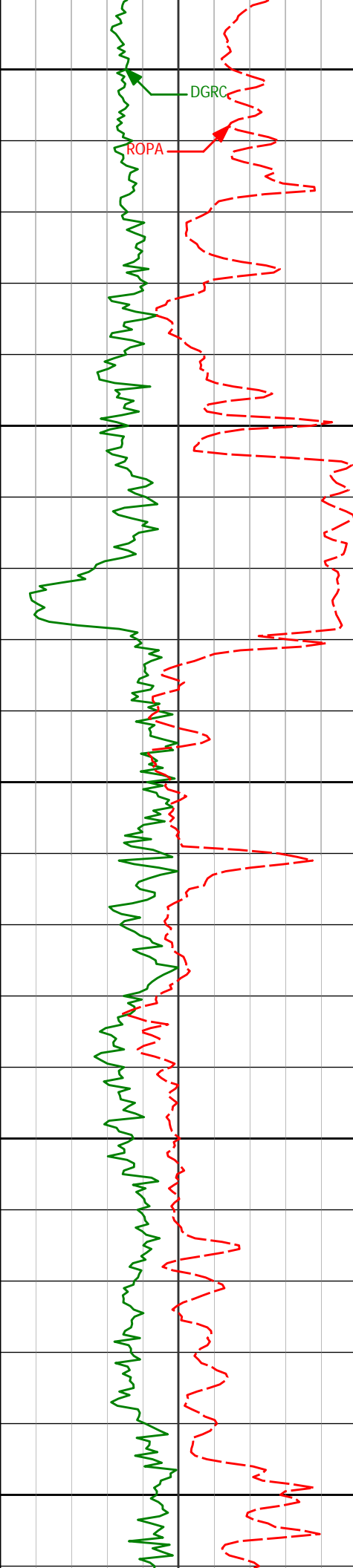
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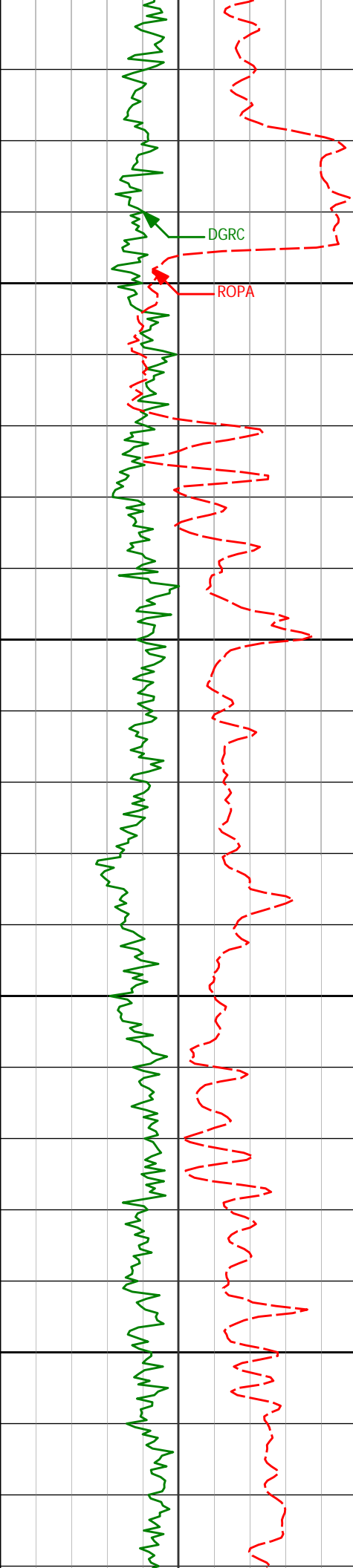


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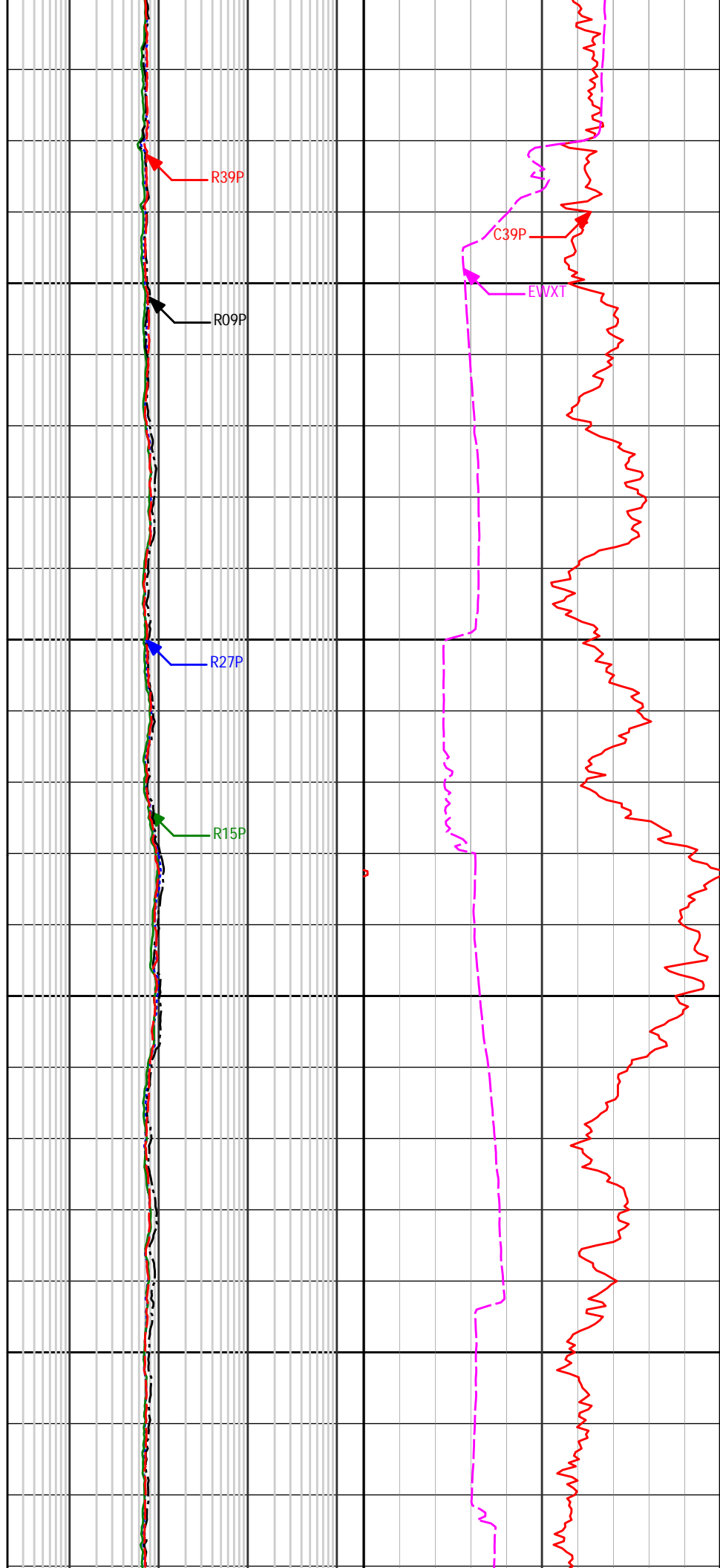


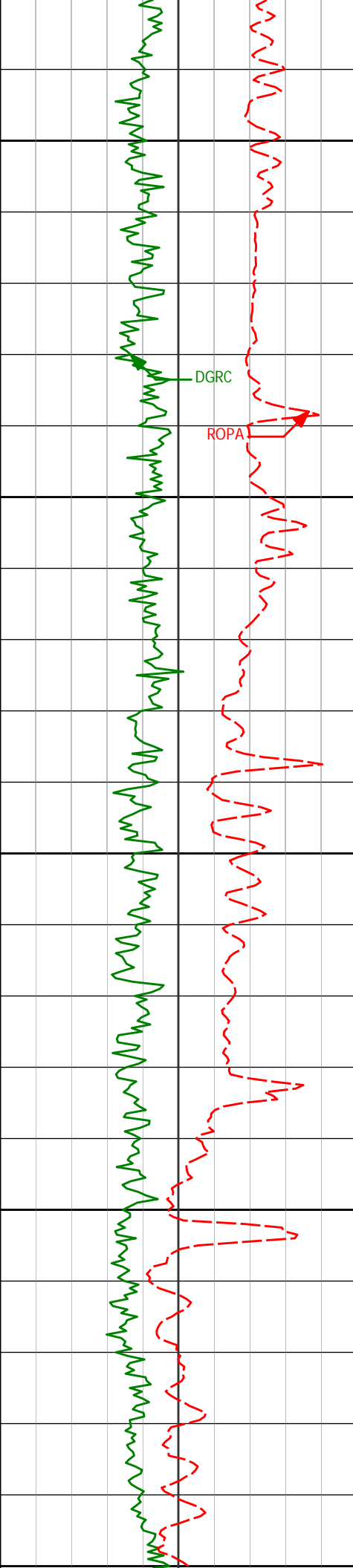
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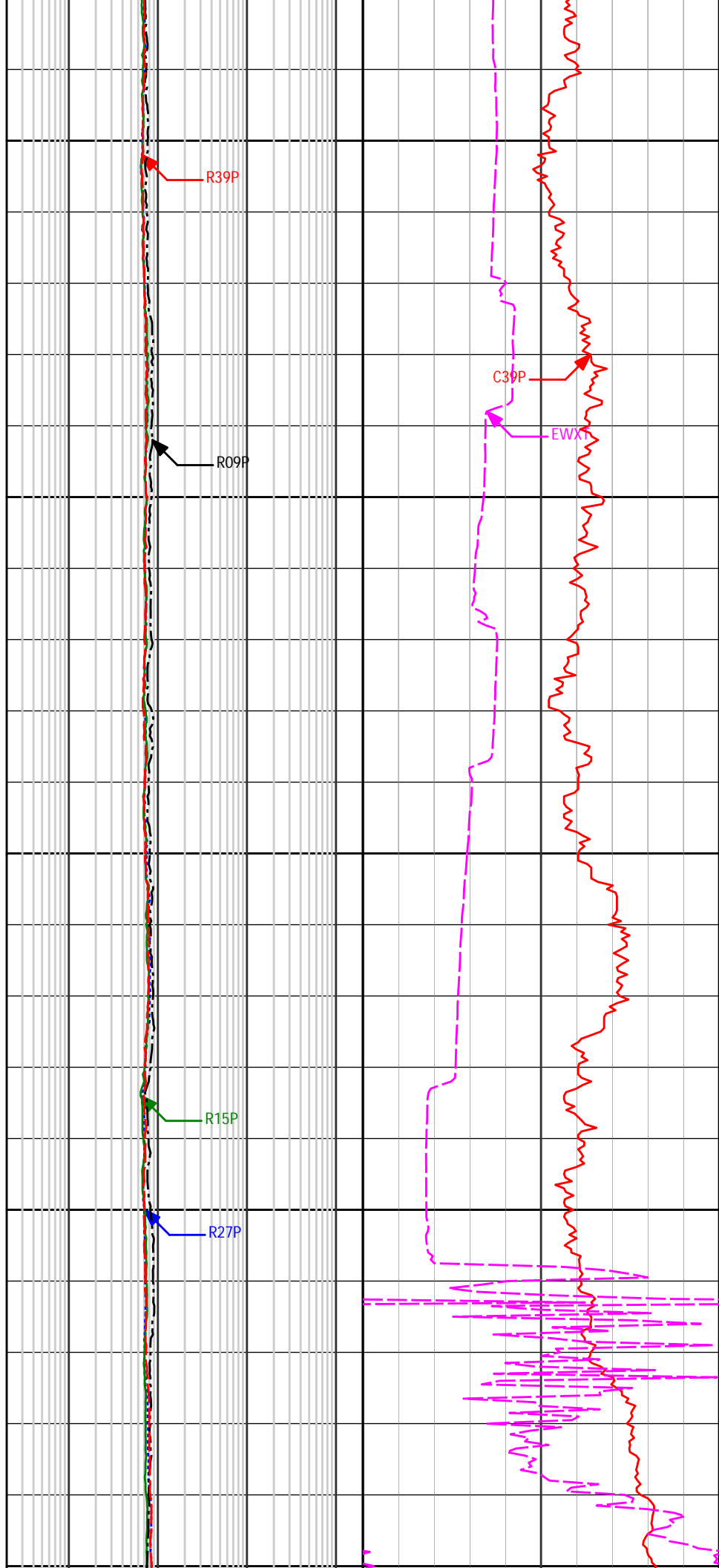
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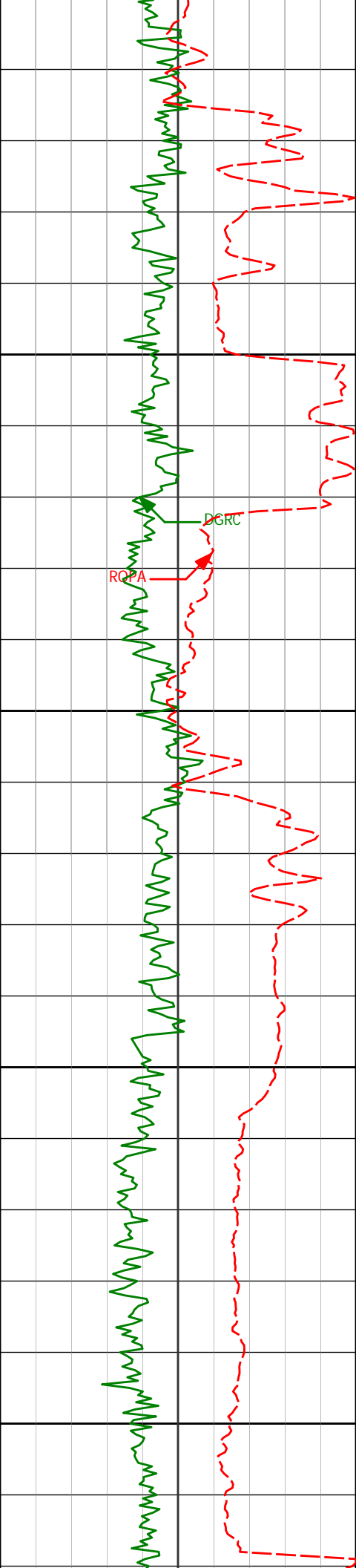
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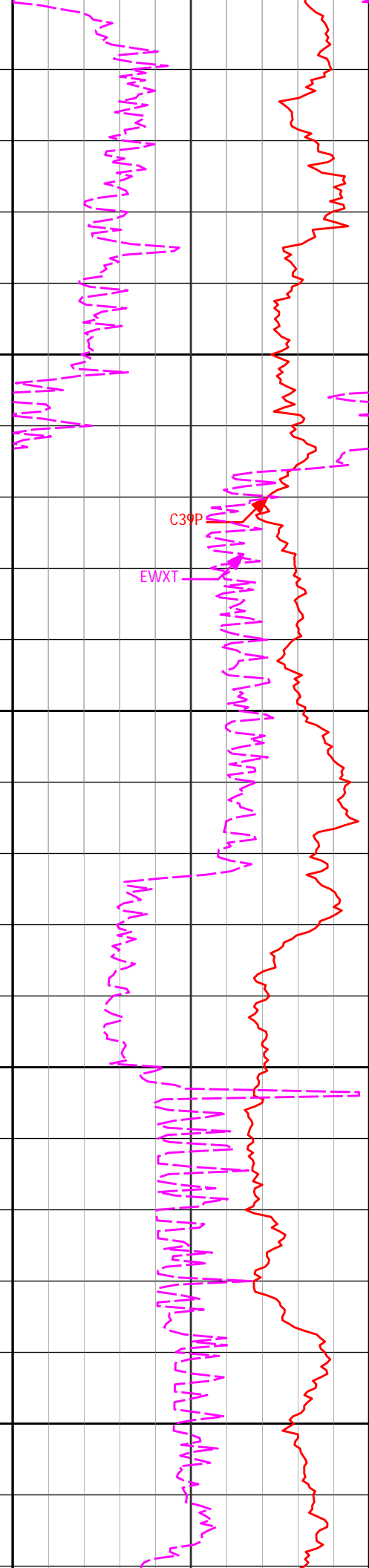
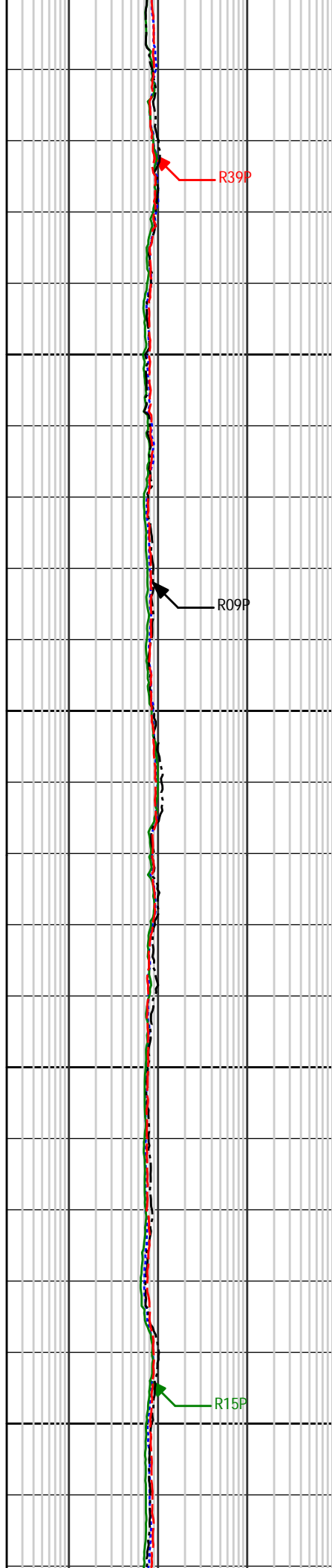
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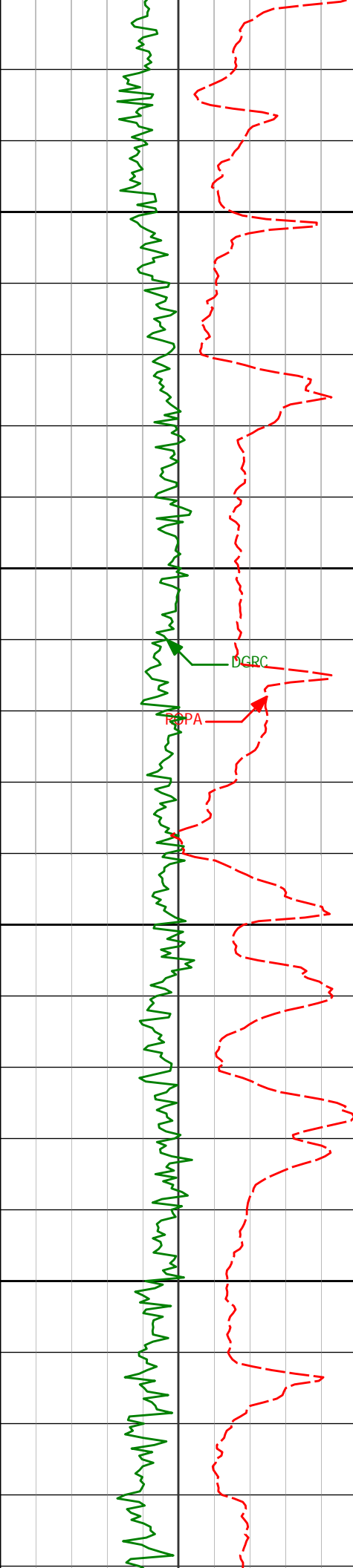
13850





13900
13950
14000
14050





14100

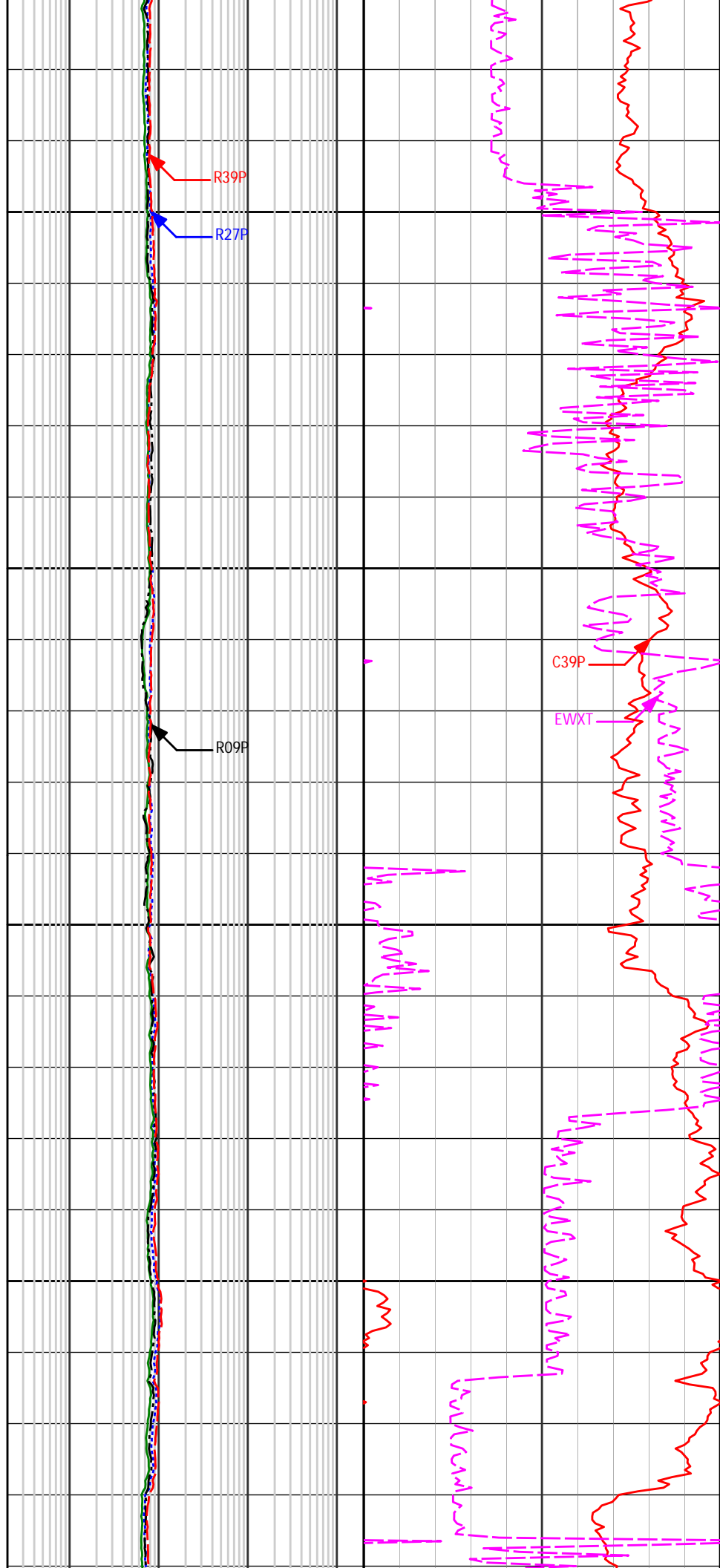
14150

14200

14250

DCRC

R3PA



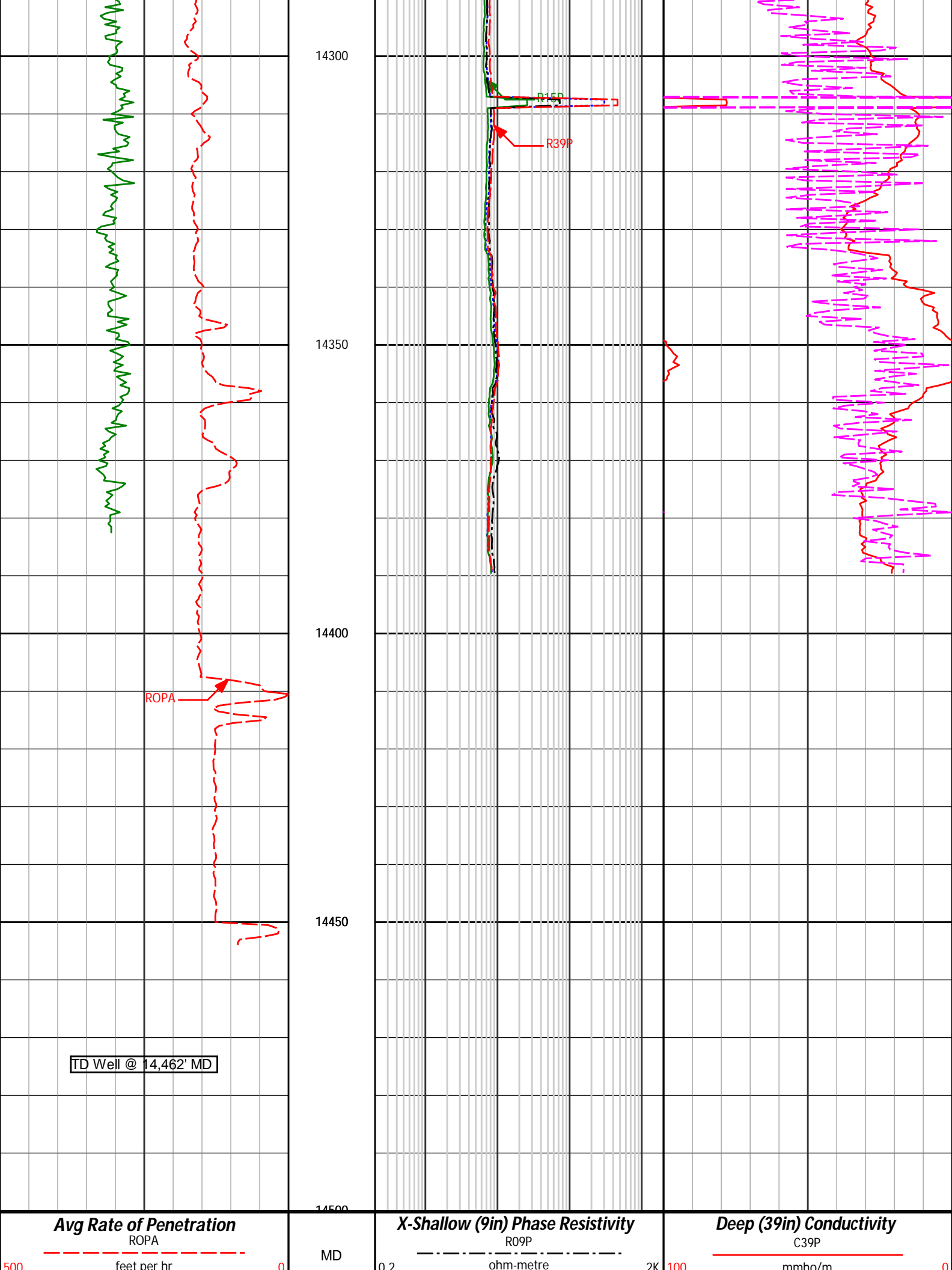
R39P

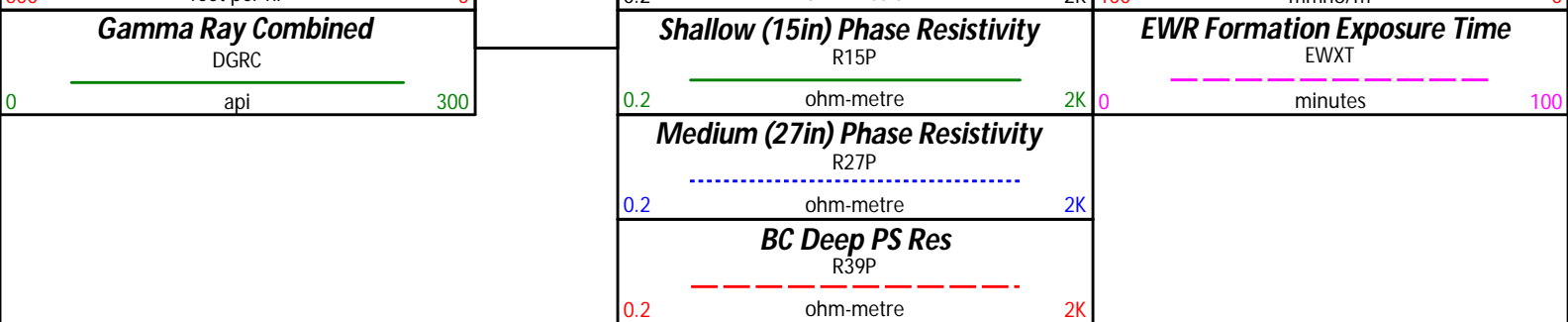
R27P

R09P

C39P

EWXT





| | | | | | | | |
|----------|-------|--------|---------|-----------|----------|---------|-------|
| 4216.00 | 14.81 | 278.65 | 4157.40 | 72.75 S | 505.49 W | -72.75 | 4.57 |
| 4311.00 | 18.10 | 284.37 | 4248.50 | 67.27 S | 531.79 W | -67.27 | 3.85 |
| 4406.00 | 17.50 | 279.03 | 4338.96 | 61.36 S | 560.20 W | -61.36 | 1.83 |
| 4500.00 | 16.56 | 279.05 | 4428.84 | 57.04 S | 587.38 W | -57.04 | 1.00 |
| 4595.00 | 16.28 | 271.80 | 4519.97 | 54.49 S | 614.06 W | -54.49 | 2.18 |
| 4689.00 | 15.50 | 264.60 | 4610.39 | 55.26 S | 639.74 W | -55.26 | 2.25 |
| 4784.00 | 14.76 | 262.60 | 4702.09 | 58.01 S | 664.38 W | -58.01 | 0.95 |
| 4878.00 | 14.48 | 262.50 | 4793.05 | 61.09 S | 687.91 W | -61.09 | 0.30 |
| 4973.00 | 13.51 | 260.31 | 4885.23 | 64.50 S | 710.62 W | -64.50 | 1.16 |
| 5068.00 | 14.08 | 256.25 | 4977.49 | 69.12 S | 732.79 W | -69.12 | 1.18 |
| 5163.00 | 15.67 | 257.59 | 5069.30 | 74.63 S | 756.55 W | -74.63 | 1.71 |
| 5258.00 | 15.07 | 255.72 | 5160.91 | 80.43 S | 781.05 W | -80.43 | 0.82 |
| 5353.00 | 14.41 | 254.40 | 5252.78 | 86.66 S | 804.41 W | -86.66 | 0.78 |
| 5447.00 | 13.37 | 251.78 | 5344.03 | 93.20 S | 826.00 W | -93.20 | 1.30 |
| 5542.00 | 10.85 | 256.87 | 5436.91 | 98.67 S | 845.14 W | -98.67 | 2.88 |
| 5637.00 | 8.40 | 260.26 | 5530.57 | 101.87 S | 860.69 W | -101.87 | 2.64 |
| 5732.00 | 6.05 | 268.84 | 5624.81 | 103.15 S | 872.54 W | -103.15 | 2.71 |
| 5826.00 | 2.82 | 266.17 | 5718.51 | 103.40 S | 879.80 W | -103.40 | 3.45 |
| 5921.00 | 2.68 | 228.04 | 5813.41 | 105.04 S | 883.78 W | -105.04 | 1.90 |
| 6016.00 | 1.11 | 153.38 | 5908.37 | 107.35 S | 885.02 W | -107.35 | 2.75 |
| 6111.00 | 3.16 | 91.85 | 6003.31 | 108.26 S | 882.00 W | -108.26 | 2.95 |
| 6206.00 | 4.26 | 82.33 | 6098.11 | 107.88 S | 875.89 W | -107.88 | 1.33 |
| 6301.00 | 5.00 | 79.94 | 6192.80 | 106.68 S | 868.32 W | -106.68 | 0.80 |
| 6396.00 | 5.62 | 92.39 | 6287.39 | 106.16 S | 859.60 W | -106.16 | 1.37 |
| 6490.00 | 4.19 | 88.05 | 6381.05 | 106.23 S | 851.57 W | -106.23 | 1.56 |
| 6585.00 | 3.53 | 88.32 | 6475.83 | 106.03 S | 845.17 W | -106.03 | 0.70 |
| 6680.00 | 1.20 | 95.55 | 6570.74 | 106.04 S | 841.26 W | -106.04 | 2.47 |
| 6775.00 | 5.73 | 357.81 | 6665.58 | 101.39 S | 840.44 W | -101.39 | 6.33 |
| 6822.00 | 12.63 | 4.30 | 6711.95 | 93.91 S | 840.15 W | -93.91 | 14.83 |
| 6870.00 | 17.62 | 10.29 | 6758.28 | 81.52 S | 838.46 W | -81.52 | 10.87 |
| 6917.00 | 20.96 | 10.19 | 6802.63 | 66.25 S | 835.70 W | -66.25 | 7.11 |
| 6965.00 | 23.30 | 5.92 | 6847.10 | 48.35 S | 833.20 W | -48.35 | 5.92 |
| 7012.00 | 27.74 | 3.97 | 6889.50 | 28.18 S | 831.48 W | -28.18 | 9.60 |
| 7060.00 | 31.61 | 4.27 | 6931.20 | 4.49 S | 829.77 W | -4.49 | 8.08 |
| 7107.00 | 33.88 | 4.89 | 6970.73 | 20.85 N | 827.74 W | 20.85 | 4.88 |
| 7154.00 | 34.09 | 3.42 | 7009.70 | 47.05 N | 825.83 W | 47.05 | 1.80 |
| 7201.00 | 35.88 | 358.74 | 7048.22 | 73.97 N | 825.35 W | 73.97 | 6.87 |
| 7249.00 | 40.87 | 356.12 | 7085.84 | 103.72 N | 826.72 W | 103.72 | 10.92 |
| 7296.00 | 47.37 | 355.17 | 7119.56 | 136.33 N | 829.22 W | 136.33 | 13.92 |
| 7344.00 | 51.34 | 353.42 | 7150.82 | 172.56 N | 832.86 W | 172.56 | 8.71 |
| 7391.00 | 55.78 | 354.16 | 7178.73 | 210.14 N | 836.94 W | 210.14 | 9.55 |
| 7439.00 | 61.78 | 352.90 | 7203.60 | 250.90 N | 841.58 W | 250.90 | 12.68 |
| 7486.00 | 68.49 | 354.69 | 7223.35 | 293.27 N | 846.17 W | 293.27 | 14.69 |
| 7534.00 | 74.33 | 357.57 | 7238.66 | 338.64 N | 849.22 W | 338.64 | 13.42 |
| 7581.00 | 77.72 | 357.36 | 7250.00 | 384.20 N | 851.24 W | 384.20 | 7.24 |
| 7629.00 | 80.96 | 358.69 | 7258.88 | 431.33 N | 852.86 W | 431.33 | 7.28 |
| 7656.00 | 83.11 | 358.35 | 7262.62 | 458.06 N | 853.55 W | 458.06 | 8.04 |
| 7730.00 | 88.77 | 359.42 | 7267.86 | 531.83 N | 854.98 W | 531.83 | 7.78 |
| 7791.00 | 88.70 | 359.89 | 7269.21 | 592.82 N | 855.34 W | 592.82 | 0.78 |
| 7885.00 | 89.32 | 0.10 | 7270.83 | 686.80 N | 855.35 W | 686.80 | 0.69 |
| 7978.00 | 88.58 | 0.99 | 7272.53 | 779.78 N | 854.47 W | 779.78 | 1.24 |
| 8072.00 | 88.70 | 1.81 | 7274.76 | 873.72 N | 852.17 W | 873.72 | 0.89 |
| 8134.00 | 88.70 | 0.79 | 7276.17 | 935.69 N | 850.77 W | 935.69 | 1.65 |
| 8227.00 | 89.88 | 2.52 | 7277.32 | 1028.64 N | 848.09 W | 1028.64 | 2.25 |
| 8321.00 | 90.68 | 1.46 | 7276.86 | 1122.58 N | 844.82 W | 1122.58 | 1.41 |
| 8383.00 | 89.75 | 2.05 | 7276.63 | 1184.55 N | 842.93 W | 1184.55 | 1.77 |
| 8445.00 | 90.49 | 1.57 | 7276.50 | 1246.52 N | 840.98 W | 1246.52 | 1.42 |
| 8539.00 | 90.43 | 2.41 | 7275.74 | 1340.46 N | 837.71 W | 1340.46 | 0.90 |
| 8632.00 | 90.12 | 1.04 | 7275.29 | 1433.41 N | 834.92 W | 1433.41 | 1.52 |
| 8726.00 | 88.45 | 359.22 | 7276.45 | 1527.40 N | 834.71 W | 1527.40 | 2.62 |
| 8819.00 | 90.62 | 359.03 | 7277.21 | 1620.38 N | 836.13 W | 1620.38 | 2.33 |
| 8913.00 | 90.12 | 1.46 | 7276.60 | 1714.37 N | 835.72 W | 1714.37 | 2.64 |
| 9006.00 | 89.38 | 359.80 | 7277.00 | 1807.36 N | 834.70 W | 1807.36 | 1.95 |
| 9099.00 | 88.21 | 358.81 | 7278.95 | 1900.33 N | 835.83 W | 1900.33 | 1.65 |
| 9193.00 | 90.06 | 1.31 | 7280.37 | 1994.31 N | 835.73 W | 1994.31 | 3.31 |
| 9285.00 | 89.51 | 1.58 | 7280.71 | 2086.28 N | 833.41 W | 2086.28 | 0.67 |
| 9379.00 | 88.89 | 0.90 | 7282.03 | 2180.24 N | 831.37 W | 2180.24 | 0.98 |
| 9472.00 | 89.32 | 1.76 | 7283.48 | 2273.21 N | 829.21 W | 2273.21 | 1.04 |
| 9567.00 | 88.46 | 0.39 | 7285.33 | 2368.17 N | 827.43 W | 2368.17 | 1.71 |
| 9661.00 | 88.52 | 1.12 | 7287.81 | 2462.13 N | 826.19 W | 2462.13 | 0.78 |
| 9756.00 | 88.08 | 359.12 | 7290.63 | 2557.08 N | 825.99 W | 2557.08 | 2.15 |
| 9851.00 | 87.53 | 359.04 | 7294.26 | 2652.00 N | 827.52 W | 2652.00 | 0.59 |
| 9945.00 | 88.76 | 358.16 | 7297.30 | 2745.92 N | 829.82 W | 2745.92 | 1.61 |
| 10040.00 | 89.57 | 1.10 | 7298.69 | 2840.89 N | 830.43 W | 2840.89 | 3.20 |

| | | | | | | | |
|----------|-------|--------|---------|-----------|----------|---------|------|
| 10135.00 | 91.17 | 1.97 | 7298.07 | 2935.85 N | 827.89 W | 2935.85 | 1.92 |
| 10230.00 | 90.62 | 2.76 | 7296.59 | 3030.76 N | 823.98 W | 3030.76 | 1.02 |
| 10325.00 | 91.85 | 1.18 | 7294.54 | 3125.68 N | 820.72 W | 3125.68 | 2.11 |
| 10420.00 | 92.03 | 1.30 | 7291.32 | 3220.60 N | 818.67 W | 3220.60 | 0.23 |
| 10515.00 | 91.73 | 1.17 | 7288.21 | 3315.53 N | 816.62 W | 3315.53 | 0.35 |
| 10609.00 | 89.57 | 359.80 | 7287.15 | 3409.51 N | 815.82 W | 3409.51 | 2.72 |
| 10704.00 | 90.62 | 0.04 | 7286.99 | 3504.51 N | 815.95 W | 3504.51 | 1.13 |
| 10799.00 | 90.86 | 359.03 | 7285.77 | 3599.50 N | 816.72 W | 3599.50 | 1.10 |
| 10894.00 | 90.99 | 357.80 | 7284.23 | 3694.45 N | 819.35 W | 3694.45 | 1.29 |
| 10988.00 | 90.00 | 357.66 | 7283.42 | 3788.37 N | 823.07 W | 3788.37 | 1.06 |
| 11083.00 | 90.19 | 358.19 | 7283.26 | 3883.30 N | 826.51 W | 3883.30 | 0.59 |
| 11177.00 | 88.21 | 356.26 | 7284.58 | 3977.18 N | 831.06 W | 3977.18 | 2.93 |
| 11272.00 | 89.51 | 356.07 | 7286.47 | 4071.94 N | 837.41 W | 4071.94 | 1.38 |
| 11366.00 | 90.31 | 355.77 | 7286.62 | 4165.70 N | 844.09 W | 4165.70 | 0.91 |
| 11461.00 | 91.30 | 358.35 | 7285.29 | 4260.56 N | 848.97 W | 4260.56 | 2.91 |
| 11556.00 | 92.10 | 358.38 | 7282.48 | 4355.48 N | 851.67 W | 4355.48 | 0.84 |
| 11651.00 | 92.84 | 0.07 | 7278.39 | 4450.38 N | 852.96 W | 4450.38 | 1.94 |
| 11746.00 | 92.41 | 358.63 | 7274.04 | 4545.27 N | 854.04 W | 4545.27 | 1.58 |
| 11841.00 | 91.55 | 0.61 | 7270.76 | 4640.20 N | 854.67 W | 4640.20 | 2.28 |
| 11935.00 | 90.87 | 359.42 | 7268.78 | 4734.18 N | 854.64 W | 4734.18 | 1.45 |
| 12030.00 | 89.94 | 358.38 | 7268.12 | 4829.16 N | 856.47 W | 4829.16 | 1.47 |
| 12125.00 | 88.83 | 357.73 | 7269.14 | 4924.10 N | 859.69 W | 4924.10 | 1.36 |
| 12220.00 | 90.00 | 357.70 | 7270.11 | 5019.01 N | 863.48 W | 5019.01 | 1.24 |
| 12314.00 | 90.12 | 359.75 | 7270.01 | 5112.99 N | 865.58 W | 5112.99 | 2.18 |
| 12409.00 | 90.56 | 2.01 | 7269.45 | 5207.97 N | 864.12 W | 5207.97 | 2.43 |
| 12504.00 | 91.48 | 2.46 | 7267.76 | 5302.88 N | 860.41 W | 5302.88 | 1.08 |
| 12599.00 | 89.81 | 359.61 | 7266.69 | 5397.84 N | 858.70 W | 5397.84 | 3.48 |
| 12694.00 | 88.21 | 359.15 | 7268.32 | 5492.82 N | 859.73 W | 5492.82 | 1.76 |
| 12789.00 | 89.51 | 358.22 | 7270.22 | 5587.77 N | 861.91 W | 5587.77 | 1.68 |
| 12884.00 | 90.06 | 359.39 | 7270.57 | 5682.75 N | 863.89 W | 5682.75 | 1.36 |
| 12978.00 | 89.51 | 359.01 | 7270.93 | 5776.74 N | 865.21 W | 5776.74 | 0.72 |
| 13073.00 | 90.31 | 1.43 | 7271.08 | 5871.73 N | 864.85 W | 5871.73 | 2.69 |
| 13168.00 | 90.25 | 1.11 | 7270.62 | 5966.71 N | 862.75 W | 5966.71 | 0.35 |
| 13263.00 | 89.88 | 2.07 | 7270.52 | 6061.67 N | 860.12 W | 6061.67 | 1.08 |
| 13358.00 | 90.37 | 2.73 | 7270.31 | 6156.59 N | 856.14 W | 6156.58 | 0.87 |
| 13453.00 | 88.95 | 2.76 | 7270.88 | 6251.47 N | 851.60 W | 6251.47 | 1.49 |
| 13548.00 | 89.82 | 3.34 | 7271.90 | 6346.33 N | 846.55 W | 6346.33 | 1.10 |
| 13642.00 | 89.69 | 2.57 | 7272.31 | 6440.20 N | 841.69 W | 6440.20 | 0.83 |
| 13737.00 | 89.07 | 3.46 | 7273.33 | 6535.07 N | 836.70 W | 6535.07 | 1.13 |
| 13832.00 | 88.58 | 2.34 | 7275.28 | 6629.92 N | 831.89 W | 6629.92 | 1.28 |
| 13927.00 | 90.87 | 3.00 | 7275.73 | 6724.81 N | 827.47 W | 6724.81 | 2.50 |
| 14022.00 | 91.42 | 3.35 | 7273.84 | 6819.65 N | 822.21 W | 6819.65 | 0.69 |
| 14117.00 | 91.17 | 1.69 | 7271.68 | 6914.53 N | 818.04 W | 6914.53 | 1.77 |
| 14212.00 | 90.18 | 1.22 | 7270.56 | 7009.49 N | 815.63 W | 7009.49 | 1.15 |
| 14306.00 | 89.94 | 1.02 | 7270.46 | 7103.47 N | 813.79 W | 7103.47 | 0.34 |
| 14401.00 | 89.07 | 359.28 | 7271.28 | 7198.46 N | 813.55 W | 7198.46 | 2.05 |
| 14452.00 | 89.07 | 359.28 | 7272.10 | 7249.45 N | 814.19 W | 7249.45 | 0.01 |

CALCULATION BASED ON MINIMUM CURVATURE METHOD

**SURVEY COORDINATES RELATIVE TO WELL SYSTEM REFERENCE POINT
TVD VALUES GIVEN RELATIVE TO DRILLING MEASUREMENT POINT**

**VERTICAL SECTION RELATIVE TO WELL HEAD
VERTICAL SECTION IS COMPUTED ALONG A DIRECTION OF 0.00 DEGREES (TRUE)
A TOTAL CORRECTION OF 8.52 DEG FROM MAGNETIC NORTH TO TRUE NORTH HAS BEEN APPLIED**

**HORIZONTAL DISPLACEMENT IS RELATIVE TO THE WELL HEAD.
HORIZONTAL DISPLACEMENT(CLOSURE) AT 14452.00 FEET
IS 7295.03 FEET ALONG 353.59 DEGREES (TRUE)**

**Surveys are tied onto surface gyro's.
Final survey is a projection to bit.**