Appendix P

Closure Drain Basis of Design Report

Cripple Creek & Victor Gold Mining Company
Squaw Gulch Valley Leach Facility
Closure Drain Design Report
February 17, 2014

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1.0 INTRODUCTION

Cripple Creek & Victor Gold Mining Company (CC&V) operates the Cresson Project, located in Teller County, Colorado, near the city of Victor, as shown on Figure 1. The Cresson Project is a mining and ore beneficiation facility that is composed of surface mines as well as a valley leach facility (VLF); an adsorption, desorption, and recovery (ADR) plant; and associated infrastructure. Construction for the existing Cresson Project VLF progressed in five phases starting in 1994 and continuing through 2011 (Phases I through 5).

CC&V began construction of the Squaw Gulch Valley Leach Facility (SGVLF), as shown on Figure 2, in late 2012. The construction is expected to continue through 2017. The SGVLF consists of four major components:

1) Highway 67 re-alignment
2) Pregnant Solution Storage Area (PSSA)
3) Phase I Leach Facility
4) Phase II Leach Facility

To date, the Highway 67 re-alignment is generally complete and construction continues with the PSSA, Phase I, and Phase II.

The PSSA construction includes the installation of a collection sump and Closure Drain located below the PSSA geomembrane liner system. The Closure Drain will serve as the primary means of discharging water that accumulates within the PSSA, by means of infiltration/percolation through the closure cover, after the SGVLF is closed. This is conceptually described in the SGVLF Design Report (AMEC, 2011). At the time of facility closure, the PSSA geomembrane liners (primary and secondary) will be perforated to allow infiltrated water, resulting from precipitation, to enter the Closure Drain. The Closure Drain will transport water to a subsurface formation described as the Tertiary aged Cripple Creek Lapilli Breccia (diatreme) several hundred feet away from the PSSA sump where the water will be discharged. This report details the design of that Closure Drain system.

1.1 Objective and Scope

The purpose of the work performed by AMEC, reported herein, was to provide CC&V with an engineering design for the SGVLF Closure Drain. The work included:

- Review of prior work and available data

- Field investigation program to better characterize the hydraulic conductivity and location of the diatreme
- Design of the Closure Drain facilities

1.2 Closure Drain Design History

The Closure Drain was described, conceptually, in the SGVLF Design Report (AMEC, 2011). At that time, the drain was preliminary designed having five drilled shafts which extended a minimum of 10 feet into the diatreme formation. Specific flow estimations and design details were not included in the 2011 report. The hydraulic conductivity (K) of the diatreme material was estimated to be 2 x 10^{-4} cm/sec, a geometric mean value, based on work conducted by Adrian Brown (2012). In the fall of 2013, AMEC was tasked with furthering the Closure Drain design.

1.3 Design Criteria

AMEC completed the engineering design for the Closure Drain using the design criteria presented in the following tables. The following parameters were used in the infiltration analysis:

Table 1-1: Site Design Criteria

Item Description	Input Parameter
Latitude of the Mine Site	38.7473° N
Evaporative Zone Depth	6 inches
Maximum Leaf Area	2 (Fair stand of grass)
Growing Season Start	121 Julian (May 1)
Growing Season End	273 Julian (September 30)
Average Wind Speed	21.25 miles per hour
Relative Humidity (First Quarter)	74%
Relative Humidity (Second Quarter)	80%
Relative Humidity (Third Quarter)	77%
Relative Humidity (Fourth Quarter)	75%

Table 1-2: Soil and Design Input Parameters

Item Description	Input Parameter
Impoundment Area	288 acres
Initial Moisture Storage	None
Topsoil	
Porosity	*0.419*
Field Capacity	*0.307*
Wilting Point	*0.180*
Saturated Hydraulic Conductivity	*1.89×10^{-5} cm/sec*
Crushed Ore	
Porosity	*0.360*
Field Capacity	*0.032*
Wilting Point	*0.013*
Saturated Hydraulic Conductivity	*1×10^{-3} cm/sec*

Table 1-3: Hydrologic Input Parameters

Item Description	Input Parameter
Slope	40% (2.5:1)
Slope Length	1,200 feet
Curve Number	71

Hydraulic sizing of the Closure Drains was based on the following criteria:

Table 1-4: Hydraulic Conductivity Parameters

Item Description	Input Parameter
Hydraulic Conductivity (Diatreme) (K Value)	3.21×10^{-6} cm/sec
Average Annual Infiltration/Percolation	2.66 inches
Wettest Annual Infiltration/Percolation	4.14 inches
Estimated SGVLF Plan Area	15 million square feet

Detailed discussions regarding the design criteria, supporting laboratory testing, engineering analysis, and references used for the VLF design are presented in subsequent sections of this design report.

2.0 SITE CONDITIONS

2.1 Geology

The regional ground water system associated with the Mining District is dominated by the diatreme, a volcanic caldera approximately seven square miles in area (Figure 3). The diatreme is located within the host Precambrian-age granite, granodiorite, gneiss, and schist. The diatremal and adjacent rocks contain the ore bodies in the District, and therefore contain most of the past and proposed mining activities. The diatremal rocks are moderately permeable, while the surrounding Pikes Peak granite is of lower permeability. As a result, the diatreme is an enclosed regional ground water regime, with limited hydrologic interaction with the surrounding rockmass (A. Brown, 2012).

Historic drainage tunnels driven into the diatreme in the 20th Century have drained the regional groundwater flow in the District from the diatreme and the immediately adjacent granite. The Carlton Tunnel is the most recent (1941) and deepest (approximate elevation 7,000 feet above mean sea level (amsl), and has created a reduction in the ground water table in the diatremal rockmass to approximately 3,500 feet below the original ground surface. The source of ground water in the vicinity of the diatreme is precipitation. The precipitation impinges on the surface of the District and surrounding areas, and then runs off, evaporates, transpires, or infiltrates. Percolating water within, and immediately contiguous to, the diatreme moves vertically downwards until it ultimately reaches the deep saturated regional ground water system, and then flows laterally from the region through the Carlton Tunnel (A. Brown, 2012).

2.2 Initial Closure Drain Conceptual Model

Geologic mapping for the area of the future Closure Drain (Adrian Brown, 2012) provided that the passive Closure Drains would be drilled through Precambrian aged Cripple Creek Quartz Monzonite prior to reaching the diatreme. The report describes the saturated hydraulic conductivity of the diatreme having a geometric mean of 2×10^{-4} cm/sec; and the saturated hydraulic conductivity of the native rock (Precambrian) having a geometric mean of 2×10^{-6} cm/sec. The Brown conceptual model represents that the diatreme was two orders of magnitude more permeable than the surrounding rock. The report also describes the hydraulic conductivity of the Cripple Creek Quartz Monzonite as being approximately equal to the hydraulic conductivity of the soil liner for the SGVLF (1×10^{-6} cm/sec).

Given that the diatreme was represented as significantly more permeable than the low permeability of the Cripple Creek Quartz Monzonite, without local drilling confirmation and mapping, the decision was made to evaluate the target diatreme and its contact with the Cripple Creek Quartz Monzonite.

3.0 SUBSURFACE INVESTIGATIONS

AMEC retained AK Drilling to drill and develop three exploration test holes east of the Closure Drain platform to locate the diatreme - Cripple Creek Quartz Monzonite contact. International Directional Services (COLOG), LLC., was retained to follow up each well completion with borehole geophysical services to test permeability.

A subsurface field investigation program was conducted with the following two primary goals:

- Verify the hydraulic conductivity of the diatreme in the vicinity of the Closure Drain
- Acquire better information about the location and attitude of the diatreme/Precambrian contact boundary

3.1 Field Investigation

The field investigation to test and evaluate the hydraulic conductivity of the diatreme was conducted from November 15 through 22, 2013. Three vertical test holes, as indicated on Figure 4, were completed to depths up to 700 feet via reverse circulation air rotary drilling by AK Drilling. The CC&V geologist and AMEC field geologist observed the rock chip cuttings in the field, with a focus on identifying fracture zones and unit contacts between the diatreme and the underlying Precambrian granite. The borehole log information is presented in Appendix A. Upon completion of the boreholes to depth, geophysical and hydrophysical tests were conducted in each borehole by COLOG. This data is presented in Appendix B. COLOG completed 3-arm caliper surveys of each borehole to determine hole stability and shape. An optical televiewer survey was completed in the first borehole to determine fracture frequency, evidence of water saturation, and to provide a guide for interval permeability testing. Permeability testing included constant-rate injection and falling head tests. The use of an inflatable packer during the permeability tests allowed the AMEC field geologist and COLOG to isolate specific zones within the borehole. The isolated zones were selected based on the fracture zones and unit contacts observed in the rock chip cuttings, driller logs and 3-arm calliper results. COLOG performed data analysis and interpretation to characterize the hydraulic conductivity of the diatreme, for use in the design of the Closure Drain; this is summarized in Table 3-1.

Table 3-1:COLOG Geophysical/Hydrophysical Services Summary

Survey	Test Hole 1	Test Hole 2	Test Hole 3
Hole Name	(SGR-833)	(SGR-828)	(SGR-834)
Total Depth (feet)	700	500	701
3-Arm Caliper Survey (feet)	0 to 700	0 to 500	0 to 701
Optical Televiewer (feet)	0 to 700	No Survey	No Survey
Stepped-Injection Tests	-	-	-
Step No.1 Interval (feet)	217 to 291	26.7 to 118	522.5 to 701.6
Step No.2 Interval (feet)	75.1 to 291	-	422.9 to 701.6
Step No.3 Interval (feet)	-	-	293.5 to 701.6

SGR-833 (Hole #1) was completed to a depth of 700 feet below ground surface (ft bgs). Small fractured zones were observed in the rock chips at approximately 70 and 80 ft bgs, and the contact between the diatreme and underlying granite was identified at 325 ft bgs. Deviation, 3-arm caliper, and an optical televiewer survey were performed in the hole. After the removal of geophysical tools, an inflatable packer was placed between 291 and 294 ft bgs, in order to isolate the diatreme unit for permeability testing. A transducer was affixed to the packer cable 2 feet above the top of the packer and had a direct read line to the computer system in the logging truck to monitor water level. The injection test began at a rate of 6.5 gallons per minute (gpm), which caused a rapid rise in water levels. The rate was reduced to 1.5 gpm, and a constant head was achieved. A sharp linear decrease in water level was observed and attributed to a leaky packer, which meant the permeability test had to be aborted. A larger packer, with greater well diameter capabilities, was acquired for use in subsequent tests. A second round of hydrophysical testing in SGR-833 was performed by placing the large packer at the same depth as the first test. The initial injection rate was 1.72 gpm, which reached constant head after about 20 minutes. The injection rate was increased to 4.56 gpm, and this injection rate proceeded for about 8.5 hours. At the end of the second step of the injection test, injection was stopped and a falling head test was conducted. The falling head test was run for 5.8 hours, until the water level recovered to greater than 80 percent of the static water level. Upon recovery, the packer and transducer were removed from the hole.

SGR-834 (Hole #3) was completed to a depth of 700 ft bgs. A 3-arm caliper survey was completed in the hole. From the calliper log and rock chip cutting, fractured zones were observed from 65 to 75 and 645 ft bgs. A highly disturbed area was noted from 13 to 40 ft bgs. The diatreme to granite contact was observed between 685 and 690 ft bgs, indicating only 10 to 15 feet of granite was exposed in the bottom of the borehole. Due to the minor amount of granite exposed in the borehole, a packer was not utilized to isolate the two unites during the permeability testing. A transducer was installed just above the bottom of the hole to monitor water level. Three injection rate steps were conducted on this hole, as constant head was observed at three of the four steps. The fourth step caused a steady increase in head, and no immediate signs of levelling out. Step 1 injected water at a rate of 2.42 gpm, for approximately 3 hours. Flow rate was increased to 4.86 gpm for Step 2, for approximately 3 hours. Flow rate was increased again for Step 3, to 9.63 gpm, for a duration of approximately 5.5 hours. During Step 3, anomalous data was observed which correlated to the start up and shut down of drilling at SGR-828, indicating that SGR-834 and SGR-828 are hydraulically connected. To minimize further data disturbance, drilling was halted until after the completion of the hydrophysical testing in SGR-834. A falling head test was conducted at the end of Step 4. Greater than 80 percent recovery was achieved within 40 minutes of ceasing injection.

Upon the completion of recovery at SGR-834, drilling on SGR-828 (Hole #2) resumed. The diatreme/granite contact was observed at 125 ft bgs. Due to the shallow expression of the interface, SGR-828 was only drilled to a depth of 500 ft bgs. A 3-arm caliper survey was completed in the hole, and the log showed a possible fractured area near 125 ft bgs. The packer was placed from 118 to 121 ft bgs. A two-step injection test was conducted, with water injected during Step 1 at a rate of 0.97 gpm for 30 minutes. The water level during Step 1 did not stabilize, and the rate was reduced for Step 2 to 0.45 gpm, for 3 hours. A falling head test was conducted at the end of Step 2, allowed to run for 3.3 hours, at which point the test was ended as the falling head rate was starting to level out.

Following the hydrophysical testing, the test holes were abandoned using a bentonite slurry mix.

3.2 Geologic Logging

AMEC field geologists and CC&V's exploration geologist observed and preserved the rock chip cuttings in the field during the drilling of Test Hole 1 (SGR-833), Test Hole 2 (SGR-828), and Test Hole 3 (SGR-834). Detailed geologic logging of the chip cuttings was performed by CC&V exploration geologist, Mr. Scott McAnally. Detailed logs of each test hole are provided in Appendix A. The logs identified critical information regarding rock type, lithology and mineralogy.

Table 3-2: CC&V Rock Type Codes

Code	Type
3	Overburden
21	Undifferentiated aphanitic phonolite
31	Porphyritic phonolite with k-spar
37	Aphanitic to slightly porphyritic mafic phonolite breccia
42	Cripple Creek Breccia
62	Cripple Creek quartz monzonite

The information derived from the logs are integrated into a 3-Dimensional (3D) VLF2 geologic model. The 3D geologic model incorporated additional area exploration holes from the CC&V database. The 3D presentation provides a detailed representation of the unit contacts between the diatreme and Precambrian granite.

3.3 Flow Test Results

The hydraulic conductivity (K) was determined by COLOG through three analysis methods (Appendix B) across multiple depth intervals of diatreme material. These results are presented in Table 3-3.

Table 3-3: Hydraulic Conductivity (K) Values

Hole	Interval (feet)	K Hvorslov (cm/s)	K Thiem (cm/s)	K Lugeon (cm/s)	K Mean (cm/s)
SGR-833	217.5 to 291.0	N/A	7.1×10^{-6}	1.2×10^{-5}	9.2×10^{-6}
SGR-833	75.1 to 291.0	2.2×10^{-6}	6.4×10^{-6}	4.6×10^{-6}	**4.0×10^{-6}**
SGR-828	26.7 to 118.0	8.9×10^{-7}	2.1×10^{-6}	1.6×10^{-6}	**1.4×10^{-6}**
SGR-834	522.5 to 701.6	N/A	3.2×10^{-6}	3.4×10^{-6}	3.3×10^{-6}
SGR-834	422.9 to 701.6	N/A	4.1×10^{-6}	3.5×10^{-6}	3.8×10^{-6}
SGR-834	293.5 to 701.6	1.2×10^{-5}	5.5×10^{-6}	2.9×10^{-6}	**5.7×10^{-6}**

Note: Bold Values used for Averages.

These K values are relatively consistent across all three boreholes, which suggest that they are likely representative of the diatreme K values that will be found in the vicinity of the Closure Drains. For each borehole, the geometric mean of the three analysis methods over the longest diatreme interval is shown in bold type in Table 3-3. The geometric mean of these three values (3.2×10^{-6} cm/s) was used for drain flow estimation.

This K value is about two orders of magnitude lower than the diatreme average obtained by Brown (2012). This means that each individual drain will flow at a much lower rate than originally anticipated. In terms of design, each drain can be a smaller diameter, but more individual drains will be required to produce the same total drain flow.

3.4 Subsurface Model – Geologic Interpretation of Precambrian Contact

The 3D VLF2 geologic model was created by Mr. McAnally using Vulcan software. This is presented in Appendix C. The 3D model incorporates area exploration holes from the CC&V database, the logs from Test Hole 1 (SGR-833), Test Hole 2 (SGR-828), and Test Hole 3 (SGR-834) and the current survey of the legacy mine workings. The 3D presentation in Figure 5 provides a detailed plan view representation of the area legacy mine workings, and the unit contacts between the diatreme and Precambrian granite. The majority of the previous workings are inside the diatreme but a few cut through the contact and the deepest being at the 8,740 foot level.

The general geology of the holes in the VLF2 area suggests a sharp and steep contact from Precambrian to Tertiary rock (the diatreme) in most cases (Figure 6). A few holes, such as SGC12-10, previously drilled and logged, suggest a less distinct contact with transition zones comprised of Precambrian breccias, possibly tectonic breccia and/or collapsed material from the Tertiary volcanic events. The Precambrian surface is also cut by numerous intrusive phonolite dikes and lamprophyres ranging from about 1 to 5 feet at all depths see Appendix C. There were three previous exploration holes in the vicinity of the VLF2 holes that helped interpret the shape of the contact. In general the Precambrian surface appears very steep and dips slightly to the North North East.

4.0 CLOSURE DRAIN DESIGN

4.1 General

This section describes the Closure Drain design for the SGVLF. Design criteria used in the Closure Drain design is presented in Section 1.3, and is discussed in more detail in the following sections.

The Closure Drain is designed to be constructed as shown on Drawings A361 and A362, based on the design criteria and analyses presented in this report.

The quality of the constructed Closure Drain is an important aspect of this project. Qualified personnel under the supervision of an experienced professional engineer registered in the State of Colorado will be on-site full time to observe and/or provide testing during the installation.

4.2 Closure Drain

The Closure Drain system consists of 12 separate gravity drain lines that collect water from the bottom of the geomembrane liner below the PSSA. The design is presented on Drawings A361 and A362; the design is further discussed in Section 5.2. Each of these 12 drain lines is composed of the following:

- Collector Section – A 1.5-inch-diameter (nominal) Schedule 80 PVC pipe with 0.020-inch slots, laid horizontally along the base of the underdrain fill. The length of the slotted section is 25 feet.
- Transport Section – A solid wall Schedule 80 PVC pipe set at a variable dip angle (approximately 45 degrees below horizontal). This pipe varies in length for each of the 12 drain lines, and will depend on the location of the diatreme boundary.
- Discharge Section – A 25-foot-long section of 1.5-inch-diameter Schedule 80 PVC pipe with 0.030-inch slots, also set at a variable angle matching that of the transport section. The slot size is slightly larger than that of the collector pipe, so that any fine particulate materials entering the drain can more easily exit the casing at the discharge end. Water will discharge from this directly to the diatreme.

The transport and discharge sections will be installed through a 4-inch borehole and anchored with centralizers and a 10-foot section of grout. Schedule 80 PVC was selected, as this material is typically used in water wells for depths up to 500 feet, and is resistant to chemical corrosion. The 12 drain lines are set at different horizontal alignment angles to provide more separation of the drains in the diatreme, and less interference between drains.

4.3 Drain Design Summary

The VLF Closure Drain has been designed to transport infiltrated/percolated water, resulting from precipitation, from the PSSA to a subsurface diatreme formation. Flow estimations through the drain were estimated based on hydraulic conductivity values that were obtained through the flow testing of three nearby test borings. Based on these flow estimations, 12 individual drains were designed to provide sufficient PSSA drainage for wetter than average years.

5.0 ENGINEERING ANALYSIS

5.1 Infiltration Analysis

To estimate the quantity of water expected to report to the Closure Drain, an infiltration analysis was conducted using the anticipated closure geometry and cover system. The quantity of water expected to report to the Closure Drain was estimated as a percentage of the precipitation that could infiltrate the closure cover. The cover and the underlying crushed ore were evaluated using the Hydrologic Evaluation of Landfill Performance (HELP) model developed by the EPA (Schroeder et al., 1994). The HELP model was designed to evaluate the infiltration potential of typical landfill cover systems, and requires input data regarding facility design specifications, soil and/or waste characteristics, and climatic data. Facility design specifications include facility area, evaporative zone depth, anticipated vegetative cover, and Soil Conservation Survey runoff curve number. Soil and/or waste characteristics include layer types and material properties consisting of porosity, field capacity, wilting point, and saturated hydraulic conductivity. Climatic information required for the model includes wind speed, relative humidity, precipitation, temperature, and solar radiation values. The results of this analysis are presented in Appendix D. The HELP model was selected as the preferred method for estimating the infiltration through the cover system because this model typically estimates infiltration rates higher than other, more modern, modeling software. The results given by this model are deemed to represent the highest and most conservative infiltration values.

The climatic data required for the HELP model may be provided using one of the following methods:

1) Historical climatic records for numerous U.S. cities are stored within the HELP model and may be used directly.

2) Site-specific information may be input directly into the model if a large historical record of site-specific information is available.

3) A site-specific climatic record may be synthetically generated from weather patterns stored within the HELP model for numerous U.S. cities, adjusted for site-specific average monthly temperature and precipitation values.

The following sections present climatic, soil, facility design, and cover geometry inputs to the HELP model. Using this input data, the HELP model was used to estimate infiltration through the anticipated closure cover and the underlying crushed ore.

5.1.1 Infiltration Evaluation

Site-specific climate information (method 2) was used for the HELP infiltration analysis. Precipitation data from the CC&V Mine was used in the analysis. A total of 13 years of weather data was used, from January 2000 to December 2012. This data includes average daily temperatures, daily precipitation, and the start and end of growing seasons based on the average daily temperature. The average wind speed and average relative daily humidity was obtained from a weather station located in the vicinity of Cripple Creek and Victor, Colorado (WMG, 2013). The average wind speed was estimated at 21.25 miles per hour and the average relative daily humidity ranged from a minimum of 74 percent during the colder parts of the year up to a maximum of 80 percent during the warmer parts of the year. Solar radiation data was not available for the CC&V Mine site or the surrounding area; the solar radiation data was synthetically generated using the aforementioned weather data and coefficients for Colorado Springs, Colorado, which was the closest geographical location with available data.

The leaf area index (LAI) is the dimensionless ratio of the leaf area of actively transpiring vegetation to the nominal surface area of the land on which the vegetation is growing. The LAI can range from zero (bare ground) to 5 (excellent stand of grass). A maximum leaf area index of 2.0 (fair stand of grass) was chosen for evapotranspiration, which represents the long-term conditions.

The evaporative zone depth (EZD) is the maximum depth at which water may be removed by evapotranspiration. An EZD of 6 inches was used, which represents the anticipated cover depth. This is considered a conservative depth since the HELP User's Guide recommends 14 inches for this region.

The properties for the cover material are based on observations of soil materials that may be similar to the materials used in the final closure cover. The cover is expected to consist of a 6-inch layer of topsoil, expected to be taken from an area located within the immediate vicinity of the Valley Leach Facility (VLF). A HELP default material was selected to represent the cover material, based on the observed characteristics of materials similar to the materials expected to be used in the final closure cover. The properties for the underlying crushed ore are based on laboratory test results (AMEC, 2011). A HELP default material was selected based on the similarity to laboratory test results. The material properties used in the HELP infiltration analyses are summarized in Table 5-1.

Table 5-1 Summary of Material Properties used in Infiltration Analysis

Material	HELP Default Material Description (USCS Classification when applicable)	Porosity (vol/vol)	Field Capacity (vol/vol)	Wilting Point (vol/vol)	Saturated Hydraulic Conductivity (cm/sec)
Cover Material	Loam	0.419	0.307	0.180	1.89×10^{-5}
Crushed Ore	Gravel	0.360	0.032	0.013	1.0×10^{-3}

The following additional information was used to estimate the infiltration through the cover, as appropriate:

- The analysis was evaluated using a slope length of 1,200 feet with an overall slope of 2.5H:1V. These lengths are expected to be representative of the maximum slope lengths for the VLF at closure.
- Initial moisture contents were estimated by the HELP model.
- The curve number was computed by the HELP model, from a user-specified curve number of 71. The user-specified curve number is based on the curve number used in the site-wide water balance (AMEC, 2011). The model computed a corresponding curve number of 71.5 based on the slope length, percent of slope, and soil texture at the surface; this is the curve number used by the model.
- The cover material and crushed ore were modeled as vertical percolation layers with depths of 6 inches and 100 feet, respectively.
- The area of the final closure cover was estimated to be 288 acres.
- The evaluation was conducted for each of the 13 years of historical, average monthly precipitation and temperature for the Mine site.

5.1.2 Infiltration Conclusions

Results of our analysis are included in Appendix D. From the 13-year infiltration analysis, the average precipitation is estimated to be 18.71 inches with an average percolation through the cover estimated to be 2.66 inches.

The wettest year over the 13-year record was 25.37 inches of precipitation, while the driest was 12.10 inches of precipitation, with average percolation rates of 4.14 inches and 2.02 inches, respectively.

5.2 Hydraulic Sizing of Closure Drains

There is no requirement to drain specific storm event volumes within a particular time frame. However, the system should be sufficiently sized to adequately drain the precipitation water that is expected to infiltrate into the PSSA. Based on the infiltration analysis in the previous section, the average year volume that would need to be drained is approximately 24.8 million gallons, based on an infiltration rate of 2.66 inches per year over the estimated SGVLF plan area of 15 million square feet (AMEC, 2011). In a wet year, this increases to 38.3 million gallons, based on an infiltration rate of 4.14 inches per year over the same area. The year-round average drainage rates for average and wet years are 47.3 and 73.6 gpm, respectively.

For flow estimates through the drains, the Thiem equation (Equation 1) for recharging through an injection well into an unconfined aquifer may be used. This equation is intended for use with a traditional vertical well, but is used here to provide a rough estimate.

$$Q = \frac{K({h_w}^2 - {H_0}^2)}{1055 \log (r_0/r_w)} \qquad \text{[Equation 1]}$$

$Q = \text{rate of injection (gpm)}$
$K = \text{hydraulic conductivity (gpd/ft}^2\text{)}$
$h_w = \text{head above bottom of aquifer while recharging (ft)}$
$H_0 = \text{head above bottom of aquifer while not recharging (ft)}$
$r_0 = \text{radius of influence (ft)}$
$r_w = \text{radius of injection well (ft)}$

(From Driscoll, Groundwater and Wells, 1986)

The drain system flow rate will depend primarily on the hydraulic conductivity (K) of the diatreme in the vicinity of each of the 12 individual drains, and the difference in hydraulic head between the water level over the collector pipes and the static water level in the aquifer. The K value is very important, as it has a large effect on the flow value and it can vary over several orders of magnitude. It was for this reason that AMEC drilled 3 vertical boreholes in the vicinity to derive K values as described in Section 3.0.

The theoretical flow rate from Equation 1 is presented in Table 5-2. The hydraulic conductivity (K) of 3.21 x 10^{-6} cm/s is the geometric mean obtained from the flow testing (Appendix B). This is equivalent to 6.81 x 10^{-2} gallons per day per square foot (gpd/ft^2) in the units used in Equation 1. The radius of the drains (r_w) are designed to be 2 inches (0.167 feet). The diatreme is expected to be unsaturated, so the head above the bottom of the aquifer while not recharging (H_0) is zero. The radius of influence (r_o) is assumed to be 75 feet. The target depth (h_w) of the Closure Drains was set at 500 feet. This will provide enough head to get a reasonable flow rate and will also provide an optimal drilling dip angle (approximately 45 degrees).

Drilling at a 45 degree dip angle is considered optimal because drilling history at CC&V suggests that angled borings steeper than 45 degrees tend to deviate deeper, while borings dipped less than 45 degrees tend to deviate shallower.

Table 5-2: Estimated Flow Rates and Velocity

K (cm/s)	K (gpd/ft^2)	h_w (feet)	H_0 (feet)	r_0 (feet)	r_w (feet)	Q (gpm)	V (1.5" Sch80) (fps)
3.21×10^{-6}	6.81×10^{-2}	500	0	75	0.167	6.10	1.14

Based on the calculated flow rate per drain, 6.10 gpm, an estimated 7 to 8 drains are required to discharge the average year volume of 24.8 million gallons (2.66 inches of infiltration/percolation) and an estimated 11 to 12 drains to discharge a wet year volume of 38.3 million gallons (4.14 inches of infiltration/percolation).

Based on this conclusion, a total of 12 drains were specified for this design. For average annual precipitation, 12 drains provide a factor of safety of nearly 1.5 to 1.7. During wetter years, the factor of safety could be reduced to, or below, 1.0. The PSSA has an estimated pore volume (water holding capacity) of 163 million gallons (AMEC, 2011). In the event that the annual precipitation is greater than the wettest year evaluated in this design (25.37 inches or 38.3 million gallons, which is the basis for the number of drains required) the PSSA has the capacity to store excess water resulting from percolation, until such time the excess water can be discharged.

The flow rates used in this evaluation are estimates, based on in situ permeability test results conducted in three representative test holes. Although due diligence has been performed in quantifying a reasonable value for hydraulic conductivity, geologic conditions may provide less flow than estimated (lower permeability). Flow testing is recommended as part of the drain construction process. If flow testing reveals less flow than anticipated (lower permeability), the number of drains may need to be increased. Conversely, if measured flows are higher than anticipated (higher permeability), the number of drains may be reduced. In the event that the measured flow at the time of construction is much lower than expected, additional measures such as hydraulic fracturing may be recommended.

6.0 Use of This Report

This report has been prepared exclusively for Cripple Creek and Victor Mining Company by AMEC Environment & Infrastructure. The quality of information, conclusions, and estimates contained herein is based on information available at the time of preparations; data supplied by outside sources; and the assumptions, conditions, and qualifications set forth in this report. AMEC represents that our services are performed within the limits prescribed by the Client, in a manner consistent with the level of care and skill ordinarily exercised by other professional consultants under similar circumstances. No other representation to the Client, expressed or implied, and no warranty or guarantee are included or intended.

The contents of this report shall not be used by anyone else or for any other use, except with the prior written approval of the Cripple Creek & Victor Gold Mining Company, subject to the terms and conditions of its contract with AMEC. Any other use of, or reliance on, this report by any third party is at the party's sole risk.

This report is comprised of numerous individual measurements and analyses; some of which are site-specific, others design-specific, and all of which are interrelated. Exploratory data presented herein were collected by AMEC to assess subsurface conditions to help develop designs for this project. Professional judgments presented in this report are based on our understanding of the characteristics of the facility being planned, our experience with similar subsurface conditions, and on our general experience with subsurface conditions in the area.

The site investigation and engineering analyses reported herein were performed in accordance with accepted engineering practices.

Respectfully submitted,
AMEC Environment & Infrastructure, Inc.

Michael E. Nelson, PE
Senior Geotechnical Engineer
Project Manager

Austin Creswell, PE
Senior Engineer

Paul Ivancie, PG
Senior Associate Geologist

Reviewed by,

Brett R. Byler, PE
Senior Geotechnical Engineer

Engineer's Seal

MLE2 – Squaw Gulch Valley Leach Facility
Design Basis Report
Closure Drain
TELLER, COUNTY, COLORADO

COLORADO LICENSED
W. AUSTIN CRESWELL III
40684
2/17/14
PROFESSIONAL ENGINEER

Austin Creswell, PE No. 40684

2/17/14
Date

COLORADO REGISTERED
MICHAEL E. NELSON
39365
2-17-14
PROFESSIONAL ENGINEER

Michael E. Nelson, PE No. 39365

17 FEBRUARY 2014
Date

7.0 REFERENCES

AMEC Environment & Infrastructure (AMEC), September 2011. "Cripple Creek & Victor Gold Mining Company, Squaw Gulch Valley Leach Facility Design" Victor, Colorado.

Browne, Adrian, Cresson Project Hydrogeochemical Evaluation, 2012.

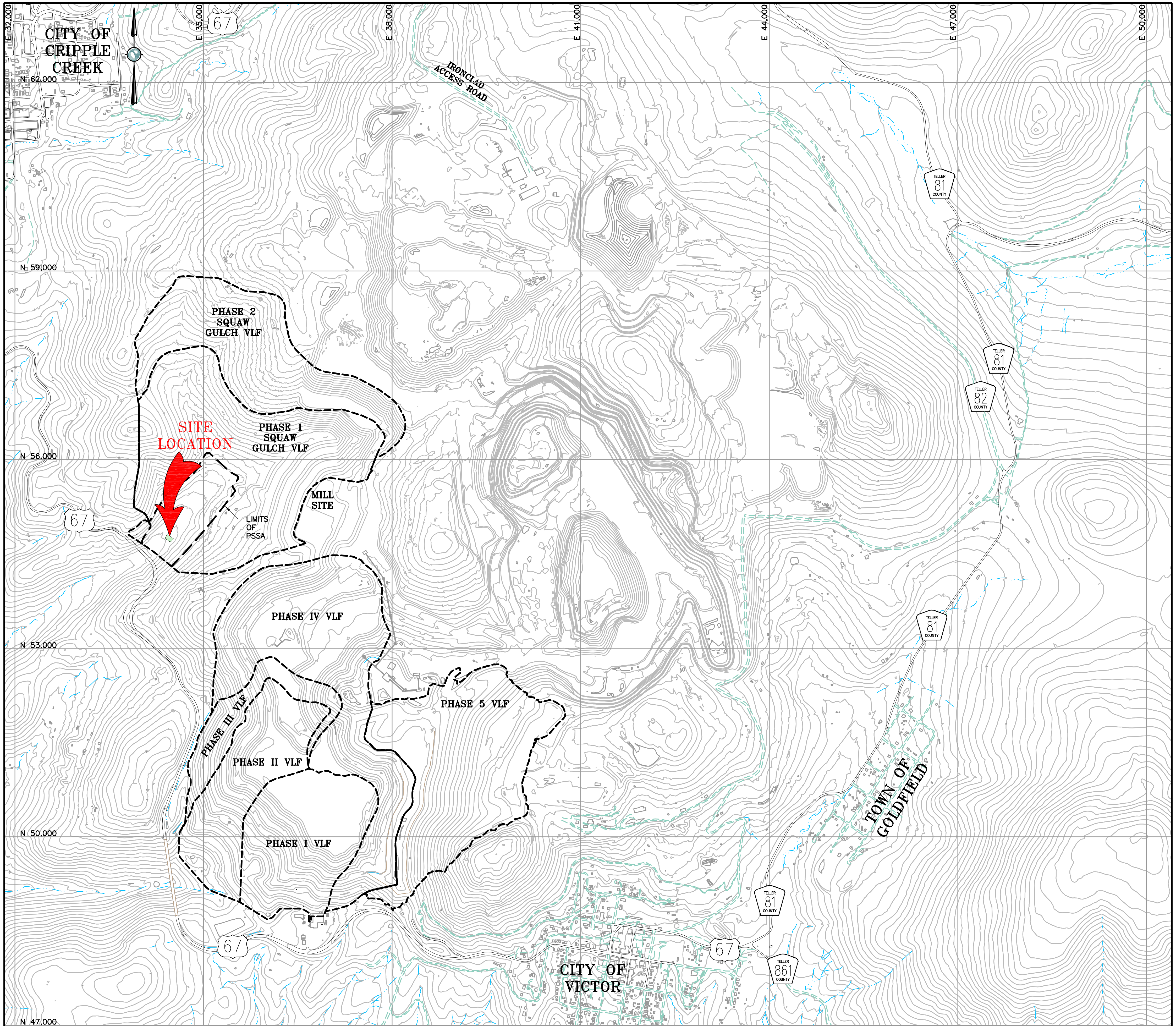
Driscoll, F.G., Groundwater and Wells, 2nd Ed., 1986.

Schroeder, P.R., Dozier, T.S., Zappi, P.A., McEnroe, B.M., Sjostrom, J.W., and Peyton, R.L., 1994. "The Hydrologic Evaluation of Landfill Performance (HELP) Model: Engineering Documentation for Version 3, EPA/600/9-94/xxx", U.S. Environmental Protection Agency Risk Reduction Engineering Laboratory, Cincinnati, OH.

World Media Group (WMG), 2013. Cripple Creek, Colorado Weather. Retrieved from http://www.usa.com/cripple-creek-co-weather.htm.

Figures

S:\CAD\1125G-Squaw VLF\cadd\CADD DRAWINGS\figures\CLOSURE PLAN\1 SITE LOCATION.dwg-2/17/2014 10:28 AM



LEGEND:

EXISTING GROUND SURFACE CONTOUR
EXISTING UNIMPROVED ROAD/TRAILS
EXISTING DRAINAGES
SITE LOCATION
67 STATE HIGHWAY
861 COUNTY ROAD

REFERENCE:

EXISTING GROUND TOPOGRAPHY WAS CREATED BY COMBINING THE FOLLOWING FILES RECV FROM FORESIGHT WEST SURVEYING, INC.:
- SQUAW GULCH BASE TOPO – PHASE 1 – REVISED.DWG (RECV MARCH 14, 2010)
- SQUAW GULCH BASE TOPO – PHASE 2.DWG (RECV APRIL 24, 2010)
- SQUAW GULCH BASE TOPO – PHASE 3.DWG (RECV MAY 4, 2010)
- CCV TOPO EXPANSION 12–29–10 NORTH AREA.DWG (RECV JANUARY 13, 2011)
- CCV TOPO EXPANSION 01–28–11 SOUTH AREA.DWG (RECV JANUARY 28, 2011)
- SH67 TOPO 7–07–11.DWG (RECV JULY 11, 2011)
- VLF2 TOPO EXPANSION 8–05–11.DWG (RECV AUGUST 9, 2011)
- 09028–COMOSITE–TOPO MLE LIMITS.DWG (RECV MAY 28, 2010 FROM CC&V)

800 0 800 1600 FT

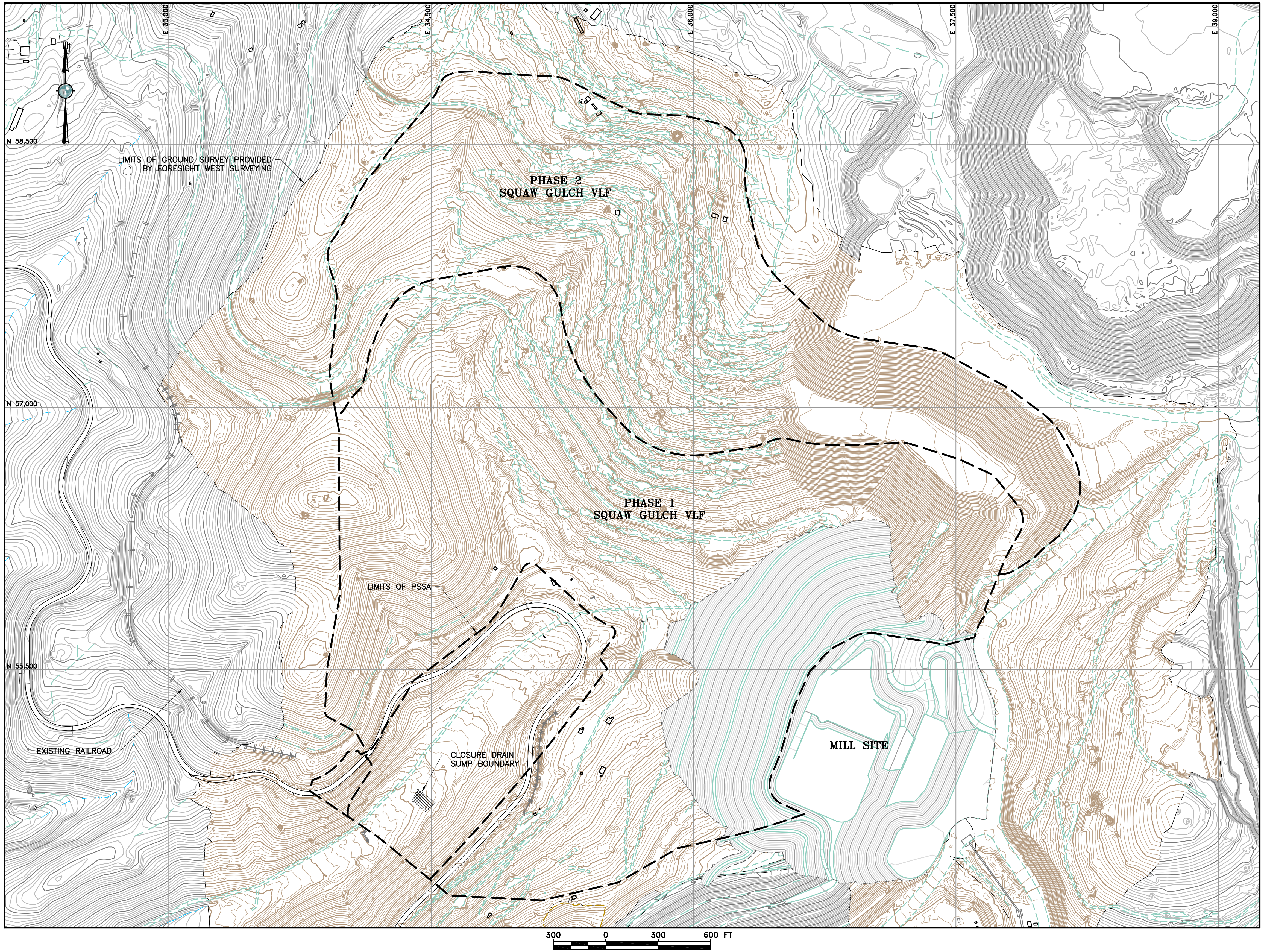
CLIENT: CRIPPLE CREEK & VICTOR GOLD MINING COMPANY

PROJECT: SQUAW GULCH VLF

TITLE: SITE LOCATION

DESIGNED BY	MEN	CHECKED BY	ALM	DATE
DRAWN BY	BDP	APPROVED BY	MEN	1/30/14

FILENAME	FIGURE No.	REV
1125N–1	1	0



LEGEND:

- EXISTING GROUND SURFACE CONTOUR EL, FEET (AERIAL SURVEY)
- EXISTING GROUND SURFACE CONTOUR EL, FEET (LAND SURVEY)
- MILL PLATFORM GROUND SURFACE CONTOUR EL, FEET
- HIGHWAY 67
- EXISTING ROADS
- EXISTING DRAINAGES
- DIATREME BOUNDARY
- EXISTING RAILROAD
- EXISTING UNDERGROUND POWER CABLE
- EXISTING FENCE
- EXISTING CRIB WALL
- SQUAW GULCH VLF BOUNDARY (LIMITS OF LINER)
- EXISTING BUILDING
- EXISTING CULVERT

REFERENCE:

EXISTING GROUND TOPOGRAPHY WAS CREATED BY COMBINING THE FOLLOWING FILES RECV FROM FORESIGHT WEST SURVEYING, INC.:

SQUAW GULCH BASE TOPO – PHASE 1 – REVISED.DWG (RECV MARCH 14, 2010)
SQUAW GULCH BASE TOPO – PHASE 2.DWG (RECV APRIL 24, 2010)
SQUAW GULCH BASE TOPO – PHASE 3.DWG (RECV MAY 4, 2010)
CCV TOPO EXPANSION 12–29–10 NORTH AREA.DWG (RECV JANUARY 13, 2011)
CCV TOPO EXPANSION 01–28–11 SOUTH AREA.DWG (RECV JANUARY 28, 2011)
SH67 TOPO 7–07–11.DWG (RECV JULY 11, 2011)
VLF2 TOPO EXPANSION 8–05–11.DWG (RECV AUGUST 9, 2011)
09028–COMOSITE–TOPO MLE LIMITS.DWG (RECV MAY 28, 2010 FROM CC&V)

CLIENT	CRIPPLE CREEK & VICTOR GOLD MINING COMPANY
PROJECT	SQUAW GULCH VLF
TITLE	SQUAW GULCH VALLEY LEACH FACILITY

DESIGNED BY	MEN	CHECKED BY	ALM	DATE
DRAWN BY	BDP	APPROVED BY	MEN	1/31/14
FILENAME	1125N–2	FIGURE No.	2	REV 0

amec

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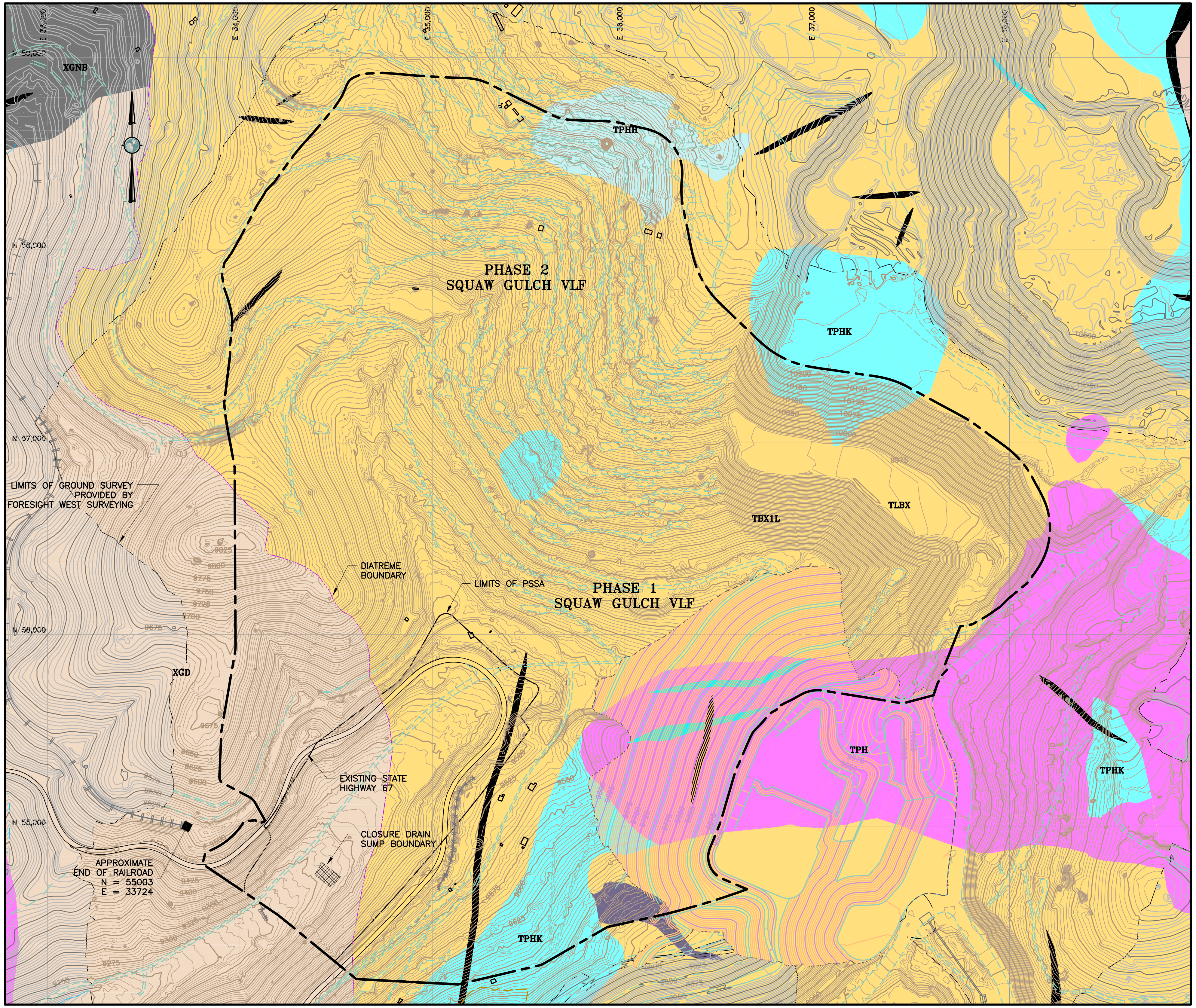

REFERENCE:

EXISTING GROUND TOPOGRAPHY WAS CREATED BY COMBINING THE FOLLOWING FILES RECV FROM FORESIGHT WEST SURVEYING, INC.:

SQUAW GULCH BASE TOPO – PHASE 1 – REVISED.DWG (RECV MARCH 14, 2010)
SQUAW GULCH BASE TOPO – PHASE 2.DWG (RECV APRIL 24, 2010)
SQUAW GULCH BASE TOPO – PHASE 3.DWG (RECV MAY 4, 2010)
CCV TOPO EXPANSION 12–29–10 NORTH AREA.DWG (RECV JANUARY 13, 2011)
CCV TOPO EXPANSION 01–28–11 SOUTH AREA.DWG (RECV JANUARY 28, 2011)
SH67 TOPO 7–07–11.DWG (RECV JULY 11, 2011)
VLF2 TOPO EXPANSION 8–05–11.DWG (RECV AUGUST 9, 2011)
09028–COMOSITE–TOPO MLE LIMITS.DWG (RECV MAY 28, 2010 FROM CC&V)

300 0 300 600 FEET

EXPLANATION

THBX – HYDROTHERMAL BRECCIA – LATE STAGE BRECCIA PIPES CONSISTING OF ANGULAR TO ROUNDED, HETEROLITHIC CLASTS IN A ROCK FLOUR MATRIX. TYPICALLY ASSOCIATED WITH PERVASIVE ARGILLIC ALTERATION.

TERTIARY

LAMPROPHYRES

TLB – BIOTITE BEARING – LAMPROPHYRE DIKE DARK–GREEN, FINE–TO MEDIUM–GRAINED PORPHYRY WITH BIOTITE PHENOCRYSTS IN A FINE–GRAINED GROUNDMASS CONSISTING OF ANALCIME, ALKALI FELDSPAR, BIOTITE, HORNBLENDE AND MINOR MAGNETITE.

TLBX – LAMPROPHYRE BRECCIA – LATE–STAGE LAMPROPHYRIC BRECCIA PIPE CONSISTING OF BOTH MATRIX AND CLAST SUPPORTED HETEROLITHIC BRECCIA WITH ABUNDANT DARK–GREEN LAMPROPHYRE CLASTS AND VARIABLE LATE CARBONATE ALTERATION.

TSY – TEPHRIPHONOLITE – GREY, MEDIUM–TO FINE–GRAINED INTRUSIVE COMPOSED OF ORTHOCLASE, PLAGIOCLASE, PYROXENE AND MINOR HORNBLENDE AND ANALCIME, COMMONLY OCCURING AS SMALL TO MEDIUM SIZED STOCKS.

PHONOLITES

TPHD – PHONOLITE DIKE (SAME AS TPH)

TPH – PHONOLITE – GRAY, BROWN OR PINK, APHANITIC PHONOLITE COMPOSED OF FINE–GRAINED ORTHOCLASE, NEPHELINE, MINOR AEGIRINE–AUGITE, AND ANALCIME.

TPHK – FELDSPAR BEARING – PLAGIOCLASE PHONOLITE LIGHT–TO MEDIUM–GRAY, PORPHYRY WITH SUBHEDRAL TO EUHEDRAL, MEDIUM–TO COARSE–GRAINED PHENOCRYSTS OF ALKALI FELDSPAR WITH MINOR AMOUNTS OF FELDSPATHOIDS, GLASSY APATITE AND PYROXENES.

TPHH – HORNBLENDE YROXENE BEARING – PLAGIOCLASE PHONOLITE GREY, MEDIUM–GRAINED PORPHYRY WITH EUHEDRAL TO SUBHEDRAL HORNBLENDE, AEGIRINE–AUGITE, AND ALKALI FELDSPAR PHENOCRYSTS.

TPHB – BIOTITE BEARING – PLAGIOCLASE PHONOLITE GRAY, FINE–GRAINED PORPHYRY WITH EUHEDRAL BIOTITE AND ALKALI FELDSPAR PHENOCRYSTS.

BRECCIAS

TBX1L – CRIPPLE CREEK LAPILLI BRECCIA – GENERALLY MASSIVE, STRUCTURELESS, MATRIX SUPPORTED BRECCIA THAT IS POORLY SORTED, TYPICAL OF DIATREMAL CRATER FILL BRECCIA. CLASTS ARE SUB–ANGULAR TO SUB–ROUNDED AND PRIMARILY COMPOSED OF VARIOUS PHONOLITE UNITS WITH OCCASIONAL PRECAMBRIAN FRAGMENTS. COMMONLY SHOWS VARYING DEGREES OF HYDROTHERMAL ALTERATION.

PRECAMBRIAN

XGD – GRANODIORITE – MASSIVE TO FOLIATED, MEDIUM–TO COARSE–GRAINED, HORNBLENDE– BIOTITE GRANODIORITE. LOCALLY OCCURS AS AN AUGEN GNEISS. INCLUDES DIABASE DIKES AND SCHISTOSE LENSES.

XGNB – BIOTITE GNEISS STRONGLY FOLIATED, BIOTITE–QUARTZ–PLAGIOCLASE GNEISS TO SCHIST, WHICH IS LOCALLY MIGMATITIC.

NOTE:

1. GEOLOGY MAP WAS PROVIDED BY CC&V TO AMEC ON JULY 20, 2007 IN A DRAWING CALLED INTERPRETIVE GEOLOGICAL MAP OF THE CRIPPLE CREEK MINING DISTRICT.
2. REMOVED EXISTING UTILITIES FROM DRAWING.
3. UPDATED EXISTING GROUND TO INCLUDE MILL PLATFORM.

LEGEND:

- EXISTING GROUND SURFACE CONTOUR EL, FEET (AERIAL SURVEY)
- EXISTING GROUND SURFACE CONTOUR EL, FEET (LAND SURVEY)
- MILL PLATFORM GROUND SURFACE CONTOUR EL, FEET
- STATE HIGHWAY 67
- EXISTING ROADS
- EXISTING DRAINAGES
- EXISTING RAILROAD
- SQUAW GULCH VLF BOUNDARY (LIMITS OF LINER)
- DIATREME BOUNDARY
- PSSA LIMITS
- EXISTING BUILDING

CLIENT	CRIPPLE CREEK & VICTOR GOLD MINING COMPANY				
PROJECT	SQUAW GULCH VLF				
TITLE	GEOLOGICAL MAP				
amec	DESIGNED BY	MEN	CHECKED BY	ALM	DATE
	DRAWN BY	BDP	APPROVED BY	MEN	1/30/14
	FILENAME 1125N–3		FIGURE No. 3		REV 0

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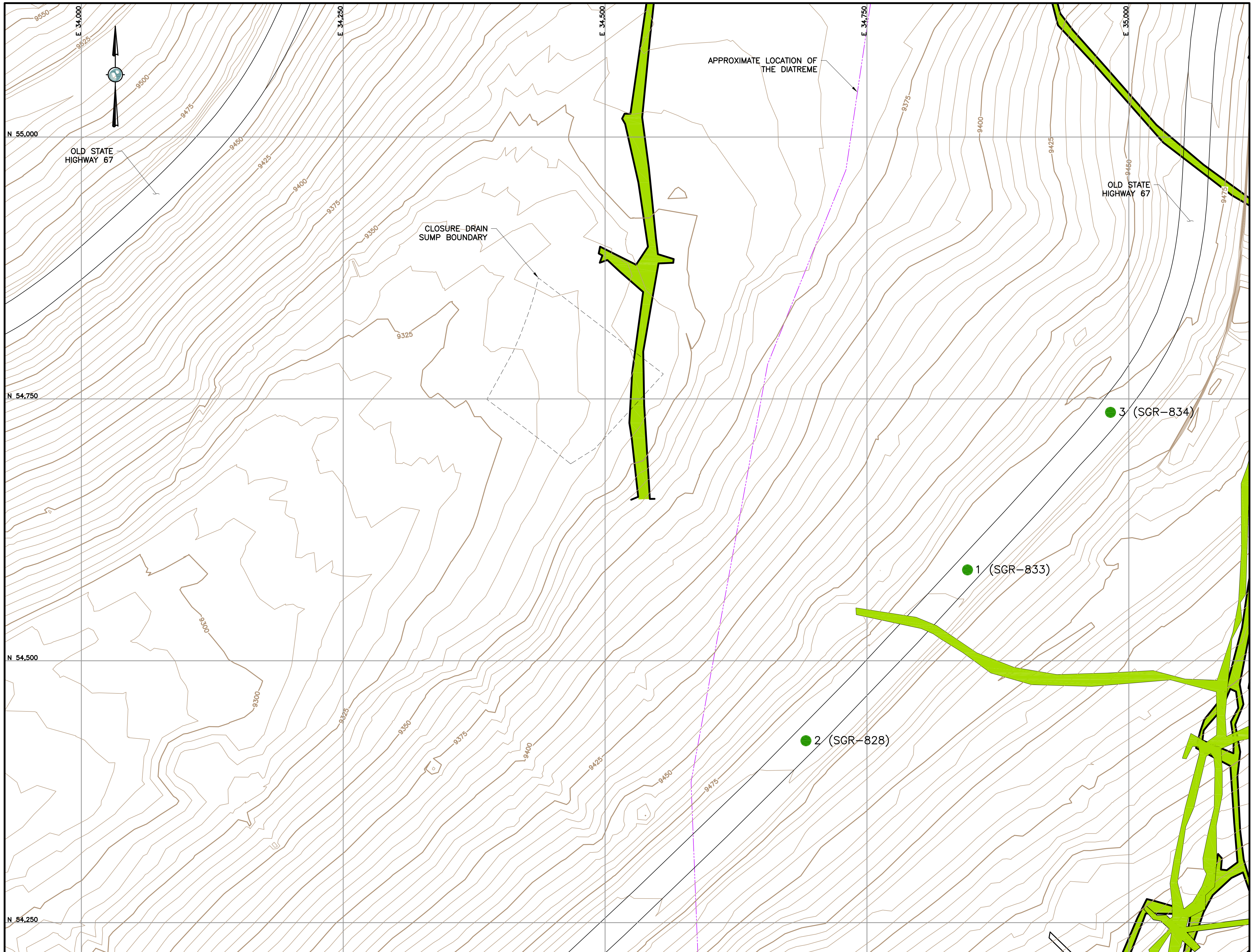

PLAN VIEW

50 0 50 100 FT

LEGEND:

- EXISTING GROUND SURFACE CONTOUR EL, FEET
- APPROXIMATE DIATREME LIMITS
- APPROXIMATE LOCATION OF HISTORIC UNDERGROUND WORKINGS
- TEST HOLE LOCATION

SETTING OUT DATA

Point	Elevation	Northing	Easting
1 (SGR-833)	9,479.35	54,586.76	34,845.99
2 (SGR-828)	9,484.02	54,423.68	34,691.75
3 (SGR-834)	9,475.84	54,737.20	34,982.55

REFERENCE:

EXISTING GROUND TOPOGRAPHY WAS CREATED BY COMBINING THE FOLLOWING FILES RECV FROM FORESIGHT WEST SURVEYING, INC.:
SQUAW GULCH BASE TOPO – PHASE 1 – REVISED.DWG
(RECV MARCH 14, 2010)
SQUAW GULCH BASE TOPO – PHASE 2.DWG
(RECV APRIL 24, 2010)
SQUAW GULCH BASE TOPO – PHASE 3.DWG
(RECV MAY 4, 2010)
CCV TOPO EXPANSION 12-29-10 NORTH AREA.DWG
(RECV JANUARY 13, 2011)
CCV TOPO EXPANSION 01-28-11 SOUTH AREA.DWG
(RECV JANUARY 28, 2011)
SH67 TOPO 7-07-11.DWG
(RECV JULY 11, 2011)
VLF2 TOPO EXPANSION 8-05-11.DWG
(RECV AUGUST 9, 2011)
09028-COMOSITE-TOPO MLE LIMITS.DWG
(RECV MAY 28, 2010 FROM CC&V)

CLIENT: CRIPPLE CREEK & VICTOR GOLD MINING COMPANY

PROJECT: SQUAW GULCH VLF

TITLE: FIELD INVESTIGATION TEST HOLE LOCATIONS

amec

DESIGNED BY	MEN	CHECKED BY	ALM	DATE
DRAWN BY	BDP	APPROVED BY	MEN	1/31/14
FILENAME	1125N-4	FIGURE No.	4	REV 0

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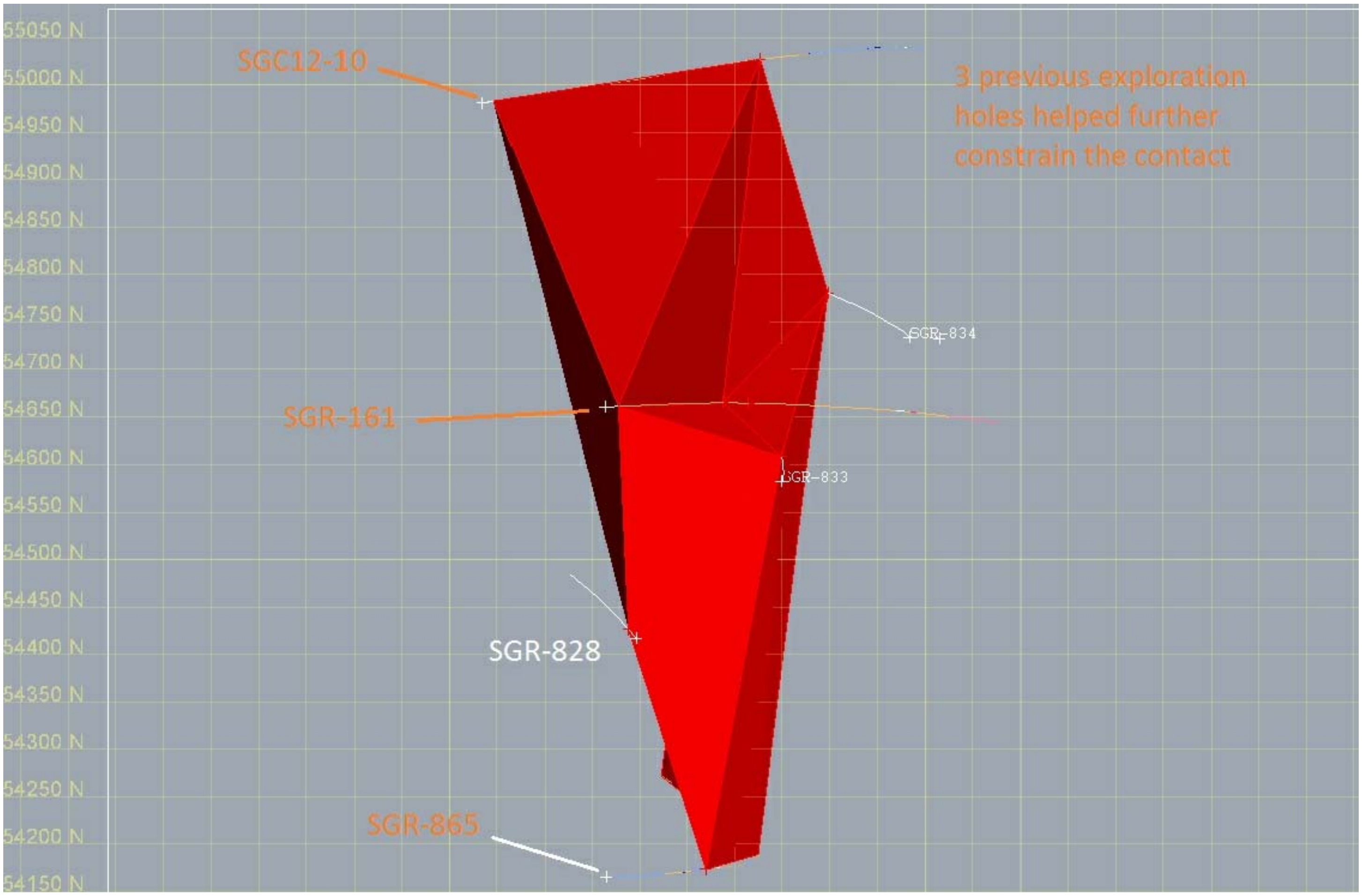
DATUM	DRN BY BDP	CHK BY ALM	CLIENT CRIPPLE CREEK & VICTOR GOLD MINING COMPANY
PROJECTION	DSN BY MEN	APR BY MEN	PROJECT SQUAW GULCH VLF

amec

TITLE
3 DIMENSIONAL PLAN VIEW OF TERTIARY AND PRECAMBRIAN CONTACT WITH UNDERGROUND WORKINGS

ISSUED DATE	1/31/14
PROJECT No.	1125N
FIGURE No.	5
REV	0



DATUM	DRN BY BDP	CHK BY ALM	CLIENT: CRIPPLE CREEK & VICTOR GOLD MINING COMPANY	ISSUED DATE: 1/31/14
PROJECTION	DSN BY MEN	APR BY MEN	PROJECT: SQUAW GULCH VLF	PROJECT No.: 1125N
amec			TITLE: 3 DIMENSIONAL PLAN VIEW OF TERTIARY AND PRECAMBRIAN CONTACT	FIGURE No.: 6 / REV: 0

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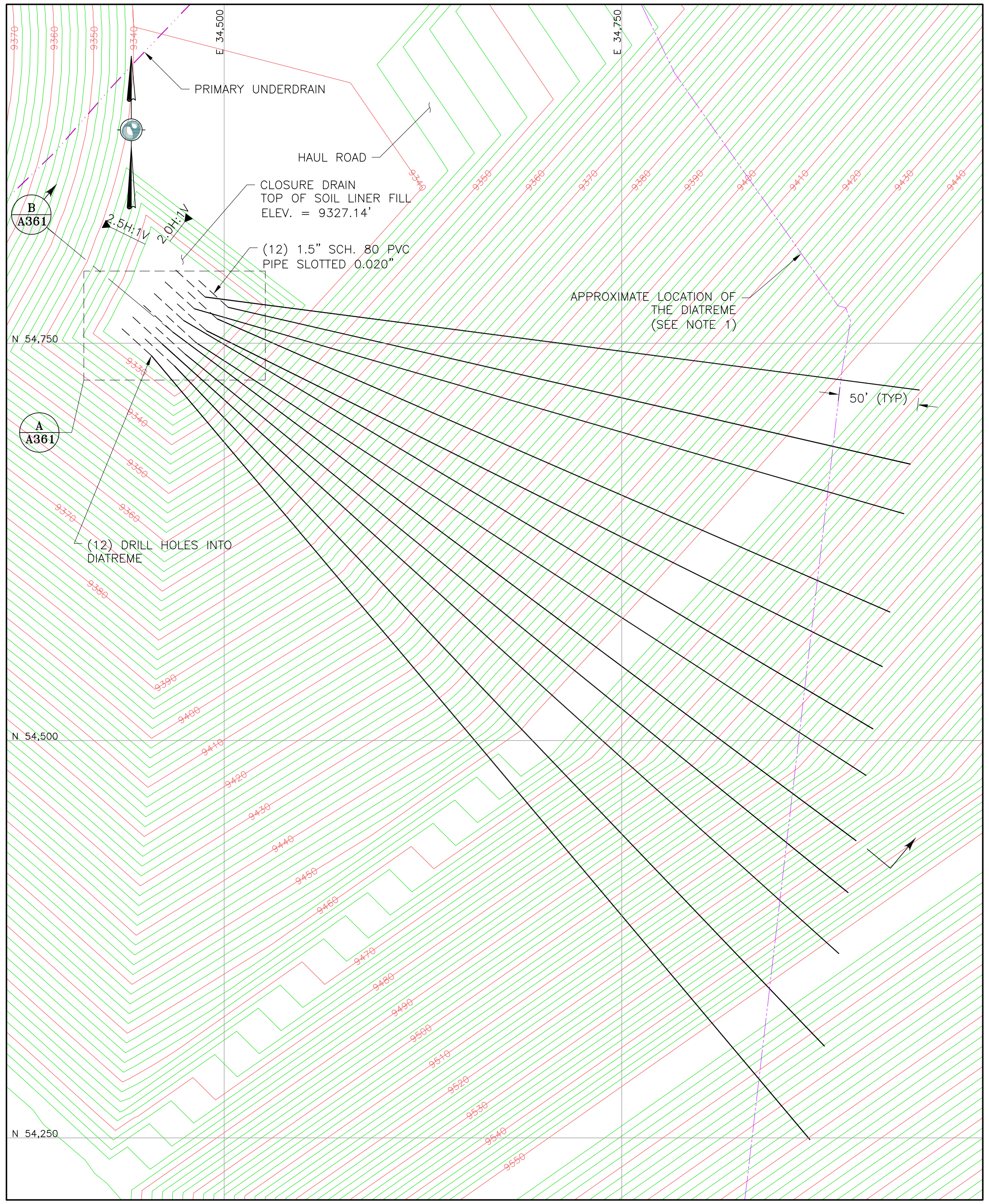
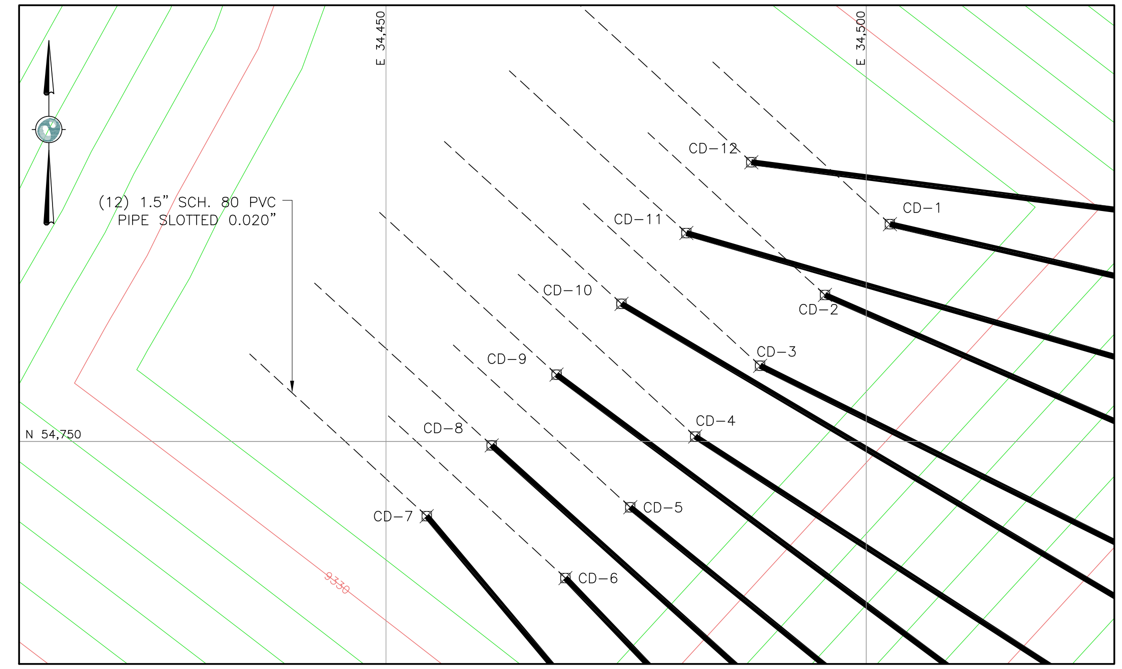
Drawings



PLAN VIEW

50 0 50 100 FT



A A361 DRILL HOLE LAYOUT

10 0 10 20 FT

LEGEND:

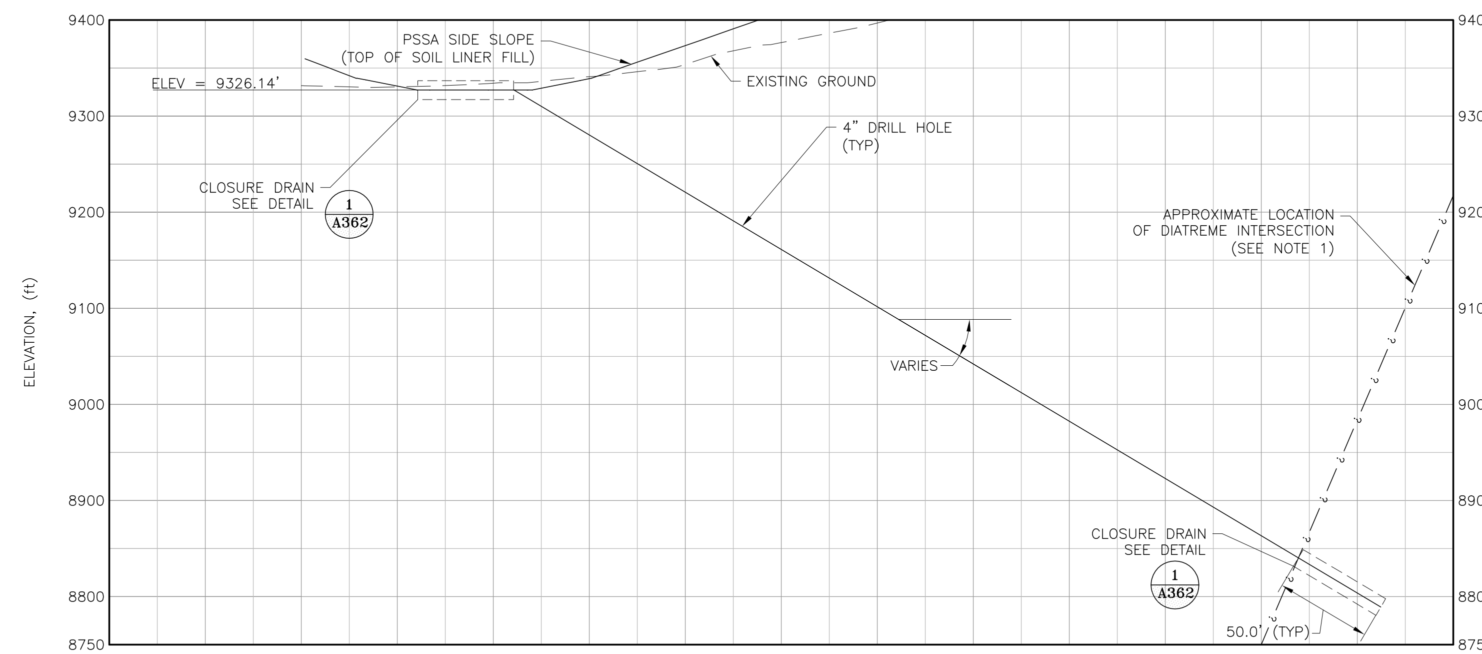
- EXISTING GROUND SURFACE CONTOUR EL, FEET
- PROPOSED GROUND SURFACE CONTOUR EL, FEET
- PRIMARY UNDERDRAIN
- APPROXIMATE DIATREME
- CD-10 DRILL HOLE LOCATION

NOTE:

1. THE DIATREME LOCATION IS APPROXIMATE. LOCATION WILL NEED TO BE FIELD VERIFIED. ONCE ENCOUNTERED DRILL OPERATOR SHALL CONTINUE TO DRILL A MINIMUM OF 50 FEET BEFORE INSTALLING 1.5 INCH SCHEDULE 80 PVC PIPE.

REFERENCE:

EXISTING GROUND TOPOGRAPHY WAS CREATED BY COMBINING THE FOLLOWING FILES RECV FROM FORESIGHT WEST SURVEYING, INC.:
SQUAW GULCH BASE TOPO – PHASE 1 – REVISED.DWG (RECV MARCH 14, 2010)
SQUAW GULCH BASE TOPO – PHASE 2.DWG (RECV APRIL 24, 2010)
SQUAW GULCH BASE TOPO – PHASE 3.DWG (RECV MAY 4, 2010)
CCV TOPO EXPANSION 12-29-10 NORTH AREA.DWG (RECV JANUARY 13, 2011)
CCV TOPO EXPANSION 01-28-11 SOUTH AREA.DWG (RECV JANUARY 28, 2011)
SH67 TOPO 7-07-11.DWG (RECV JULY 11, 2011)
VLF2 TOPO EXPANSION 8-05-11.DWG (RECV AUGUST 9, 2011)
09028-COMOSITE-TOPO MLE LIMITS.DWG (RECV MAY 28, 2010 FROM CC&V)



B A361 CLOSURE DRAIN TYPICAL SECTION

50 0 50 100 FT HORIZONTAL

100 0 100 200 FT VERTICAL

CLOSURE DRAIN DRILL HOLE INSTALLATION DATA

POINT	NORTHING	EASTING	ELEVATION (ft)	HOLE DIA. (in)	INCLINATION (deg)	AZIMUTH (deg)	APPROXIMATE BORE LENGTH (ft)
CD-1	54,772.62	34,502.47	9,326.14	4	49.0	103	666
CD-2	54,765.25	34,495.71	9,326.14	4	47.0	114	681
CD-3	54,757.88	34,488.95	9,326.14	4	47.0	116	690
CD-4	54,750.50	34,482.19	9,326.14	4	45.0	123	709
CD-5	54,743.13	34,475.44	9,326.14	4	45.0	129	734
CD-6	54,735.76	34,468.68	9,326.14	4	45.0	136	775
CD-7	54,742.21	34,454.25	9,326.14	4	45.0	140	815
CD-8	54,749.58	34,461.00	9,326.14	4	45.0	132	760
CD-9	54,756.95	34,467.76	9,326.14	4	45.0	127	737
CD-10	54,764.32	34,474.52	9,326.14	4	45.0	121	710
CD-11	54,771.70	34,481.27	9,326.14	4	47.0	106	683
CD-12	54,779.07	34,488.03	9,326.14	4	48.0	97	675

COLORADO LICENSED PROFESSIONAL ENGINEER
W. AUSTIN CRESWELL III
40684
5/13/2014

3	05/13/14	RE-ISSUED FOR CONSTRUCTION	AC ALM
2	02/17/14	RE-ISSUED FOR CONSTRUCTION	AC CAS
1	1/17/14	RE-ISSUED FOR CONSTRUCTION	AC JWR
0	01/09/14	ISSUED FOR CONSTRUCTION	AC CAS

DISCLAIMER

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CLIENT: CRIPPLE CREEK & VICTOR GOLD MINING COMPANY

PROJECT: SQUAW GULCH VLF

TITLE: CLOSURE DRAIN PLAN

amec

DESIGNED BY	AC	CHECKED BY	MEN
DRAWN BY	CAS	APPROVED BY	MEN
FILENAME	1125G-A361	DRAWING No. A361	REV 3

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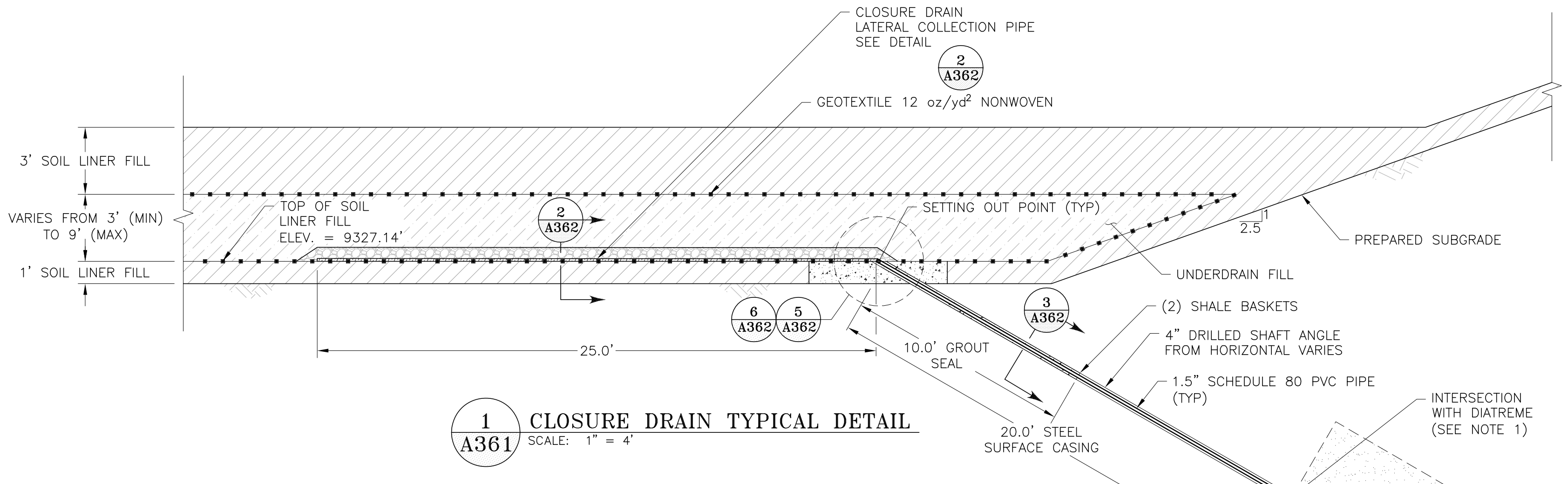
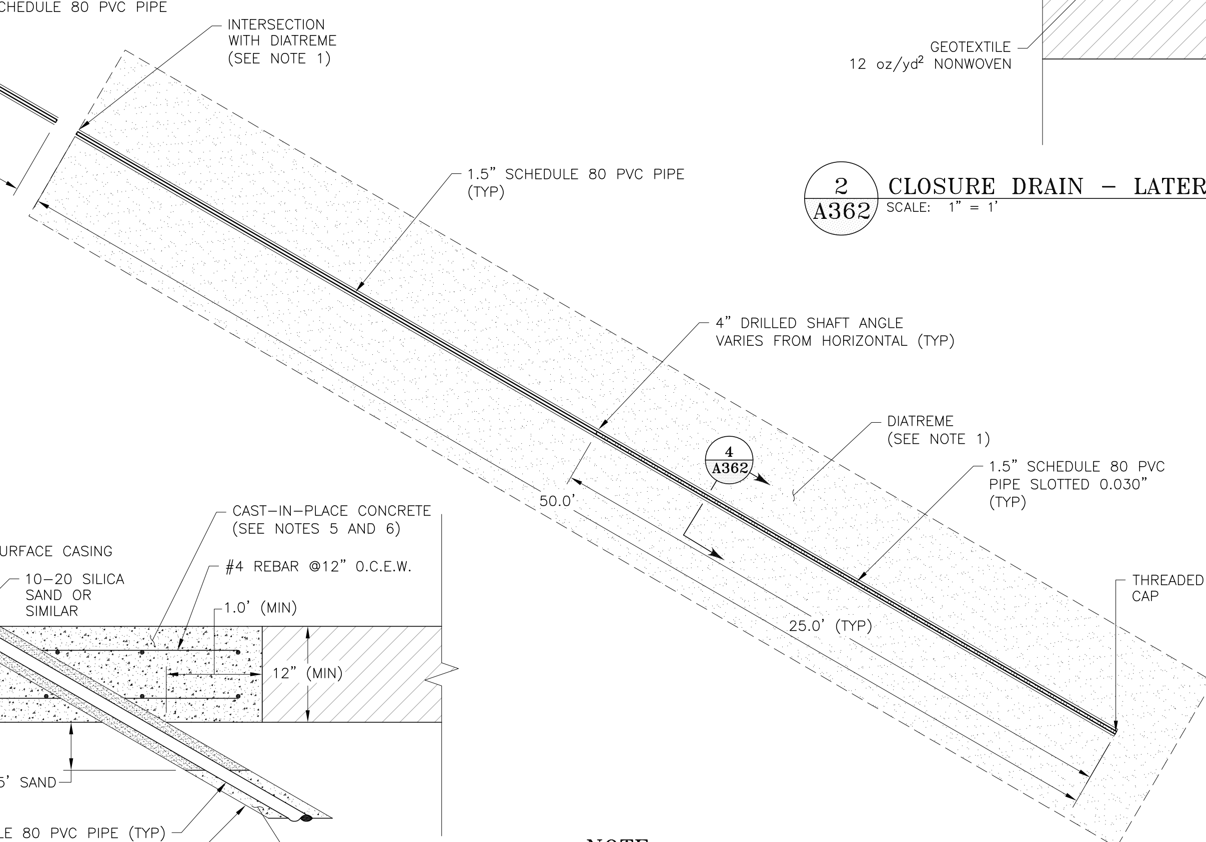
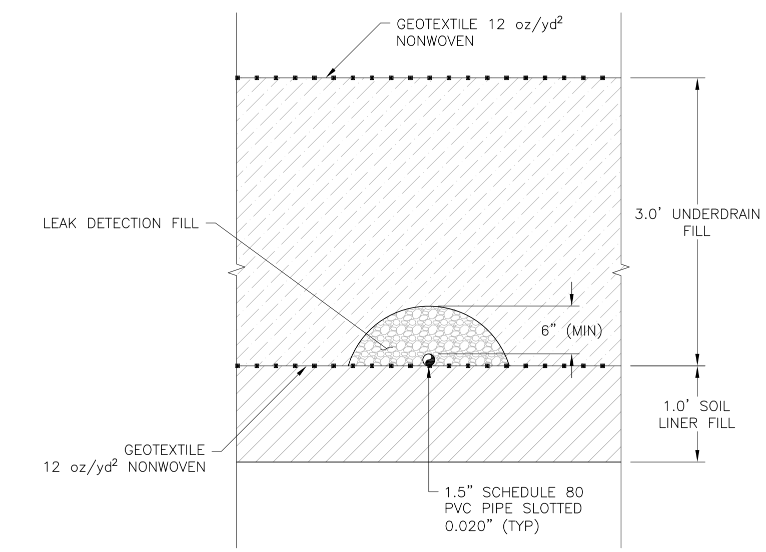
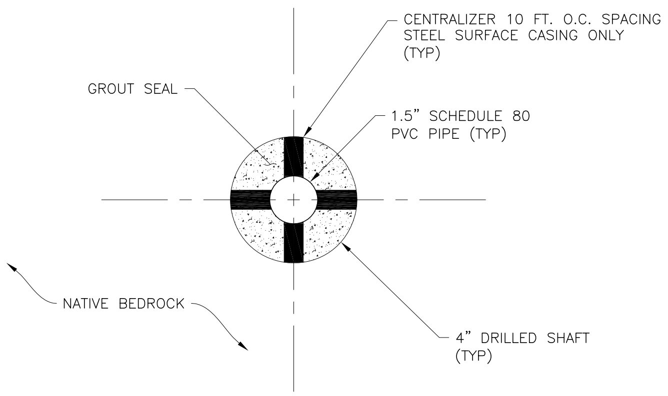



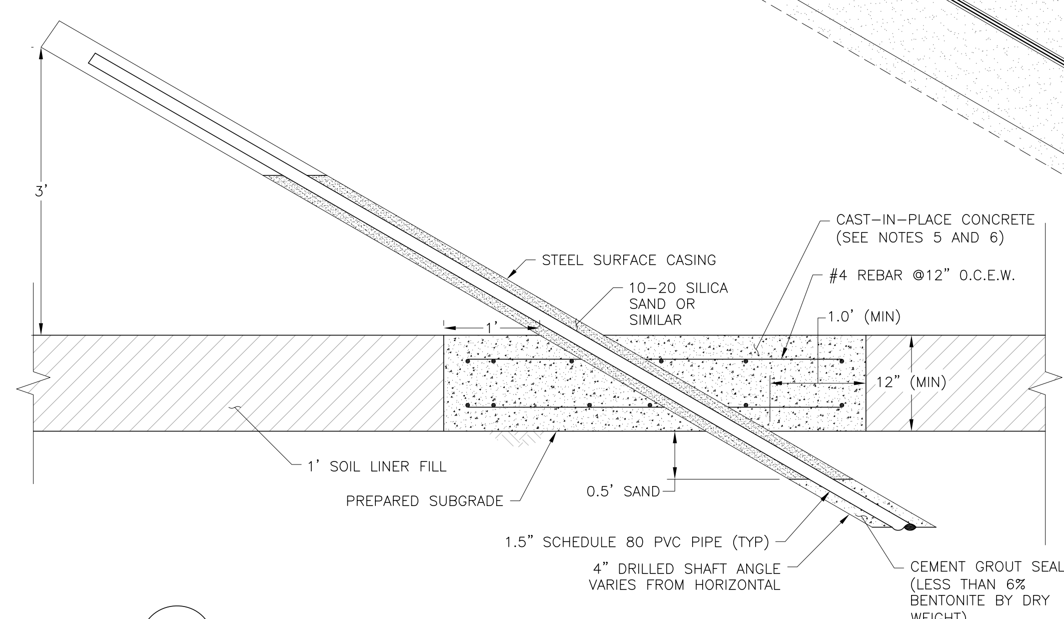
1 A361 CLOSURE DRAIN TYPICAL DETAIL
SCALE: 1" = 4'



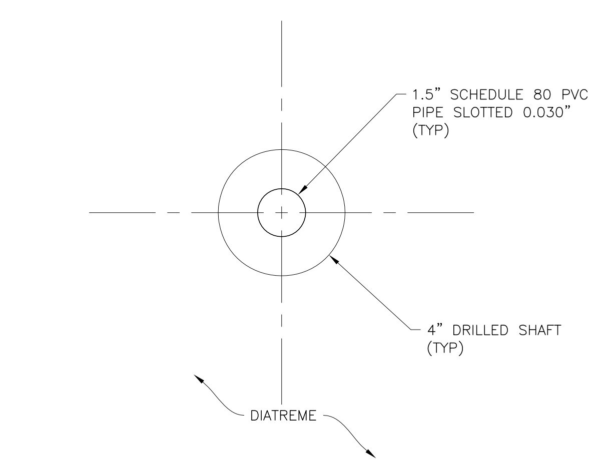
2 A362 CLOSURE DRAIN – LATERAL COLLECTION PIPE DETAIL
SCALE: 1" = 1'



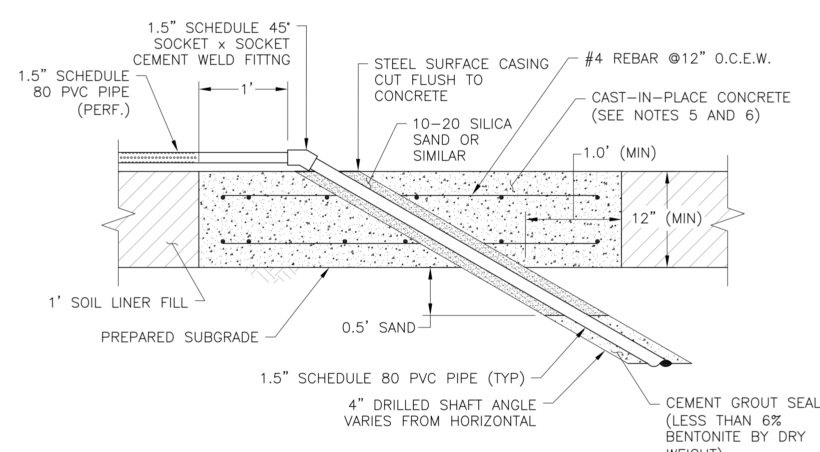
3 A362 GROUT SEAL DETAIL
SCALE: 1" = 0.25'



5 A362 CLOSURE DRAIN– CONCRETE COLLAR PRE – SOIL LINER FILL PLACEMENT



4 A362 CLOSURE DRAIN – INCLINED DISCHARGE PIPE DETAIL
SCALE: 1" = 0.25'



6 A362 CLOSURE DRAIN– CONCRETE COLLAR POST – SOIL LINER FILL PLACEMENT

NOTE:

1. THE DIATREME LOCATION IS APPROXIMATE. LOCATION WILL NEED TO BE FIELD VERIFIED. ONCE ENCOUNTERED DRILL OPERATOR SHALL CONTINUE TO DRILL A MINIMUM OF 50 FEET BEFORE INSTALLING 1.5 INCH SCHEDULE 80 PVC PIPE.
2. IF UNDERGROUND WORKINGS ARE ENCOUNTERED WITHIN THE PRECAMBRIAN, THE BOREHOLE SHALL BE SEALED AND ABANDONED. A NEW REPLACEMENT BOREHOLE WILL BE STARTED AT THE DIRECTION OF AMEC.
3. IF UNDERGROUND WORKINGS ARE ENCOUNTERED WITHIN THE DIATREME LIMITS, TERMINATE THE DRILL SHAFT AT UNDERGOUND WORKING AND SET SCREEN IN BOREHOLE JUST ABOVE THE ENCOUNTERED WORKING.
4. ALL SOIL LINER FILL WITHIN 5 FEET OF CONCRETE COLLAR SHALL BE HAND PLACED (NO HEAVY EQUIPMENT).
5. CAST–IN–PLACE CONCRETE WITH REINFORCING STEEL SHALL HAVE A MINIMUM 28 DAY COMPRESSIVE STRENGTH OF 4,000 psi. 3
6. CONCRETE COLLAR SHALL BE A MINIMUM 3 FEET IN LENGTH, 2 FEET WIDE, AND 1 FOOT THICK.

COLORADO LICENSED PROFESSIONAL ENGINEER
AUSTIN CRESS
40684
5/13/2014

3	05/13/14	RE–ISSUED FOR CONSTRUCTION	AC ALM
2	02/17/14	RE–ISSUED FOR CONSTRUCTION	AC JWR
1	01/17/14	RE–ISSUED FOR CONSTRUCTION	AC JWR
0	01/09/14	ISSUED FOR CONSTRUCTION	AC CAS

CLIENT: CRIPPLE CREEK & VICTOR GOLD MINING COMPANY

PROJECT: SQUAW GULCH VLF

TITLE: CLOSURE DRAIN DETAILS

amec

DESIGNED BY	AC	CHECKED BY	MEN
DRAWN BY	CAS	APPROVED BY	MEN
FILENAME	1125G–A362	DRAWING No. A362	REV 3

S:\CAD\1125G-Squaw VLF\cadd\CADD DRAWINGS\FC Drawings\A362-1125G.dwg-5/13/2014 10:14 AM

Appendix A

Geological Logging

Cripple Creek Victor Gold Mining Company

AngloGold Ashanti
AngloGold Ashanti (Colorado) Corp.

Hole Name: SGR-828	**Collar Azimuth:** 0.00	**Collar Inclination:** -90.00	**Hole Length:** 500.00
Northing: 54417.35	**Easting:** 34696.09	**Elevation:** 9484.16	

Depth	Rock Type	Lithology Comment	Potassic	Specularite	Silicification	Argillic	Sericitic	Bleached	Propylitic	Carbonate	Biotite	Alt Comment	Oxidation	Structure	Contact	Ox Comment	Pyrite	Min	Quartz	Gangue	Sulfate	Min Comment	Au o/t FA	Au o/t SL	Sample Number
5	3	Overburden. 13' of casing set.												5											EXPASGR-828-001
10	3													5											EXPASGR-828-002
15	3													3											EXPASGR-828-003
20	42	4:1 ratio of overburden to Tbx1l	3	0	1	0	0	2	0	0	0		3	5	9	dilute ochre Fe ox permeating majority of chips	1				0				EXPASGR-828-004
25	42	overburden as above	3	0	0	0	0	2	0	0	0		3	3			0				0				EXPASGR-828-005
30	42		3	0	2	0	0	2	0	0	0	very hard chips, scratch glass easily; weak silica flooding in matrix	1	2		oxidation cuts out sharply	3				0	finely disseminated py clusters and grains throughout matrix			EXPASGR-828-006
35	42	overburden mixed in as above	2	0	0	3	2	3	0	0	0	chips are soft, clay altered	3	2			0			55	0	hematite intergrown with Mn ox			EXPASGR-828-007
40	42	>90% Tbx1l	3	0	1	1	0	4	0	0	0		2	2			1				0				EXPASGR-828-008
45	42		3	0	2	0	0	3	0	0	0		1	1			1				0				EXPASGR-828-009
50	37	gradual transition to mix of aphanitic to porphyritic clasts, very mottled texture, med-lt gry	3	0	2	0	0	3	0	0	0	molds of euhedral lath-shaped phenos that have been dissolved are present throughout chips	2	2			1				0				EXPASGR-828-010
55	37		3	0	2	0	0	3	0	0	2		3	1			2			55	0				EXPASGR-828-011
60	37		3	0	2	0	0	4	0	0	2		3	2			2			55	0				EXPASGR-828-012
65	37		4	0	3	0	0	4	0	0	2	moderately silicified matrix	3	3		primarily Fe ox with trace Mn ox	2			55	0				EXPASGR-828-013
70	37		3	0	2	0	0	4	0	0	3		2	2			3			55	0	py intergrown w/ biotite + hematite			EXPASGR-828-014
75	37		3	0	2	0	0	4	0	0	2		2	1			3				0				EXPASGR-828-015
80	37		3	0	2	0	0	4	0	0	3		3	3			3				0				EXPASGR-828-016
85	37		3	3	2	0	0	3	0	0	3	strong to pervasive specularite alteration on ~ 30-40% of chips	3	2			2			55	0				EXPASGR-828-017
90	37	tr precambrian clasts in breccia	3	1	2	0	0	3	0	0	3		3	3			3			55	0				EXPASGR-828-018
95	37		3	1	2	0	0	4	0	0	2		3	2			3			55	0				EXPASGR-828-019

Cripple Creek Victor Gold Mining Company

ANGLOGOLD ASHANTI
ANGLOGOLD ASHANTI (COLORADO) CORP.

Hole Name: SGR-828	**Collar Azimuth:** 0.00	**Collar Inclination:** -90.00	**Hole Length:** 500.00
Northing: 54417.35	**Easting:** 34696.09	**Elevation:** 9484.16	

Depth	Rock Type	Lithology Comment	Potassic	Specularite	Silicification	Argillic	Sericitic	Bleached	Propylitic	Carbonate	Biotite	Alt Comment	Oxidation	Structure	Contact	Ox Comment	Pyrite	Min	Quartz	Gangue	Sulfate	Min Comment	Au o/t FA	Au o/t SL	Sample Number
100																									EXPMSGR-828-020
100	37		3	1	1	0	0	3	0	0	2		3	2			3			55	0				EXPASGR-828-020
105	42	gradual transition to Tbx1l, precambrian clasts common. clast-supported heterolithic brx	3	1	2	0	0	3	0	0	2		2	2	10		2				0				EXPASGR-828-021
110	42		3	1	2	0	0	3	0	0	2		2	2			2				0				EXPASGR-828-022
115	42		3	1	3	0	0	3	0	0	3		3	3			2				0				EXPASGR-828-023
120	42		3	0	3	0	0	4	0	0	1		2	2			2			55	0				EXPASGR-828-024
125	42		3	0	3	0	0	4	0	0	1		2	2			3			41	0	purple fluorite clusters associated w/ py			EXPASGR-828-025
130	42	coarse precambrian clasts throughout in ~ 25% abundance	3	0	4	0	0	5	0	0	0	clasts are strongly silicified	2	2			3			41	0				EXPASGR-828-026
135	42		4	0	4	0	0	5	0	0	0		2	2			2				0				EXPASGR-828-027
140	62	irregular, sharp contact to Ycc, ~50% qtz, 25% milky wht fsp (plag?), 25% pink microcline	3	0	5	0	0	4	0	0	4		1	2	9		3		11	41	0	coarse biotite associated w/ py +/- purple fluorite			EXPASGR-828-028
145	62		3	0	5	0	0	4	0	0	4		1	1			3		11	41	0				EXPASGR-828-029
150	62		3	0	5	0	0	4	0	0	2		1	2		oxidized py grains	3		11		0				EXPASGR-828-030
155	62		3	0	5	0	0	4	0	0	4		0	2			3		11		0				EXPASGR-828-031
160	62		3	1	4	0	0	4	0	0	4		1	2			3		11		0				EXPASGR-828-032
165	62		3	0	5	0	0	4	0	0	3	pervasive silicification, probably a mixture of primary qtz and secondary	2	2			3		11		0				EXPASGR-828-033
170	62		3	0	4	0	0	4	0	0	1		1	1			3		11		0				EXPASGR-828-034
175	62	very sandy	3	0	4	0	0	4	0	0	1		0	3			3		11		0				EXPASGR-828-035
180	62		3	0	4	0	0	4	0	0	1		0	2			2		11		0				EXPASGR-828-036
185	62		3	0	5	0	0	4	0	0	3		0	3			3		11		0				EXPASGR-828-037

Cripple Creek Victor Gold Mining Company

ANGLOGOLD ASHANTI
ANGLOGOLD ASHANTI (COLORADO) CORP.

Hole Name: SGR-828	Collar Azimuth: 0.00	Collar Inclination: -90.00	Hole Length: 500.00
Northing: 54417.35	Easting: 34696.09	Elevation: 9484.16	

Depth	Rock Type	Lithology Comment	Potassic	Specularite	Silicification	Argillic	Sericitic	Bleached	Propylitic	Carbonate	Biotite	Alt Comment	Oxidation	Structure	Contact	Ox Comment	Pyrite	Min	Quartz	Gangue	Sulfate	Min Comment	Au o/t FA	Au o/t SL	Sample Number
190	62		3	0	5	0	0	4	0	0	2		0	2			3		11		0				EXPASGR-828-038
195	62		3	0	5	0	0	4	0	0	2		0	2			3		11		0				EXPASGR-828-039
200	62		3	0	5	0	0	4	0	0	1		0	1			3		11		0				EXPASGR-828-040
200																									EXPMSGR-828-040
205	62		3	0	4	0	0	3	0	0	3		0	1			2		11		0				EXPASGR-828-041
210	31	Tphk dike, sparse lath shaped euhedral wht phenos in lt gry groundmass	3	0	0	0	0	5	0	1	0	moderate potassic alteration, doesn't scratch glass very easily	0	2	9		0				0	tr carbonate alteration in phenos; tr hornblende phenos			EXPASGR-828-042
215	31		3	0	0	0	0	5	0	1	0		0	2			0				0				EXPASGR-828-043
220	31		3	0	0	0	0	5	0	1	0		0	2			0				0				EXPASGR-828-044
225	62	contact back to Ycc as described at 135-140', ~25% Tphk chips in sample interval	3	0	3	0	0	4	0	1	1		0	3	9		1		11		0				EXPASGR-828-045
230	62		3	0	3	0	0	4	0	0	1		0	2			1		11	41	0	coarse biotite associated w/ py +/- purple fluorite			EXPASGR-828-046
235	62	tr Tphk chips in sample interval	3	0	3	0	0	4	0	0	1		0	2			2		11		0				EXPASGR-828-047
240	62		3	0	4	0	0	4	0	0	2		0	2			2		11		0				EXPASGR-828-048
245	62		3	0	4	0	0	4	0	0	2		0	2			2		11		0				EXPASGR-828-049
250	62		3	0	4	0	0	4	0	0	2		0	2			2		11		0				EXPASGR-828-050
255	62		3	0	4	0	0	4	0	0	2		0	2			2		11		0				EXPASGR-828-051
260	62		3	0	4	0	0	4	0	0	3		0	2			2		11		0				EXPASGR-828-052
265	62		3	0	4	0	0	4	0	0	3		0	2			2		11		0				EXPASGR-828-053
270	62		3	0	5	0	0	4	0	0	3	pervasive silicification, probably a mixture of primary qtz and secondary	0	1			3		11		0				EXPASGR-828-054
275	62		3	0	5	0	0	4	0	0	3		0	2			3		11		0				EXPASGR-828-055

Cripple Creek Victor Gold Mining Company

AngloGold Ashanti
ANGLOGOLD ASHANTI (COLORADO) CORP.

Hole Name: SGR-828	**Collar Azimuth:** 0.00	**Collar Inclination:** -90.00	**Hole Length:** 500.00
Northing: 54417.35	**Easting:** 34696.09	**Elevation:** 9484.16	

Depth	Rock Type	Lithology Comment	Potassic	Specularite	Silicification	Argillic	Sericitic	Bleached	Propylitic	Carbonate	Biotite	Alt Comment	Oxidation	Structure	Contact	Ox Comment	Pyrite	Min	Quartz	Gangue	Sulfate	Min Comment	Au o/t FA	Au o/t SL	Sample Number
280	62		3	0	5	0	0	4	0	0	2		0	2			3		11		0				EXPASGR-828-056
285	62		3	0	5	0	0	4	0	0	2		0	2			3		11		0				EXPASGR-828-057
290	62		3	0	5	0	0	4	0	0	2		0	2			3		11		0				EXPASGR-828-058
295	62		3	0	5	0	0	4	0	0	2		0	2			3		11		0				EXPASGR-828-059
300	62		3	0	5	0	0	3	0	0	2		0	1			3		11		0				EXPASGR-828-060
300																									EXPMSGR-828-060
305	62		3	0	5	0	0	3	0	0	2		0	1			3		11		0				EXPASGR-828-061
310	62		3	0	5	0	0	4	0	0	2		0	2			3		11		0				EXPASGR-828-062
315	62		3	0	5	0	0	4	0	0	2		0	2			3		11		0				EXPASGR-828-063
320	62		3	0	5	0	0	4	0	0	1		0	1			2		11		0				EXPASGR-828-064
325	62		3	0	4	0	0	4	0	0	3		0	2			3		11		0	coarse biotite intergrown with magnetite			EXPASGR-828-065
330	62		3	0	5	0	0	4	0	0	3		0	2			3		11		0				EXPASGR-828-066
335	62		3	0	5	0	0	4	0	0	2		0	2			2		11		0				EXPASGR-828-067
340	62		3	0	5	0	0	4	0	0	2		0	2			2		11		0				EXPASGR-828-068
345	62		3	0	5	0	0	4	0	0	2		0	3			2		11		0				EXPASGR-828-069
350	62		3	0	5	0	0	4	0	0	2		0	1			2		11		0				EXPASGR-828-070
355	62		3	0	5	0	0	4	0	0	2		0	1			2		11		0				EXPASGR-828-071
360	62		3	0	5	0	0	4	0	0	2		0	2			3		11		0				EXPASGR-828-072
365	62		3	0	5	0	0	4	0	0	2	very glassy-looking groundmass, easily scratches glass	0	3			3		11		0				EXPASGR-828-073
370	62		3	0	5	0	0	4	0	0	3		0	3			3		11		0				EXPASGR-828-074

Cripple Creek Victor Gold Mining Company

ANGLOGOLD ASHANTI
ANGLOGOLD ASHANTI (COLORADO) CORP.

Hole Name: SGR-828	**Collar Azimuth:** 0.00	**Collar Inclination:** -90.00	**Hole Length:** 500.00
Northing: 54417.35	**Easting:** 34696.09	**Elevation:** 9484.16	

Depth	Rock Type	Lithology Comment	Potassic	Specularite	Silicification	Argillic	Sericitic	Bleached	Propylitic	Carbonate	Biotite	Alt Comment	Oxidation	Structure	Contact	Ox Comment	Pyrite	Min	Quartz	Gangue	Sulfate	Min Comment	Au o/t FA	Au o/t SL	Sample Number
375	62		3	0	5	0	0	4	0	0	2		0	1			3		11		0				EXPASGR-828-075
380	62		3	0	5	0	0	4	0	0	2		0	2			3		11		0				EXPASGR-828-076
385	62		3	0	5	0	0	4	0	0	2		0	3			2		11	41	0				EXPASGR-828-077
390	62		3	0	5	0	0	4	0	0	4		0	2			3		11		0				EXPASGR-828-078
395	62		3	0	5	0	0	4	0	0	4		0	3			3		11		0				EXPASGR-828-079
400																									EXPMSGR-828-080
400	62		3	0	5	0	0	4	0	0	4		0	1			3		11		0				EXPASGR-828-080
405	62	traces of phonolite (or breccia?) in sample interval	4	0	4	0	0	4	0	0	3		0	5			2		11		0				EXPASGR-828-081
410	62	~10-15% Tbx1l in sample	4	0	4	0	0	4	0	0	1		0	5			2		11		0				EXPASGR-828-082
415	62		4	0	4	0	0	4	0	0	3		0	2			3		11		0				EXPASGR-828-083
420	62		4	0	4	0	0	4	0	0	2		0	2			3		11		0				EXPASGR-828-084
425	62		4	0	4	0	0	4	0	0	2		0	3			3		11		0				EXPASGR-828-085
430	62		4	0	4	0	0	4	0	0	3		0	2			3		11		0				EXPASGR-828-086
435	62		4	0	4	0	0	4	0	0	2		0	2			3		11		0				EXPASGR-828-087
440	62		4	0	4	0	0	4	0	0	3		0	2			3		11		0				EXPASGR-828-088
445	62		4	0	5	0	0	4	0	0	4	pervasive silica flooding	0	3			3		11		0				EXPASGR-828-089
450	62		4	0	5	0	0	4	0	0	2		0	2			3		11		0				EXPASGR-828-090
455	62		4	0	5	0	0	5	0	0	2		0	1			3		11		0				EXPASGR-828-091
460	22	med-lt grey intrusive aphanitic phonolite dike	4	0	1	0	0	5	0	0	0	silicification cuts off sharply in intrusive dike	0	2	9		2				0				EXPASGR-828-092
465	22		4	0	1	0	0	5	0	0	0		2	3		diluted ochre Fe ox on ~15-20% of chips	2				0				EXPASGR-828-093

Cripple Creek Victor Gold Mining Company

AngloGold Ashanti
AngloGold Ashanti (Colorado) Corp.

Hole Name: SGR-828	**Collar Azimuth:** 0.00	**Collar Inclination:** -90.00	**Hole Length:** 500.00
Northing: 54417.35	**Easting:** 34696.09	**Elevation:** 9484.16	

Depth	Rock Type	Lithology Comment	Potassic	Specularite	Silification	Argillic	Sericitic	Bleached	Propylitic	Carbonate	Biotite	Alt Comment	Oxidation	Structure	Contact	Ox Comment	Pyrite	Min	Quartz	Gangue	Sulfate	Min Comment	Au o/t FA	Au o/t SL	Sample Number
470	62	back to precambrian	4	0	4	0	0	4	0	0	2		0	2	9		2		11		0				EXPASGR-828-094
475	62		4	0	4	0	0	4	0	0	3		1	2			3		11		0				EXPASGR-828-095
480	62		4	0	5	0	0	4	0	0	3		1	2			3		11		0				EXPASGR-828-096
485	62		4	0	5	0	0	4	0	0	2		1	2			3		11		0				EXPASGR-828-097
490	62		4	0	5	0	0	4	0	0	2		0	2			3		11		0				EXPASGR-828-098
495	62		4	0	5	0	0	4	0	0	2		0	2			3		11		0				EXPASGR-828-099
500	62	EOH	4	0	5	0	0	4	0	0	3		0	2			3		11		0				EXPASGR-828-100
500																									EXPMSGR-828-100

Cripple Creek Victor Gold Mining Company

ANGLOGOLD ASHANTI
ANGLOGOLD ASHANTI (COLORADO) CORP.

Hole Name: SGR-833	Collar Azimuth: 0.00	Collar Inclination: -90.00	Hole Length: 700.00
Northing: 54582.08	Easting: 34849.20	Elevation: 9479.64	Print Page 1 of 8

Depth	Rock Type	Lithology Comment	Potassic	Specularite	Silification	Argillic	Sericitic	Bleached	Propylitic	Carbonate	Biotite	Alt Comment	Oxidation	Structure	Contact	Ox Comment	Pyrite	Min	Quartz	Gangue	Sulfate	Min Comment	Au o/t FA	Au o/t SL	Sample Number
5	3	*had to drill through old road to start hole. some pavement and base rock from that.	3	0	0	1	0		0				3	5			1								EXPASGR-833-001
10	3		3	0	0	1	0		0				3	5			0								EXPASGR-833-002
15	21	"Some residual clay on the rock, but doesn't have the typical grey color of tbx1l.	3	0	0	1	0		0				3	5			0								EXPASGR-833-003
20	21	Smooth texture, few phenos visible, but not enough to call tphk.	3	0	0	1	0		0				2	3			0								EXPASGR-833-004
25	21		3	0	0	1	0		0				2	5			0								EXPASGR-833-005
30	21		3	0	0	1	0		0				2	3			0								EXPASGR-833-006
35	21		3	0	0	1	0		0				3	3			0								EXPASGR-833-007
40	21		3	0	0	1	0		0				3	3			0								EXPASGR-833-008
45	21		3	0	0	1	0		0				3	5			1								EXPASGR-833-009
50	21	Vuggy texture in rock. Possible tphbx? Difficult to tell with oxidation and vugs.	3	0	0	1	0		0				3	5			1								EXPASGR-833-010
55	21		3	0	0	1	0		0				3	3			2								EXPASGR-833-011
60	42	Typrical grey color of tbx1l with visible clasts, and disseminated py.	3	0	0	1	0		0				3	3	10		2								EXPASGR-833-012
65	42		3	0	0	1	0		0				2	3			2								EXPASGR-833-013
70	42		3	0	0	1	0		0				1	5			3								EXPASGR-833-014
75	42		3	0	0	1	0		0				1	3			3								EXPASGR-833-015
80	42		3	0	0	1	0		0				1	3			3								EXPASGR-833-016
85	42		3	0	0	1	0		0				1	5			3					Find disseminated py. (80-100')			EXPASGR-833-017
90	42		3	0	0	1	0		0				1	3			3								EXPASGR-833-018
95	42		3	0	0	1	0		0				1	3			3								EXPASGR-833-019

Cripple Creek Victor Gold Mining Company

ANGLOGOLD ASHANTI
ANGLOGOLD ASHANTI (COLORADO) CORP.

Hole Name: SGR-833	Collar Azimuth: 0.00	Collar Inclination: -90.00	Hole Length: 700.00
Northing: 54582.08	Easting: 34849.20	Elevation: 9479.64	Print Page 2 of 8

Depth	Rock Type	Lithology Comment	Potassic	Specularite	Silification	Argillic	Sericitic	Bleached	Propylitic	Carbonate	Biotite	Alt Comment	Oxidation	Structure	Contact	Ox Comment	Pyrite	Min	Quartz	Gangue	Sulfate	Min Comment	Au o/t FA	Au o/t SL	Sample Number
100																									EXPMSGR-833-020
100	42		3	0	0	1	0		0				1	3			3								EXPASGR-833-020
105	42		3	0	0	1	0		0				2	3		Majority of the FeOx is fx confined. (105-200')	4					Increase in clotted py.			EXPASGR-833-021
110	42		3	0	0	1	0		0				2	3			3								EXPASGR-833-022
115	42		3	0	0	1	0		0				2	3			3								EXPASGR-833-023
120	42		3	0	0	1	0		0				1	3			3								EXPASGR-833-024
125	42		3	0	0	1	0		0				1	3			3								EXPASGR-833-025
130	42		3	0	0	1	0		0				2	3			3								EXPASGR-833-026
135	42		3	0	0	1	0		0				2	3			3								EXPASGR-833-027
140	42		3	0	0	1	0		0				1	3			4								EXPASGR-833-028
145	42		3	0	0	1	0		0				2	3			4								EXPASGR-833-029
150	42		3	0	0	1	0		0				2	3			3								EXPASGR-833-030
155	42		3	0	0	1	0		0				1	3			4					Clotted py coating fxs.			EXPASGR-833-031
160	42		3	0	0	1	0		0				1	3			4								EXPASGR-833-032
165	42		3	0	0	1	0		0				1	3			4								EXPASGR-833-033
170	42		3	0	0	1	0		0				1	3			3								EXPASGR-833-034
175	42		3	0	0	1	0		0				1	3			3								EXPASGR-833-035
180	42		3	0	0	1	0		0				1	3			3								EXPASGR-833-036
185	42		3	0	0	1	0		0				1	3			3								EXPASGR-833-037
190	42		3	0	0	1	0		0				1	3			3								EXPASGR-833-038

Cripple Creek Victor Gold Mining Company

ANGLOGOLD ASHANTI
ANGLOGOLD ASHANTI (COLORADO) CORP.

Hole Name: SGR-833	**Collar Azimuth:** 0.00	**Collar Inclination:** -90.00	**Hole Length:** 700.00
Northing: 54582.08	**Easting:** 34849.20	**Elevation:** 9479.64	

Depth	Rock Type	Lithology Comment	Potassic	Specularite	Silification	Argillic	Sericitic	Bleached	Propylitic	Carbonate	Biotite	Alt Comment	Oxidation	Structure	Contact	Ox Comment	Pyrite	Min	Quartz	Gangue	Sulfate	Min Comment	Au o/t FA	Au o/t SL	Sample Number
195	42		3	0	0	1	0		0				1	3			3								EXPASGR-833-039
200	42		3	0	0	1	0		0				1	3			3								EXPASGR-833-040
200																									EXPMSGR-833-040
205	42	Mixed chips of phonolite and granite within the bx.	3	0	0	1	0		0				1	3			3								EXPASGR-833-041
210	42		3	0	0	1	0		0				1	3			4								EXPASGR-833-042
215	42		3	0	0	1	0		0				1	3			4								EXPASGR-833-043
220	42		3	0	0	1	0		0				1	3			4								EXPASGR-833-044
225	42		3	0	0	1	0		0				1	3			4								EXPASGR-833-045
230	42		3	0	0	1	0		0				1	3			3								EXPASGR-833-046
235	42		3	0	0	1	0		0				1	3			3								EXPASGR-833-047
240	42		3	0	0	1	0		0				1	3			3								EXPASGR-833-048
245	42		3	0	0	1	0		0				1	3			4								EXPASGR-833-049
250	42	Increased amount of granite in the bx. some chips are entirely granite and still have qt and kspar.	3	0	0	1	0		0				1	3			4								EXPASGR-833-050
255	42	(250-270')	3	0	0	1	0		0				1	3			4								EXPASGR-833-051
260	42		3	0	0	1	0		0				0	3			4			41					EXPASGR-833-052
265	42		3	0	0	1	0		0				1	3			3								EXPASGR-833-053
270	42		3	0	0	1	0		0				1	3			3			41					EXPASGR-833-054
275	42		3	0	0	1	0		0				1	3			3			41					EXPASGR-833-055
280	42		3	0	0	1	0		0				1	3			3								EXPASGR-833-056

Cripple Creek Victor Gold Mining Company

ANGLOGOLD ASHANTI
ANGLOGOLD ASHANTI (COLORADO) CORP.

Hole Name: SGR-833	Collar Azimuth: 0.00	Collar Inclination: -90.00	Hole Length: 700.00
Northing: 54582.08	Easting: 34849.20	Elevation: 9479.64	

Depth	Rock Type	Lithology Comment	Potassic	Specularite	Silification	Argillic	Sericitic	Bleached	Propylitic	Carbonate	Biotite	Alt Comment	Oxidation	Structure	Contact	Ox Comment	Pyrite	Min	Quartz	Gangue	Sulfate	Min Comment	Au o/t FA	Au o/t SL	Sample Number
285	42		3	0	0	1	0		0				1	3			3								EXPASGR-833-057
290	31	tphk with nephaline and remanent biotite phenos. lt-dk grey groundmass with lt elong phenos and bt.	3	0	0	1	0		0				1	3	10		2								EXPASGR-833-058
295	42	Bleached tbx1l with barely visible clasts (could be bleached tphkbx?)	3	0	0	1	0		0				1	3			2								EXPASGR-833-059
300																									EXPMSGR-833-060
300	42		3	0	0	1	0		0				1	3			2								EXPASGR-833-060
305	42		3	0	0	1	0		0				1	3			3								EXPASGR-833-061
310	42		3	0	0	1	0		0				1	3			3								EXPASGR-833-062
315	42		3	0	0	1	0		0				1	3			4								EXPASGR-833-063
320	42	Increased amount of Ycc	3	0	0	1	0		0				1	3			4								EXPASGR-833-064
325	42		3	0	0	1	0		0				1	3			4								EXPASGR-833-065
330	42		3	0	0	0	0		0				1	3			4								EXPASGR-833-066
335	42		3	0	0	0	0		0				1	3			3								EXPASGR-833-067
340	62		2	0	0	0	0		0				1	3			3								EXPASGR-833-068
345	42		3	0	0	1	0		0				1	3			3								EXPASGR-833-069
350	62		2	0	0	1	0		0				1	3			3								EXPASGR-833-070
355	62		2	0	0	1	0		0				1	3			3								EXPASGR-833-071
360	62		2	0	0	1	0		0				1	3			4								EXPASGR-833-072
365	42		3	0	0	1	0		0				0	3			3								EXPASGR-833-073
370	42		3	0	0	1	0		0				1	3			3								EXPASGR-833-074

Cripple Creek Victor Gold Mining Company

AngloGold Ashanti
ANGLOGOLD ASHANTI (COLORADO) CORP.

Hole Name: SGR-833	**Collar Azimuth:** 0.00	**Collar Inclination:** -90.00	**Hole Length:** 700.00
Northing: 54582.08	**Easting:** 34849.20	**Elevation:** 9479.64	

Depth	Rock Type	Lithology Comment	Potassic	Specularite	Silification	Argillic	Sericitic	Bleached	Propylitic	Carbonate	Biotite	Alt Comment	Oxidation	Structure	Contact	Ox Comment	Pyrite	Min	Quartz	Gangue	Sulfate	Min Comment	Au o/t FA	Au o/t SL	Sample Number
375	42		3	0	0	1	0		0				0	3			4								EXPASGR-833-075
380	62	qtz, feldspar, biotite large ~equigranular	3	0	0	1	1		0				0	3			3								EXPASGR-833-076
385	62		2	0	0	1	1		0				1	3			3								EXPASGR-833-077
390	62		2	0	0	0	1		0				0	3			3								EXPASGR-833-078
395	62	Some small veinlets of py within the equigranualr rock.	2	0	0	1	1		0				1	3			3								EXPASGR-833-079
400	62		2	0	0	1	1		0				1	3			3								EXPASGR-833-080
400																									EXPMSGR-833-080
405	62		2	0	0	0	1		0				0	3			3								EXPASGR-833-081
410	62		2	0	0	0	1		0				0	3			3								EXPASGR-833-082
415	62		2	0	0	0	1		0				0	3			3								EXPASGR-833-083
420	62		2	0	0	1	1		0				1	3			3								EXPASGR-833-084
425	62		2	0	0	1	1		0				1	3			3								EXPASGR-833-085
430	62		2	0	0	1	1		0				0	3			3								EXPASGR-833-086
435	62		2	0	0	1	1		0				0	3			3								EXPASGR-833-087
440	62		2	0	0	0	1		0				0	3			3								EXPASGR-833-088
445	62		2	0	0	0	1		0				1	3			2								EXPASGR-833-089
450	62		2	0	0	0	1		0				1	3			2								EXPASGR-833-090
455	62		2	0	0	0	1		0				0	3			3								EXPASGR-833-091
460	62		2	0	0	0	1		0				1	3			3	59		41					EXPASGR-833-092
465	62		2	0	0	1	1		0				0	3			3	59		41					EXPASGR-833-093

Cripple Creek Victor Gold Mining Company

AngloGold Ashanti
AngloGold Ashanti (Colorado) Corp.

Hole Name: SGR-833	**Collar Azimuth:** 0.00	**Collar Inclination:** -90.00	**Hole Length:** 700.00
Northing: 54582.08	**Easting:** 34849.20	**Elevation:** 9479.64	

Depth	Rock Type	Lithology Comment	Potassic	Specularite	Silicification	Argillic	Sericitic	Bleached	Propylitic	Carbonate	Biotite	Alt Comment	Oxidation	Structure	Contact	Ox Comment	Pyrite	Min	Quartz	Gangue	Sulfate	Min Comment	Au o/t FA	Au o/t SL	Sample Number
470	62		2	0	0	0	1		0				0	3			3								EXPASGR-833-094
475	62		2	0	0	0	1		0				0	3			3								EXPASGR-833-095
480	62		2	0	0	1	1		0				0	3			3	59							EXPASGR-833-096
485	62		2	0	0	0	1		0				1	3			3								EXPASGR-833-097
490	62		2	0	0	0	1		0				0	3			3			41					EXPASGR-833-098
495	62		2	0	0	0	1		0				1	3			2								EXPASGR-833-099
500	62		2	0	0	0	1		0				0	3			3								EXPASGR-833-100
500																									EXPMSGR-833-100
505	62		2	0	0	1	1		0				1	3			2								EXPASGR-833-101
510	62		2	0	0	0	1		0				1	3			2	53							EXPASGR-833-102
515	62		2	0	0	1	1		0				0	3			3								EXPASGR-833-103
520	62		2	0	0	0	1		0				0	3			3	53							EXPASGR-833-104
525	62		2	0	0	0	1		0				1	3			2	53							EXPASGR-833-105
530	62		2	0	0	0	1		0				0	3			2								EXPASGR-833-106
535	62		2	0	0	1	1		0				0	3			3								EXPASGR-833-107
540	62		2	0	0	0	1		0				0	3			2								EXPASGR-833-108
545	62		2	0	0	0	1		0				1	3			2	53							EXPASGR-833-109
550	62		2	0	0	1	1		0				0	3			2								EXPASGR-833-110
555	62		2	0	0	0	1		0				0	3			2								EXPASGR-833-111
560	62		2	0	0	0	1		0				0	3			3								EXPASGR-833-112

Cripple Creek Victor Gold Mining Company

AngloGold Ashanti
AngloGold Ashanti (Colorado) Corp.

Hole Name: SGR-833	Collar Azimuth: 0.00	Collar Inclination: -90.00	Hole Length: 700.00
Northing: 54582.08	Easting: 34849.20	Elevation: 9479.64	

Depth	Rock Type	Lithology Comment	Potassic	Specularite	Silicification	Argillic	Sericitic	Bleached	Propylitic	Carbonate	Biotite	Alt Comment	Oxidation	Structure	Contact	Ox Comment	Pyrite	Min	Quartz	Gangue	Sulfate	Min Comment	Au o/t FA	Au o/t SL	Sample Number
565	62	10% tbx1l	2	0	0	0	1		0				1	3			2	53							EXPASGR-833-113
570	62	10% tbx1l	2	0	0	1	1		0				0	3			3								EXPASGR-833-114
575	62		2	0	0	0	1		0				1	3			3								EXPASGR-833-115
580	62		2	0	0	0	1		0				0	3			3								EXPASGR-833-116
585	62		2	0	0	0	1		0				0	3			2								EXPASGR-833-117
590	62		2	0	0	0	1		0				0	3			1								EXPASGR-833-118
595	62		2	0	0	1	1		0				0	3			1								EXPASGR-833-119
600																									EXPMSGR-833-120
600	62		2	0	0	0	1		0				0	3			1								EXPASGR-833-120
605	2		2	0	0	0	1		0				1	3			2								EXPASGR-833-121
610	62		2	0	0	0	1		0				0	3			2								EXPASGR-833-122
615	62		2	0	0	0	1		0				0	3			1								EXPASGR-833-123
620	62		2	0	0	1	1		0				0	3			2								EXPASGR-833-124
625	62		2	0	0	0	1		0				1	3			2								EXPASGR-833-125
630	62		2	0	0	0	1		0				1	3			1	59							EXPASGR-833-126
635	62		2	0	0	0	1		0				0	3			2	59							EXPASGR-833-127
640	62		2	0	0	1	1		0				0	3			1	59							EXPASGR-833-128
645	62		2	0	0	1	1		0				1	3			1								EXPASGR-833-129
650	62		2	0	0	0	1		0				0	3			2								EXPASGR-833-130
655	62		2	0	0	0	1		0				0	3			1	59							EXPASGR-833-131

Cripple Creek Victor Gold Mining Company

ANGLOGOLD ASHANTI
ANGLOGOLD ASHANTI (COLORADO) CORP.

Hole Name: SGR-833	**Collar Azimuth:** 0.00	**Collar Inclination:** -90.00	**Hole Length:** 700.00
Northing: 54582.08	**Easting:** 34849.20	**Elevation:** 9479.64	

Depth	Rock Type	Lithology Comment	Potassic	Specularite	Silification	Argillic	Sericitic	Bleached	Propylitic	Carbonate	Biotite	Alt Comment	Oxidation	Structure	Contact	Ox Comment	Pyrite	Min	Quartz	Gangue	Sulfate	Min Comment	Au o/t FA	Au o/t SL	Sample Number
660	62		2	0	0	0	1		0				0	3			1								EXPASGR-833-132
665	62		2	0	0	0	1		0				1	3			1	59							EXPASGR-833-133
670	62		2	0	0	0	1		0				0	5			1	59							EXPASGR-833-134
675	62		2	0	0	0	1		0				0	3			1								EXPASGR-833-135
680	62		2	0	0	0	1		0				0	3			2	59							EXPASGR-833-136
685	62		2	0	0	0	1		0				0	3			1	59		41					EXPASGR-833-137
690	62		2	0	0	0	1		0				0	3			1	59							EXPASGR-833-138
695	62		2	0	0	0	1		0				0	3			1	59							EXPASGR-833-139
700	62		2	0	0	1	1		0				1	3			1	59							EXPASGR-833-140
700																									EXPMSGR-833-140

Cripple Creek Victor Gold Mining Company

ANGLOGOLD ASHANTI
ANGLOGOLD ASHANTI (COLORADO) CORP.

Hole Name: SGR-834	**Collar Azimuth:** 0.00	**Collar Inclination:** -90.00	**Hole Length:** 700.00
Northing: 54732.67	**Easting:** 34983.07	**Elevation:** 9476.32	

Depth	Rock Type	Lithology Comment	Potassic	Specularite	Silification	Argillic	Sericitic	Bleached	Propylitic	Carbonate	Biotite	Alt Comment	Oxidation	Structure	Contact	Ox Comment	Pyrite	Min	Quartz	Gangue	Sulfate	Min Comment	Au o/t FA	Au o/t SL	Sample Number
5	3	Set 13' of casing. Top of hole broke up down to 33'. Overburden.																							EXPASGR-834-001
10	3																								EXPASGR-834-002
15	3																								EXPASGR-834-003
20	3																								EXPASGR-834-004
25	3																								EXPASGR-834-005
30	3																								EXPASGR-834-006
35	42	pervasively oxidized, decomposed Tbx1l, texture overprinted and difficult to see	3	2	1	1	1	2	0	0	2	alteration overprinted by Fe ox, very hard to discern but chips are overall decomposed, soft	5	2		pervasive ochre Fe ox with intergrowths of Fe + Mn ox on frx surfaces	0				0				EXPASGR-834-007
40	42		3	2	1	1	1	3	0	0	2		5	2			0				0				EXPASGR-834-008
45	42		3	3	1	1	1	3	0	0	2	specularite alteration on 25% of chips	5	2			0				0				EXPASGR-834-009
50	42		3	2	1	1	1	3	0	0	2		4	2			0				0				EXPASGR-834-010
55	42		3	2	1	1	1	3	0	0	2		2	2		Fe ox tapering off, restricted to patchy zones around decomposed py xls	0				0				EXPASGR-834-011
60	42		3	3	1	2	0	3	0	2	2	phenocrysts in phonolite clasts are decomposed to clays and stained w/ Fe ox	2	2			0			55	0	Carbonate disseminated in groundmass; clusters of specular hematite throughout			EXPASGR-834-012
65	30	transitions gradually to phonolite brx, heterolithic, aphanitic and porphyritic	3	3	1	2	0	3	0	2	2		2	2			0			55	0				EXPASGR-834-013
70	30		3	4	1	2	0	2	0	2	2		3	2			0			55	0	abundant hematite clusters			EXPASGR-834-014
75	30		3	4	1	2	0	3	0	3	2		4	3			0			55	0				EXPASGR-834-015
80	30		3	3	1	2	0	3	0	3	2		2	2			0			55	0				EXPASGR-834-016
85	30		3	3	1	1	0	2	0	2	1		1	1			0			55	0				EXPASGR-834-017
90	30		3	3	1	1	0	3	0	3	1		3	3			0			55	0				EXPASGR-834-018
95	30		3	4	1	1	0	3	0	3	1		1	2			0			55	0				EXPASGR-834-019

Cripple Creek Victor Gold Mining Company

AngloGold Ashanti
AngloGold Ashanti (Colorado) Corp.

Hole Name: SGR-834	Collar Azimuth: 0.00	Collar Inclination: -90.00	Hole Length: 700.00
Northing: 54732.67	Easting: 34983.07	Elevation: 9476.32	Print Page 2 of 8

Depth	Rock Type	Lithology Comment	Potassic	Specularite	Silicification	Argillic	Sericitic	Bleached	Propylitic	Carbonate	Biotite	Alt Comment	Oxidation	Structure	Contact	Ox Comment	Pyrite	Min	Quartz	Gangue	Sulfate	Min Comment	Au o/t FA	Au o/t SL	Sample Number
100	30		3	4	1	1	0	3	0	3	1		1	2			0			55	0				EXPASGR-834-020
100																									EXPMSGR-834-020
105	31	gradual transition into monolithic porphyritic phonolite unit, subhedral wht phenos in med gry matrx	3	3	2	0	0	4	0	3	1	weak silica flooding in matrix	1	2	10	oxidized py grains	0			55	0	specular hematite in clusters and disseminated flecks			EXPASGR-834-021
110	31		3	3	2	0	0	3	0	3	1		0	1			0			55	0				EXPASGR-834-022
115	31		3	3	2	0	0	3	0	3	1		0	2			0			55	0				EXPASGR-834-023
120	31		3	3	2	0	0	3	0	3	1		0	2			0			55	0				EXPASGR-834-024
125	31		3	3	1	0	0	3	0	3	1		1	2			0			55	0				EXPASGR-834-025
130	31		3	3	1	0	0	3	0	3	1		0	2			0			55	0				EXPASGR-834-026
135	31		3	3	1	0	0	3	0	3	1		0	2			0			55	0				EXPASGR-834-027
140	31		3	3	1	0	0	3	0	3	1		0	2			0			55	0				EXPASGR-834-028
145	31		3	3	1	0	0	3	0	3	0		0	3			2			55	0				EXPASGR-834-029
150	31		3	3	1	0	0	3	0	3	0		1	3			1			55	0				EXPASGR-834-030
155	31		3	3	1	0	0	3	0	3	0		1	2			1			55	0				EXPASGR-834-031
160	31		3	3	1	0	0	3	0	3	0		0	2			1			55	0				EXPASGR-834-032
165	31		3	3	1	0	0	3	0	3	0		0	2			0			55	0				EXPASGR-834-033
170	31		3	3	1	0	0	3	0	3	0		0	2			1			55	0				EXPASGR-834-034
175	31		3	3	1	0	0	3	0	3	0		1	2			1			55	0				EXPASGR-834-035
180	31		3	3	1	0	0	3	0	2	0		0	2			1			55	0				EXPASGR-834-036
185	31		3	3	1	0	0	3	0	2	0		0	1			1			55	0				EXPASGR-834-037

Cripple Creek Victor Gold Mining Company

ANGLOGOLD ASHANTI
ANGLOGOLD ASHANTI (COLORADO) CORP.

Hole Name: SGR-834	Collar Azimuth: 0.00	Collar Inclination: -90.00	Hole Length: 700.00
Northing: 54732.67	Easting: 34983.07	Elevation: 9476.32	

Depth	Rock Type	Lithology Comment	Potassic	Specularite	Silification	Argillic	Sericitic	Bleached	Propylitic	Carbonate	Biotite	Alt Comment	Oxidation	Structure	Contact	Ox Comment	Pyrite	Min	Quartz	Gangue	Sulfate	Min Comment	Au o/t FA	Au o/t SL	Sample Number
190	31		3	2	1	0	0	4	0	2	0		0	1			1			55	0				EXPASGR-834-038
195	31		3	2	1	0	0	4	0	2	0		0	2			1			55	0				EXPASGR-834-039
200																									EXPMSGR-834-040
200	31		3	3	1	0	0	3	0	2	0		0	2			1			55	0				EXPASGR-834-040
205	31		3	2	1	0	0	3	0	2	1		0	2			1			55	0				EXPASGR-834-041
210	31		4	2	2	0	0	4	0	3	1		0	2			0			55	0				EXPASGR-834-042
215	31		4	2	2	0	0	4	0	3	1		0	1			0			55	0				EXPASGR-834-043
220	31		4	2	2	0	0	4	0	3	1		1	1			0			55	0				EXPASGR-834-044
225	31		4	2	2	0	0	3	0	3	1		1	2			1			55	0				EXPASGR-834-045
230	31		4	3	1	0	0	3	0	3	1		0	2			1			55	0				EXPASGR-834-046
235	31		4	3	1	0	0	4	0	3	1		0	1			1			55	0				EXPASGR-834-047
240	31		3	2	1	0	0	3	0	3	0		0	2			1				0				EXPASGR-834-048
245	31		3	1	1	0	0	3	0	3	0		1	1			1				0				EXPASGR-834-049
250	31	Fx @ 249-250'	3	1	2	0	0	3	0	3	0	very glassy looking matrix	1	2			1				0				EXPASGR-834-050
255	31		3	1	2	0	0	3	0	3	0		1	5			2				0				EXPASGR-834-051
260	30	gradually becomes brecciated, very small clasts <<1mm, heterolithic, matrix-supported	3	1	2	0	0	3	0	3	1		0	2	10		2				0				EXPASGR-834-052
265	30		3	1	2	0	0	3	0	3	1		1	2			2				0				EXPASGR-834-053
270	30		3	1	2	0	0	3	0	3	1		0	1			2				0				EXPASGR-834-054
275	30		3	1	2	0	0	3	0	3	0		1	1			1				0				EXPASGR-834-055

Cripple Creek Victor Gold Mining Company

AngloGold Ashanti
AngloGold Ashanti (Colorado) Corp.

Hole Name: SGR-834	**Collar Azimuth:** 0.00	**Collar Inclination:** -90.00	**Hole Length:** 700.00
Northing: 54732.67	**Easting:** 34983.07	**Elevation:** 9476.32	**Print Page 4 of 8**

Depth	Rock Type	Lithology Comment	Potassic	Specularite	Silification	Argillic	Sericitic	Bleached	Propylitic	Carbonate	Biotite	Alt Comment	Oxidation	Structure	Contact	Ox Comment	Pyrite	Min	Quartz	Gangue	Sulfate	Min Comment	Au o/t FA	Au o/t SL	Sample Number
280	30		3	1	2	0	0	4	0	3	0		2	2			1				0				EXPASGR-834-056
285	30		3	1	2	0	0	4	0	2	0		1	2			1				0				EXPASGR-834-057
290	30		3	1	2	0	0	4	0	1	0		1	2			1				0				EXPASGR-834-058
295	30		3	1	1	0	0	3	0	1	0		1	2			1				0				EXPASGR-834-059
300	30		3	1	1	0	0	3	0	1	0		1	1			1				0				EXPASGR-834-060
300																									EXPMSGR-834-060
305	30		3	0	1	0	0	3	0	1	0		0	1			2				0				EXPASGR-834-061
310	42	gradual introduction of sparse, very small <<1mm, precambrian clasts into breccia, heterolithic	3	0	1	0	0	3	0	1	0		1	2	10		1				0				EXPASGR-834-062
315	42		3	0	1	0	0	4	0	1	0		0	1			2				0				EXPASGR-834-063
320	42		3	0	1	0	0	4	0	1	0		1	1			2				0				EXPASGR-834-064
325	42		3	0	1	0	0	4	0	1	0		1	2			2				0				EXPASGR-834-065
330	42		3	0	1	0	0	4	0	1	0		1	2			2				0				EXPASGR-834-066
335	42		3	0	1	0	0	4	0	1	0		1	2			2				0				EXPASGR-834-067
340	42		3	0	1	0	0	3	0	1	0		0	1			2				0				EXPASGR-834-068
345	42		3	0	1	0	0	4	0	1	0		1	1			2				0				EXPASGR-834-069
350	42		3	0	1	0	0	4	0	1	0		0	2			2				0				EXPASGR-834-070
355	42		3	0	1	0	0	4	0	1	0		1	1			2				0				EXPASGR-834-071
360	42		3	0	1	0	0	3	0	1	0		1	2			1				0				EXPASGR-834-072
365	42		3	0	1	0	0	4	0	1	0		1	2			1				0				EXPASGR-834-073

Cripple Creek Victor Gold Mining Company

ANGLOGOLD ASHANTI
ANGLOGOLD ASHANTI (COLORADO) CORP.

Hole Name: SGR-834	Collar Azimuth: 0.00	Collar Inclination: -90.00	Hole Length: 700.00
Northing: 54732.67	Easting: 34983.07	Elevation: 9476.32	

Depth	Rock Type	Lithology Comment	Potassic	Specularite	Silicification	Argillic	Sericitic	Bleached	Propylitic	Carbonate	Biotite	Alt Comment	Oxidation	Structure	Contact	Ox Comment	Pyrite	Min	Quartz	Gangue	Sulfate	Min Comment	Au o/t FA	Au o/t SL	Sample Number
370	42		3	0	1	0	0	4	0	1	0		1	2			1				0				EXPASGR-834-074
375	42		3	0	1	0	0	4	0	1	0		1	2			1				0				EXPASGR-834-075
380	42		3	0	2	0	0	4	0	0	0		0	1			2				0				EXPASGR-834-076
385	42		3	0	3	0	0	3	0	0	0	moderate silica flooding in matrix	1	2			2				0				EXPASGR-834-077
390	42		3	0	3	0	0	3	0	0	0		1	2			1				0				EXPASGR-834-078
395	42		3	0	2	0	0	3	0	0	0		0	2			1				0				EXPASGR-834-079
400																									EXPMSGR-834-080
400	42		3	0	2	0	0	3	0	0	0		0	2			2				0				EXPASGR-834-080
405	42		3	0	2	0	0	3	0	0	0		0	2			2				0				EXPASGR-834-081
410	42		3	0	2	0	0	3	0	0	0		0	2			2				0				EXPASGR-834-082
415	42		3	0	2	0	0	4	0	0	0		1	2			1				0				EXPASGR-834-083
420	42		3	0	2	0	0	3	0	0	0		0	2			2				0				EXPASGR-834-084
425	42		3	0	2	0	0	4	0	0	0		0	2			2				0				EXPASGR-834-085
430	42		3	0	2	0	0	4	0	0	0		0	2			2				0				EXPASGR-834-086
435	42		3	0	2	0	0	4	0	0	0		0	2			2				0				EXPASGR-834-087
440	42		3	0	2	0	0	3	0	0	0		0	1			2				0				EXPASGR-834-088
445	42		3	0	2	0	0	4	0	0	0		0	2			2				0				EXPASGR-834-089
450	42		3	0	2	0	0	4	0	0	0		0	2			1				0				EXPASGR-834-090
455	42		3	0	2	0	0	3	0	0	0		0	2			1				0				EXPASGR-834-091
460	42		3	0	2	0	0	3	0	0	0		0	2			3				0				EXPASGR-834-092

Cripple Creek Victor Gold Mining Company

AngloGold Ashanti
AngloGold Ashanti (Colorado) Corp.

Hole Name: SGR-834	**Collar Azimuth:** 0.00	**Collar Inclination:** -90.00	**Hole Length:** 700.00
Northing: 54732.67	**Easting:** 34983.07	**Elevation:** 9476.32	

Depth	Rock Type	Lithology Comment	Potassic	Specularite	Silicification	Argillic	Sericitic	Bleached	Propylitic	Carbonate	Biotite	Alt Comment	Oxidation	Structure	Contact	Ox Comment	Pyrite	Min	Quartz	Gangue	Sulfate	Min Comment	Au o/t FA	Au o/t SL	Sample Number
465	42		3	0	2	0	0	3	0	0	0		0	2			3				0				EXPASGR-834-093
470	42		3	0	3	0	0	3	0	0	0		0	2			2				0				EXPASGR-834-094
475	42		3	0	2	0	0	3	0	0	0		0	2			2				0				EXPASGR-834-095
480	42		3	0	2	0	0	3	0	0	0		0	2			2				0				EXPASGR-834-096
485	42		3	0	2	0	0	3	0	0	0		0	2			2				0				EXPASGR-834-097
490	42		3	0	2	0	0	3	0	0	0		0	2			2				0				EXPASGR-834-098
495	42		3	0	2	0	0	3	0	0	0		1	2			1				0				EXPASGR-834-099
500	42		3	0	2	0	0	3	0	0	0		0	2			1				0				EXPASGR-834-100
500																									EXPMSGR-834-100
505	42		3	0	2	0	0	3	0	0	0		0	2			1				0				EXPASGR-834-101
510	42		3	0	2	0	0	3	0	0	0		1	2			1				0				EXPASGR-834-102
515	42		3	0	2	0	0	3	0	0	0		0	2			1				0				EXPASGR-834-103
520	42		3	0	2	0	0	3	0	0	0		1	2			1				0				EXPASGR-834-104
525	42		3	0	2	0	0	3	0	0	0		1	2			2				0				EXPASGR-834-105
530	42		3	0	2	0	0	3	0	0	0		1	2			2				0				EXPASGR-834-106
535	42		3	0	1	0	0	3	0	0	0		1	2			2				0				EXPASGR-834-107
540	42		3	0	1	0	0	3	0	0	0		0	2			2				0				EXPASGR-834-108
545	42		3	0	1	0	0	3	0	0	0		1	2			1				0				EXPASGR-834-109
550	42		3	0	1	0	0	3	0	0	0		1	2			1				0				EXPASGR-834-110
555	42		3	0	1	0	0	3	0	0	0		1	3			1				0				EXPASGR-834-111

Cripple Creek Victor Gold Mining Company

ANGLOGOLD ASHANTI
ANGLOGOLD ASHANTI (COLORADO) CORP.

Hole Name: SGR-834	Collar Azimuth: 0.00	Collar Inclination: -90.00	Hole Length: 700.00
Northing: 54732.67	Easting: 34983.07	Elevation: 9476.32	

Depth	Rock Type	Lithology Comment	Potassic	Specularite	Silicification	Argillic	Sericitic	Bleached	Propylitic	Carbonate	Biotite	Alt Comment	Oxidation	Structure	Contact	Ox Comment	Pyrite	Min	Quartz	Gangue	Sulfate	Min Comment	Au o/t FA	Au o/t SL	Sample Number
560	42		3	0	1	0	0	3	0	0	0		1	2			1				0				EXPASGR-834-112
565	42		3	0	1	0	0	4	0	0	0		1	2			1				0				EXPASGR-834-113
570	42		3	0	2	0	0	3	0	0	0		0	2			1				0				EXPASGR-834-114
575	42		3	0	2	0	0	3	0	0	0		0	1			1				0				EXPASGR-834-115
580	42		3	0	2	0	0	3	0	0	0		1	1			2				0				EXPASGR-834-116
585	42		3	0	2	0	0	3	0	0	0		0	2			2				0				EXPASGR-834-117
590	42		3	0	2	0	0	3	0	0	0		0	1			2				0				EXPASGR-834-118
595	42		3	0	2	0	0	3	0	0	0		0	2			2				0				EXPASGR-834-119
600	42		3	0	2	0	0	3	0	0	0		0	2			2				0				EXPASGR-834-120
600																									EXPMSGR-834-120
605	42		3	0	2	0	0	4	0	0	0		0	1			2				0				EXPASGR-834-121
610	42		3	0	2	0	0	3	0	0	0		0	2			2				0				EXPASGR-834-122
615	42		3	0	1	0	0	3	0	0	0		0	2			2				0				EXPASGR-834-123
620	42		3	0	2	0	0	3	0	0	0		1	1			2				0				EXPASGR-834-124
625	42		3	0	2	0	0	3	0	0	0		1	1			2				0				EXPASGR-834-125
630	42		3	0	2	0	0	4	0	0	0		1	1			1				0				EXPASGR-834-126
635	42		3	0	2	0	0	4	0	0	0		1	1			2				0				EXPASGR-834-127
640	42		3	0	2	0	0	3	0	0	0		1	2			2				0				EXPASGR-834-128
645	42	Fx @ 643'	3	0	2	0	0	3	0	0	0		1	5			2				0				EXPASGR-834-129
650	42		3	0	2	0	0	3	0	0	1		1	5			3				0				EXPASGR-834-130

Cripple Creek Victor Gold Mining Company

AngloGold Ashanti
AngloGold Ashanti (Colorado) Corp.

Hole Name: SGR-834	**Collar Azimuth:** 0.00	**Collar Inclination:** -90.00	**Hole Length:** 700.00
Northing: 54732.67	**Easting:** 34983.07	**Elevation:** 9476.32	

Depth	Rock Type	Lithology Comment	Potassic	Specularite	Silification	Argillic	Sericitic	Bleached	Propylitic	Carbonate	Biotite	Alt Comment	Oxidation	Structure	Contact	Ox Comment	Pyrite	Min	Quartz	Gangue	Sulfate	Min Comment	Au o/t FA	Au o/t SL	Sample Number
655	42		3	0	2	0	0	3	0	0	1		0	2			2				0				EXPASGR-834-131
660	42		3	0	2	0	0	3	0	0	0		0	2			2				0				EXPASGR-834-132
665	42		3	0	3	0	0	4	0	0	0		0	1			1				0				EXPASGR-834-133
670	42		3	0	2	0	0	3	0	0	0		0	1			2				0				EXPASGR-834-134
675	42		3	0	2	0	0	3	0	0	0		0	1			2				0				EXPASGR-834-135
680	42		3	0	2	0	0	3	0	0	0		0	1			2				0				EXPASGR-834-136
685	42		3	0	2	0	0	3	0	0	0		0	2			2				0				EXPASGR-834-137
690	62	very sharp transition to Ycc, only 5-10% breccia in interval	3	0	5	0	0	4	0	0	4	pervasive silicification	0	2	9		3			55	0				EXPASGR-834-138
695	62		3	0	5	0	0	4	0	0	3		0	2			3			55	0				EXPASGR-834-139
700																									EXPMSGR-834-140
700	62	EOH	3	0	5	0	0	4	0	0	3		0	2			2			55	0				EXPASGR-834-140

Appendix B

COLOG Documentation

Appendix B.1 – Injection and Raised Head Data during Testing

Appendix B.2 – Additional COLOG Data Provided Electronically

Appendix B.1

Injection and Raised Head Data during Testing

FIGURE Hole #2:1. Injection And Raised-Head Data During Injection Test; AMEC; Squaw Gulch Valley VLF; CC and V Mine; Wellbore: Hole #2

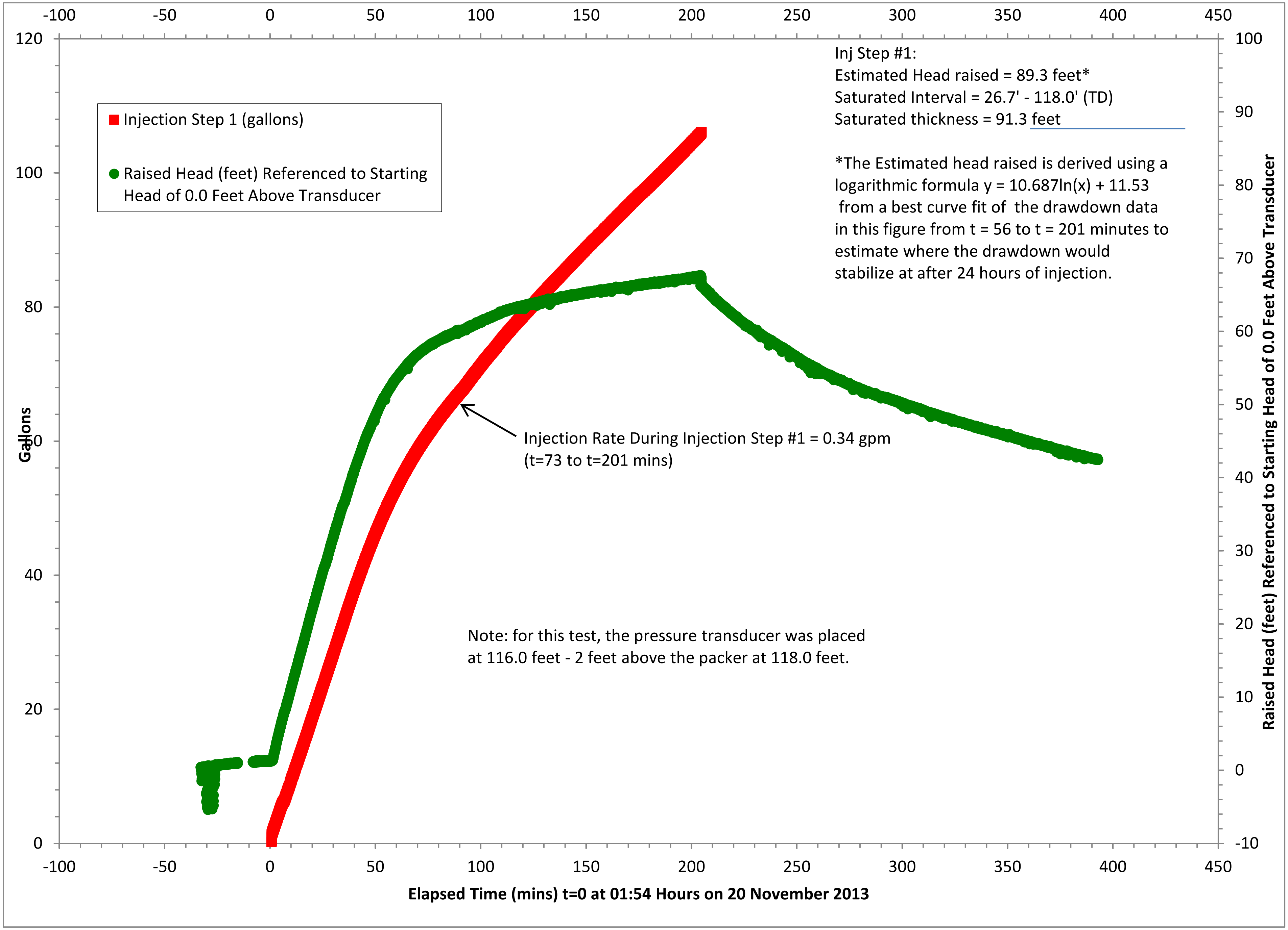


Table Hole#2:1. Summary Of Injection Test With Hydraulic Conductivity And Transmissivity Estimations; AMEC; Squaw Gulch Valley VLF; CC and V Mine; Wellbore: Hole #2

Well Name	Hole #2
Ambient Depth to Water (ftbtoc)	NA
Ambient Depth to Water (ftbgs)	NA
Maximum Injection Rate (gpm)	0.34

Diameter of Wellbore (ft)	0.458
Estimated Raised Head[2] (ft)	89.3
Effective Radius (ft)	25
Specific Capacity (gpm/ft dd)	0.004

Permeability Estimations - Hole #2

Inj Step No.	Top of Interval (ft)	Bottom of Interval (ft)	Length of Interval (ft)	Ambient Flow[1] (gpm)	Injection Rate (gpm)	Hydraulic Conductivity Using Theim Equation[3] (ft/day)	Transmissivity Based on the Theim Equation (ft^2/day)	Hydraulic Conductivity Using AQTESOLV and Recovery Data[4] (ft/day)	Hydraulic Conductivity Using Lugeon Analysis[5] (ft/day)
1	26.7	118.0	91.3	0.00	0.34	6.00E-03	5.48E-01	2.51E-03	4.56E-03

Note: Negative flow, if any, is outflow from the wellbore to the aquifer, positive flow is inflow to the wellbore.

[1] The Theim equation requires flow at two pressure conditions. For Theim equation estimations, ambient flow is assumed to be zero.

[2] The "Estimated Raised Head" value is derived using a logarithmic formula $y = 10.687\ln(x) + 11.53$ from a best curve fit of the drawdown data in Figure Hole #2:1 from t = 56 to t = 201 minutes to estimate where the drawdown would stabilize at after 24 hours of injection.

[3] Hydraulic conductivity and transmissivity estimates are based on single well drawdown data, a porous-medium equivalent model and the Theim equation.

[4] This hydraulic conductivity value for the total maximum saturated interval are derived from AQTESOLV using the recovery (decay) data and the Hvorslov method.

All depths reported herein are referenced to ground surface.

NA = Not Applicable

FIGURE Hole #1:1. Injection And Raised-Head Data During Stepped-Injection Test; AMEC; Squaw Gulch Valley VLF; CC and V Mine; Wellbore: Hole #1

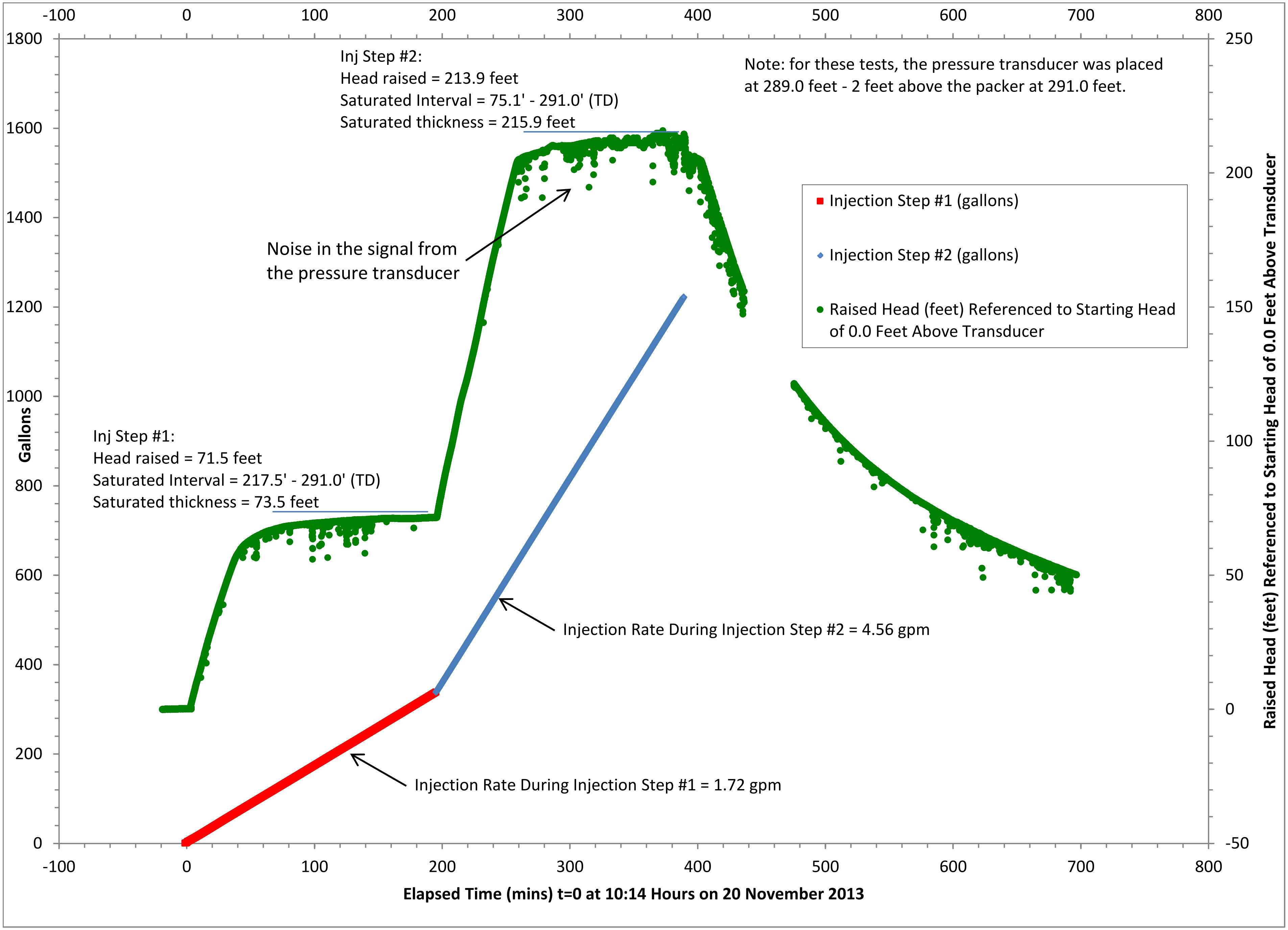


Table Hole#1:1. Summary Of Stepped-Injection Tests With Hydraulic Conductivity And Transmissivity Estimations; AMEC; Squaw Gulch Valley VLF; CC and V Mine; Wellbore: Hole #1

Well Name	Hole #1
Ambient Depth to Water (ftbtoc)	NA
Ambient Depth to Water (ftbgs)	NA
Maximum Injection Rate (gpm)	4.56

Diameter of Wellbore (ft)	0.458
Maximum Steady Raised Head (ft)	215.9
Effective Radius (ft)	100
Specific Capacity (gpm/ft dd)	0.021

Permeability Estimations - Hole #1

Inj Step No.	Top of Interval (ft)	Bottom of Interval (ft)	Length of Interval (ft)	Ambient Flow[1] (gpm)	Injection Rate (gpm)	Hydraulic Conductivity Using Theim Equation[2] (ft/day)	Transmissivity Based on the Theim Equation (ft^2/day)	Hydraulic Conductivity Using AQTESOLV and Recovery Data[3] (ft/day)	Hydraulic Conductivity Using Lugeon Analysis[4] (ft/day)
1	217.5	291.0	73.5	0.00	1.72	2.02E-02	1.48E+00	NA	3.35E-02
2	75.1	291.0	215.9	0.00	4.56	1.82E-02	3.94E+00	6.30E-03	1.30E-02

Note: Negative flow, if any, is outflow from the wellbore to the aquifer, positive flow is inflow to the wellbore.

[1] The Theim equation requires flow at two pressure conditions. For Theim equation estimations, ambient flow is assumed to be zero.

[2] Hydraulic conductivity and transmissivity estimates are based on single well drawdown data, a porous-medium equivalent model and the Theim equation.

[3] This hydraulic conductivity value for the total maximum saturated interval are derived from AQTESOLV using the recovery (decay) data and the Hvorslov method.

All depths reported herein are referenced to ground surface.

NA = Not Applicable

FIGURE Hole #3:1. Injection And Raised-Head Data During Stepped-Injection Test; AMEC; Squaw Gulch Valley VLF; CC and V Mine; Wellbore: Hole #3

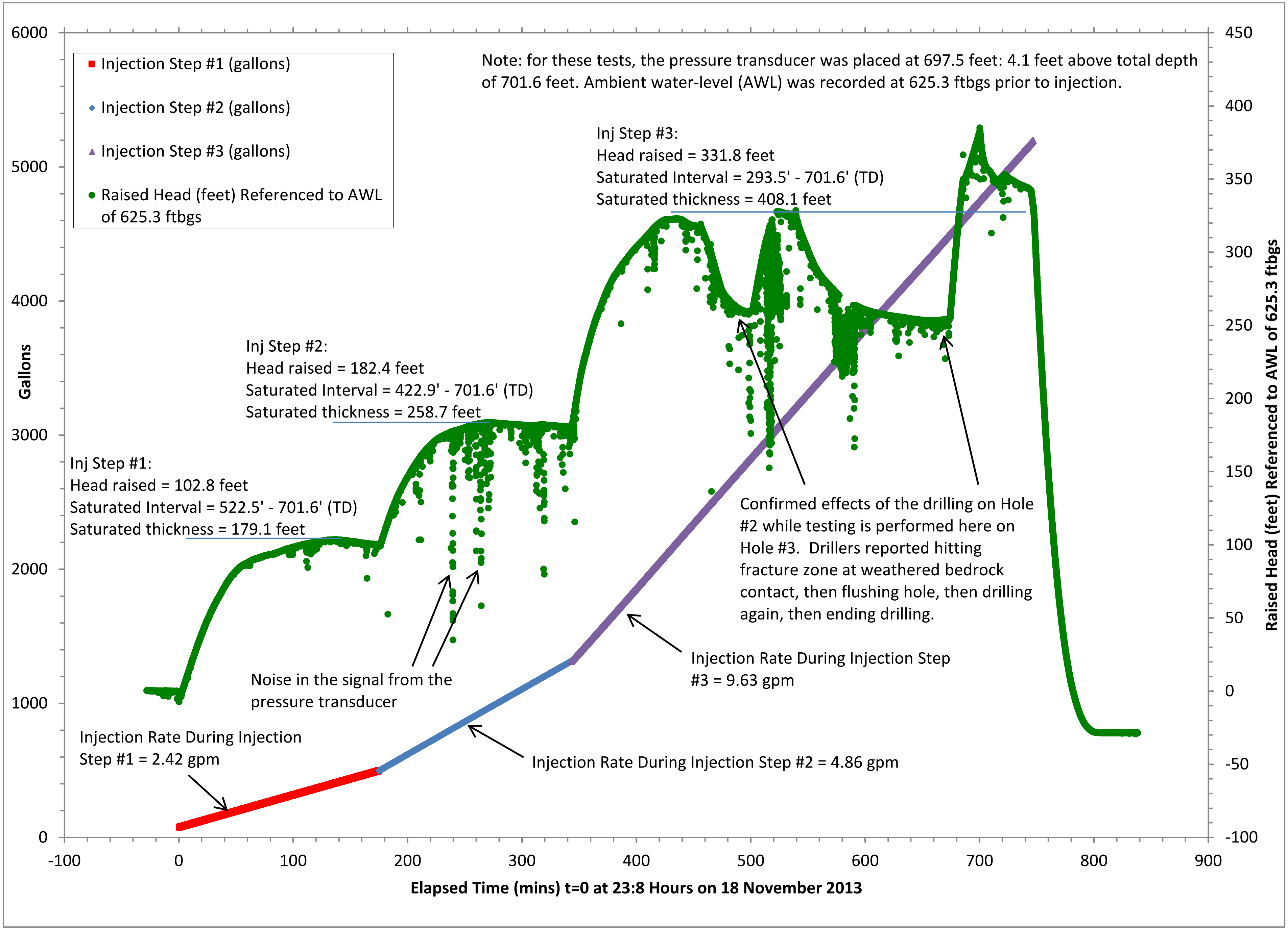


Table Hole#3:1. Summary Of Stepped-Injection Tests With Hydraulic Conductivity And Transmissivity Estimations; AMEC; Squaw Gulch Valley VLF; CC and V Mine; Wellbore: Hole #3

Well Name	Hole #3
Ambient Depth to Water (ftbtoc)	NA
Ambient Depth to Water (ftbgs)	625.30
Maximum Injection Rate (gpm)	9.63

Diameter of Wellbore (ft)	0.458
Maximum Steady Raised Head (ft)	331.8
Effective Radius (ft)	300
Specific Capacity (gpm/ft dd)	0.029

Permeability Estimations - Hole #3

Inj Step No.	Top of Interval (ft)	Bottom of Interval (ft)	Length of Interval (ft)	Ambient Flow[1] (gpm)	Injection Rate (gpm)	Hydraulic Conductivity Using Theim Equation[2] (ft/day)	Transmissivity Based on the Theim Equation (ft^2/day)	Hydraulic Conductivity Using AQTESOLV and Recovery Data[3] (ft/day)	Hydraulic Conductivity Using Lugeon Analysis[4] (ft/day)
1	522.5	701.6	179.1	0.00	2.42	8.96E-03	1.60E+00	NA	9.72E-03
2	422.9	701.6	278.7	0.00	4.86	1.16E-02	3.22E+00	NA	9.84E-03
3	293.5	701.6	408.1	0.00	9.63	1.56E-02	6.39E+00	3.27E-02	8.19E-03

Note: Negative flow, if any, is outflow from the wellbore to the aquifer, positive flow is inflow to the wellbore.

[1] The Theim equation requires flow at two pressure conditions. For Theim equation estimations, ambient flow is assumed to be zero.

[2] Hydraulic conductivity and transmissivity estimates are based on single well drawdown data, a porous-medium equivalent model and the Theim equation.

[3] This hydraulic conductivity value for the total maximum saturated interval are derived from AQTESOLV using the recovery (decay) data and the Hvorslov method.

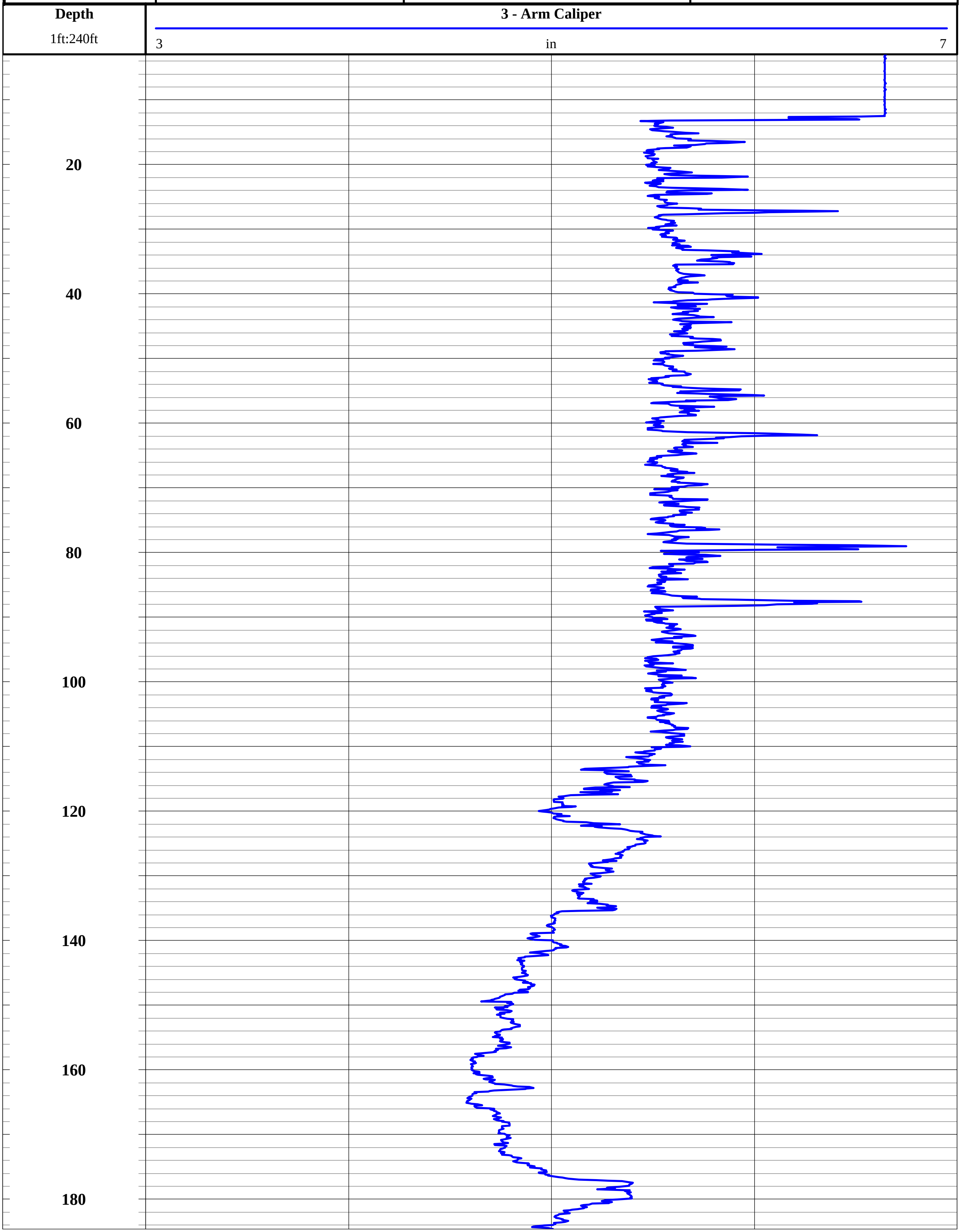
All depths reported herein are referenced to ground surface.

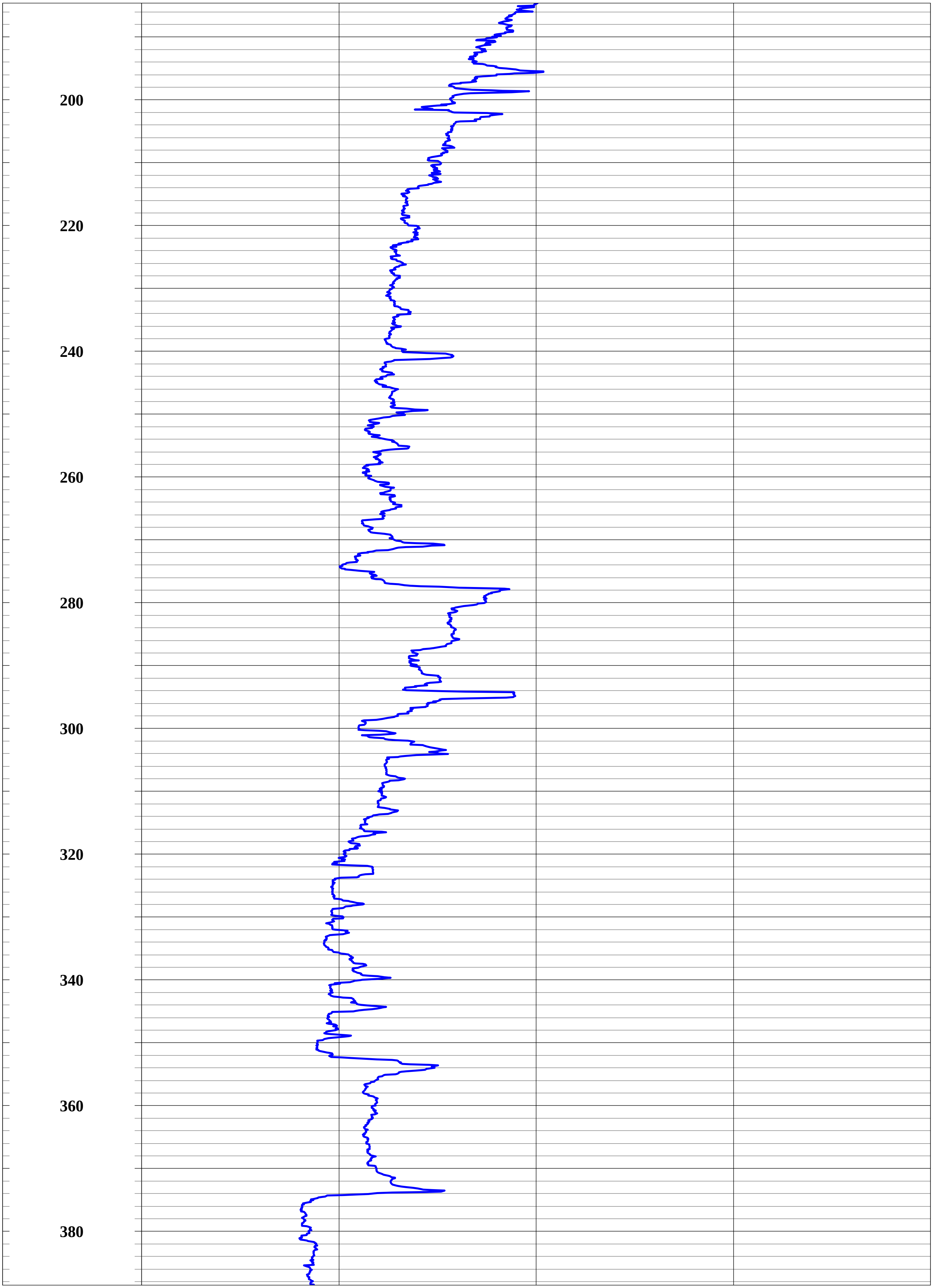
NA = Not Applicable

Appendix B.2

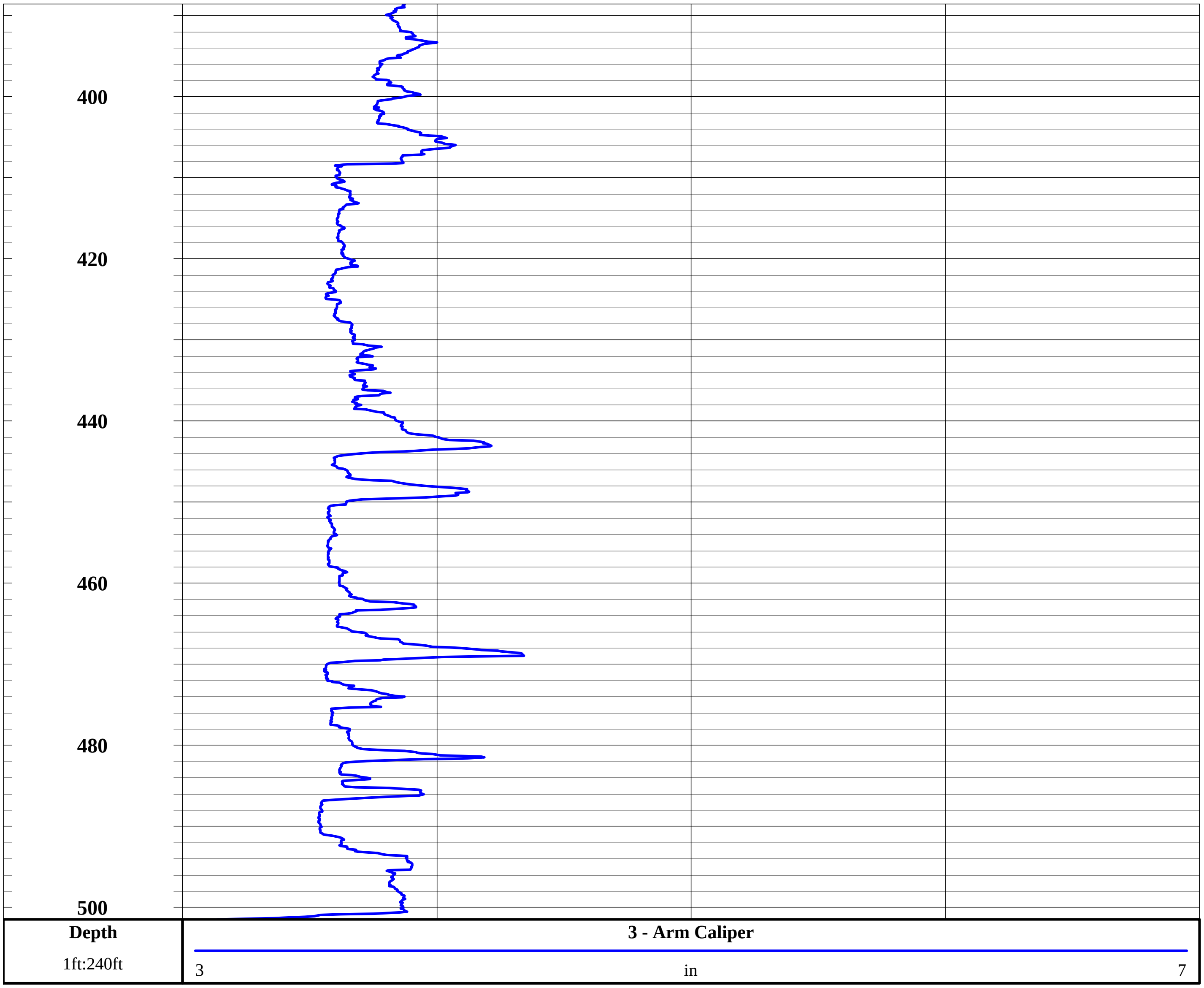
Additional COLOG Data

COLOG	3-Arm Caliper		COLOG Main Office
	COMPANY: AMEC	PROJECT: Squaw Gulch Valley VLF	810 Quail Street, Suite E, Lakewood, CO 80215
	DATE LOGGED: 19 November 2013	WELL: Hole #2	Phone: (303) 279-0171, Fax: (303) 278-0135
			www.colog.com





200
220
240
260
280
300
320
340
360
380



400
420
440
460
480
500
Depth
1ft:240ft
3 - Arm Caliper
3
in
7

Figure Hole 1: Deviation Data
AMEC
Project: Squaw Gulch Valley VLF Field Support
Boring: Hole #1
November 17, 2013

Map View

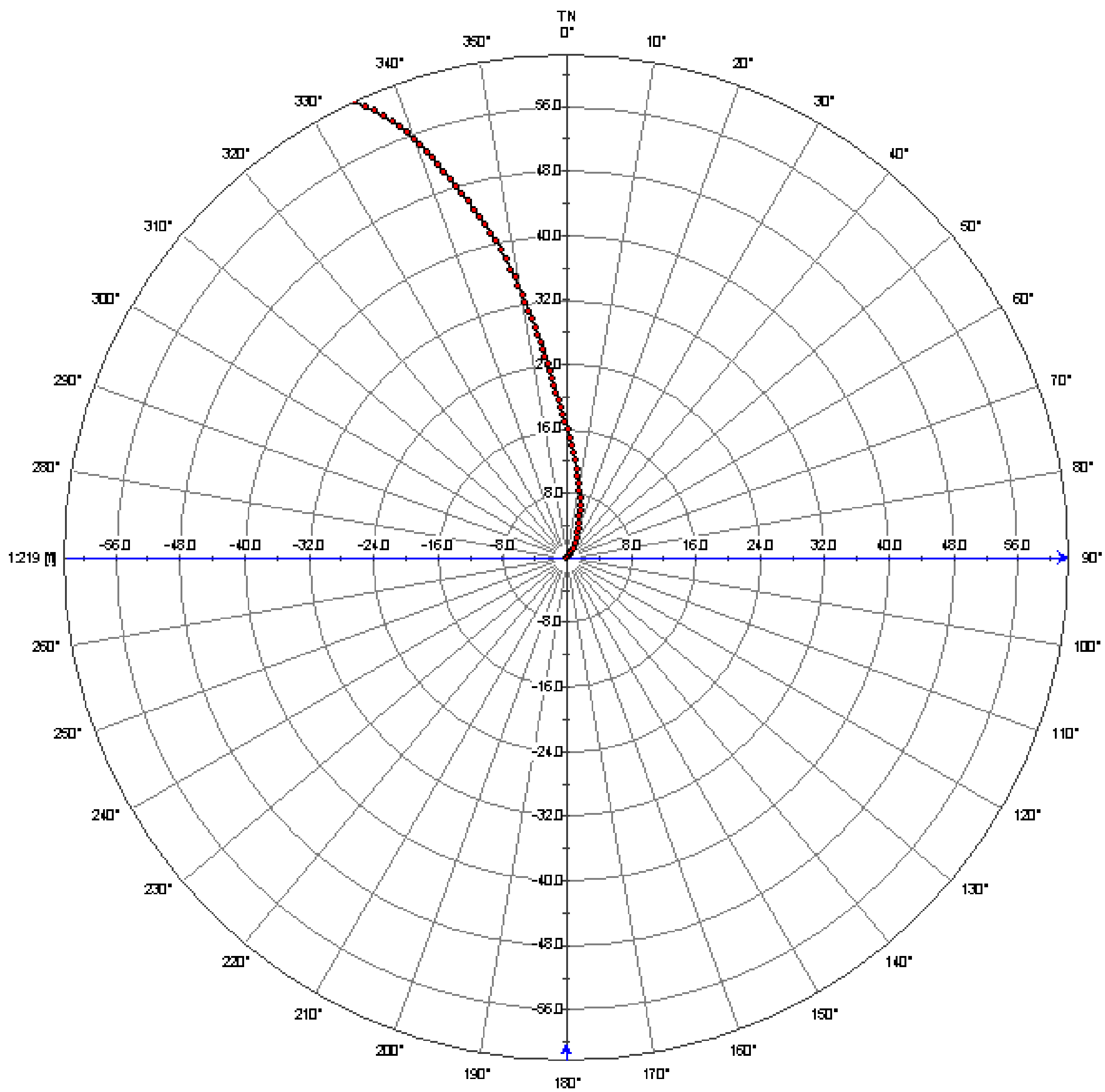


Figure Hole 1: Deviation Data
AMEC
Project: Squaw Gulch Valley VLF Field Support
Boring: Hole #1
November 17, 2013

Orthogonal View

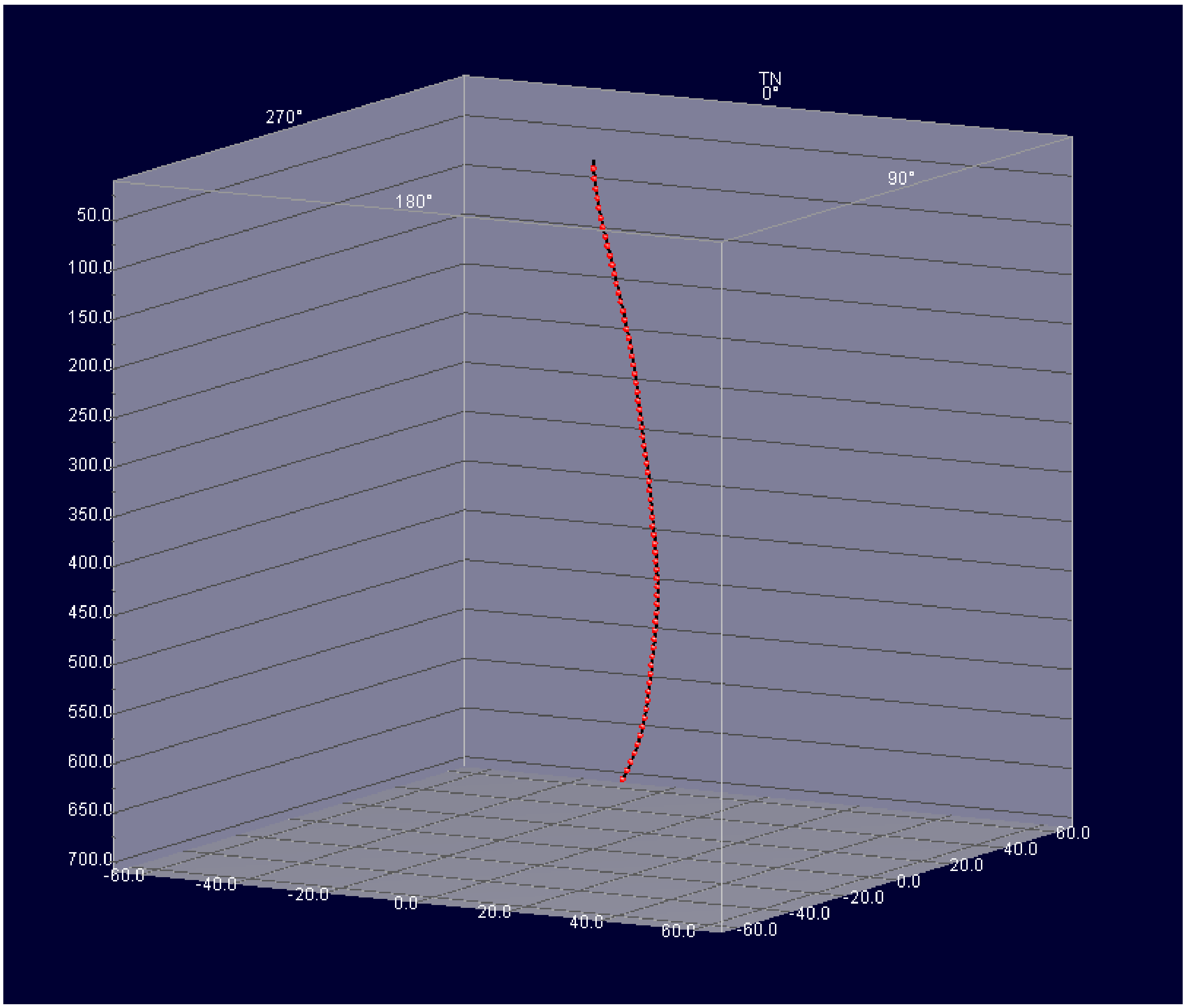


Table Hole #1:2. Deviation Data: Northing, Easting and True Depth; AMEC; Squaw Gulch Valley VLF Field Support; Cripple Creek, CO; Wellbore: Hole #1

Deviation Survey for: AMEC **Field:** Squaw Gulch Valley VLF Field Support **Date:** November 17, 2013
Well: Hole 1 **Depth Ref.:** Ground **Total Depth:** **696.55** ft **Probe Type, S/N:** OBI 030601

Depth (feet)	Inclination (degrees)	Bearing (degrees)	Closure Length (line ft.)	Closure Dist. (horiz. ft.)	Closure Depth (vertical ft.)	Northing (feet)	Easting (feet)	True Depth (feet)	Dist. Sum (feet)	NorthSum (feet)	EastSum (feet)
0	0.0	0.0	0	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
11	0.9	266.3	11	0.17	11.08	-0.01	-0.17	11.08	0.17	-0.01	-0.17
12	1.0	202.9	1	0.02	1.00	-0.02	-0.01	12.08	0.18	-0.03	-0.18
13	0.6	166.5	1	0.01	1.00	-0.01	0.00	13.08	0.18	-0.04	-0.18
14	0.9	87.1	1	0.02	1.00	0.00	0.02	14.08	0.17	-0.04	-0.16
15	1.6	4.3	1	0.03	1.00	0.03	0.00	15.08	0.16	-0.01	-0.16
16	1.5	277.4	1	0.03	1.00	0.00	-0.03	16.08	0.19	-0.01	-0.19
17	1.4	278.6	1	0.02	1.00	0.00	-0.02	17.08	0.21	0.00	-0.21
18	0.4	67.3	1	0.01	1.00	0.00	0.01	18.08	0.20	0.00	-0.20
19	0.4	31.7	1	0.01	1.00	0.01	0.00	19.08	0.20	0.01	-0.20
20	1.2	17.4	1	0.02	1.00	0.02	0.01	20.08	0.20	0.03	-0.19
21	1.6	19.5	1	0.03	1.00	0.03	0.01	21.08	0.19	0.05	-0.18
22	1.4	61.0	1	0.02	1.00	0.01	0.02	22.08	0.18	0.06	-0.16
23	0.9	70.9	1	0.02	1.00	0.01	0.01	23.07	0.16	0.07	-0.15
24	1.4	52.7	1	0.02	1.00	0.01	0.02	24.07	0.15	0.08	-0.13
25	1.4	43.7	1	0.02	1.00	0.02	0.02	25.07	0.15	0.10	-0.11
26	0.7	3.6	1	0.01	1.00	0.01	0.00	26.07	0.16	0.11	-0.11
27	0.4	1.4	1	0.01	1.00	0.01	0.00	27.07	0.16	0.12	-0.11
28	1.6	36.6	1	0.03	1.00	0.02	0.02	28.07	0.17	0.14	-0.09
29	0.0	0.0	1	0.00	1.00	0.00	0.00	29.07	0.17	0.14	-0.09
30	2.4	37.8	1	0.04	1.00	0.03	0.03	30.07	0.19	0.18	-0.07
31	1.6	57.0	1	0.03	1.00	0.02	0.02	31.07	0.20	0.19	-0.05
32	1.1	57.9	1	0.02	1.00	0.01	0.02	32.07	0.20	0.20	-0.03
33	1.2	82.2	1	0.02	1.00	0.00	0.02	33.07	0.21	0.21	-0.01
34	1.7	41.6	1	0.03	1.00	0.02	0.02	34.07	0.23	0.23	0.01
35	1.9	52.0	1	0.03	1.00	0.02	0.03	35.07	0.25	0.25	0.04
36	1.7	48.0	1	0.03	1.00	0.02	0.02	36.07	0.27	0.27	0.06
37	1.3	67.7	1	0.02	1.00	0.01	0.02	37.07	0.29	0.28	0.08
38	1.3	32.6	1	0.02	1.00	0.02	0.01	38.07	0.31	0.30	0.09
39	1.7	57.0	1	0.03	1.00	0.02	0.02	39.07	0.33	0.31	0.12
40	2.0	41.0	1	0.03	1.00	0.03	0.02	40.07	0.37	0.34	0.14
41	1.6	46.9	1	0.03	1.00	0.02	0.02	41.07	0.39	0.36	0.16
42	1.5	35.7	1	0.03	1.00	0.02	0.02	42.07	0.42	0.38	0.18
43	1.2	45.5	1	0.02	1.00	0.01	0.01	43.07	0.44	0.39	0.19
44	1.9	21.1	1	0.03	1.00	0.03	0.01	44.07	0.47	0.42	0.20
45	1.6	30.0	1	0.03	1.00	0.02	0.01	45.07	0.50	0.45	0.22
46	1.5	30.1	1	0.03	1.00	0.02	0.01	46.07	0.52	0.47	0.23
47	1.5	44.2	1	0.03	1.00	0.02	0.02	47.07	0.55	0.49	0.25
48	2.3	43.8	1	0.04	1.00	0.03	0.03	48.07	0.59	0.52	0.28
49	2.1	53.8	1	0.04	1.00	0.02	0.03	49.07	0.62	0.54	0.31
50	2.0	43.2	1	0.03	1.00	0.03	0.02	50.06	0.65	0.57	0.33
51	1.8	25.8	1	0.03	1.00	0.03	0.01	51.06	0.69	0.59	0.34
52	1.5	25.2	1	0.03	1.00	0.02	0.01	52.06	0.71	0.62	0.35
53	2.2	46.3	1	0.04	1.00	0.03	0.03	53.06	0.75	0.64	0.38
54	2.5	58.6	1	0.04	1.00	0.02	0.04	54.06	0.79	0.67	0.42
55	1.6	56.1	1	0.03	1.00	0.02	0.02	55.06	0.81	0.68	0.44
56	1.3	37.8	1	0.02	1.00	0.02	0.01	56.06	0.84	0.70	0.46
57	1.6	31.8	1	0.03	1.00	0.02	0.01	57.06	0.86	0.72	0.47
58	1.6	32.0	1	0.03	1.00	0.02	0.01	58.06	0.89	0.75	0.49
59	2.6	30.9	1	0.05	1.00	0.04	0.02	59.06	0.94	0.79	0.51
60	1.5	31.1	1	0.03	1.00	0.02	0.01	60.06	0.96	0.81	0.52
61	2.3	32.0	1	0.04	1.00	0.03	0.02	61.06	1.00	0.84	0.54

Orientations are with respect to Magnetic North

Table Hole #1:2. Deviation Data: Northing, Easting and True Depth; AMEC; Squaw Gulch Valley VLF Field Support; Cripple Creek, CO; Wellbore: Hole #1

Deviation Survey for: AMEC **Field:** Squaw Gulch Valley VLF Field Support **Date:** November 17, 2013
Well: Hole 1 **Depth Ref.:** Ground **Total Depth:** **696.55** ft **Probe Type, S/N:** OBI 030601

62	1.5	37.9	1	0.03	1.00	0.02	0.02	62.06	1.03	0.86	0.56
63	2.1	28.1	1	0.04	1.00	0.03	0.02	63.06	1.07	0.90	0.58
64	2.3	35.5	1	0.04	1.00	0.03	0.02	64.06	1.11	0.93	0.60
65	1.8	36.7	1	0.03	1.00	0.03	0.02	65.06	1.14	0.95	0.62
66	1.5	28.1	1	0.03	1.00	0.02	0.01	66.06	1.16	0.98	0.63
67	2.4	36.5	1	0.04	1.00	0.03	0.02	67.05	1.21	1.01	0.66
68	2.7	14.3	1	0.05	1.00	0.05	0.01	68.05	1.25	1.06	0.67
69	3.2	27.7	1	0.06	1.00	0.05	0.03	69.05	1.31	1.11	0.69
70	3.2	14.0	1	0.06	1.00	0.05	0.01	70.05	1.36	1.16	0.71
71	3.6	359.2	1	0.06	1.00	0.06	0.00	71.05	1.41	1.22	0.71
72	1.5	356.1	1	0.03	1.00	0.03	0.00	72.05	1.43	1.25	0.71
73	2.6	25.7	1	0.05	1.00	0.04	0.02	73.05	1.48	1.29	0.72
74	4.6	5.2	1	0.08	1.00	0.08	0.01	74.04	1.55	1.37	0.73
75	6.3	9.1	1	0.11	0.99	0.11	0.02	75.04	1.66	1.48	0.75
76	3.3	26.7	1	0.06	1.00	0.05	0.03	76.04	1.71	1.53	0.78
77	2.3	23.1	1	0.04	1.00	0.04	0.02	77.04	1.75	1.57	0.79
78	2.9	37.5	1	0.05	1.00	0.04	0.03	78.03	1.80	1.61	0.82
79	2.8	16.7	1	0.05	1.00	0.05	0.01	79.03	1.85	1.65	0.84
80	4.0	24.8	1	0.07	1.00	0.06	0.03	80.03	1.92	1.72	0.87
81	3.9	16.9	1	0.07	1.00	0.07	0.02	81.03	1.99	1.78	0.88
82	4.3	21.9	1	0.07	1.00	0.07	0.03	82.03	2.06	1.85	0.91
83	3.9	7.7	1	0.07	1.00	0.07	0.01	83.02	2.13	1.92	0.92
84	2.7	4.4	1	0.05	1.00	0.05	0.00	84.02	2.17	1.97	0.93
85	2.8	7.5	1	0.05	1.00	0.05	0.01	85.02	2.22	2.01	0.93
86	2.6	22.4	1	0.05	1.00	0.04	0.02	86.02	2.26	2.06	0.95
87	4.7	19.2	1	0.08	1.00	0.08	0.03	87.02	2.35	2.13	0.98
88	4.2	34.0	1	0.07	1.00	0.06	0.04	88.01	2.42	2.19	1.02
89	3.7	10.7	1	0.06	1.00	0.06	0.01	89.01	2.48	2.26	1.03
90	3.9	9.9	1	0.07	1.00	0.07	0.01	90.01	2.55	2.32	1.04
91	3.8	16.1	1	0.07	1.00	0.06	0.02	91.01	2.61	2.39	1.06
92	4.7	12.5	1	0.08	1.00	0.08	0.02	92.00	2.69	2.47	1.08
93	4.5	5.9	1	0.08	1.00	0.08	0.01	93.00	2.77	2.55	1.08
94	3.0	13.6	1	0.05	1.00	0.05	0.01	94.00	2.82	2.60	1.10
95	3.0	358.2	1	0.05	1.00	0.05	0.00	95.00	2.87	2.65	1.10
96	3.0	12.0	1	0.05	1.00	0.05	0.01	96.00	2.92	2.70	1.11
97	4.2	11.2	1	0.07	1.00	0.07	0.01	96.99	2.99	2.77	1.12
98	4.0	6.1	1	0.07	1.00	0.07	0.01	97.99	3.06	2.84	1.13
99	3.9	10.0	1	0.07	1.00	0.07	0.01	98.99	3.12	2.91	1.14
100	3.8	14.8	1	0.07	1.00	0.06	0.02	99.99	3.19	2.97	1.16
101	3.5	24.5	1	0.06	1.00	0.06	0.03	100.99	3.25	3.03	1.18
102	4.8	12.1	1	0.08	1.00	0.08	0.02	101.98	3.33	3.11	1.20
103	3.3	8.0	1	0.06	1.00	0.06	0.01	102.98	3.39	3.17	1.21
104	3.6	2.0	1	0.06	1.00	0.06	0.00	103.98	3.45	3.23	1.21
105	4.0	11.7	1	0.07	1.00	0.07	0.01	104.98	3.52	3.30	1.22
106	4.4	13.9	1	0.08	1.00	0.07	0.02	105.97	3.59	3.37	1.24
107	4.1	7.9	1	0.07	1.00	0.07	0.01	106.97	3.66	3.44	1.25
108	3.5	13.8	1	0.06	1.00	0.06	0.01	107.97	3.72	3.50	1.27
109	3.4	12.4	1	0.06	1.00	0.06	0.01	108.97	3.78	3.56	1.28
110	3.8	7.5	1	0.07	1.00	0.07	0.01	109.96	3.85	3.63	1.29
111	4.5	1.9	1	0.08	1.00	0.08	0.00	110.96	3.92	3.70	1.29
112	4.6	7.6	1	0.08	1.00	0.08	0.01	111.96	4.00	3.78	1.30
113	4.6	18.1	1	0.08	1.00	0.08	0.02	112.95	4.08	3.86	1.33
114	3.3	17.7	1	0.06	1.00	0.05	0.02	113.95	4.14	3.92	1.34
115	2.9	2.2	1	0.05	1.00	0.05	0.00	114.95	4.19	3.97	1.35
116	3.4	9.2	1	0.06	1.00	0.06	0.01	115.95	4.25	4.02	1.36

Orientations are with respect to Magnetic North

Table Hole #1:2. Deviation Data: Northing, Easting and True Depth; AMEC; Squaw Gulch Valley VLF Field Support; Cripple Creek, CO; Wellbore: Hole #1

Deviation Survey for: AMEC **Field:** Squaw Gulch Valley VLF Field Support **Date:** November 17, 2013
Well: Hole 1 **Depth Ref.:** Ground **Total Depth:** **696.55** ft **Probe Type, S/N:** OBI 030601

117	4.0	2.8	1	0.07	1.00	0.07	0.00	116.95	4.31	4.09	1.36
118	4.6	14.4	1	0.08	1.00	0.08	0.02	117.94	4.39	4.17	1.38
119	4.2	10.5	1	0.07	1.00	0.07	0.01	118.94	4.47	4.24	1.39
120	3.8	5.1	1	0.07	1.00	0.07	0.01	119.94	4.53	4.31	1.40
121	3.6	1.2	1	0.06	1.00	0.06	0.00	120.94	4.59	4.37	1.40
122	4.4	7.4	1	0.08	1.00	0.08	0.01	121.93	4.67	4.45	1.41
123	4.7	11.8	1	0.08	1.00	0.08	0.02	122.93	4.75	4.53	1.43
124	4.2	2.9	1	0.07	1.00	0.07	0.00	123.93	4.82	4.60	1.43
125	3.4	11.9	1	0.06	1.00	0.06	0.01	124.93	4.88	4.66	1.44
126	4.2	7.1	1	0.07	1.00	0.07	0.01	125.92	4.95	4.73	1.45
127	4.5	0.3	1	0.08	1.00	0.08	0.00	126.92	5.03	4.81	1.45
128	4.6	356.7	1	0.08	1.00	0.08	0.00	127.92	5.10	4.89	1.45
129	4.0	0.8	1	0.07	1.00	0.07	0.00	128.92	5.17	4.96	1.45
130	3.9	6.6	1	0.07	1.00	0.07	0.01	129.91	5.24	5.03	1.46
131	3.9	7.1	1	0.07	1.00	0.07	0.01	130.91	5.30	5.10	1.46
132	4.4	3.3	1	0.08	1.00	0.08	0.00	131.91	5.38	5.17	1.47
133	4.6	356.9	1	0.08	1.00	0.08	0.00	132.90	5.45	5.25	1.46
134	4.5	4.2	1	0.08	1.00	0.08	0.01	133.90	5.53	5.33	1.47
135	4.1	4.4	1	0.07	1.00	0.07	0.01	134.90	5.60	5.40	1.48
136	4.0	7.4	1	0.07	1.00	0.07	0.01	135.90	5.67	5.47	1.48
137	4.8	354.5	1	0.08	1.00	0.08	-0.01	136.89	5.75	5.55	1.48
138	4.9	355.7	1	0.09	1.00	0.09	-0.01	137.89	5.83	5.64	1.47
139	4.0	2.5	1	0.07	1.00	0.07	0.00	138.89	5.90	5.71	1.47
140	4.6	5.0	1	0.08	1.00	0.08	0.01	139.88	5.98	5.79	1.48
141	1.9	0.0	1	0.03	1.00	0.03	0.00	140.88	6.01	5.82	1.48
142	4.4	352.8	1	0.08	1.00	0.08	-0.01	141.88	6.08	5.90	1.47
143	4.4	352.3	1	0.08	1.00	0.08	-0.01	142.88	6.15	5.97	1.46
144	5.2	1.6	1	0.09	1.00	0.09	0.00	143.87	6.24	6.07	1.46
145	5.5	6.7	1	0.10	1.00	0.10	0.01	144.87	6.33	6.16	1.47
146	4.0	7.4	1	0.07	1.00	0.07	0.01	145.87	6.40	6.23	1.48
147	4.8	2.3	1	0.08	1.00	0.08	0.00	146.86	6.49	6.31	1.49
148	4.5	354.6	1	0.08	1.00	0.08	-0.01	147.86	6.56	6.39	1.48
149	5.5	345.5	1	0.10	1.00	0.09	-0.02	148.85	6.65	6.48	1.45
150	5.3	1.9	1	0.09	1.00	0.09	0.00	149.85	6.74	6.58	1.46
151	5.5	4.8	1	0.10	1.00	0.10	0.01	150.85	6.83	6.67	1.47
152	5.1	357.2	1	0.09	1.00	0.09	0.00	151.84	6.92	6.76	1.46
153	4.7	350.3	1	0.08	1.00	0.08	-0.01	152.84	6.99	6.84	1.45
154	3.7	356.2	1	0.06	1.00	0.06	0.00	153.84	7.06	6.91	1.44
155	4.7	4.3	1	0.08	1.00	0.08	0.01	154.83	7.14	6.99	1.45
156	5.0	353.7	1	0.09	1.00	0.09	-0.01	155.83	7.22	7.07	1.44
157	4.9	355.2	1	0.09	1.00	0.09	-0.01	156.83	7.30	7.16	1.43
158	4.9	356.6	1	0.09	1.00	0.09	-0.01	157.82	7.38	7.24	1.43
159	5.0	2.8	1	0.09	1.00	0.09	0.00	158.82	7.47	7.33	1.43
160	5.8	353.2	1	0.10	0.99	0.10	-0.01	159.81	7.57	7.43	1.42
161	5.2	351.7	1	0.09	1.00	0.09	-0.01	160.81	7.65	7.52	1.41
162	5.0	348.1	1	0.09	1.00	0.09	-0.02	161.81	7.73	7.61	1.39
163	4.9	359.0	1	0.09	1.00	0.09	0.00	162.80	7.82	7.69	1.39
164	5.4	2.8	1	0.09	1.00	0.09	0.00	163.80	7.91	7.79	1.39
165	5.2	3.8	1	0.09	1.00	0.09	0.01	164.79	8.00	7.88	1.40
166	5.1	355.7	1	0.09	1.00	0.09	-0.01	165.79	8.09	7.97	1.39
167	4.9	348.6	1	0.09	1.00	0.08	-0.02	166.79	8.17	8.05	1.37
168	4.8	346.4	1	0.08	1.00	0.08	-0.02	167.78	8.24	8.13	1.35
169	5.3	346.4	1	0.09	1.00	0.09	-0.02	168.78	8.33	8.22	1.33
170	5.4	359.0	1	0.09	1.00	0.09	0.00	169.77	8.42	8.31	1.33
171	5.4	358.7	1	0.09	1.00	0.09	0.00	170.77	8.51	8.41	1.33

Orientations are with respect to Magnetic North

Table Hole #1:2. Deviation Data: Northing, Easting and True Depth; AMEC; Squaw Gulch Valley VLF Field Support; Cripple Creek, CO; Wellbore: Hole #1

Deviation Survey for: AMEC **Field:** Squaw Gulch Valley VLF Field Support **Date:** November 17, 2013
Well: Hole 1 **Depth Ref.:** Ground **Total Depth:** **696.55** ft **Probe Type, S/N:** OBI 030601

172	5.0	355.9	1	0.09	1.00	0.09	-0.01	171.76	8.60	8.50	1.32
173	4.7	348.8	1	0.08	1.00	0.08	-0.02	172.76	8.68	8.58	1.31
174	4.8	345.7	1	0.08	1.00	0.08	-0.02	173.76	8.75	8.66	1.29
175	5.0	351.0	1	0.09	1.00	0.09	-0.01	174.75	8.84	8.74	1.27
176	5.6	355.8	1	0.10	1.00	0.10	-0.01	175.75	8.93	8.84	1.27
177	5.2	1.2	1	0.09	1.00	0.09	0.00	176.75	9.02	8.93	1.27
178	5.4	0.3	1	0.09	1.00	0.09	0.00	177.74	9.11	9.03	1.27
179	4.1	335.2	1	0.07	1.00	0.06	-0.03	178.74	9.17	9.09	1.24
180	5.5	346.2	1	0.10	1.00	0.09	-0.02	179.73	9.26	9.18	1.22
181	5.6	352.4	1	0.10	1.00	0.10	-0.01	180.73	9.36	9.28	1.20
182	6.0	1.3	1	0.10	0.99	0.10	0.00	181.72	9.46	9.38	1.20
183	5.6	356.0	1	0.10	1.00	0.10	-0.01	182.72	9.56	9.48	1.20
184	5.5	351.1	1	0.10	1.00	0.09	-0.01	183.71	9.65	9.58	1.18
185	6.2	350.7	1	0.11	0.99	0.11	-0.02	184.71	9.75	9.68	1.17
186	5.4	346.9	1	0.09	1.00	0.09	-0.02	185.70	9.84	9.77	1.14
187	4.9	338.4	1	0.09	1.00	0.08	-0.03	186.70	9.92	9.85	1.11
188	4.8	345.3	1	0.08	1.00	0.08	-0.02	187.70	9.99	9.94	1.09
189	5.7	353.8	1	0.10	1.00	0.10	-0.01	188.69	10.09	10.03	1.08
190	6.1	355.2	1	0.11	0.99	0.11	-0.01	189.69	10.20	10.14	1.07
191	6.0	358.8	1	0.10	0.99	0.10	0.00	190.68	10.30	10.24	1.07
192	5.2	349.4	1	0.09	1.00	0.09	-0.02	191.68	10.39	10.33	1.05
193	5.5	352.3	1	0.10	1.00	0.09	-0.01	192.67	10.48	10.43	1.04
194	5.8	351.7	1	0.10	0.99	0.10	-0.01	193.67	10.58	10.53	1.03
195	5.2	353.1	1	0.09	1.00	0.09	-0.01	194.66	10.67	10.62	1.01
196	5.3	357.6	1	0.09	1.00	0.09	0.00	195.66	10.76	10.71	1.01
197	5.5	347.6	1	0.10	1.00	0.09	-0.02	196.65	10.85	10.80	0.99
198	6.1	356.5	1	0.11	0.99	0.11	-0.01	197.65	10.95	10.91	0.98
199	4.5	341.3	1	0.08	1.00	0.07	-0.03	198.65	11.03	10.98	0.96
200	5.9	351.3	1	0.10	0.99	0.10	-0.02	199.64	11.13	11.09	0.94
201	5.7	348.8	1	0.10	1.00	0.10	-0.02	200.63	11.22	11.18	0.92
202	5.8	348.0	1	0.10	0.99	0.10	-0.02	201.63	11.32	11.28	0.90
203	5.9	340.2	1	0.10	0.99	0.10	-0.03	202.62	11.41	11.38	0.87
204	5.3	342.6	1	0.09	1.00	0.09	-0.03	203.62	11.50	11.47	0.84
205	6.1	349.5	1	0.11	0.99	0.10	-0.02	204.61	11.60	11.57	0.82
206	5.7	354.1	1	0.10	1.00	0.10	-0.01	205.61	11.70	11.67	0.81
207	5.8	344.6	1	0.10	0.99	0.10	-0.03	206.60	11.79	11.77	0.78
208	5.3	345.0	1	0.09	1.00	0.09	-0.02	207.60	11.88	11.86	0.76
209	5.5	343.9	1	0.10	1.00	0.09	-0.03	208.60	11.97	11.95	0.73
210	5.8	352.8	1	0.10	0.99	0.10	-0.01	209.59	12.07	12.05	0.72
211	5.9	351.9	1	0.10	0.99	0.10	-0.01	210.59	12.17	12.15	0.71
212	5.2	350.3	1	0.09	1.00	0.09	-0.02	211.58	12.26	12.24	0.69
213	5.1	345.5	1	0.09	1.00	0.09	-0.02	212.58	12.34	12.33	0.67
214	5.9	341.5	1	0.10	0.99	0.10	-0.03	213.57	12.44	12.42	0.64
215	6.4	345.9	1	0.11	0.99	0.11	-0.03	214.57	12.55	12.53	0.61
216	5.7	352.7	1	0.10	1.00	0.10	-0.01	215.56	12.65	12.63	0.60
217	5.3	348.8	1	0.09	1.00	0.09	-0.02	216.56	12.73	12.72	0.58
218	5.0	343.5	1	0.09	1.00	0.08	-0.02	217.55	12.82	12.81	0.55
219	5.6	347.6	1	0.10	1.00	0.10	-0.02	218.55	12.91	12.90	0.53

Orientations are with respect to Magnetic North

Table Hole #1:2. Deviation Data: Northing, Easting and True Depth; AMEC; Squaw Gulch Valley VLF Field Support; Cripple Creek, CO; Wellbore: Hole #1

Deviation Survey for: AMEC **Field:** Squaw Gulch Valley VLF Field Support **Date:** November 17, 2013
Well: Hole 1 **Depth Ref.:** Ground **Total Depth:** **696.55** ft **Probe Type, S/N:** OBI 030601

220	5.7	349.8	1	0.10	1.00	0.10	-0.02	219.54	13.01	13.00	0.52
221	6.2	346.6	1	0.11	0.99	0.11	-0.03	220.54	13.11	13.10	0.49
222	5.9	342.6	1	0.10	0.99	0.10	-0.03	221.53	13.21	13.20	0.46
223	5.4	340.5	1	0.09	1.00	0.09	-0.03	222.53	13.30	13.29	0.43
224	5.9	343.7	1	0.10	0.99	0.10	-0.03	223.52	13.39	13.39	0.40
225	5.8	347.8	1	0.10	0.99	0.10	-0.02	224.52	13.49	13.49	0.38
226	5.8	346.5	1	0.10	0.99	0.10	-0.02	225.51	13.59	13.59	0.35
227	5.9	350.0	1	0.10	0.99	0.10	-0.02	226.51	13.69	13.69	0.34
228	5.5	342.4	1	0.10	1.00	0.09	-0.03	227.50	13.78	13.78	0.31
229	5.7	341.5	1	0.10	1.00	0.09	-0.03	228.50	13.88	13.87	0.28
230	5.7	346.1	1	0.10	1.00	0.10	-0.02	229.49	13.97	13.97	0.25
231	5.3	348.3	1	0.09	1.00	0.09	-0.02	230.49	14.06	14.06	0.23
232	5.3	353.6	1	0.09	1.00	0.09	-0.01	231.48	14.15	14.15	0.22
233	5.6	349.4	1	0.10	1.00	0.10	-0.02	232.48	14.25	14.25	0.20
234	6.0	344.9	1	0.10	0.99	0.10	-0.03	233.47	14.35	14.35	0.18
235	6.1	341.2	1	0.11	0.99	0.10	-0.03	234.47	14.45	14.45	0.14
236	5.6	341.9	1	0.10	1.00	0.09	-0.03	235.46	14.54	14.54	0.11
237	4.8	343.0	1	0.08	1.00	0.08	-0.02	236.46	14.62	14.62	0.09
238	4.7	348.9	1	0.08	1.00	0.08	-0.02	237.46	14.70	14.70	0.07
239	6.1	345.8	1	0.11	0.99	0.10	-0.03	238.45	14.80	14.80	0.05
240	6.2	344.9	1	0.11	0.99	0.10	-0.03	239.44	14.91	14.91	0.02
241	5.1	343.6	1	0.09	1.00	0.09	-0.03	240.44	14.99	14.99	-0.01
242	5.3	344.9	1	0.09	1.00	0.09	-0.02	241.44	15.08	15.08	-0.03
243	5.0	342.6	1	0.09	1.00	0.08	-0.03	242.43	15.17	15.17	-0.06
244	6.5	341.6	1	0.11	0.99	0.11	-0.04	243.43	15.27	15.27	-0.09
245	6.0	343.7	1	0.10	0.99	0.10	-0.03	244.42	15.37	15.37	-0.12
246	5.6	343.6	1	0.10	1.00	0.09	-0.03	245.42	15.47	15.47	-0.15
247	5.3	347.9	1	0.09	1.00	0.09	-0.02	246.41	15.56	15.56	-0.17
248	5.4	345.7	1	0.09	1.00	0.09	-0.02	247.41	15.65	15.65	-0.19
249	6.0	342.4	1	0.10	0.99	0.10	-0.03	248.40	15.75	15.75	-0.22
250	6.0	338.2	1	0.10	0.99	0.10	-0.04	249.40	15.85	15.85	-0.26
251	5.4	345.3	1	0.09	1.00	0.09	-0.02	250.39	15.94	15.94	-0.29
252	5.2	345.7	1	0.09	1.00	0.09	-0.02	251.39	16.03	16.03	-0.31
253	5.3	347.3	1	0.09	1.00	0.09	-0.02	252.38	16.12	16.12	-0.33
254	6.0	338.5	1	0.10	0.99	0.10	-0.04	253.38	16.22	16.21	-0.37
255	5.7	334.9	1	0.10	1.00	0.09	-0.04	254.37	16.31	16.30	-0.41
256	5.4	342.1	1	0.09	1.00	0.09	-0.03	255.37	16.40	16.39	-0.44
257	5.7	351.3	1	0.10	1.00	0.10	-0.02	256.36	16.50	16.49	-0.45
258	5.7	345.6	1	0.10	1.00	0.10	-0.02	257.36	16.59	16.59	-0.48
259	5.7	340.6	1	0.10	1.00	0.09	-0.03	258.35	16.69	16.68	-0.51
260	5.5	335.6	1	0.10	1.00	0.09	-0.04	259.35	16.78	16.77	-0.55
261	5.3	344.4	1	0.09	1.00	0.09	-0.02	260.34	16.87	16.86	-0.58
262	5.4	345.5	1	0.09	1.00	0.09	-0.02	261.34	16.96	16.95	-0.60
263	5.4	350.3	1	0.09	1.00	0.09	-0.02	262.34	17.05	17.04	-0.61
264	5.4	343.7	1	0.09	1.00	0.09	-0.03	263.33	17.14	17.13	-0.64
265	5.0	340.0	1	0.09	1.00	0.08	-0.03	264.33	17.23	17.21	-0.67
266	5.9	338.5	1	0.10	0.99	0.10	-0.04	265.32	17.32	17.31	-0.71
267	5.3	342.7	1	0.09	1.00	0.09	-0.03	266.32	17.41	17.40	-0.74
268	6.3	341.6	1	0.11	0.99	0.10	-0.03	267.31	17.52	17.50	-0.77
269	5.2	347.3	1	0.09	1.00	0.09	-0.02	268.31	17.61	17.59	-0.79
270	5.6	344.1	1	0.10	1.00	0.09	-0.03	269.30	17.70	17.68	-0.82
271	5.3	346.0	1	0.09	1.00	0.09	-0.02	270.30	17.79	17.77	-0.84
272	5.4	340.4	1	0.09	1.00	0.09	-0.03	271.29	17.88	17.86	-0.87
273	5.8	339.8	1	0.10	0.99	0.09	-0.03	272.29	17.98	17.96	-0.91
274	5.7	349.6	1	0.10	1.00	0.10	-0.02	273.28	18.08	18.05	-0.92

Orientations are with respect to Magnetic North

Table Hole #1:2. Deviation Data: Northing, Easting and True Depth; AMEC; Squaw Gulch Valley VLF Field Support; Cripple Creek, CO; Wellbore: Hole #1

Deviation Survey for: AMEC **Field:** Squaw Gulch Valley VLF Field Support **Date:** November 17, 2013
Well: Hole 1 **Depth Ref.:** Ground **Total Depth:** **696.55** ft **Probe Type, S/N:** OBI 030601

275	5.3	349.7	1	0.09	1.00	0.09	-0.02	274.28	18.17	18.14	-0.94
276	5.2	345.9	1	0.09	1.00	0.09	-0.02	275.28	18.26	18.23	-0.96
277	5.4	337.0	1	0.09	1.00	0.09	-0.04	276.27	18.35	18.32	-1.00
278	5.9	336.1	1	0.10	0.99	0.09	-0.04	277.27	18.44	18.41	-1.04
279	5.8	344.8	1	0.10	0.99	0.10	-0.03	278.26	18.54	18.51	-1.07
280	5.4	345.1	1	0.09	1.00	0.09	-0.02	279.26	18.63	18.60	-1.09
281	4.6	339.9	1	0.08	1.00	0.07	-0.03	280.25	18.71	18.68	-1.12
282	5.4	337.1	1	0.09	1.00	0.09	-0.04	281.25	18.80	18.76	-1.16
283	5.5	340.2	1	0.10	1.00	0.09	-0.03	282.24	18.89	18.85	-1.19
284	5.6	342.0	1	0.10	1.00	0.09	-0.03	283.24	18.98	18.95	-1.22
285	5.4	345.2	1	0.09	1.00	0.09	-0.02	284.23	19.08	19.04	-1.24
286	5.3	344.6	1	0.09	1.00	0.09	-0.02	285.23	19.17	19.13	-1.27
287	5.4	342.5	1	0.09	1.00	0.09	-0.03	286.23	19.26	19.22	-1.30
288	5.8	340.1	1	0.10	0.99	0.10	-0.03	287.22	19.36	19.31	-1.33
289	5.7	342.3	1	0.10	1.00	0.09	-0.03	288.22	19.45	19.40	-1.36
290	5.1	346.0	1	0.09	1.00	0.09	-0.02	289.21	19.54	19.49	-1.38
291	5.6	348.3	1	0.10	1.00	0.10	-0.02	290.21	19.64	19.59	-1.40
292	5.4	341.4	1	0.09	1.00	0.09	-0.03	291.20	19.73	19.68	-1.43
293	5.4	338.5	1	0.09	1.00	0.09	-0.03	292.20	19.82	19.76	-1.47
294	5.0	342.8	1	0.09	1.00	0.08	-0.03	293.19	19.90	19.85	-1.49
295	5.3	348.4	1	0.09	1.00	0.09	-0.02	294.19	19.99	19.94	-1.51
296	5.4	347.3	1	0.09	1.00	0.09	-0.02	295.19	20.09	20.03	-1.53
297	5.3	342.0	1	0.09	1.00	0.09	-0.03	296.18	20.18	20.12	-1.56
298	5.4	340.7	1	0.09	1.00	0.09	-0.03	297.18	20.27	20.21	-1.59
299	5.7	343.1	1	0.10	1.00	0.10	-0.03	298.17	20.37	20.30	-1.62
300	5.4	347.2	1	0.09	1.00	0.09	-0.02	299.17	20.46	20.39	-1.64
301	5.3	346.2	1	0.09	1.00	0.09	-0.02	300.16	20.55	20.48	-1.66
302	5.1	343.0	1	0.09	1.00	0.09	-0.03	301.16	20.64	20.57	-1.69
303	5.6	333.9	1	0.10	1.00	0.09	-0.04	302.15	20.73	20.65	-1.73
304	5.8	339.3	1	0.10	0.99	0.09	-0.04	303.15	20.82	20.75	-1.77
305	5.5	348.7	1	0.10	1.00	0.09	-0.02	304.15	20.92	20.84	-1.79
306	5.1	348.2	1	0.09	1.00	0.09	-0.02	305.14	21.01	20.93	-1.80
307	4.9	339.9	1	0.09	1.00	0.08	-0.03	306.14	21.09	21.01	-1.83
308	6.0	336.9	1	0.10	0.99	0.10	-0.04	307.13	21.19	21.11	-1.87
309	5.5	349.3	1	0.10	1.00	0.09	-0.02	308.13	21.29	21.20	-1.89
310	5.4	341.5	1	0.09	1.00	0.09	-0.03	309.12	21.38	21.29	-1.92
311	5.1	351.6	1	0.09	1.00	0.09	-0.01	310.12	21.47	21.38	-1.93
312	5.5	343.4	1	0.10	1.00	0.09	-0.03	311.11	21.56	21.47	-1.96
313	5.5	339.9	1	0.10	1.00	0.09	-0.03	312.11	21.65	21.56	-2.00
314	5.3	334.0	1	0.09	1.00	0.08	-0.04	313.11	21.74	21.64	-2.04
315	5.4	335.8	1	0.09	1.00	0.09	-0.04	314.10	21.83	21.73	-2.07
316	5.4	349.6	1	0.09	1.00	0.09	-0.02	315.10	21.92	21.82	-2.09
317	5.3	352.5	1	0.09	1.00	0.09	-0.01	316.09	22.01	21.91	-2.10
318	5.5	351.0	1	0.10	1.00	0.09	-0.01	317.09	22.11	22.01	-2.12
319	5.4	345.4	1	0.09	1.00	0.09	-0.02	318.08	22.20	22.10	-2.14
320	6.3	338.2	1	0.11	0.99	0.10	-0.04	319.08	22.31	22.20	-2.18
321	5.7	342.9	1	0.10	1.00	0.09	-0.03	320.07	22.40	22.30	-2.21
322	5.5	346.7	1	0.10	1.00	0.09	-0.02	321.07	22.50	22.39	-2.23
323	5.2	348.7	1	0.09	1.00	0.09	-0.02	322.06	22.59	22.48	-2.25
324	5.6	347.5	1	0.10	1.00	0.10	-0.02	323.06	22.69	22.57	-2.27
325	6.0	347.0	1	0.10	0.99	0.10	-0.02	324.05	22.79	22.67	-2.30
326	6.0	342.3	1	0.10	0.99	0.10	-0.03	325.05	22.89	22.77	-2.33
327	5.2	341.8	1	0.09	1.00	0.09	-0.03	326.04	22.98	22.86	-2.36
328	5.2	347.7	1	0.09	1.00	0.09	-0.02	327.04	23.07	22.95	-2.38
329	5.4	346.9	1	0.09	1.00	0.09	-0.02	328.04	23.16	23.04	-2.40

Orientations are with respect to Magnetic North

Table Hole #1:2. Deviation Data: Northing, Easting and True Depth; AMEC; Squaw Gulch Valley VLF Field Support; Cripple Creek, CO; Wellbore: Hole #1

Deviation Survey for: AMEC **Field:** Squaw Gulch Valley VLF Field Support **Date:** November 17, 2013
Well: Hole 1 **Depth Ref.:** Ground **Total Depth:** **696.55** ft **Probe Type, S/N:** OBI 030601

330	5.6	345.1	1	0.10	1.00	0.09	-0.03	329.03	23.26	23.13	-2.42
331	5.9	343.3	1	0.10	0.99	0.10	-0.03	330.03	23.36	23.23	-2.45
332	5.2	340.5	1	0.09	1.00	0.09	-0.03	331.02	23.45	23.32	-2.48
333	5.3	342.3	1	0.09	1.00	0.09	-0.03	332.02	23.54	23.41	-2.51
334	5.8	346.7	1	0.10	0.99	0.10	-0.02	333.01	23.64	23.51	-2.53
335	5.7	345.9	1	0.10	1.00	0.10	-0.02	334.01	23.74	23.60	-2.56
336	5.7	345.2	1	0.10	1.00	0.10	-0.03	335.00	23.84	23.70	-2.58
337	5.0	341.1	1	0.09	1.00	0.08	-0.03	336.00	23.92	23.78	-2.61
338	5.5	339.3	1	0.10	1.00	0.09	-0.03	336.99	24.02	23.87	-2.64
339	5.7	345.6	1	0.10	1.00	0.10	-0.02	337.99	24.11	23.97	-2.67
340	5.6	353.1	1	0.10	1.00	0.10	-0.01	338.98	24.21	24.06	-2.68
341	5.3	349.5	1	0.09	1.00	0.09	-0.02	339.98	24.30	24.15	-2.70
342	5.3	342.0	1	0.09	1.00	0.09	-0.03	340.98	24.39	24.24	-2.73
343	5.2	337.6	1	0.09	1.00	0.08	-0.03	341.97	24.48	24.33	-2.76
344	5.4	340.4	1	0.09	1.00	0.09	-0.03	342.97	24.57	24.41	-2.79
345	5.3	346.3	1	0.09	1.00	0.09	-0.02	343.96	24.66	24.50	-2.81
346	5.3	346.9	1	0.09	1.00	0.09	-0.02	344.96	24.76	24.59	-2.84
347	5.8	342.3	1	0.10	0.99	0.10	-0.03	345.95	24.86	24.69	-2.87
348	5.9	341.8	1	0.10	0.99	0.10	-0.03	346.95	24.96	24.79	-2.90
349	5.7	342.0	1	0.10	1.00	0.09	-0.03	347.94	25.05	24.88	-2.93
350	5.1	348.7	1	0.09	1.00	0.09	-0.02	348.94	25.14	24.97	-2.95
351	4.6	353.6	1	0.08	1.00	0.08	-0.01	349.94	25.22	25.05	-2.96
352	5.4	346.2	1	0.09	1.00	0.09	-0.02	350.93	25.32	25.14	-2.98
353	5.4	333.6	1	0.09	1.00	0.08	-0.04	351.93	25.40	25.22	-3.02
354	6.1	341.4	1	0.11	0.99	0.10	-0.03	352.92	25.51	25.33	-3.05
355	5.6	344.2	1	0.10	1.00	0.09	-0.03	353.92	25.60	25.42	-3.08
356	4.9	345.2	1	0.09	1.00	0.08	-0.02	354.91	25.69	25.50	-3.10
357	5.6	343.0	1	0.10	1.00	0.09	-0.03	355.91	25.79	25.59	-3.13
358	5.3	335.9	1	0.09	1.00	0.08	-0.04	356.90	25.87	25.68	-3.17
359	5.8	337.5	1	0.10	0.99	0.09	-0.04	357.90	25.97	25.77	-3.21
360	5.9	344.6	1	0.10	0.99	0.10	-0.03	358.89	26.07	25.87	-3.23
361	5.5	341.8	1	0.10	1.00	0.09	-0.03	359.89	26.17	25.96	-3.26
362	4.6	339.3	1	0.08	1.00	0.08	-0.03	360.89	26.25	26.04	-3.29
363	4.8	332.2	1	0.08	1.00	0.07	-0.04	361.88	26.32	26.11	-3.33
364	5.6	338.4	1	0.10	1.00	0.09	-0.04	362.88	26.42	26.20	-3.37
365	5.9	340.7	1	0.10	0.99	0.10	-0.03	363.87	26.52	26.30	-3.40
366	6.0	344.7	1	0.10	0.99	0.10	-0.03	364.87	26.62	26.40	-3.43
367	5.9	340.1	1	0.10	0.99	0.10	-0.03	365.86	26.72	26.50	-3.46
368	5.5	335.2	1	0.10	1.00	0.09	-0.04	366.86	26.81	26.58	-3.50
369	5.2	333.7	1	0.09	1.00	0.08	-0.04	367.85	26.90	26.67	-3.54
370	5.2	338.7	1	0.09	1.00	0.08	-0.03	368.85	26.99	26.75	-3.58
371	5.9	346.1	1	0.10	0.99	0.10	-0.02	369.84	27.09	26.85	-3.60
372	5.4	335.9	1	0.09	1.00	0.09	-0.04	370.84	27.18	26.94	-3.64
373	5.9	332.8	1	0.10	0.99	0.09	-0.05	371.83	27.28	27.03	-3.69
374	5.8	333.2	1	0.10	0.99	0.09	-0.05	372.83	27.37	27.12	-3.73
375	6.3	341.6	1	0.11	0.99	0.10	-0.03	373.82	27.48	27.22	-3.77
376	5.7	345.0	1	0.10	1.00	0.10	-0.03	374.82	27.58	27.32	-3.79
377	5.9	343.4	1	0.10	0.99	0.10	-0.03	375.81	27.68	27.42	-3.82
378	5.7	336.9	1	0.10	1.00	0.09	-0.04	376.81	27.78	27.51	-3.86
379	5.2	331.9	1	0.09	1.00	0.08	-0.04	377.80	27.86	27.59	-3.90
380	5.8	333.1	1	0.10	0.99	0.09	-0.05	378.80	27.96	27.68	-3.95
381	6.0	345.4	1	0.10	0.99	0.10	-0.03	379.79	28.06	27.78	-3.98
382	6.1	344.2	1	0.11	0.99	0.10	-0.03	380.79	28.17	27.88	-4.01
383	5.8	343.5	1	0.10	0.99	0.10	-0.03	381.78	28.27	27.98	-4.03
384	5.8	335.5	1	0.10	0.99	0.09	-0.04	382.78	28.36	28.07	-4.08

Orientations are with respect to Magnetic North

Table Hole #1:2. Deviation Data: Northing, Easting and True Depth; AMEC; Squaw Gulch Valley VLF Field Support; Cripple Creek, CO; Wellbore: Hole #1

Deviation Survey for: AMEC **Field:** Squaw Gulch Valley VLF Field Support **Date:** November 17, 2013
Well: Hole 1 **Depth Ref.:** Ground **Total Depth:** **696.55** ft **Probe Type, S/N:** OBI 030601

385	5.9	335.3	1	0.10	0.99	0.09	-0.04	383.77	28.46	28.16	-4.12
386	6.0	335.8	1	0.10	0.99	0.10	-0.04	384.77	28.56	28.26	-4.16
387	6.1	341.8	1	0.11	0.99	0.10	-0.03	385.76	28.67	28.36	-4.20
388	5.7	342.1	1	0.10	1.00	0.09	-0.03	386.75	28.77	28.45	-4.23
389	5.6	337.0	1	0.10	1.00	0.09	-0.04	387.75	28.86	28.54	-4.26
390	5.3	333.3	1	0.09	1.00	0.08	-0.04	388.75	28.95	28.63	-4.31
391	5.7	335.3	1	0.10	1.00	0.09	-0.04	389.74	29.04	28.72	-4.35
392	5.7	338.3	1	0.10	1.00	0.09	-0.04	390.74	29.14	28.81	-4.38
393	6.3	340.7	1	0.11	0.99	0.10	-0.04	391.73	29.25	28.91	-4.42
394	5.6	336.6	1	0.10	1.00	0.09	-0.04	392.72	29.34	29.00	-4.46
395	5.8	334.0	1	0.10	0.99	0.09	-0.04	393.72	29.44	29.09	-4.50
396	5.6	336.1	1	0.10	1.00	0.09	-0.04	394.72	29.53	29.18	-4.54
397	6.1	339.0	1	0.11	0.99	0.10	-0.04	395.71	29.64	29.28	-4.58
398	6.1	339.5	1	0.11	0.99	0.10	-0.04	396.70	29.74	29.38	-4.62
399	6.2	336.8	1	0.11	0.99	0.10	-0.04	397.70	29.85	29.48	-4.66
400	6.3	333.2	1	0.11	0.99	0.10	-0.05	398.69	29.95	29.58	-4.71
401	6.3	336.3	1	0.11	0.99	0.10	-0.04	399.69	30.06	29.68	-4.75
402	6.2	337.2	1	0.11	0.99	0.10	-0.04	400.68	30.16	29.78	-4.80
403	5.9	341.9	1	0.10	0.99	0.10	-0.03	401.67	30.26	29.88	-4.83
404	5.7	337.6	1	0.10	1.00	0.09	-0.04	402.67	30.36	29.97	-4.87
405	6.2	335.8	1	0.11	0.99	0.10	-0.04	403.66	30.46	30.07	-4.91
406	5.7	340.4	1	0.10	1.00	0.09	-0.03	404.66	30.56	30.16	-4.94
407	5.7	339.0	1	0.10	1.00	0.09	-0.04	405.65	30.66	30.25	-4.98
408	6.1	340.1	1	0.11	0.99	0.10	-0.04	406.65	30.76	30.35	-5.01
409	6.0	337.3	1	0.10	0.99	0.10	-0.04	407.64	30.86	30.45	-5.06
410	6.3	339.7	1	0.11	0.99	0.10	-0.04	408.64	30.97	30.55	-5.09
411	6.2	337.3	1	0.11	0.99	0.10	-0.04	409.63	31.08	30.65	-5.13
412	6.1	340.4	1	0.11	0.99	0.10	-0.04	410.63	31.18	30.75	-5.17
413	5.9	338.0	1	0.10	0.99	0.10	-0.04	411.62	31.28	30.85	-5.21
414	6.3	334.1	1	0.11	0.99	0.10	-0.05	412.61	31.39	30.94	-5.26
415	6.6	333.9	1	0.11	0.99	0.10	-0.05	413.61	31.50	31.05	-5.31
416	5.8	338.9	1	0.10	0.99	0.09	-0.04	414.60	31.60	31.14	-5.34
417	5.7	339.9	1	0.10	1.00	0.09	-0.03	415.60	31.70	31.24	-5.38
418	5.7	339.6	1	0.10	1.00	0.09	-0.03	416.59	31.79	31.33	-5.41
419	6.0	339.7	1	0.10	0.99	0.10	-0.04	417.59	31.90	31.43	-5.45
420	6.6	339.2	1	0.11	0.99	0.11	-0.04	418.58	32.01	31.53	-5.49
421	6.5	336.4	1	0.11	0.99	0.10	-0.05	419.57	32.12	31.64	-5.53
422	6.5	337.4	1	0.11	0.99	0.10	-0.04	420.57	32.23	31.74	-5.58
423	6.3	340.8	1	0.11	0.99	0.10	-0.04	421.56	32.34	31.85	-5.61
424	6.6	340.0	1	0.11	0.99	0.11	-0.04	422.55	32.45	31.95	-5.65
425	6.4	337.1	1	0.11	0.99	0.10	-0.04	423.55	32.56	32.06	-5.70
426	6.5	338.1	1	0.11	0.99	0.11	-0.04	424.54	32.67	32.16	-5.74
427	6.3	333.2	1	0.11	0.99	0.10	-0.05	425.54	32.78	32.26	-5.79
428	6.5	339.0	1	0.11	0.99	0.11	-0.04	426.53	32.89	32.37	-5.83
429	6.6	342.2	1	0.11	0.99	0.11	-0.04	427.52	33.00	32.47	-5.86
430	6.2	339.6	1	0.11	0.99	0.10	-0.04	428.52	33.11	32.58	-5.90
431	6.0	334.6	1	0.10	0.99	0.09	-0.04	429.51	33.21	32.67	-5.95
432	6.6	336.3	1	0.11	0.99	0.11	-0.05	430.50	33.32	32.78	-5.99
433	6.7	336.6	1	0.12	0.99	0.11	-0.05	431.50	33.43	32.88	-6.04
434	6.8	338.6	1	0.12	0.99	0.11	-0.04	432.49	33.55	32.99	-6.08
435	6.5	341.9	1	0.11	0.99	0.11	-0.04	433.48	33.66	33.10	-6.12
436	6.5	336.4	1	0.11	0.99	0.10	-0.05	434.48	33.77	33.20	-6.16
437	6.6	333.8	1	0.11	0.99	0.10	-0.05	435.47	33.88	33.31	-6.21
438	6.6	332.8	1	0.11	0.99	0.10	-0.05	436.47	33.99	33.41	-6.27
439	7.1	339.3	1	0.12	0.99	0.12	-0.04	437.46	34.11	33.53	-6.31

Orientations are with respect to Magnetic North

Table Hole #1:2. Deviation Data: Northing, Easting and True Depth; AMEC; Squaw Gulch Valley VLF Field Support; Cripple Creek, CO; Wellbore: Hole #1

Deviation Survey for: AMEC **Field:** Squaw Gulch Valley VLF Field Support **Date:** November 17, 2013
Well: Hole 1 **Depth Ref.:** Ground **Total Depth:** **696.55** ft **Probe Type, S/N:** OBI 030601

440	7.2	339.2	1	0.13	0.99	0.12	-0.04	438.45	34.24	33.64	-6.35
441	7.2	333.7	1	0.13	0.99	0.11	-0.06	439.44	34.36	33.75	-6.41
442	6.4	337.7	1	0.11	0.99	0.10	-0.04	440.44	34.47	33.86	-6.45
443	6.4	335.6	1	0.11	0.99	0.10	-0.05	441.43	34.58	33.96	-6.50
444	6.5	332.0	1	0.11	0.99	0.10	-0.05	442.42	34.68	34.06	-6.55
445	6.6	331.1	1	0.11	0.99	0.10	-0.06	443.42	34.79	34.16	-6.61
446	7.2	332.8	1	0.13	0.99	0.11	-0.06	444.41	34.91	34.27	-6.66
447	7.2	336.4	1	0.13	0.99	0.11	-0.05	445.40	35.04	34.39	-6.71
448	6.7	335.0	1	0.12	0.99	0.11	-0.05	446.39	35.15	34.49	-6.76
449	6.4	336.4	1	0.11	0.99	0.10	-0.04	447.39	35.26	34.59	-6.81
450	6.7	331.3	1	0.12	0.99	0.10	-0.06	448.38	35.37	34.70	-6.86
451	7.1	336.5	1	0.12	0.99	0.11	-0.05	449.37	35.49	34.81	-6.91
452	6.8	336.5	1	0.12	0.99	0.11	-0.05	450.37	35.61	34.92	-6.96
453	7.1	335.8	1	0.12	0.99	0.11	-0.05	451.36	35.73	35.03	-7.01
454	6.9	334.5	1	0.12	0.99	0.11	-0.05	452.35	35.84	35.14	-7.06
455	6.9	335.9	1	0.12	0.99	0.11	-0.05	453.34	35.96	35.25	-7.11
456	6.8	336.2	1	0.12	0.99	0.11	-0.05	454.34	36.08	35.36	-7.16
457	7.1	336.3	1	0.12	0.99	0.11	-0.05	455.33	36.20	35.47	-7.21
458	7.6	334.1	1	0.13	0.99	0.12	-0.06	456.32	36.32	35.59	-7.27
459	7.1	333.1	1	0.12	0.99	0.11	-0.06	457.31	36.44	35.70	-7.32
460	7.1	333.1	1	0.12	0.99	0.11	-0.06	458.30	36.56	35.81	-7.38
461	7.0	339.3	1	0.12	0.99	0.11	-0.04	459.30	36.68	35.92	-7.42
462	7.2	335.8	1	0.13	0.99	0.11	-0.05	460.29	36.81	36.04	-7.47
463	7.8	333.9	1	0.14	0.99	0.12	-0.06	461.28	36.94	36.16	-7.53
464	7.3	332.0	1	0.13	0.99	0.11	-0.06	462.27	37.06	36.27	-7.59
465	6.8	332.8	1	0.12	0.99	0.11	-0.05	463.26	37.17	36.38	-7.65
466	7.3	335.8	1	0.13	0.99	0.12	-0.05	464.26	37.30	36.49	-7.70
467	6.9	337.3	1	0.12	0.99	0.11	-0.05	465.25	37.42	36.60	-7.75
468	6.9	335.2	1	0.12	0.99	0.11	-0.05	466.24	37.53	36.71	-7.80
469	7.0	328.4	1	0.12	0.99	0.10	-0.06	467.23	37.65	36.82	-7.86
470	7.7	330.3	1	0.13	0.99	0.12	-0.07	468.23	37.78	36.93	-7.93
471	7.3	334.2	1	0.13	0.99	0.11	-0.06	469.22	37.90	37.05	-7.98
472	7.5	338.9	1	0.13	0.99	0.12	-0.05	470.21	38.03	37.17	-8.03
473	7.1	331.9	1	0.12	0.99	0.11	-0.06	471.20	38.15	37.28	-8.09
474	7.2	326.6	1	0.13	0.99	0.10	-0.07	472.19	38.26	37.38	-8.16
475	6.6	326.6	1	0.11	0.99	0.10	-0.06	473.19	38.37	37.48	-8.22
476	7.5	335.9	1	0.13	0.99	0.12	-0.05	474.18	38.50	37.60	-8.27
477	7.4	335.4	1	0.13	0.99	0.12	-0.05	475.17	38.62	37.72	-8.33
478	7.4	330.9	1	0.13	0.99	0.11	-0.06	476.16	38.75	37.83	-8.39
479	7.4	328.3	1	0.13	0.99	0.11	-0.07	477.15	38.87	37.94	-8.46
480	7.7	329.4	1	0.13	0.99	0.12	-0.07	478.14	39.00	38.05	-8.53
481	7.1	334.3	1	0.12	0.99	0.11	-0.05	479.14	39.12	38.16	-8.58
482	6.7	333.1	1	0.12	0.99	0.10	-0.05	480.13	39.23	38.27	-8.63
483	7.8	330.8	1	0.14	0.99	0.12	-0.07	481.12	39.36	38.39	-8.70
484	7.7	328.1	1	0.13	0.99	0.11	-0.07	482.11	39.49	38.50	-8.77
485	6.9	328.7	1	0.12	0.99	0.10	-0.06	483.10	39.60	38.60	-8.83
486	6.3	324.6	1	0.11	0.99	0.09	-0.06	484.10	39.70	38.69	-8.89
487	6.7	327.6	1	0.12	0.99	0.10	-0.06	485.09	39.81	38.79	-8.96
488	7.8	330.3	1	0.14	0.99	0.12	-0.07	486.08	39.94	38.91	-9.02
489	7.4	333.9	1	0.13	0.99	0.12	-0.06	487.07	40.07	39.03	-9.08
490	7.4	327.5	1	0.13	0.99	0.11	-0.07	488.07	40.19	39.13	-9.15
491	7.0	325.0	1	0.12	0.99	0.10	-0.07	489.06	40.30	39.23	-9.22
492	7.0	328.7	1	0.12	0.99	0.10	-0.06	490.05	40.42	39.34	-9.28
493	7.4	330.6	1	0.13	0.99	0.11	-0.06	491.04	40.54	39.45	-9.35
494	7.5	330.3	1	0.13	0.99	0.11	-0.06	492.03	40.67	39.56	-9.41

Orientations are with respect to Magnetic North

Table Hole #1:2. Deviation Data: Northing, Easting and True Depth; AMEC; Squaw Gulch Valley VLF Field Support; Cripple Creek, CO; Wellbore: Hole #1

Deviation Survey for: AMEC **Field:** Squaw Gulch Valley VLF Field Support **Date:** November 17, 2013
Well: Hole 1 **Depth Ref.:** Ground **Total Depth:** **696.55** ft **Probe Type, S/N:** OBI 030601

495	7.4	326.2	1	0.13	0.99	0.11	-0.07	493.03	40.79	39.67	-9.48
496	7.4	326.3	1	0.13	0.99	0.11	-0.07	494.02	40.91	39.78	-9.55
497	7.2	327.1	1	0.13	0.99	0.11	-0.07	495.01	41.03	39.88	-9.62
498	6.9	329.9	1	0.12	0.99	0.10	-0.06	496.00	41.14	39.99	-9.68
499	7.7	331.9	1	0.13	0.99	0.12	-0.06	496.99	41.27	40.11	-9.75
500	7.8	327.5	1	0.14	0.99	0.11	-0.07	497.98	41.40	40.22	-9.82
501	6.9	325.3	1	0.12	0.99	0.10	-0.07	498.98	41.51	40.32	-9.89
502	6.7	327.6	1	0.12	0.99	0.10	-0.06	499.97	41.62	40.42	-9.95
503	7.0	330.9	1	0.12	0.99	0.11	-0.06	500.96	41.74	40.52	-10.01
504	7.4	328.7	1	0.13	0.99	0.11	-0.07	501.95	41.86	40.63	-10.08
505	7.1	322.0	1	0.12	0.99	0.10	-0.08	502.95	41.98	40.73	-10.15
506	7.4	322.7	1	0.13	0.99	0.10	-0.08	503.94	42.10	40.83	-10.23
507	7.1	325.0	1	0.12	0.99	0.10	-0.07	504.93	42.21	40.93	-10.30
508	7.1	325.0	1	0.12	0.99	0.10	-0.07	505.92	42.33	41.04	-10.37
509	7.0	325.4	1	0.12	0.99	0.10	-0.07	506.92	42.44	41.14	-10.44
510	7.2	319.2	1	0.13	0.99	0.09	-0.08	507.91	42.55	41.23	-10.52
511	7.4	323.1	1	0.13	0.99	0.10	-0.08	508.90	42.67	41.33	-10.60
512	7.0	321.9	1	0.12	0.99	0.10	-0.08	509.89	42.78	41.43	-10.68
513	7.4	326.2	1	0.13	0.99	0.11	-0.07	510.88	42.90	41.54	-10.75
514	6.9	326.6	1	0.12	0.99	0.10	-0.07	511.88	43.02	41.64	-10.81
515	7.1	322.5	1	0.12	0.99	0.10	-0.08	512.87	43.13	41.74	-10.89
516	6.9	319.0	1	0.12	0.99	0.09	-0.08	513.86	43.24	41.83	-10.97
517	6.8	316.2	1	0.12	0.99	0.09	-0.08	514.85	43.34	41.91	-11.05
518	5.8	317.7	1	0.10	0.99	0.07	-0.07	515.85	43.43	41.99	-11.12
519	6.7	323.7	1	0.12	0.99	0.09	-0.07	516.84	43.54	42.08	-11.19
520	7.1	325.8	1	0.12	0.99	0.10	-0.07	517.83	43.66	42.18	-11.26
521	7.3	321.8	1	0.13	0.99	0.10	-0.08	518.83	43.77	42.28	-11.33
522	7.2	321.0	1	0.13	0.99	0.10	-0.08	519.82	43.89	42.38	-11.41
523	7.0	325.0	1	0.12	0.99	0.10	-0.07	520.81	44.00	42.48	-11.48
524	6.6	324.1	1	0.11	0.99	0.09	-0.07	521.80	44.11	42.57	-11.55
525	6.7	325.2	1	0.12	0.99	0.10	-0.07	522.80	44.22	42.67	-11.62
526	7.1	318.7	1	0.12	0.99	0.09	-0.08	523.79	44.33	42.76	-11.70
527	6.9	322.4	1	0.12	0.99	0.10	-0.07	524.78	44.44	42.86	-11.77
528	7.0	323.2	1	0.12	0.99	0.10	-0.07	525.78	44.56	42.95	-11.84
529	6.7	324.6	1	0.12	0.99	0.10	-0.07	526.77	44.67	43.05	-11.91
530	6.8	322.5	1	0.12	0.99	0.09	-0.07	527.76	44.78	43.14	-11.98
531	6.8	323.4	1	0.12	0.99	0.10	-0.07	528.75	44.89	43.24	-12.06
532	7.1	323.7	1	0.12	0.99	0.10	-0.07	529.75	45.00	43.34	-12.13
533	6.6	322.5	1	0.11	0.99	0.09	-0.07	530.74	45.11	43.43	-12.20
534	6.4	324.4	1	0.11	0.99	0.09	-0.06	531.73	45.21	43.52	-12.26
535	6.7	322.7	1	0.12	0.99	0.09	-0.07	532.73	45.32	43.61	-12.33
536	6.7	323.2	1	0.12	0.99	0.09	-0.07	533.72	45.43	43.71	-12.40
537	6.8	324.0	1	0.12	0.99	0.10	-0.07	534.71	45.54	43.80	-12.47
538	6.7	325.7	1	0.12	0.99	0.10	-0.07	535.71	45.65	43.90	-12.54
539	6.1	323.9	1	0.11	0.99	0.09	-0.06	536.70	45.75	43.98	-12.60
540	6.7	321.5	1	0.12	0.99	0.09	-0.07	537.69	45.86	44.08	-12.67
541	6.7	320.6	1	0.12	0.99	0.09	-0.07	538.69	45.97	44.17	-12.75
542	6.9	319.8	1	0.12	0.99	0.09	-0.08	539.68	46.08	44.26	-12.83
543	6.5	325.2	1	0.11	0.99	0.09	-0.06	540.67	46.19	44.35	-12.89
544	6.8	323.4	1	0.12	0.99	0.10	-0.07	541.67	46.30	44.44	-12.96
545	6.5	320.3	1	0.11	0.99	0.09	-0.07	542.66	46.40	44.53	-13.03
546	6.8	319.3	1	0.12	0.99	0.09	-0.08	543.65	46.51	44.62	-13.11
547	6.5	317.8	1	0.11	0.99	0.08	-0.08	544.65	46.61	44.71	-13.19
548	7.0	319.5	1	0.12	0.99	0.09	-0.08	545.64	46.72	44.80	-13.27
549	6.7	325.5	1	0.12	0.99	0.10	-0.07	546.63	46.83	44.89	-13.33

Orientations are with respect to Magnetic North

Table Hole #1:2. Deviation Data: Northing, Easting and True Depth; AMEC; Squaw Gulch Valley VLF Field Support; Cripple Creek, CO; Wellbore: Hole #1

Deviation Survey for: AMEC **Field:** Squaw Gulch Valley VLF Field Support **Date:** November 17, 2013
Well: Hole 1 **Depth Ref.:** Ground **Total Depth:** **696.55** ft **Probe Type, S/N:** OBI 030601

550	6.7	325.6	1	0.12	0.99	0.10	-0.07	547.63	46.94	44.99	-13.40
551	6.3	325.6	1	0.11	0.99	0.09	-0.06	548.62	47.05	45.08	-13.46
552	6.6	313.6	1	0.11	0.99	0.08	-0.08	549.61	47.15	45.16	-13.54
553	7.0	315.0	1	0.12	0.99	0.09	-0.09	550.61	47.25	45.25	-13.63
554	6.8	323.0	1	0.12	0.99	0.09	-0.07	551.60	47.37	45.34	-13.70
555	6.7	325.3	1	0.12	0.99	0.10	-0.07	552.59	47.48	45.44	-13.77
556	6.4	322.0	1	0.11	0.99	0.09	-0.07	553.58	47.58	45.53	-13.84
557	7.0	315.8	1	0.12	0.99	0.09	-0.08	554.58	47.69	45.61	-13.92
558	7.0	314.2	1	0.12	0.99	0.08	-0.09	555.57	47.80	45.70	-14.01
559	6.5	324.2	1	0.11	0.99	0.09	-0.07	556.56	47.90	45.79	-14.07
560	6.7	323.3	1	0.12	0.99	0.09	-0.07	557.56	48.01	45.88	-14.14
561	6.7	322.4	1	0.12	0.99	0.09	-0.07	558.55	48.12	45.98	-14.22
562	6.8	319.3	1	0.12	0.99	0.09	-0.08	559.54	48.23	46.06	-14.29
563	7.1	319.4	1	0.12	0.99	0.09	-0.08	560.54	48.34	46.16	-14.37
564	6.9	318.6	1	0.12	0.99	0.09	-0.08	561.53	48.45	46.25	-14.45
565	6.6	322.0	1	0.11	0.99	0.09	-0.07	562.52	48.56	46.34	-14.52
566	6.4	321.1	1	0.11	0.99	0.09	-0.07	563.52	48.67	46.43	-14.59
567	6.8	322.2	1	0.12	0.99	0.09	-0.07	564.51	48.78	46.52	-14.67
568	6.8	324.7	1	0.12	0.99	0.10	-0.07	565.50	48.89	46.62	-14.73
569	6.1	323.4	1	0.11	0.99	0.09	-0.06	566.50	48.99	46.70	-14.80
570	6.3	323.9	1	0.11	0.99	0.09	-0.06	567.49	49.09	46.79	-14.86
571	6.0	319.4	1	0.10	0.99	0.08	-0.07	568.48	49.19	46.87	-14.93
572	6.7	318.0	1	0.12	0.99	0.09	-0.08	569.48	49.30	46.96	-15.01
573	7.0	324.8	1	0.12	0.99	0.10	-0.07	570.47	49.41	47.06	-15.08
574	6.6	325.6	1	0.11	0.99	0.09	-0.06	571.46	49.52	47.15	-15.14
575	7.0	321.3	1	0.12	0.99	0.10	-0.08	572.46	49.64	47.25	-15.22
576	6.3	317.7	1	0.11	0.99	0.08	-0.07	573.45	49.74	47.33	-15.29
577	7.4	318.9	1	0.13	0.99	0.10	-0.08	574.44	49.86	47.42	-15.38
578	7.2	325.3	1	0.13	0.99	0.10	-0.07	575.43	49.98	47.53	-15.45
579	7.1	322.6	1	0.12	0.99	0.10	-0.08	576.43	50.09	47.63	-15.52
580	7.0	321.3	1	0.12	0.99	0.10	-0.08	577.42	50.21	47.72	-15.60
581	7.0	316.3	1	0.12	0.99	0.09	-0.08	578.41	50.32	47.81	-15.68
582	7.3	318.4	1	0.13	0.99	0.10	-0.08	579.40	50.43	47.90	-15.77
583	7.3	326.3	1	0.13	0.99	0.11	-0.07	580.39	50.55	48.01	-15.84
584	6.6	325.7	1	0.11	0.99	0.09	-0.06	581.39	50.67	48.10	-15.90
585	6.3	318.7	1	0.11	0.99	0.08	-0.07	582.38	50.77	48.19	-15.98
586	6.5	315.5	1	0.11	0.99	0.08	-0.08	583.38	50.87	48.27	-16.06
587	6.9	320.7	1	0.12	0.99	0.09	-0.08	584.37	50.98	48.36	-16.13
588	7.4	325.0	1	0.13	0.99	0.11	-0.07	585.36	51.10	48.47	-16.21
589	7.3	321.7	1	0.13	0.99	0.10	-0.08	586.35	51.22	48.57	-16.28
590	6.5	314.2	1	0.11	0.99	0.08	-0.08	587.35	51.32	48.64	-16.37
591	6.9	316.8	1	0.12	0.99	0.09	-0.08	588.34	51.43	48.73	-16.45
592	6.8	318.2	1	0.12	0.99	0.09	-0.08	589.33	51.54	48.82	-16.53
593	7.0	321.9	1	0.12	0.99	0.10	-0.08	590.32	51.66	48.92	-16.60
594	6.6	323.0	1	0.11	0.99	0.09	-0.07	591.32	51.77	49.01	-16.67
595	5.9	318.3	1	0.10	0.99	0.08	-0.07	592.31	51.86	49.08	-16.74
596	5.4	317.3	1	0.09	1.00	0.07	-0.06	593.31	51.95	49.15	-16.80
597	5.3	314.8	1	0.09	1.00	0.07	-0.07	594.30	52.03	49.22	-16.87
598	6.4	317.7	1	0.11	0.99	0.08	-0.08	595.30	52.13	49.30	-16.94
599	6.8	321.6	1	0.12	0.99	0.09	-0.07	596.29	52.24	49.39	-17.02
600	6.5	318.5	1	0.11	0.99	0.08	-0.08	597.28	52.35	49.48	-17.09
601	6.3	313.3	1	0.11	0.99	0.08	-0.08	598.28	52.45	49.55	-17.17
602	5.9	311.0	1	0.10	0.99	0.07	-0.08	599.27	52.53	49.62	-17.25
603	6.2	323.4	1	0.11	0.99	0.09	-0.06	600.27	52.64	49.71	-17.31
604	5.7	323.1	1	0.10	1.00	0.08	-0.06	601.26	52.73	49.79	-17.37

Orientations are with respect to Magnetic North

Table Hole #1:2. Deviation Data: Northing, Easting and True Depth; AMEC; Squaw Gulch Valley VLF Field Support; Cripple Creek, CO; Wellbore: Hole #1

Deviation Survey for: AMEC **Field:** Squaw Gulch Valley VLF Field Support **Date:** November 17, 2013
Well: Hole 1 **Depth Ref.:** Ground **Total Depth:** **696.55** ft **Probe Type, S/N:** OBI 030601

605	6.5	325.2	1	0.11	0.99	0.09	-0.06	602.25	52.84	49.88	-17.44
606	6.8	315.6	1	0.12	0.99	0.08	-0.08	603.25	52.95	49.97	-17.52
607	6.1	315.5	1	0.11	0.99	0.08	-0.07	604.24	53.04	50.04	-17.60
608	6.1	315.6	1	0.11	0.99	0.08	-0.07	605.24	53.14	50.12	-17.67
609	5.8	322.4	1	0.10	0.99	0.08	-0.06	606.23	53.24	50.20	-17.73
610	6.9	317.4	1	0.12	0.99	0.09	-0.08	607.22	53.35	50.29	-17.81
611	7.3	316.0	1	0.13	0.99	0.09	-0.09	608.22	53.46	50.38	-17.90
612	6.6	309.9	1	0.11	0.99	0.07	-0.09	609.21	53.56	50.45	-17.99
613	6.4	312.6	1	0.11	0.99	0.08	-0.08	610.20	53.66	50.53	-18.07
614	6.5	319.4	1	0.11	0.99	0.09	-0.07	611.20	53.77	50.61	-18.15
615	6.7	317.7	1	0.12	0.99	0.09	-0.08	612.19	53.87	50.70	-18.22
616	6.8	314.8	1	0.12	0.99	0.08	-0.08	613.18	53.98	50.78	-18.31
617	6.3	314.7	1	0.11	0.99	0.08	-0.08	614.18	54.08	50.86	-18.39
618	5.9	322.4	1	0.10	0.99	0.08	-0.06	615.17	54.18	50.94	-18.45
619	5.9	324.1	1	0.10	0.99	0.08	-0.06	616.17	54.28	51.02	-18.51
620	5.8	314.6	1	0.10	0.99	0.07	-0.07	617.16	54.37	51.09	-18.58
621	6.3	312.2	1	0.11	0.99	0.07	-0.08	618.15	54.47	51.17	-18.66
622	6.6	310.5	1	0.11	0.99	0.07	-0.09	619.15	54.57	51.24	-18.75
623	5.9	313.0	1	0.10	0.99	0.07	-0.08	620.14	54.66	51.31	-18.83
624	6.3	320.0	1	0.11	0.99	0.08	-0.07	621.14	54.76	51.40	-18.90
625	6.4	317.6	1	0.11	0.99	0.08	-0.08	622.13	54.86	51.48	-18.97
626	6.6	316.3	1	0.11	0.99	0.08	-0.08	623.12	54.97	51.56	-19.05
627	7.1	312.8	1	0.12	0.99	0.08	-0.09	624.12	55.08	51.65	-19.14
628	7.0	315.6	1	0.12	0.99	0.09	-0.09	625.11	55.19	51.73	-19.23
629	6.5	313.6	1	0.11	0.99	0.08	-0.08	626.10	55.29	51.81	-19.31
630	6.8	316.9	1	0.12	0.99	0.09	-0.08	627.10	55.40	51.90	-19.39
631	7.1	312.0	1	0.12	0.99	0.08	-0.09	628.09	55.51	51.98	-19.48
632	6.9	314.6	1	0.12	0.99	0.08	-0.09	629.08	55.62	52.07	-19.57
633	6.3	313.3	1	0.11	0.99	0.08	-0.08	630.07	55.72	52.14	-19.65
634	6.0	312.7	1	0.10	0.99	0.07	-0.08	631.07	55.81	52.21	-19.72
635	6.4	306.1	1	0.11	0.99	0.07	-0.09	632.06	55.91	52.28	-19.81
636	6.5	306.1	1	0.11	0.99	0.07	-0.09	633.06	56.00	52.34	-19.90
637	7.2	310.4	1	0.13	0.99	0.08	-0.10	634.05	56.11	52.43	-20.00
638	7.1	309.7	1	0.12	0.99	0.08	-0.10	635.04	56.22	52.50	-20.10
639	5.8	306.3	1	0.10	0.99	0.06	-0.08	636.04	56.30	52.56	-20.18
640	6.1	308.3	1	0.11	0.99	0.07	-0.08	637.03	56.39	52.63	-20.26
641	7.1	312.6	1	0.12	0.99	0.08	-0.09	638.02	56.51	52.71	-20.35
642	7.2	312.5	1	0.13	0.99	0.08	-0.09	639.01	56.62	52.80	-20.44
643	6.9	314.4	1	0.12	0.99	0.08	-0.09	640.01	56.73	52.88	-20.53
644	6.2	305.7	1	0.11	0.99	0.06	-0.09	641.00	56.82	52.95	-20.62
645	6.0	304.8	1	0.10	0.99	0.06	-0.09	642.00	56.90	53.00	-20.70
646	6.7	304.0	1	0.12	0.99	0.07	-0.10	642.99	57.00	53.07	-20.80
647	6.7	308.1	1	0.12	0.99	0.07	-0.09	643.98	57.10	53.14	-20.89
648	7.1	314.4	1	0.12	0.99	0.09	-0.09	644.97	57.21	53.23	-20.98
649	6.7	309.5	1	0.12	0.99	0.07	-0.09	645.97	57.32	53.30	-21.07
650	6.8	306.7	1	0.12	0.99	0.07	-0.09	646.96	57.42	53.37	-21.16
651	6.5	303.3	1	0.11	0.99	0.06	-0.09	647.95	57.51	53.44	-21.26
652	6.9	306.3	1	0.12	0.99	0.07	-0.10	648.95	57.61	53.51	-21.36
653	6.3	303.3	1	0.11	0.99	0.06	-0.09	649.94	57.70	53.57	-21.45
654	6.8	308.4	1	0.12	0.99	0.07	-0.09	650.93	57.80	53.64	-21.54
655	6.8	303.9	1	0.12	0.99	0.07	-0.10	651.93	57.90	53.71	-21.64
656	6.7	302.6	1	0.12	0.99	0.06	-0.10	652.92	58.00	53.77	-21.74
657	7.0	303.2	1	0.12	0.99	0.07	-0.10	653.91	58.10	53.84	-21.84
658	7.5	306.7	1	0.13	0.99	0.08	-0.10	654.90	58.21	53.91	-21.94
659	6.9	308.4	1	0.12	0.99	0.07	-0.09	655.90	58.31	53.99	-22.04

Orientations are with respect to Magnetic North

Table Hole #1:2. Deviation Data: Northing, Easting and True Depth; AMEC; Squaw Gulch Valley VLF Field Support; Cripple Creek, CO; Wellbore: Hole #1

Deviation Survey for: AMEC **Field:** Squaw Gulch Valley VLF Field Support **Date:** November 17, 2013
Well: Hole 1 **Depth Ref.:** Ground **Total Depth:** **696.55** ft **Probe Type, S/N:** OBI 030601

660	6.4	308.2	1	0.11	0.99	0.07	-0.09	656.89	58.41	54.06	-22.13
661	6.2	305.2	1	0.11	0.99	0.06	-0.09	657.88	58.50	54.12	-22.21
662	6.9	305.3	1	0.12	0.99	0.07	-0.10	658.88	58.60	54.19	-22.31
663	7.3	302.1	1	0.13	0.99	0.07	-0.11	659.87	58.71	54.26	-22.42
664	7.0	301.5	1	0.12	0.99	0.06	-0.10	660.86	58.81	54.32	-22.52
665	6.9	301.7	1	0.12	0.99	0.06	-0.10	661.85	58.90	54.38	-22.63
666	6.6	302.7	1	0.11	0.99	0.06	-0.10	662.85	59.00	54.45	-22.72
667	6.8	300.7	1	0.12	0.99	0.06	-0.10	663.84	59.09	54.51	-22.82
668	7.0	302.4	1	0.12	0.99	0.07	-0.10	664.83	59.19	54.57	-22.93
669	7.1	302.3	1	0.12	0.99	0.07	-0.10	665.83	59.29	54.64	-23.03
670	7.2	302.4	1	0.13	0.99	0.07	-0.11	666.82	59.40	54.70	-23.14
671	6.8	298.0	1	0.12	0.99	0.06	-0.10	667.81	59.49	54.76	-23.24
672	6.9	293.7	1	0.12	0.99	0.05	-0.11	668.80	59.58	54.81	-23.35
673	7.4	296.1	1	0.13	0.99	0.06	-0.12	669.80	59.67	54.87	-23.47
674	7.7	296.8	1	0.13	0.99	0.06	-0.12	670.79	59.78	54.93	-23.59
675	7.7	292.4	1	0.13	0.99	0.05	-0.12	671.78	59.87	54.98	-23.71
676	7.8	292.3	1	0.14	0.99	0.05	-0.13	672.77	59.97	55.03	-23.84
677	7.6	294.3	1	0.13	0.99	0.05	-0.12	673.76	60.07	55.08	-23.96
678	7.8	301.8	1	0.14	0.99	0.07	-0.12	674.75	60.18	55.15	-24.07
679	8.3	300.4	1	0.14	0.99	0.07	-0.12	675.74	60.30	55.23	-24.20
680	7.9	295.8	1	0.14	0.99	0.06	-0.12	676.73	60.40	55.29	-24.32
681	8.4	292.7	1	0.15	0.99	0.06	-0.13	677.72	60.51	55.34	-24.46
682	7.9	294.5	1	0.14	0.99	0.06	-0.13	678.71	60.61	55.40	-24.58
683	7.4	299.5	1	0.13	0.99	0.06	-0.11	679.70	60.71	55.46	-24.69
684	7.7	298.8	1	0.13	0.99	0.06	-0.12	680.69	60.82	55.53	-24.81
685	7.5	296.9	1	0.13	0.99	0.06	-0.12	681.68	60.92	55.59	-24.93
686	8.0	294.0	1	0.14	0.99	0.06	-0.13	682.67	61.02	55.64	-25.05
687	7.7	293.9	1	0.13	0.99	0.05	-0.12	683.67	61.12	55.70	-25.18
688	7.8	298.7	1	0.14	0.99	0.07	-0.12	684.66	61.23	55.76	-25.30
689	7.4	297.6	1	0.13	0.99	0.06	-0.11	685.65	61.33	55.82	-25.41
690	7.7	298.6	1	0.13	0.99	0.06	-0.12	686.64	61.44	55.89	-25.53
691	8.3	294.4	1	0.14	0.99	0.06	-0.13	687.63	61.55	55.95	-25.66
692	8.3	293.9	1	0.14	0.99	0.06	-0.13	688.62	61.66	56.01	-25.79
693	7.8	293.6	1	0.14	0.99	0.05	-0.12	689.61	61.76	56.06	-25.91
694	7.5	297.5	1	0.13	0.99	0.06	-0.12	690.60	61.86	56.12	-26.03
695	7.9	295.2	1	0.14	0.99	0.06	-0.12	691.59	61.97	56.18	-26.15
696	7.8	292.8	1	0.14	0.99	0.05	-0.13	692.58	62.07	56.23	-26.28
697	8.0	293.5	1	0.14	0.99	0.06	-0.13	693.57	62.17	56.29	-26.41
698	7.8	296.5	1	0.14	0.99	0.06	-0.12	694.56	62.28	56.35	-26.53
699	8.4	297.0	1	0.15	0.99	0.07	-0.13	695.55	62.40	56.41	-26.66
700	8.1	298.9	1	0.14	0.99	0.07	-0.12	696.54	62.51	56.48	-26.78
700.09	8.1	289.9	0.01	0.00	0.01	0.00	0.00	696.55	62.51	56.48	-26.78

Totals:			
True Depth*	DistSum	NorthSum	EastSum
696.55	**62.51**	**56.48**	**-26.78**

Orientations are with respect to Magnetic North

Table Hole #1:2. Deviation Data: Northing, Easting and True Depth; AMEC; Squaw Gulch Valley VLF Field Support; Cripple Creek, CO; Wellbore: Hole #1

Deviation Survey for: AMEC **Field:** Squaw Gulch Valley VLF Field Support **Date:** November 17, 2013
Well: Hole 1 **Depth Ref.:** Ground **Total Depth:** **696.55** ft **Probe Type, S/N:** OBI 030601

Definitions

Bearing = Azimuth Degrees from Magnetic North (Raw Data)

Closure Distance = Horizontal Feet Between Each Station

Closure Depth = Vertical Feet Between Each Interval

Northing = North/South Component of Horizontal Distance Between Each Station (Negative = South)
(Closure Dist.) x cos(Bearing)

Easting = East/West Component of Horizontal Distance Between Each Station (Negative = West)
(Closure Dist.) x sin(Bearing)

True Depth = Vertical Depth from the Surface to This Station
* Note Regarding True Vertical Depth: the True Vertical Depth is derived using a combination of the TD obtained by the geophysical logging probes and the last logged depth of the televiewer (deviation probe).

DistanceSum = Horizontal Distance from Wellhead to this Station

NorthSum = North/South Component of Horizontal Distance from the Wellhead to This Station (Negative = South)
Running Sum of Northing

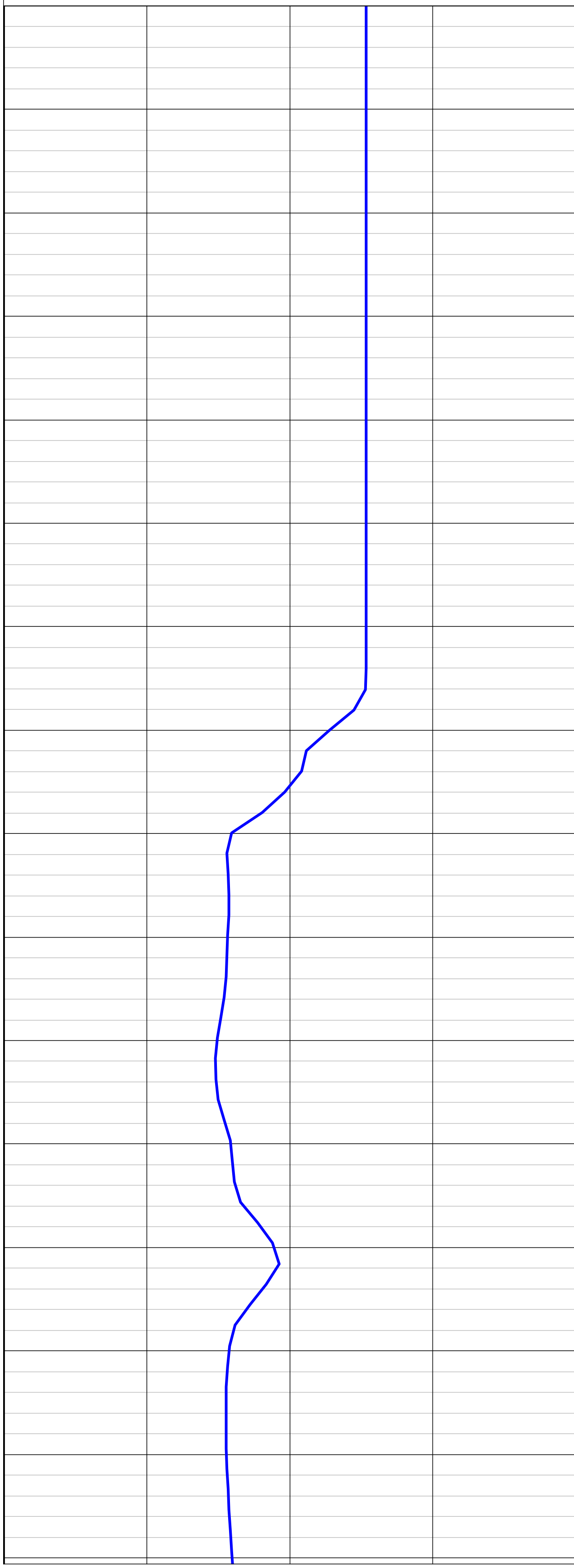
EastSum = East/West Component of Horizontal Distance from the Wellhead to This Station (Negative = West)
Running Sum of Easting

Orientations are with respect to Magnetic North

Optical Televiewer and 3-Arm Caliper

COMPANY: AMEC	PROJECT: Squaw Gulch Valey VLF	COLOG Main Office 810 Quail Street, Suite E, Lakewood, CO 80215 Phone: (303) 279-0171, Fax: (303) 278-0135 www.colog.com
DATE LOGGED: 17 November 2013	WELL: Hole #1	

3-Arm Caliper	Depth	Optical Televiewer Image
4 inches 8	1ft:10ft	0° 90° 180° 270° 0°



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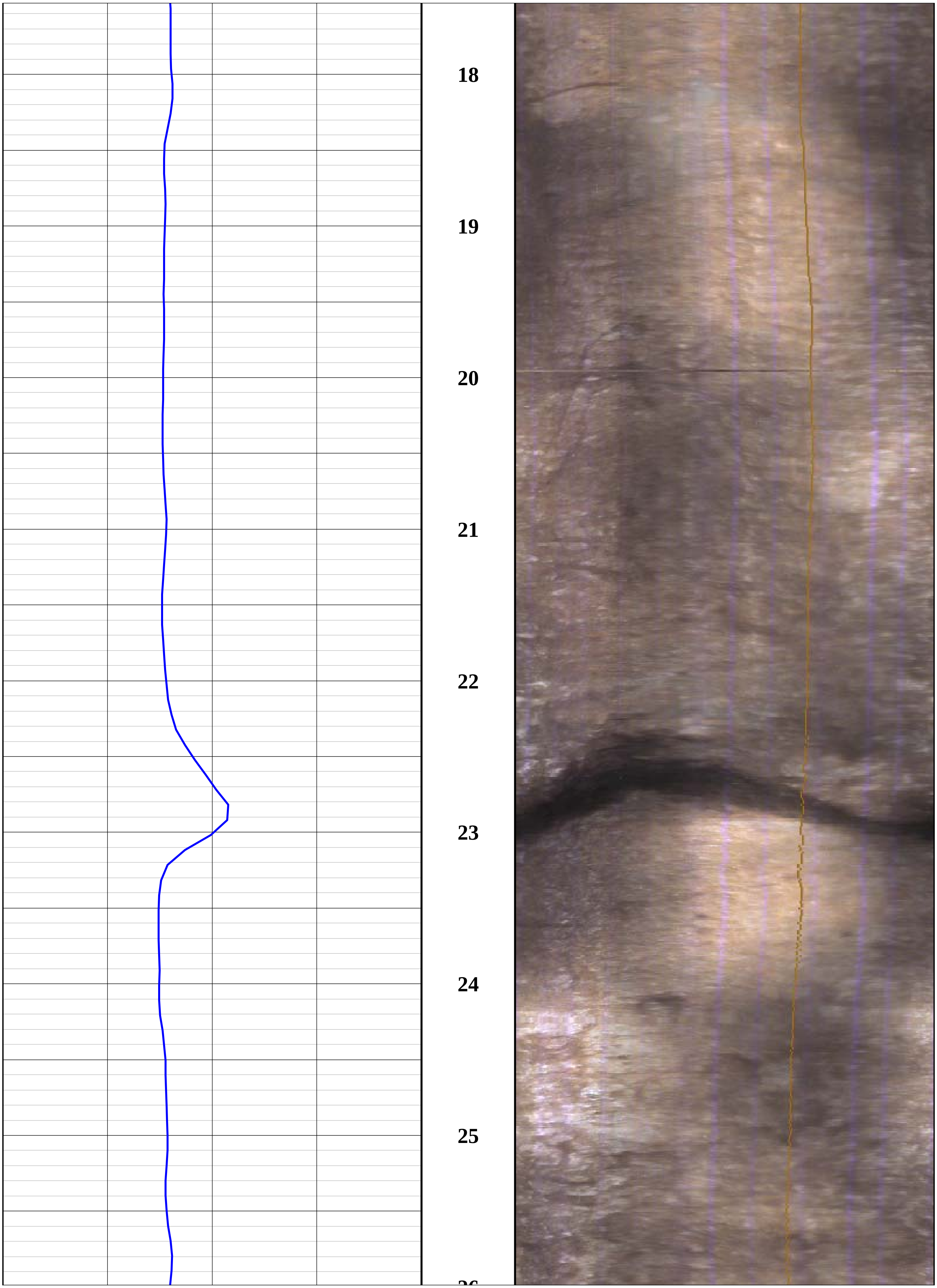
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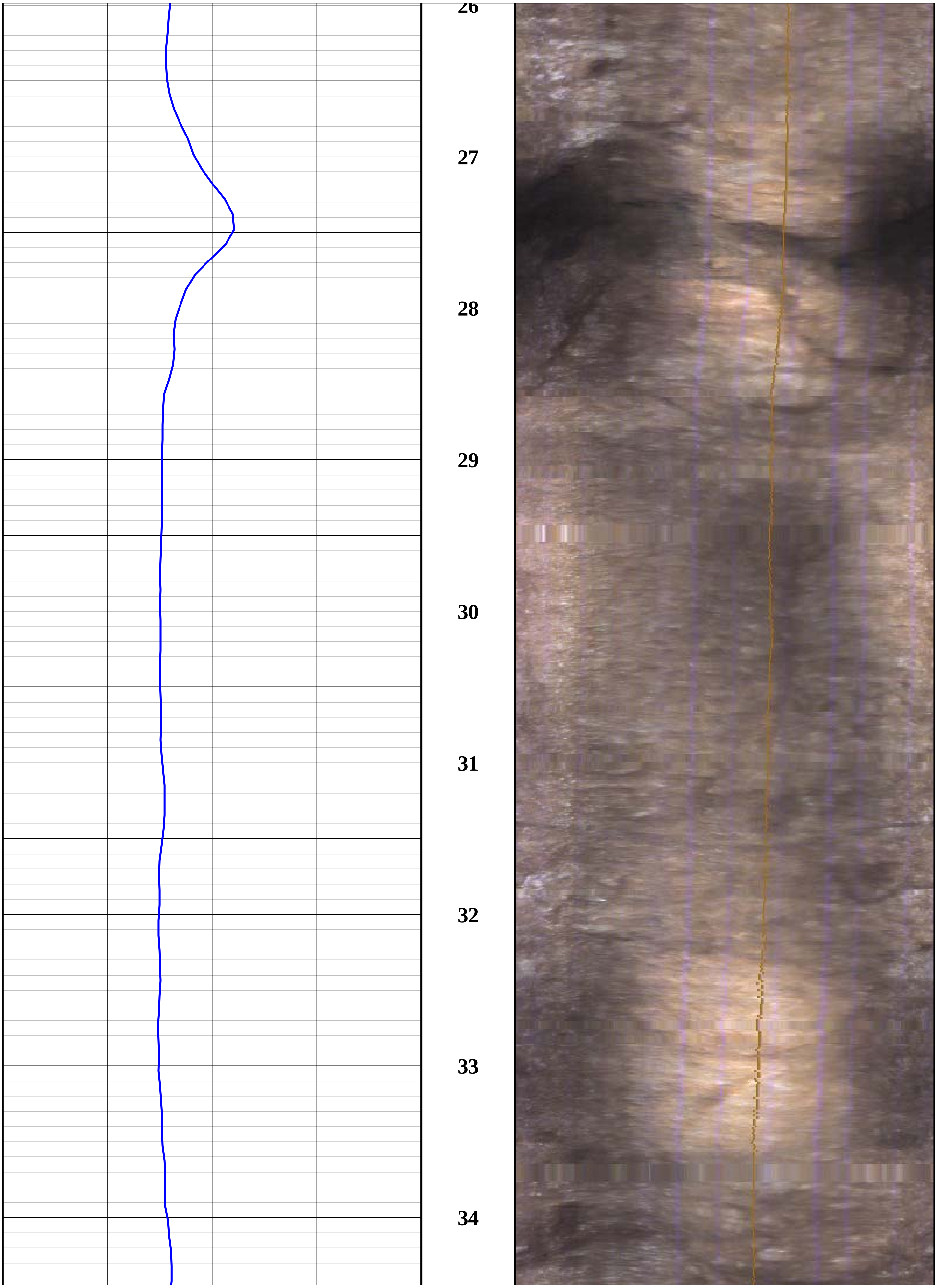
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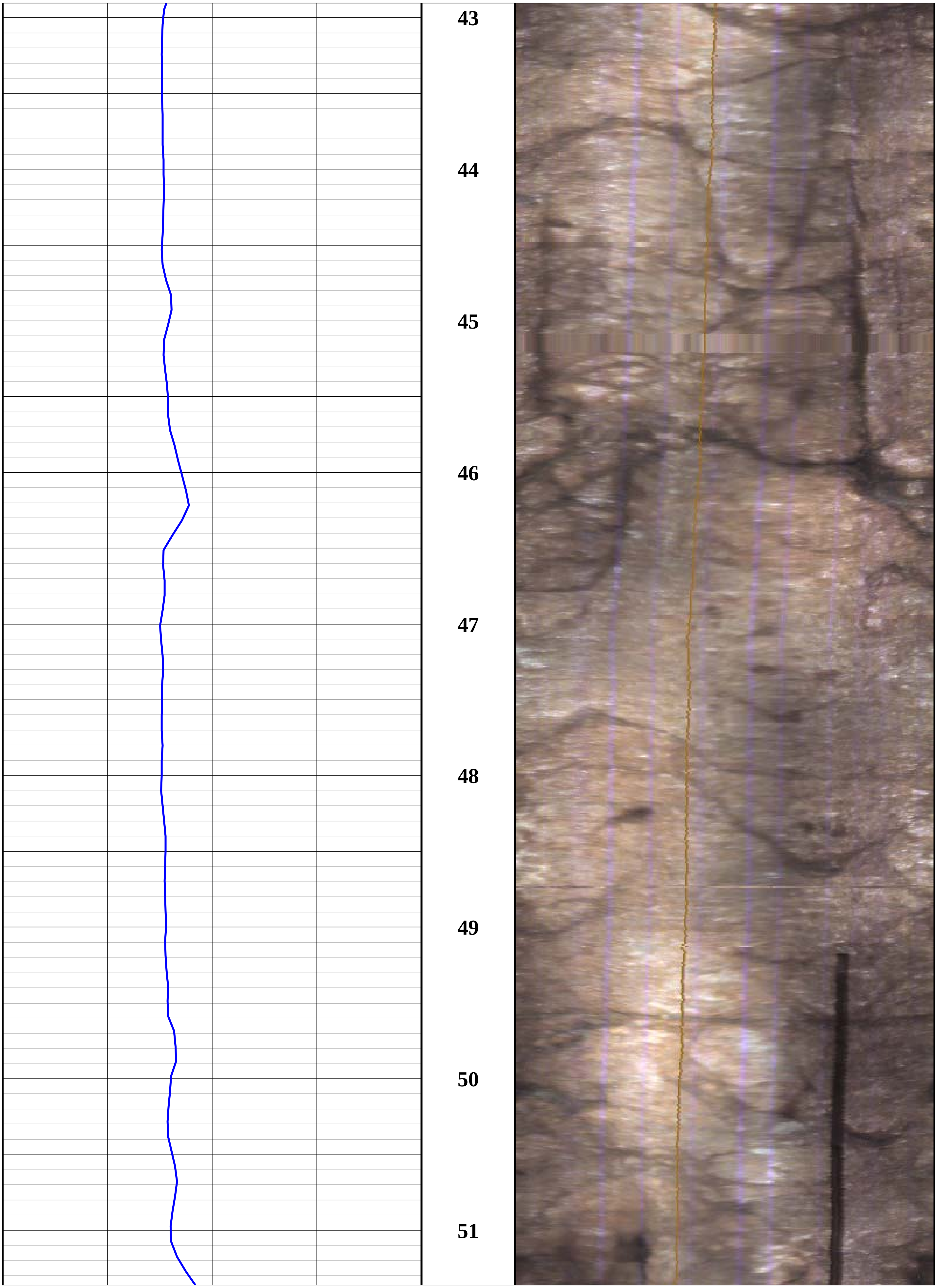
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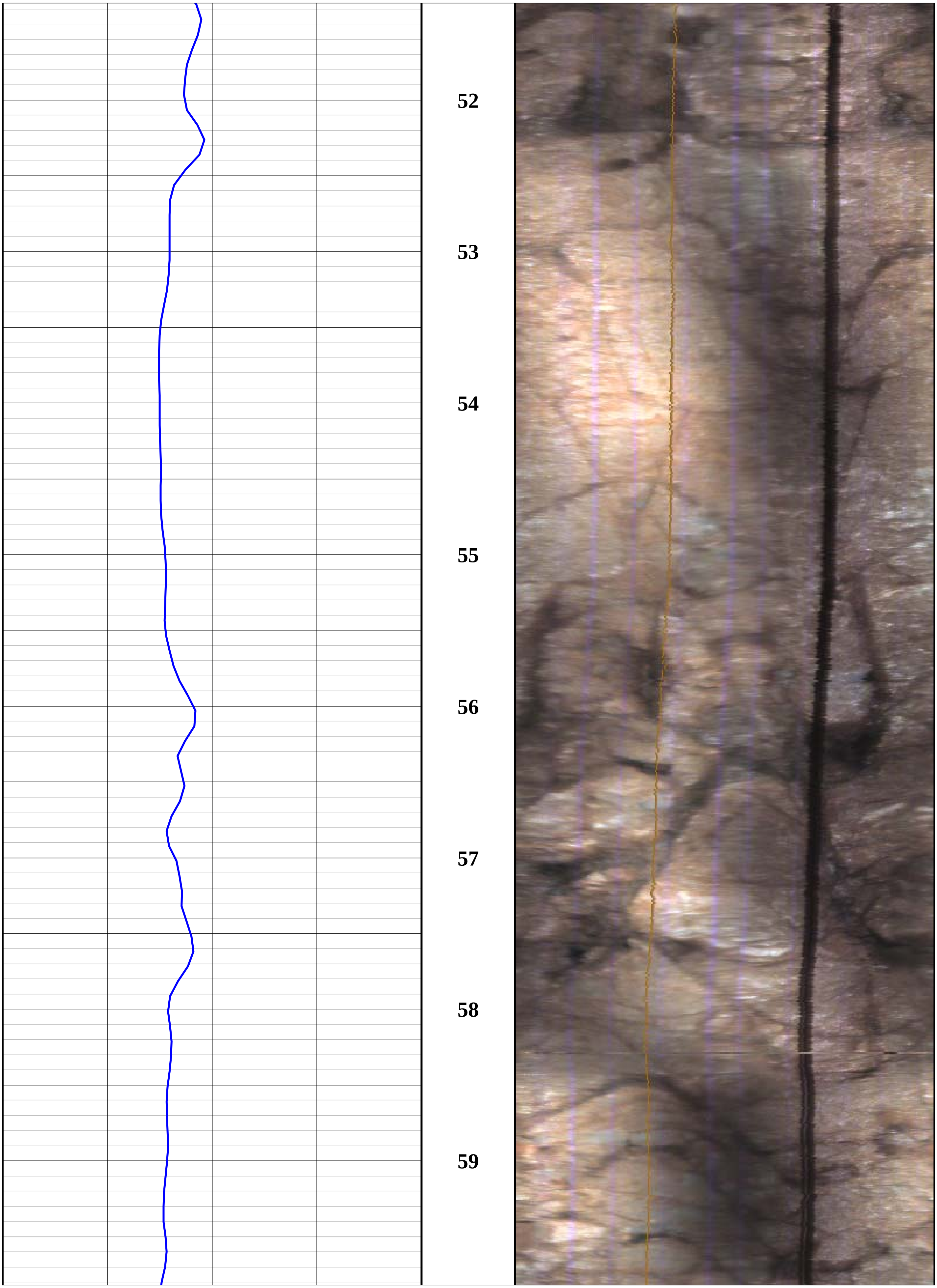
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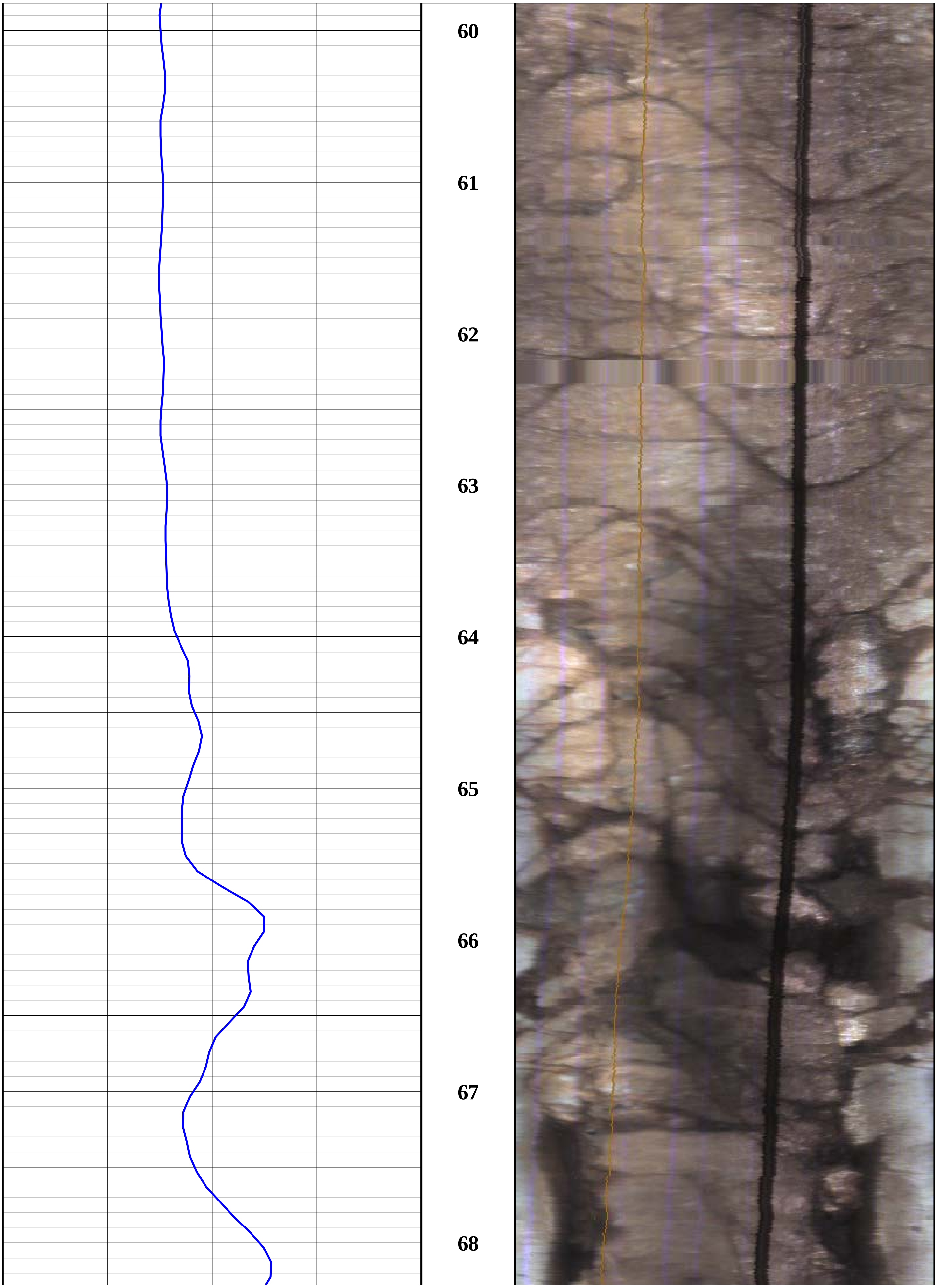
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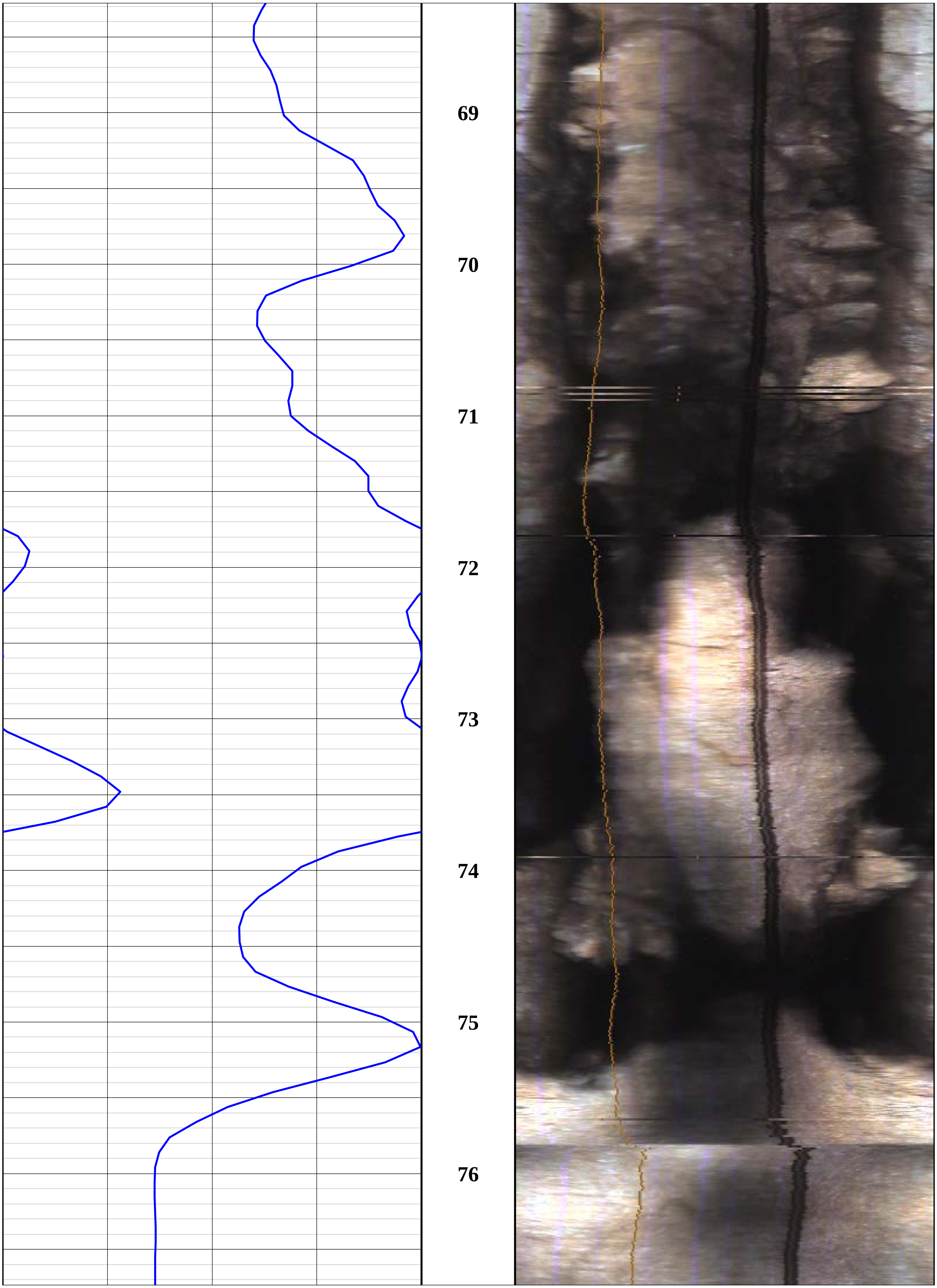
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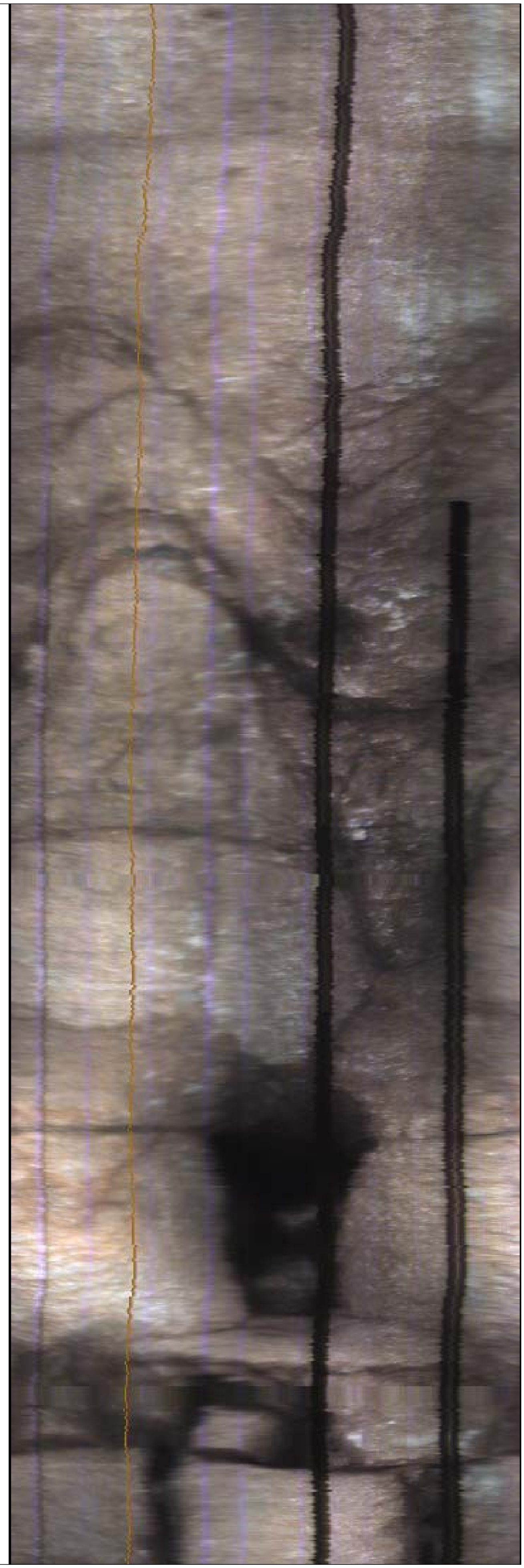

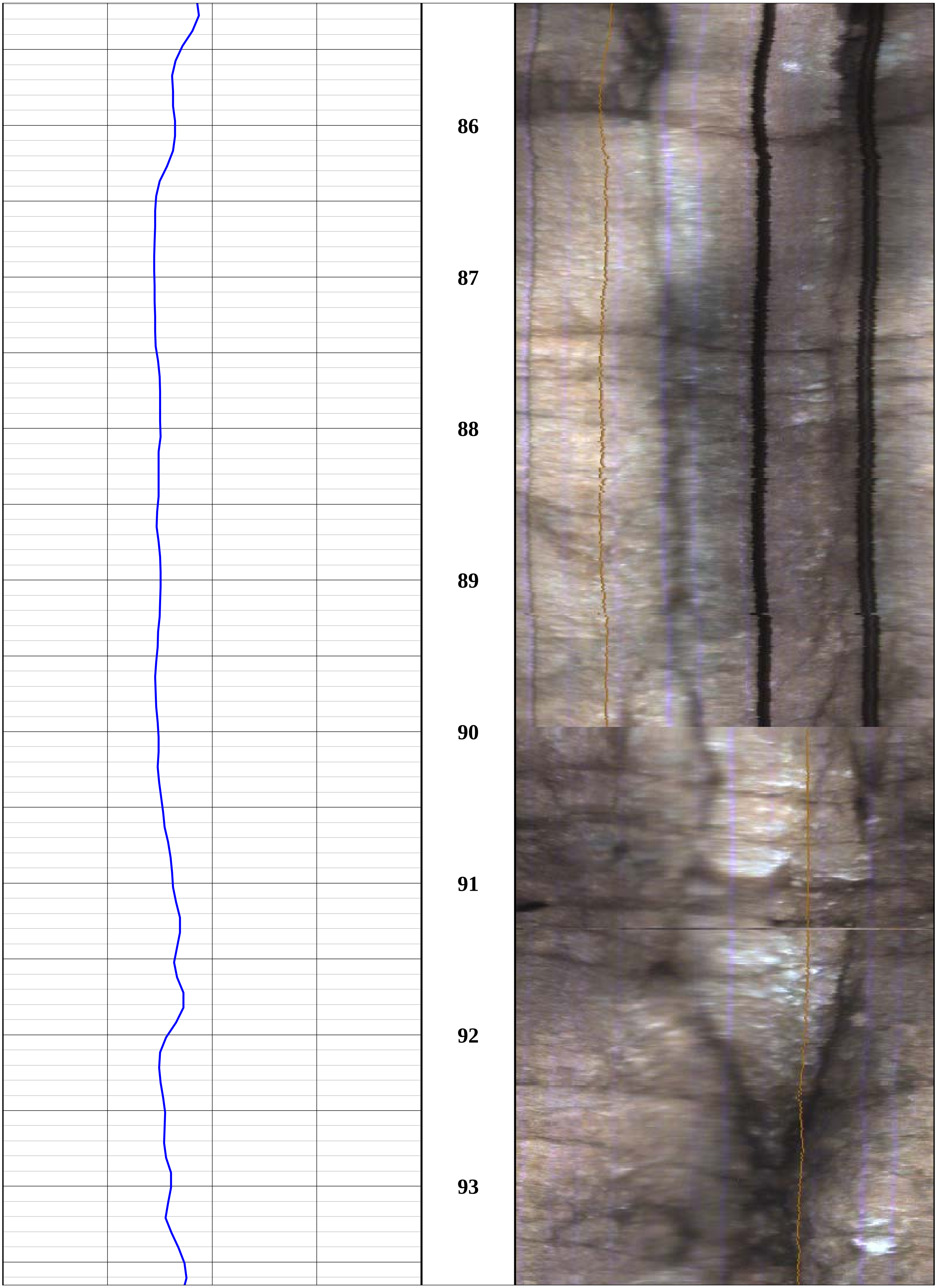
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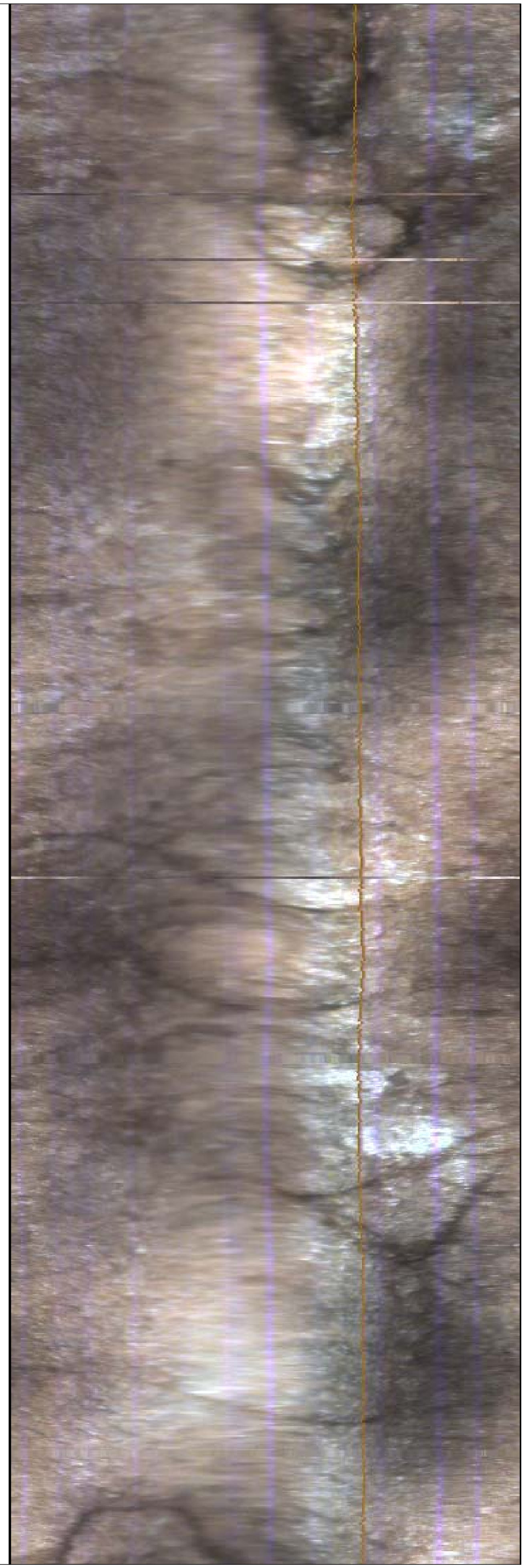

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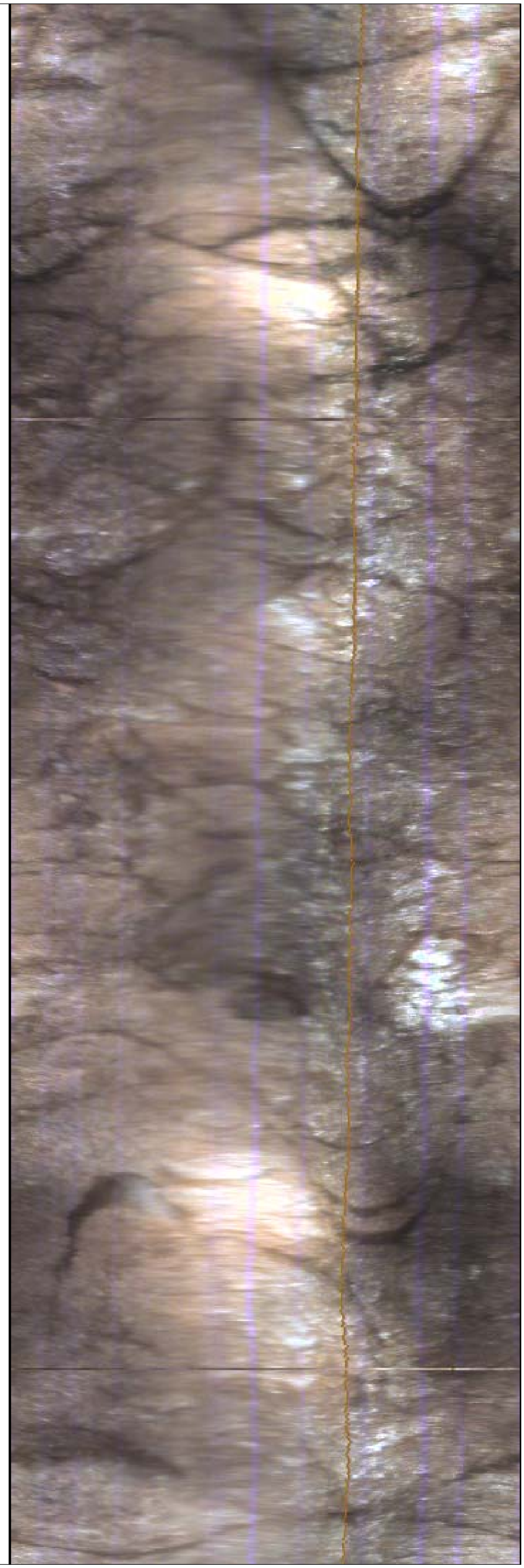

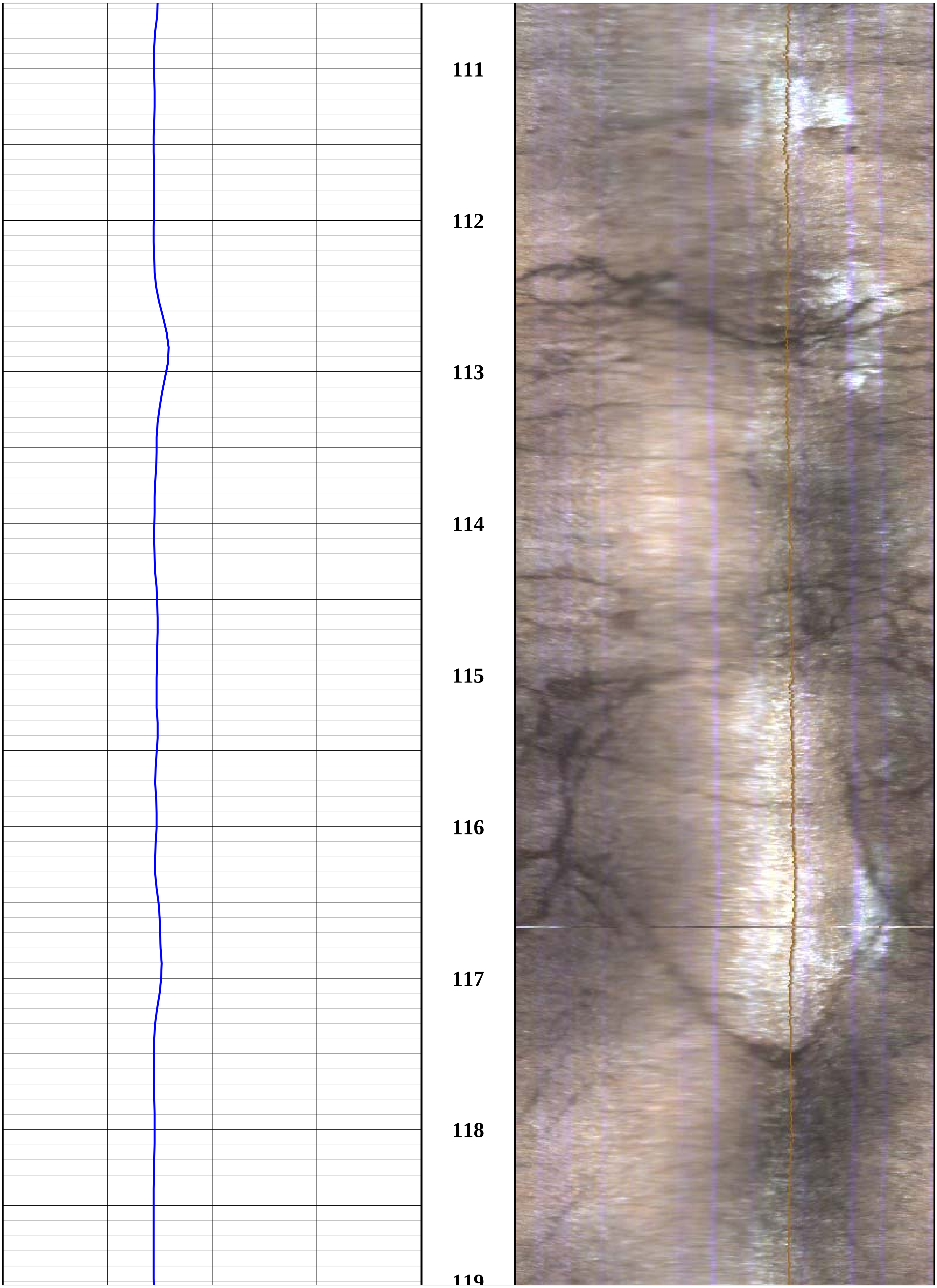
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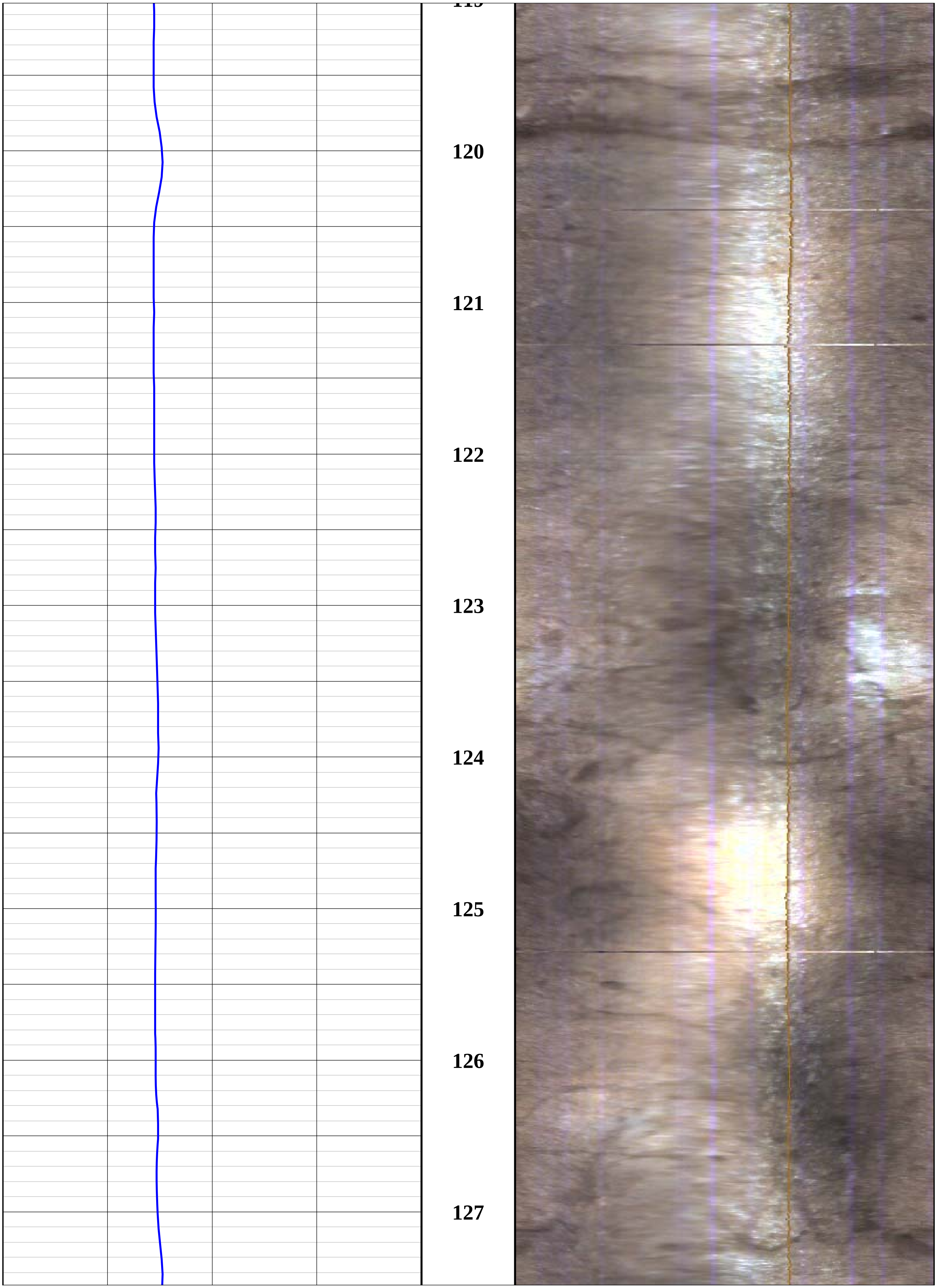
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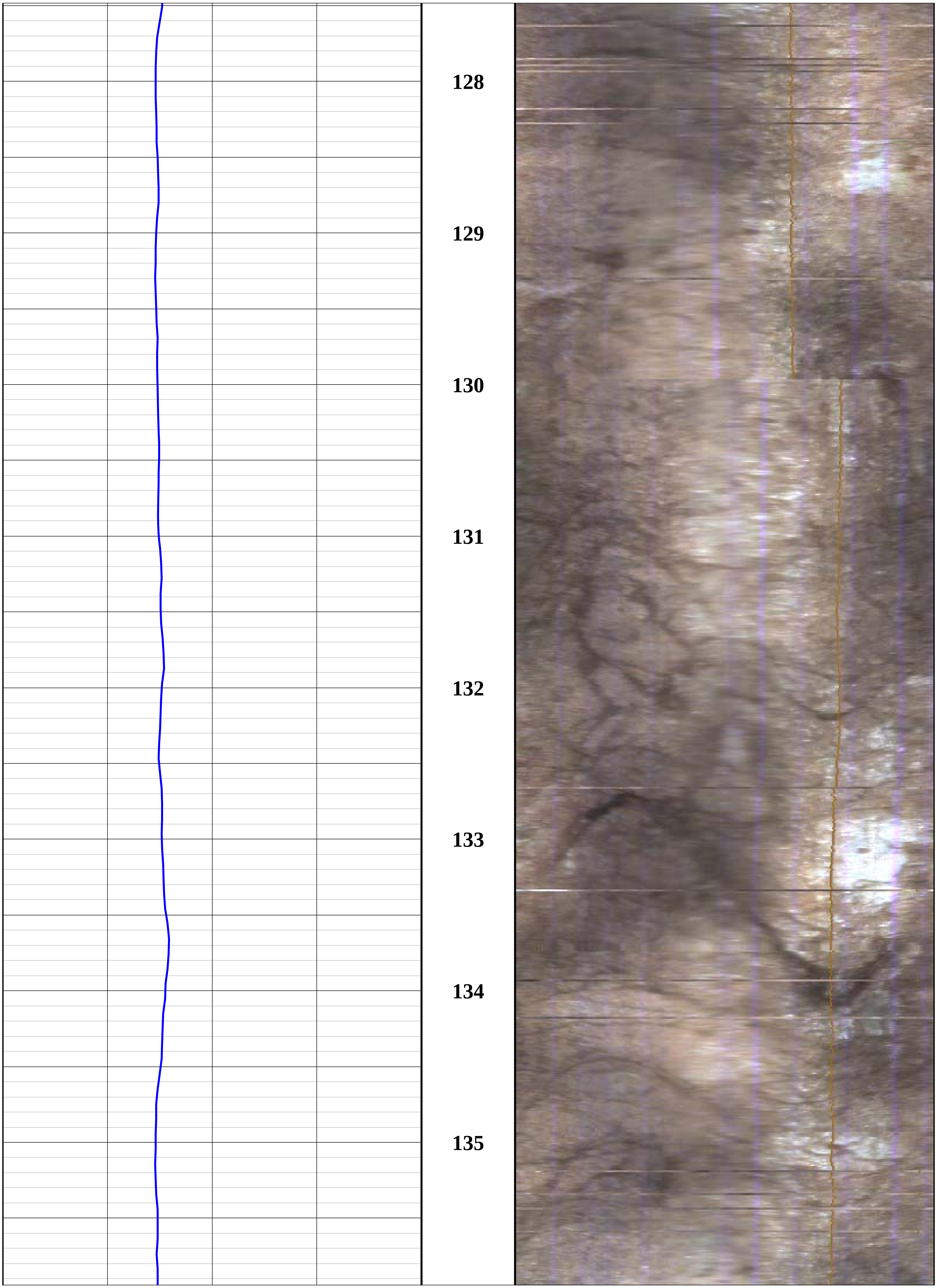
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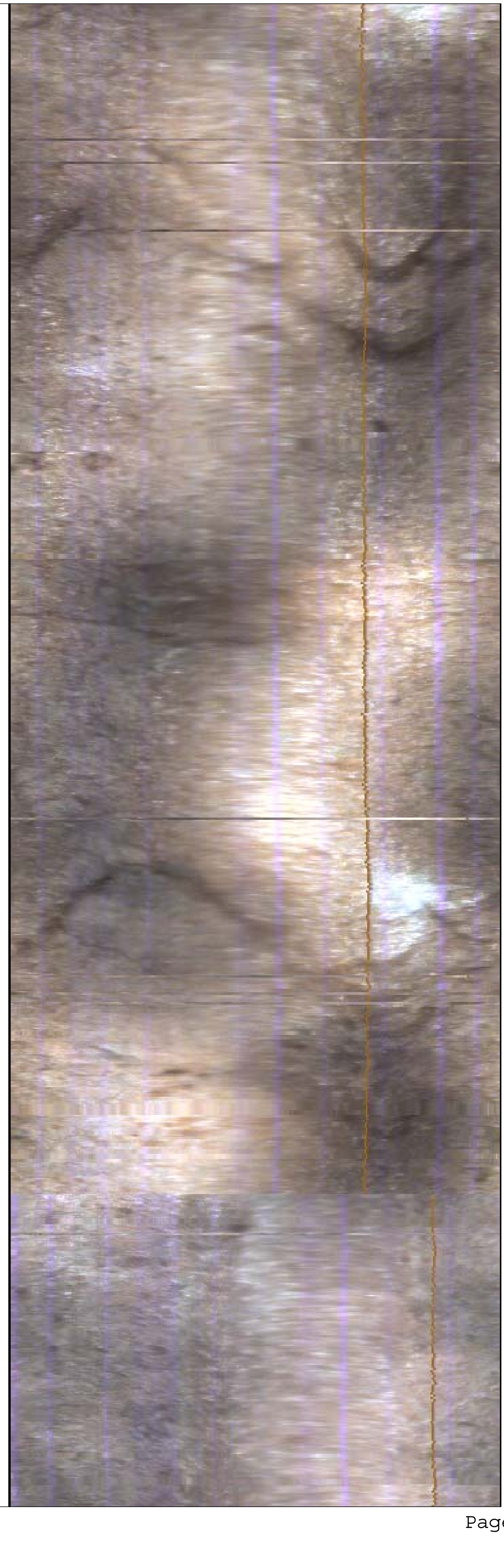

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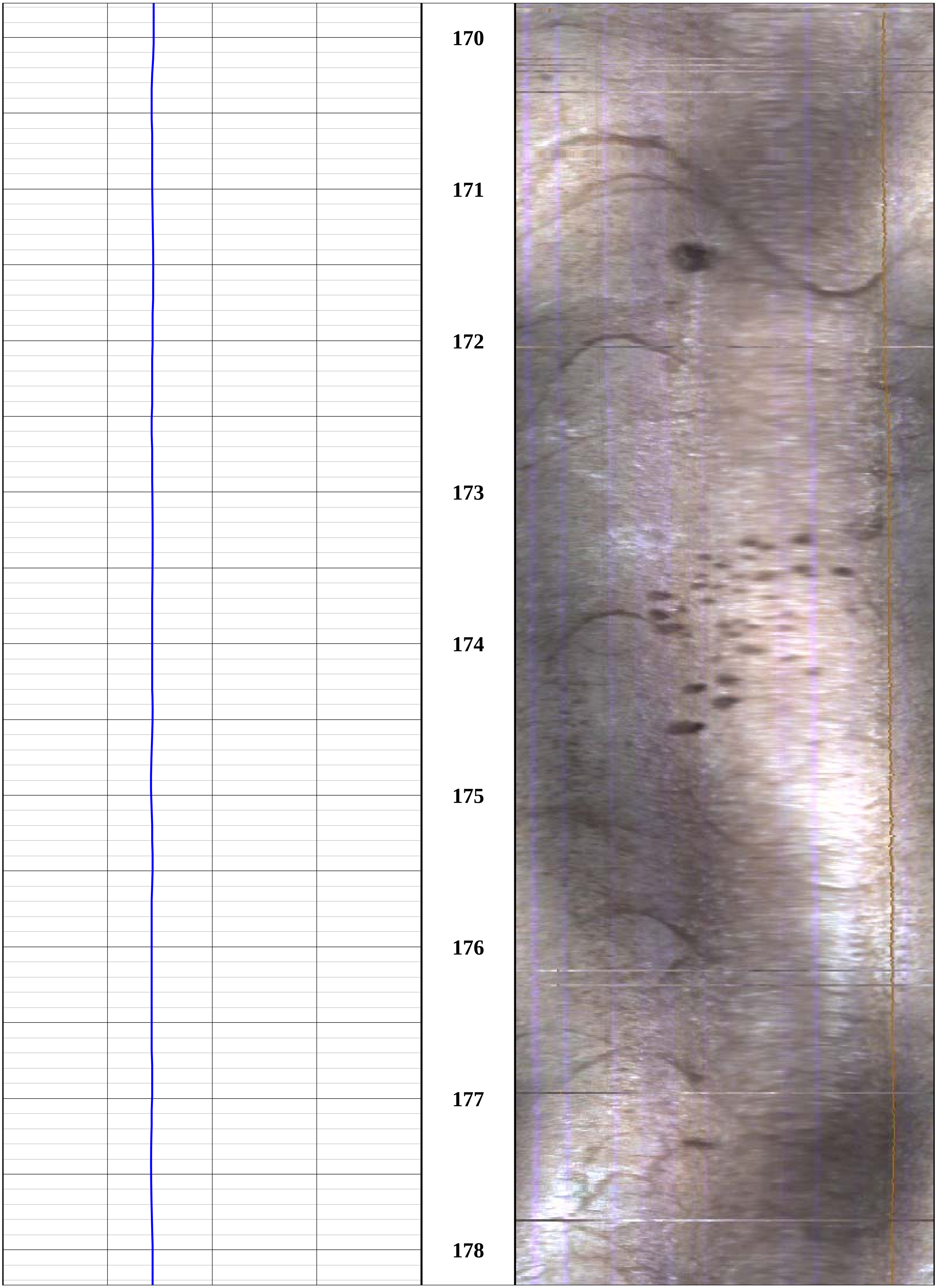
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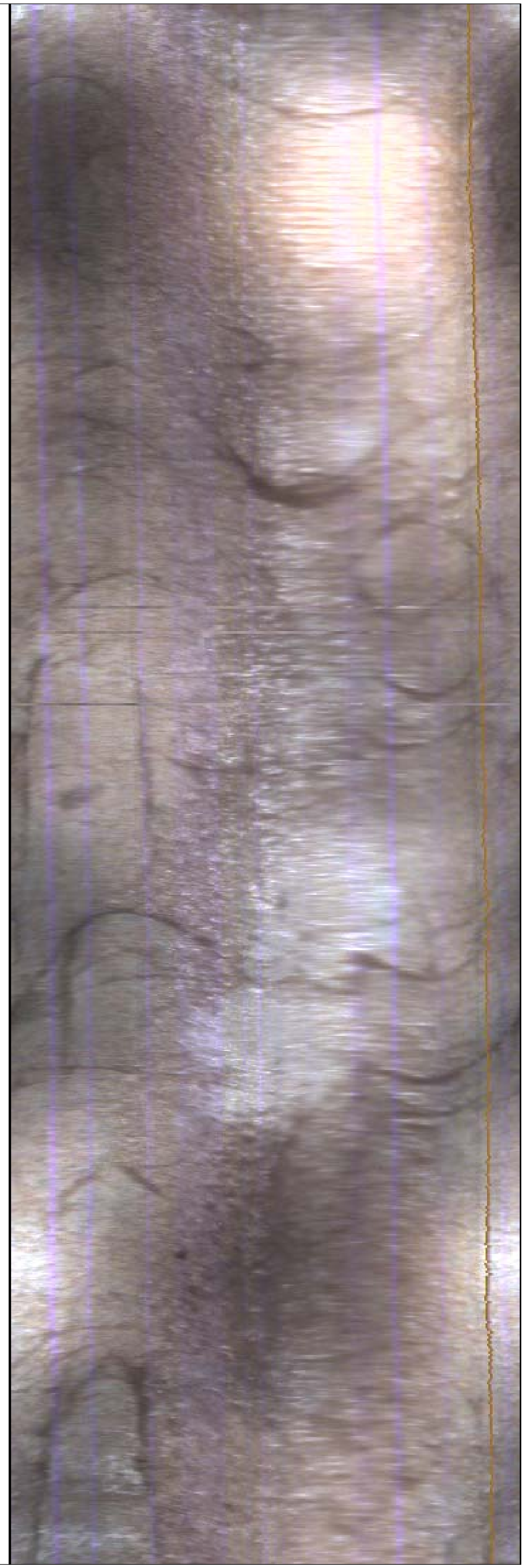

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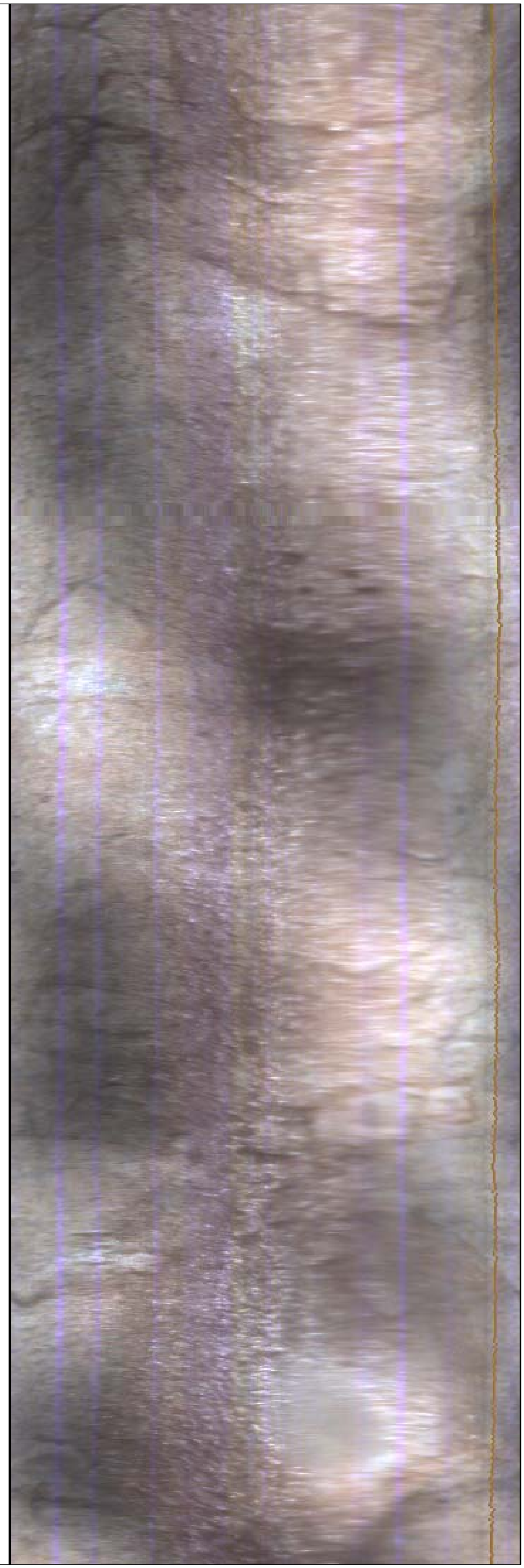

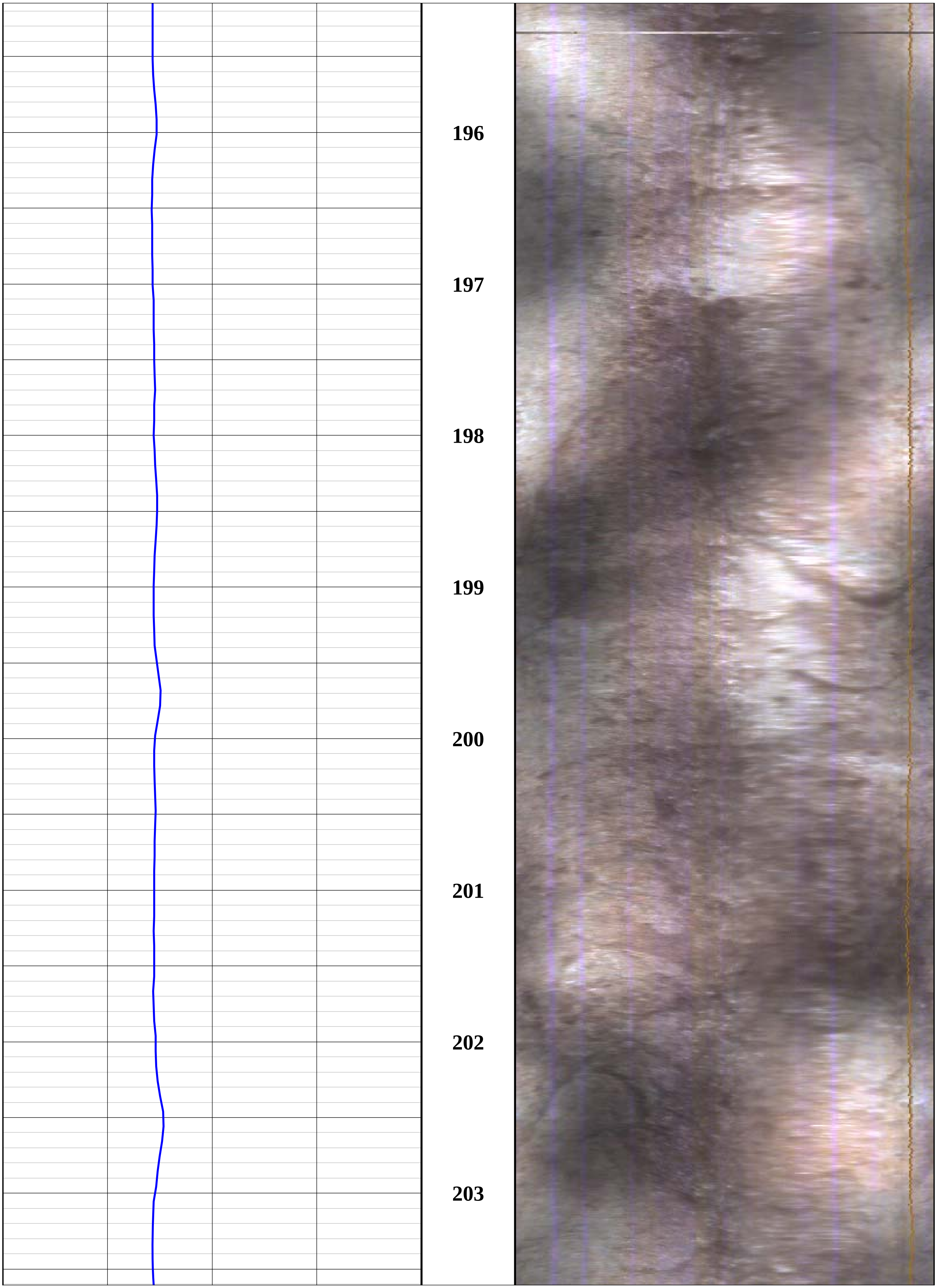
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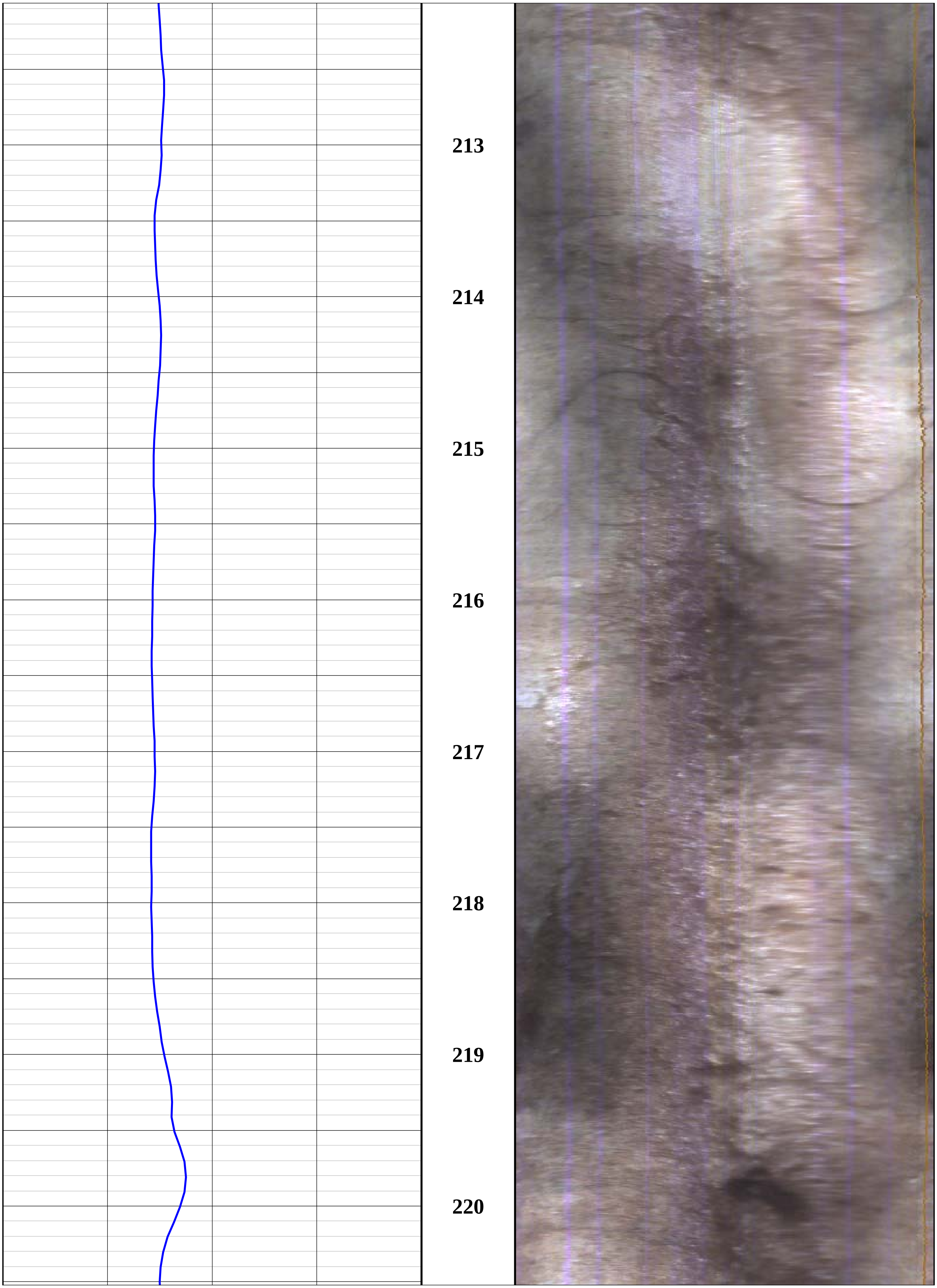
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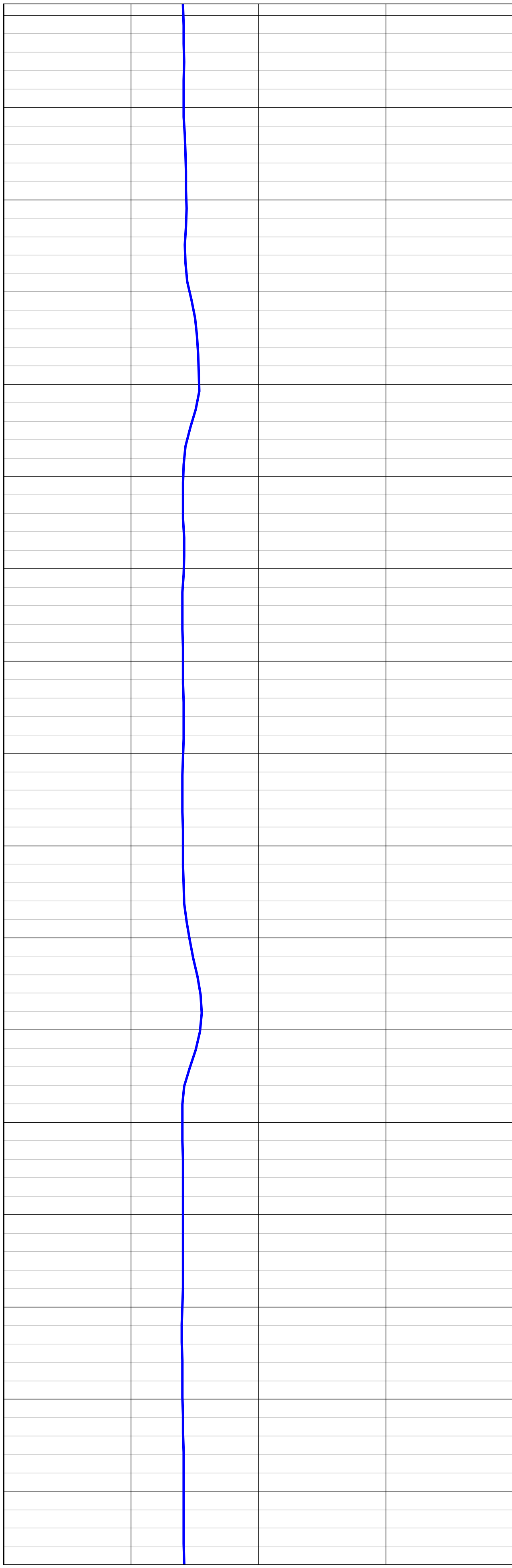

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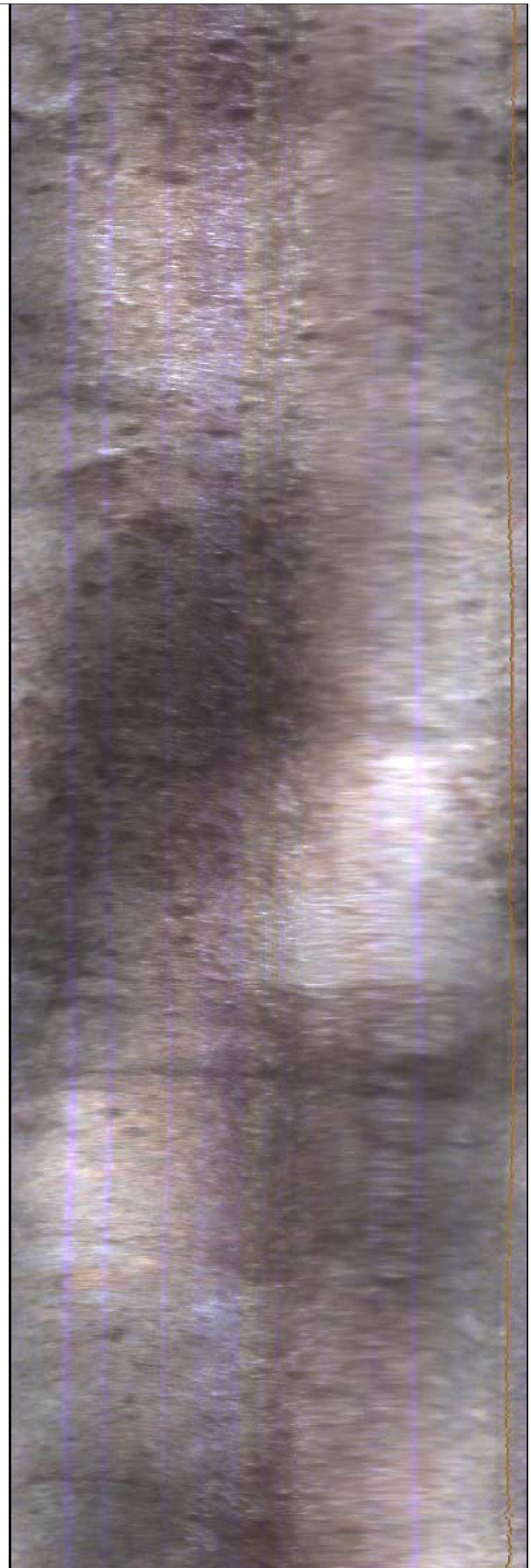

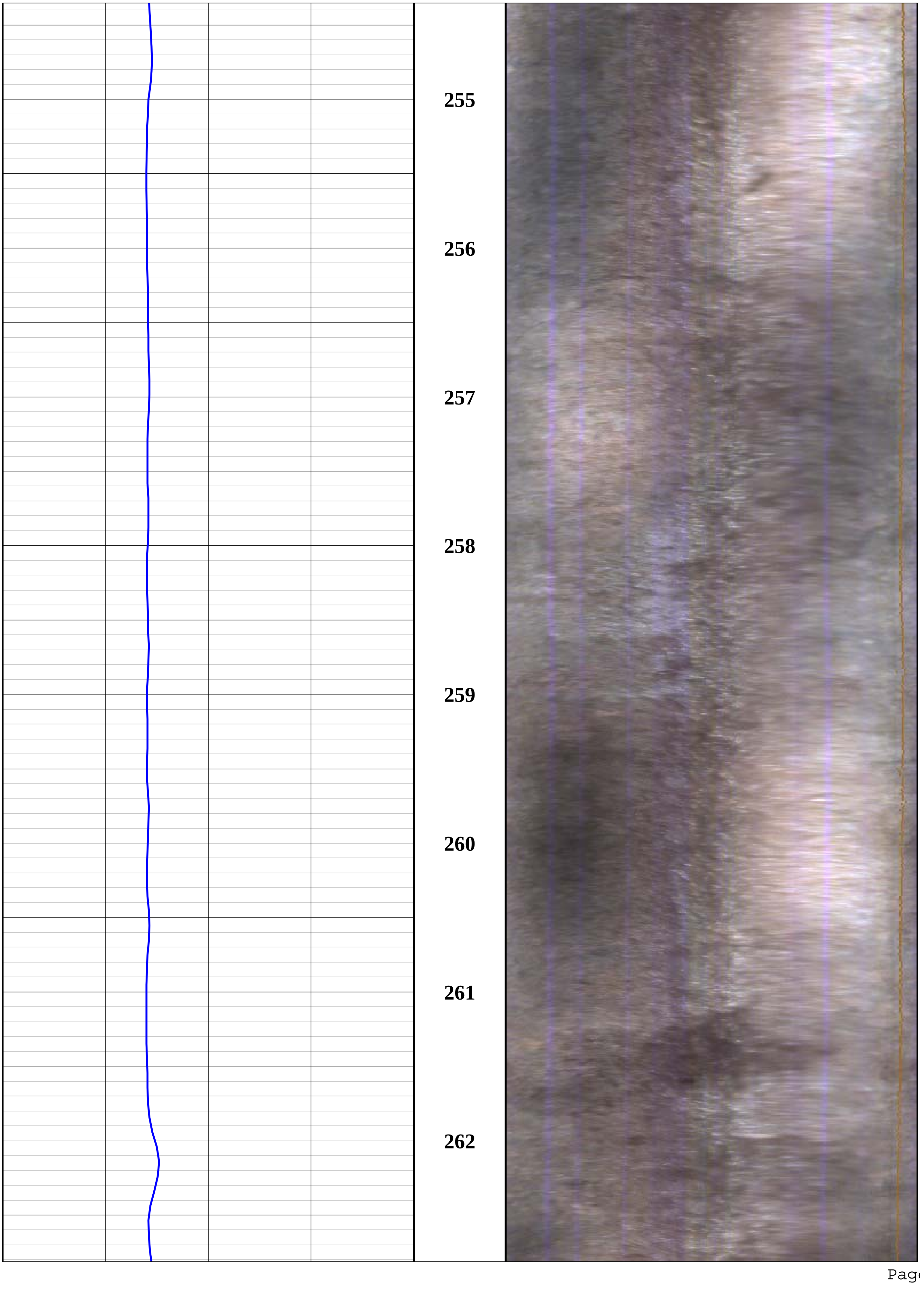
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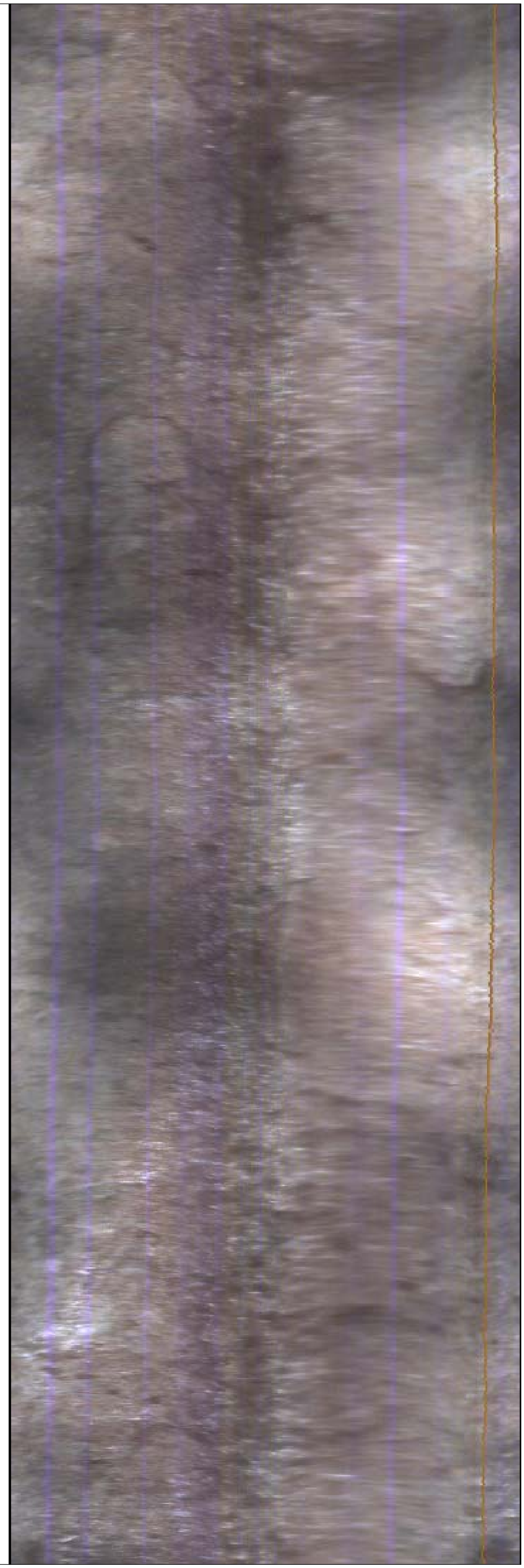

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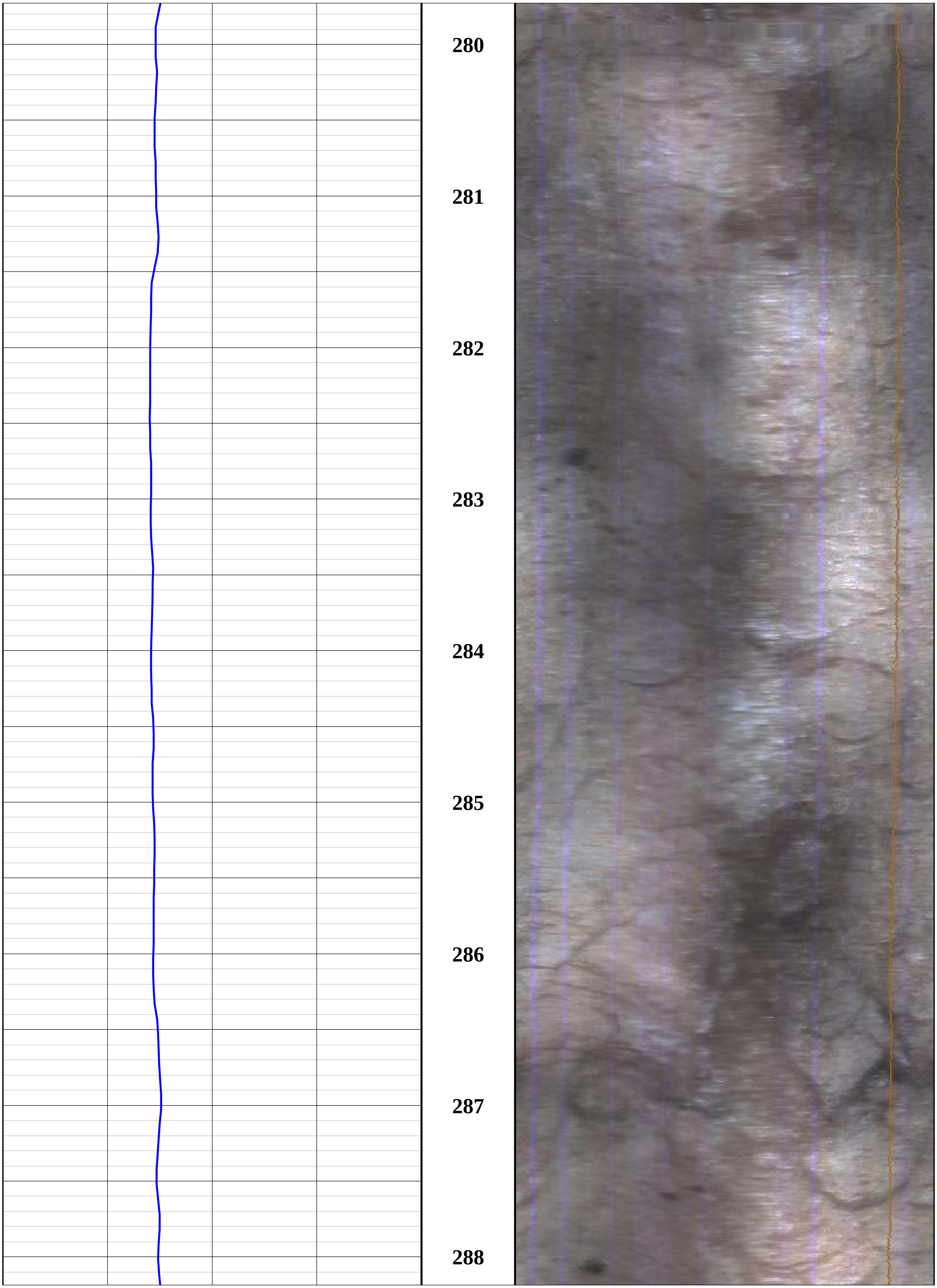
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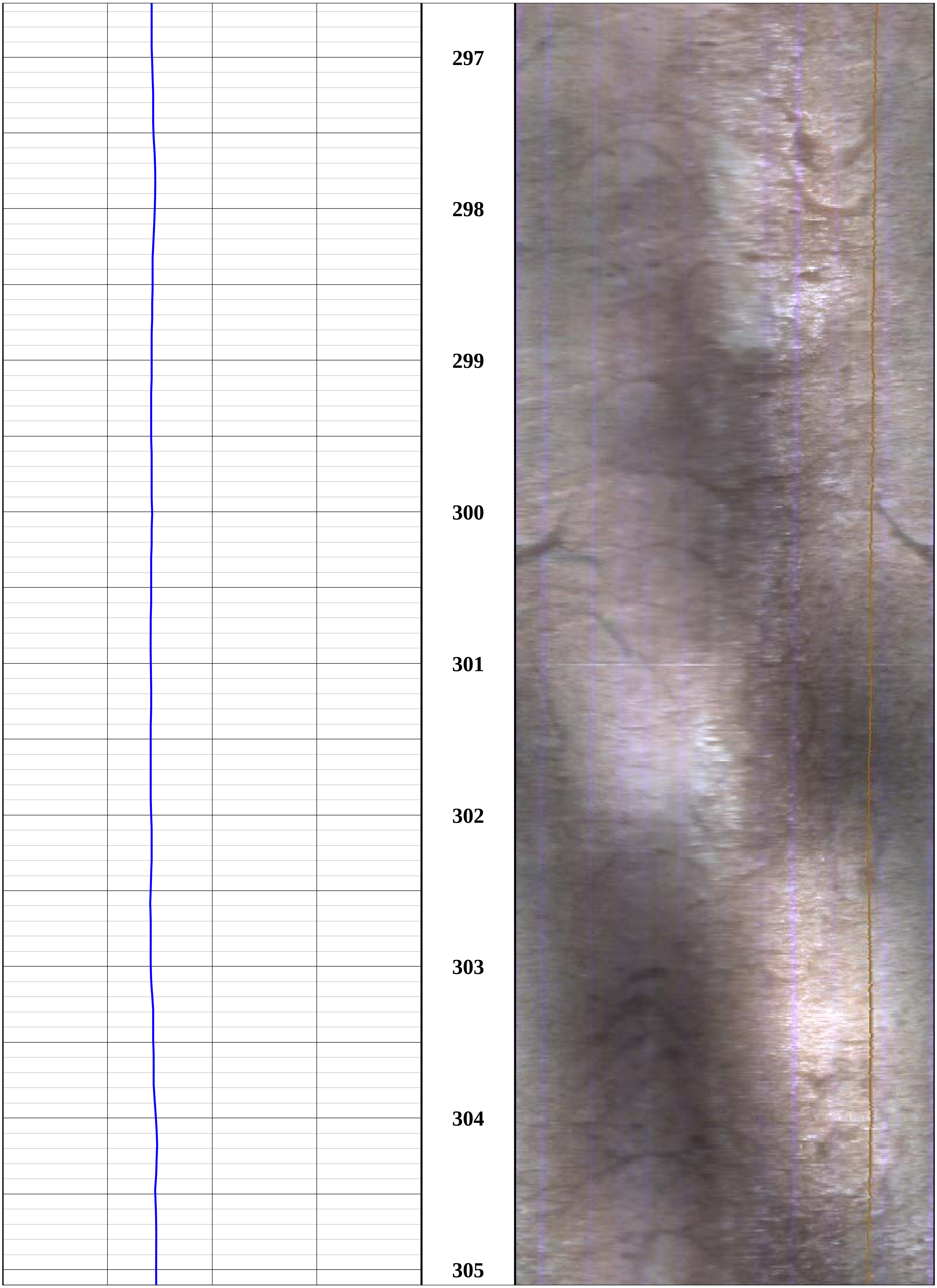
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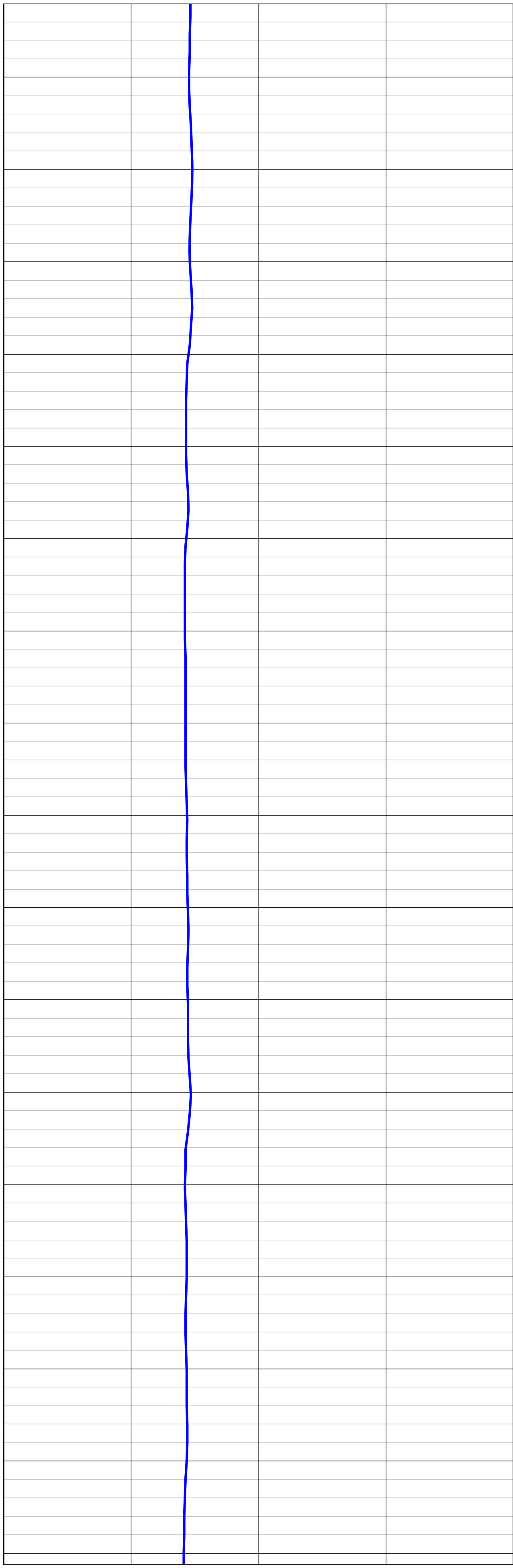

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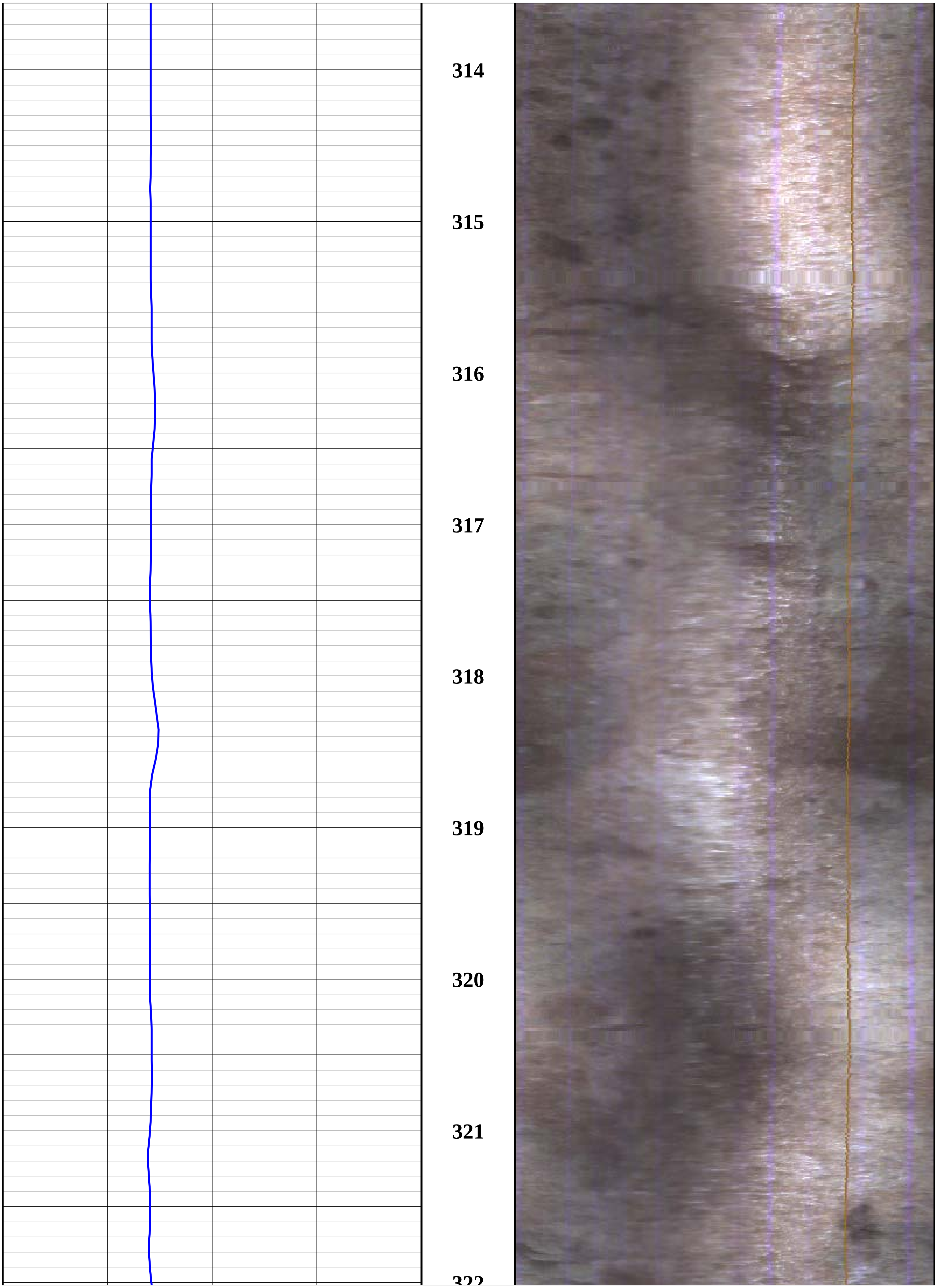
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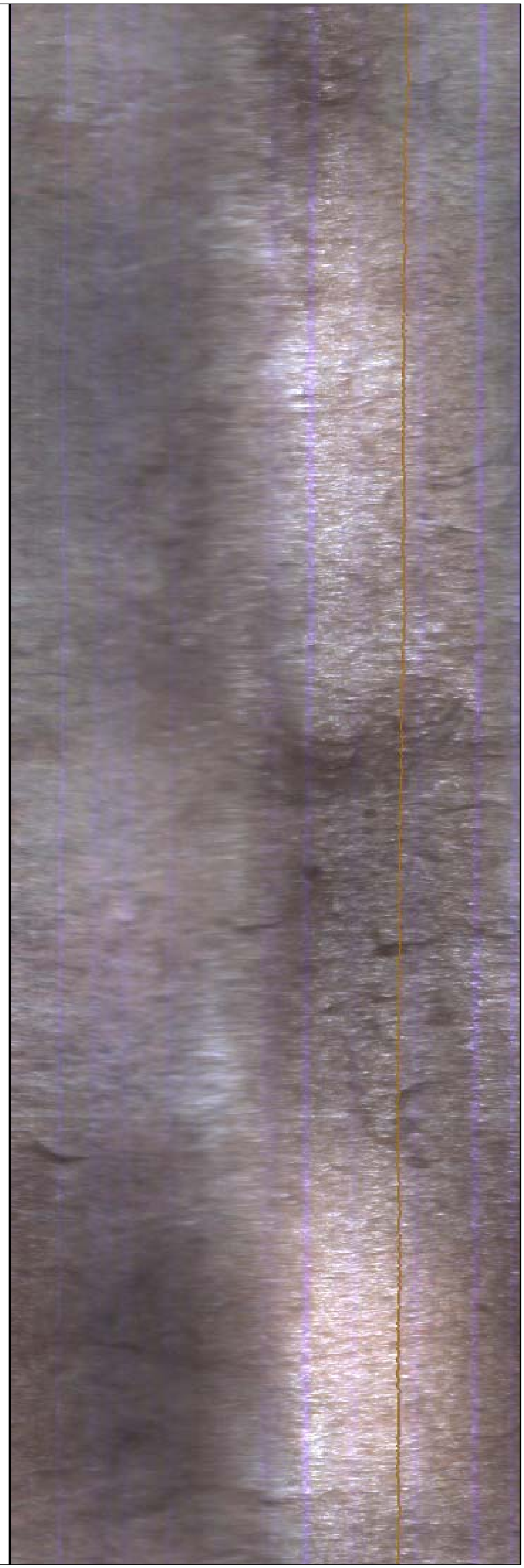

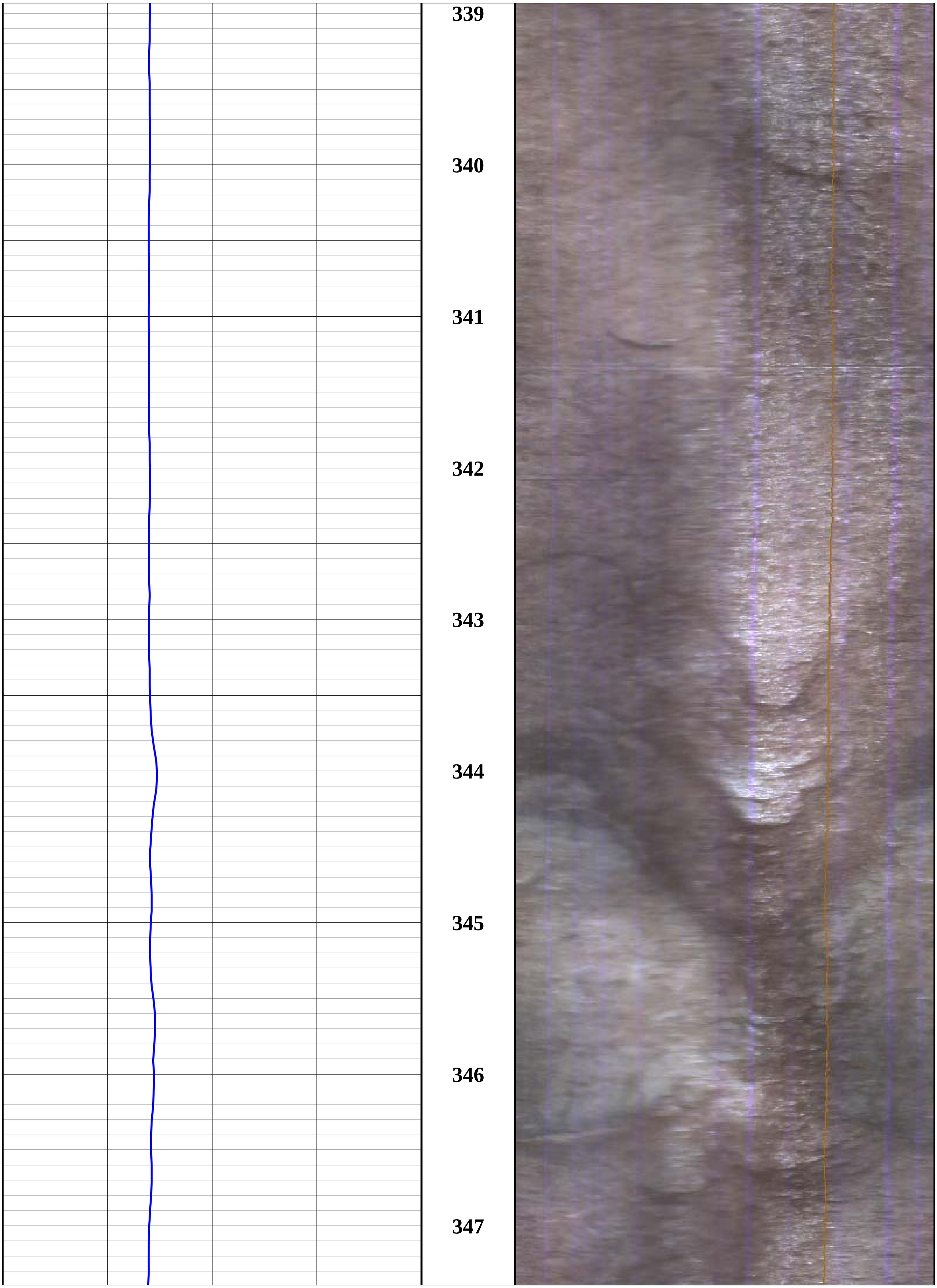
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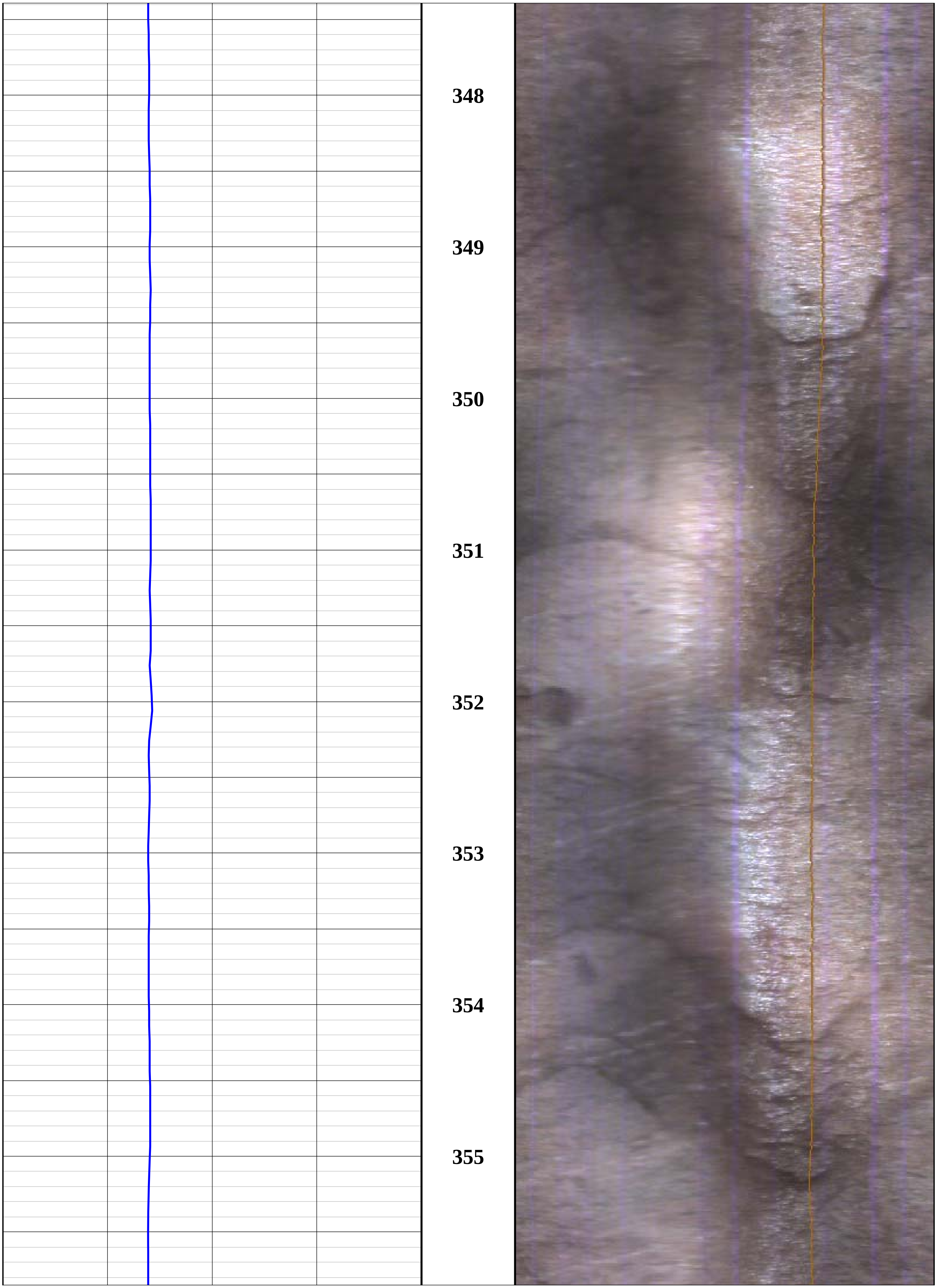
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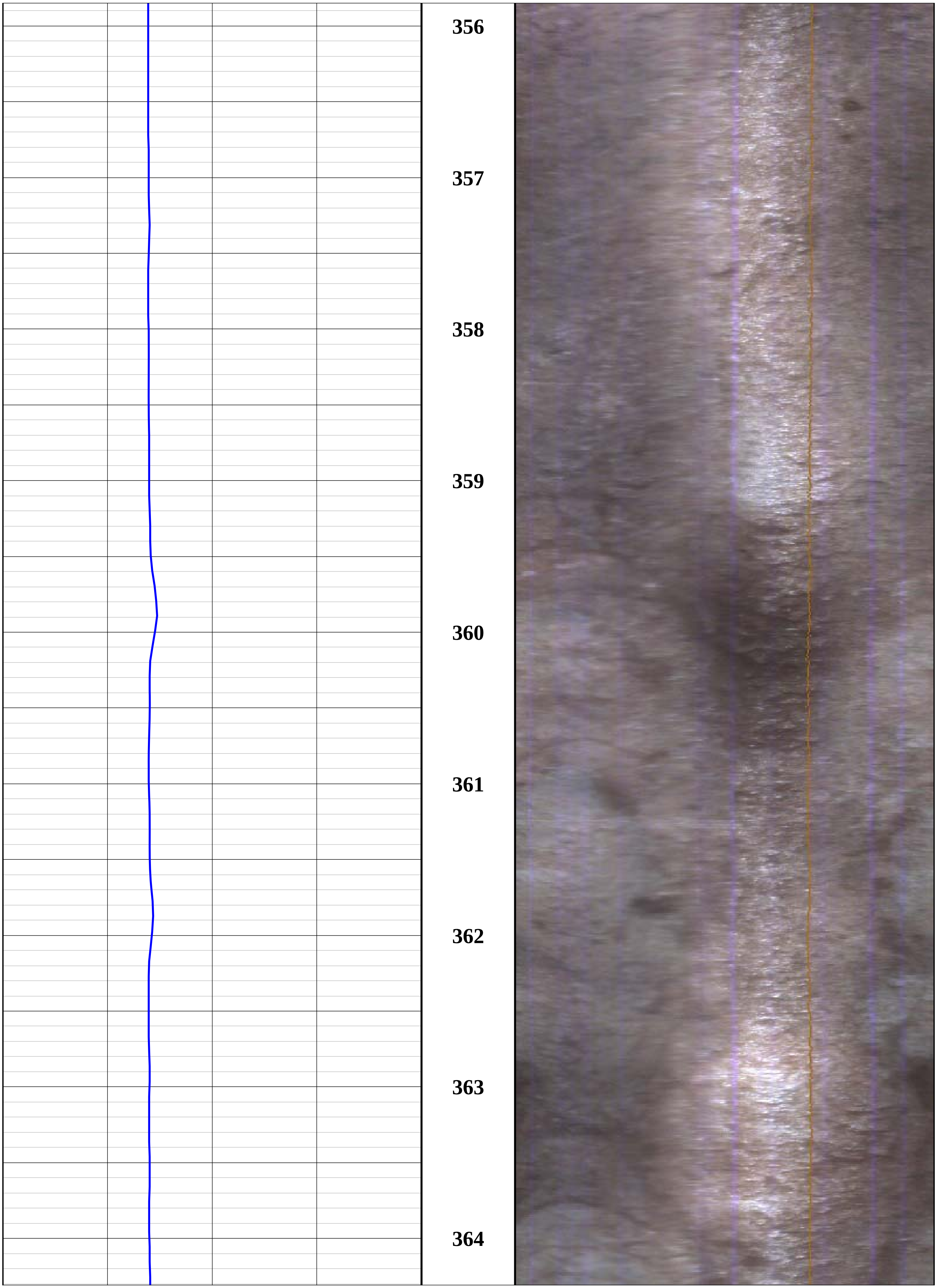
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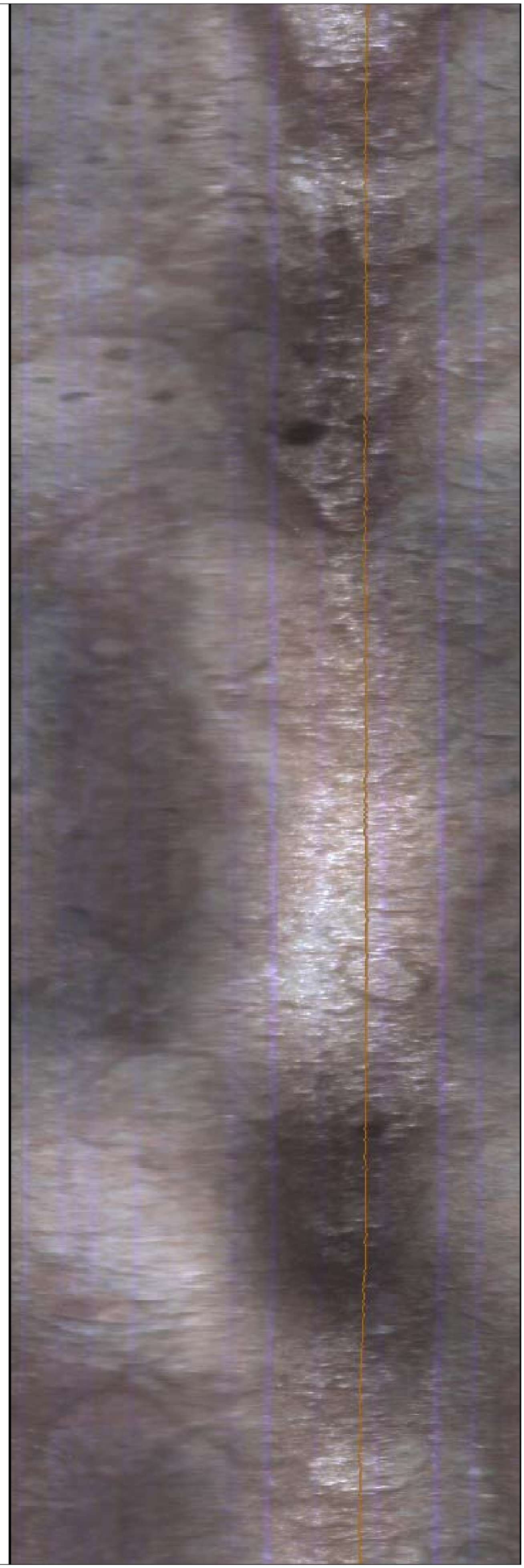

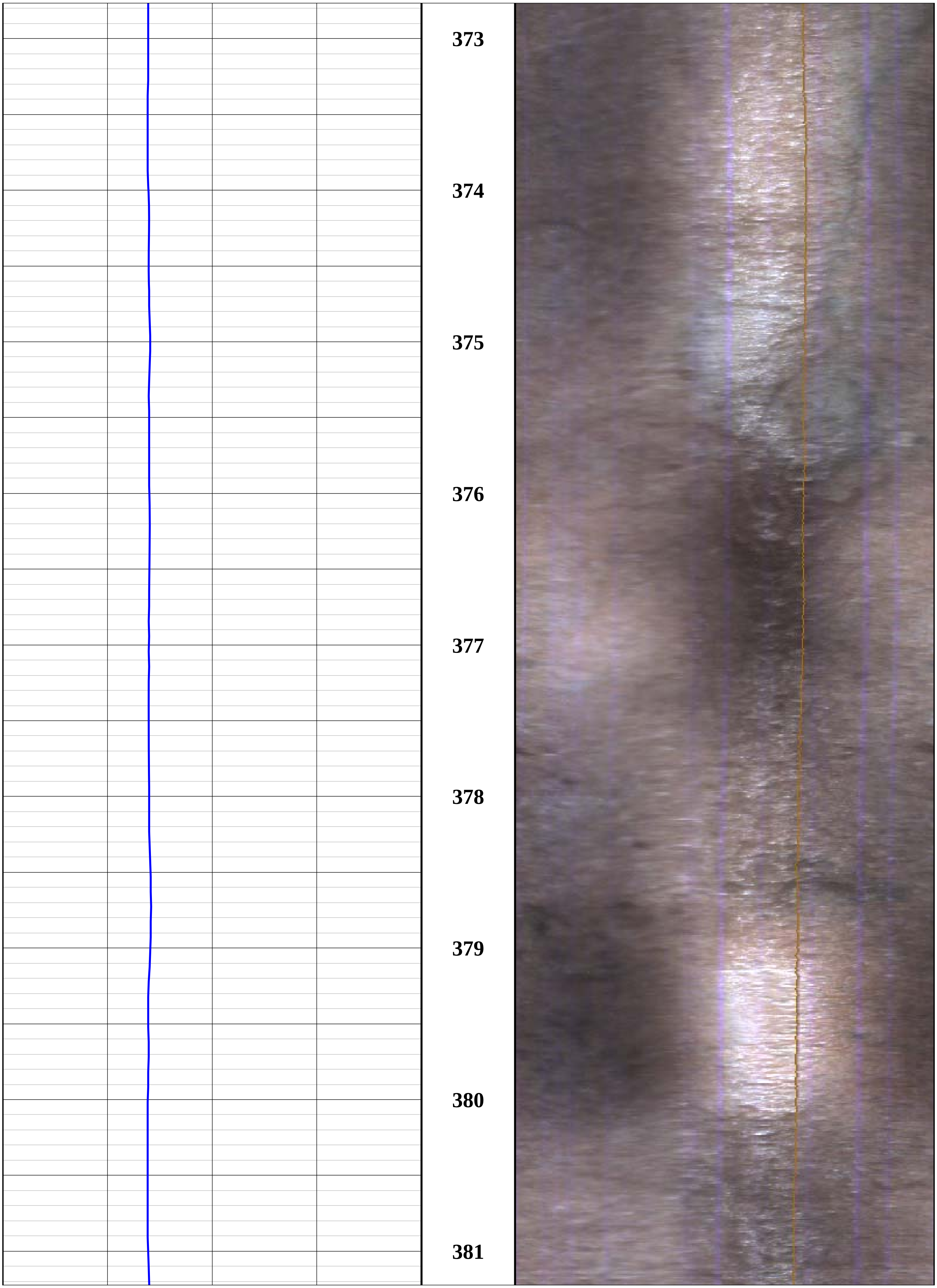
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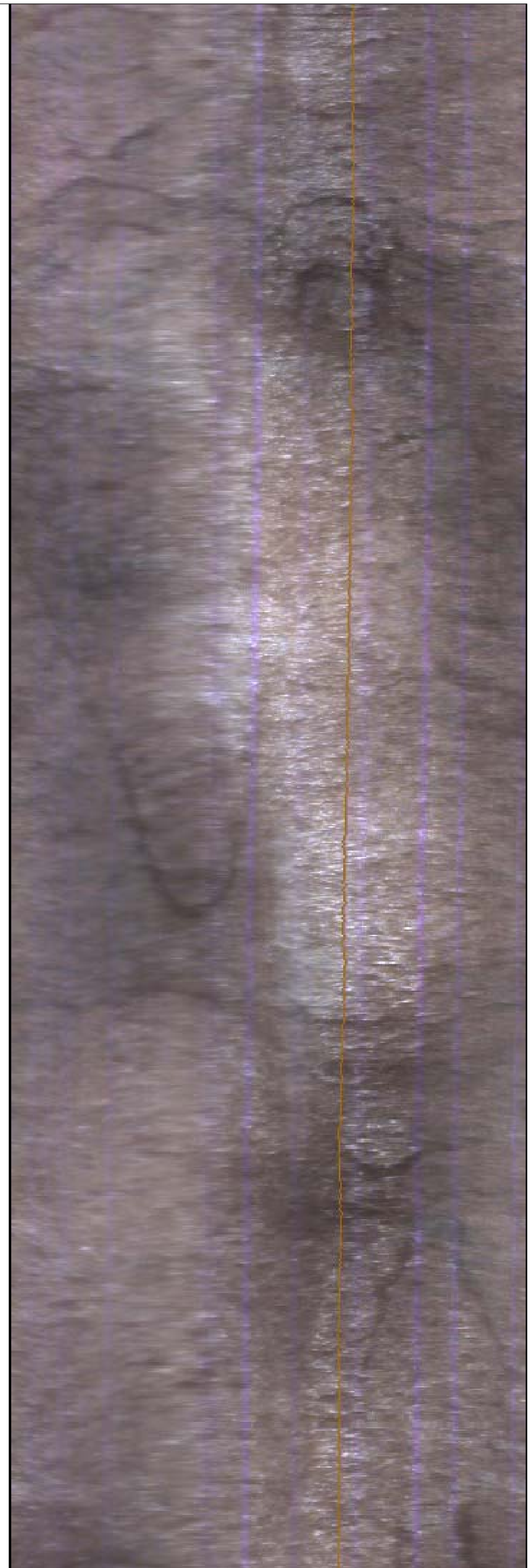

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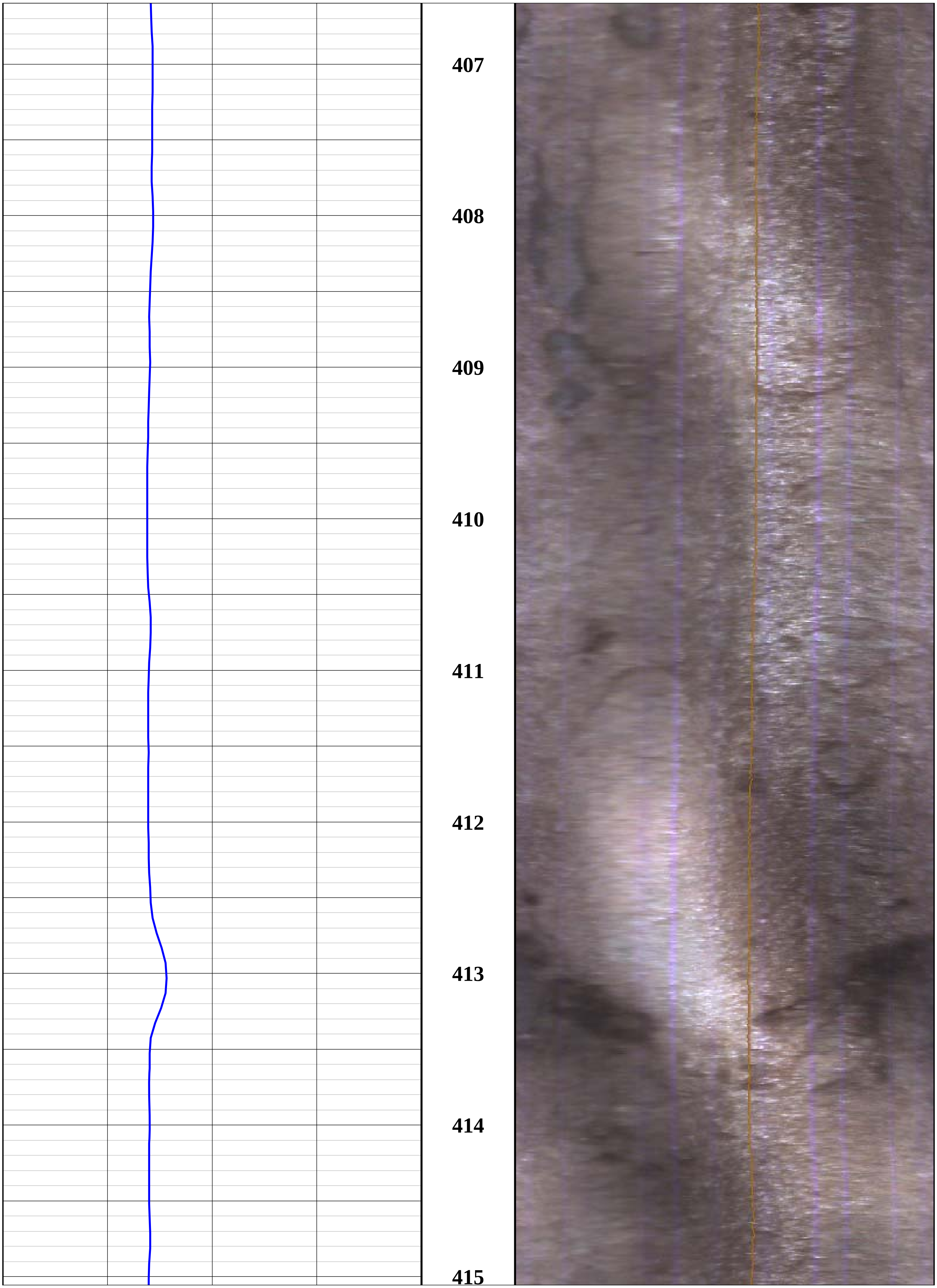
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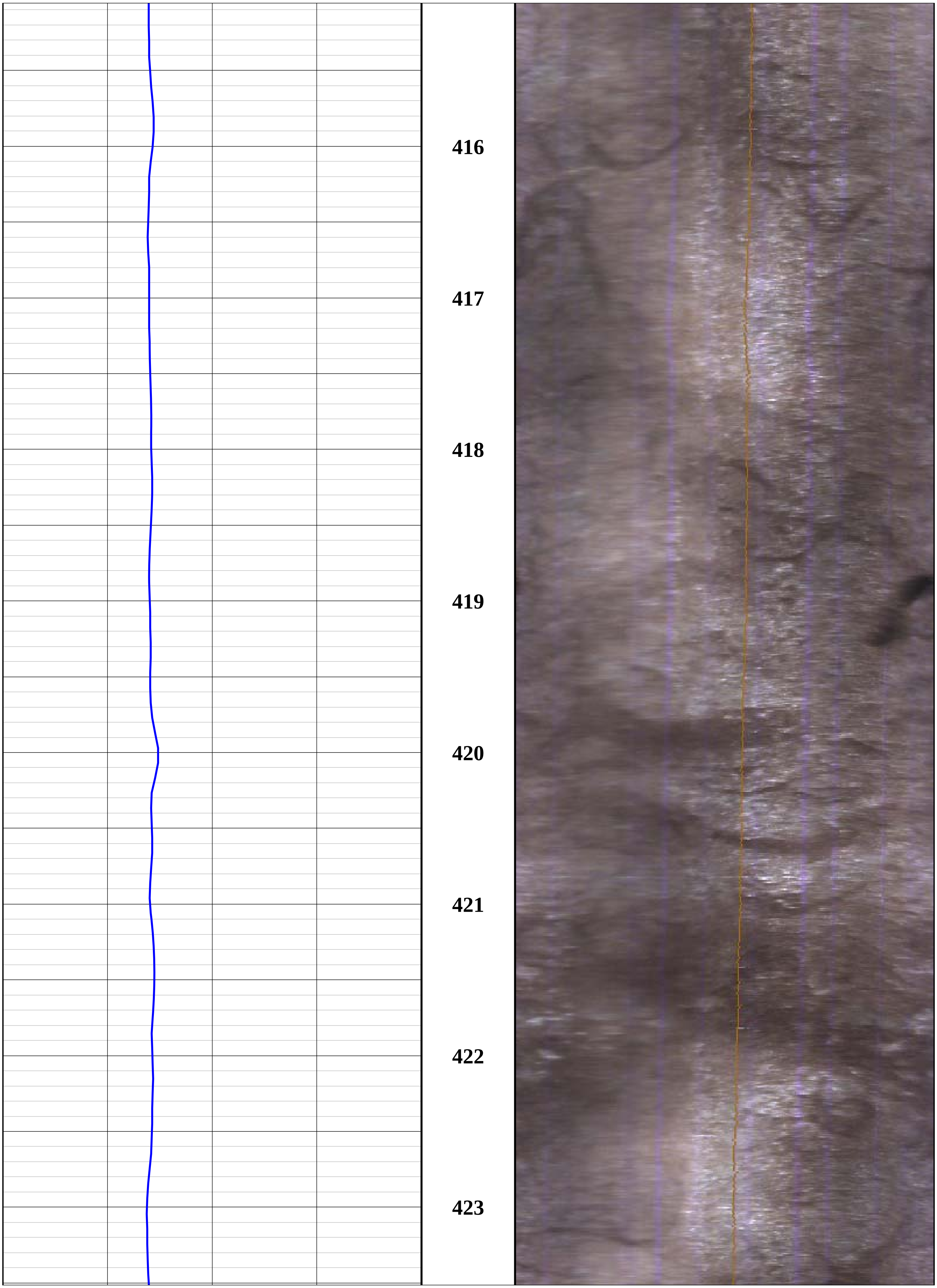
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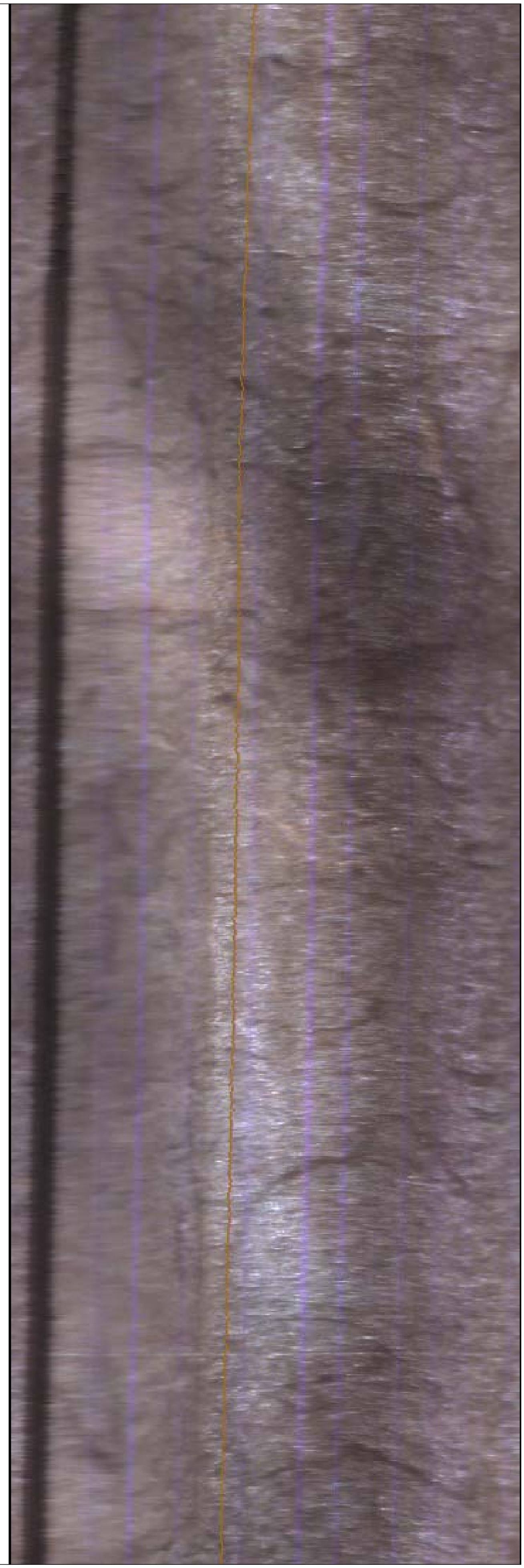

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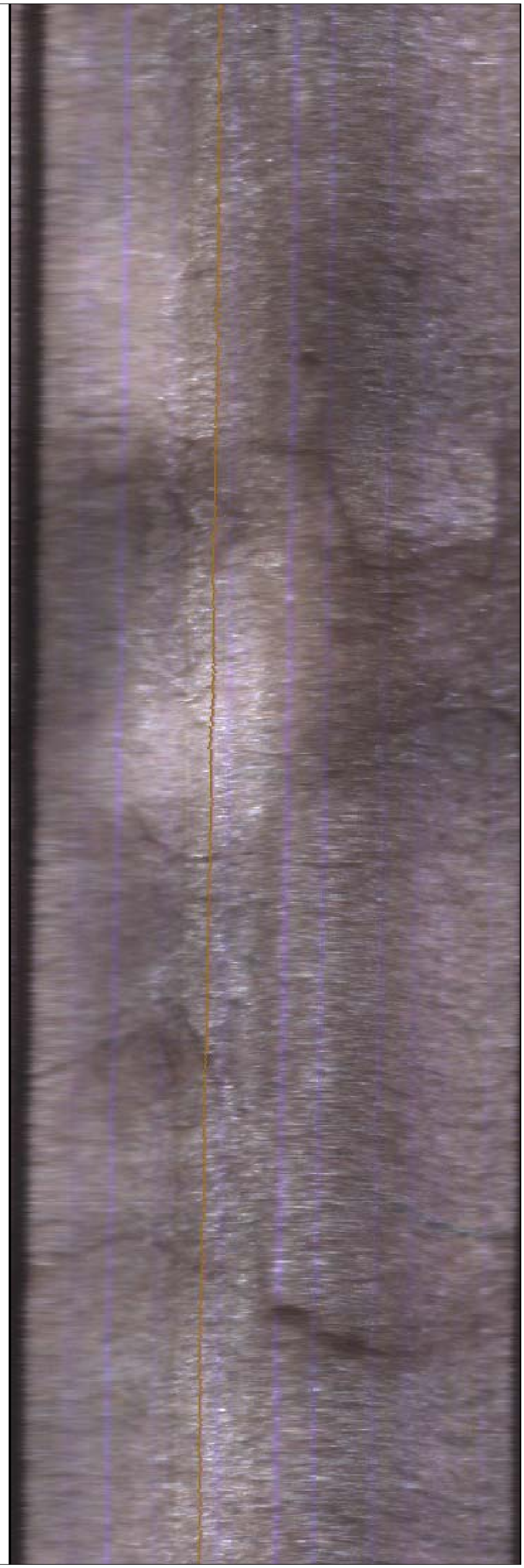

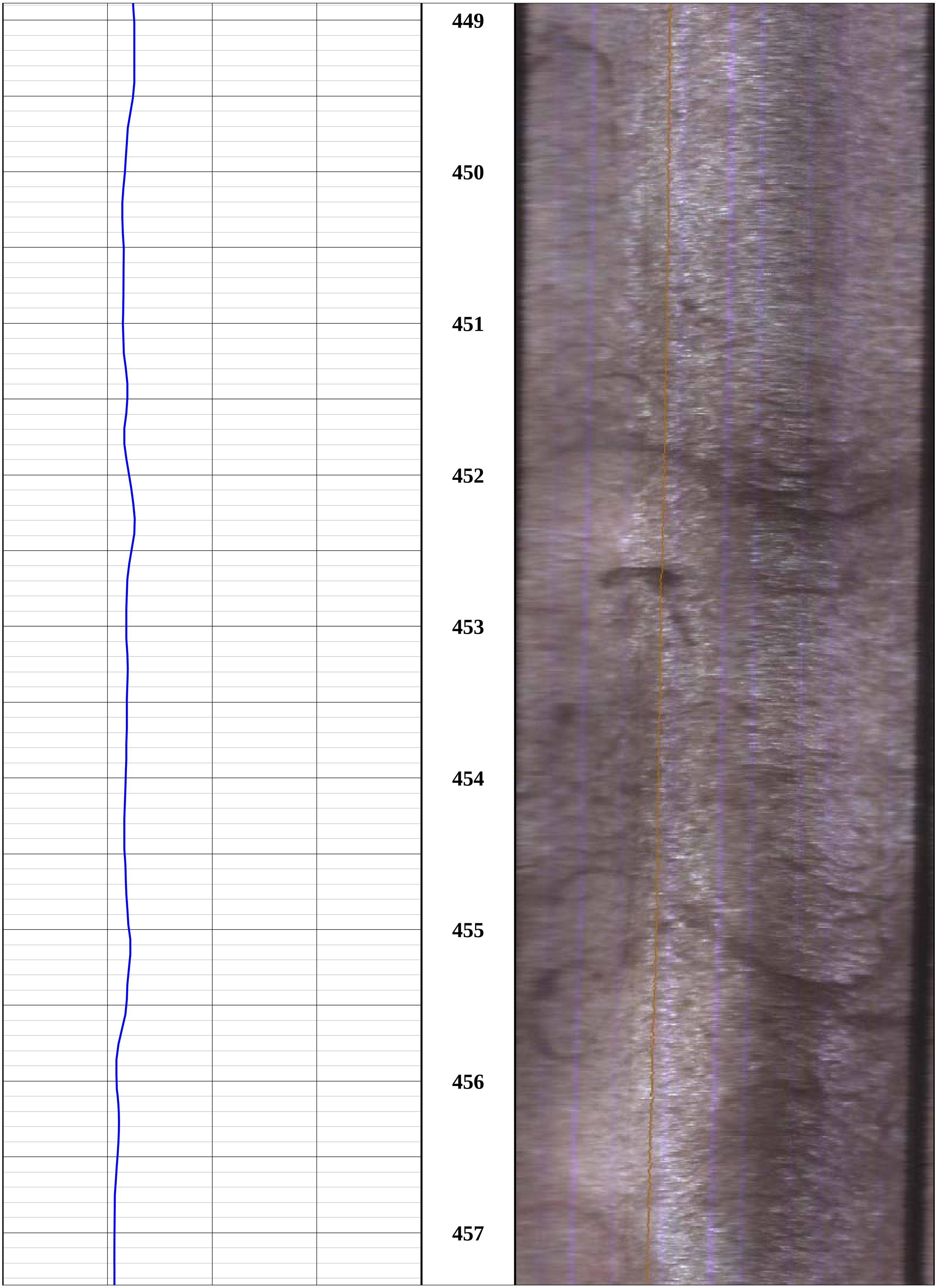
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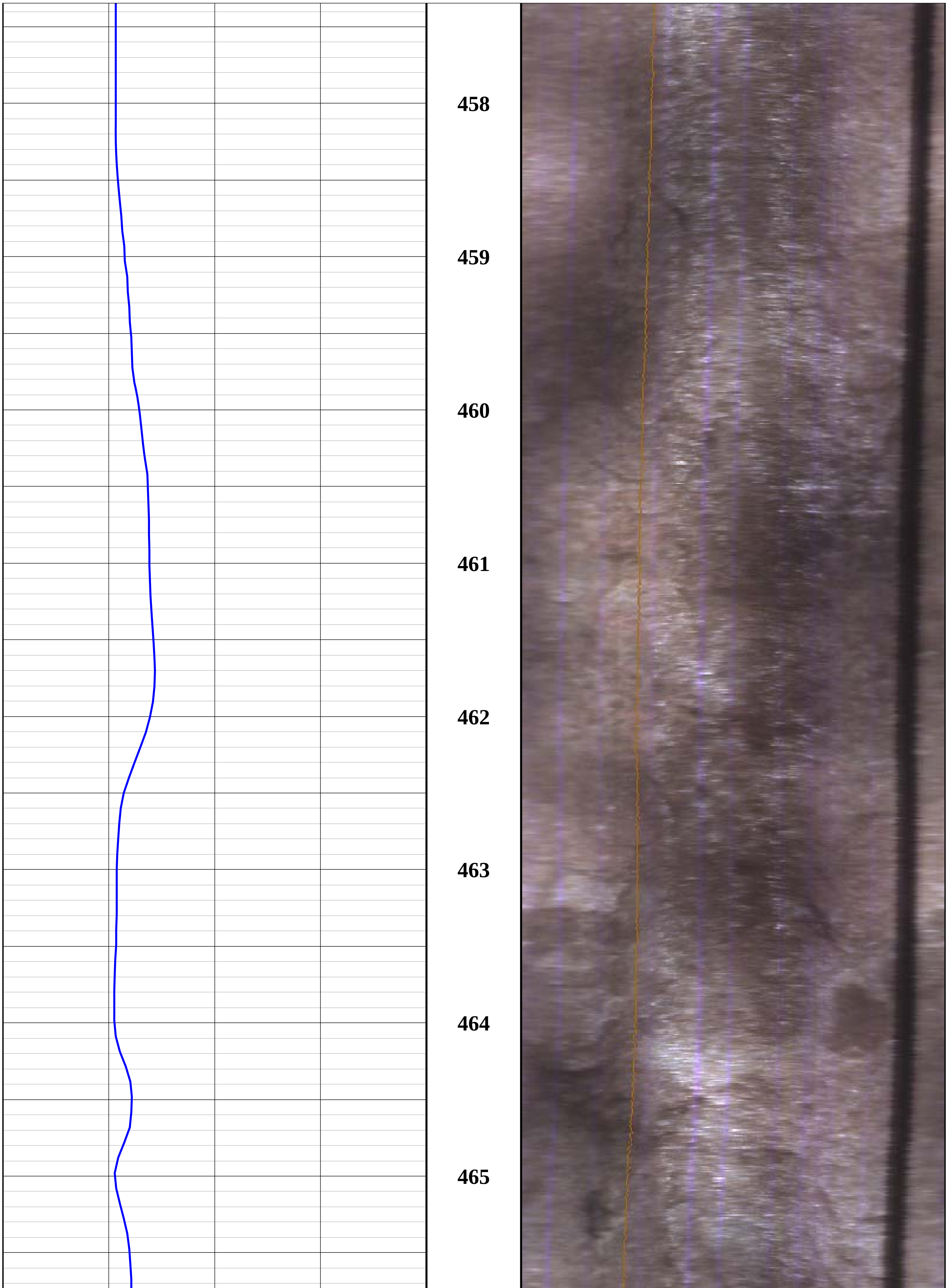
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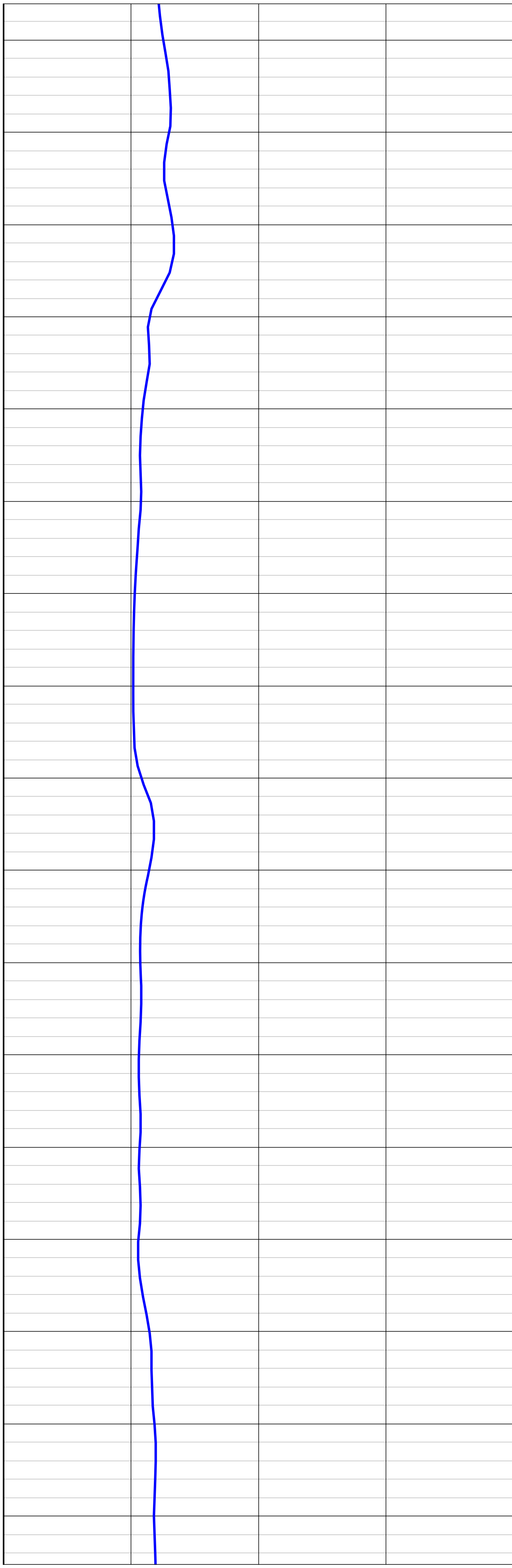

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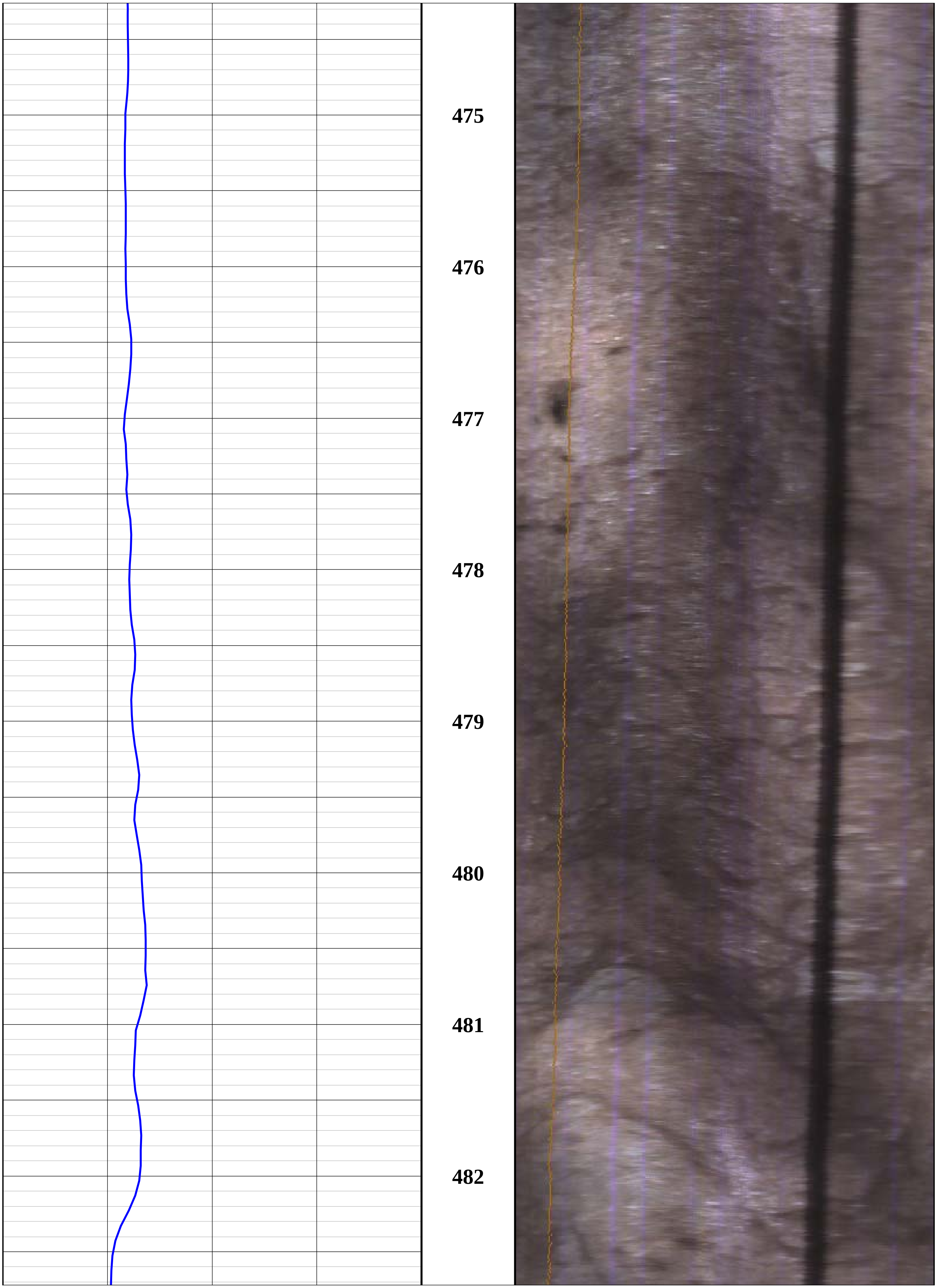
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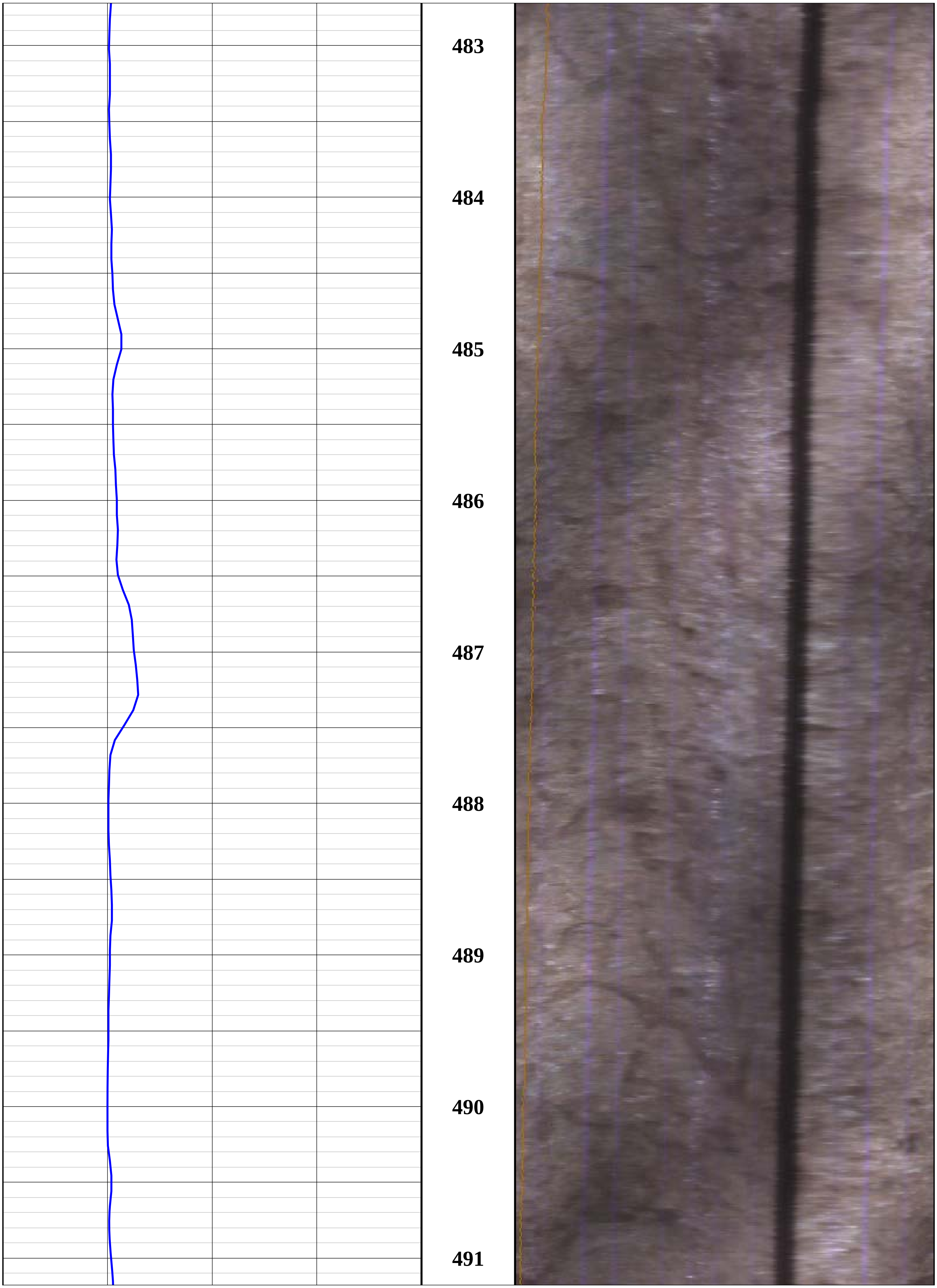
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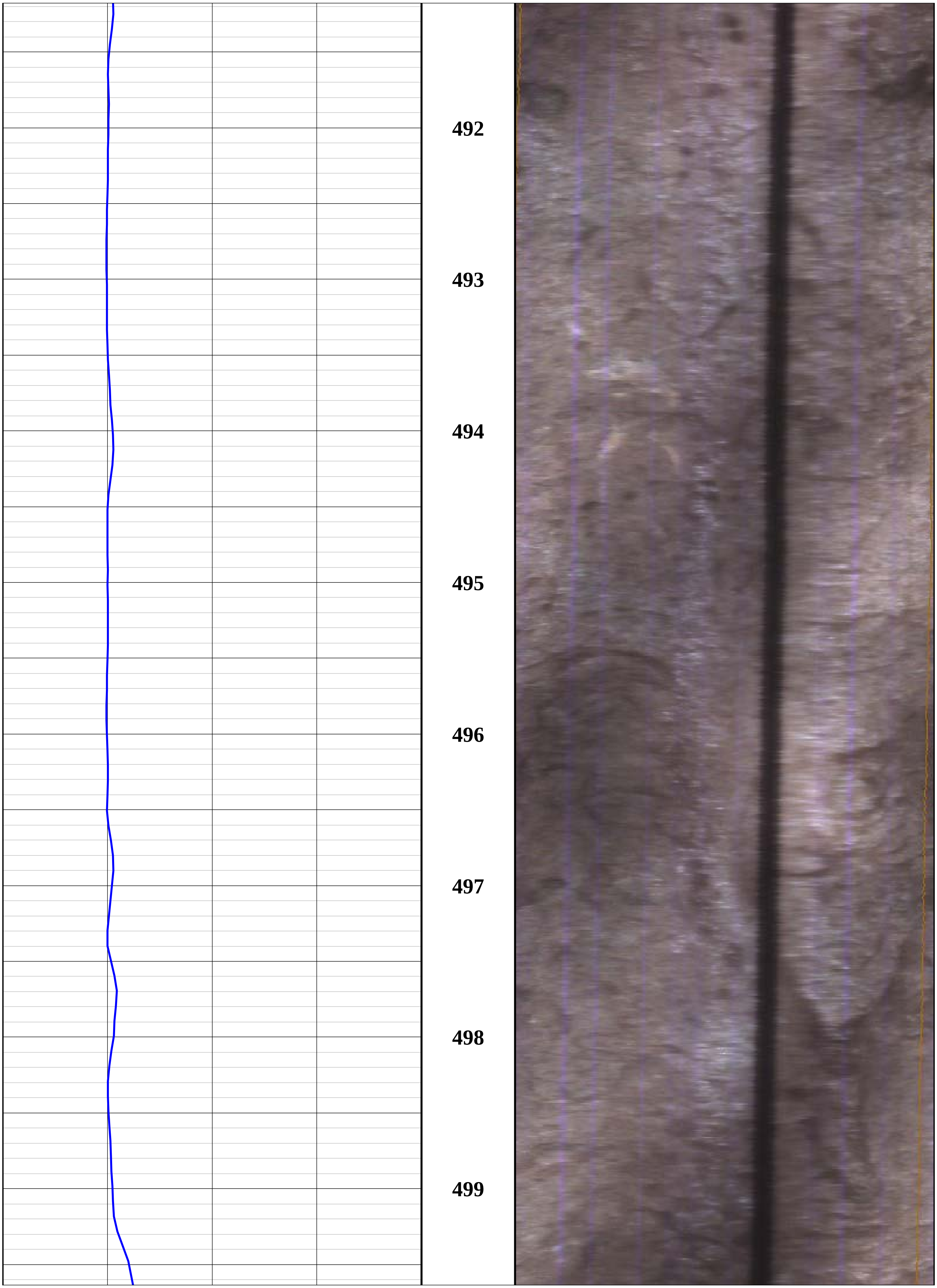
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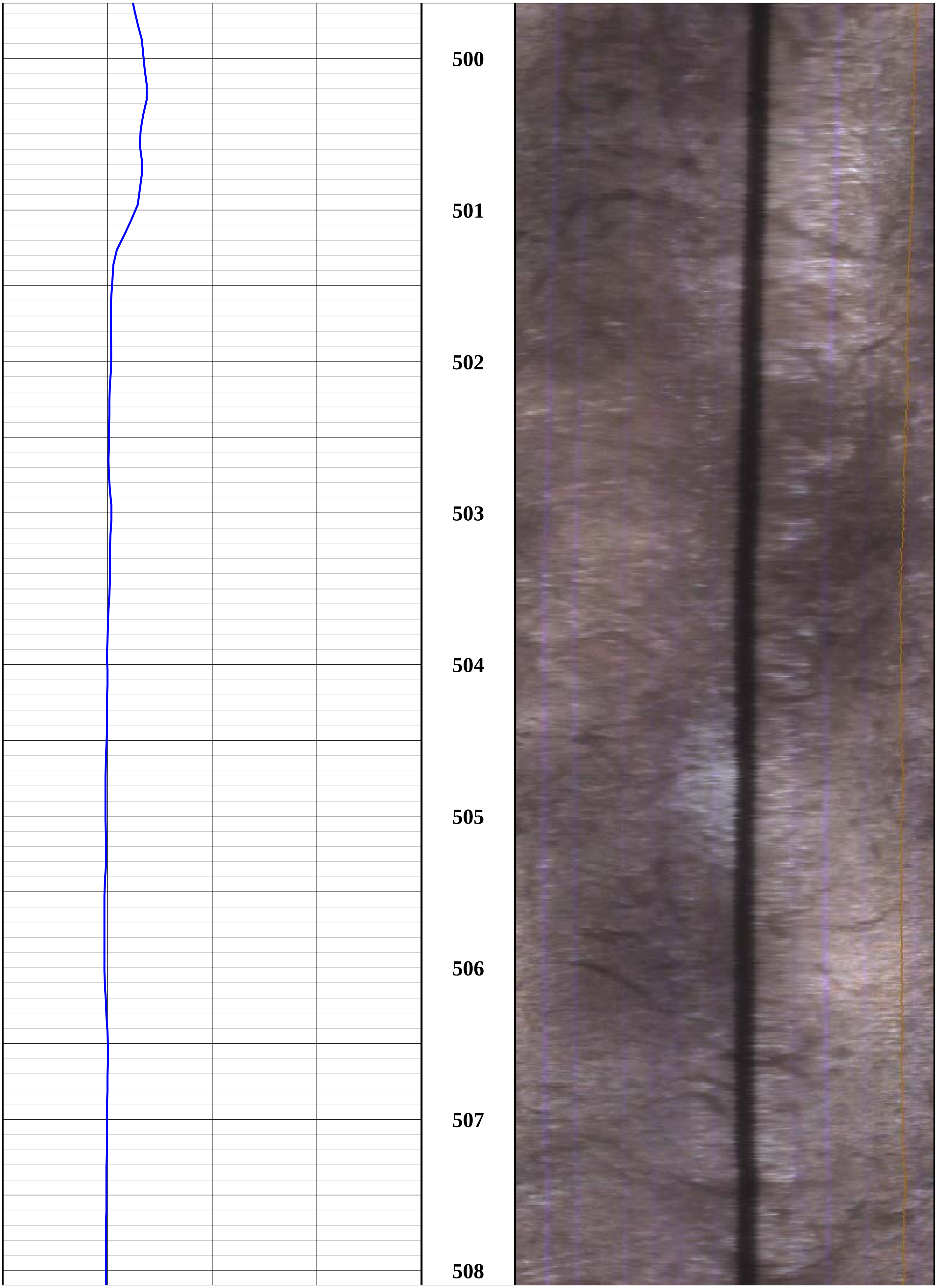
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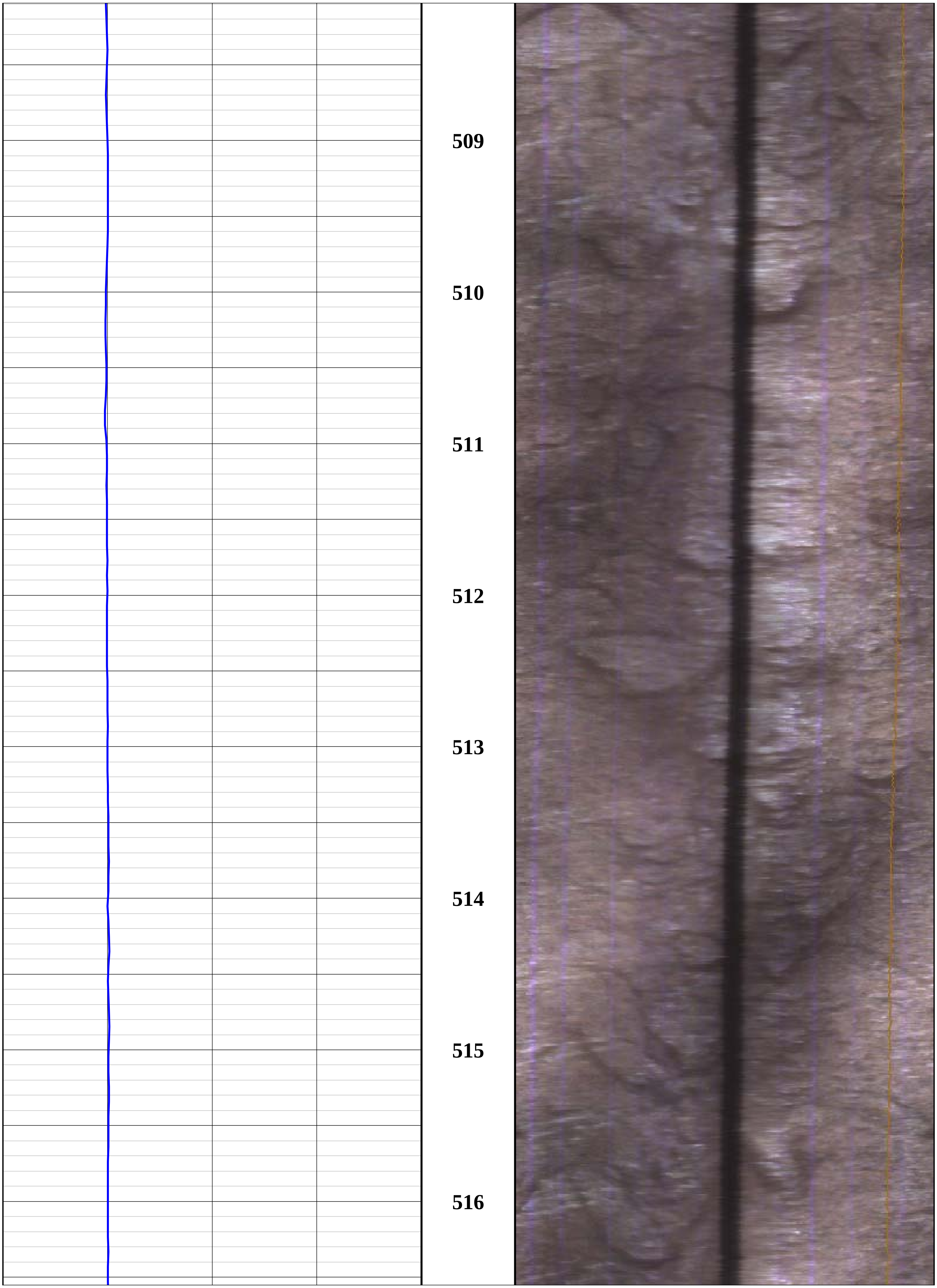
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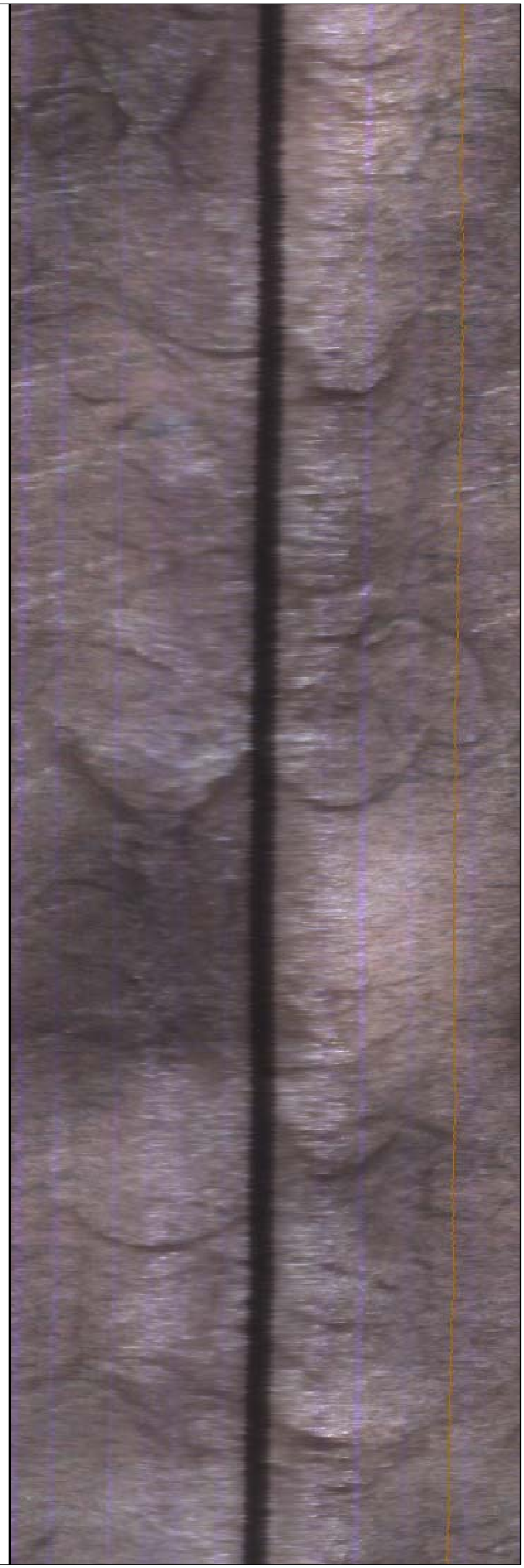

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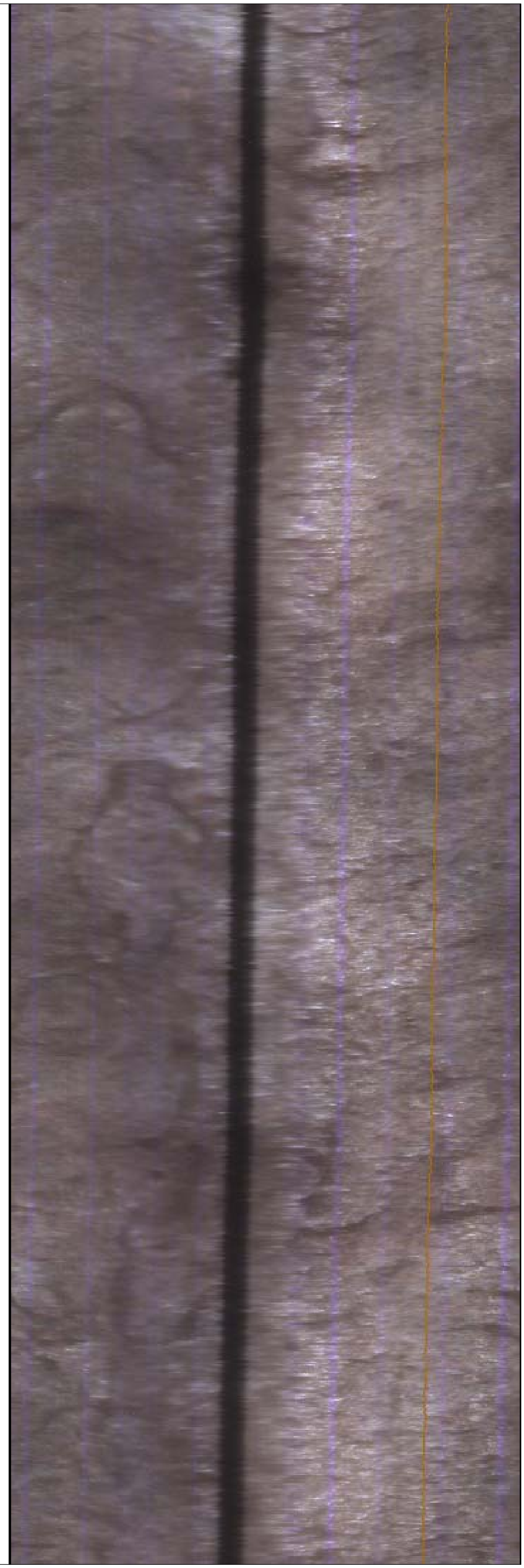


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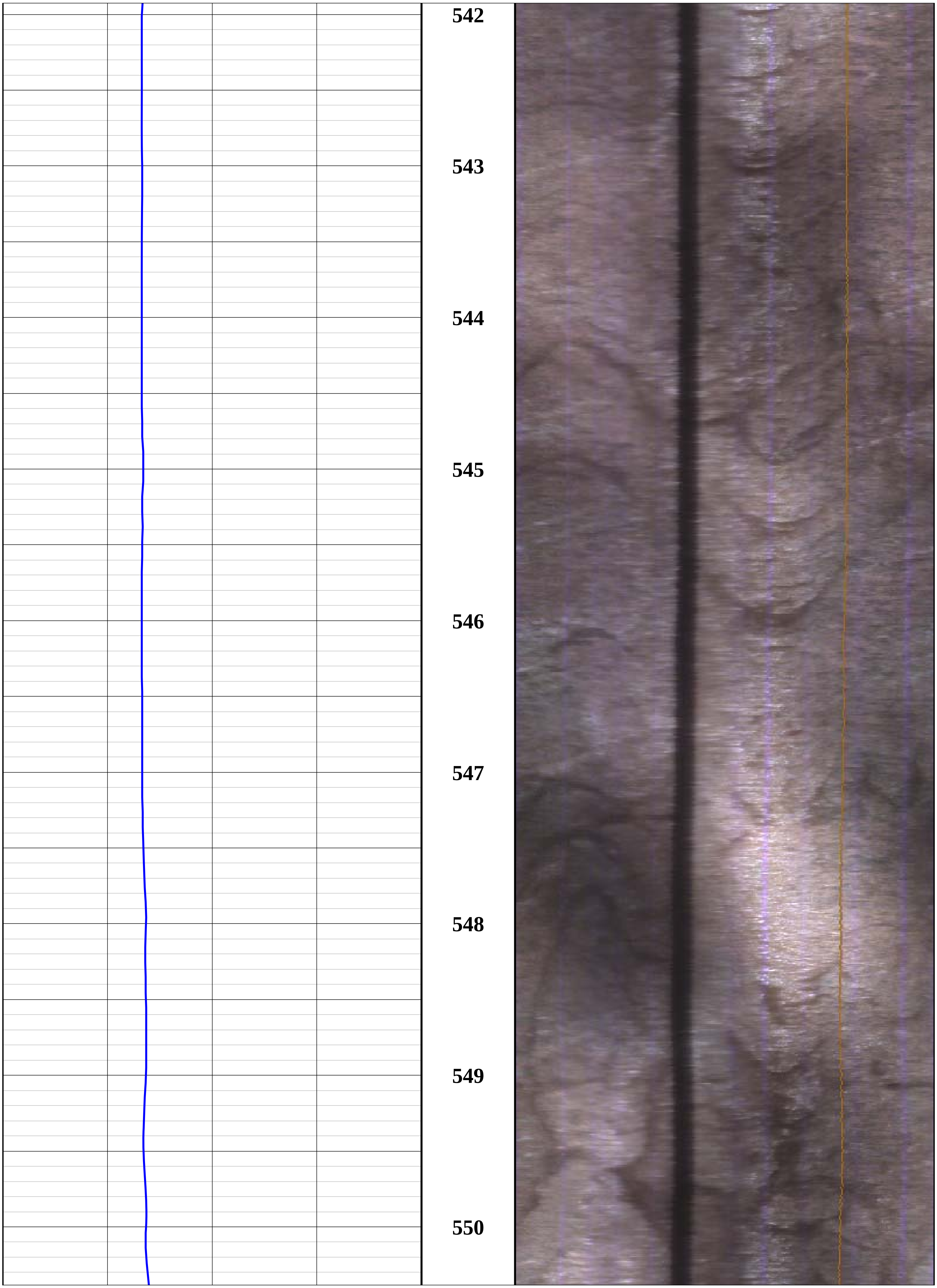
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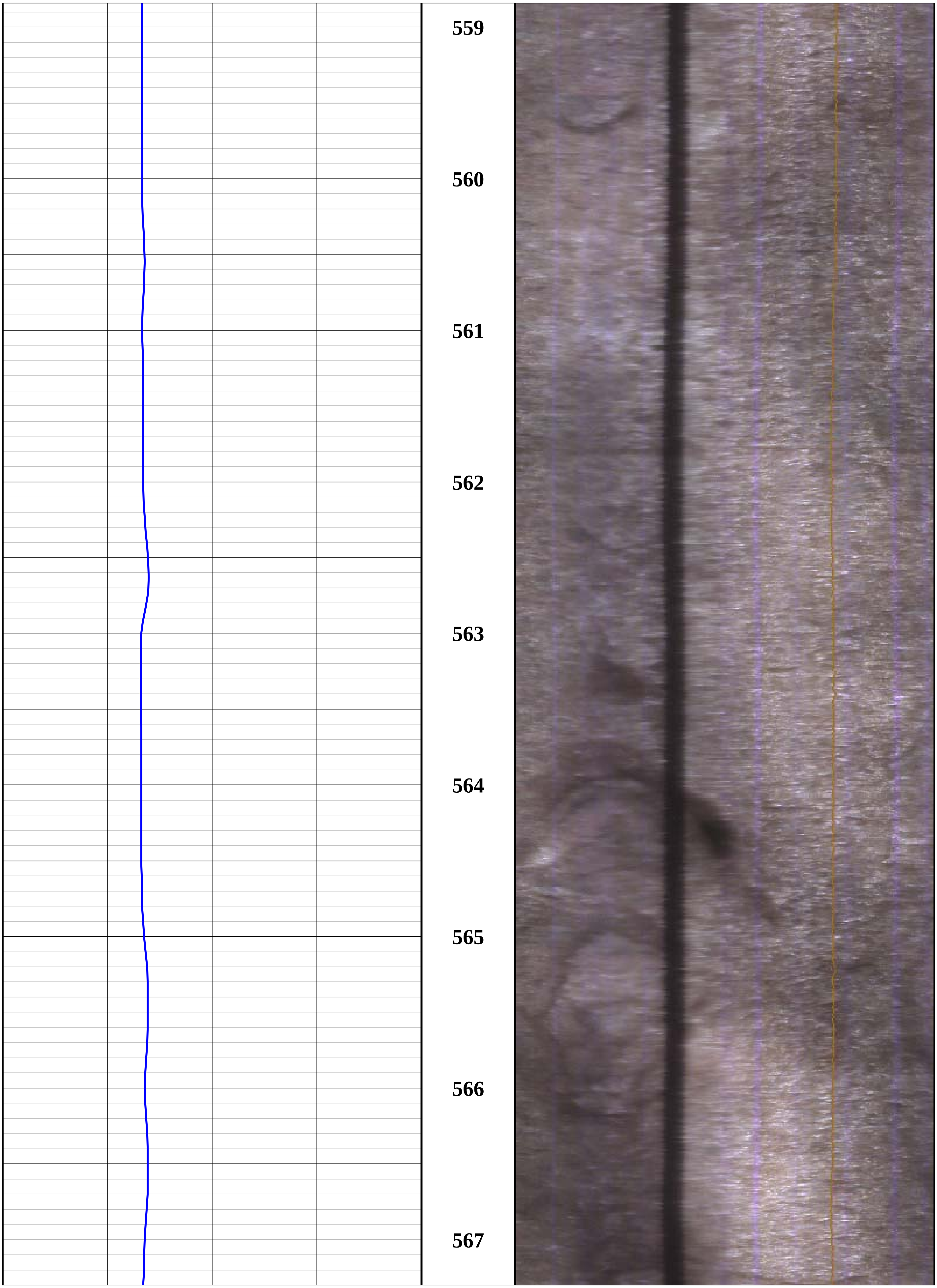
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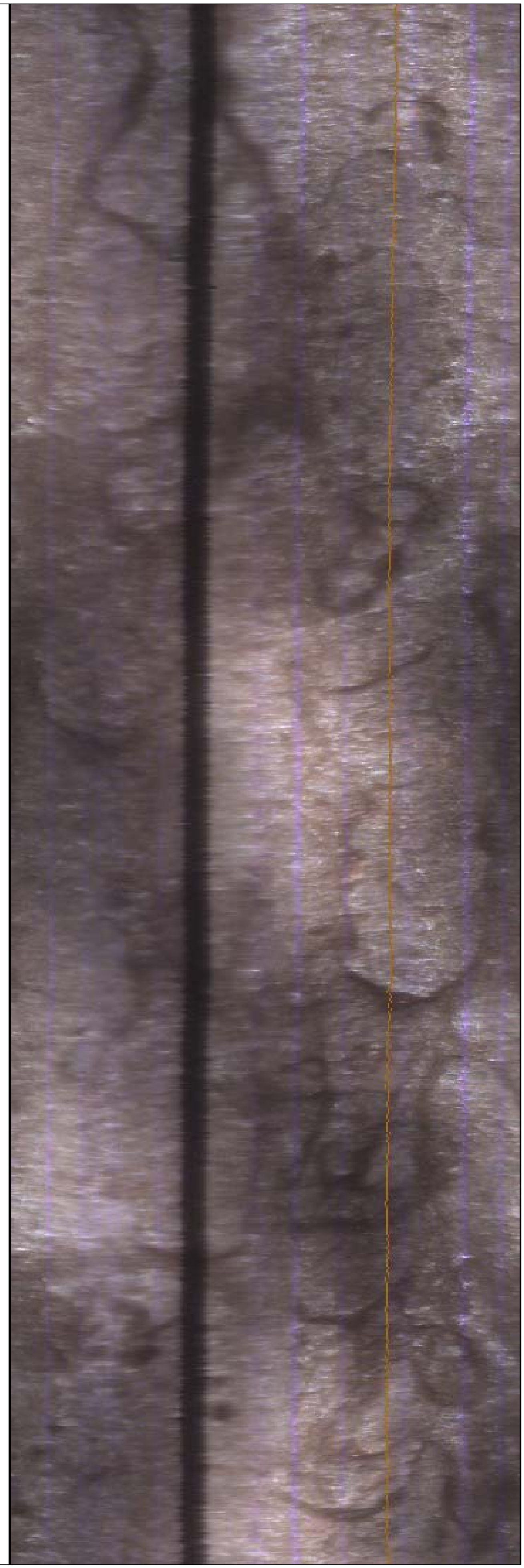

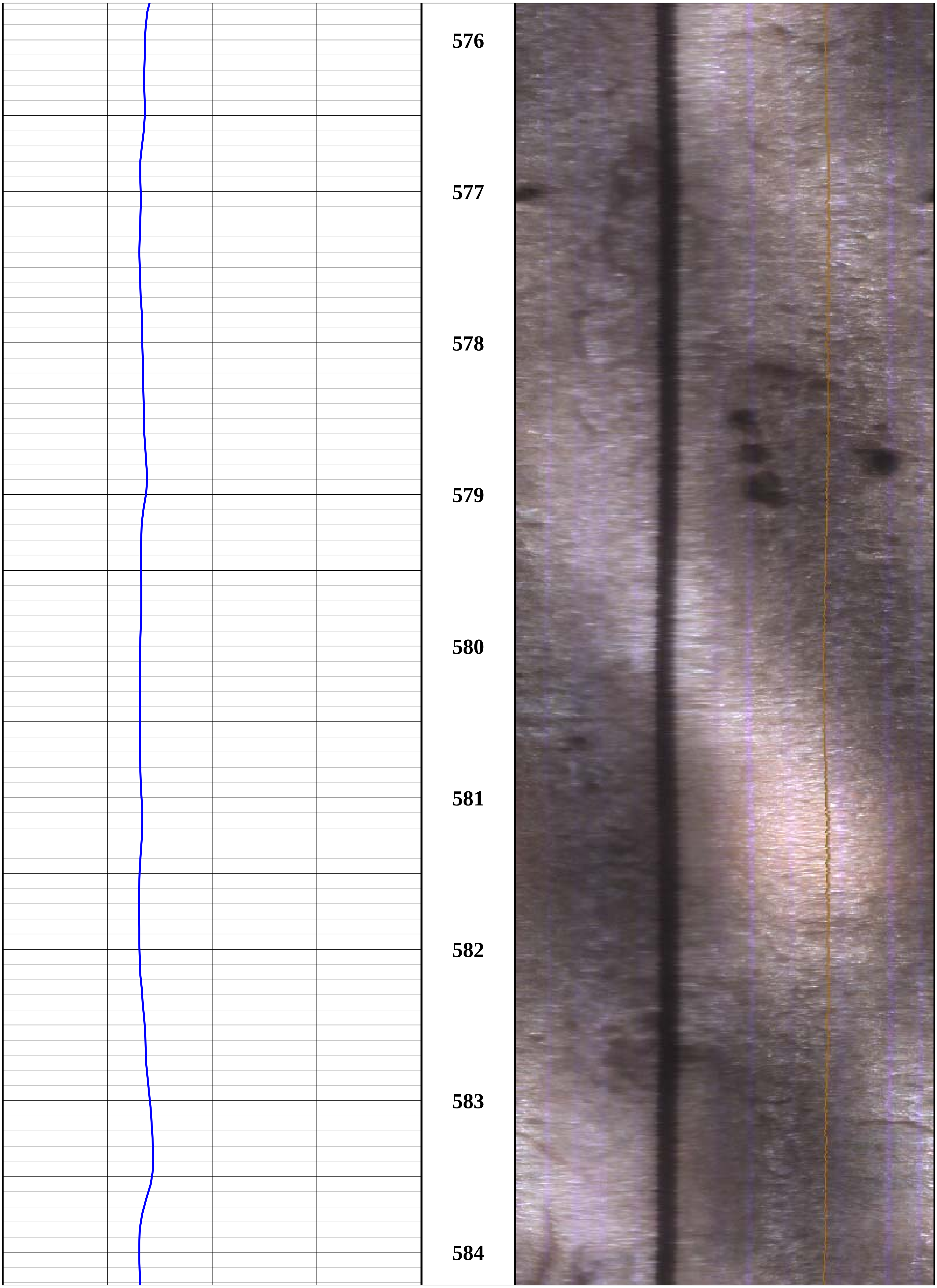
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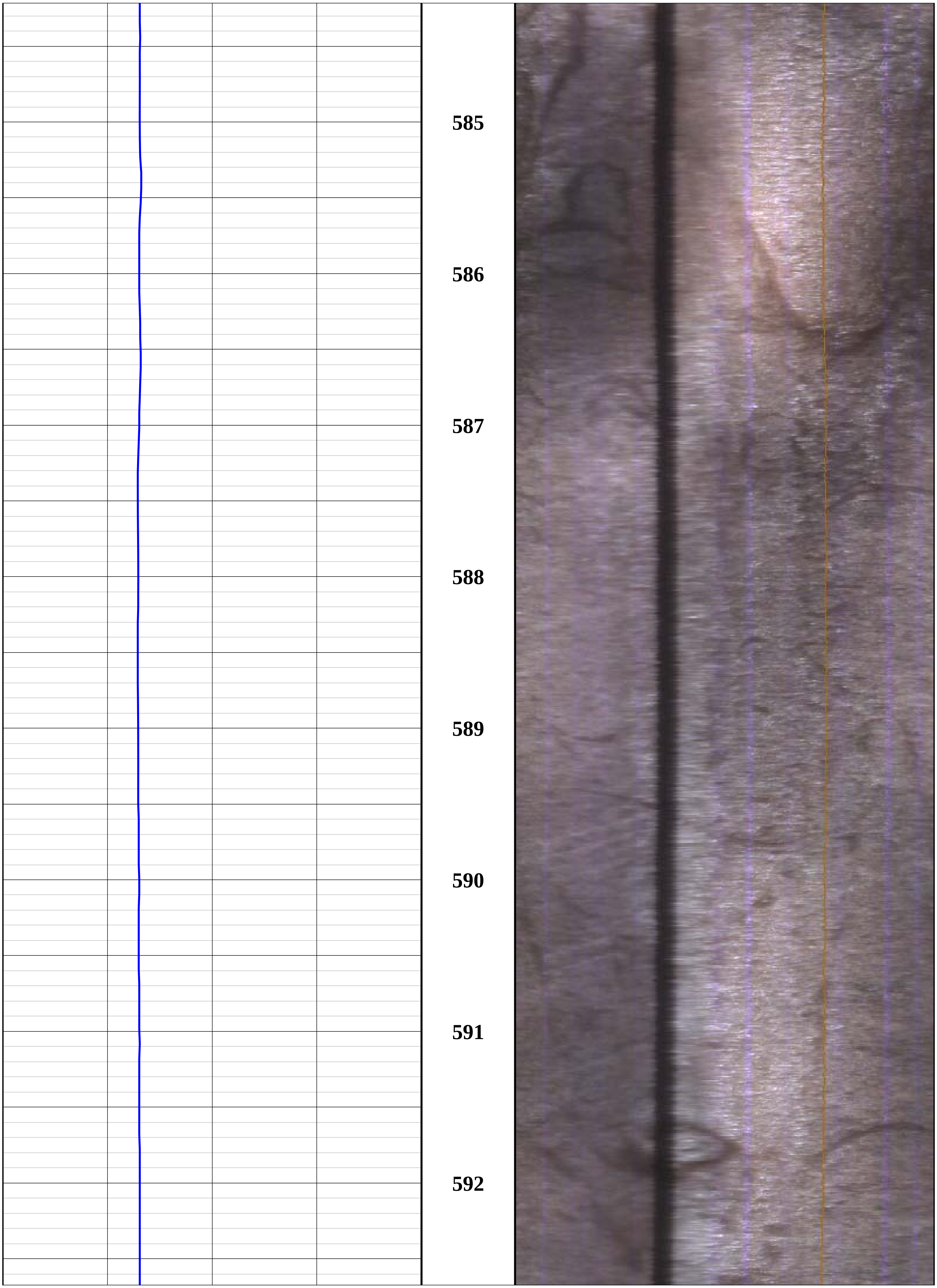
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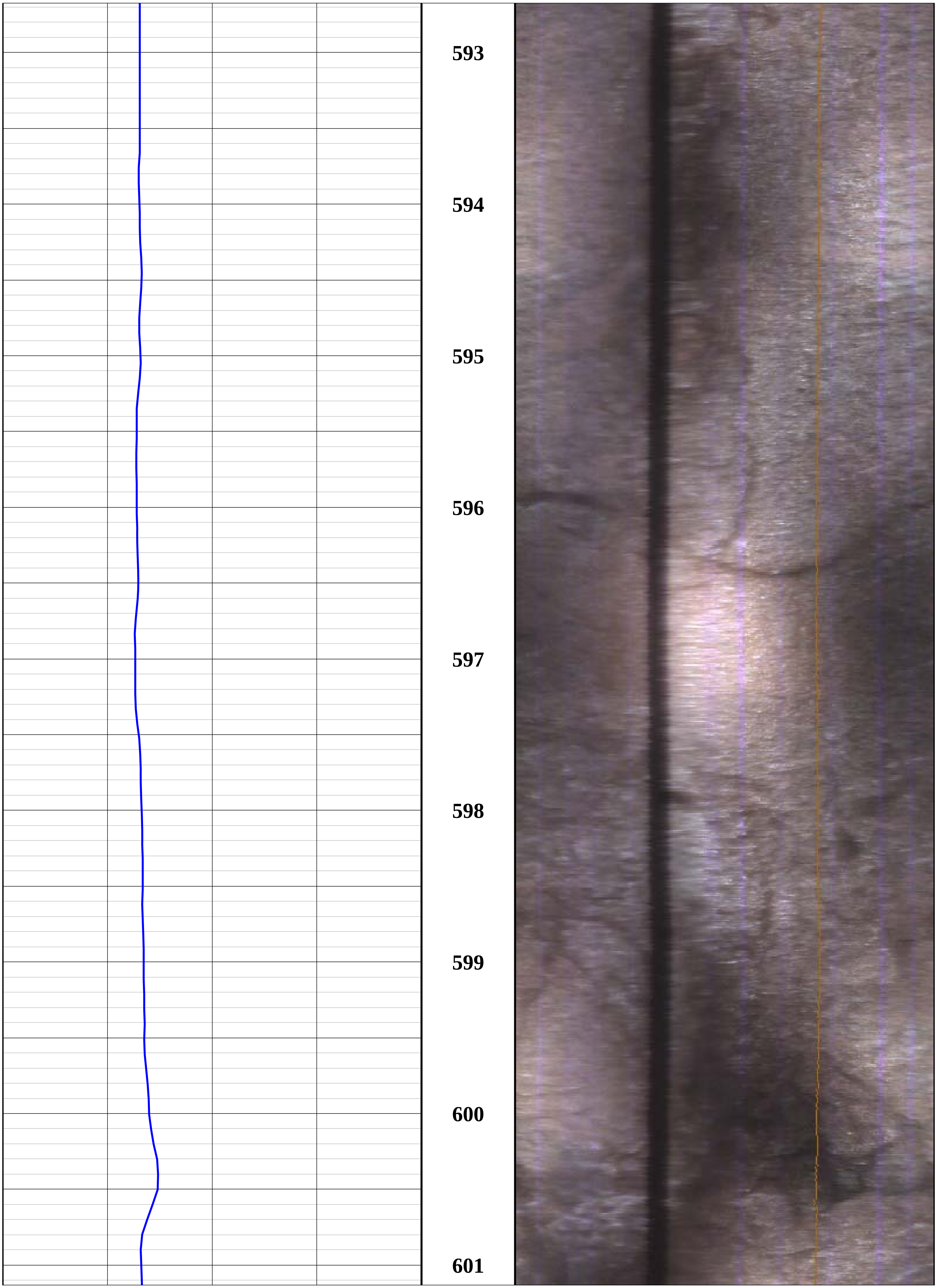
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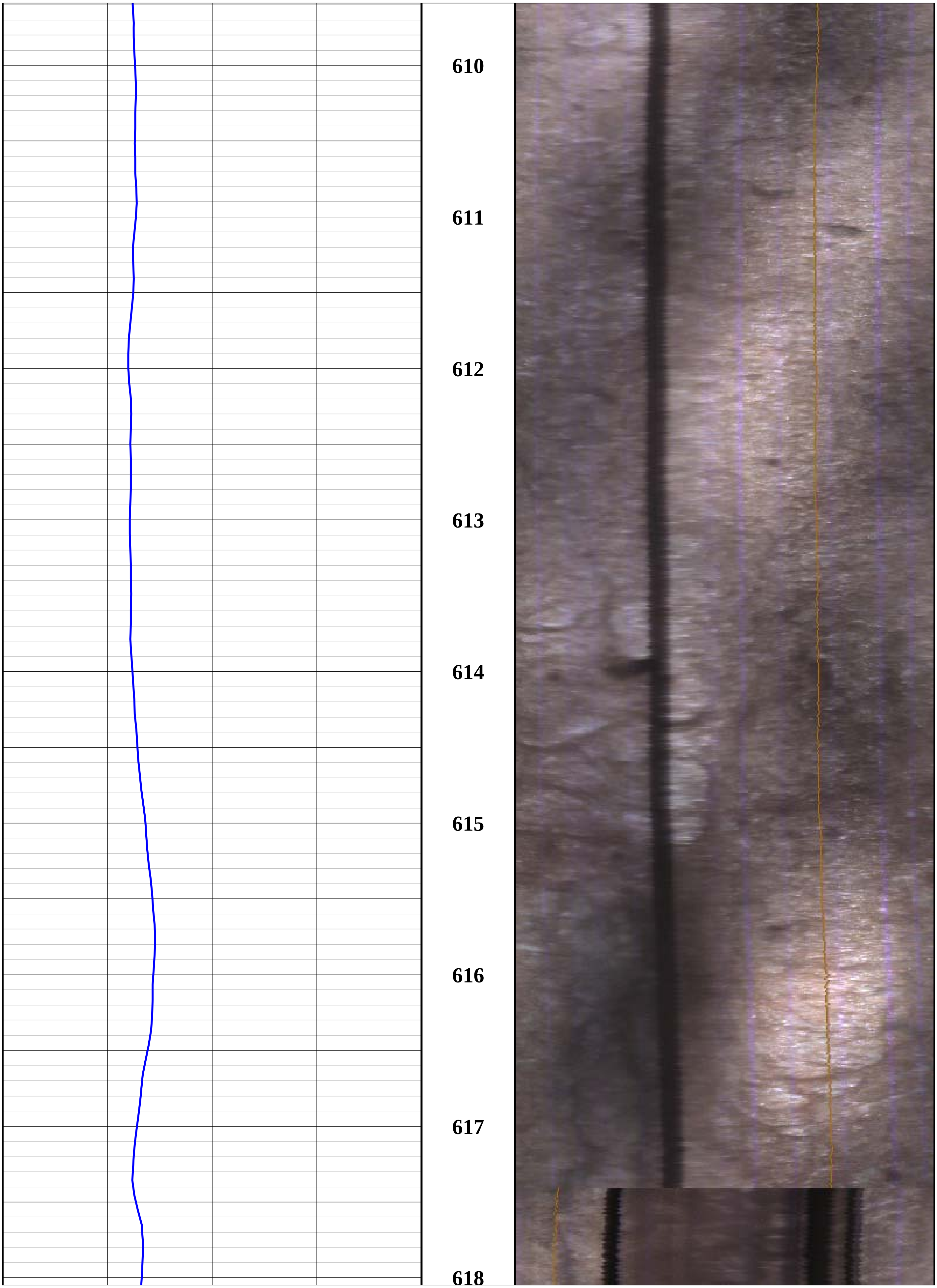
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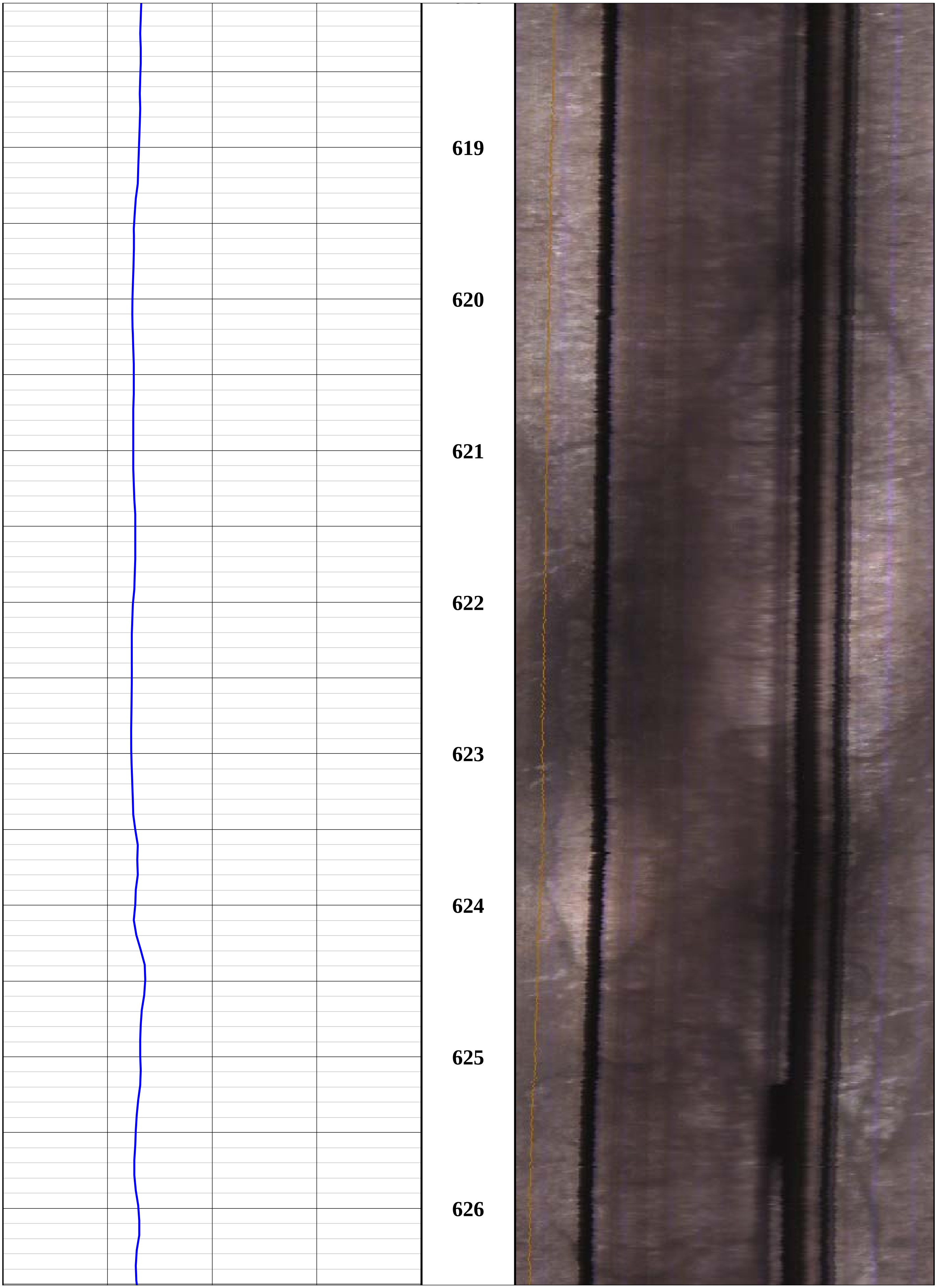
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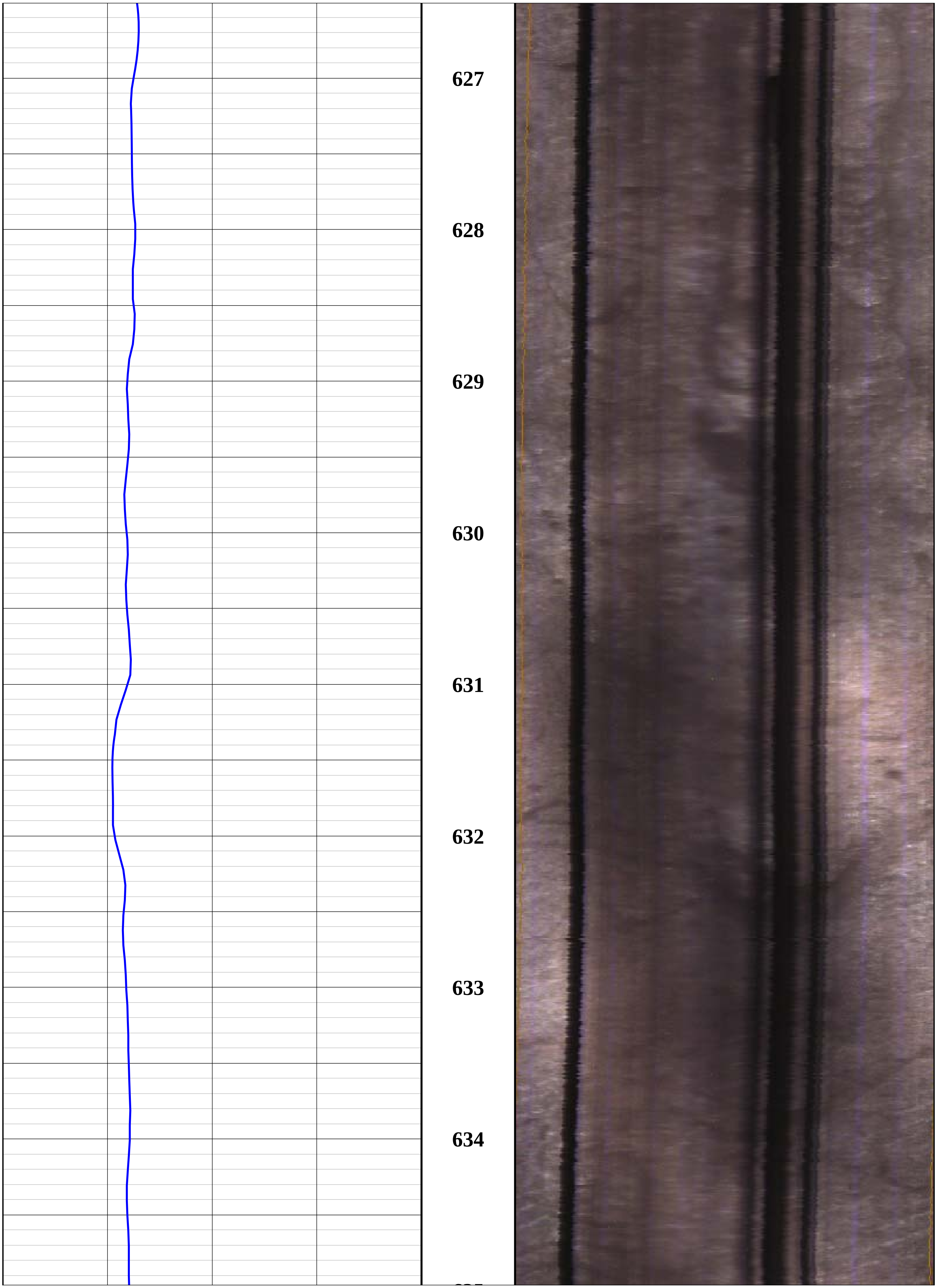
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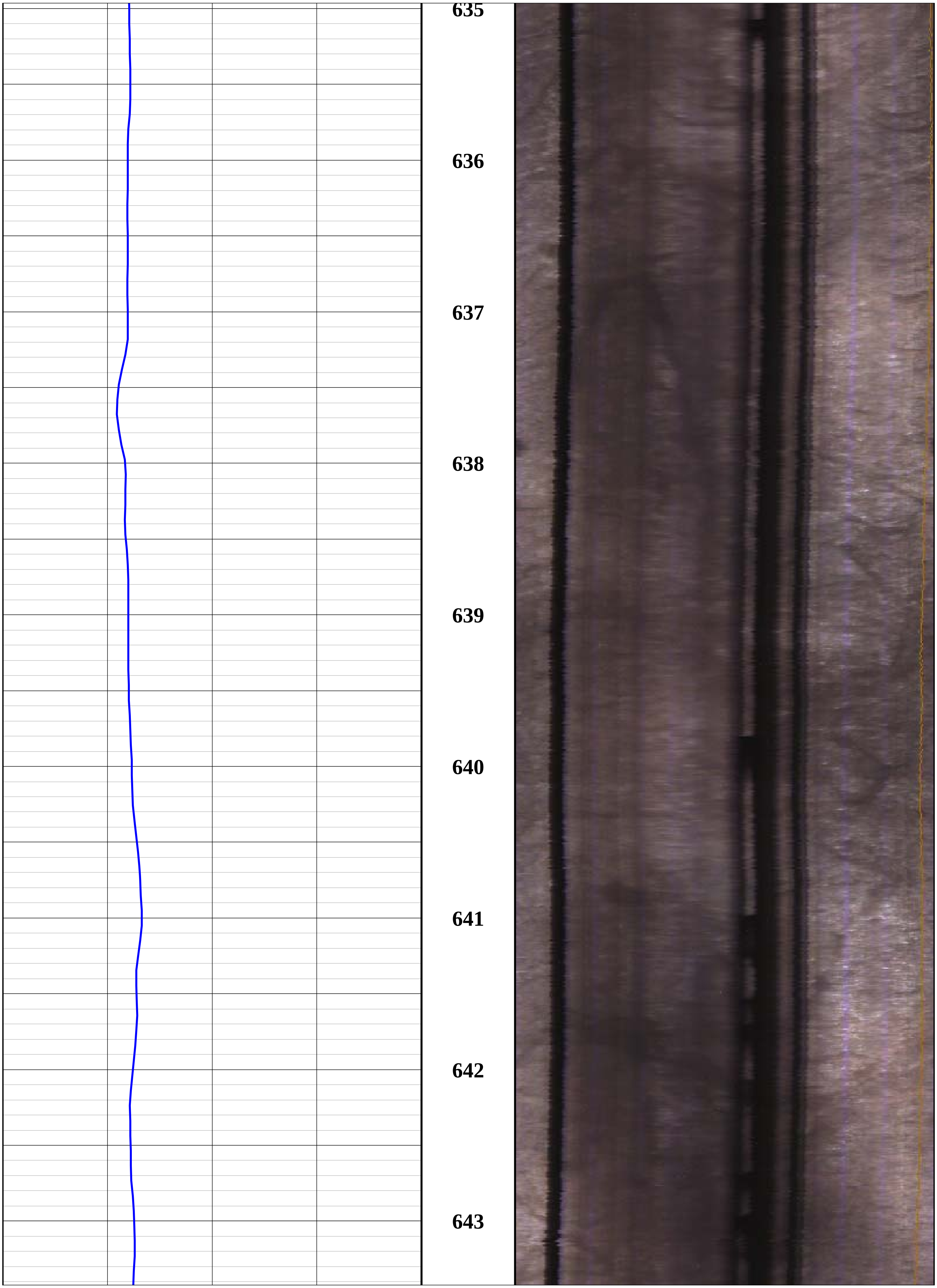
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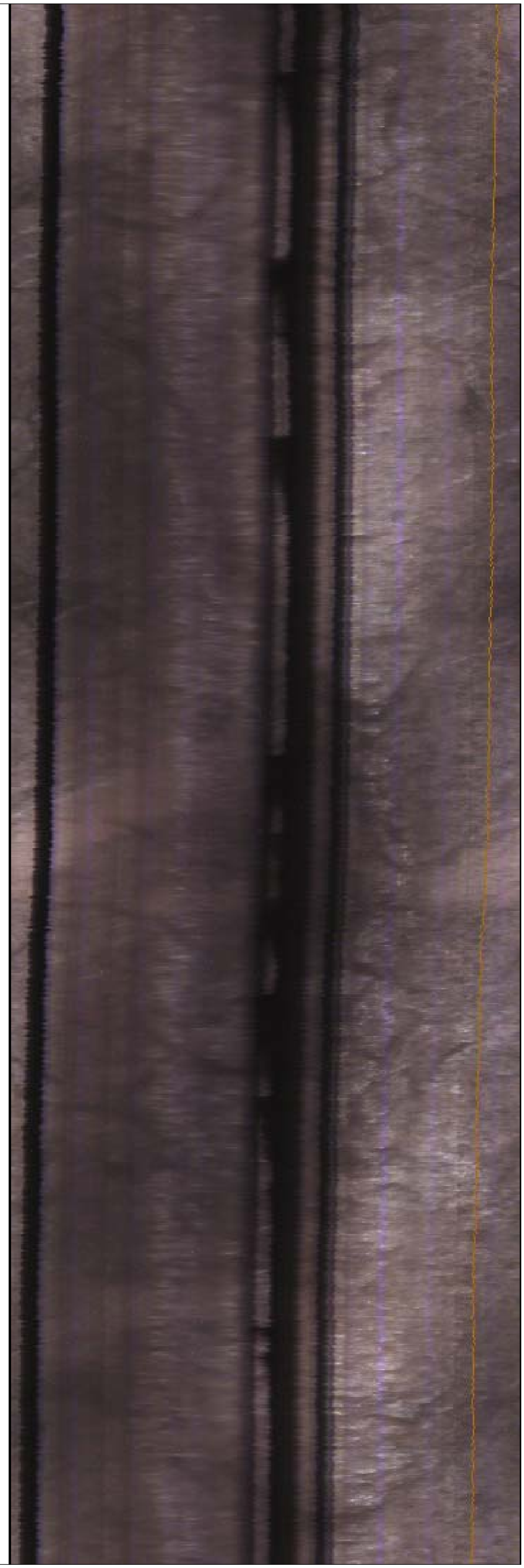

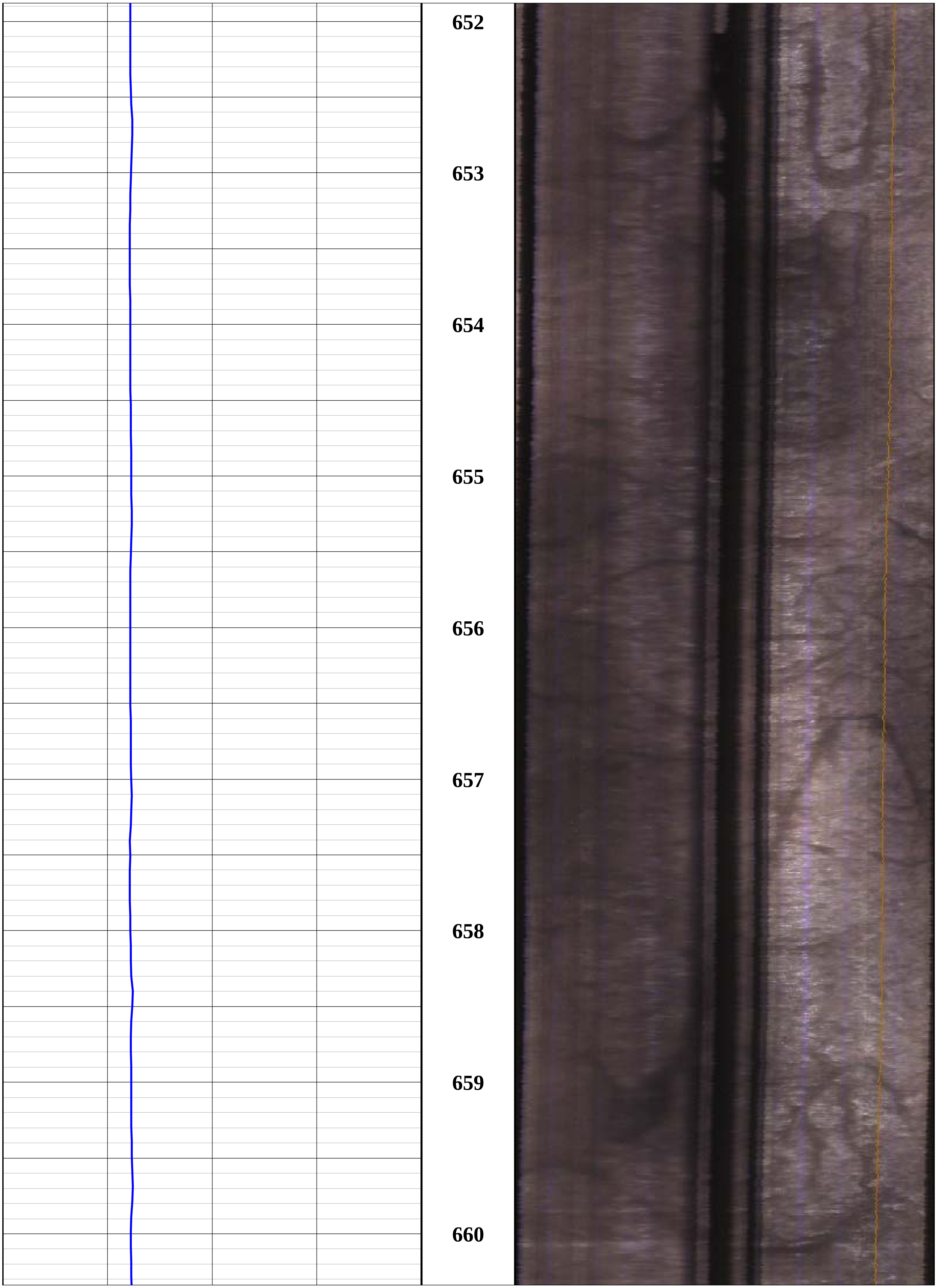
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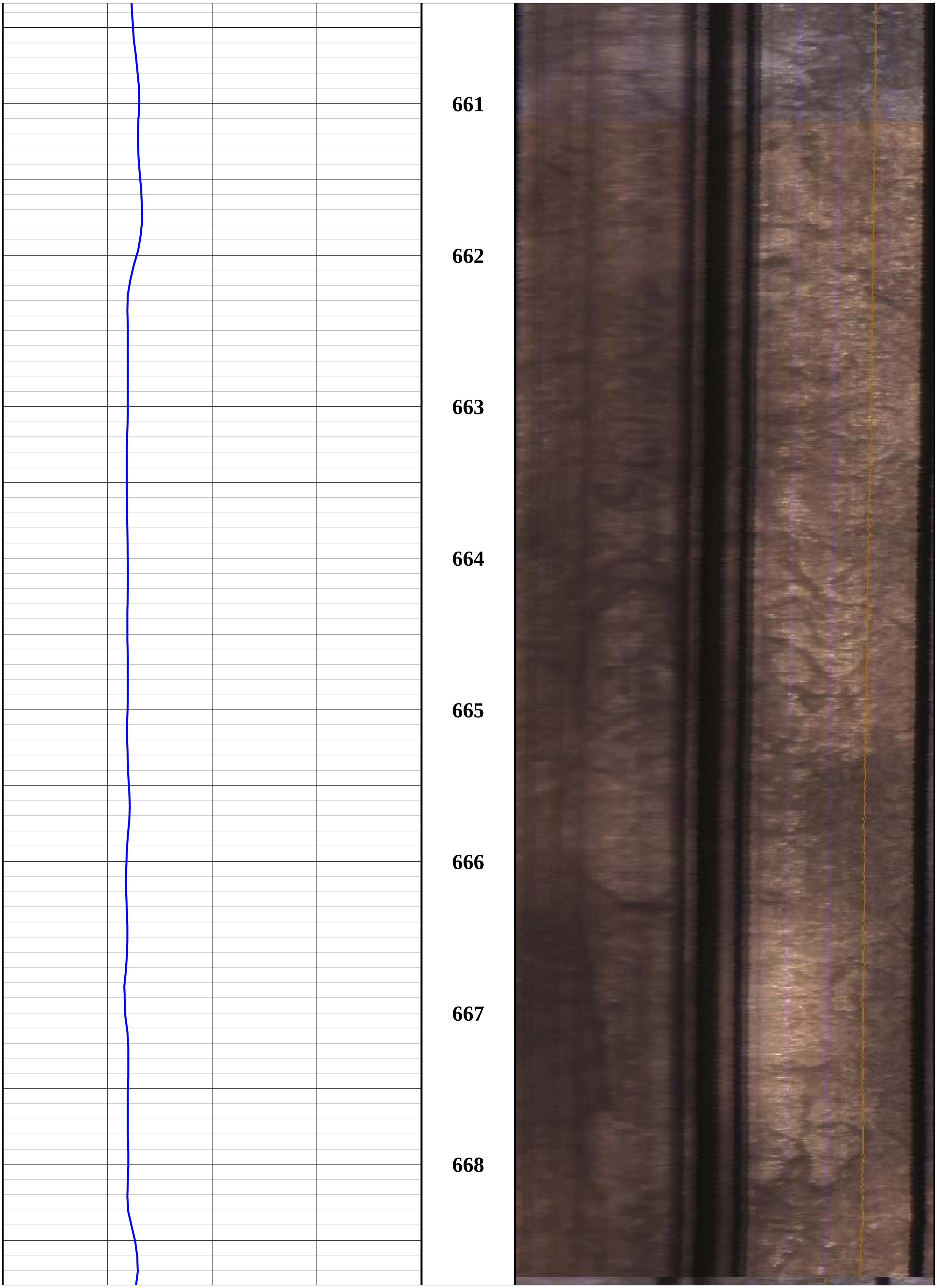
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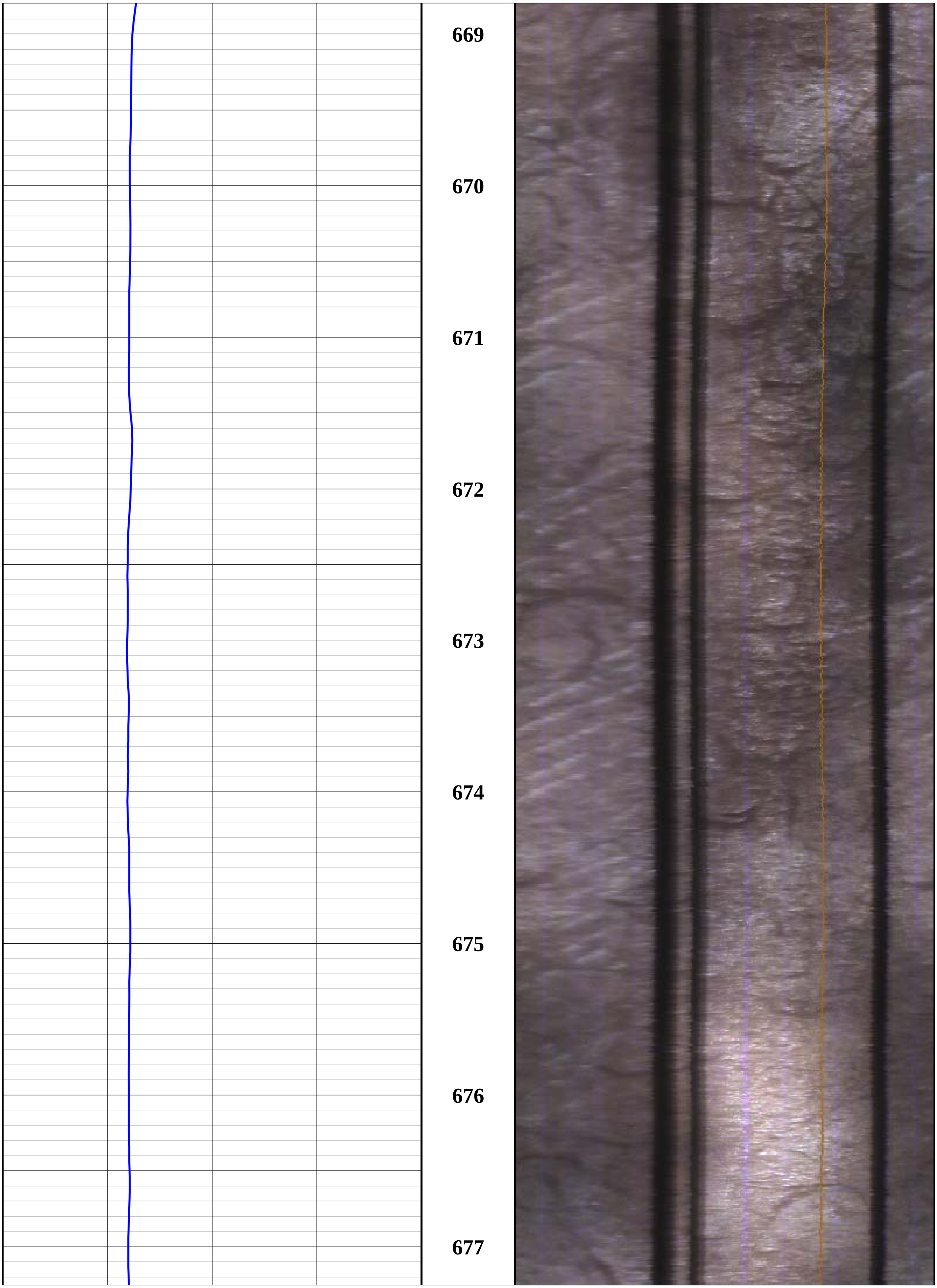
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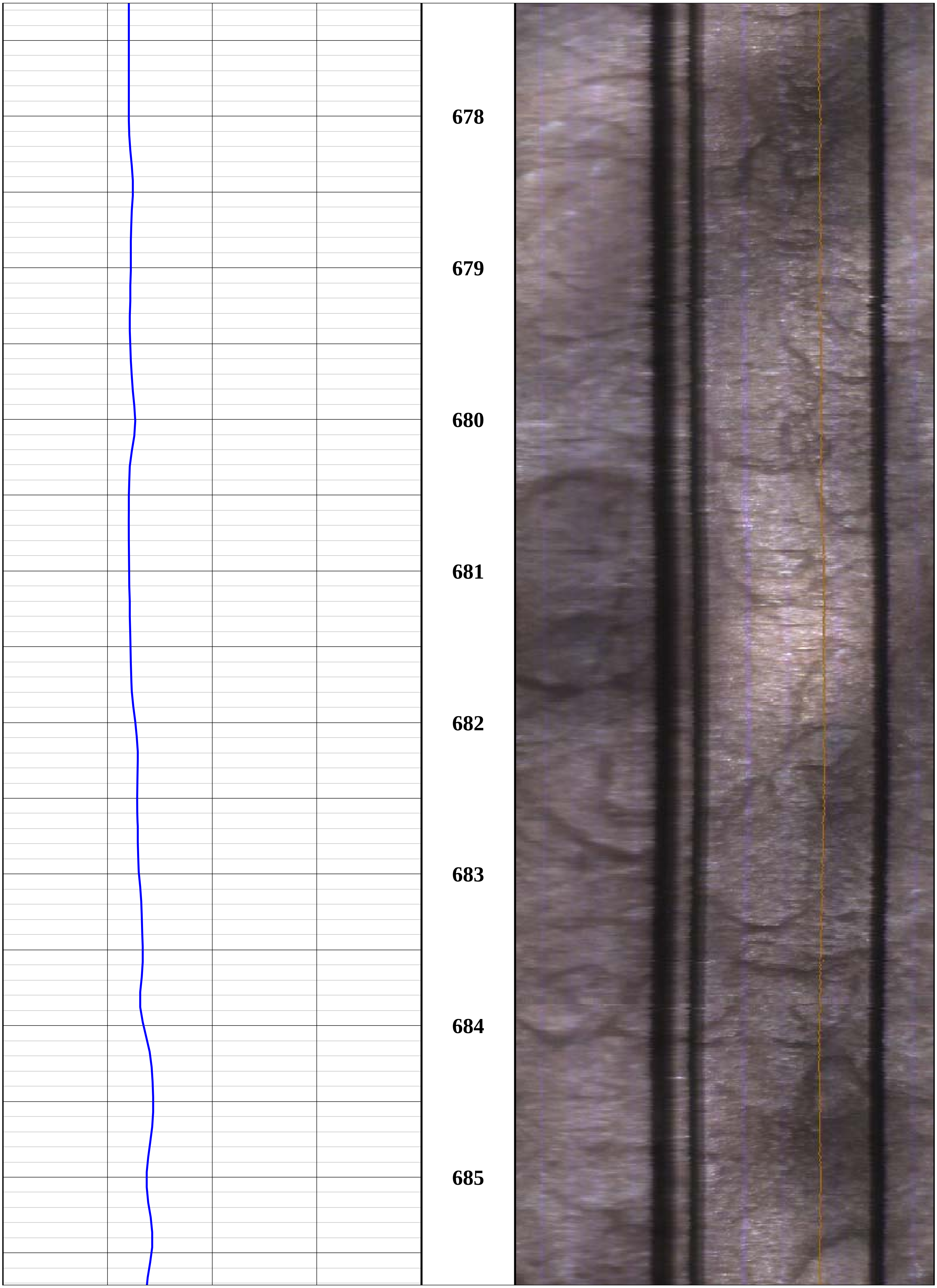
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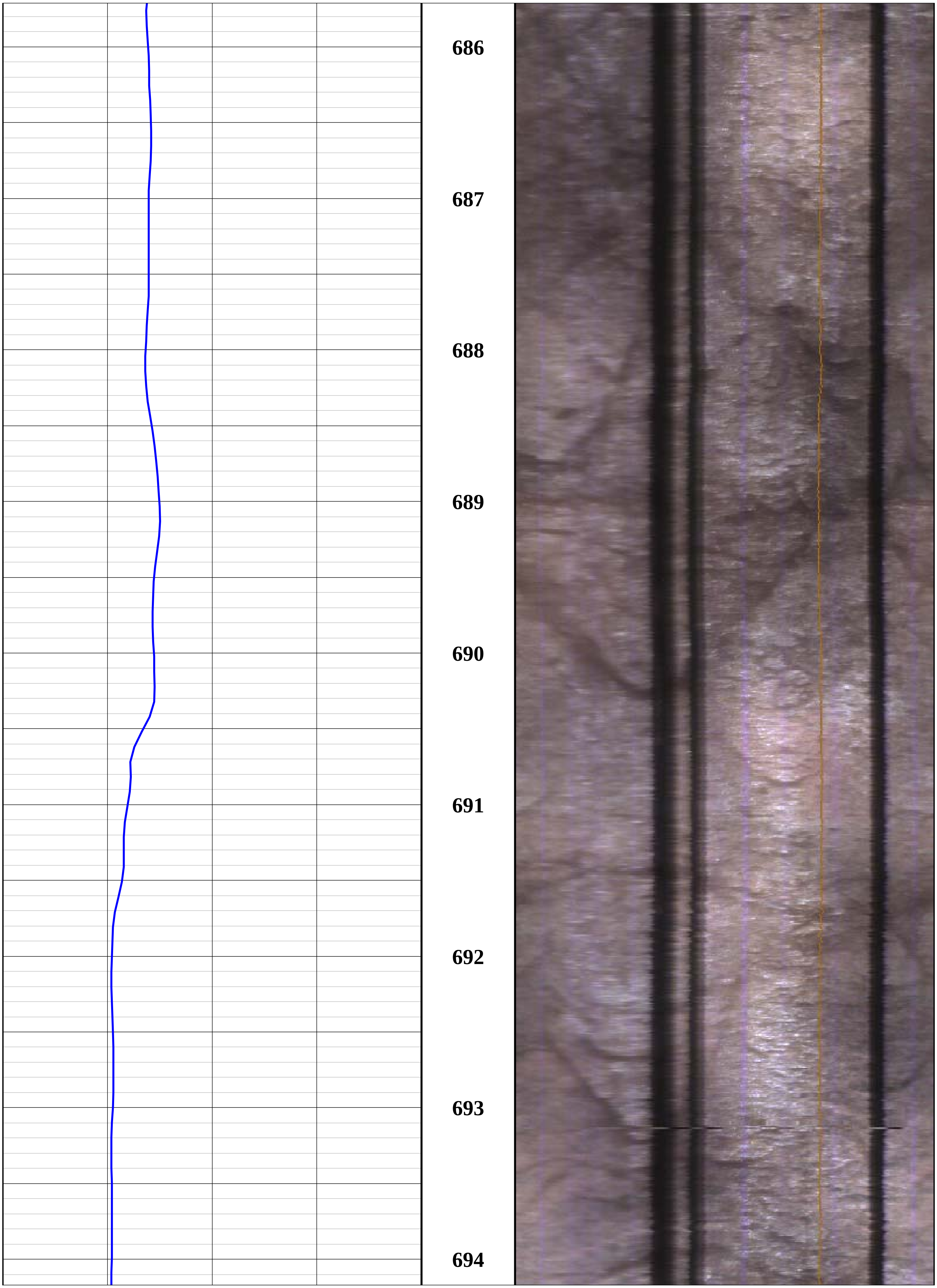
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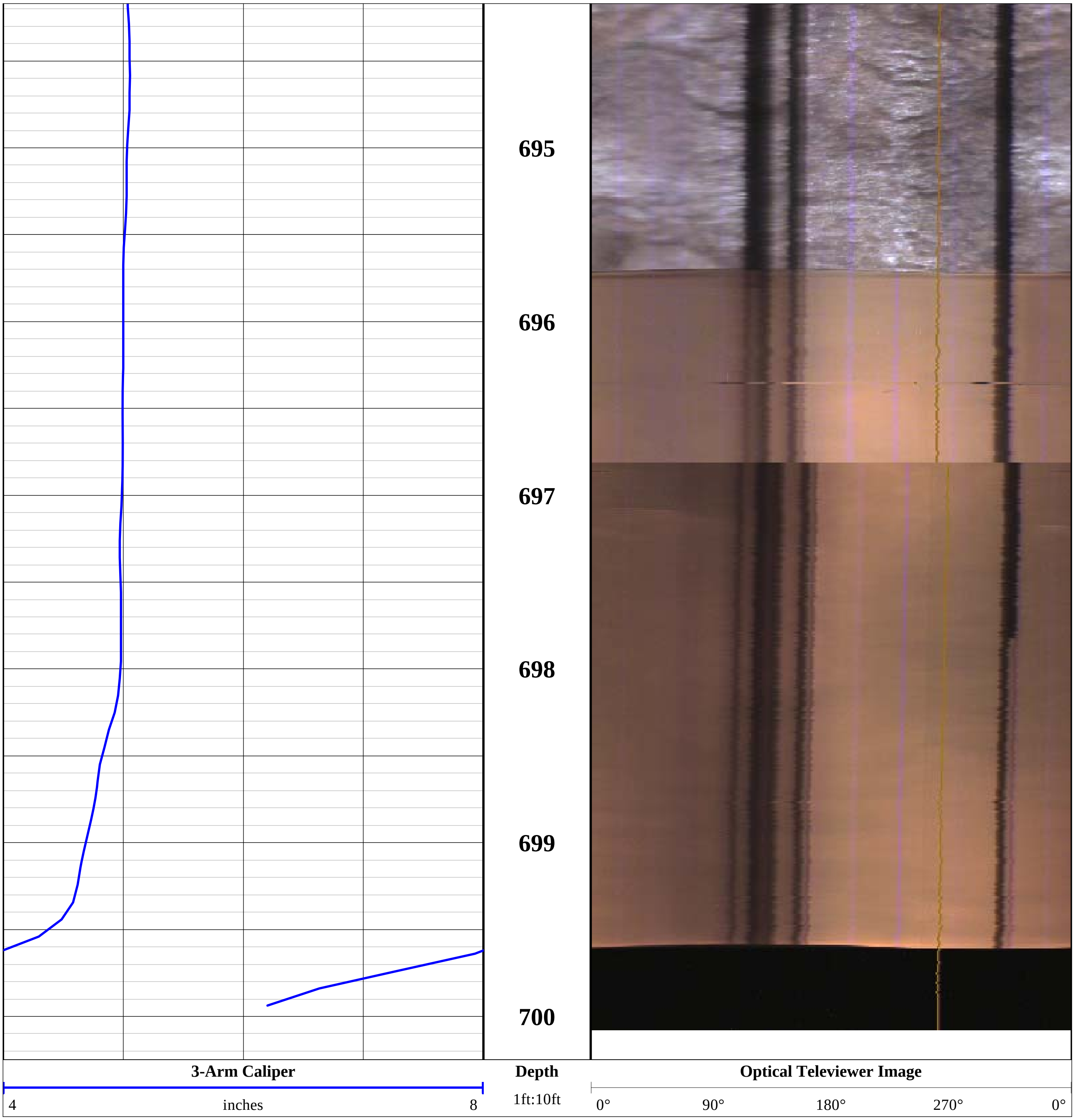

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3-Arm Caliper
4
inches
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Depth
1ft:10ft
Optical Televiewer Image
0°
90°
180°
270°
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Optical Televiewer and 3-Arm Caliper		COLOG Main Office 810 Quail Street, Suite E, Lakewood, CO 80215 Phone: (303) 279-0171, Fax: (303) 278-0135 www.colog.com
COMPANY: AMEC	PROJECT: Squaw Gulch Valley VLF	
DATE LOGGED: 17 November 2013	WELL: Hole #1	

Projections	Depth	Optical Televiewer Image
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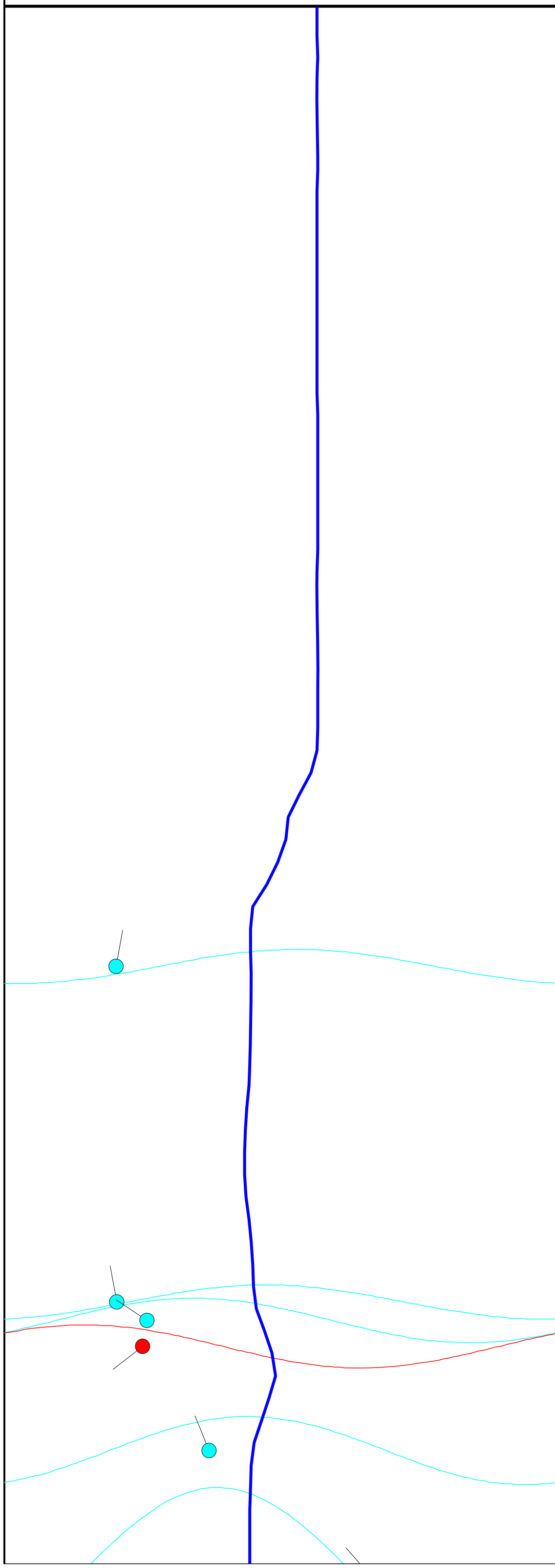
Tadpoles		
0 90		
3-Arm Caliper		
2 inches 10		



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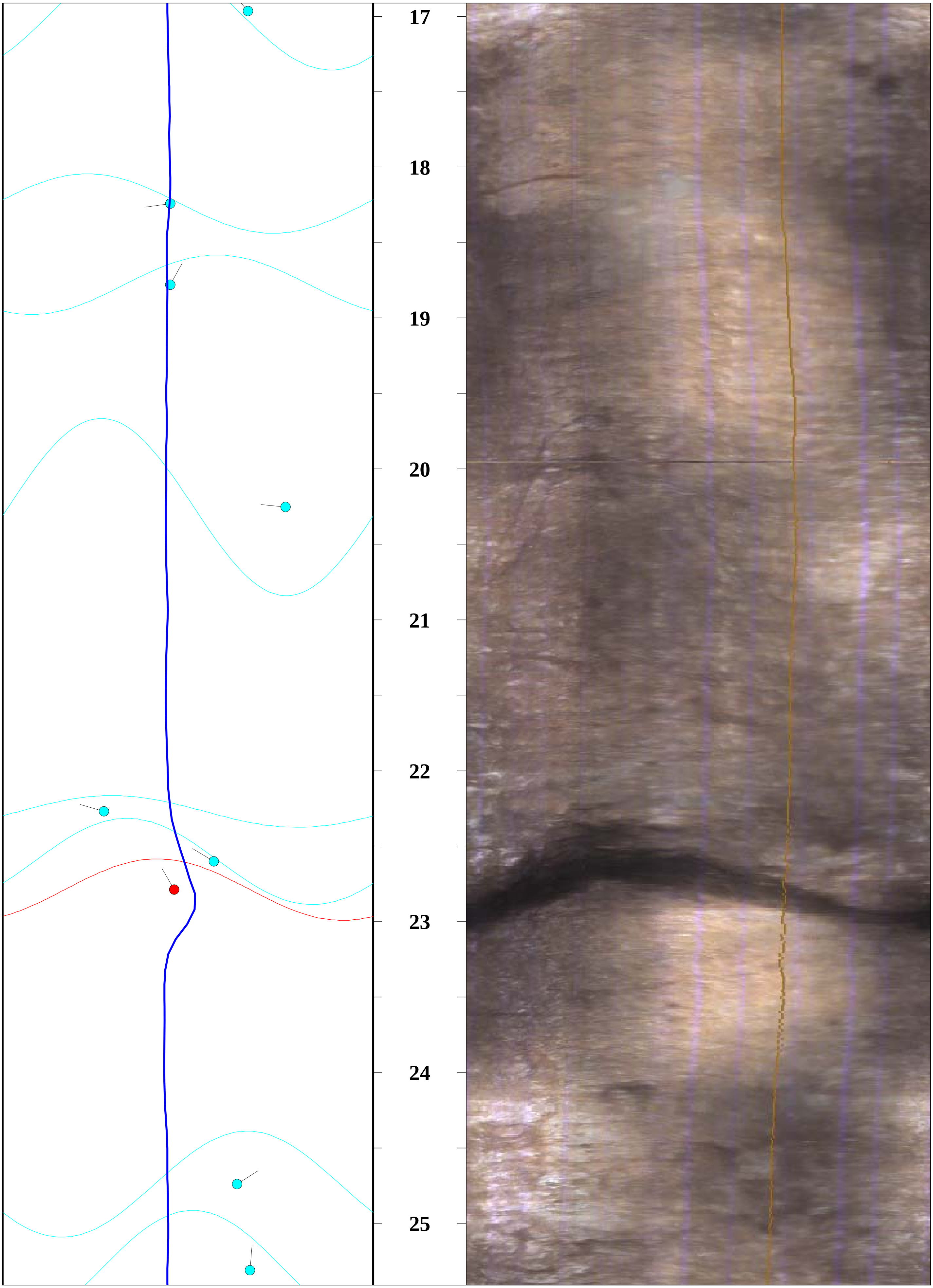
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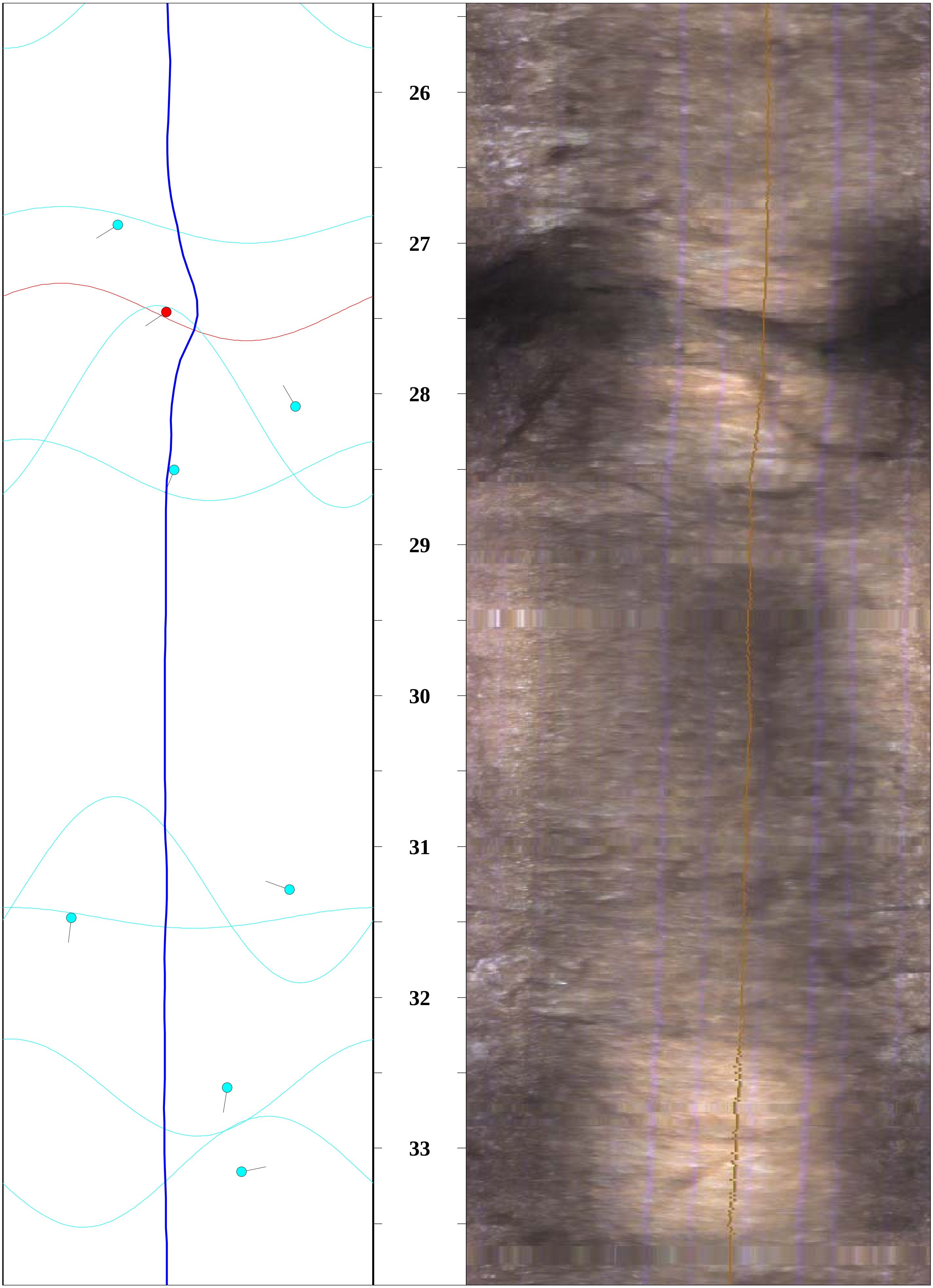

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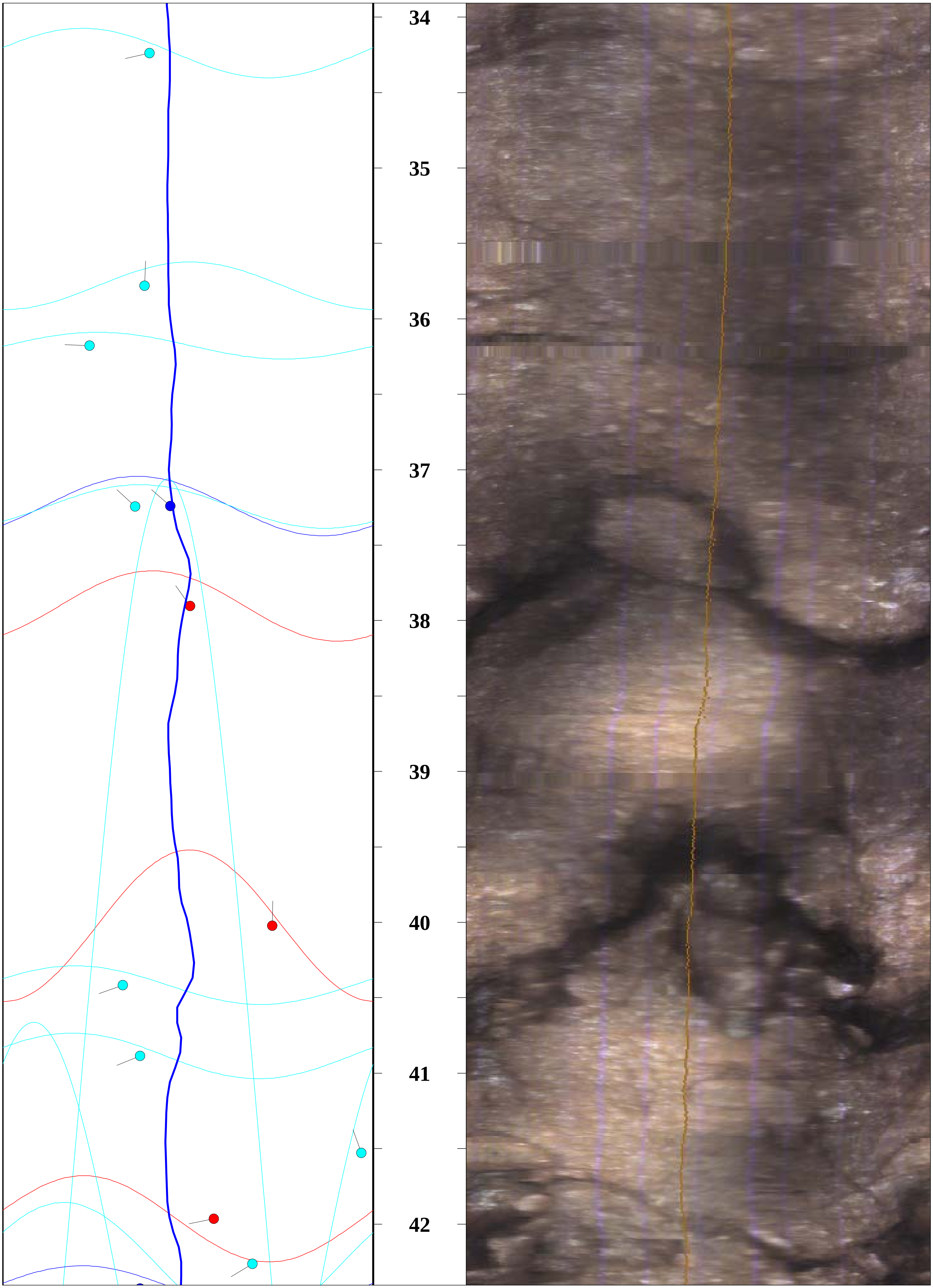
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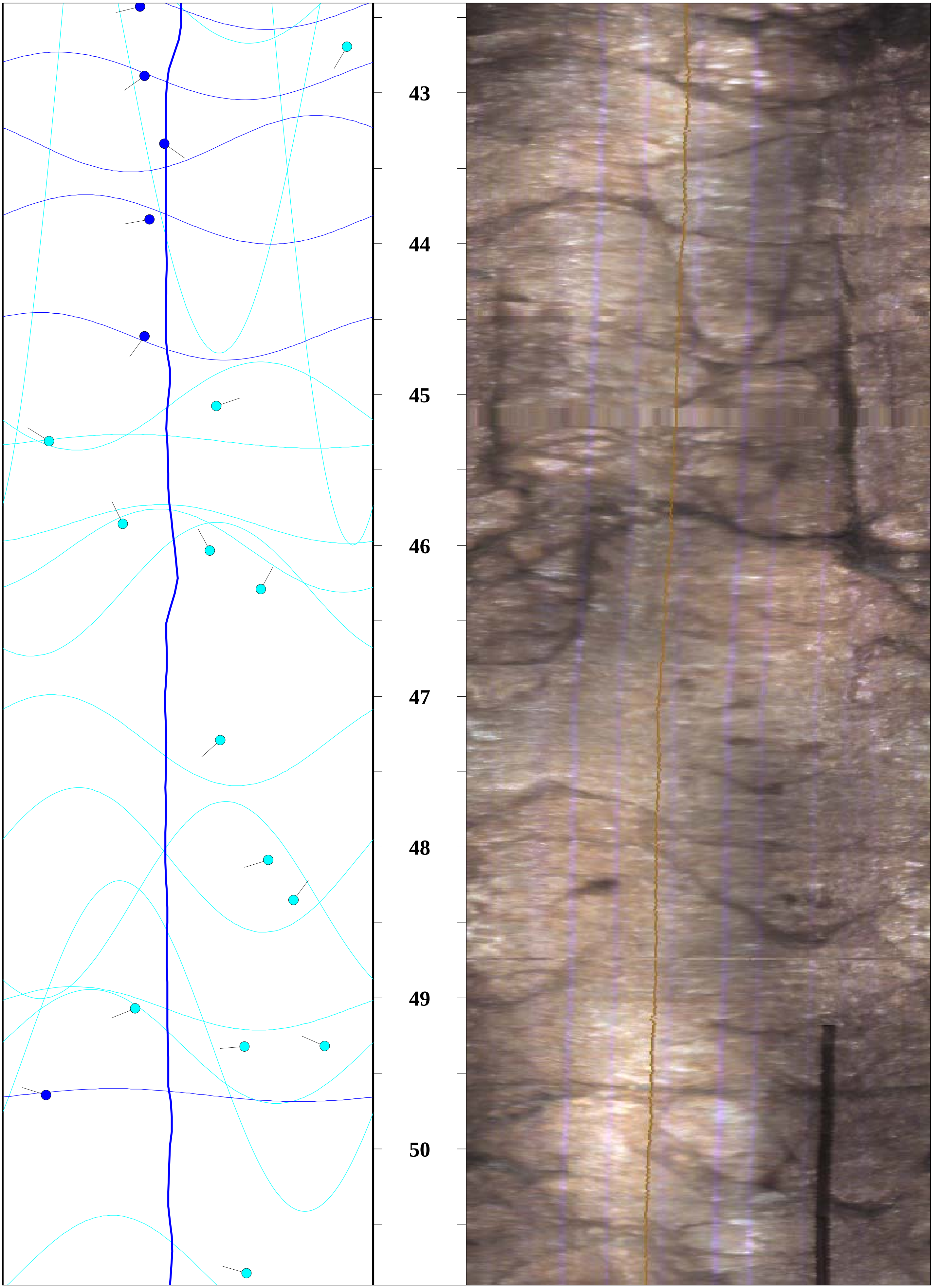
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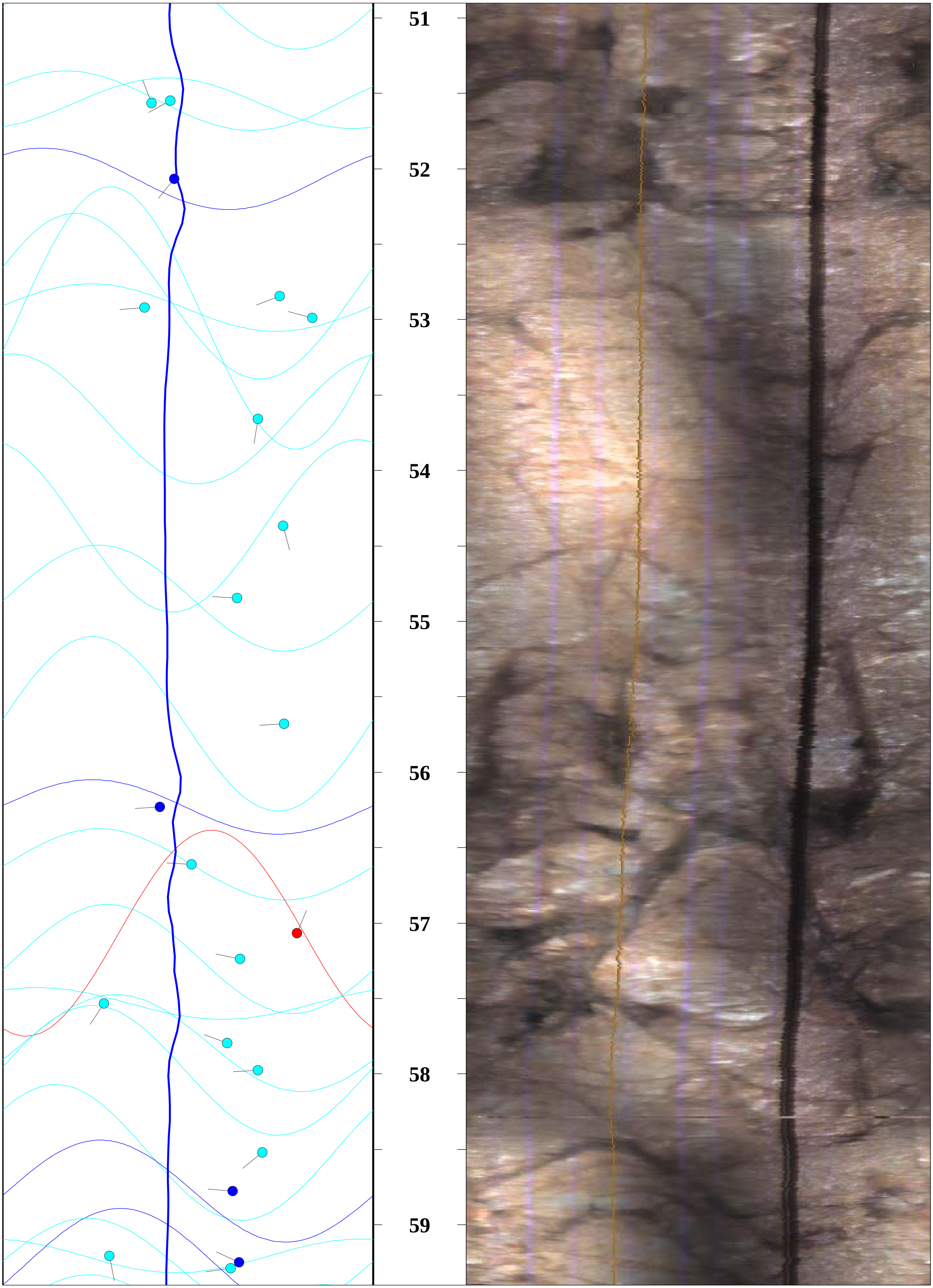

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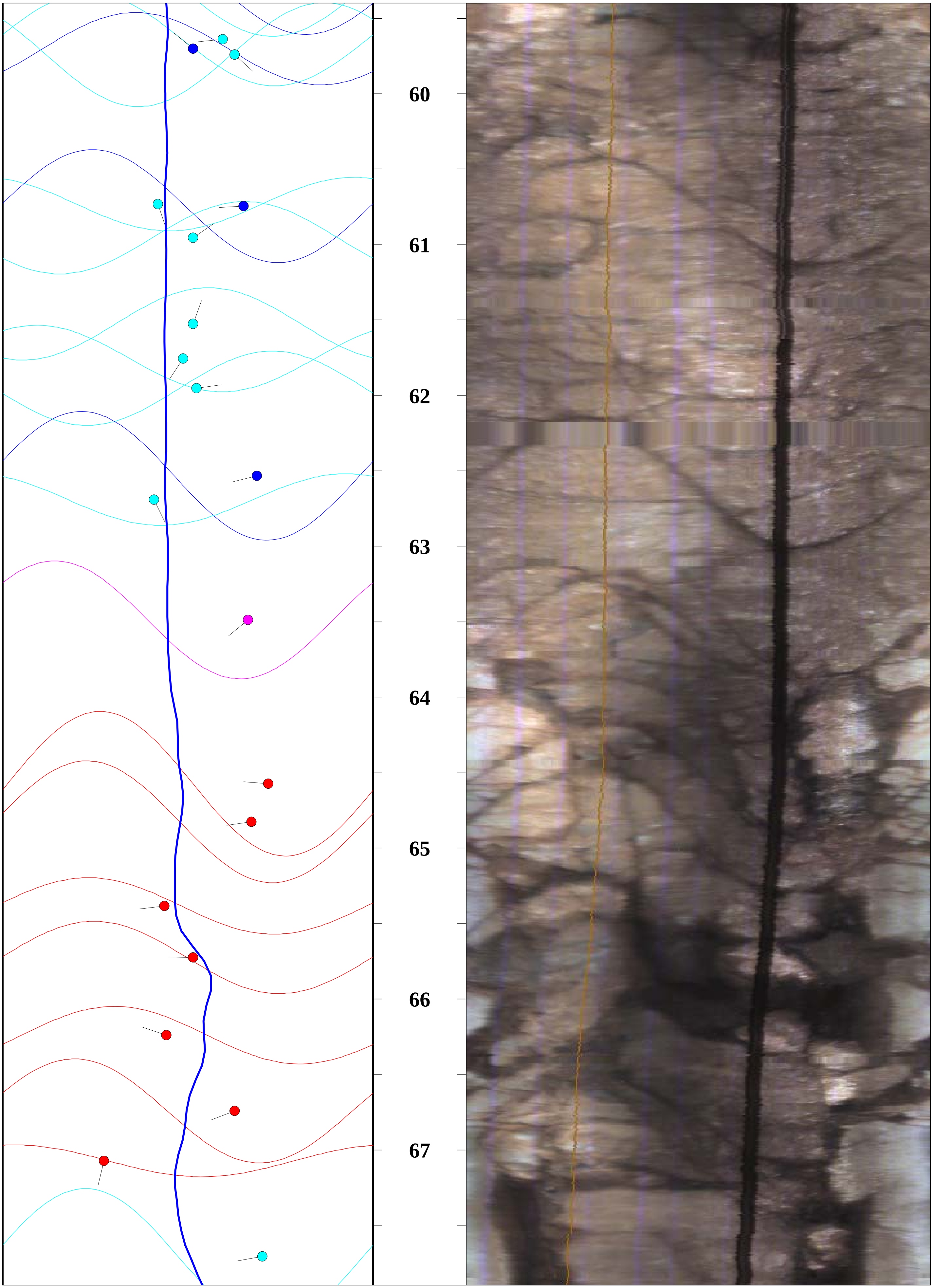
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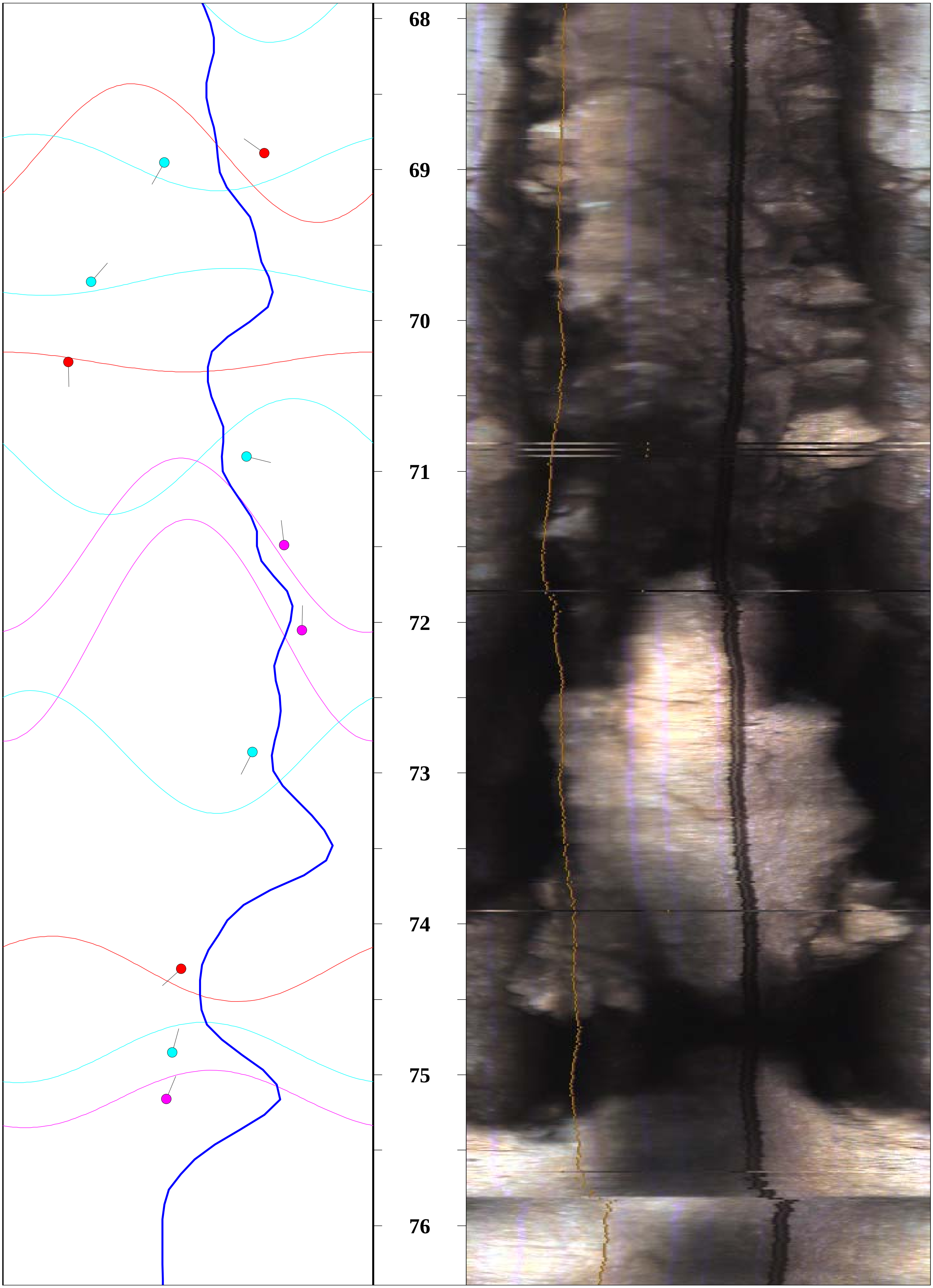
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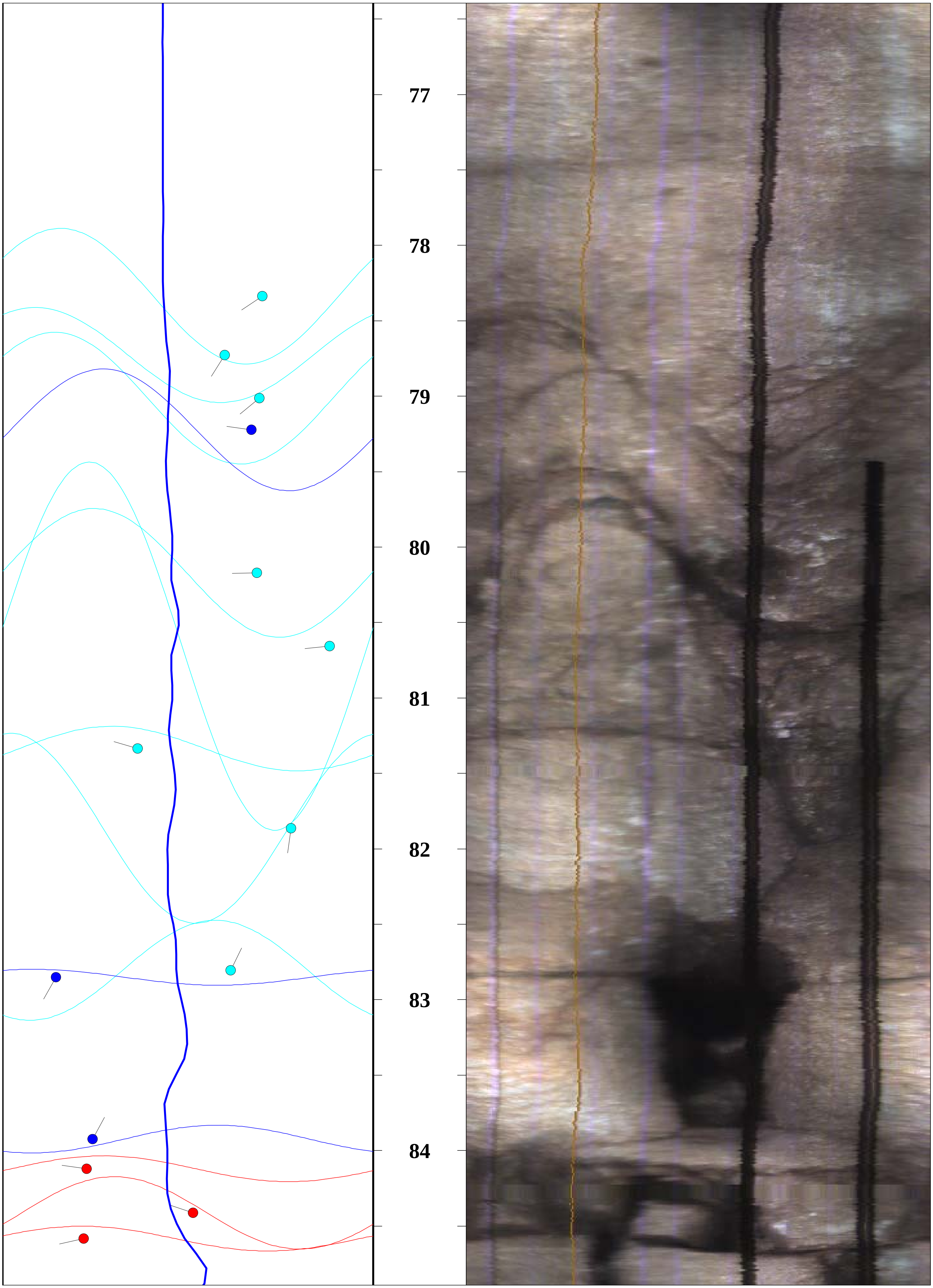

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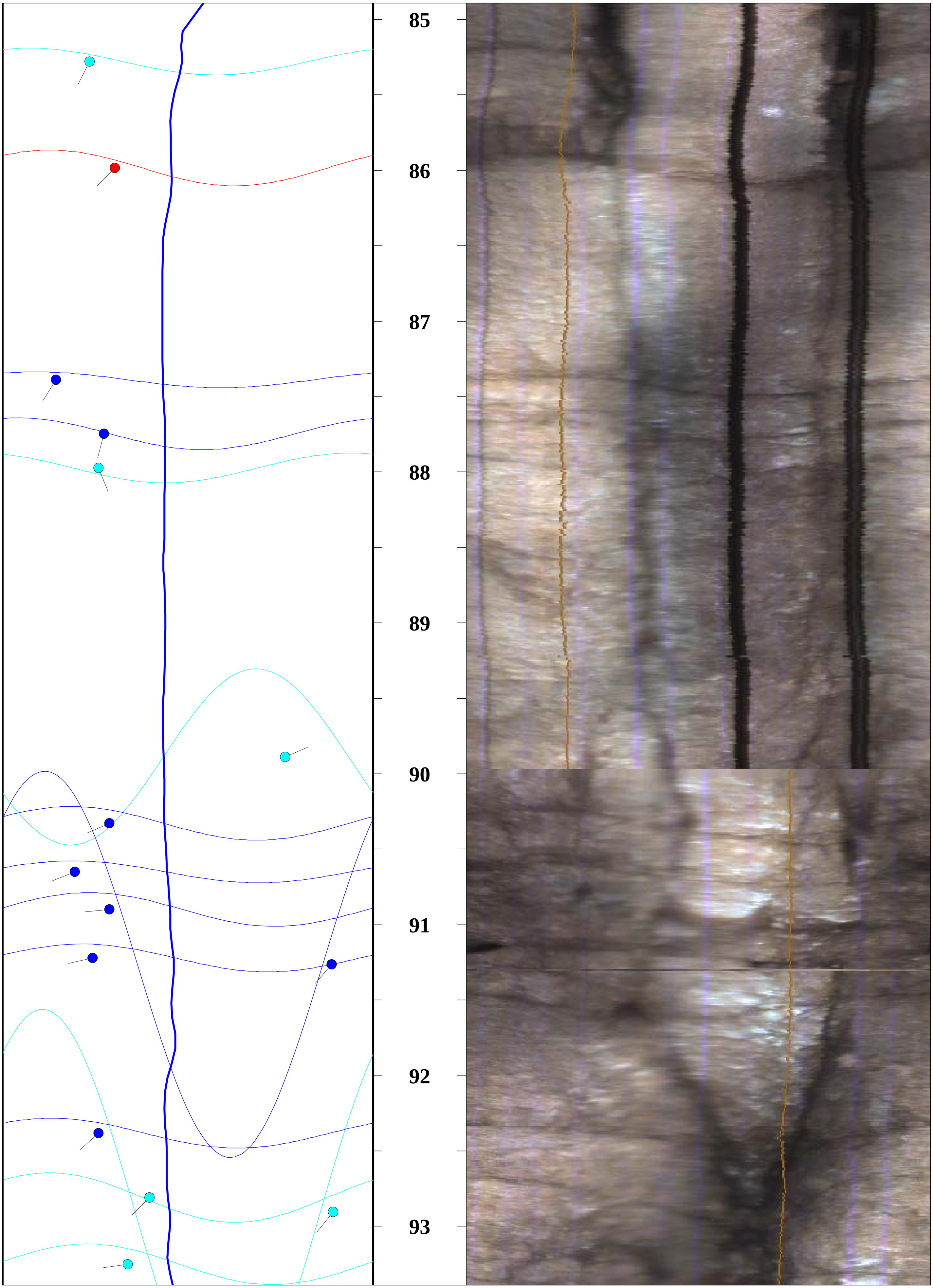
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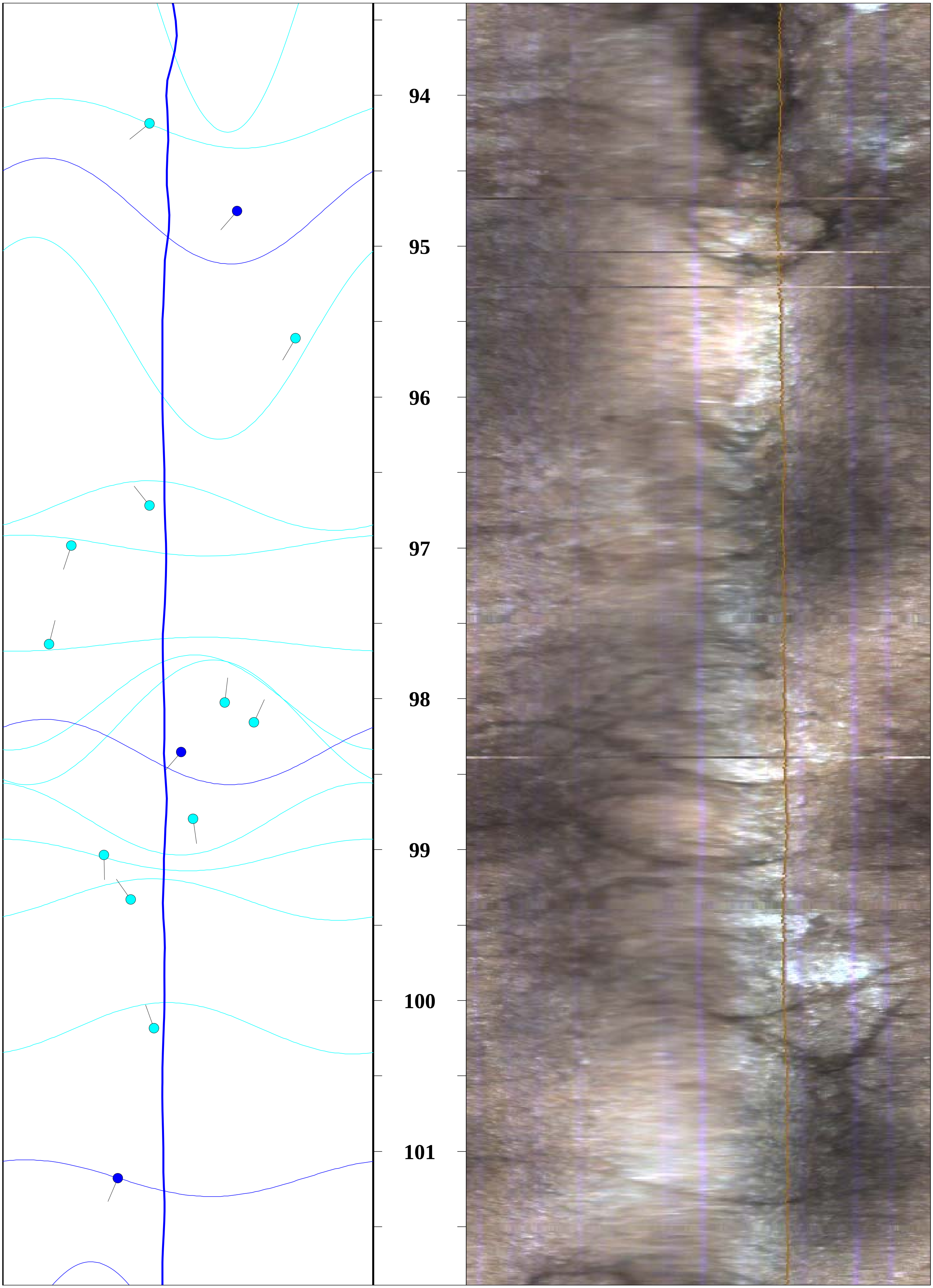
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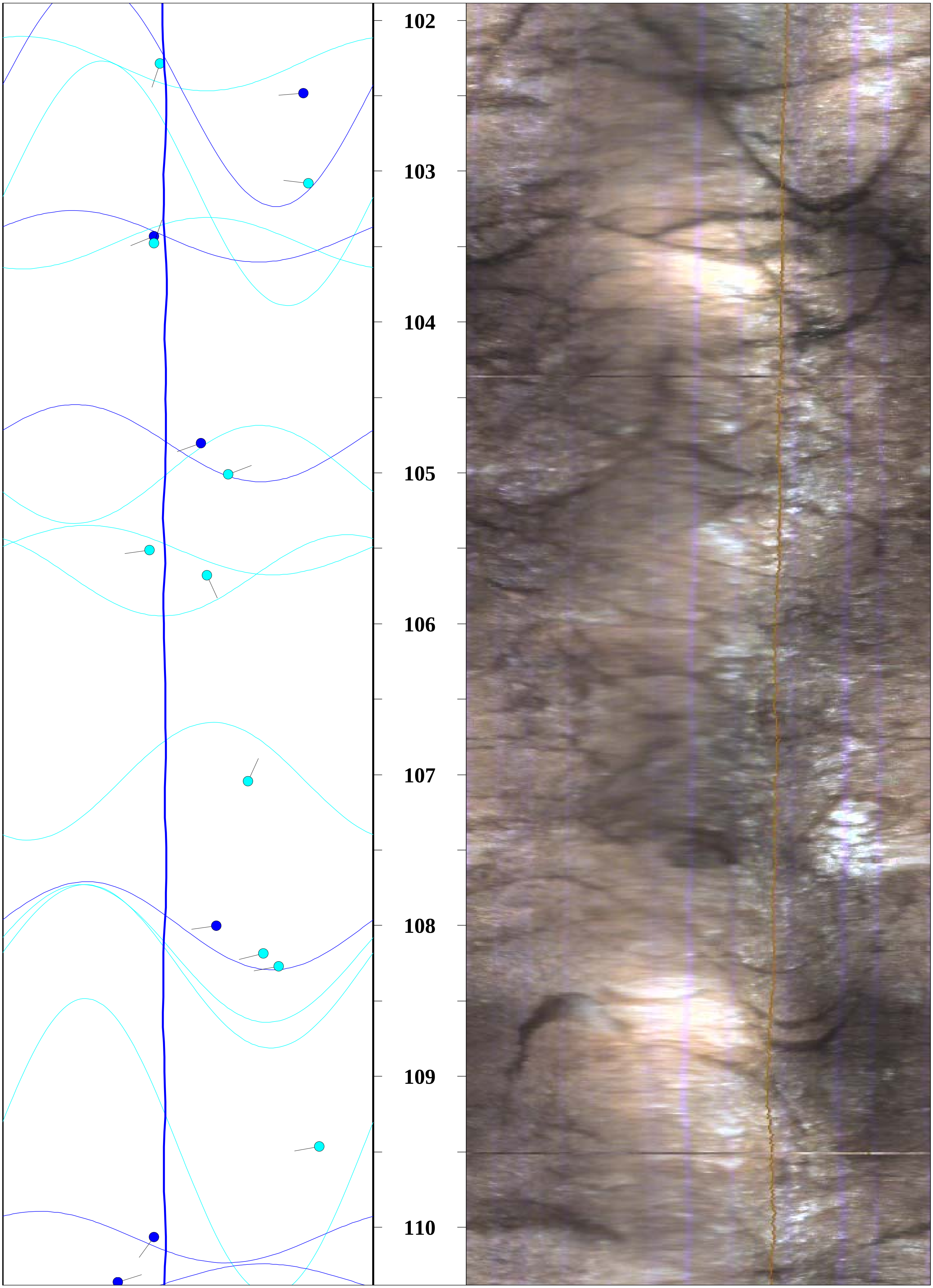
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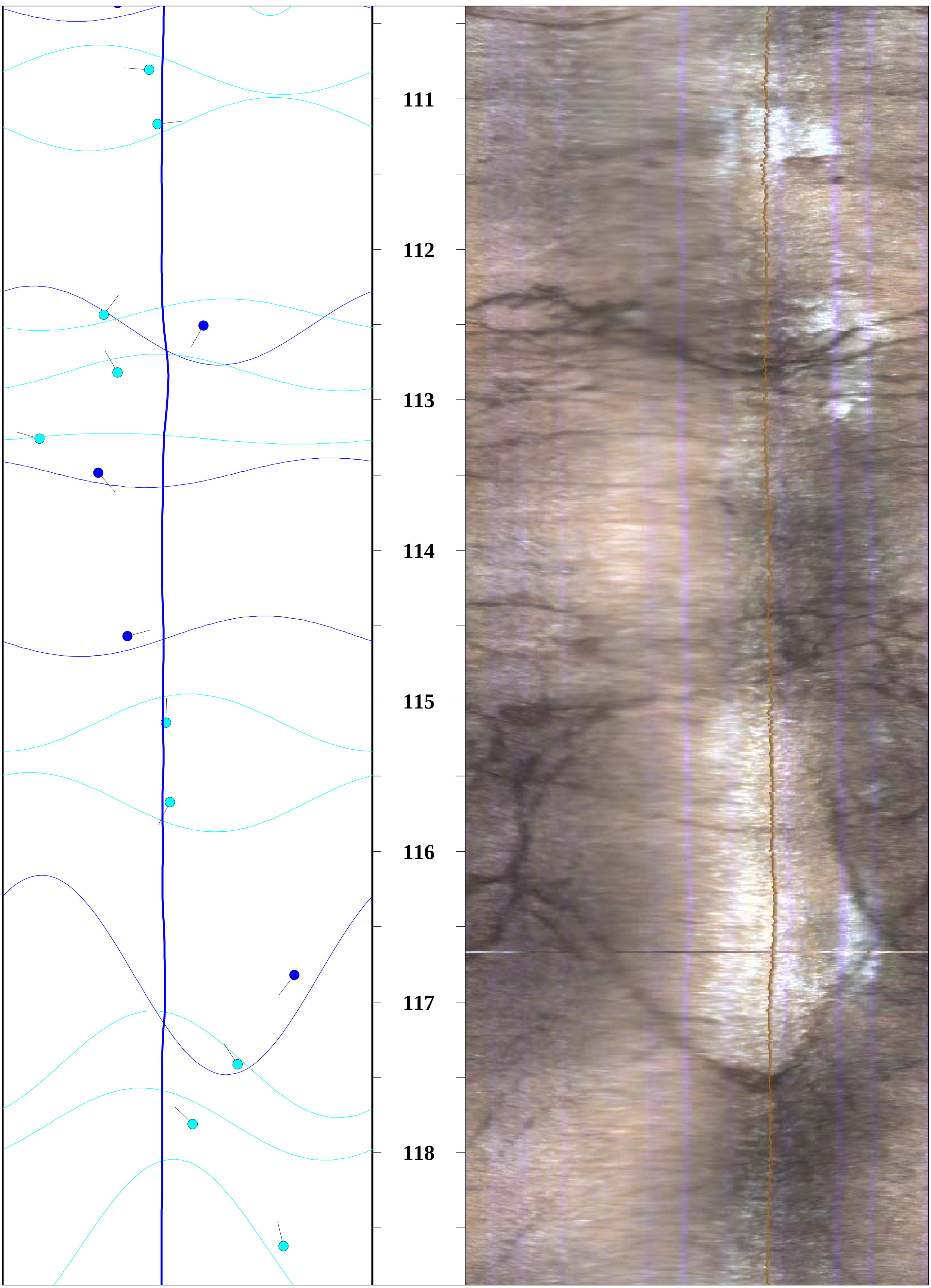
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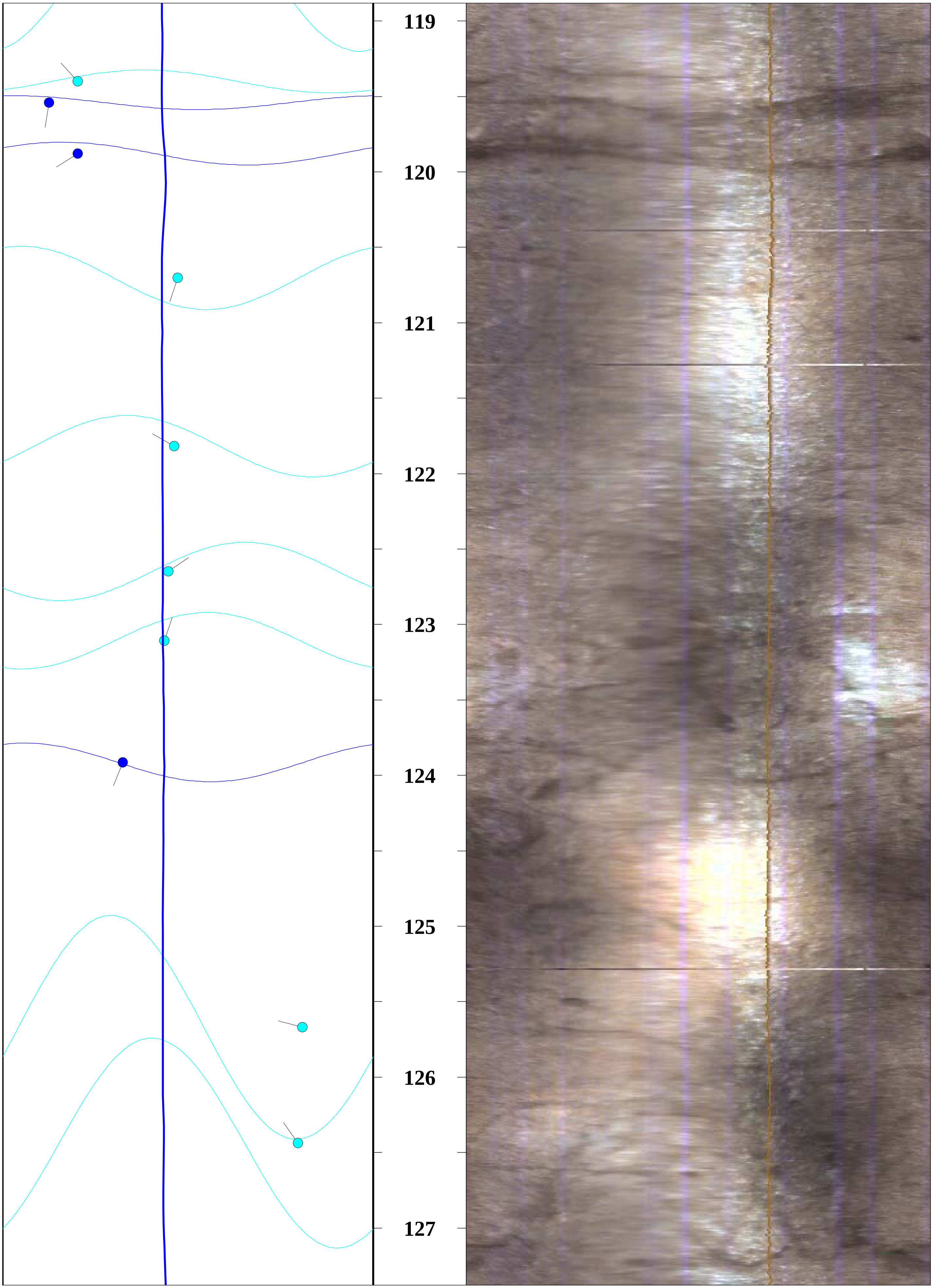
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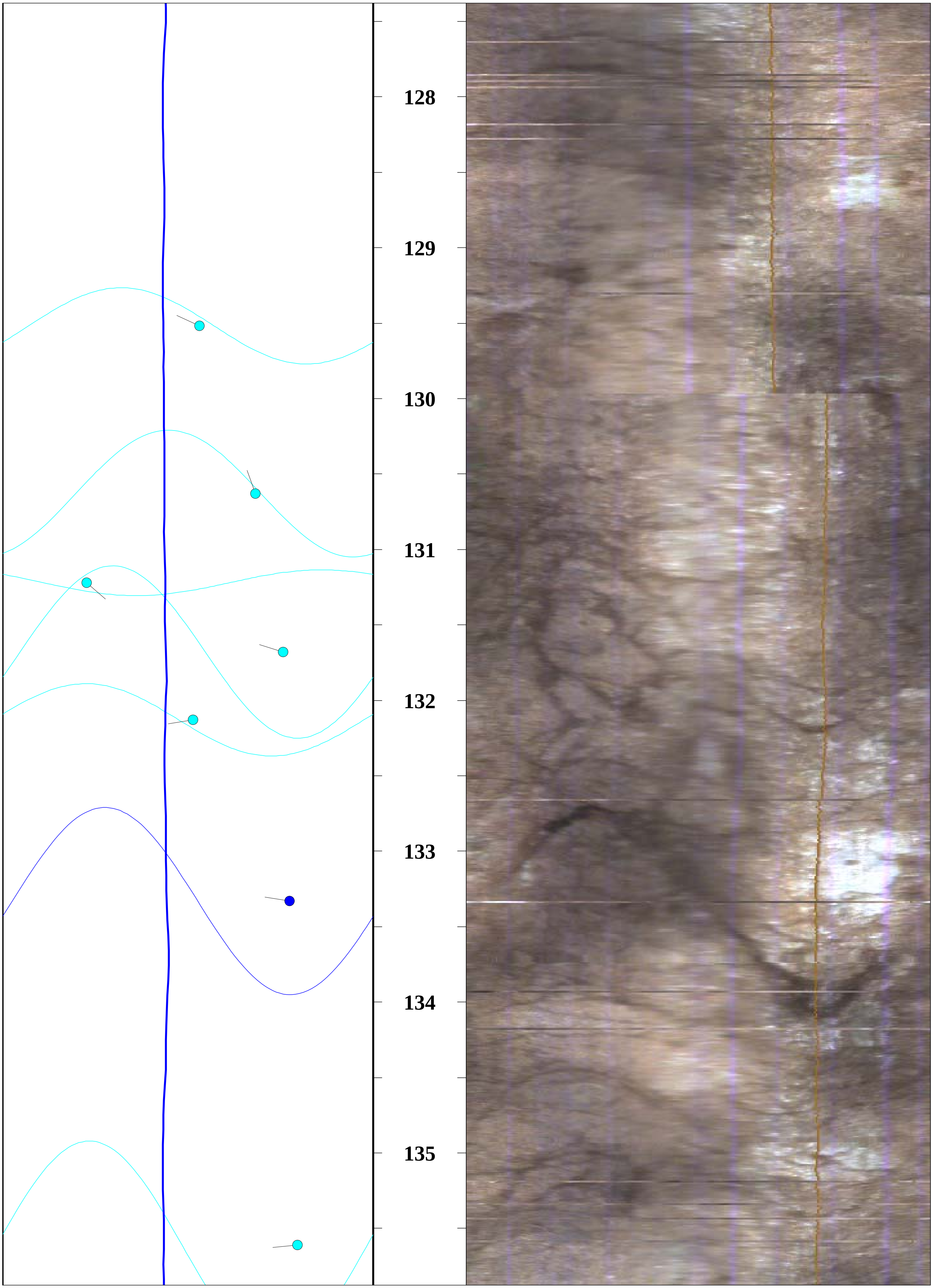

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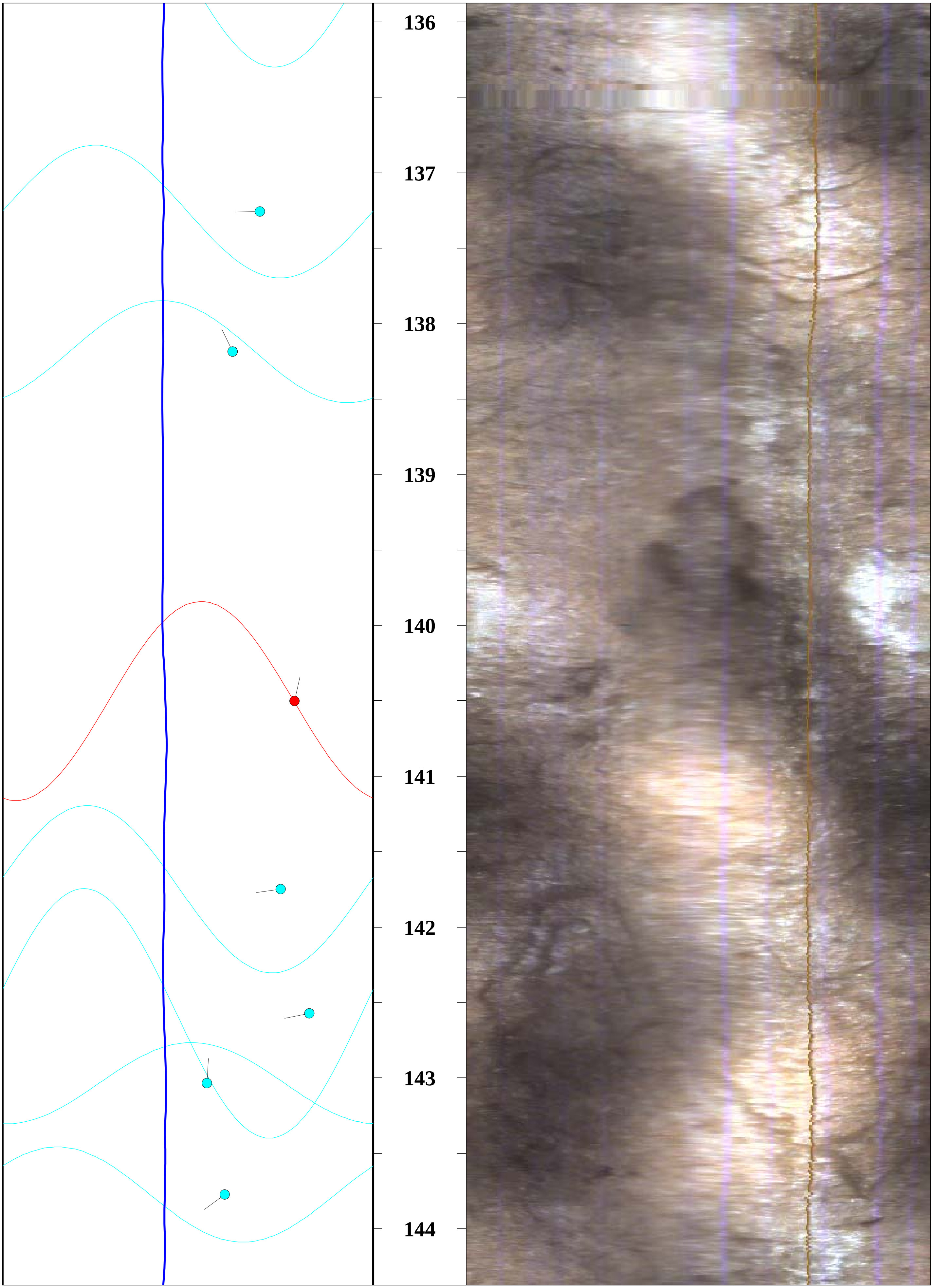
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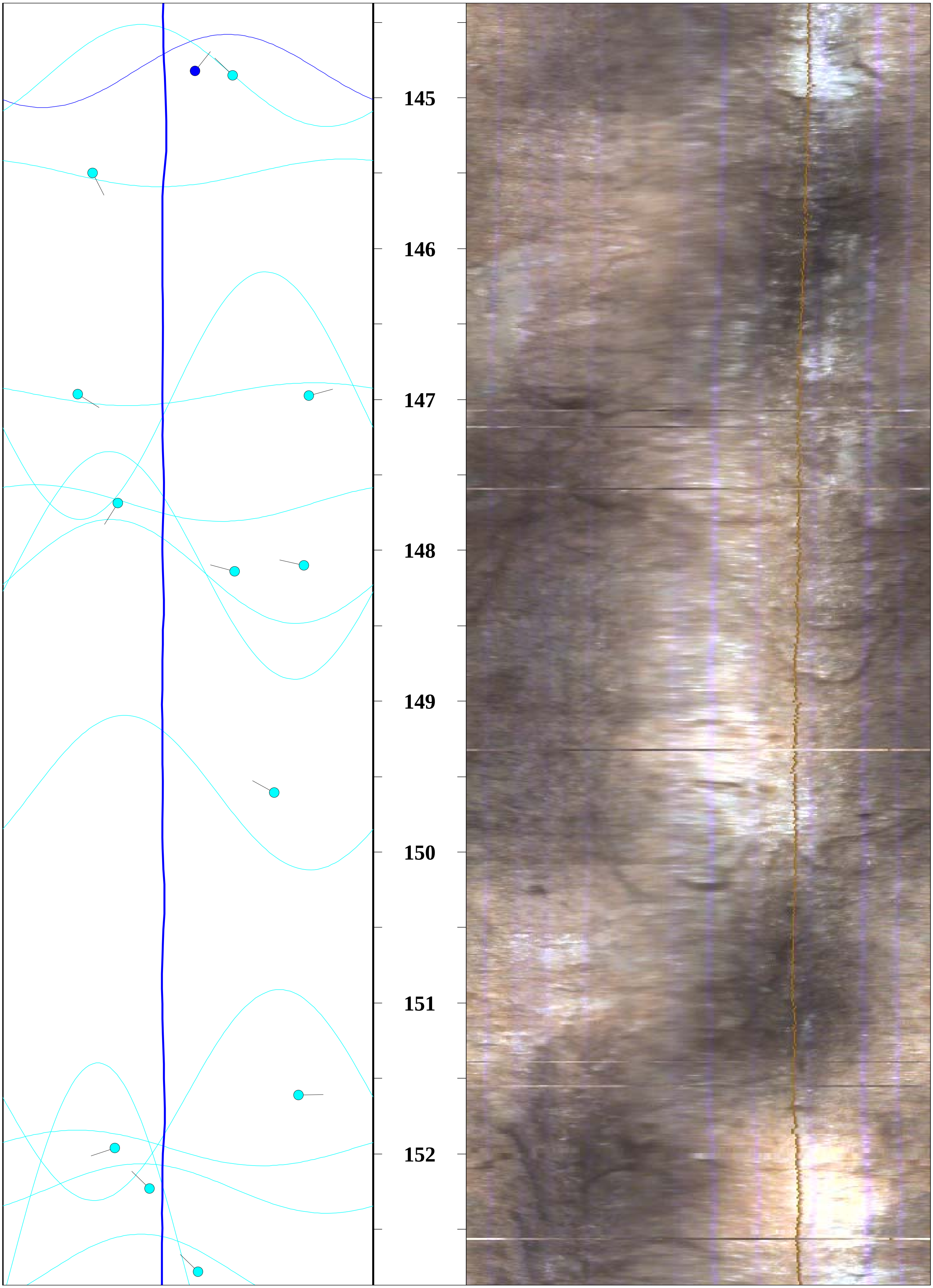
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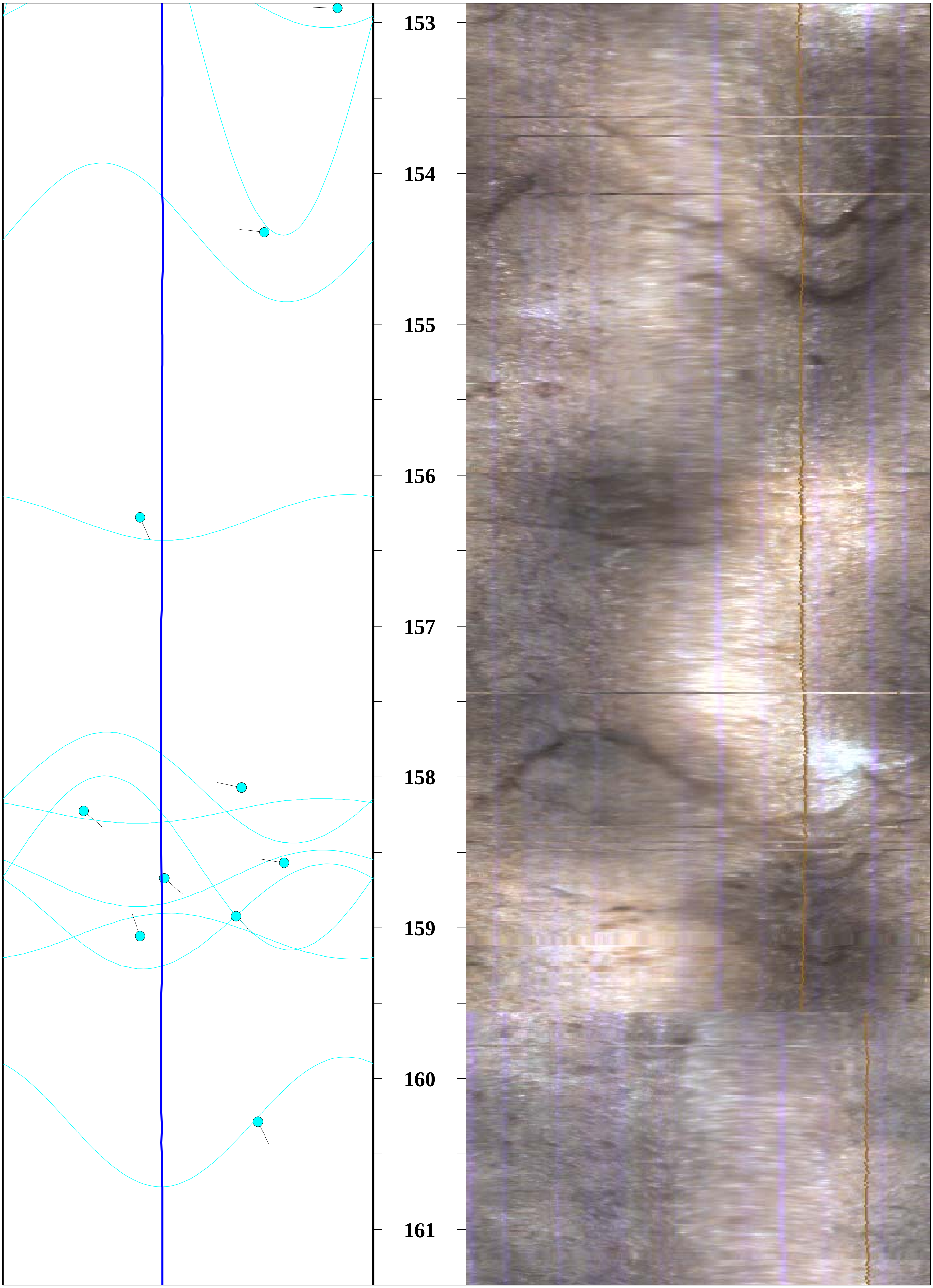
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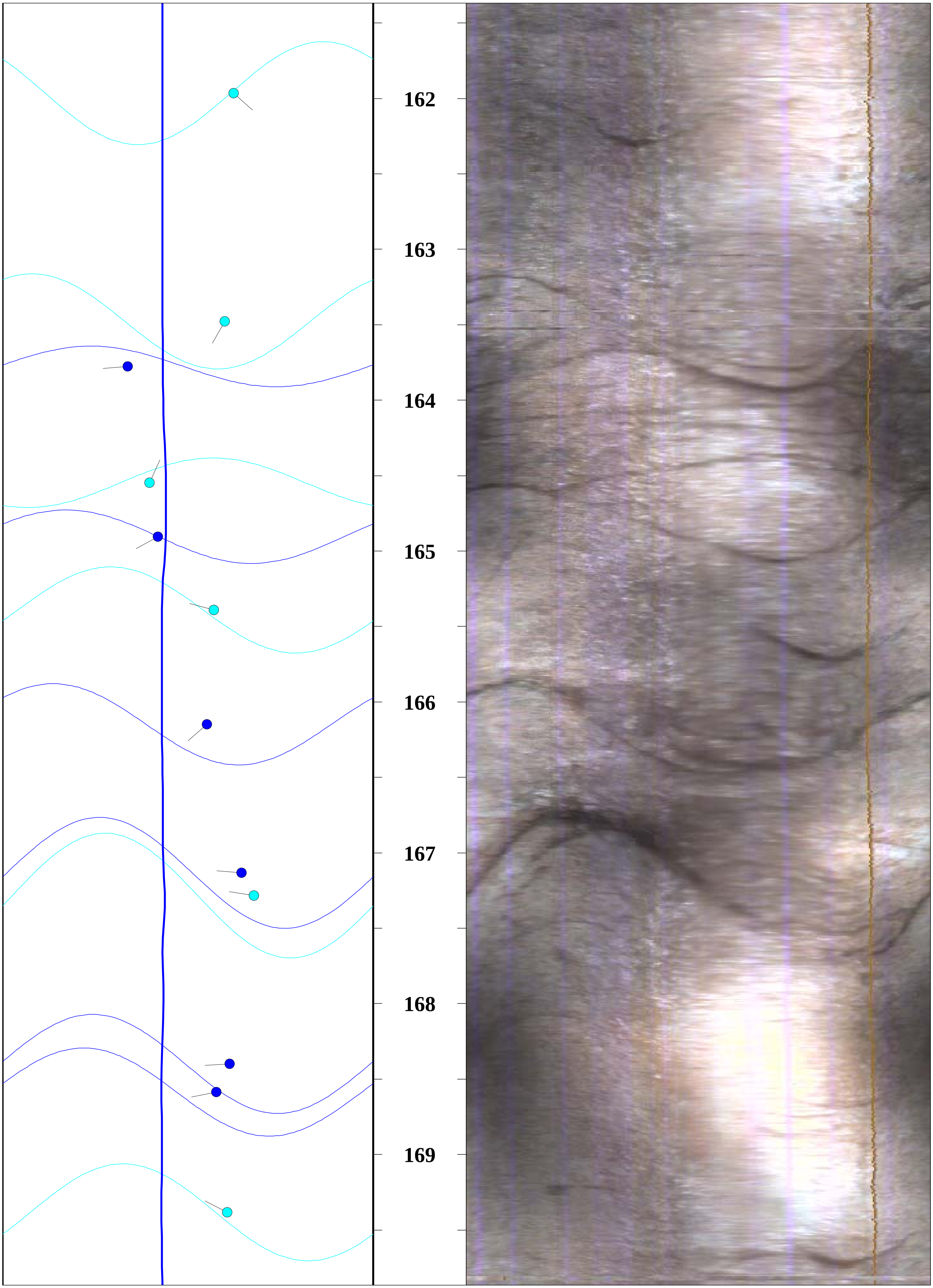

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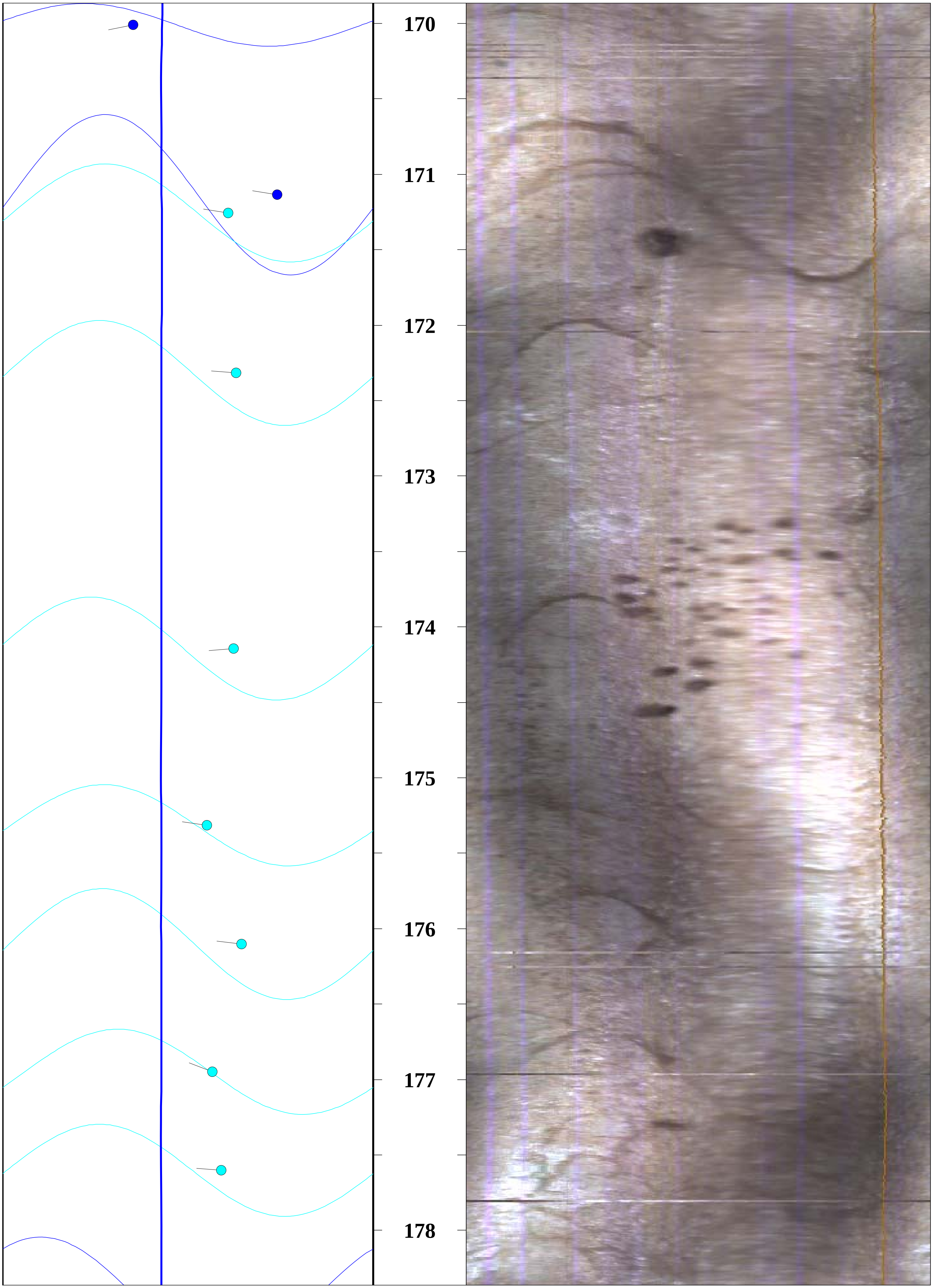
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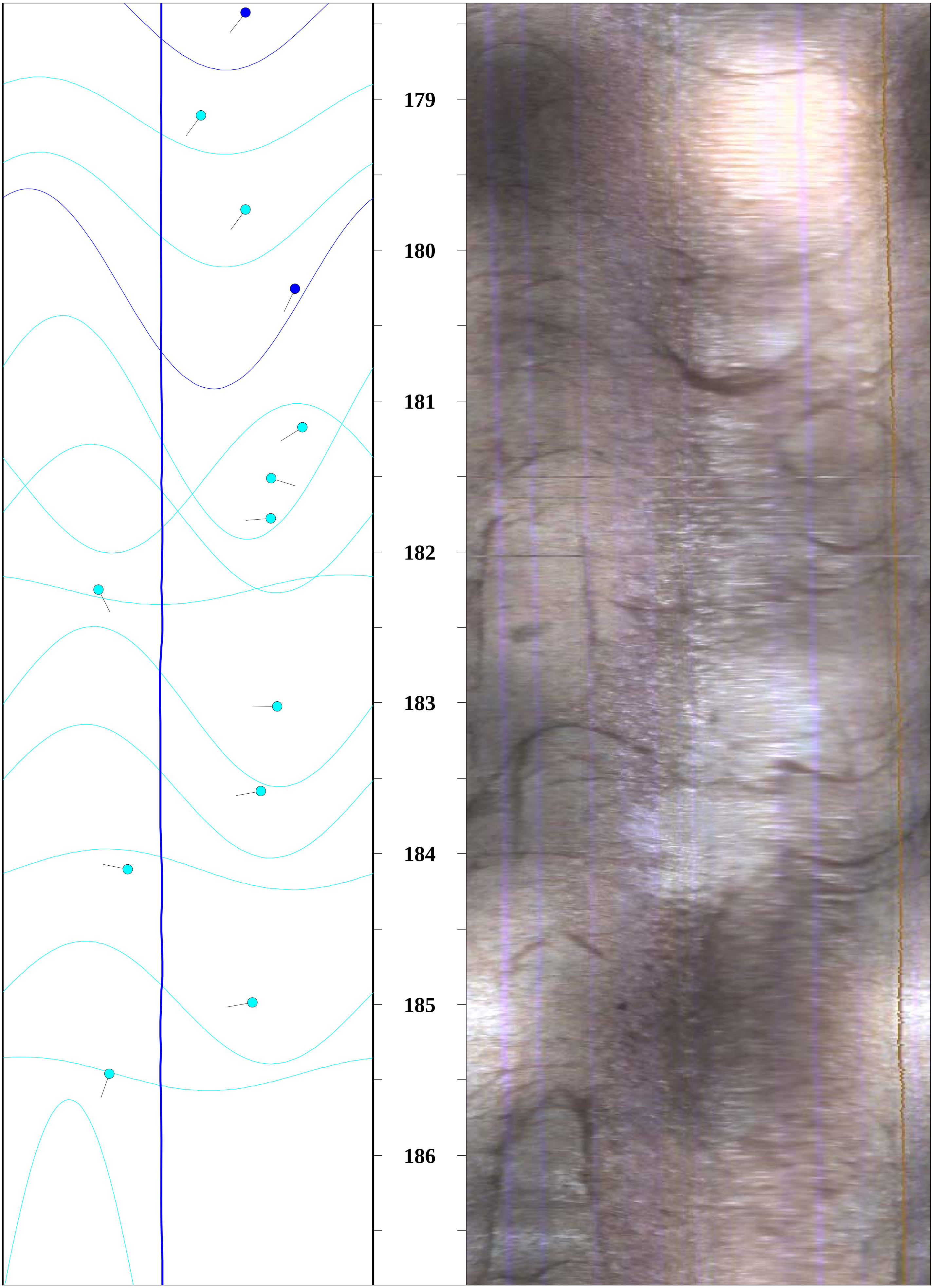
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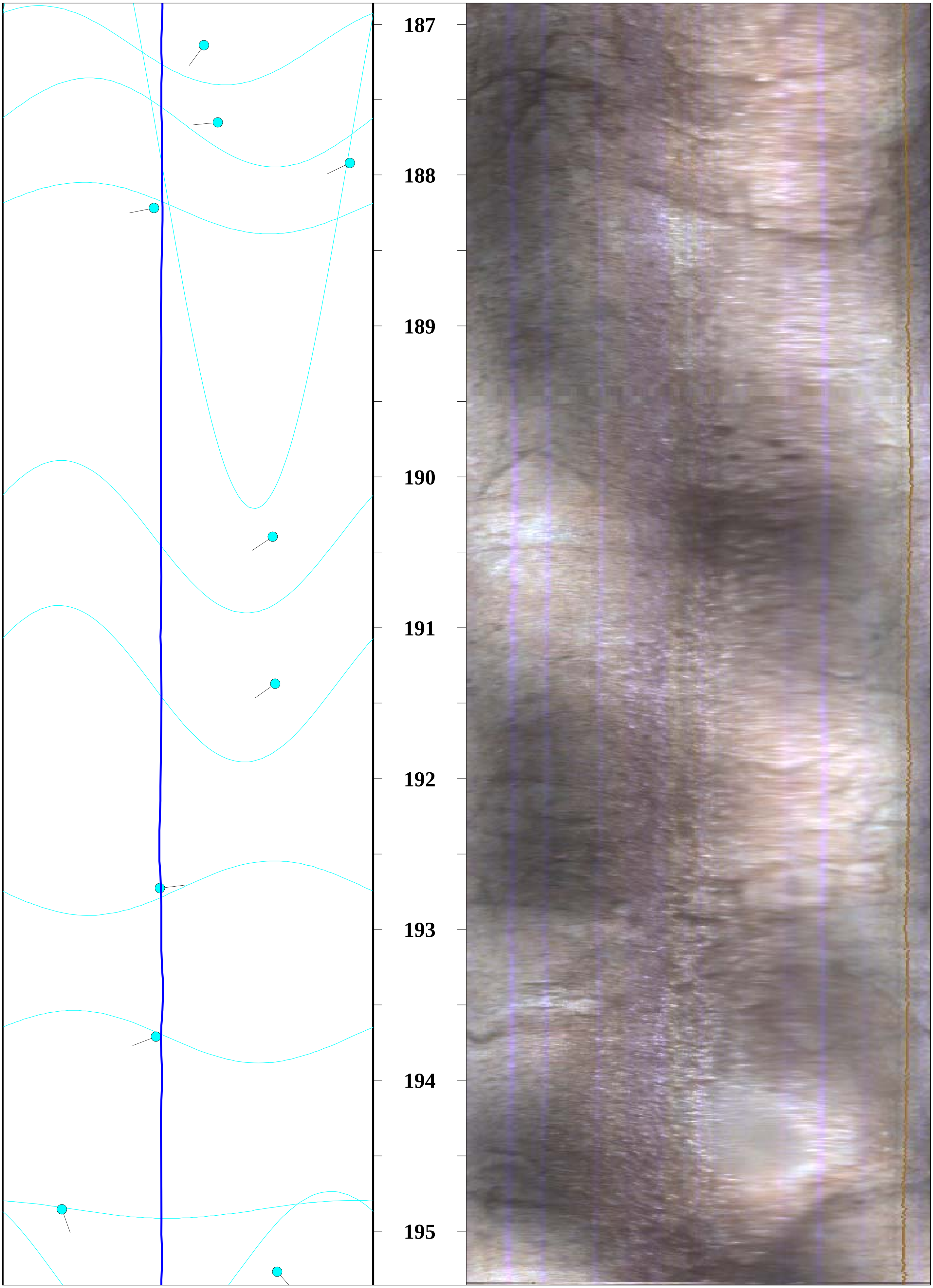
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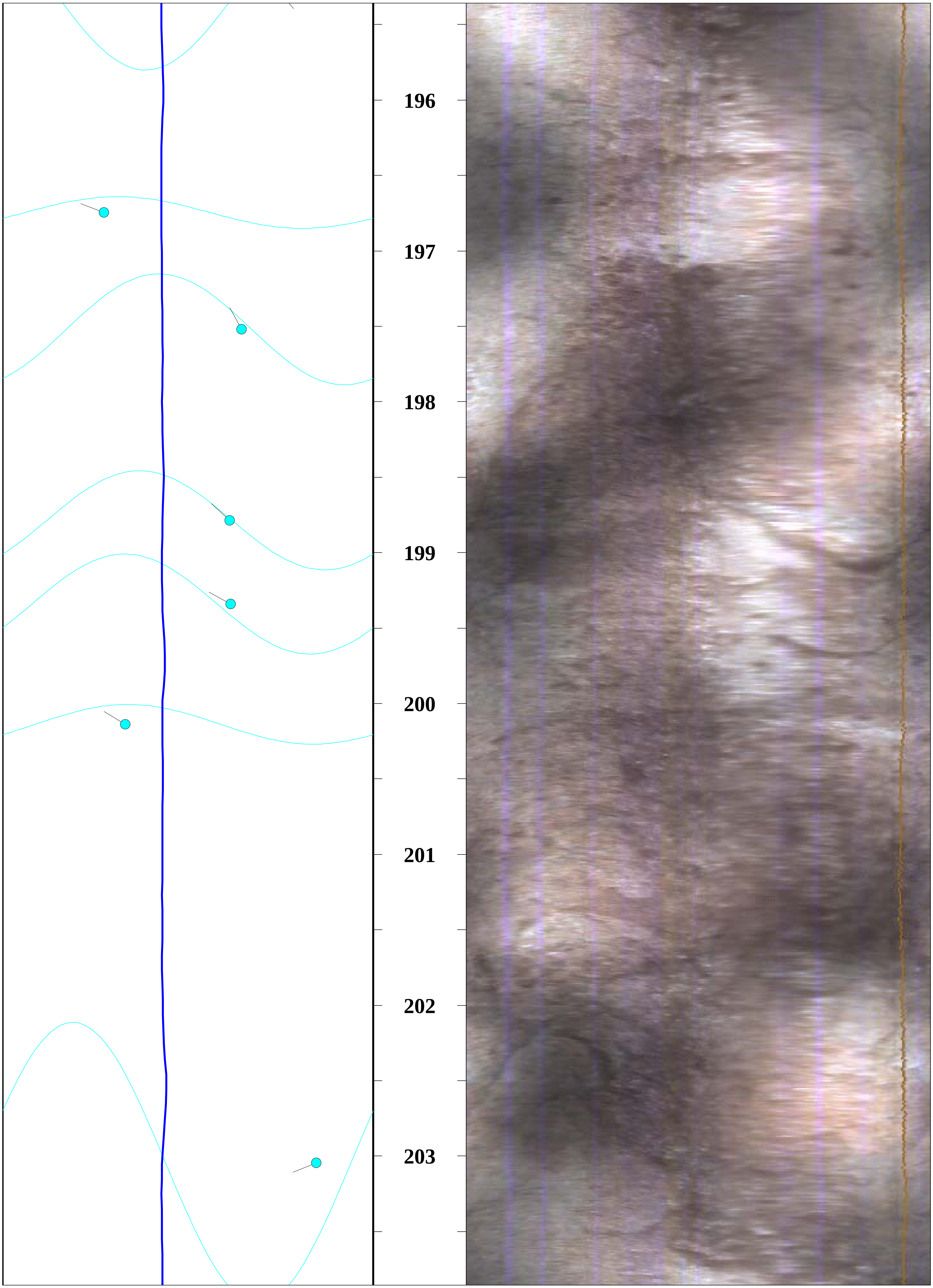
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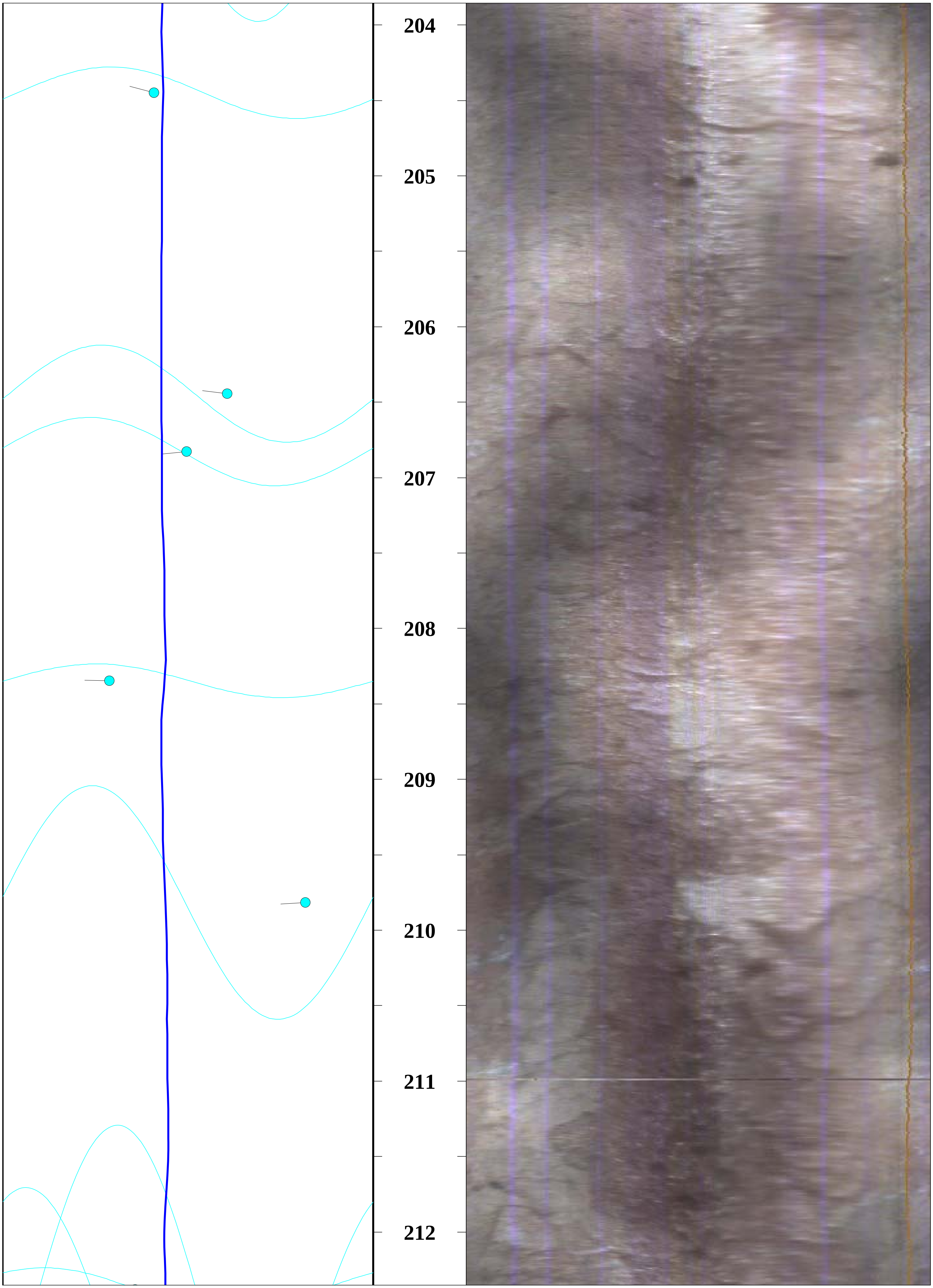

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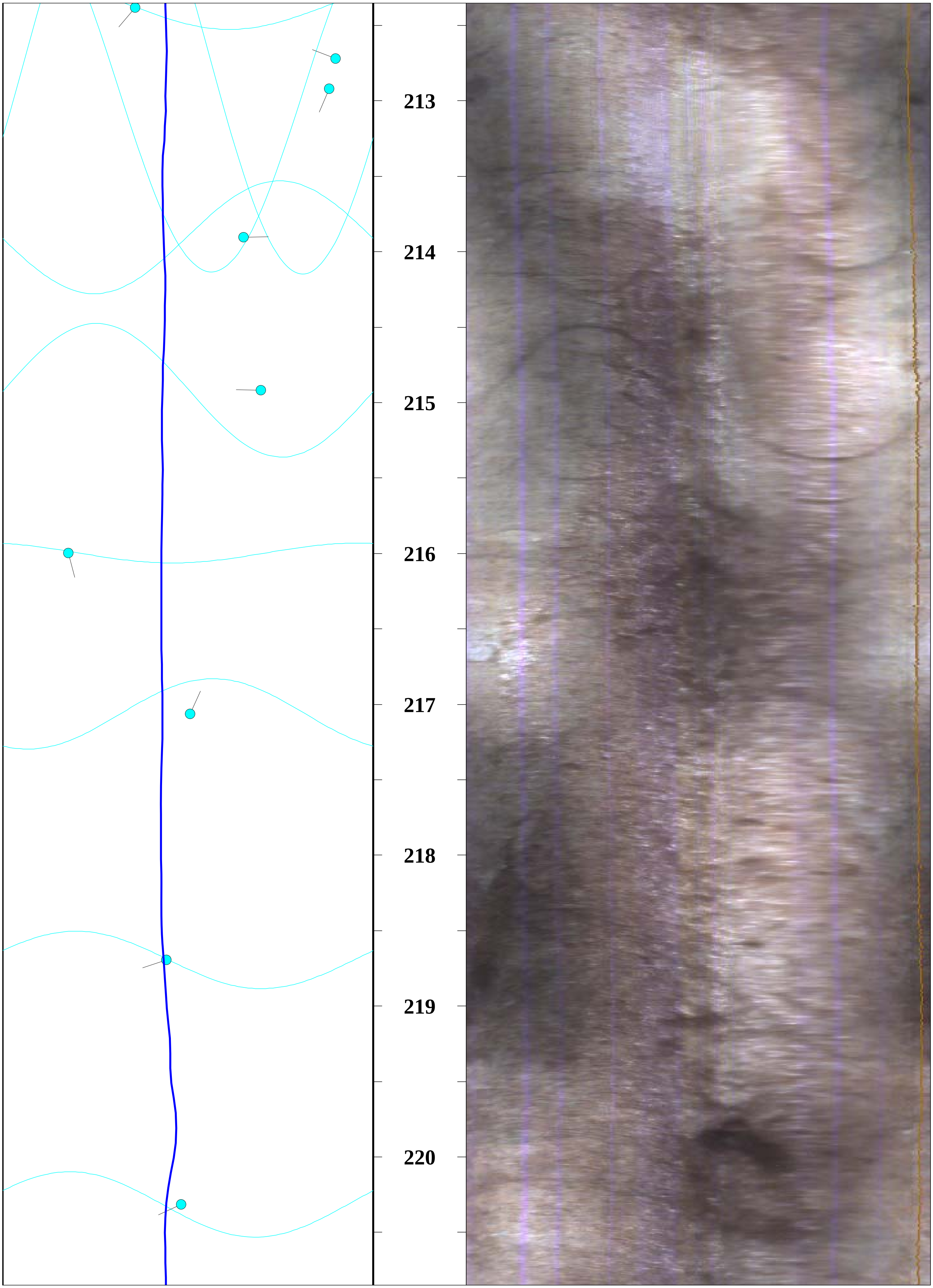
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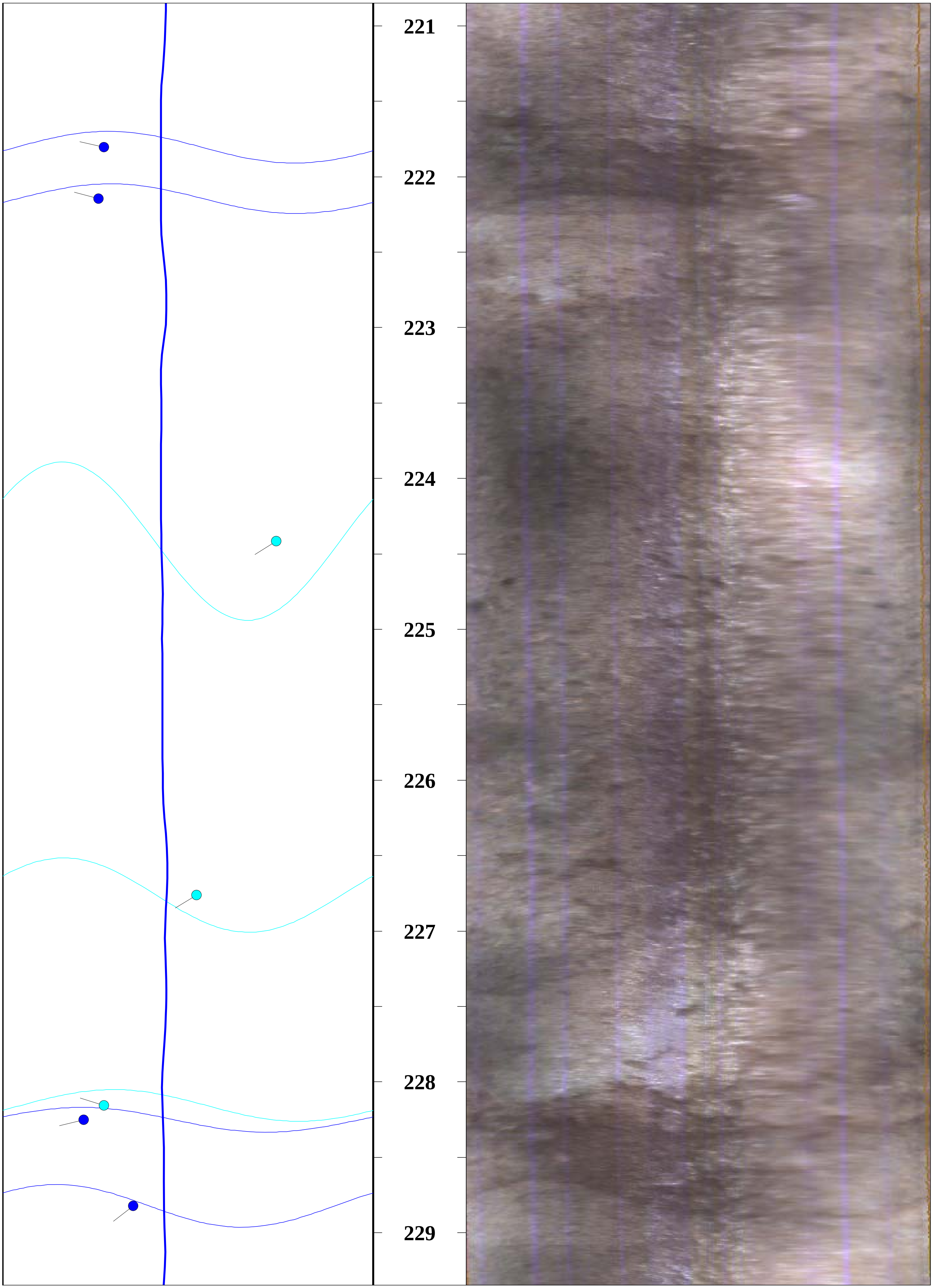
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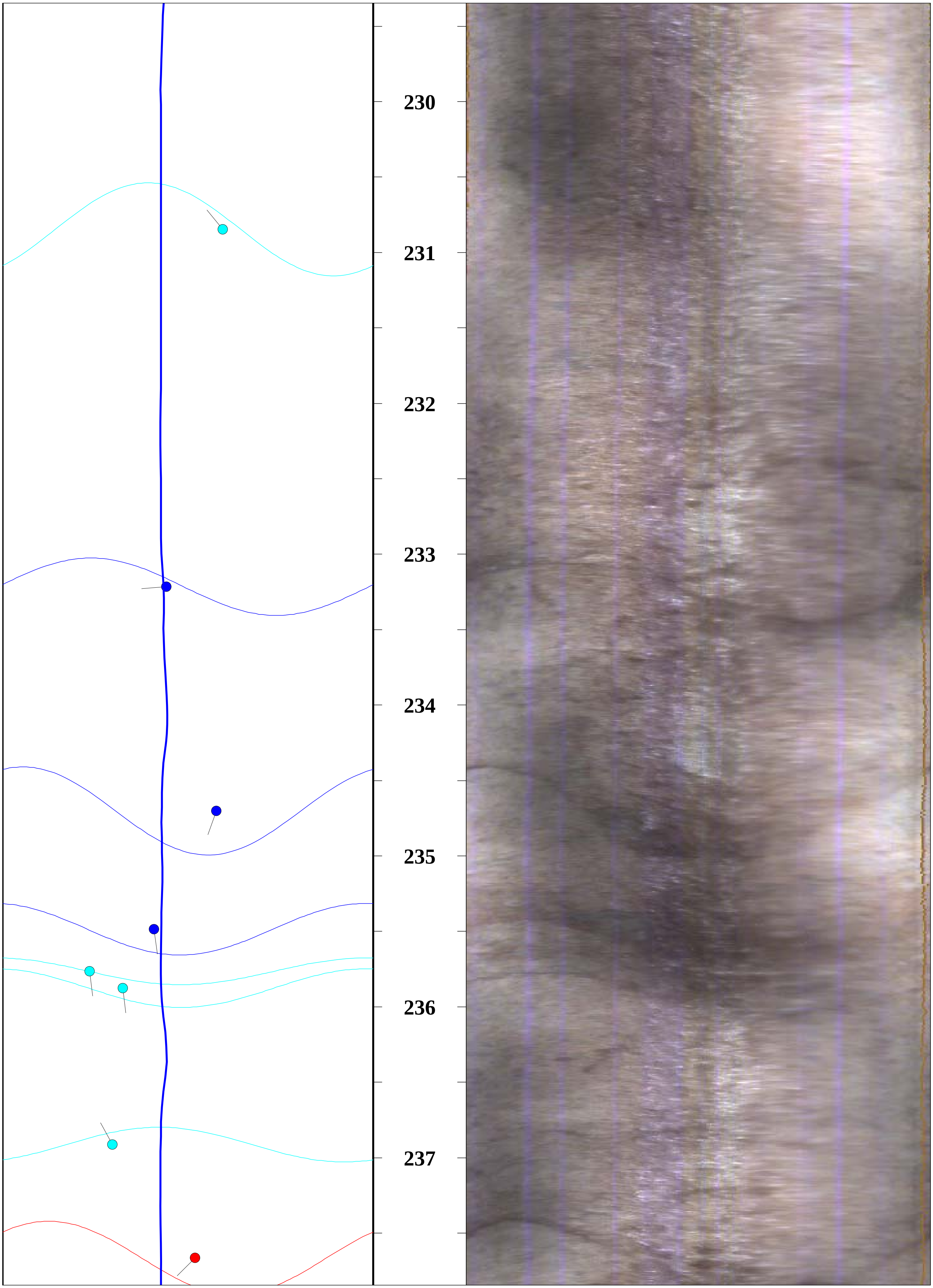

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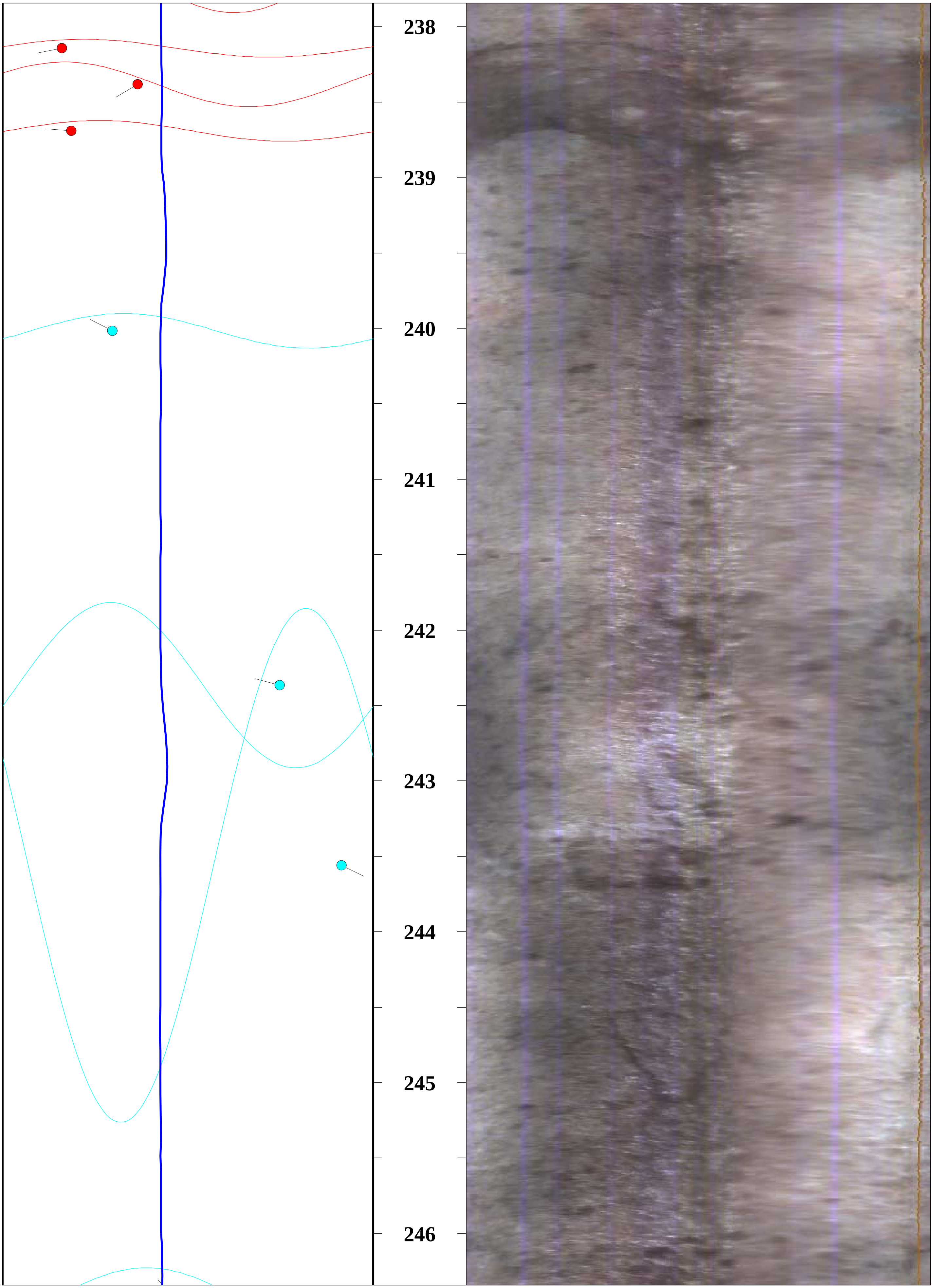
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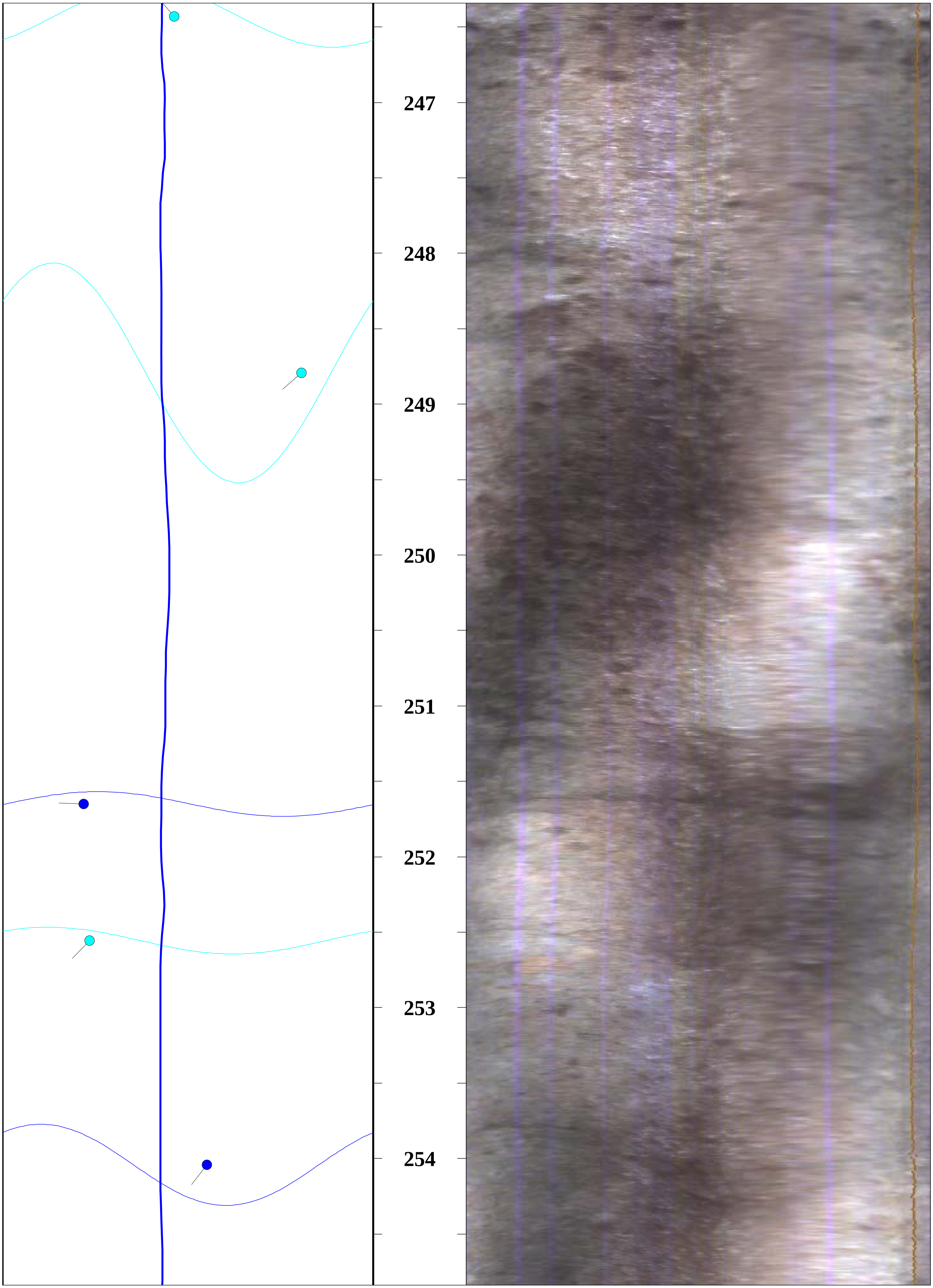

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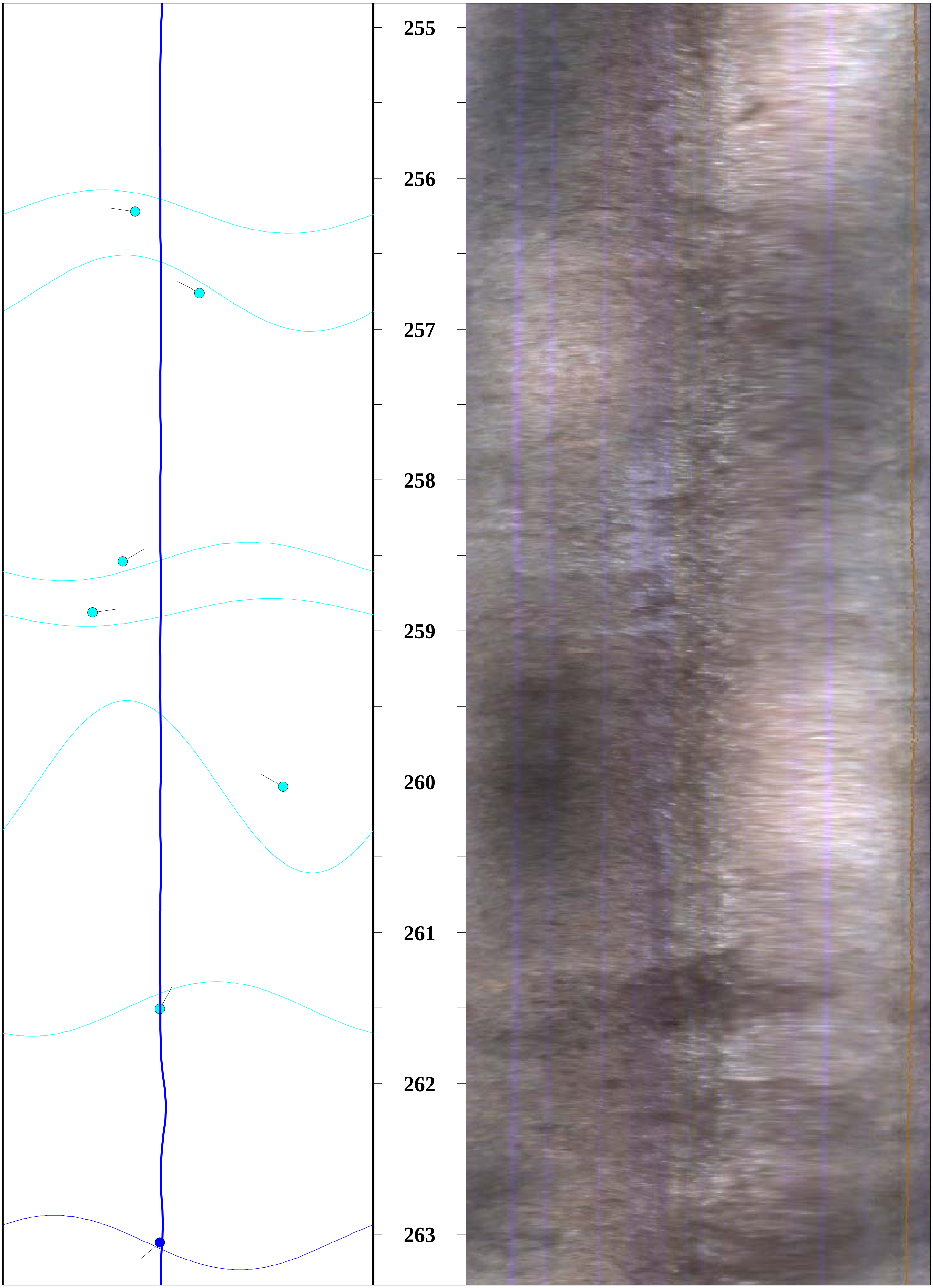
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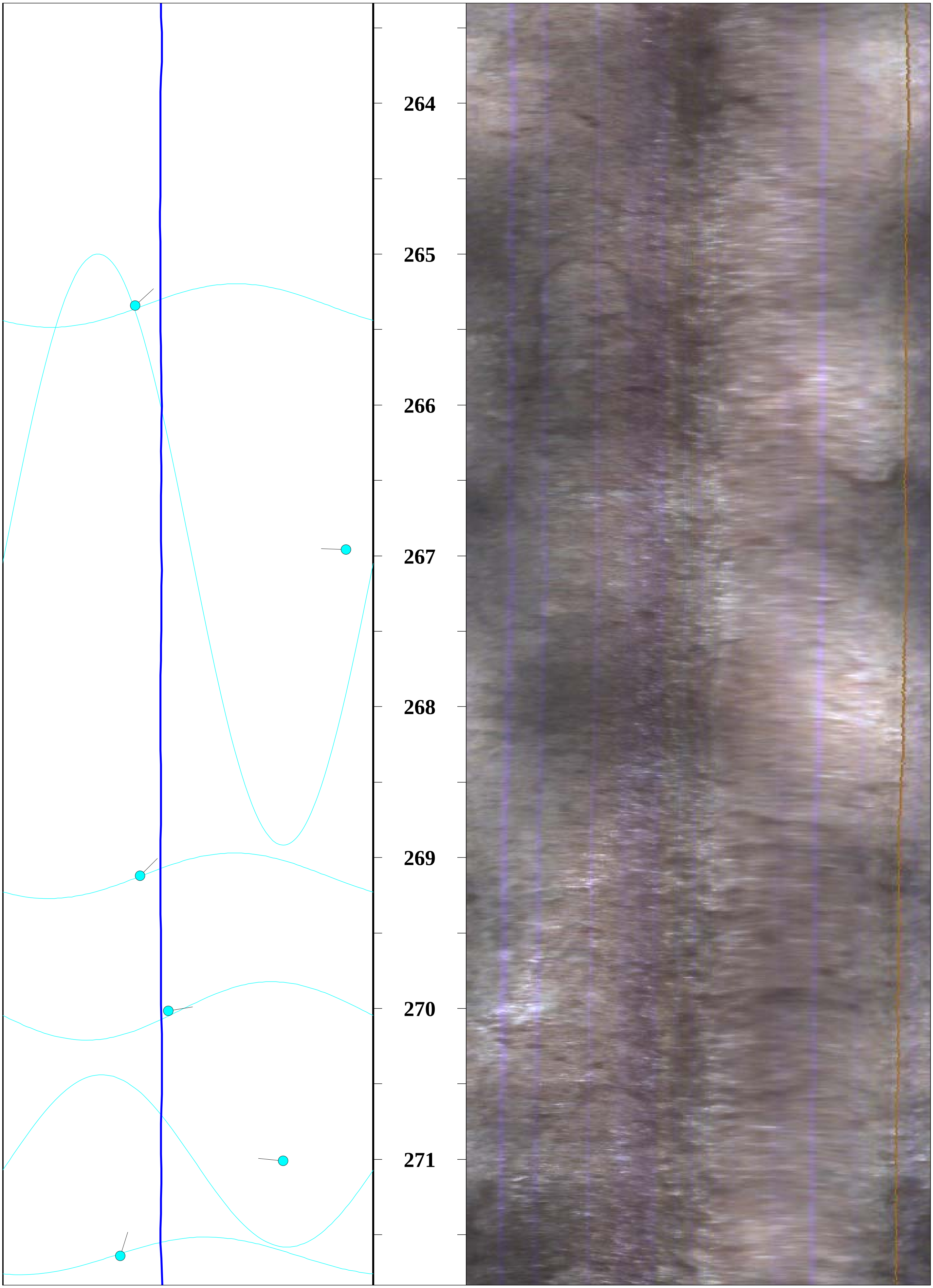
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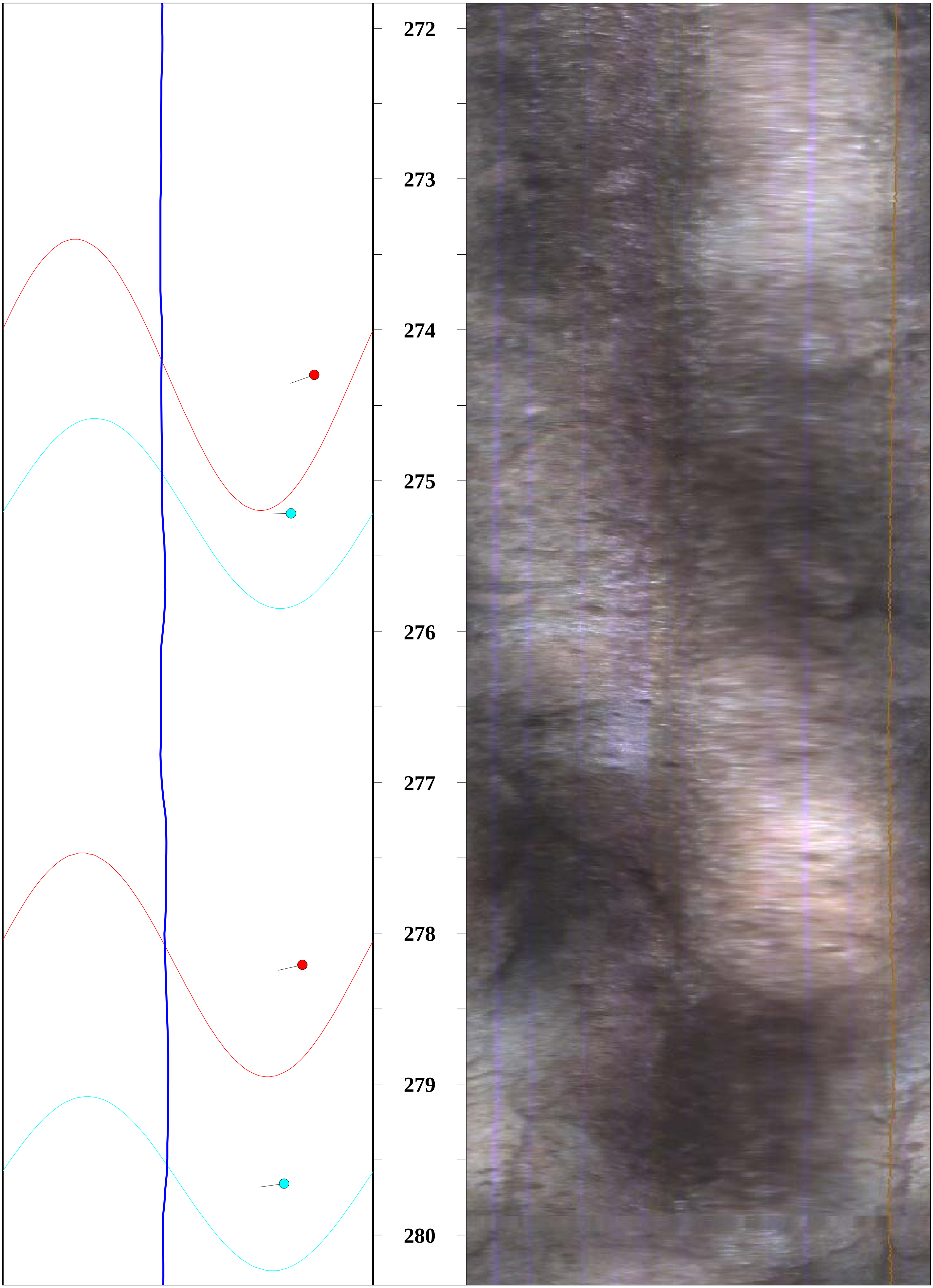
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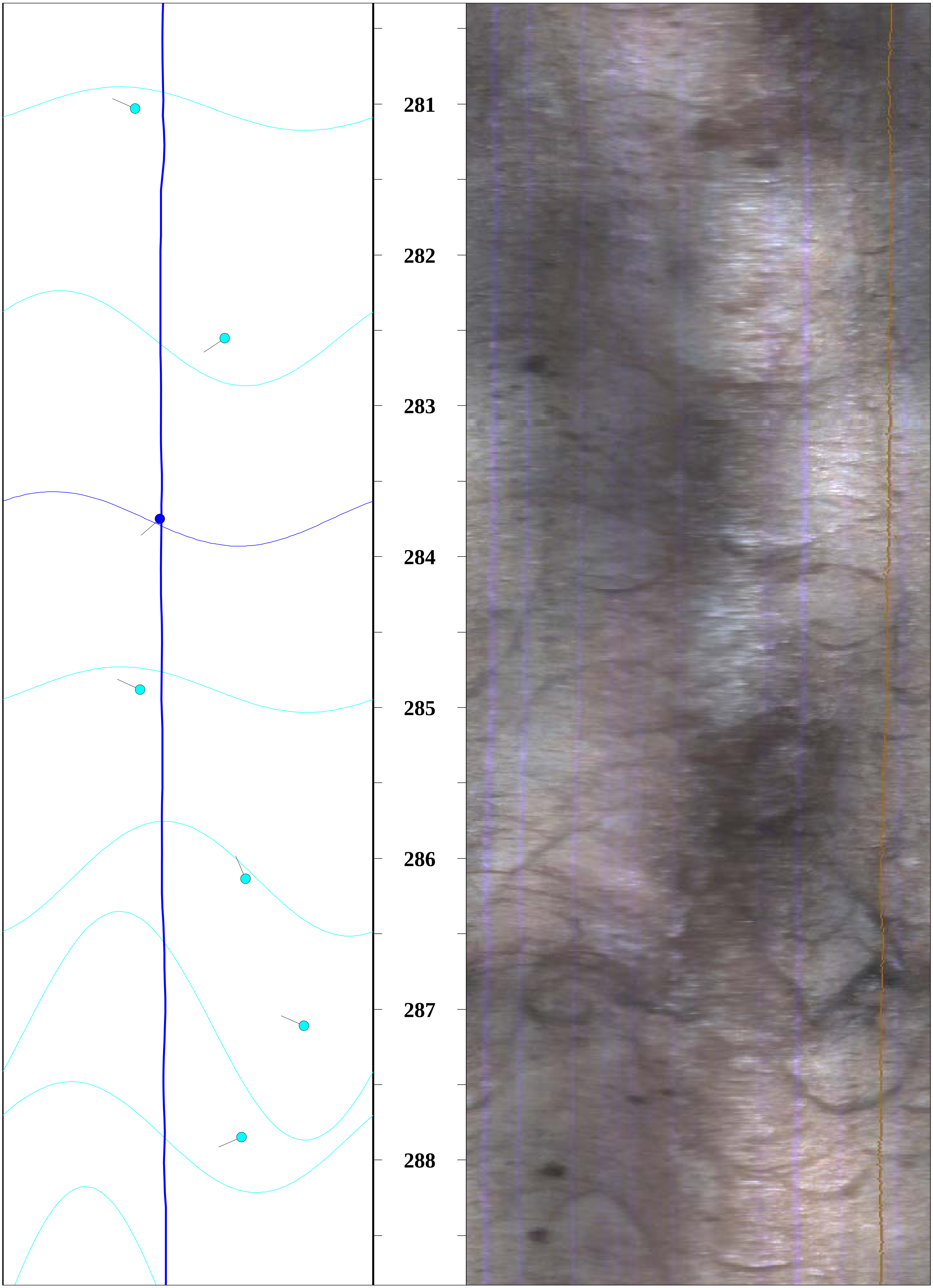
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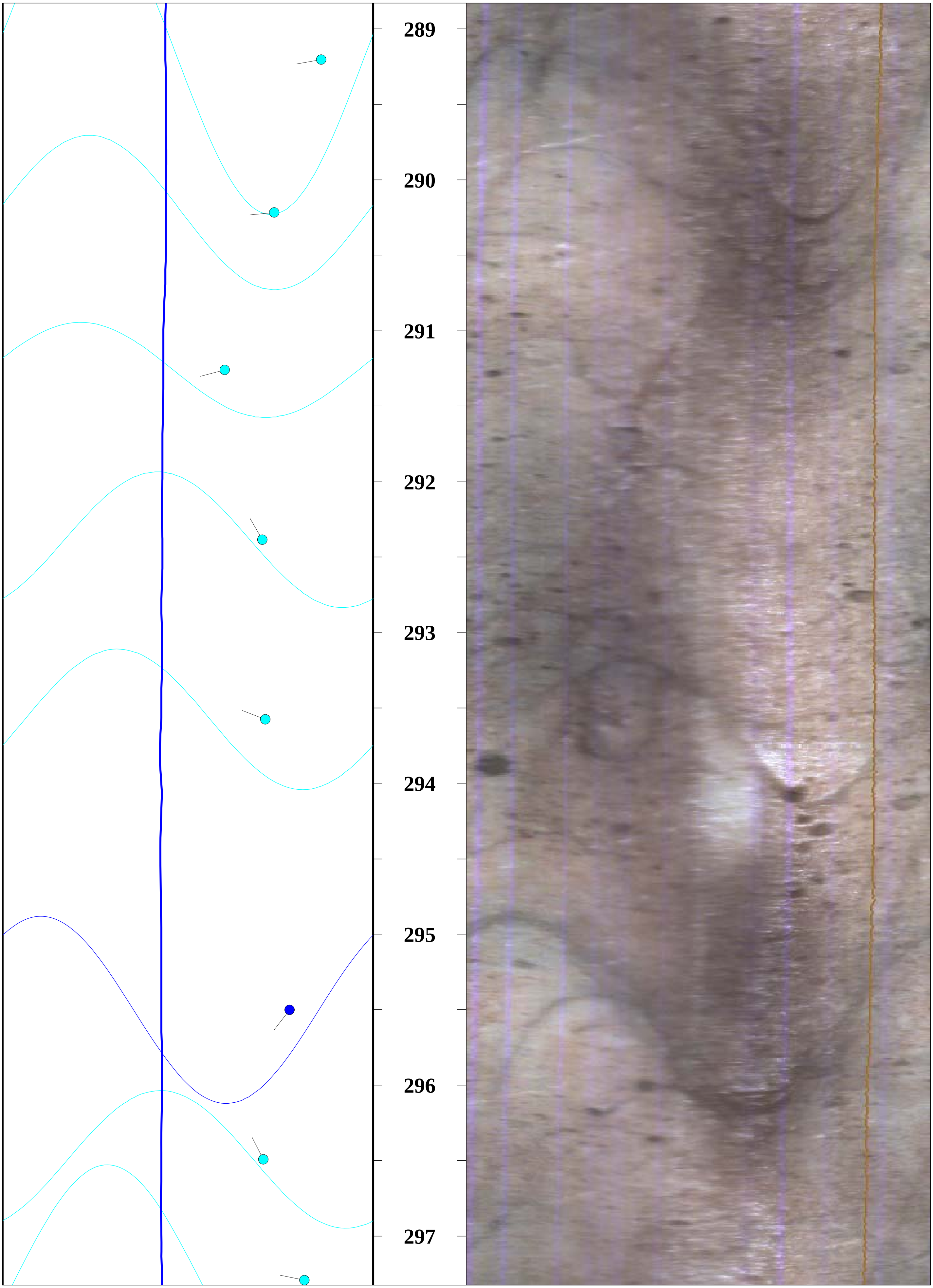
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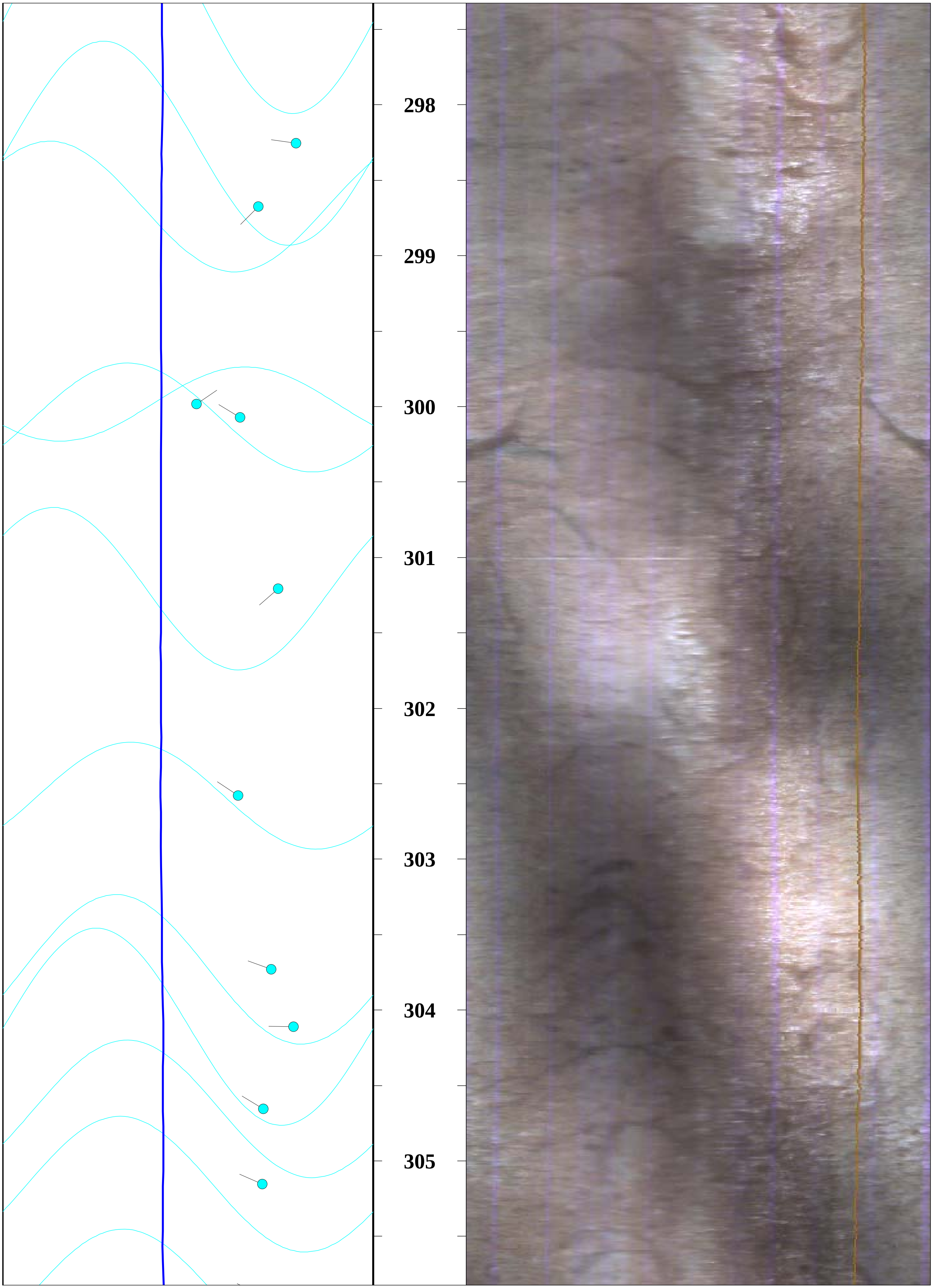

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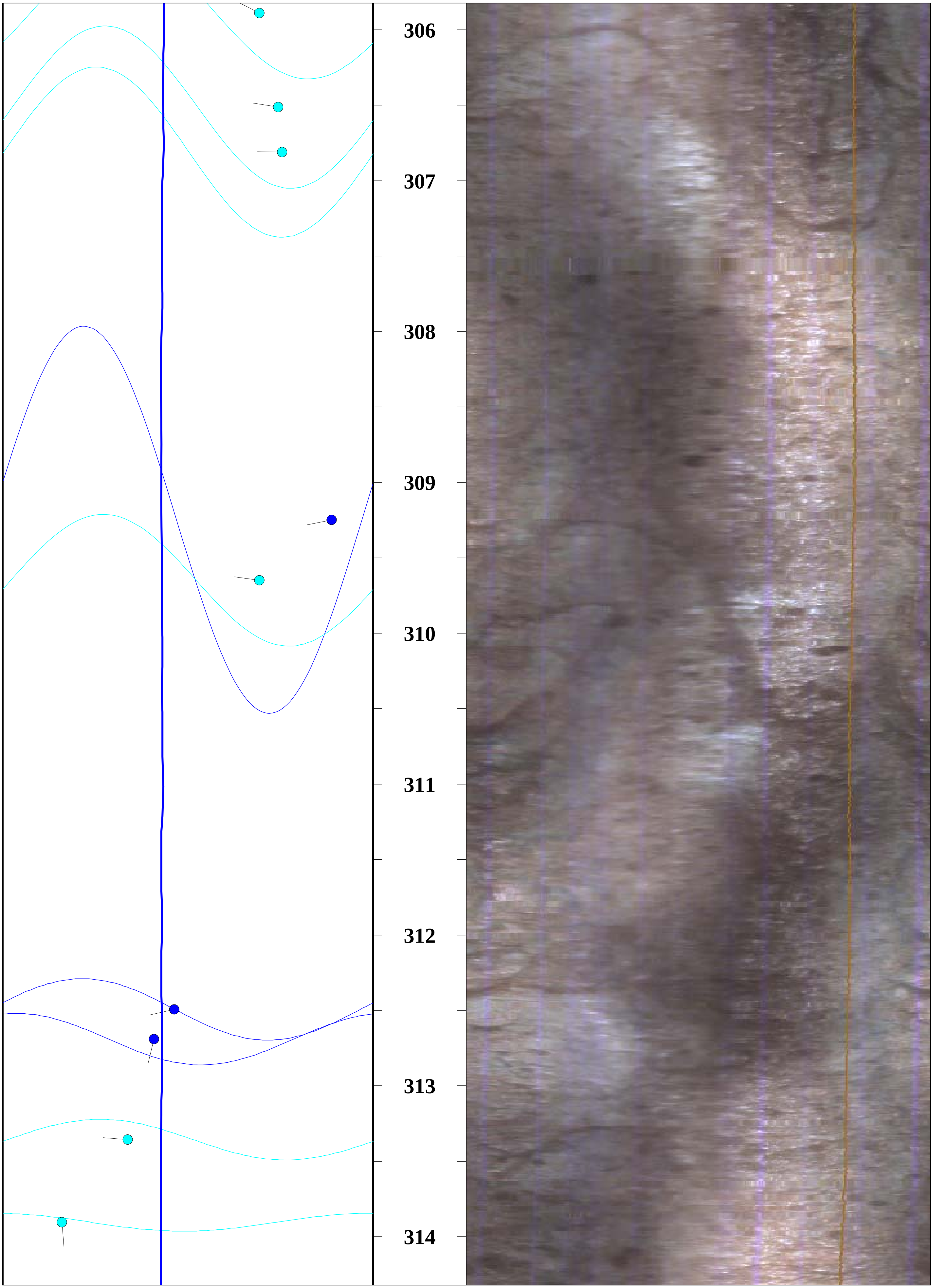
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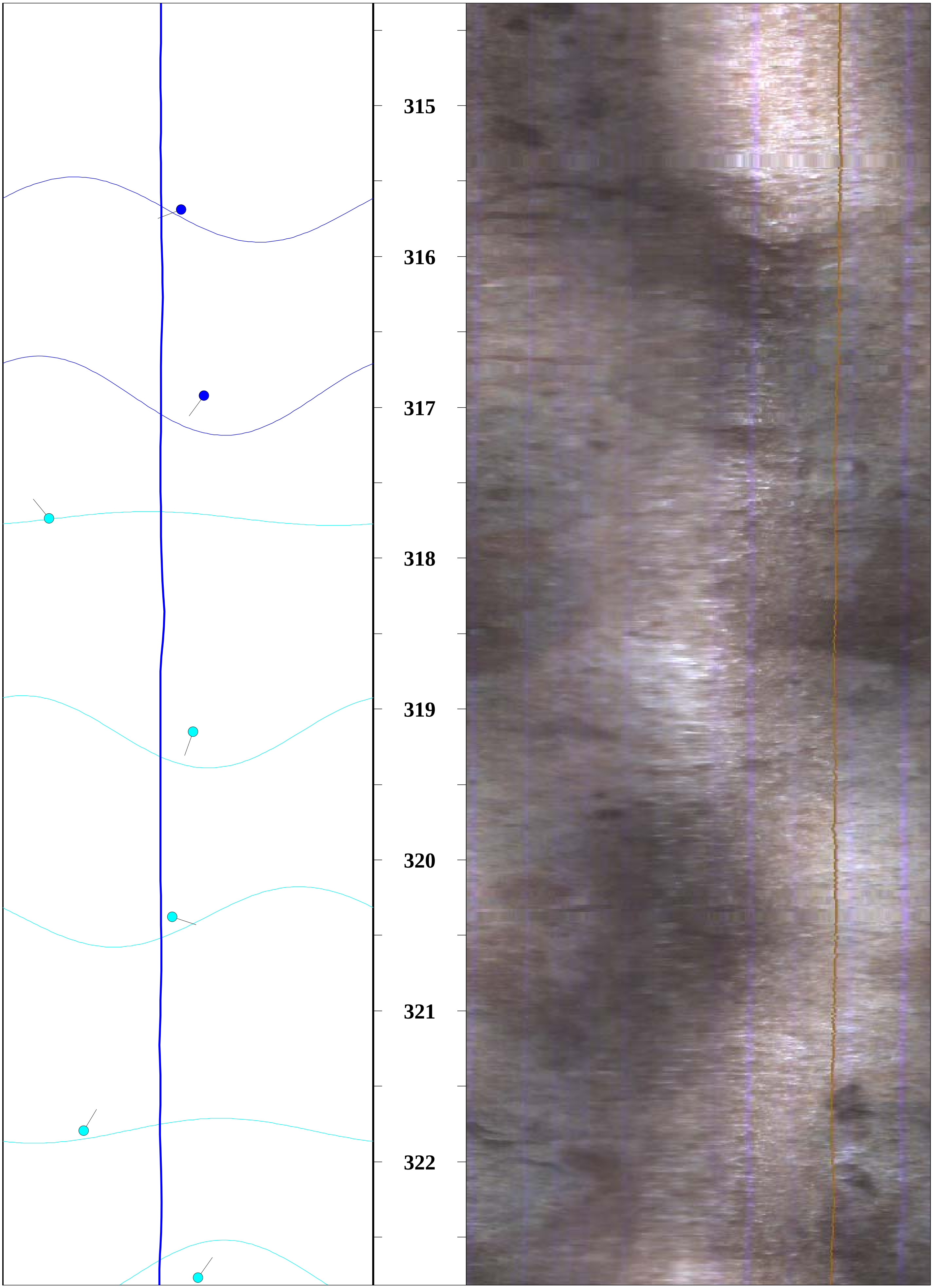
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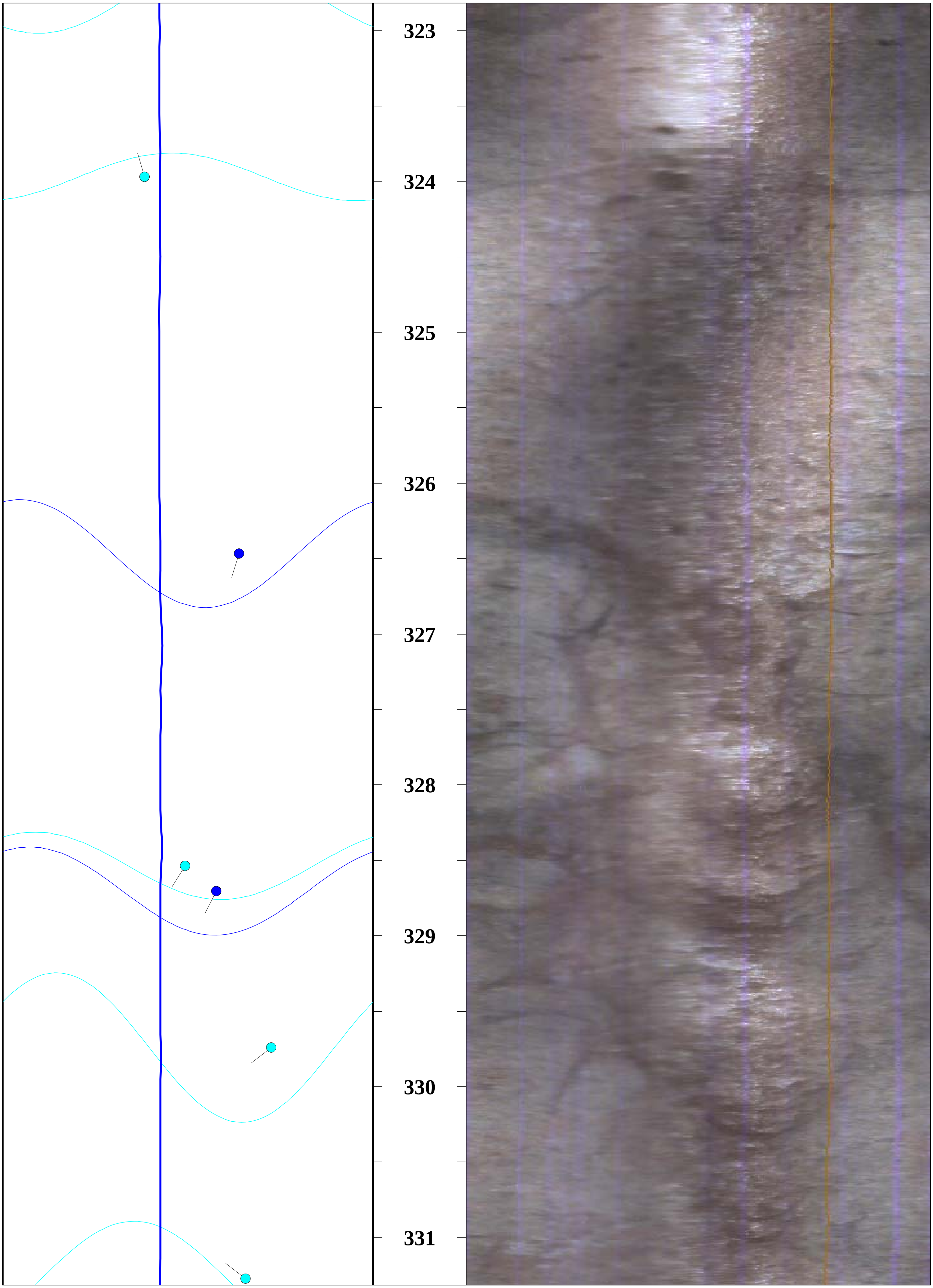
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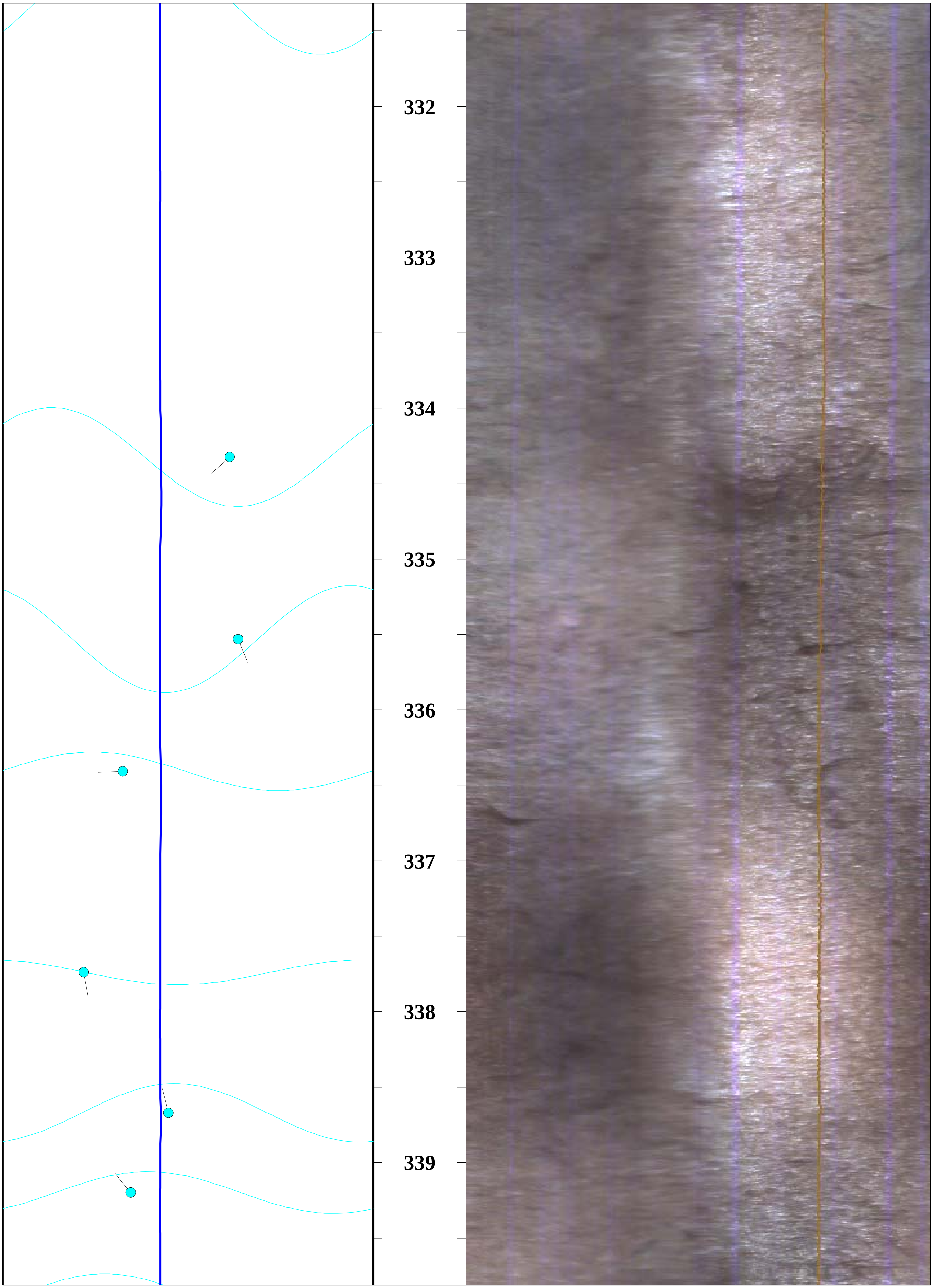
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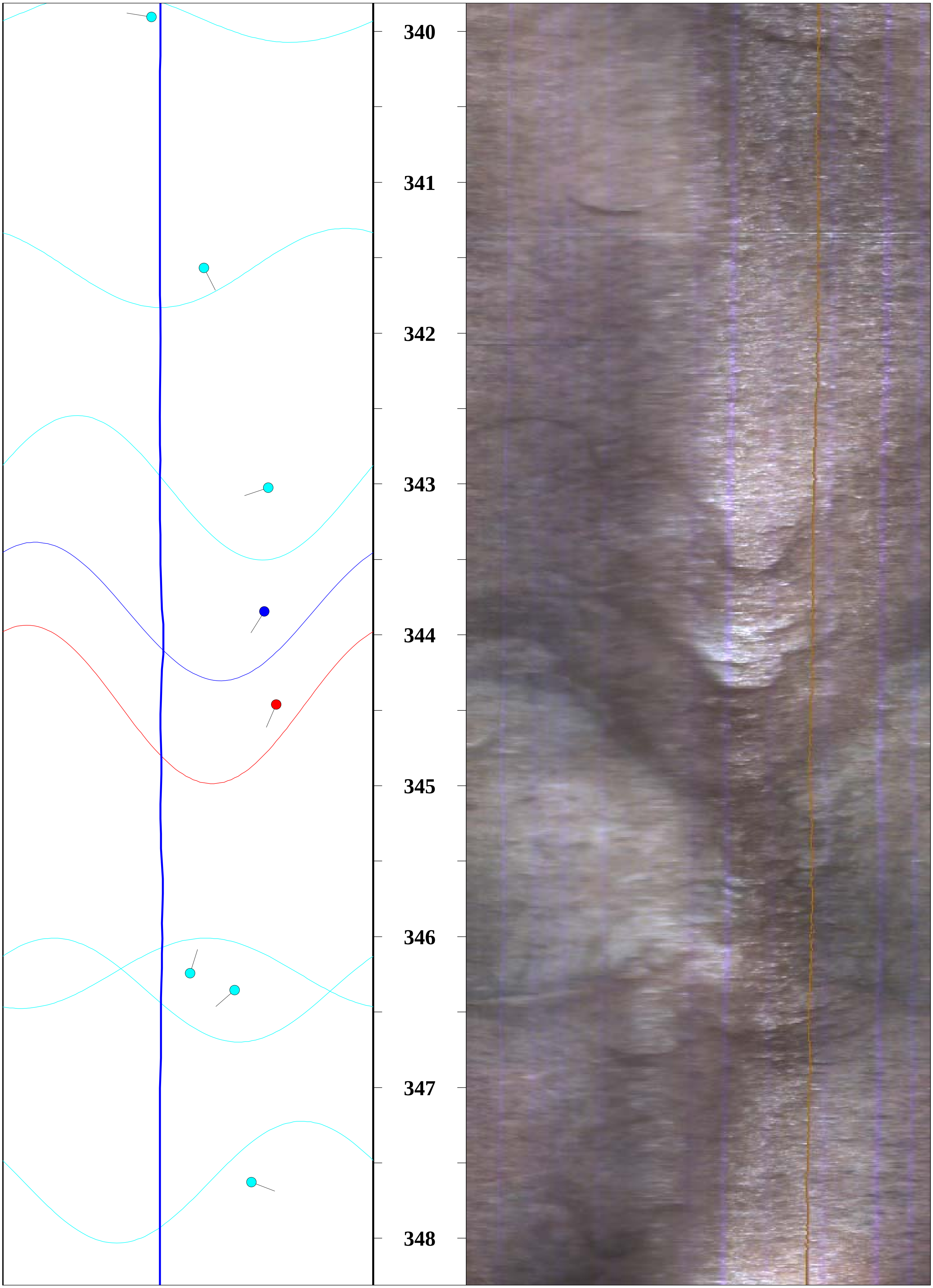
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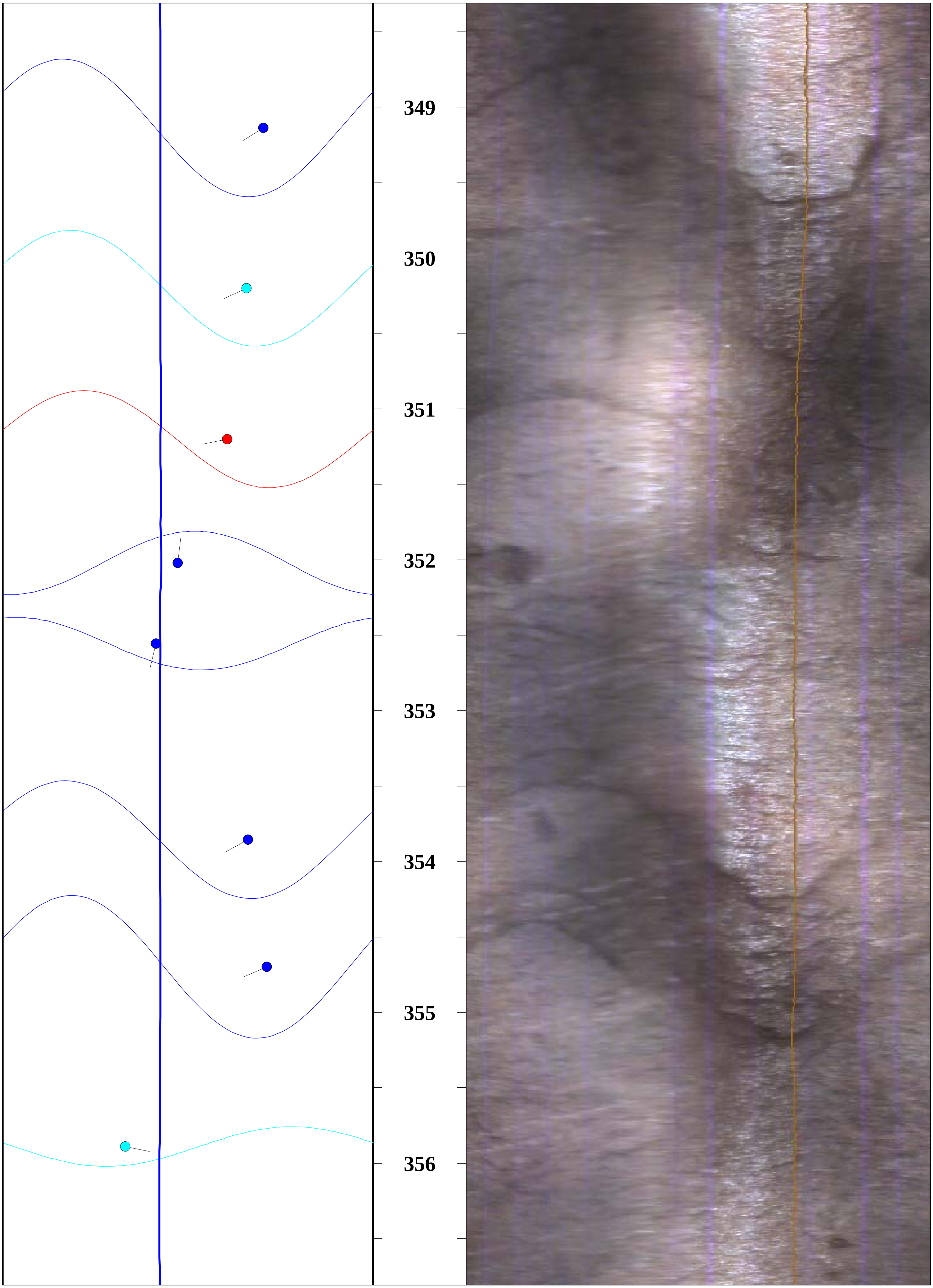
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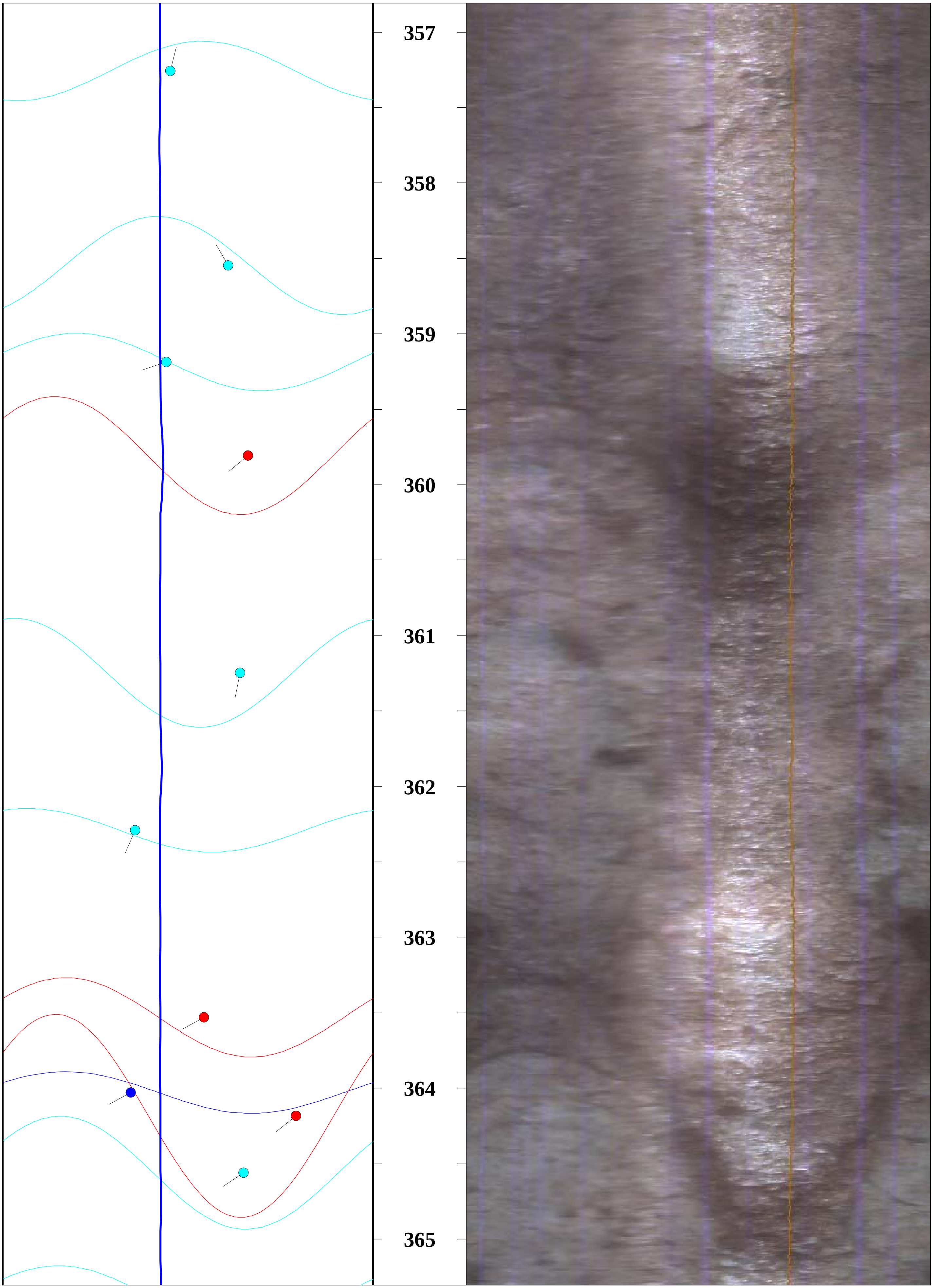
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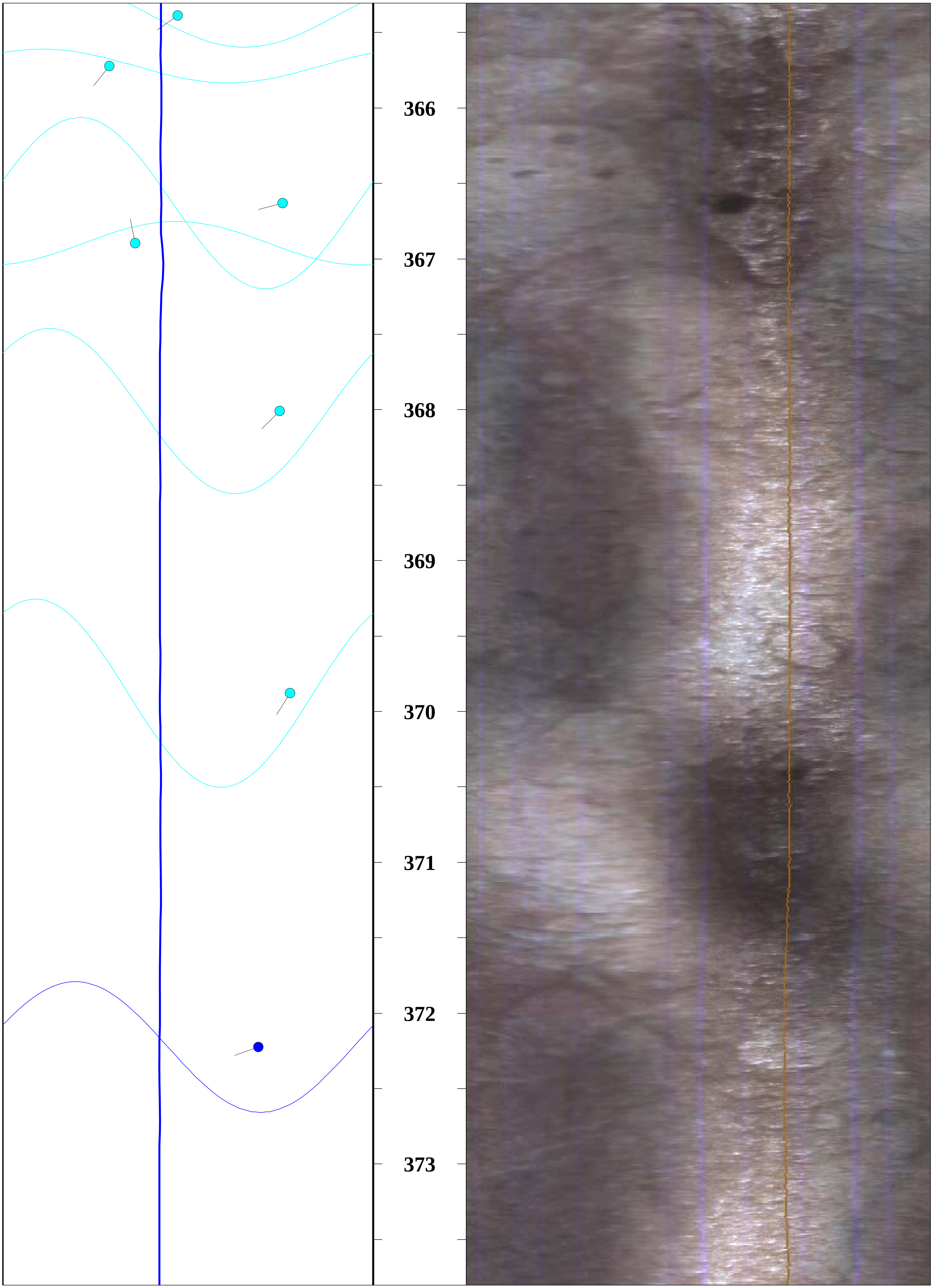
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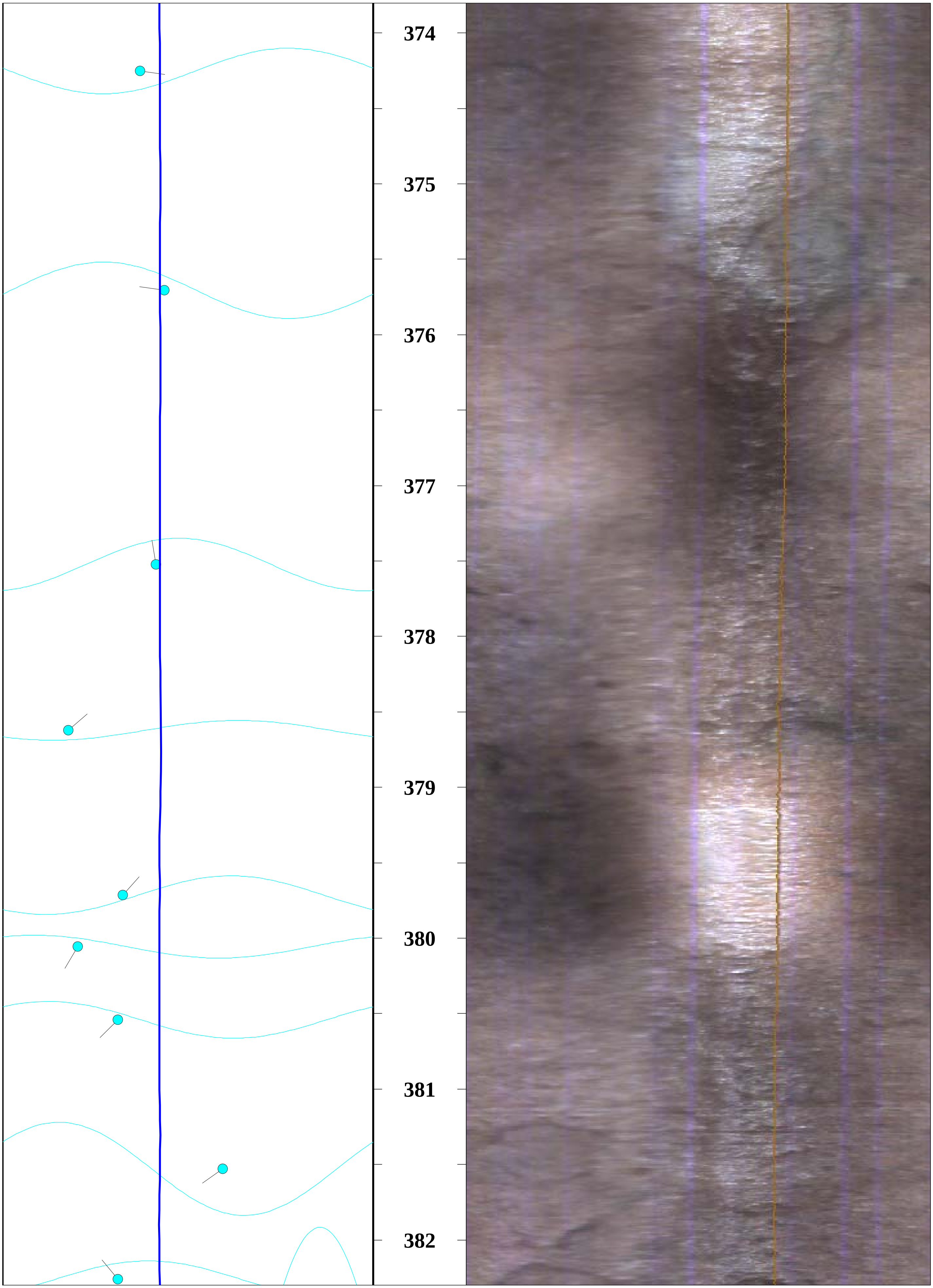
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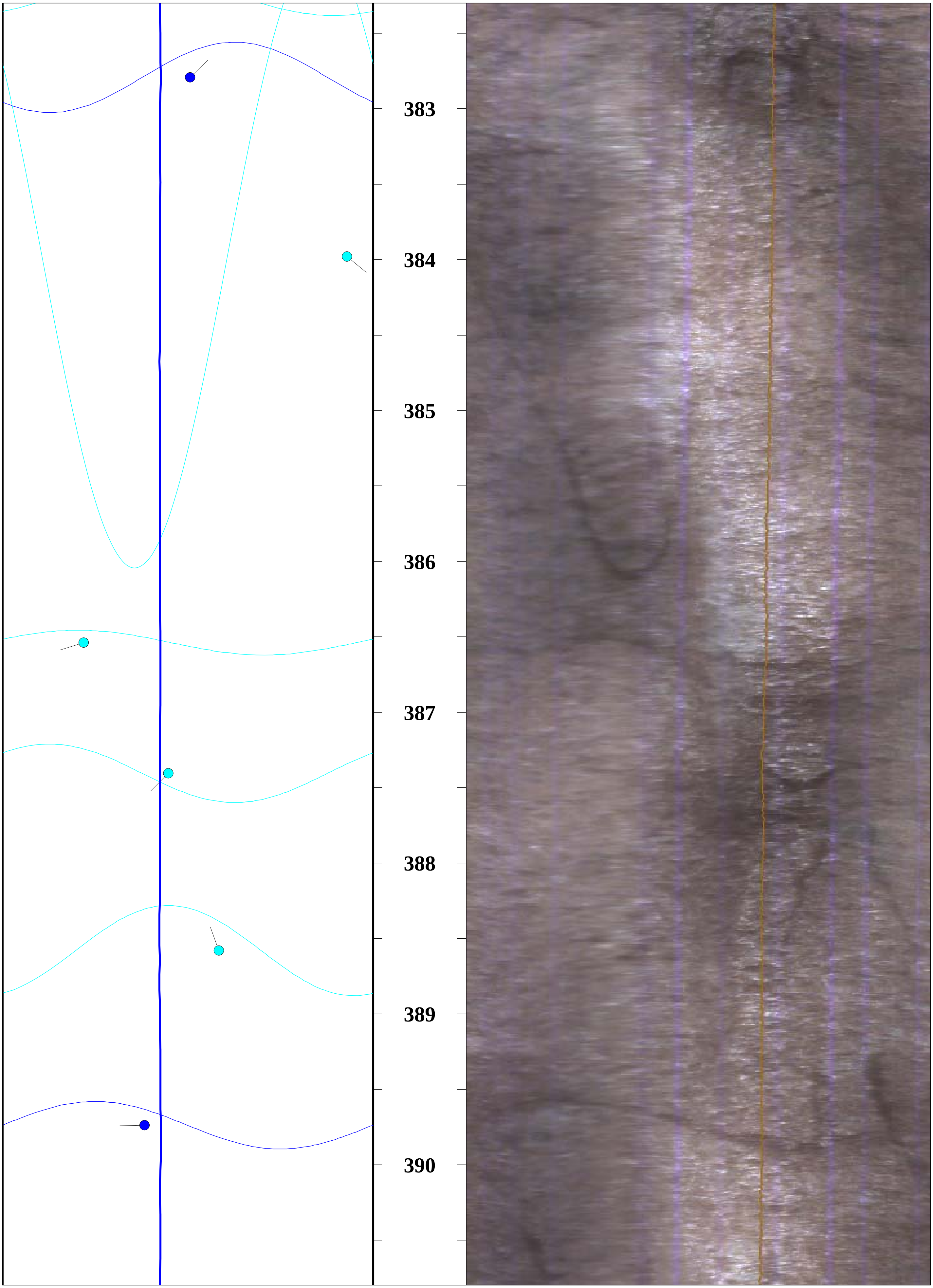
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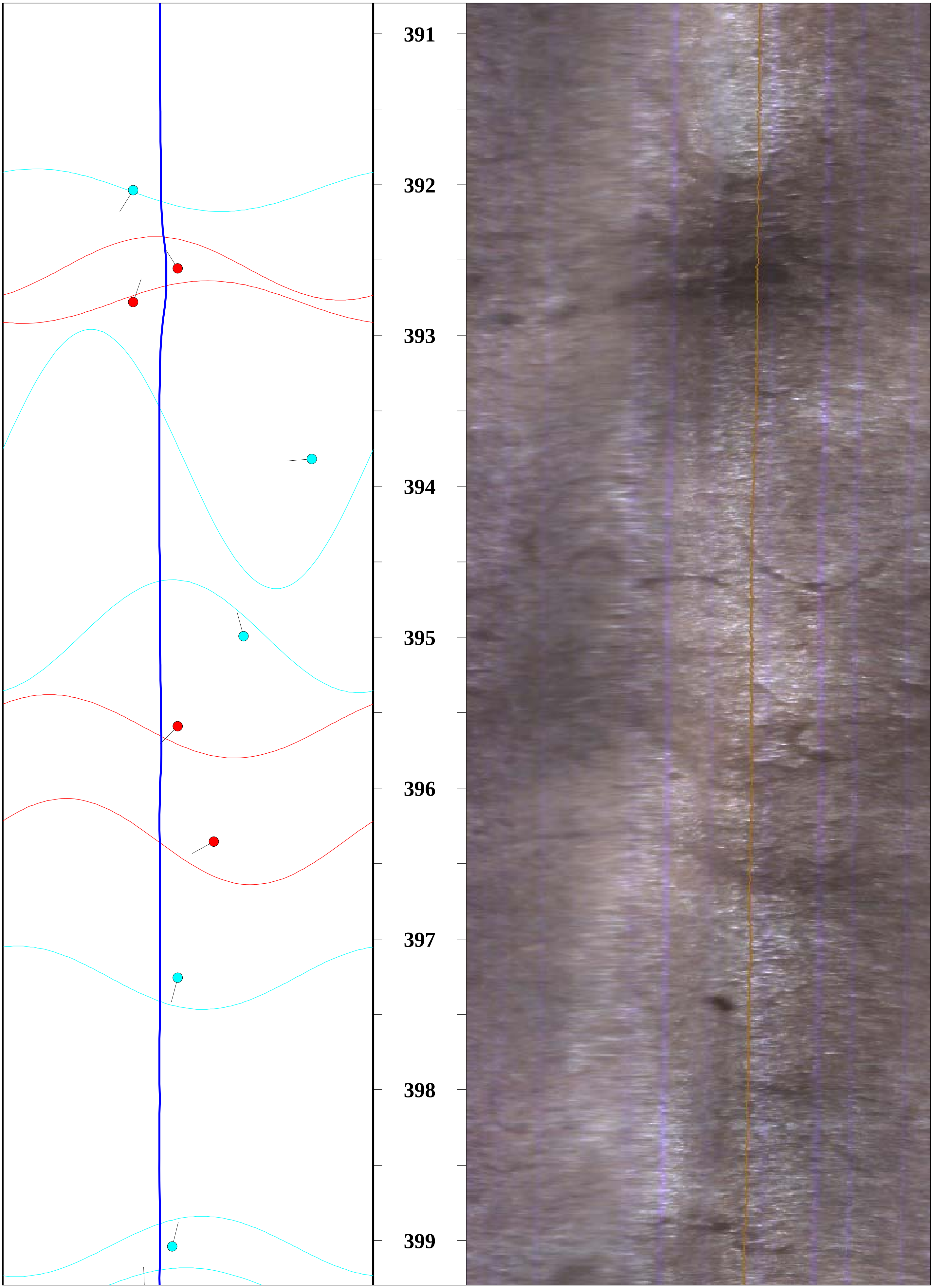
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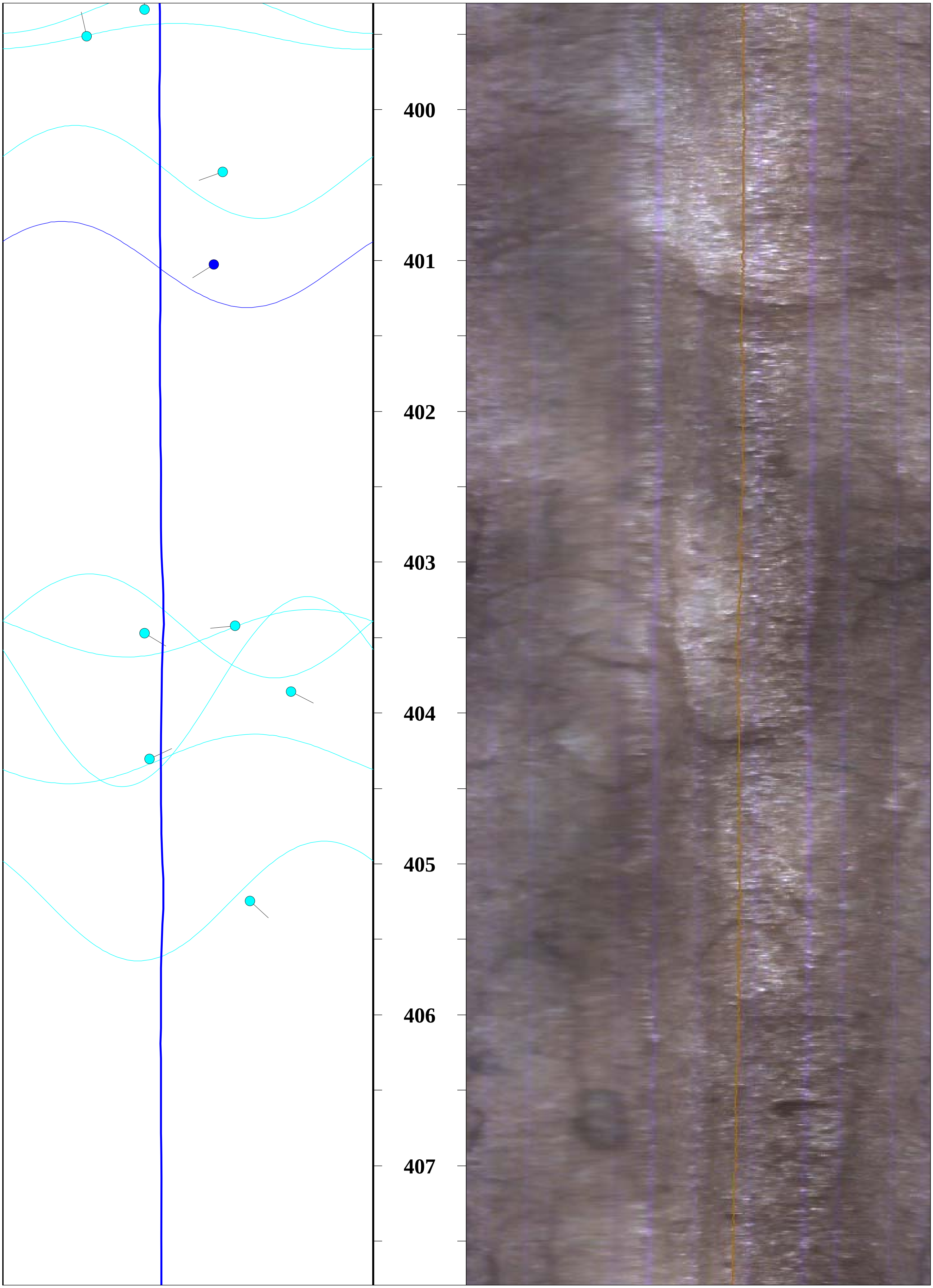
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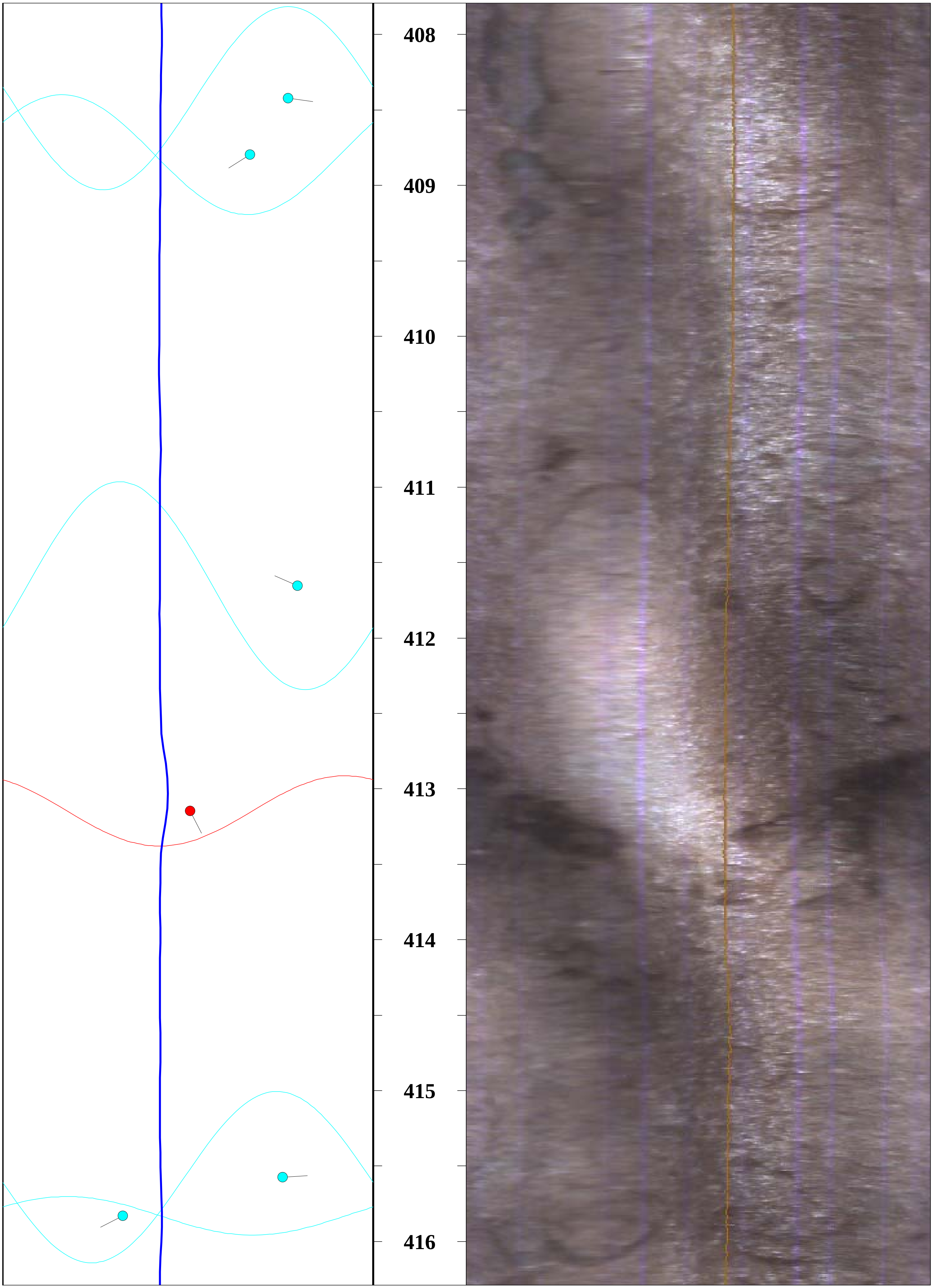

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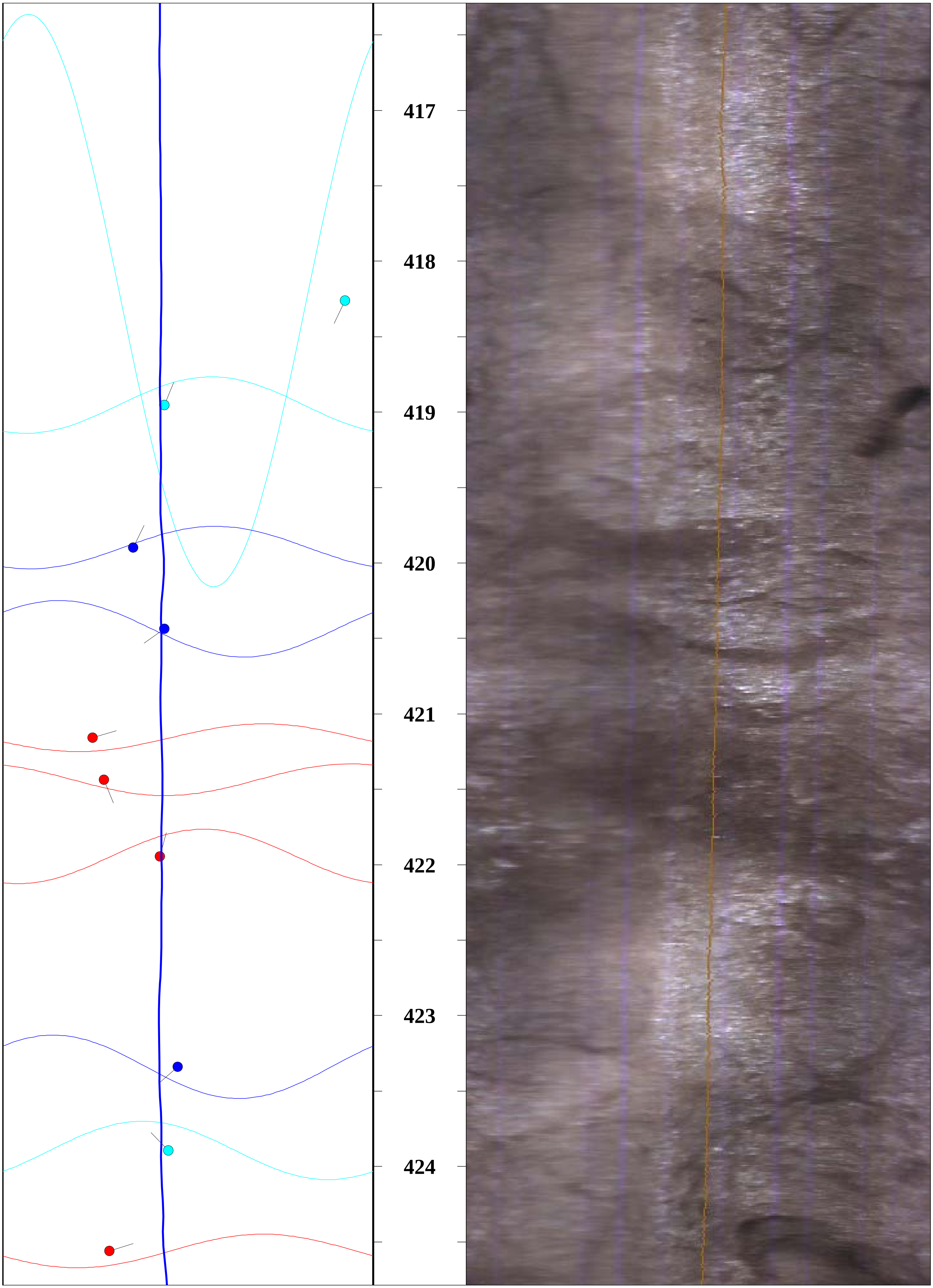
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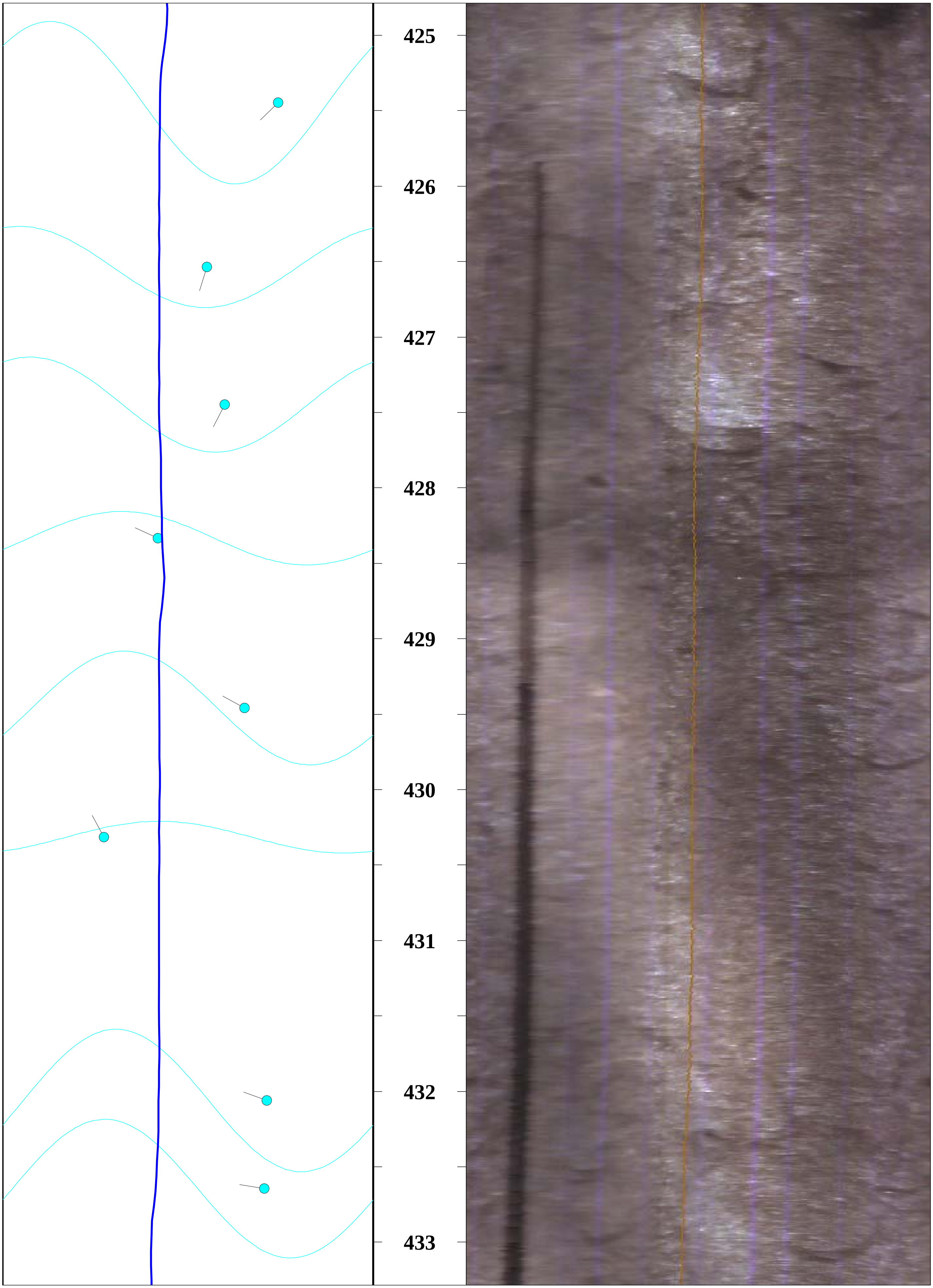
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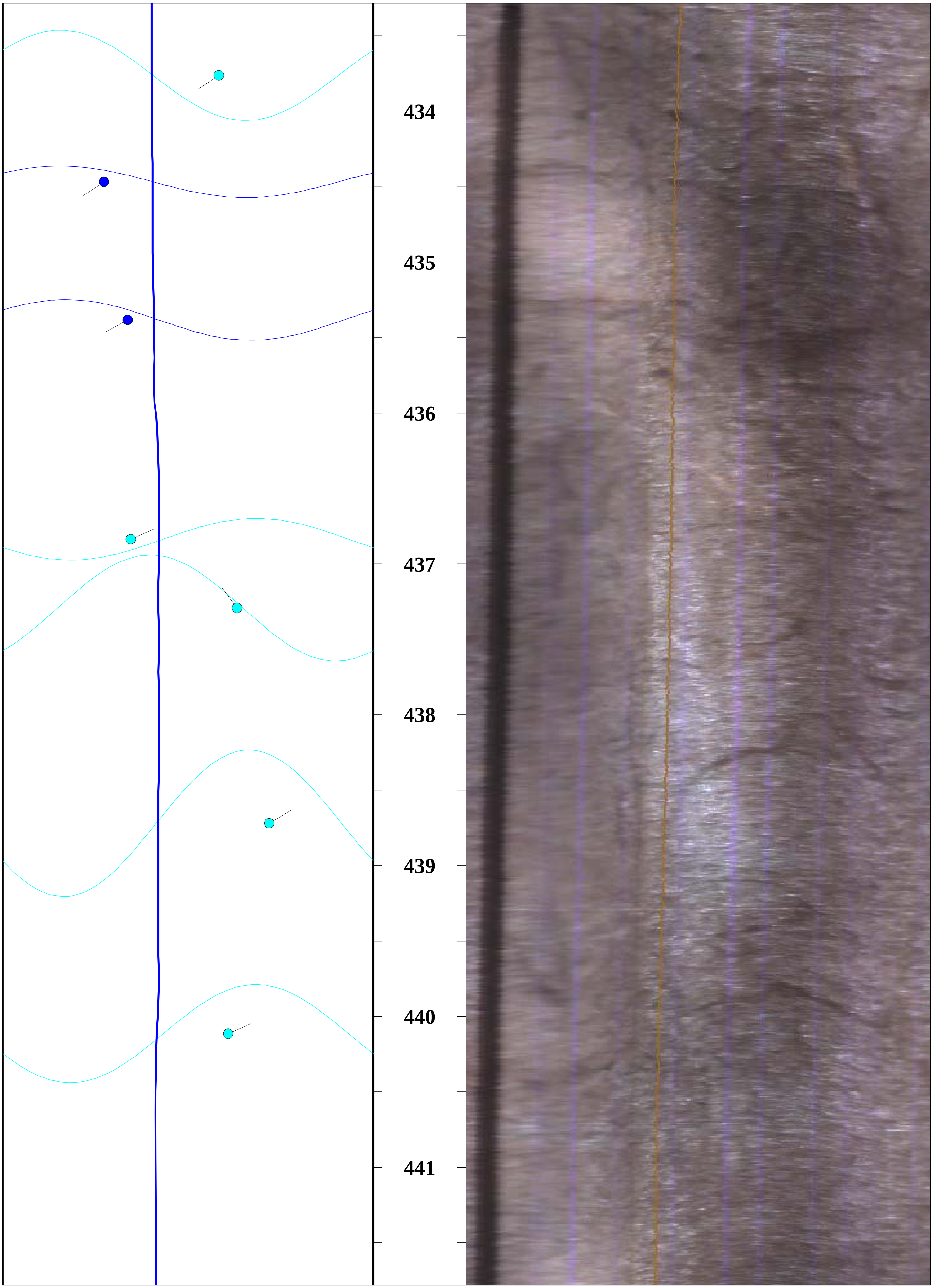
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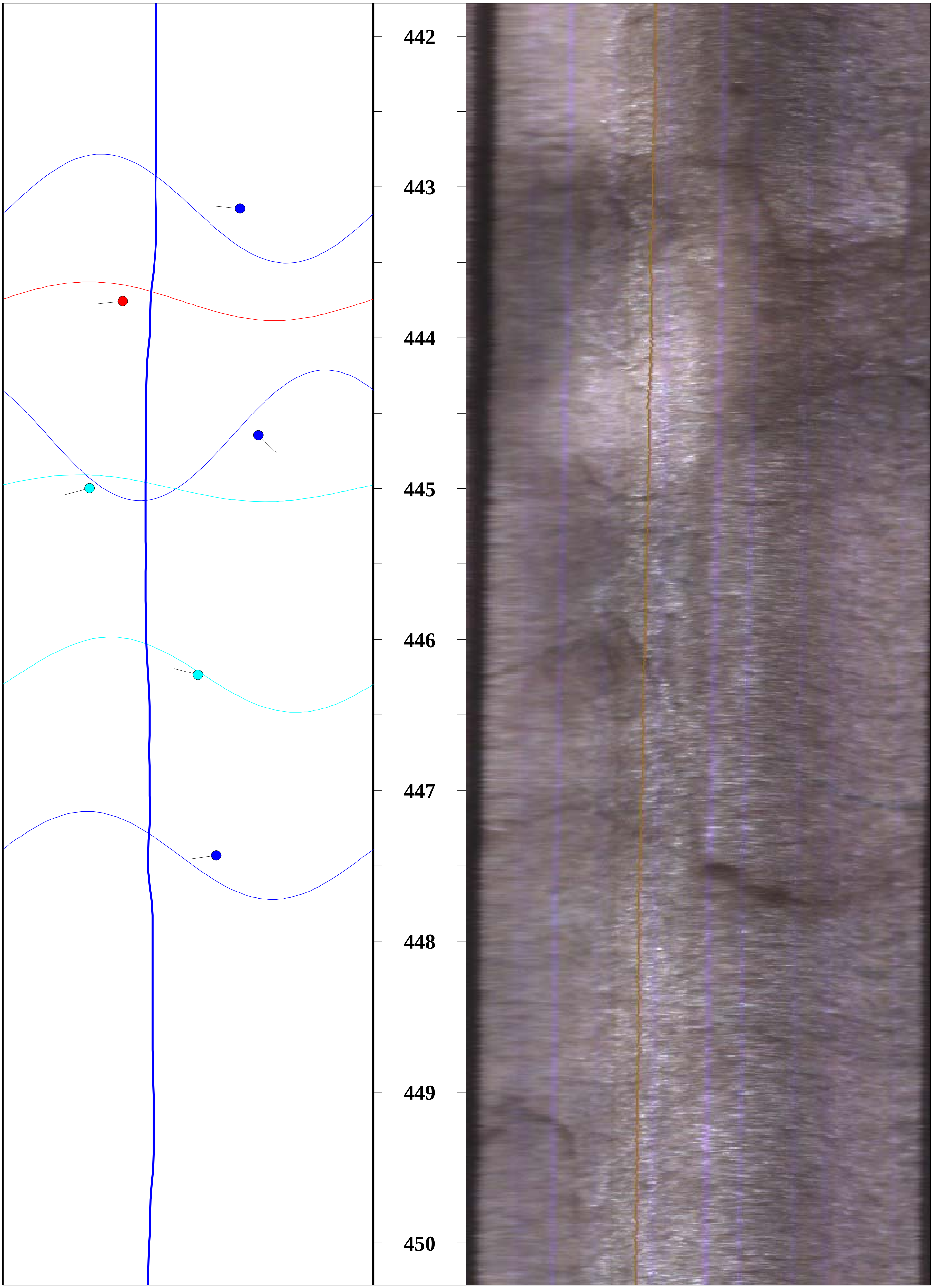

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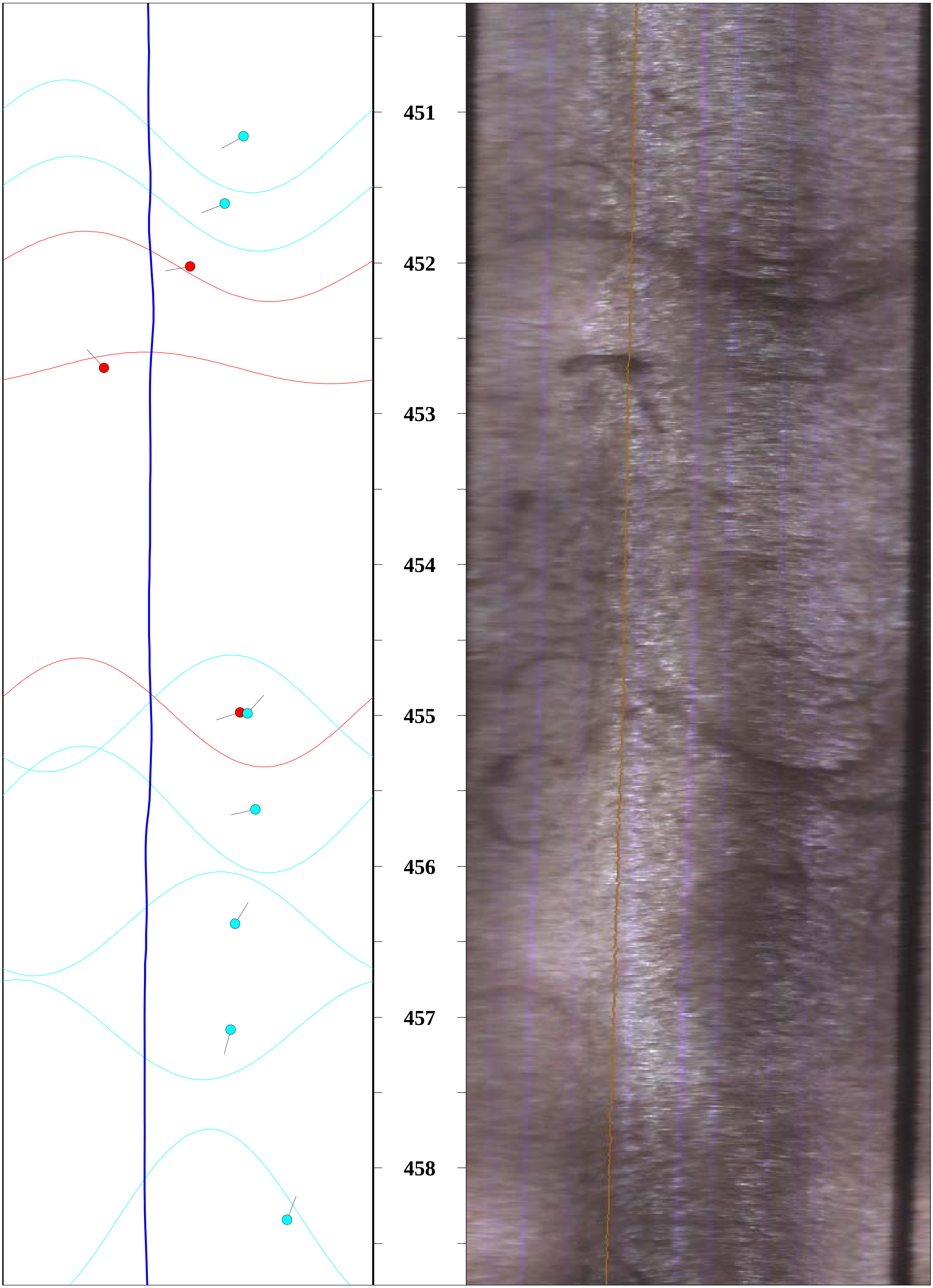

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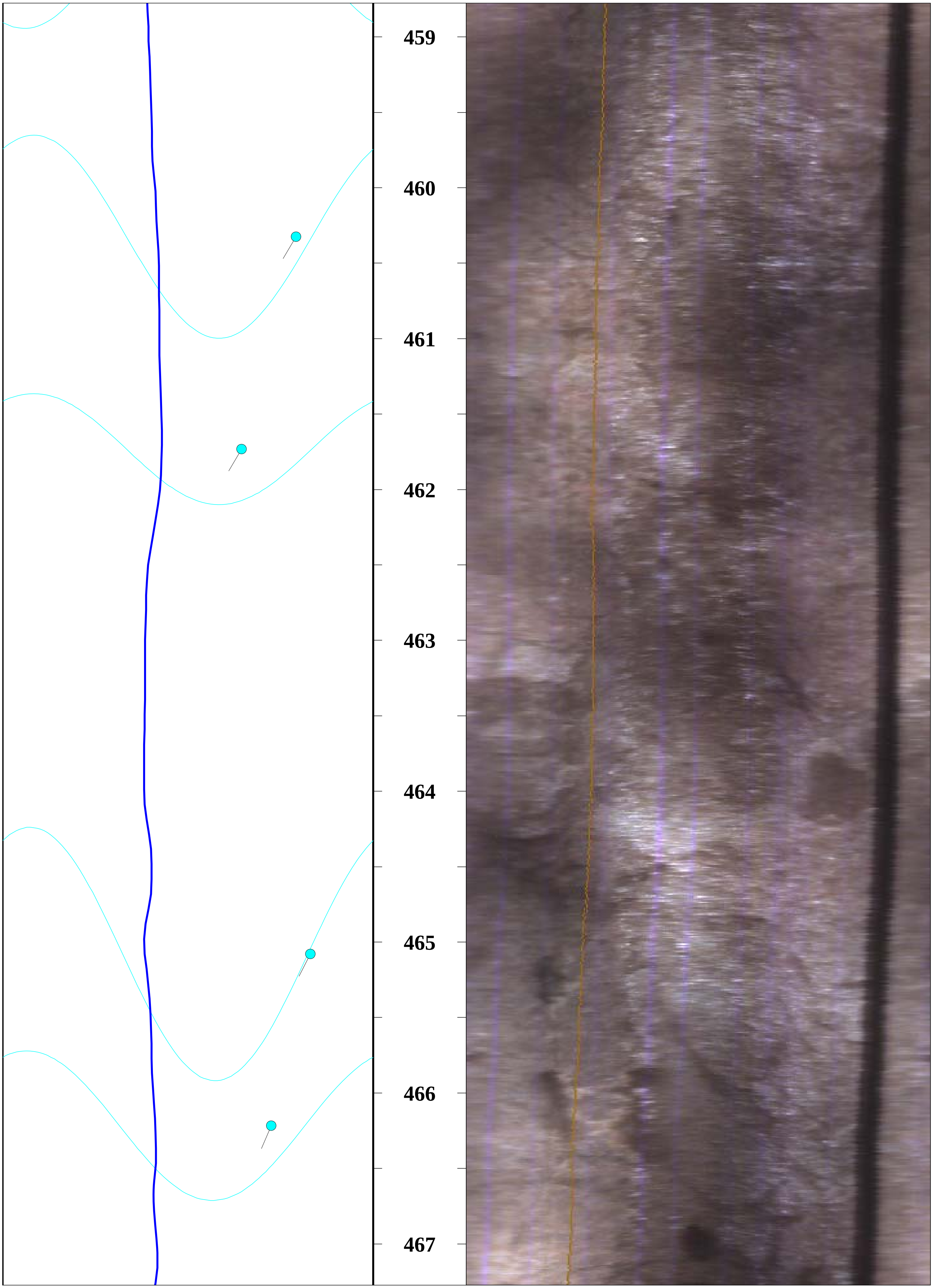
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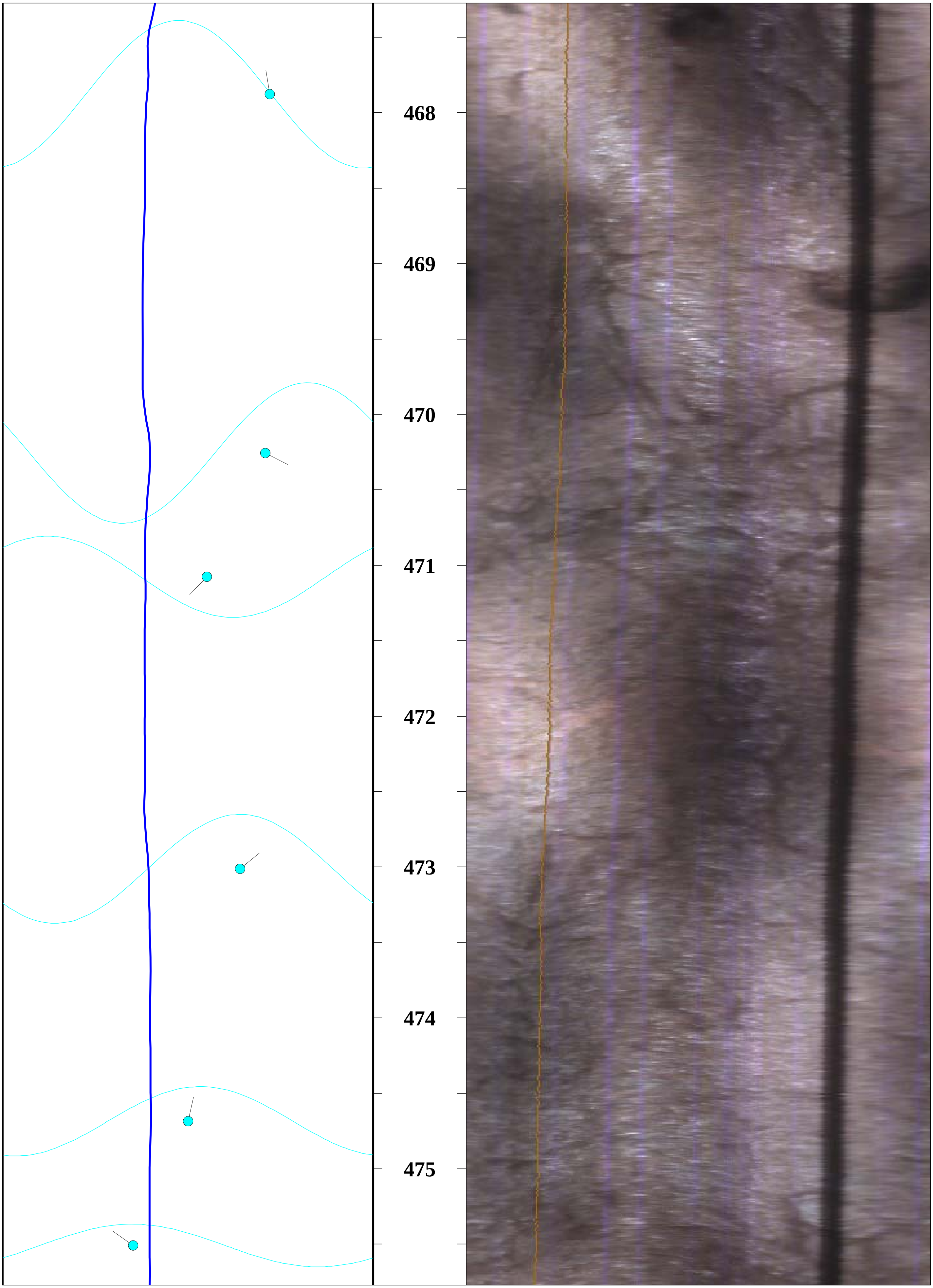
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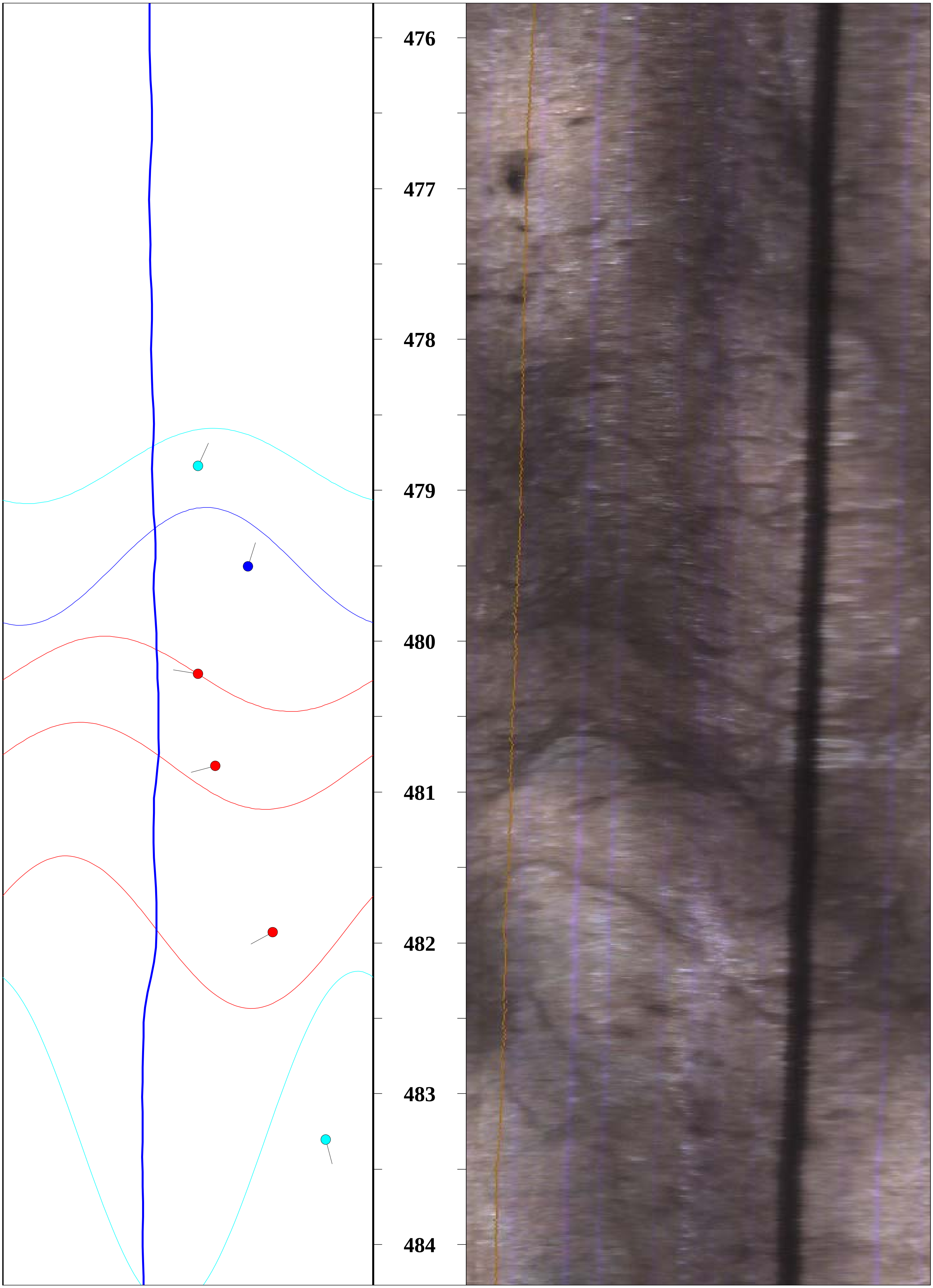
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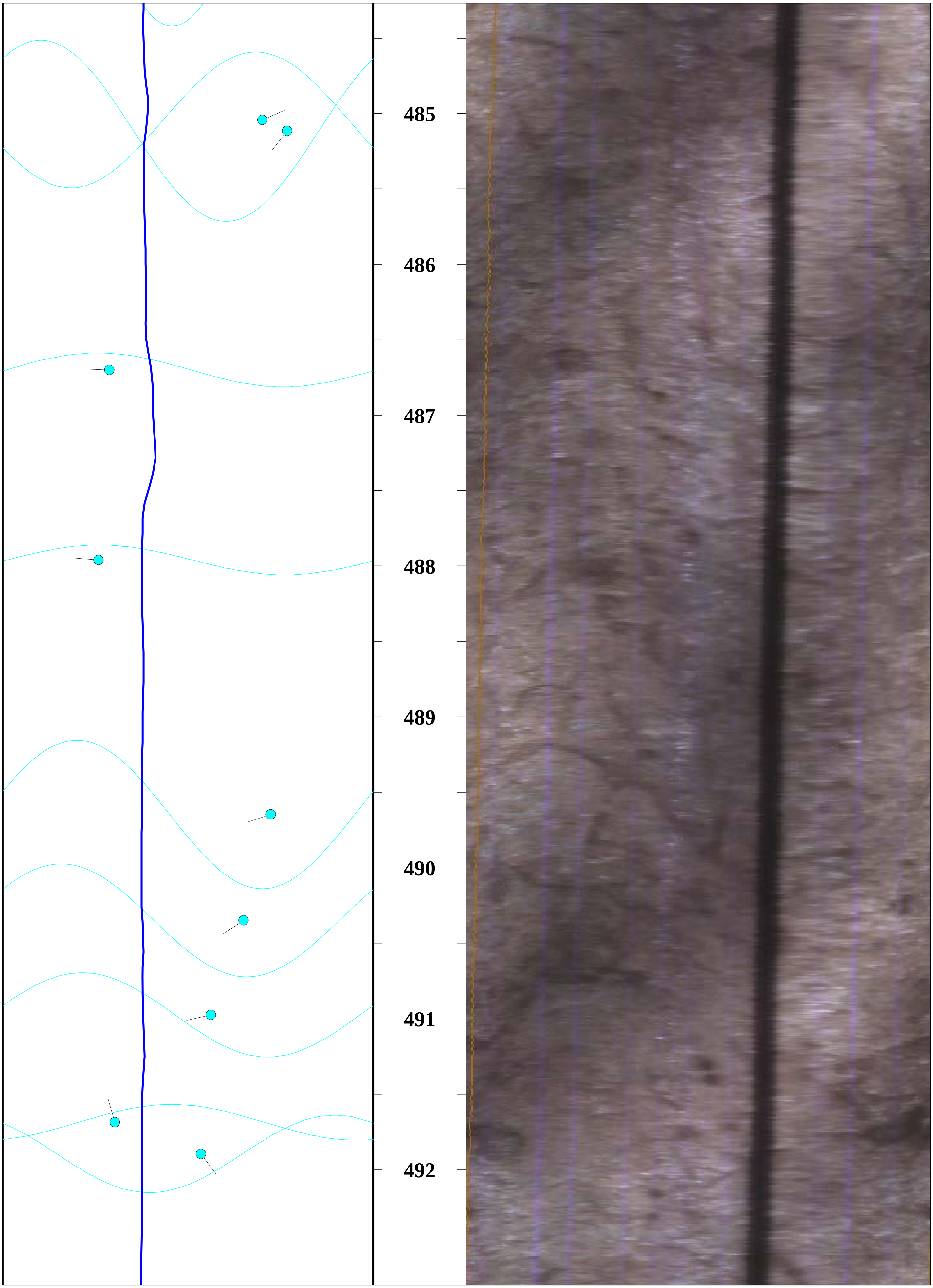
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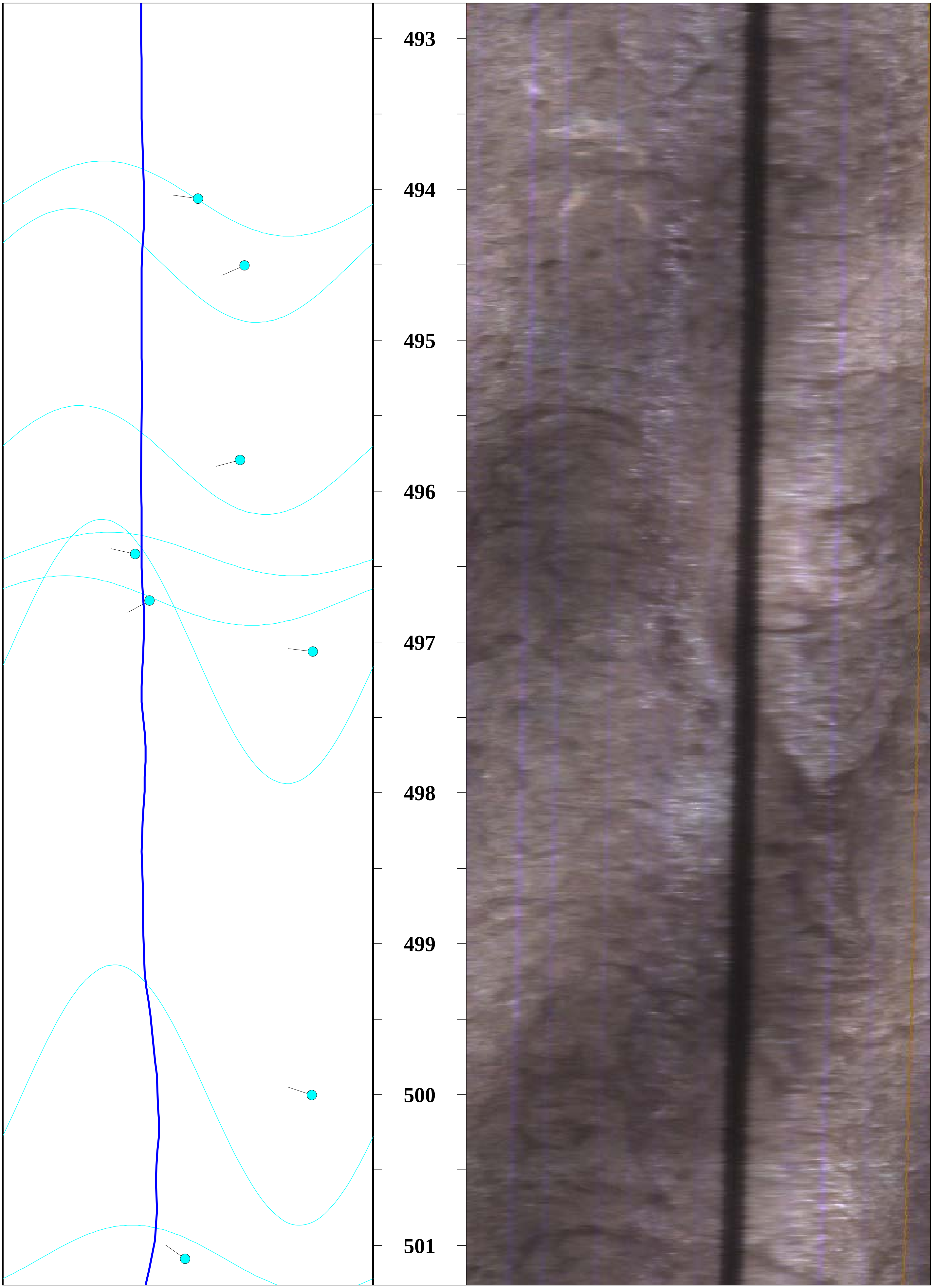

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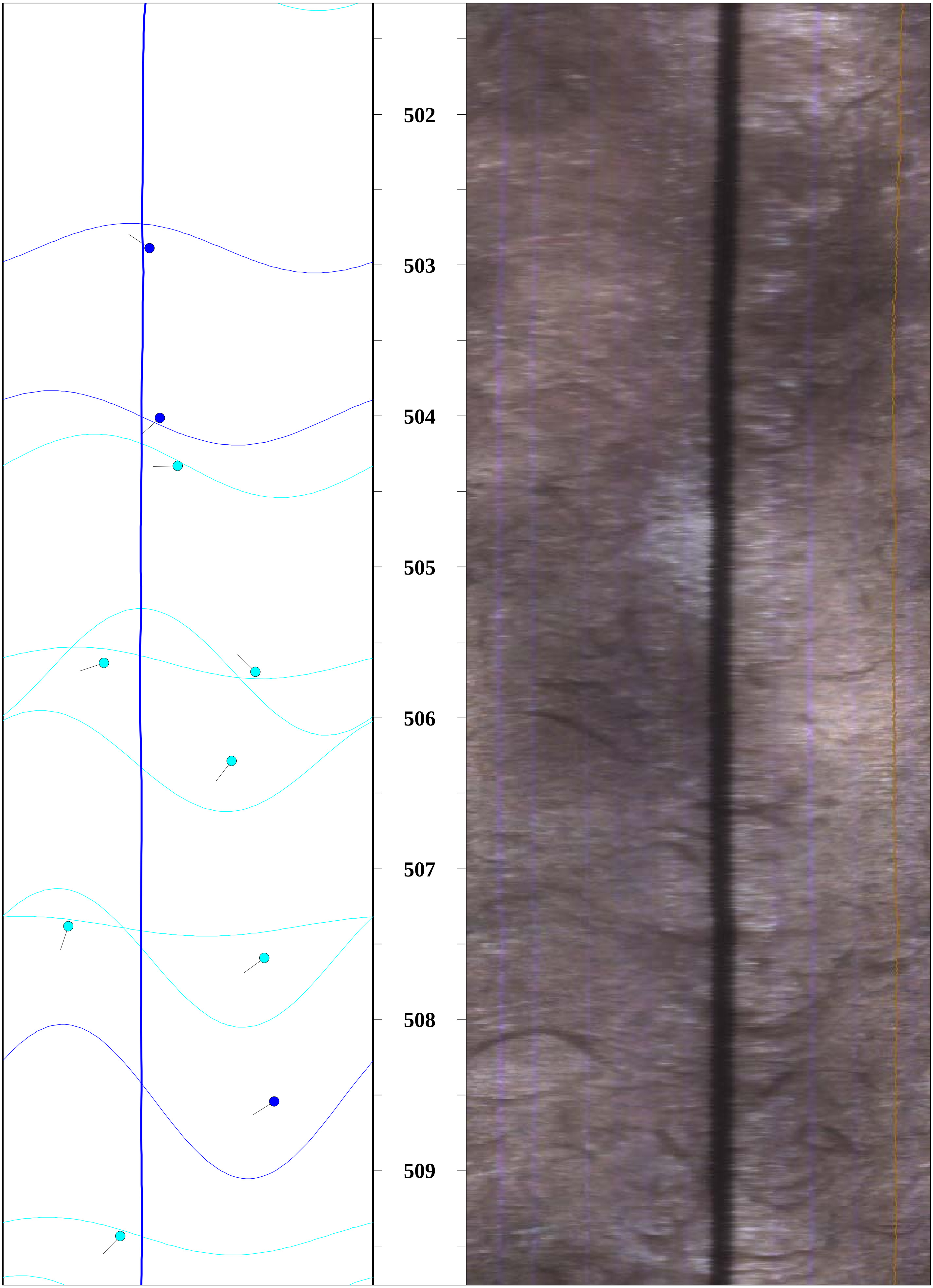
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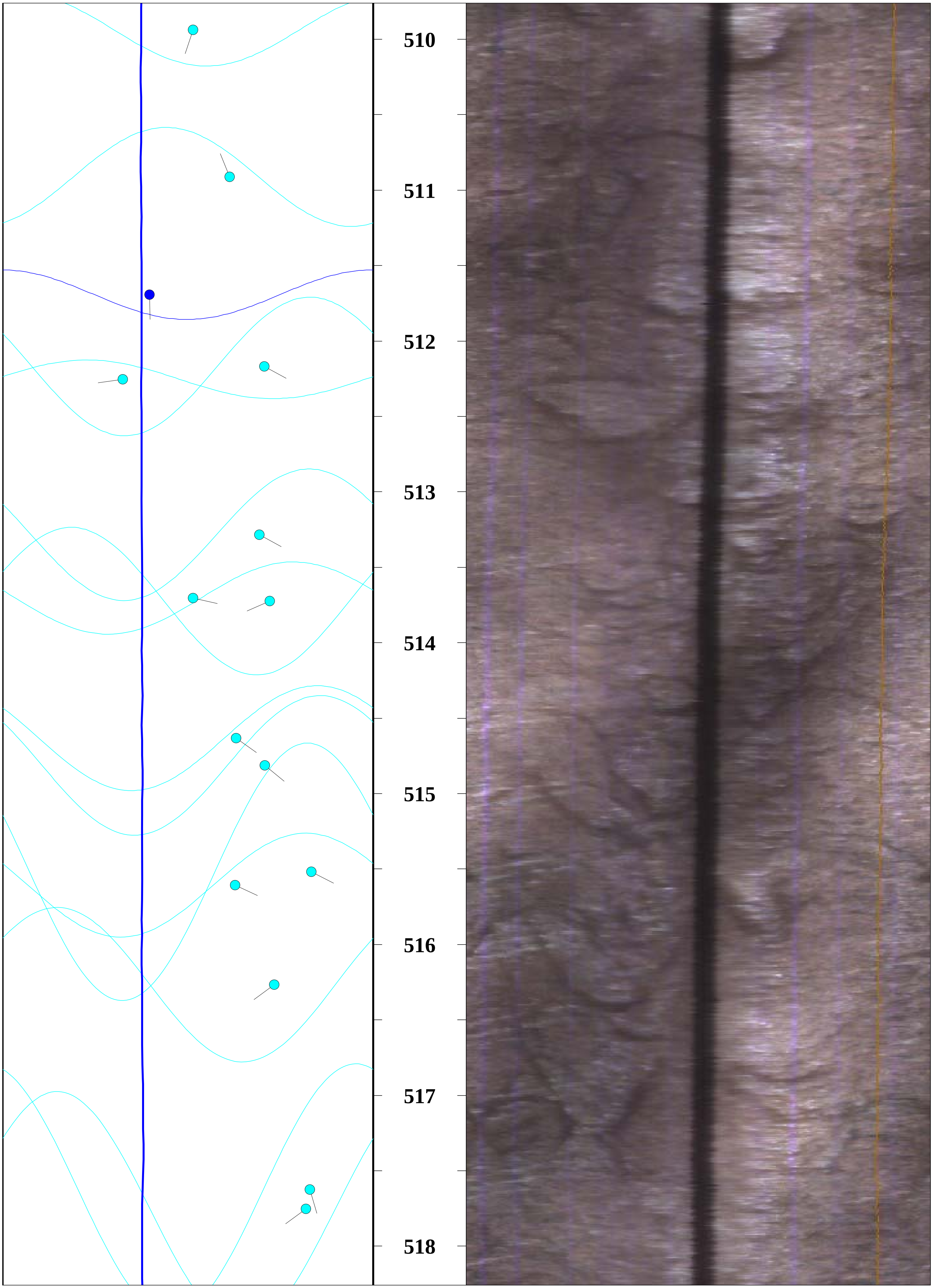
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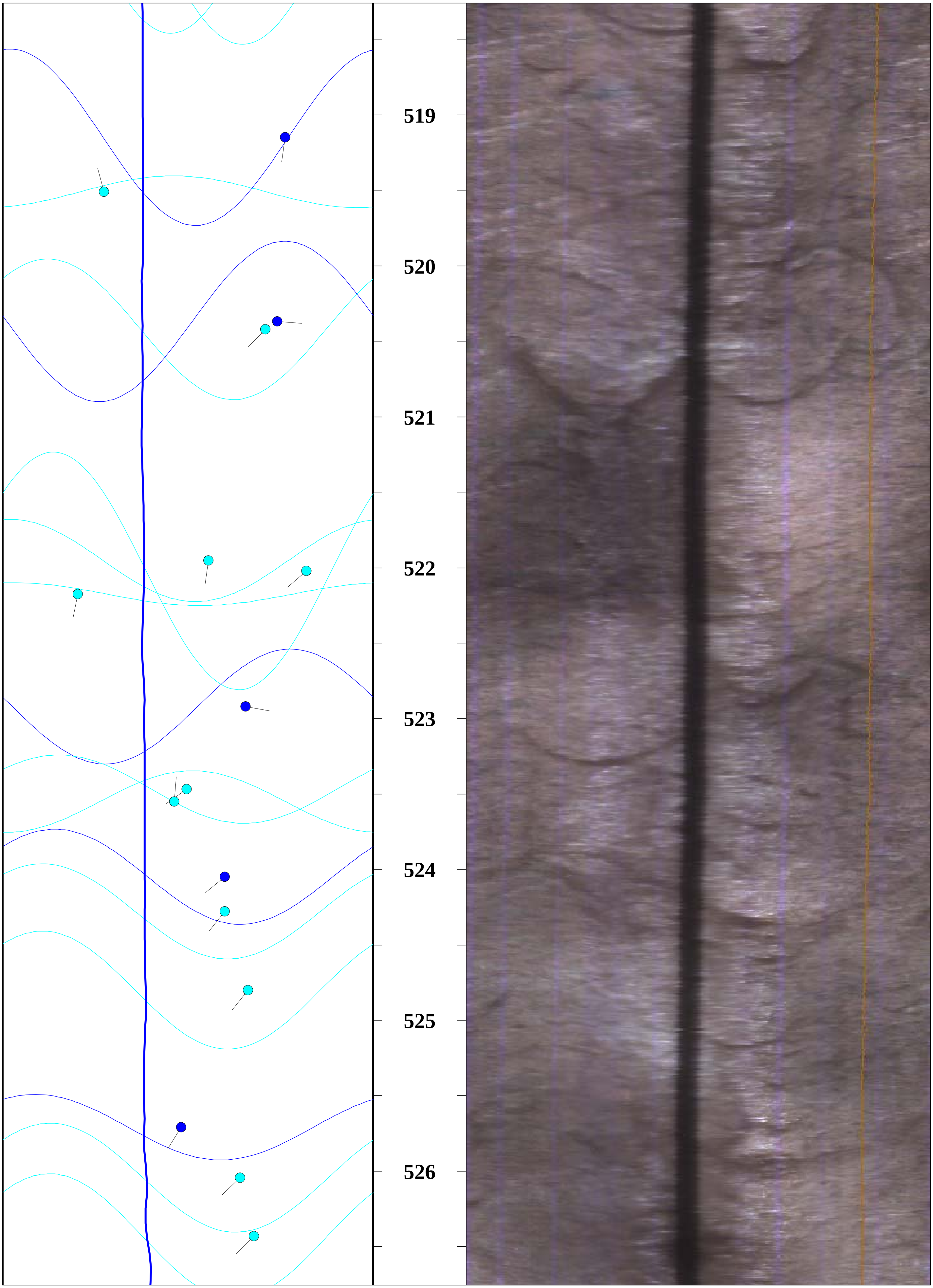
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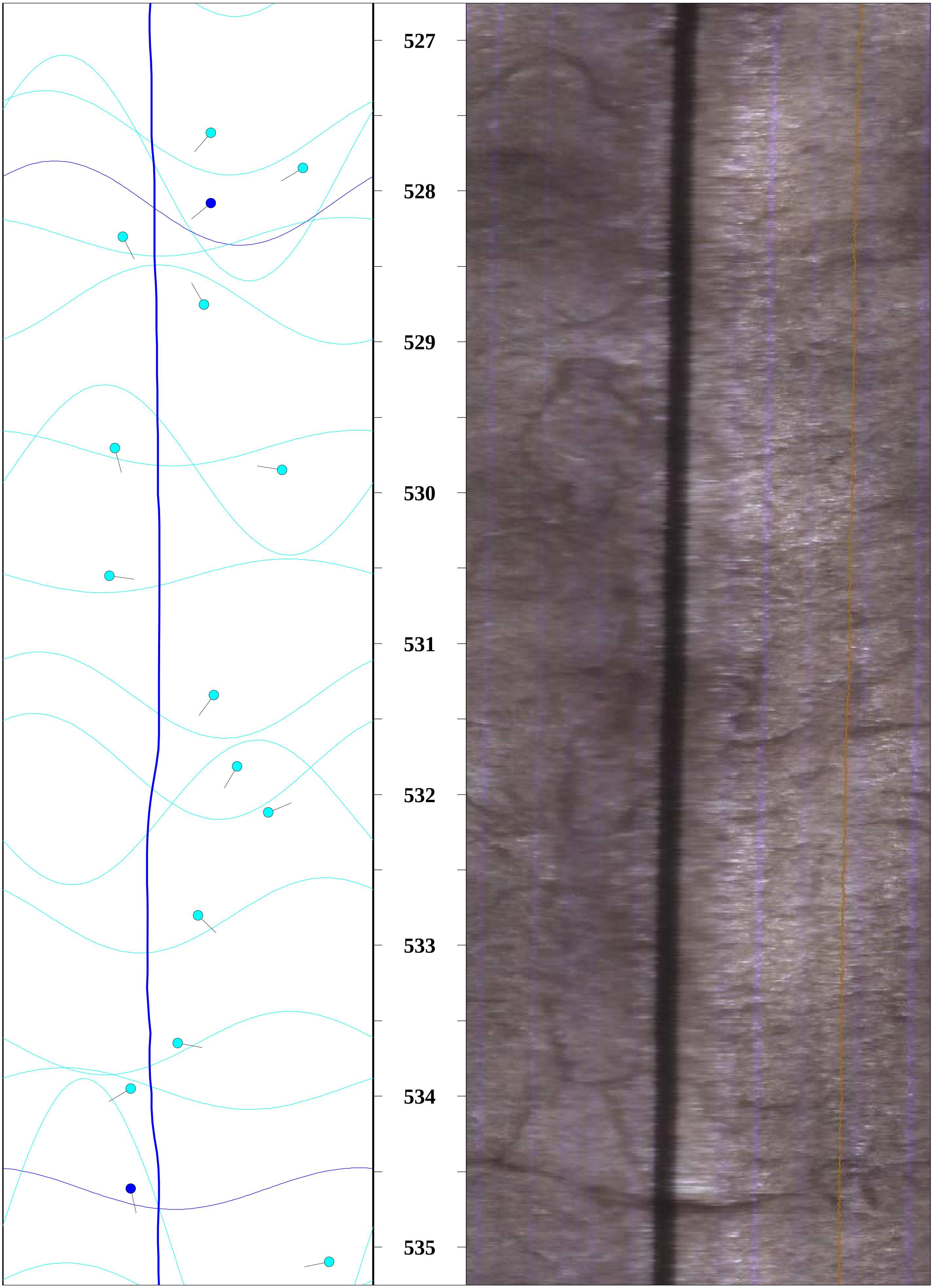
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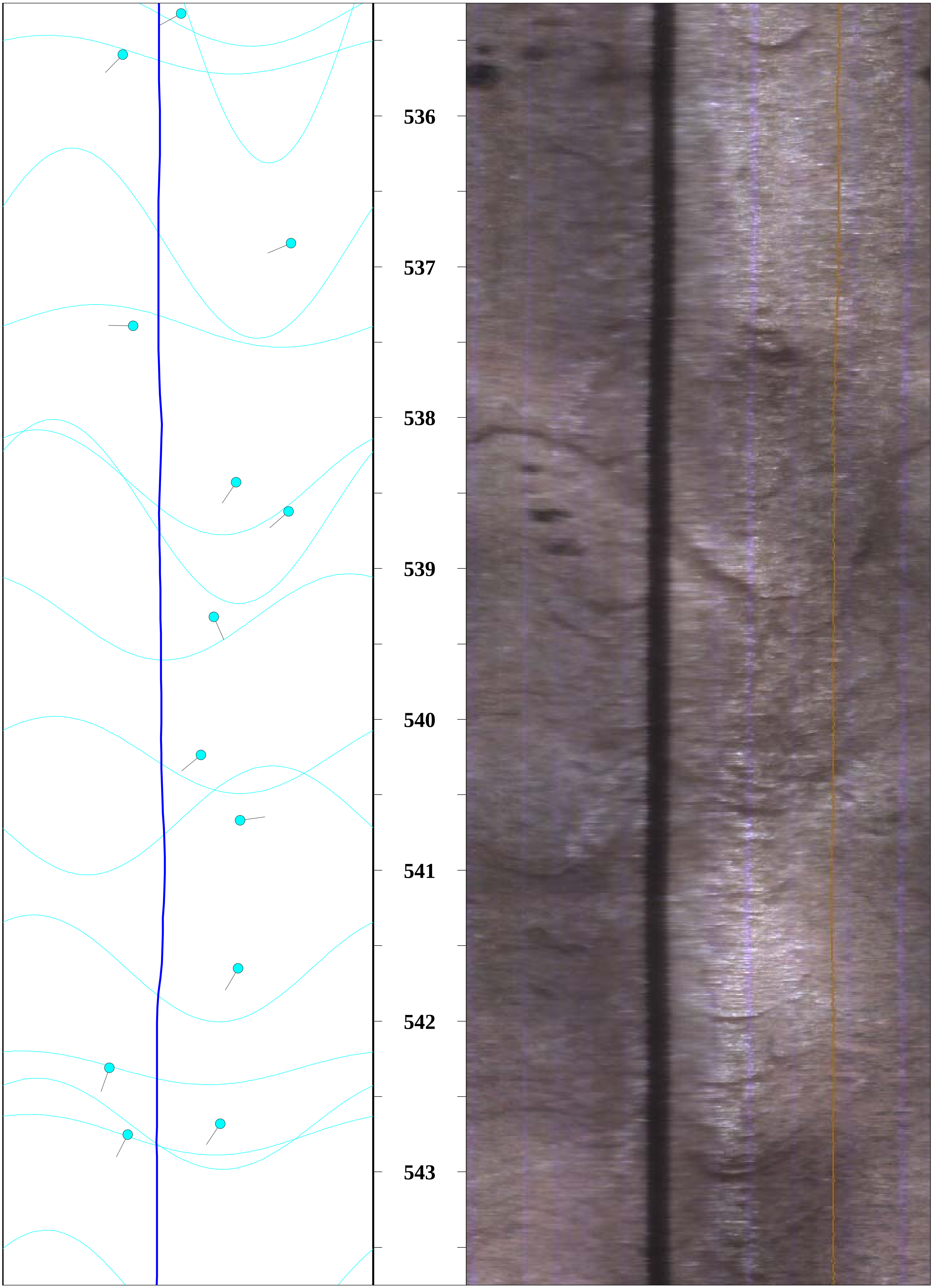
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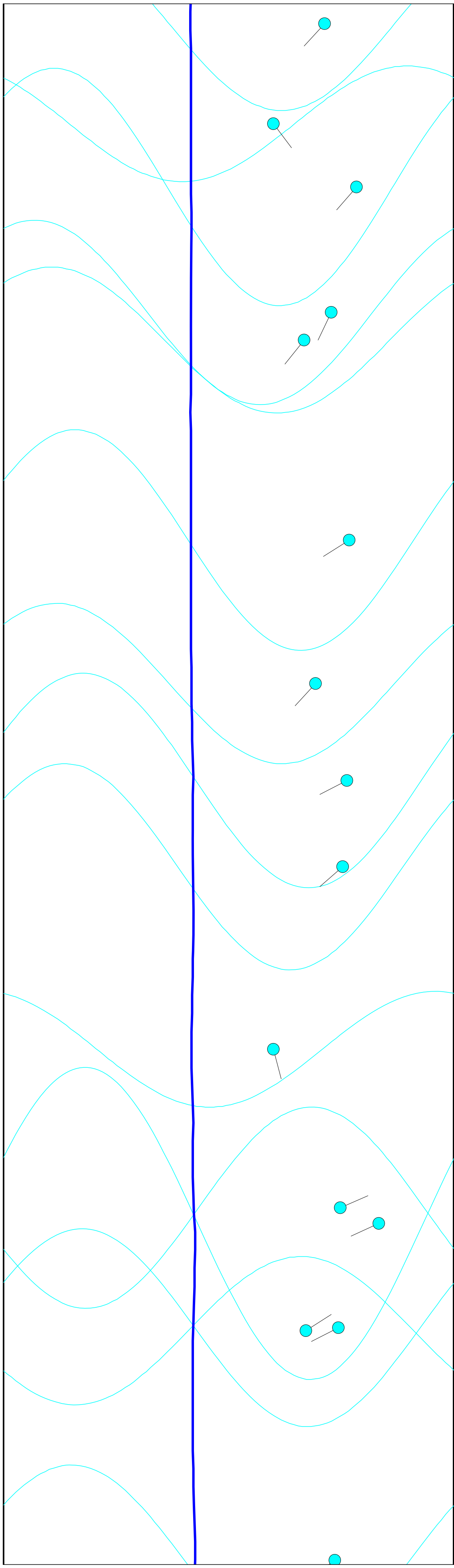

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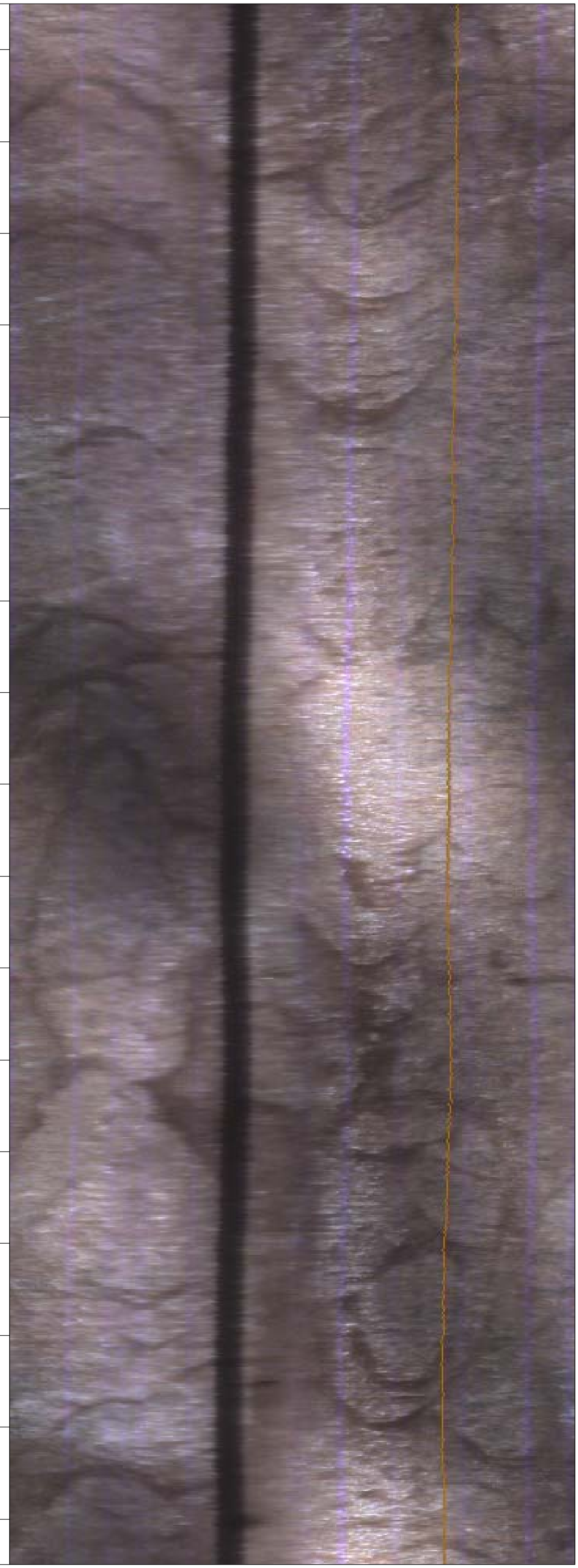

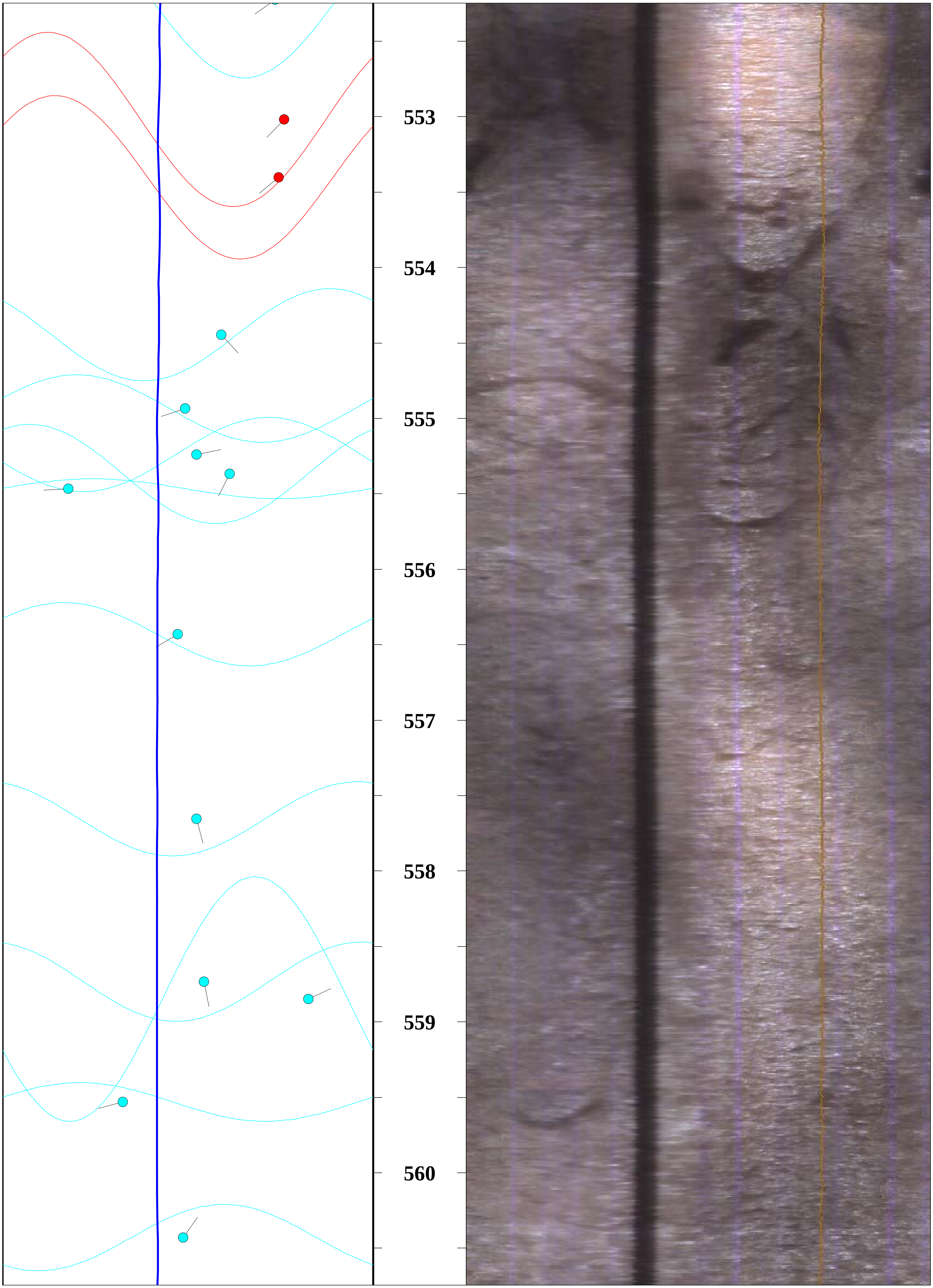
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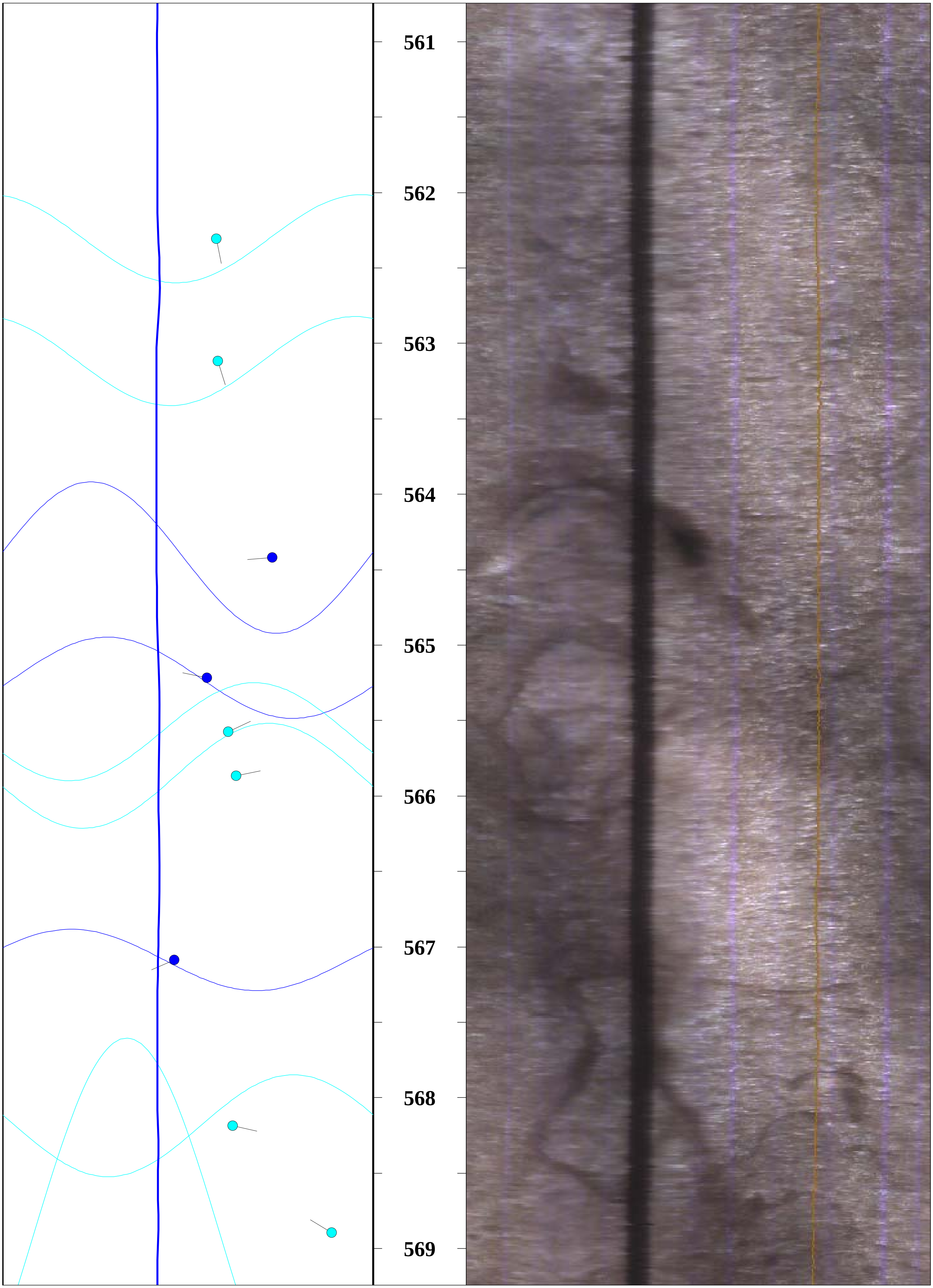
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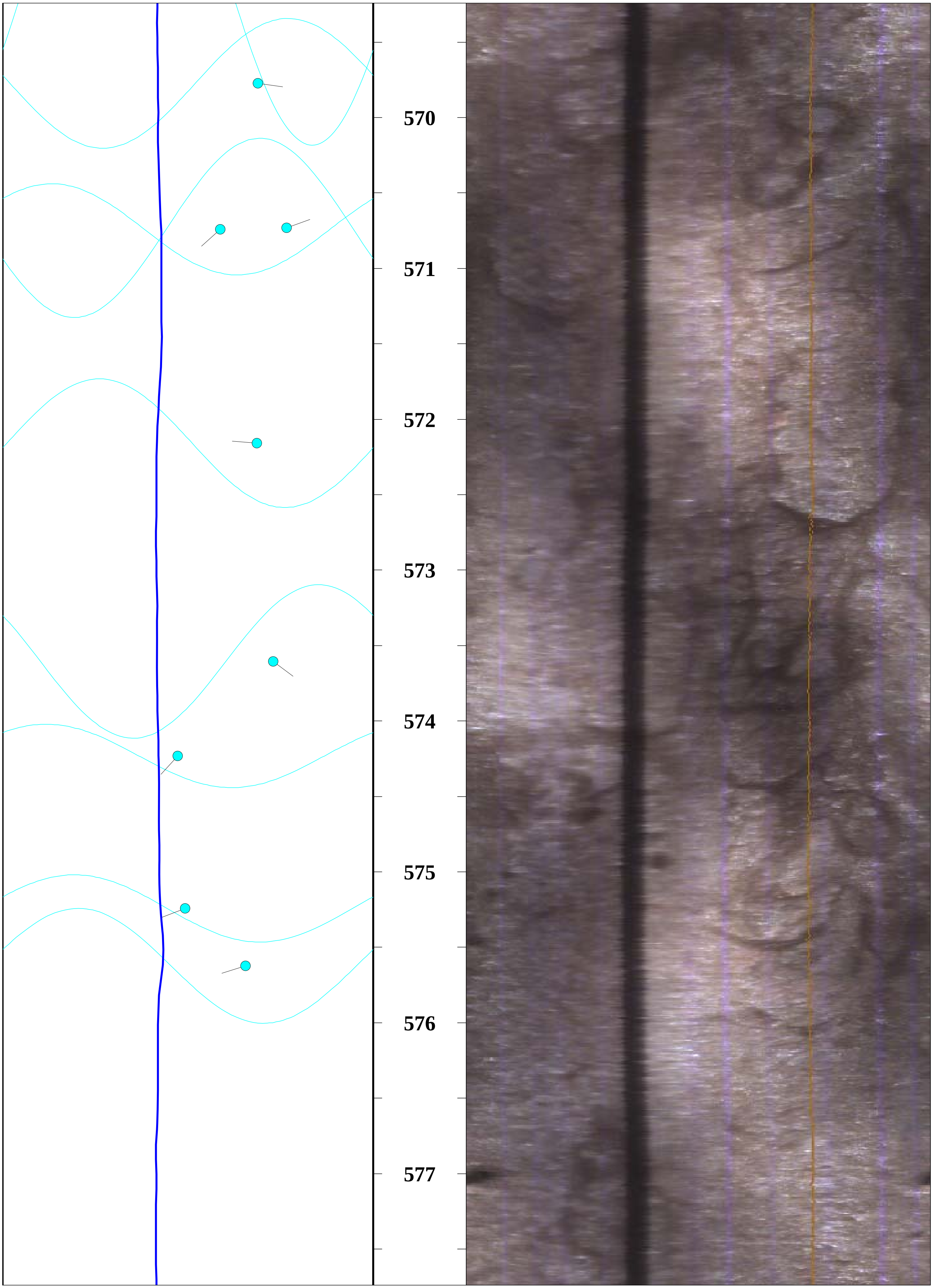
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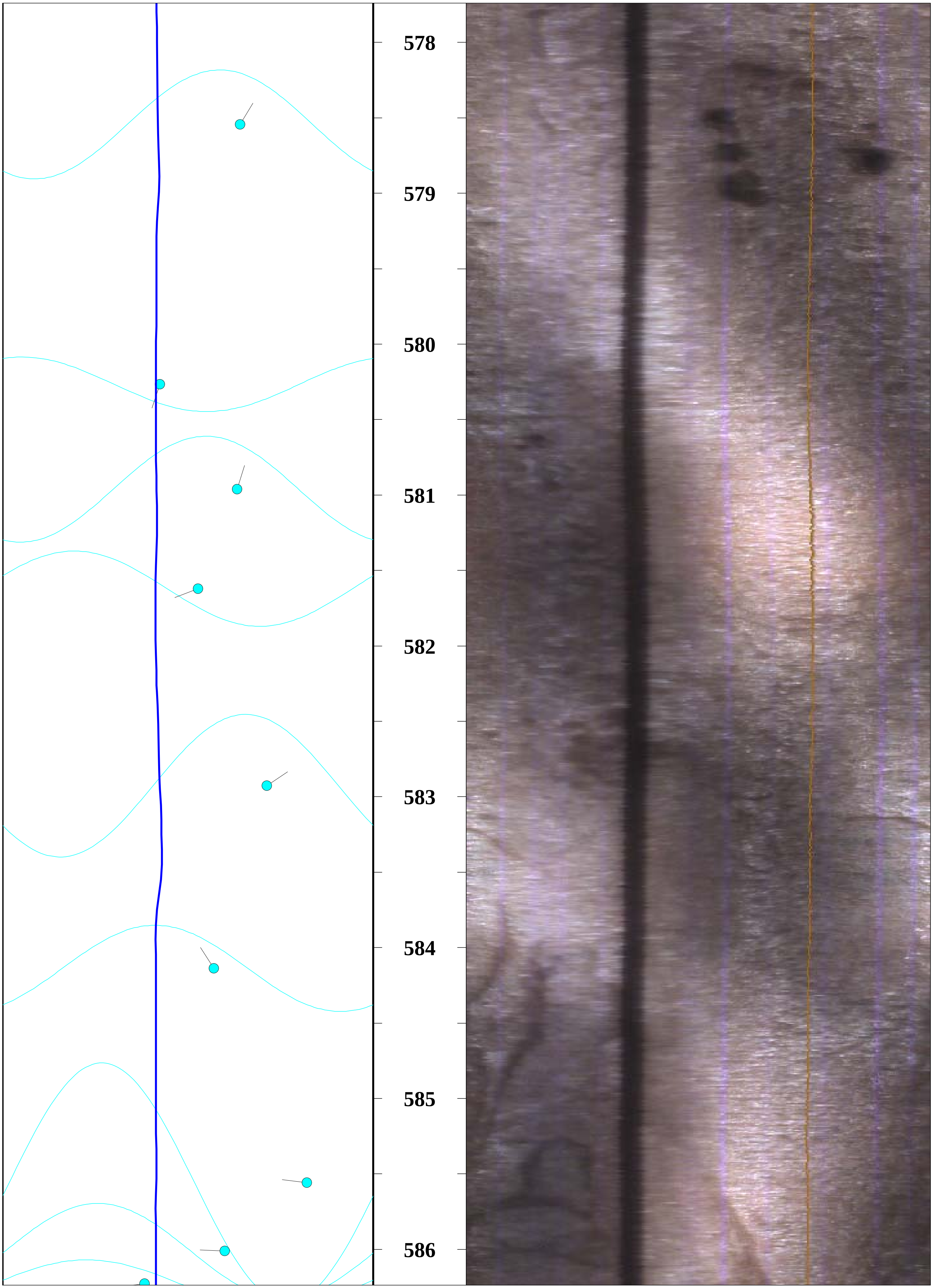
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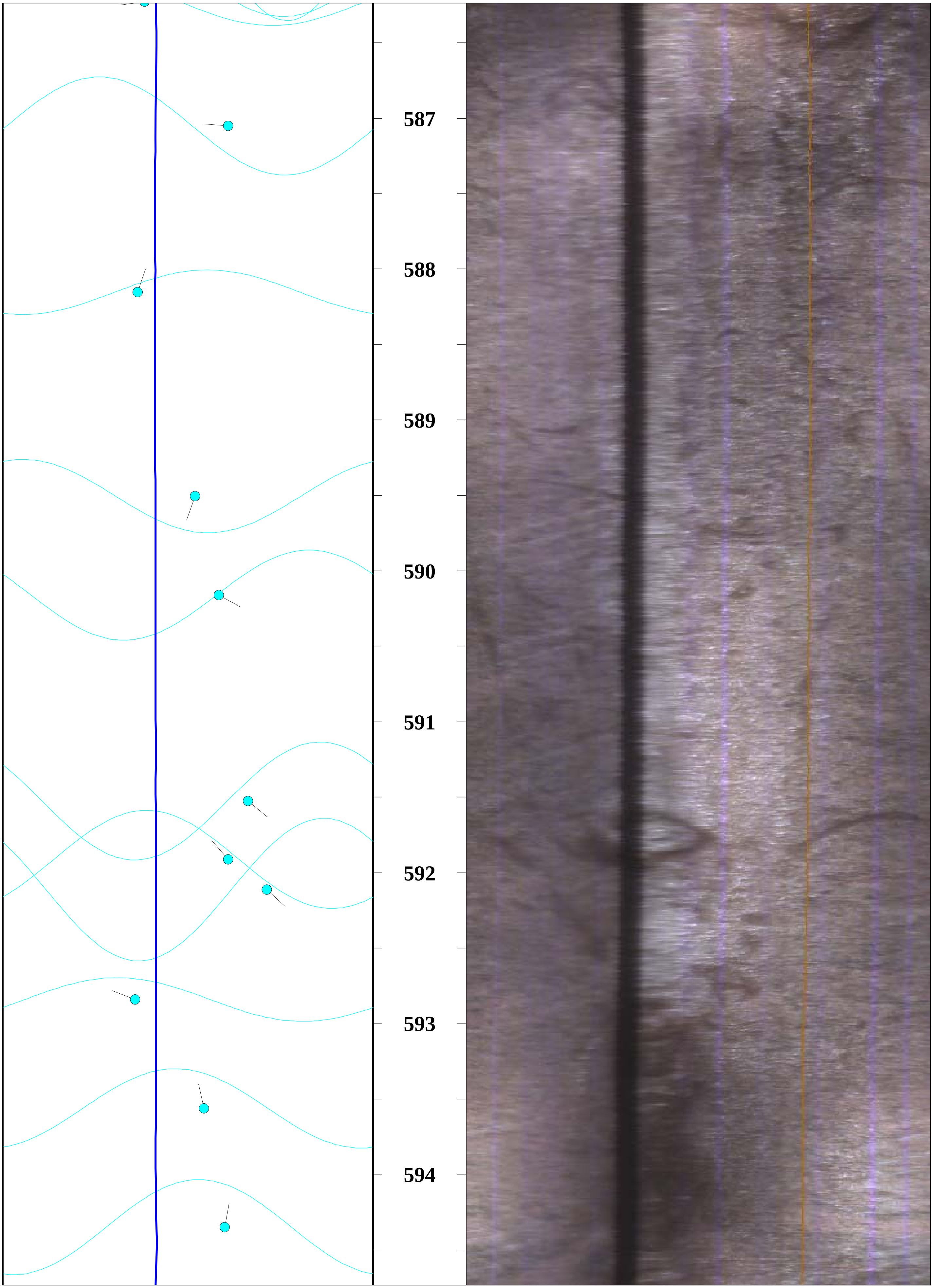
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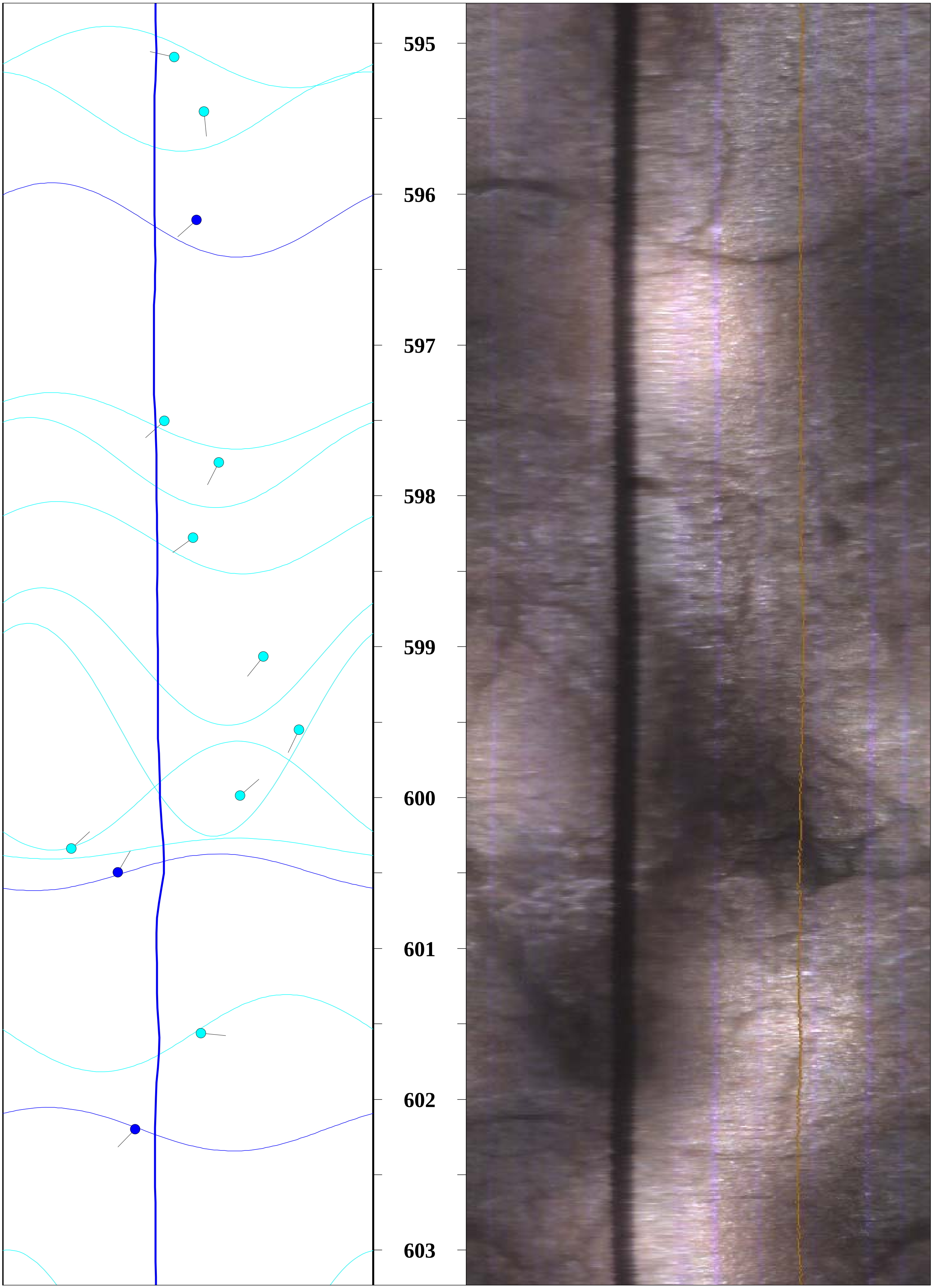
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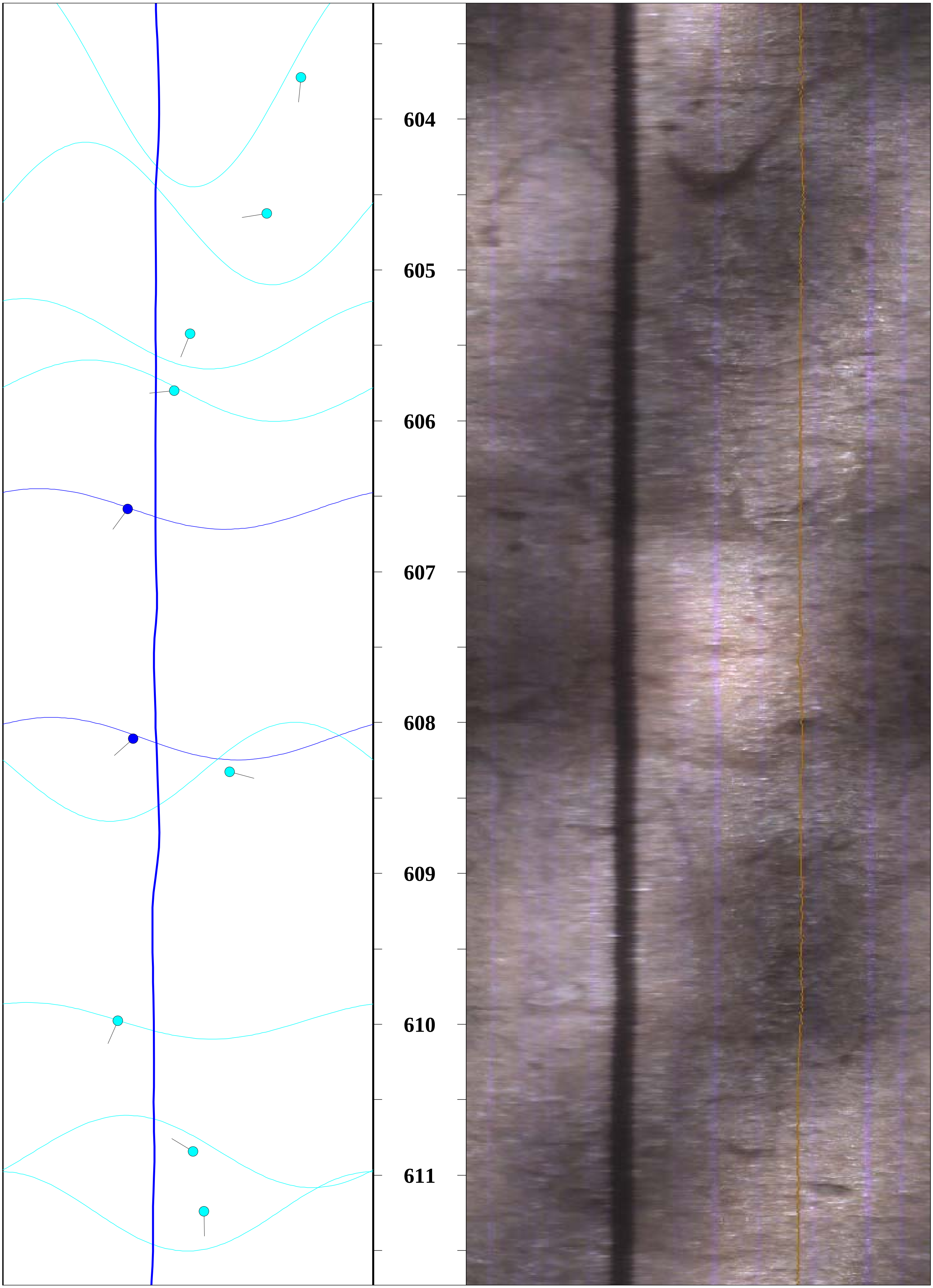
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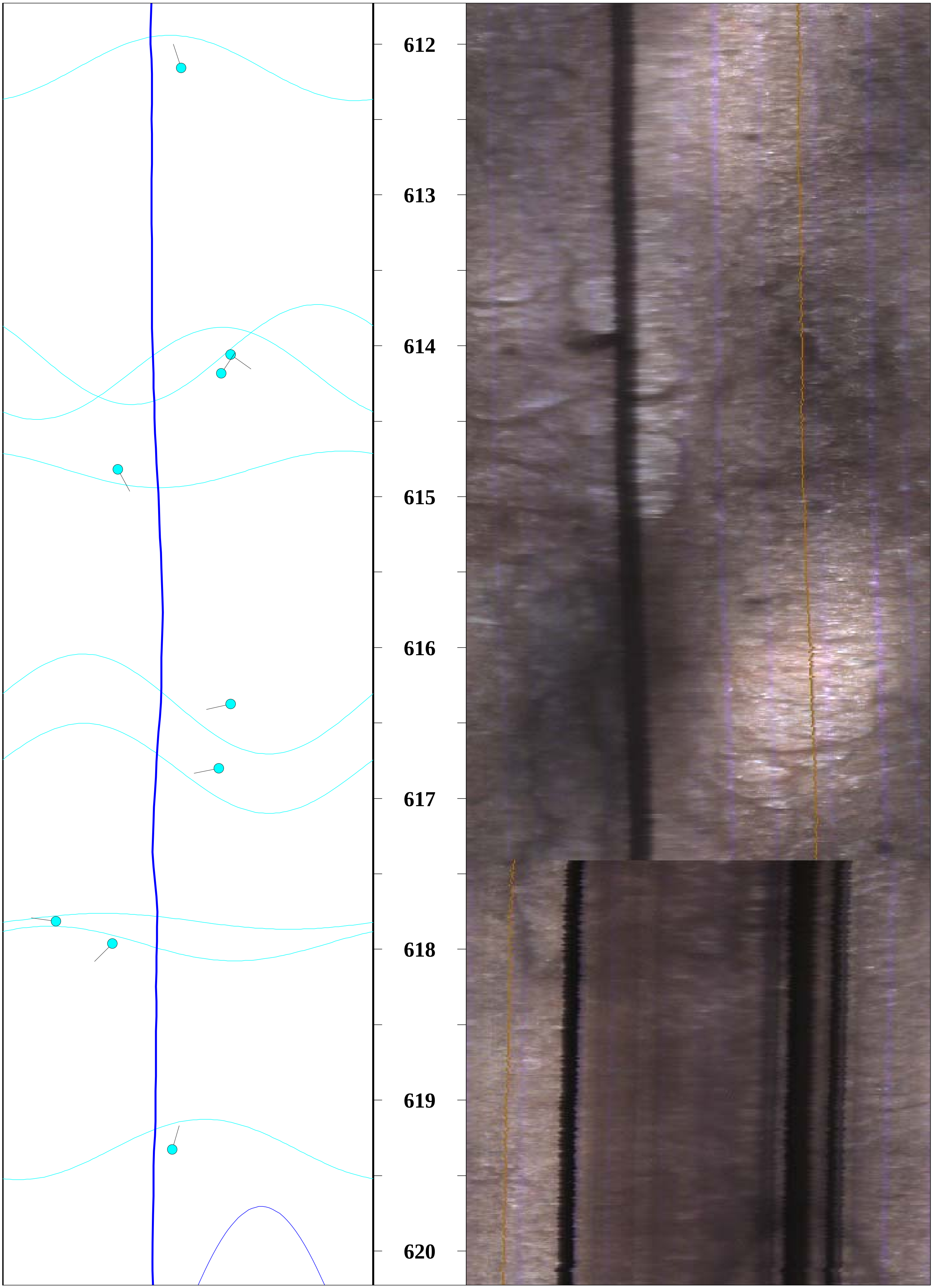
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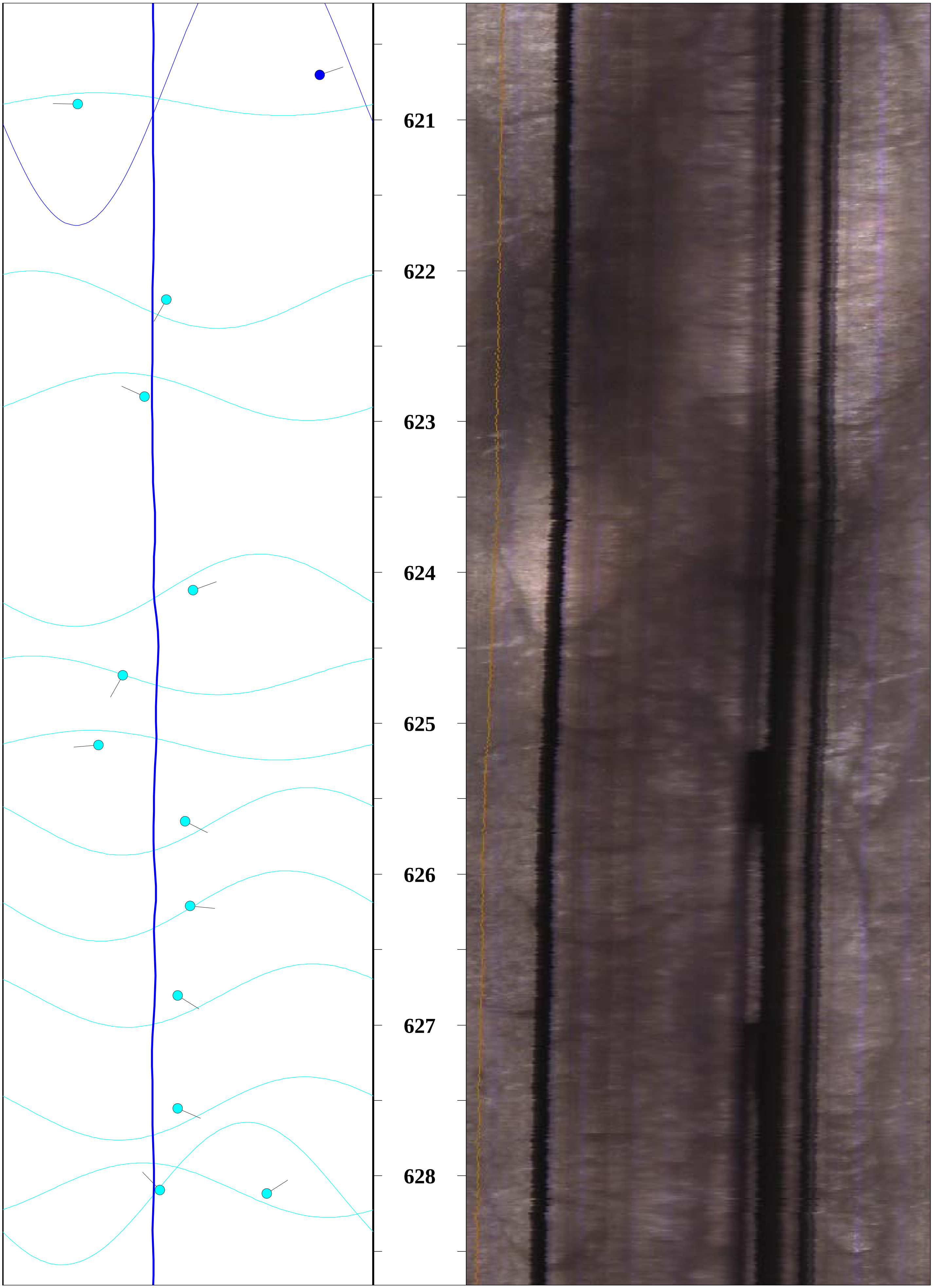
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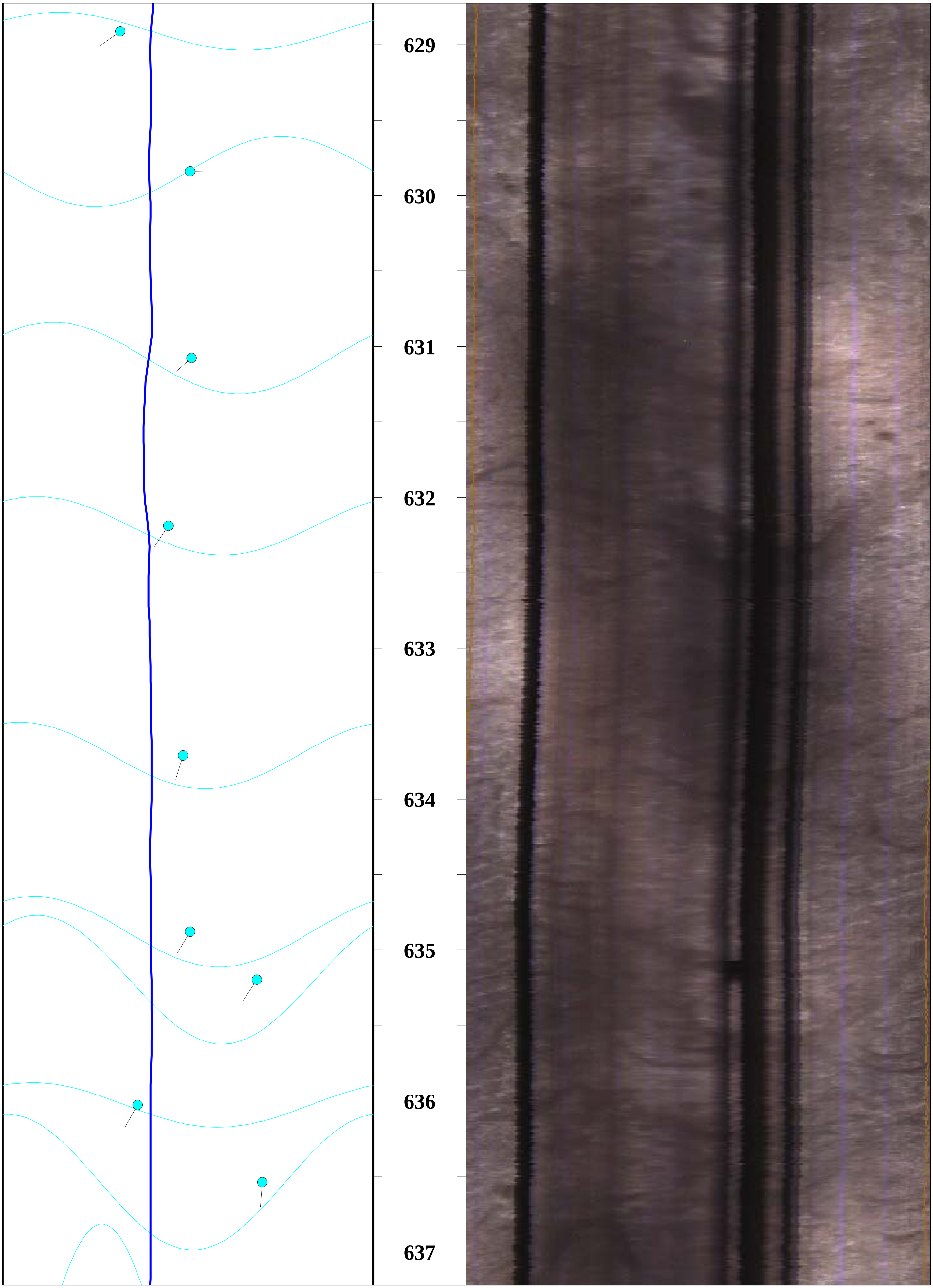

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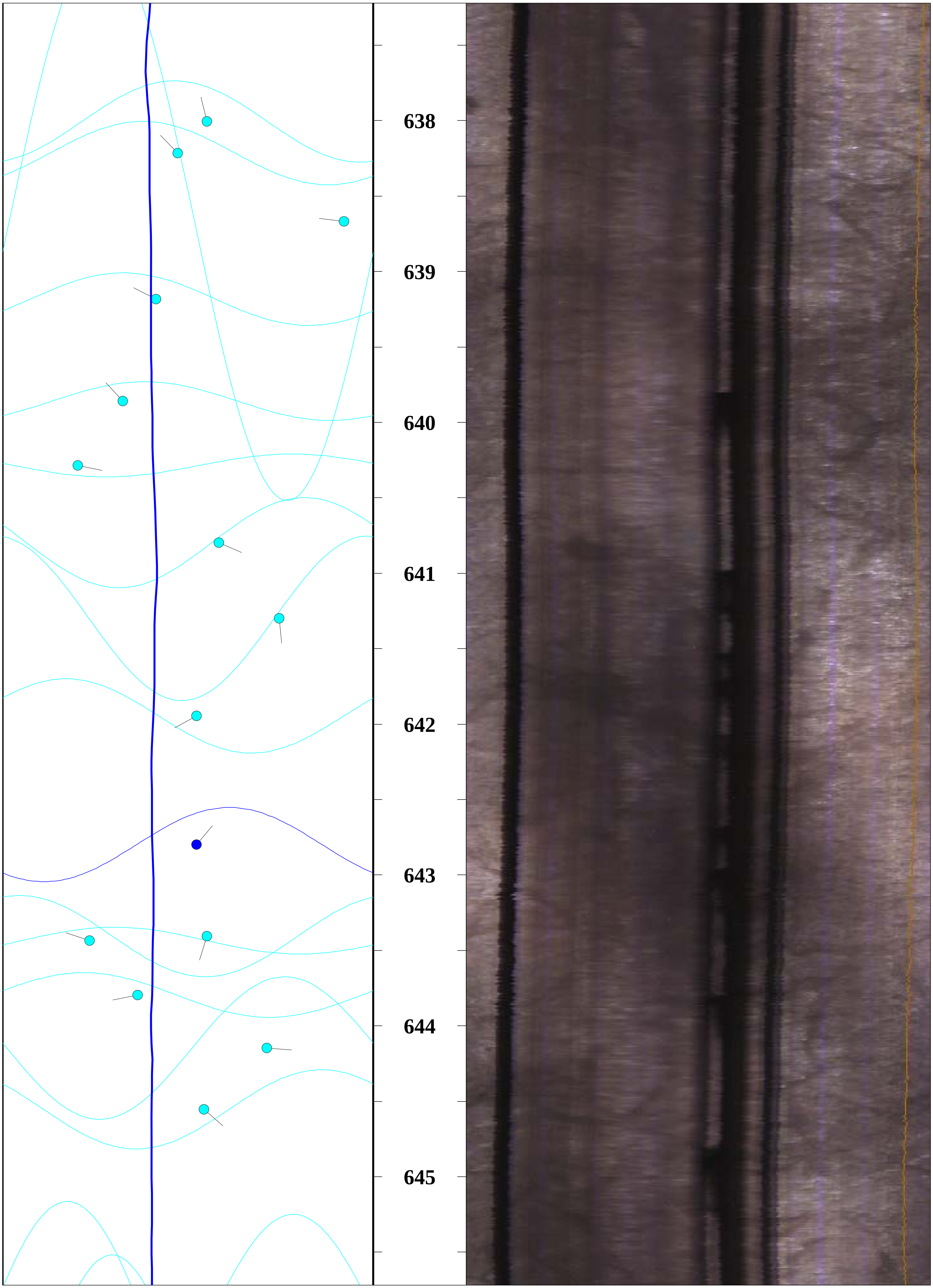
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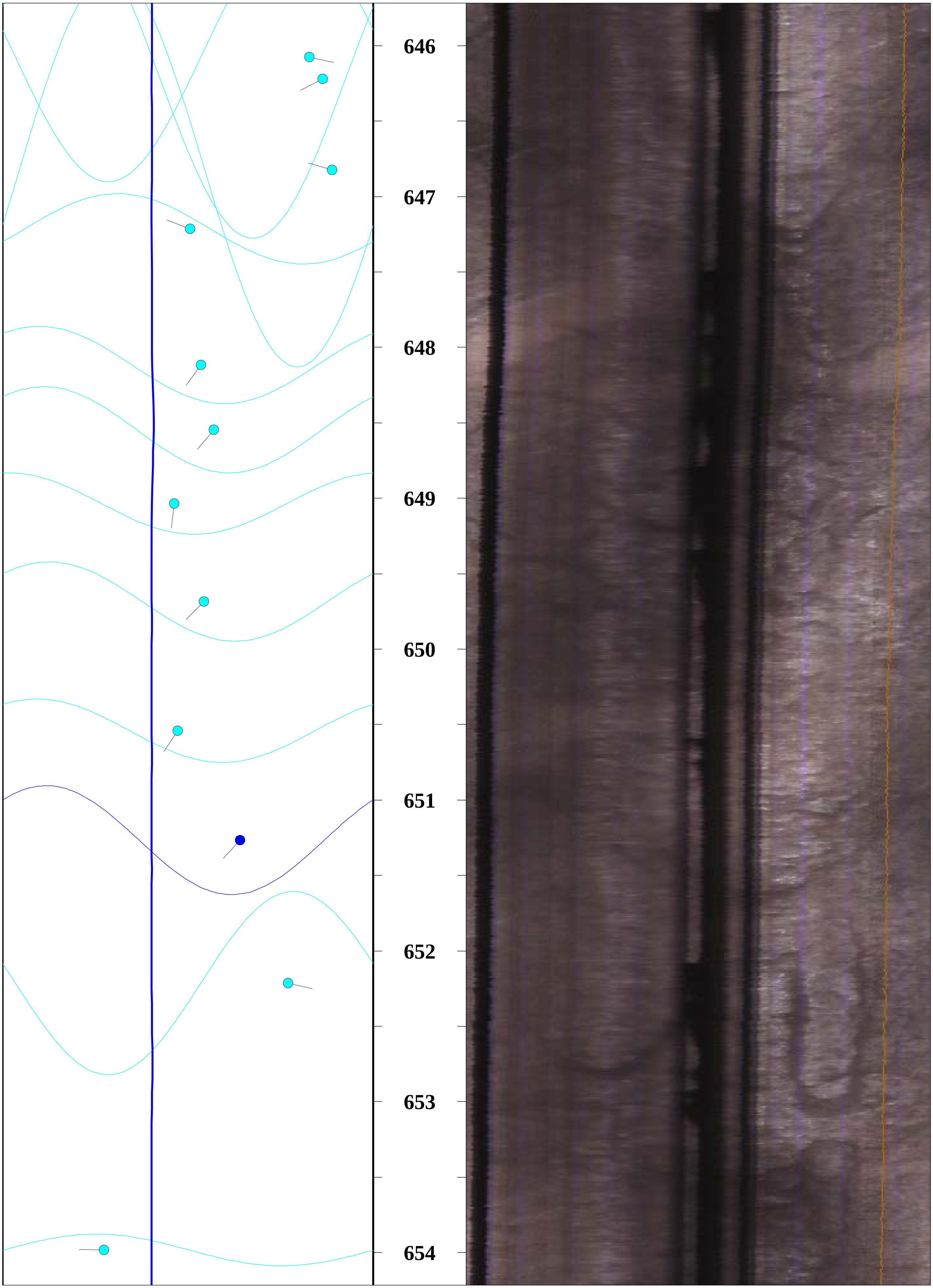
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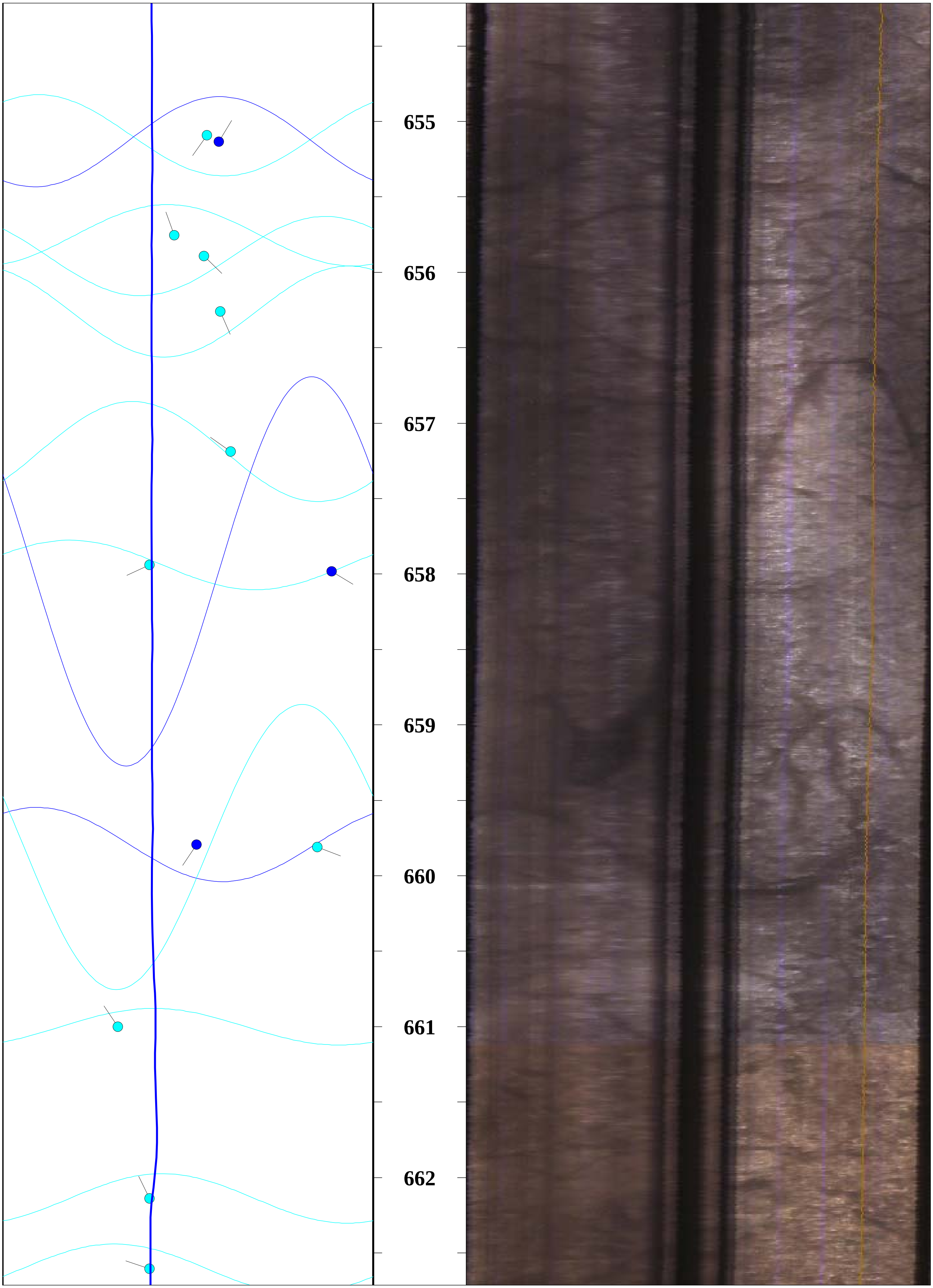
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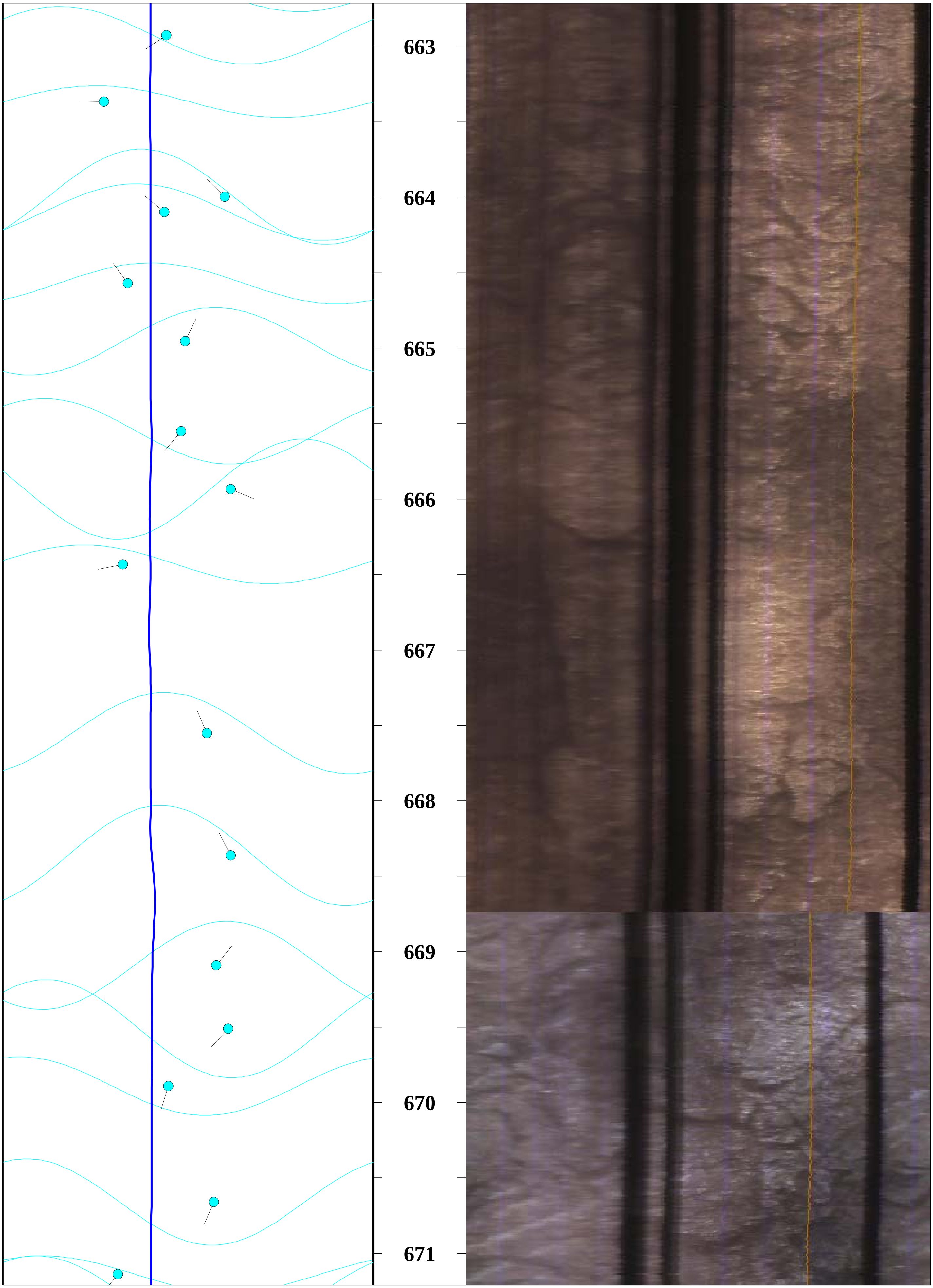

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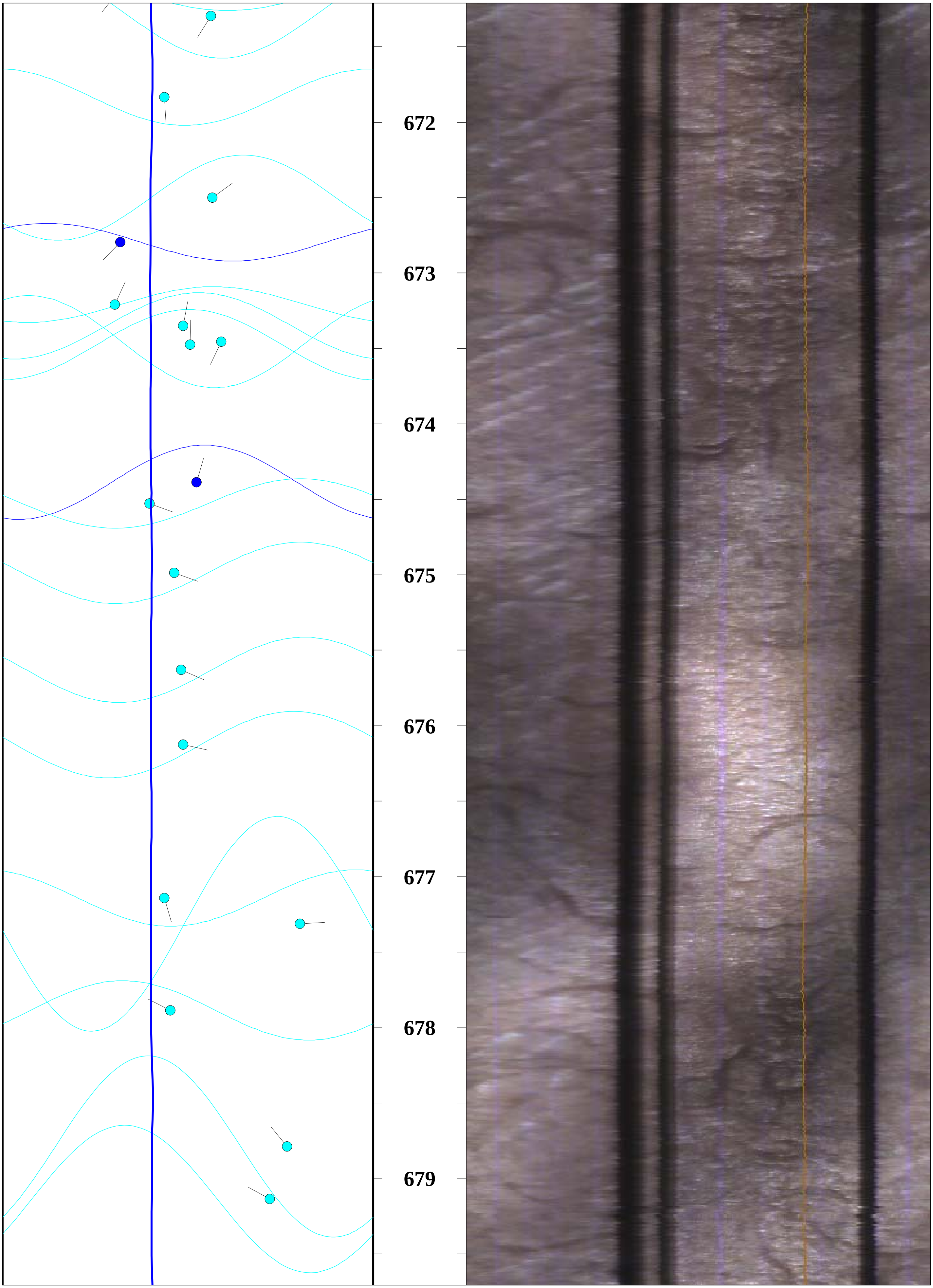

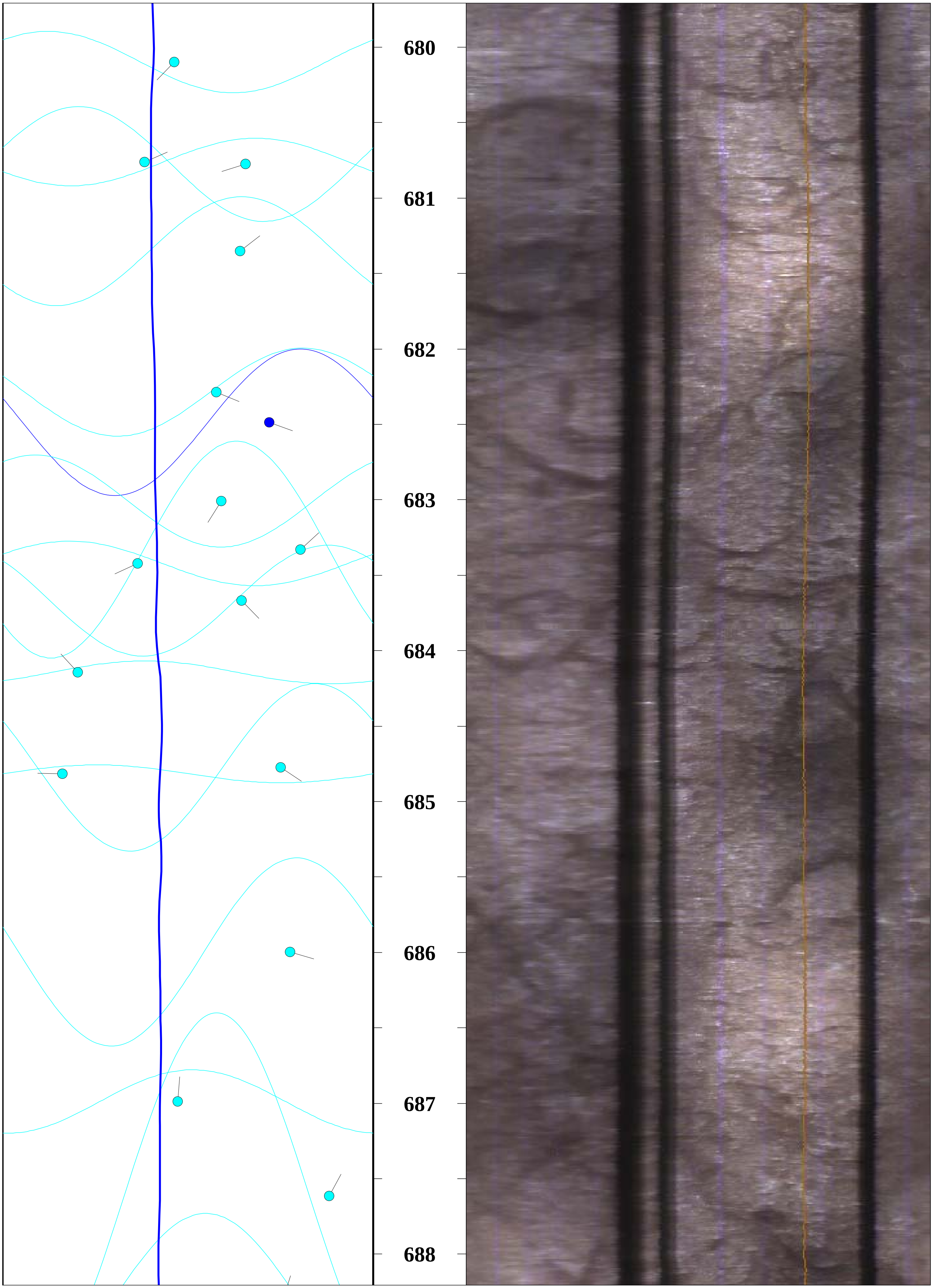
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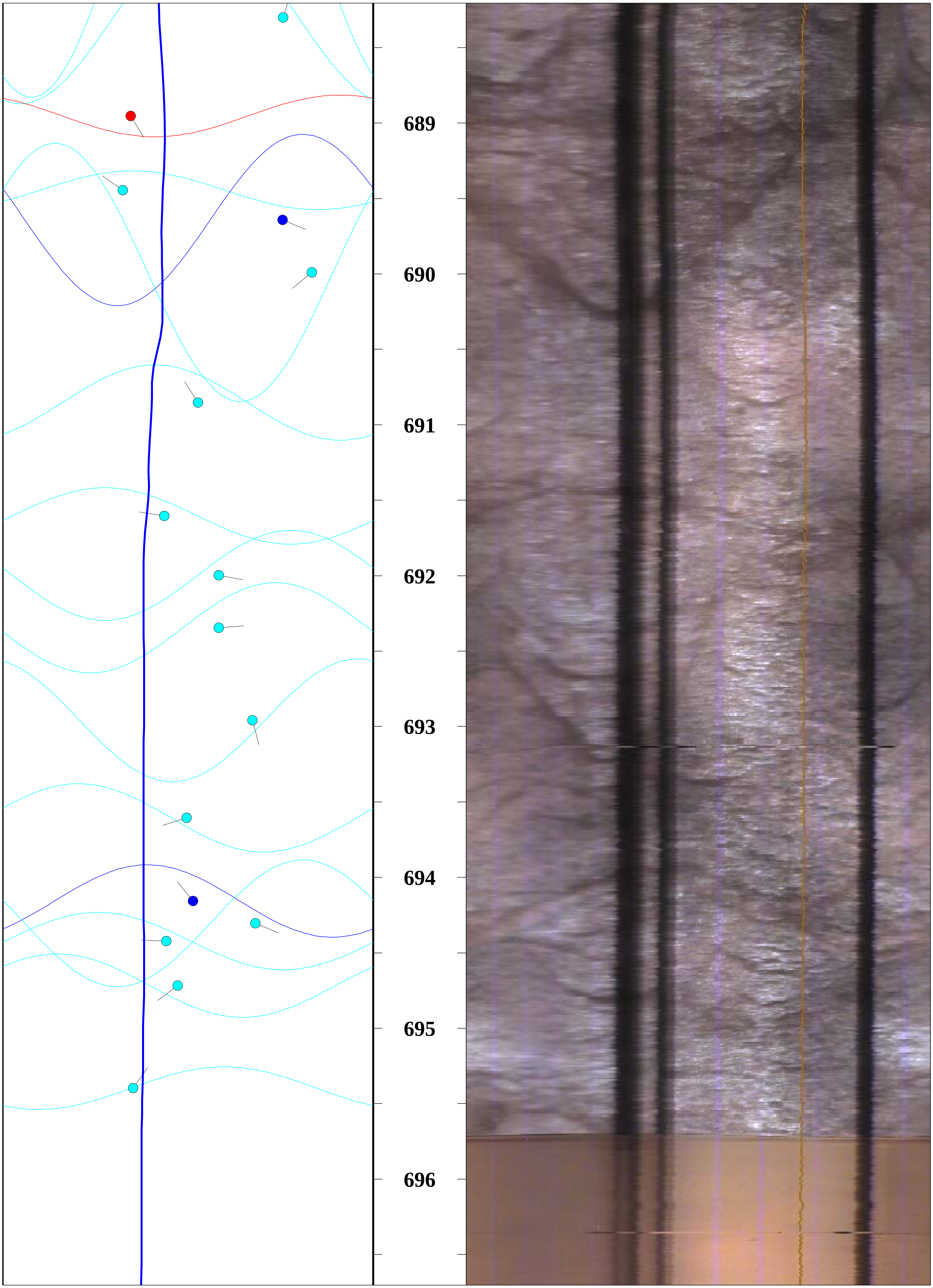
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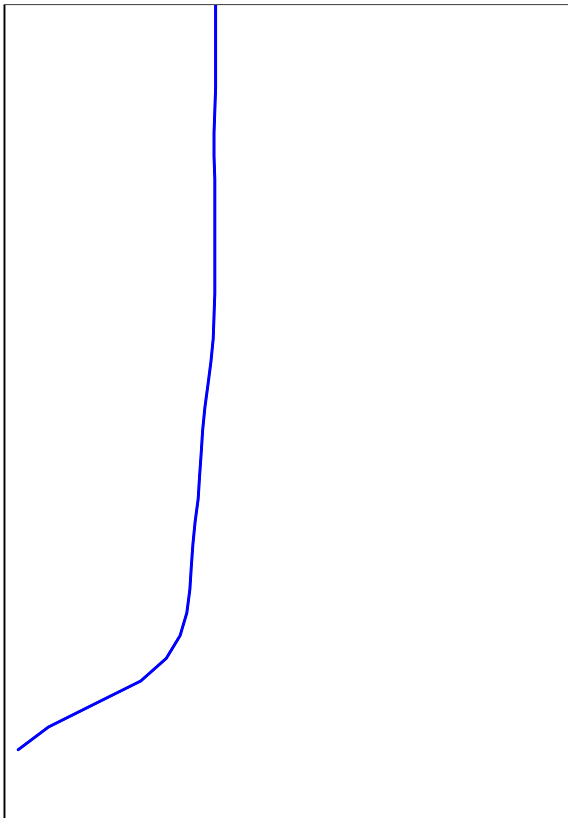

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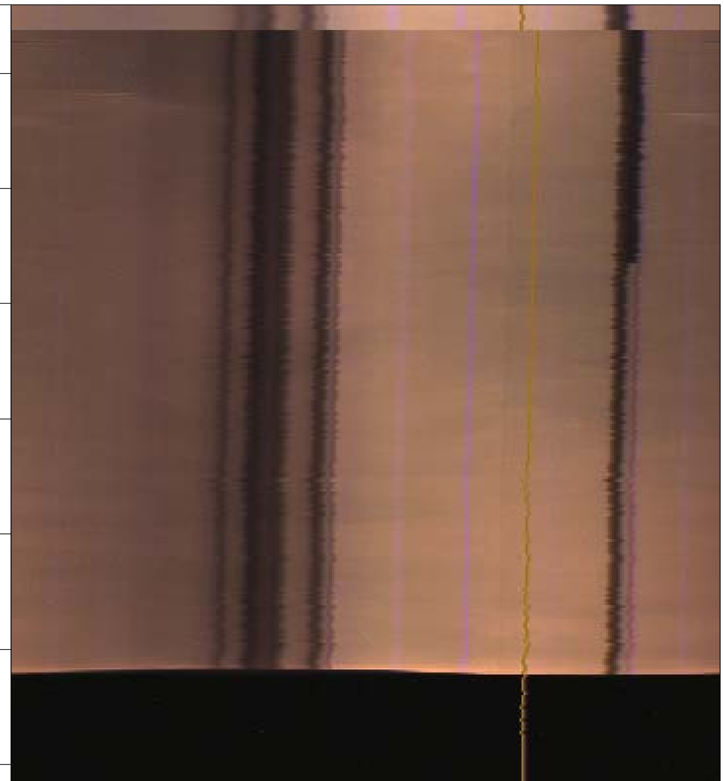


3-Arm Caliper		
2	inches	10

Tadpoles	
0	90

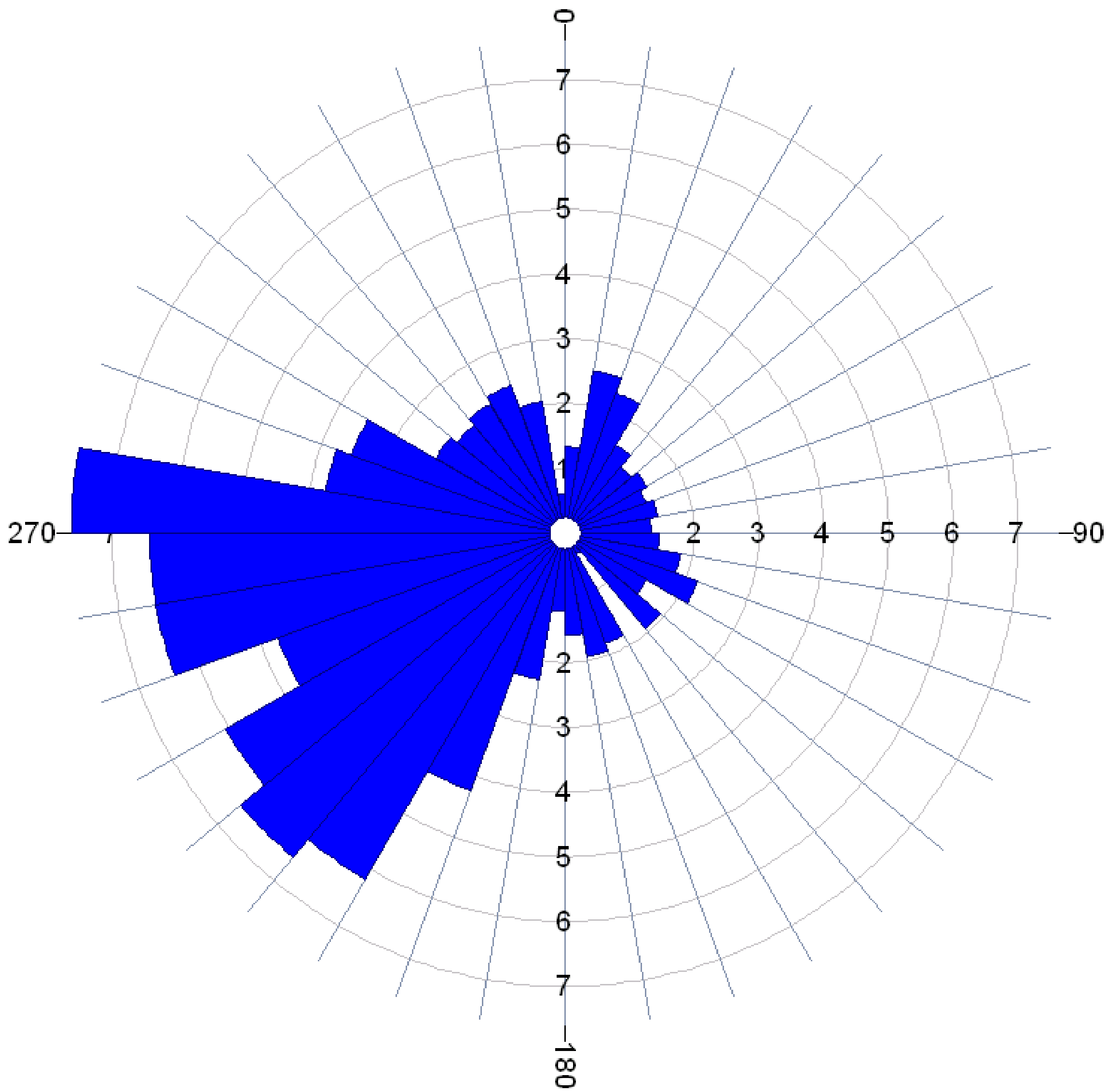
Projections				
0°	90°	180°	270°	0°

Depth
1ft:10ft

Optical Televiewer Image				
0°	90°	180°	270°	0°

Rose Diagram of Optical Televiewer Features
AMEC
Project: Squaw Gulch Valley VLF
Well: Hole #1
November 17, 2013

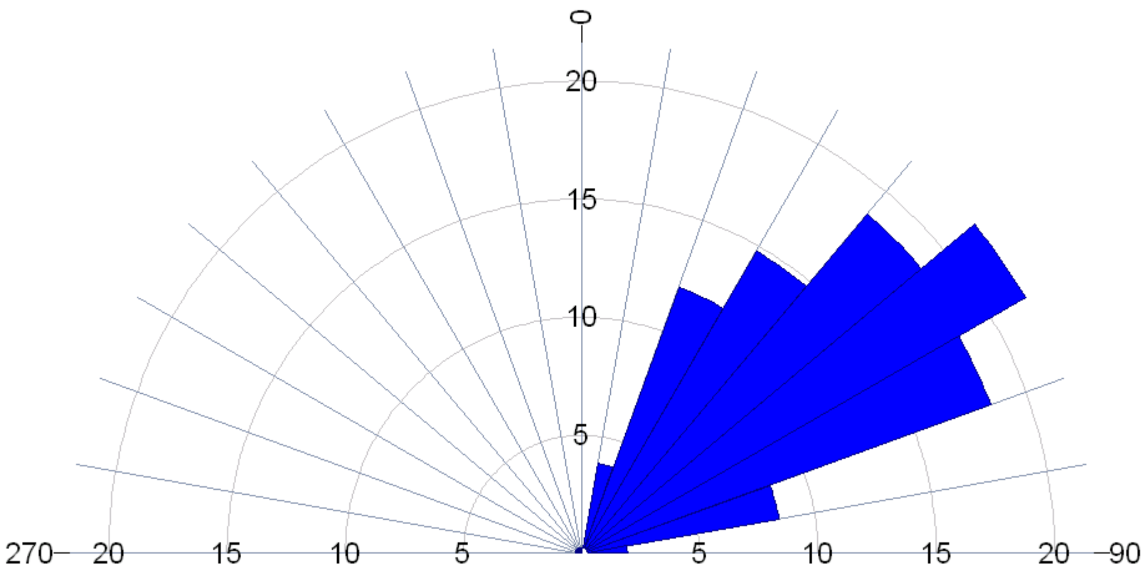
Dip Direction



All directions are with respect to Magnetic North.

Rose Diagram of Optical Televiewer Features
AMEC
Project: Squaw Gulch Valley VLF
Well: Hole #1
November 17, 2013

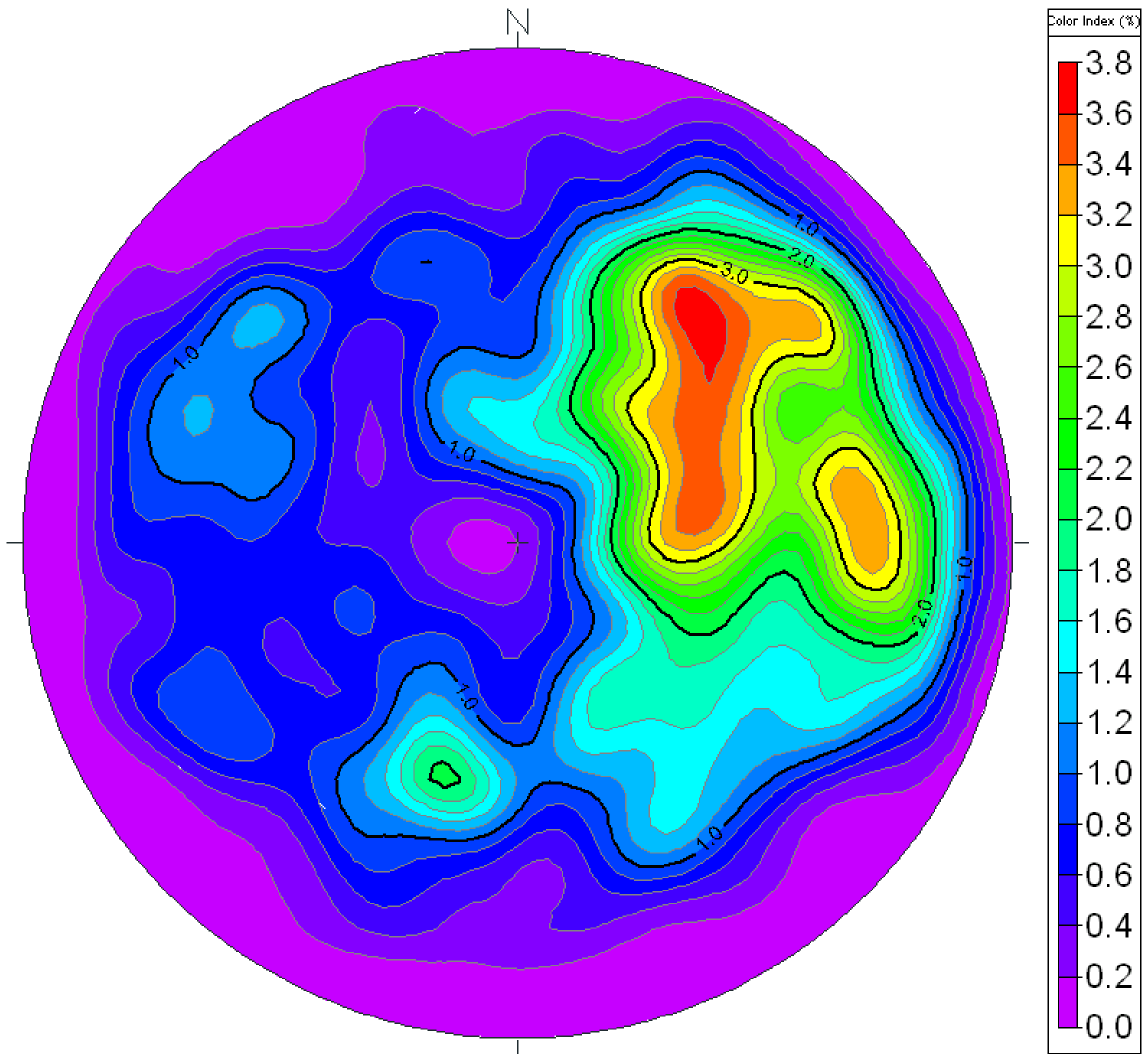
Dip Angles



All directions are with respect to Magnetic North.

Stereonet Diagram of Optical Televiewer Features
AMEC
Project: Squaw Gulch Valley VLF
Well: Hole #1
November 17, 2013

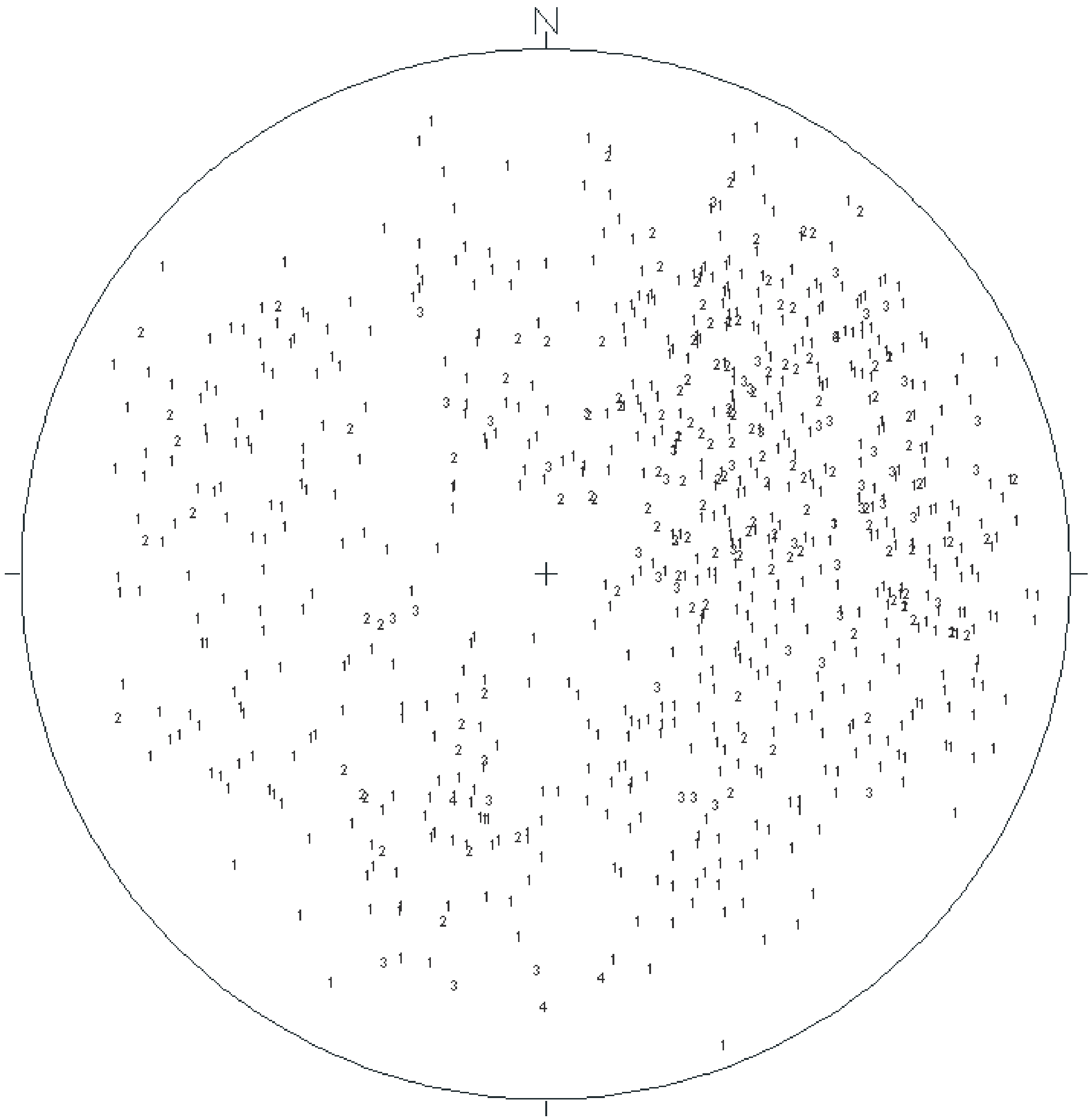
Schmidt Projection with Contours



All directions are with respect to Magnetic North.

Stereonet Diagram of Optical Televiewer Features
AMEC
Project: Squaw Gulch Valley VLF
Well: Hole #1
November 17, 2013

Schmidt Projections with Feature Ranks



All directions are with respect to Magnetic North.

Orientation Summary Table
Image Features
AMEC
Project: Squaw Gulch Valley VLF
Well: Hole #1
November 17, 2013

Feature No.	Depth (meters)	Depth (feet)	Dip Direction (degrees)	Dip Angle (degrees)	Feature Rank (0 to 5)
1	4.35	14.3	11	18	1
2	4.80	15.8	351	18	1
3	4.82	15.8	304	23	1
4	4.86	16.0	232	23	3
5	5.00	16.4	339	33	1
6	5.17	17.0	319	60	1
7	5.56	18.2	263	41	1
8	5.72	18.8	28	41	1
9	6.17	20.3	276	69	1
10	6.79	22.3	286	25	1
11	6.89	22.6	301	51	1
12	6.95	22.8	330	42	3
13	7.54	24.7	58	57	1
14	7.71	25.3	5	60	1
15	8.19	26.9	238	28	1
16	8.37	27.5	237	40	3
17	8.56	28.1	330	71	1
18	8.69	28.5	201	42	1
19	9.54	31.3	289	70	1
20	9.59	31.5	186	17	1
21	9.94	32.6	189	55	1
22	10.11	33.2	78	58	1
23	10.44	34.2	257	36	1
24	10.91	35.8	2	35	1
25	11.03	36.2	273	21	1
26	11.35	37.2	311	41	2
27	11.35	37.2	313	32	1
28	11.55	37.9	325	46	3
29	12.20	40.0	2	66	3
30	12.32	40.4	251	29	1
31	12.46	40.9	248	33	1
32	12.66	41.5	340	87	1
33	12.79	42.0	259	51	3
34	12.88	42.3	239	61	1
35	12.93	42.4	257	33	2
36	13.01	42.7	210	84	1
37	13.07	42.9	235	35	2
38	13.21	43.3	125	39	2
39	13.36	43.8	261	36	2
40	13.60	44.6	216	35	2
41	13.74	45.1	71	52	1
42	13.81	45.3	302	11	1
43	13.98	45.9	335	29	1
44	14.03	46.0	332	50	1
45	14.11	46.3	28	63	1

All directions are with respect to magnetic north.

Orientation Summary Table
Image Features
AMEC
Project: Squaw Gulch Valley VLF
Well: Hole #1
November 17, 2013

Feature No.	Depth (meters)	Depth (feet)	Dip Direction (degrees)	Dip Angle (degrees)	Feature Rank (0 to 5)
46	14.41	47.3	228	53	1
47	14.65	48.1	254	64	1
48	14.74	48.4	36	71	1
49	14.96	49.1	248	32	1
50	15.03	49.3	294	78	1
51	15.03	49.3	266	59	1
52	15.13	49.6	288	11	2
53	15.49	50.8	286	59	1
54	15.71	51.6	242	41	1
55	15.72	51.6	339	36	1
56	15.87	52.1	219	42	2
57	16.11	52.8	250	67	1
58	16.13	52.9	266	35	1
59	16.15	53.0	285	75	1
60	16.36	53.7	189	62	1
61	16.57	54.4	165	68	1
62	16.72	54.9	273	57	1
63	16.97	55.7	267	68	1
64	17.14	56.2	267	38	2
65	17.25	56.6	273	46	1
66	17.39	57.1	23	71	3
67	17.45	57.2	282	58	1
68	17.54	57.5	213	25	1
69	17.61	57.8	290	55	1
70	17.67	58.0	267	62	1
71	17.84	58.5	232	63	1
72	17.92	58.8	275	56	2
73	18.05	59.2	169	26	1
74	18.06	59.3	295	57	2
75	18.07	59.3	262	55	1
76	18.18	59.6	264	53	1
77	18.20	59.7	309	46	2
78	18.21	59.7	132	56	1
79	18.51	60.7	162	38	1
80	18.51	60.7	267	59	2
81	18.58	61.0	55	46	1
82	18.75	61.5	20	46	1
83	18.82	61.8	213	44	1
84	18.88	62.0	82	47	1
85	19.06	62.5	257	62	2
86	19.11	62.7	153	37	1
87	19.35	63.5	231	60	4
88	19.68	64.6	275	64	3
89	19.76	64.8	262	60	3
90	19.93	65.4	264	39	3

All directions are with respect to magnetic north.

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Image Features
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Well: Hole #1
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Feature No.	Depth (meters)	Depth (feet)	Dip Direction (degrees)	Dip Angle (degrees)	Feature Rank (0 to 5)
91	20.03	65.7	269	46	3
92	20.19	66.2	289	40	3
93	20.34	66.7	250	56	3
94	20.44	67.1	193	25	3
95	20.64	67.7	261	63	1
96	21.00	68.9	305	64	3
97	21.02	69.0	209	39	1
98	21.26	69.7	41	21	1
99	21.42	70.3	179	16	3
100	21.61	70.9	103	59	1
101	21.79	71.5	353	68	4
102	21.96	72.1	1	73	4
103	22.21	72.9	207	61	1
104	22.65	74.3	228	43	3
105	22.81	74.9	15	41	1
106	22.91	75.2	23	40	4
107	23.88	78.3	236	63	1
108	24.00	78.7	212	54	1
109	24.08	79.0	231	62	1
110	24.15	79.2	278	60	2
111	24.44	80.2	269	62	1
112	24.59	80.7	264	79	1
113	24.79	81.3	286	33	1
114	24.95	81.9	188	70	1
115	25.24	82.8	27	55	1
116	25.25	82.9	209	13	2
117	25.58	83.9	28	22	2
118	25.64	84.1	278	20	3
119	25.73	84.4	289	46	3
120	25.78	84.6	257	20	3
121	25.99	85.3	207	21	1
122	26.21	86.0	226	27	3
123	26.64	87.4	212	13	2
124	26.75	87.8	194	25	2
125	26.81	88.0	158	23	1
126	27.40	89.9	66	69	1
127	27.53	90.3	247	26	2
128	27.63	90.7	248	18	2
129	27.71	90.9	264	26	2
130	27.80	91.2	257	22	2
131	27.82	91.3	221	80	2
132	28.16	92.4	228	23	2
133	28.29	92.8	226	36	1
134	28.32	92.9	219	80	1
135	28.42	93.3	262	30	1

All directions are with respect to magnetic north.

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Image Features
AMEC
Project: Squaw Gulch Valley VLF
Well: Hole #1
November 17, 2013

Feature No.	Depth (meters)	Depth (feet)	Dip Direction (degrees)	Dip Angle (degrees)	Feature Rank (0 to 5)
136	28.71	94.2	232	36	1
137	28.89	94.8	221	57	2
138	29.14	95.6	210	71	1
139	29.48	96.7	322	36	1
140	29.56	97.0	198	17	1
141	29.76	97.6	14	11	1
142	29.88	98.0	7	54	1
143	29.92	98.2	24	61	1
144	29.98	98.4	221	43	2
145	30.11	98.8	172	46	1
146	30.18	99.0	179	25	1
147	30.28	99.3	326	31	1
148	30.53	100.2	340	37	1
149	30.84	101.2	203	28	2
150	31.18	102.3	198	38	1
151	31.24	102.5	266	73	2
152	31.42	103.1	276	74	1
153	31.53	103.4	248	37	2
154	31.54	103.5	19	37	1
155	31.94	104.8	251	48	2
156	32.01	105.0	69	55	1
157	32.16	105.5	262	36	1
158	32.21	105.7	155	50	1
159	32.63	107.0	24	60	1
160	32.92	108.0	262	52	2
161	32.98	108.2	257	63	1
162	33.00	108.3	261	67	1
163	33.36	109.5	261	77	1
164	33.55	110.1	216	37	2
165	33.64	110.4	72	28	2
166	33.77	110.8	274	36	1
167	33.88	111.2	84	38	1
168	34.27	112.4	36	25	1
169	34.29	112.5	210	49	2
170	34.39	112.8	330	28	1
171	34.52	113.3	286	9	1
172	34.59	113.5	139	23	2
173	34.92	114.6	75	30	2
174	35.09	115.1	2	40	1
175	35.26	115.7	207	41	1
176	35.61	116.8	218	71	2
177	35.79	117.4	327	57	1
178	35.91	117.8	314	46	1
179	36.16	118.6	346	68	1
180	36.39	119.4	318	18	1

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Image Features
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Feature No.	Depth (meters)	Depth (feet)	Dip Direction (degrees)	Dip Angle (degrees)	Feature Rank (0 to 5)
181	36.44	119.5	189	11	2
182	36.54	119.9	238	18	2
183	36.79	120.7	198	43	1
184	37.13	121.8	301	42	1
185	37.38	122.7	56	40	1
186	37.52	123.1	19	39	1
187	37.77	123.9	202	29	2
188	38.30	125.7	285	73	1
189	38.54	126.4	325	72	1
190	39.48	129.5	295	48	1
191	39.82	130.6	341	61	1
192	40.00	131.2	130	20	1
193	40.14	131.7	287	68	1
194	40.27	132.1	261	46	1
195	40.64	133.3	279	70	2
196	41.33	135.6	264	72	1
197	41.84	137.3	270	63	1
198	42.12	138.2	335	56	1
199	42.82	140.5	13	71	3
200	43.21	141.8	262	68	1
201	43.46	142.6	259	75	1
202	43.60	143.0	4	50	1
203	43.82	143.8	233	54	1
204	44.14	144.8	39	47	2
205	44.15	144.9	314	56	1
206	44.35	145.5	153	22	1
207	44.79	147.0	122	18	1
208	44.80	147.0	75	74	1
209	45.02	147.7	212	28	1
210	45.14	148.1	283	73	1
211	45.15	148.1	285	56	1
212	45.60	149.6	298	66	1
213	46.21	151.6	89	72	1
214	46.32	152.0	252	27	1
215	46.40	152.2	314	36	1
216	46.57	152.8	314	47	1
217	46.60	152.9	273	81	1
218	47.06	154.4	276	64	1
219	47.63	156.3	156	33	1
220	48.18	158.1	282	58	1
221	48.23	158.2	131	20	1
222	48.33	158.6	279	68	1
223	48.36	158.7	131	39	1
224	48.44	158.9	136	57	1
225	48.48	159.1	341	33	1

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Feature No.	Depth (meters)	Depth (feet)	Dip Direction (degrees)	Dip Angle (degrees)	Feature Rank (0 to 5)
226	48.85	160.3	154	62	1
227	49.37	162.0	131	56	1
228	49.83	163.5	209	54	1
229	49.92	163.8	266	30	2
230	50.15	164.6	24	36	1
231	50.26	164.9	242	38	2
232	50.41	165.4	285	51	1
233	50.64	166.2	229	50	2
234	50.94	167.1	274	58	2
235	50.99	167.3	279	61	1
236	51.33	168.4	267	55	2
237	51.39	168.6	259	52	2
238	51.63	169.4	297	55	1
239	51.82	170.0	259	32	2
240	52.16	171.1	279	67	2
241	52.20	171.3	279	55	1
242	52.52	172.3	274	57	1
243	53.08	174.1	266	56	1
244	53.43	175.3	278	50	1
245	53.68	176.1	276	58	1
246	53.93	177.0	292	51	1
247	54.13	177.6	274	53	1
248	54.38	178.4	217	59	2
249	54.59	179.1	216	48	1
250	54.78	179.7	216	59	1
251	54.94	180.3	205	71	2
252	55.22	181.2	238	73	1
253	55.32	181.5	106	65	1
254	55.41	181.8	266	65	1
255	55.55	182.3	153	23	1
256	55.78	183.0	269	67	1
257	55.96	183.6	261	63	1
258	56.11	184.1	282	30	1
259	56.38	185.0	261	61	1
260	56.53	185.5	200	26	1
261	57.04	187.1	216	49	1
262	57.20	187.7	264	52	1
263	57.28	187.9	245	84	1
264	57.37	188.2	259	37	1
265	58.03	190.4	237	66	1
266	58.33	191.4	235	66	1
267	58.74	192.7	84	38	1
268	59.04	193.7	249	37	1
269	59.39	194.9	160	14	1
270	59.52	195.3	139	67	1

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Orientation Summary Table
Image Features
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Feature No.	Depth (meters)	Depth (feet)	Dip Direction (degrees)	Dip Angle (degrees)	Feature Rank (0 to 5)
271	59.97	196.7	292	25	1
272	60.20	197.5	332	58	1
273	60.59	198.8	313	55	1
274	60.76	199.3	298	55	1
275	61.00	200.1	302	30	1
276	61.89	203.0	248	76	1
277	62.32	204.5	285	37	1
278	62.92	206.4	276	55	1
279	63.04	206.8	264	45	1
280	63.51	208.4	271	26	1
281	63.95	209.8	267	74	1
282	64.73	212.4	220	32	1
283	64.84	212.7	292	81	1
284	64.90	212.9	203	79	1
285	65.20	213.9	89	59	1
286	65.51	214.9	271	63	1
287	65.84	216.0	165	16	1
288	66.16	217.1	24	46	1
289	66.66	218.7	251	40	1
290	67.15	220.3	245	43	1
291	67.60	221.8	283	25	2
292	67.71	222.2	285	23	2
293	68.40	224.4	238	66	1
294	69.12	226.8	239	47	1
295	69.54	228.2	288	25	1
296	69.57	228.3	257	20	2
297	69.74	228.8	232	32	2
298	70.36	230.9	321	53	1
299	71.08	233.2	266	40	2
300	71.54	234.7	200	52	2
301	71.78	235.5	172	37	2
302	71.86	235.8	174	21	1
303	71.90	235.9	174	29	1
304	72.21	236.9	332	27	1
305	72.44	237.7	225	47	3
306	72.59	238.1	259	14	3
307	72.66	238.4	240	33	3
308	72.75	238.7	274	17	3
309	73.16	240.0	298	27	1
310	73.87	242.4	285	67	1
311	74.24	243.6	115	82	1
312	75.11	246.4	320	42	1
313	75.83	248.8	229	73	1
314	76.70	251.7	273	20	2
315	76.98	252.6	224	21	1

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Feature No.	Depth (meters)	Depth (feet)	Dip Direction (degrees)	Dip Angle (degrees)	Feature Rank (0 to 5)
316	77.43	254.0	217	50	2
317	78.10	256.2	278	32	1
318	78.26	256.8	299	48	1
319	78.80	258.5	59	29	1
320	78.91	258.9	81	22	1
321	79.26	260.0	301	68	1
322	79.71	261.5	28	38	1
323	80.18	263.1	230	38	2
324	80.88	265.3	47	32	1
325	81.37	267.0	273	83	1
326	82.03	269.1	45	33	1
327	82.30	270.0	81	40	1
328	82.60	271.0	276	68	1
329	82.80	271.6	17	29	1
330	83.61	274.3	251	76	3
331	83.89	275.2	270	70	1
332	84.80	278.2	257	73	3
333	85.24	279.7	262	68	1
334	85.66	281.0	294	32	1
335	86.12	282.6	236	54	1
336	86.49	283.8	229	38	2
337	86.83	284.9	295	33	1
338	87.21	286.1	337	59	1
339	87.51	287.1	294	73	1
340	87.74	287.9	247	58	1
341	88.15	289.2	261	77	1
342	88.46	290.2	264	66	1
343	88.78	291.3	256	54	1
344	89.12	292.4	330	63	1
345	89.48	293.6	292	64	1
346	90.07	295.5	217	70	2
347	90.37	296.5	333	63	1
348	90.61	297.3	282	73	1
349	90.91	298.3	278	71	1
350	91.03	298.7	226	62	1
351	91.43	300.0	55	47	1
352	91.46	300.1	301	58	1
353	91.81	301.2	229	67	1
354	92.23	302.6	305	57	1
355	92.58	303.7	290	65	1
356	92.69	304.1	271	71	1
357	92.86	304.7	301	63	1
358	93.01	305.2	294	63	1
359	93.24	305.9	297	62	1
360	93.42	306.5	279	67	1

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Feature No.	Depth (meters)	Depth (feet)	Dip Direction (degrees)	Dip Angle (degrees)	Feature Rank (0 to 5)
361	93.52	306.8	271	68	1
362	94.26	309.3	259	80	2
363	94.38	309.7	278	62	1
364	95.25	312.5	257	42	2
365	95.31	312.7	193	37	2
366	95.51	313.4	275	30	1
367	95.68	313.9	176	14	1
368	96.22	315.7	250	43	2
369	96.60	316.9	216	49	2
370	96.85	317.7	321	11	1
371	97.28	319.2	200	46	1
372	97.65	320.4	108	41	1
373	98.08	321.8	31	20	1
374	98.38	322.8	35	47	1
375	98.75	324.0	344	35	1
376	99.51	326.5	197	57	2
377	100.14	328.5	212	44	1
378	100.19	328.7	207	52	2
379	100.50	329.7	232	65	1
380	100.97	331.3	308	59	1
381	101.90	334.3	228	55	1
382	102.27	335.5	158	57	1
383	102.54	336.4	268	29	1
384	102.94	337.7	170	20	1
385	103.23	338.7	347	40	1
386	103.39	339.2	321	31	1
387	103.60	339.9	279	36	1
388	104.11	341.6	153	49	1
389	104.55	343.0	252	64	1
390	104.80	343.8	212	64	2
391	104.99	344.5	204	66	3
392	105.53	346.2	17	46	1
393	105.57	346.4	229	56	1
394	105.96	347.6	111	60	1
395	106.42	349.1	238	63	2
396	106.74	350.2	246	59	1
397	107.05	351.2	259	55	3
398	107.30	352.0	7	43	2
399	107.46	352.6	193	37	2
400	107.85	353.9	242	60	2
401	108.11	354.7	247	64	2
402	108.48	355.9	101	30	1
403	108.89	357.3	14	41	1
404	109.29	358.6	330	55	1
405	109.48	359.2	251	40	1

All directions are with respect to magnetic north.

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Feature No.	Depth (meters)	Depth (feet)	Dip Direction (degrees)	Dip Angle (degrees)	Feature Rank (0 to 5)
406	109.67	359.8	231	60	3
407	110.11	361.3	191	58	1
408	110.43	362.3	204	32	1
409	110.80	363.5	242	49	3
410	110.96	364.0	242	31	2
411	111.00	364.2	232	71	3
412	111.12	364.6	236	59	1
413	111.37	365.4	235	43	1
414	111.47	365.7	219	26	1
415	111.75	366.6	255	68	1
416	111.83	366.9	349	32	1
417	112.17	368.0	226	67	1
418	112.74	369.9	212	70	1
419	113.45	372.2	251	62	2
420	114.07	374.3	97	33	1
421	114.51	375.7	278	39	1
422	115.07	377.5	351	37	1
423	115.40	378.6	49	16	1
424	115.74	379.7	42	29	1
425	115.84	380.1	210	18	1
426	115.99	380.5	225	28	1
427	116.29	381.5	235	53	1
428	116.51	382.3	321	28	1
429	116.67	382.8	46	46	2
430	117.04	384.0	128	84	1
431	117.82	386.5	254	20	1
432	118.08	387.4	226	40	1
433	118.44	388.6	341	53	1
434	118.79	389.7	270	35	2
435	119.49	392.0	212	32	1
436	119.65	392.6	328	43	3
437	119.72	392.8	19	32	3
438	120.04	393.8	266	75	1
439	120.39	395.0	346	59	1
440	120.58	395.6	226	43	3
441	120.81	396.4	242	51	3
442	121.08	397.3	194	43	1
443	121.63	399.0	14	41	1
444	121.72	399.3	358	35	1
445	121.77	399.5	348	20	1
446	122.04	400.4	251	53	1
447	122.23	401.0	238	51	2
448	122.96	403.4	264	56	1
449	122.98	403.5	120	35	1
450	123.10	403.9	116	70	1

All directions are with respect to magnetic north.

Orientation Summary Table
Image Features
AMEC
Project: Squaw Gulch Valley VLF
Well: Hole #1
November 17, 2013

Feature No.	Depth (meters)	Depth (feet)	Dip Direction (degrees)	Dip Angle (degrees)	Feature Rank (0 to 5)
451	123.23	404.3	65	36	1
452	123.52	405.3	132	60	1
453	124.49	408.4	97	69	1
454	124.60	408.8	238	60	1
455	125.47	411.7	294	72	1
456	125.93	413.2	153	46	3
457	126.67	415.6	87	68	1
458	126.74	415.8	243	29	1
459	127.49	418.3	205	83	1
460	127.70	419.0	23	39	1
461	127.99	419.9	27	32	2
462	128.15	420.4	235	39	2
463	128.37	421.2	73	22	3
464	128.45	421.4	158	25	3
465	128.61	421.9	15	38	3
466	129.03	423.3	229	43	2
467	129.20	423.9	316	40	1
468	129.41	424.6	73	26	3
469	129.68	425.5	226	67	1
470	130.01	426.5	197	50	1
471	130.29	427.5	207	54	1
472	130.55	428.3	295	38	1
473	130.90	429.5	298	59	1
474	131.16	430.3	332	25	1
475	131.69	432.1	290	64	1
476	131.87	432.6	279	64	1
477	132.21	433.8	236	53	1
478	132.43	434.5	236	25	2
479	132.70	435.4	242	30	2
480	133.15	436.8	66	31	1
481	133.29	437.3	324	57	1
482	133.72	438.7	59	65	1
483	134.15	440.1	66	55	1
484	135.07	443.1	276	58	2
485	135.26	443.8	264	29	3
486	135.53	444.7	134	62	2
487	135.64	445.0	255	21	1
488	136.01	446.2	285	47	1
489	136.38	447.4	262	52	2
490	137.51	451.2	242	59	1
491	137.65	451.6	248	54	1
492	137.78	452.0	261	46	3
493	137.98	452.7	318	25	3
494	138.68	455.0	254	58	3
495	138.68	455.0	42	59	1

All directions are with respect to magnetic north.

Orientation Summary Table
Image Features
AMEC
Project: Squaw Gulch Valley VLF
Well: Hole #1
November 17, 2013

Feature No.	Depth (meters)	Depth (feet)	Dip Direction (degrees)	Dip Angle (degrees)	Feature Rank (0 to 5)
496	138.87	455.6	257	61	1
497	139.10	456.4	31	56	1
498	139.32	457.1	194	55	1
499	139.70	458.3	21	69	1
500	140.31	460.3	210	71	1
501	140.74	461.7	210	58	1
502	141.76	465.1	207	75	1
503	142.10	466.2	204	65	1
504	142.61	467.9	351	65	1
505	143.34	470.3	116	64	1
506	143.59	471.1	224	50	1
507	144.17	473.0	51	58	1
508	144.68	474.7	12	45	1
509	144.94	475.5	306	32	1
510	145.95	478.8	24	47	1
511	146.15	479.5	17	60	2
512	146.37	480.2	279	47	3
513	146.56	480.8	255	52	3
514	146.89	481.9	242	66	3
515	147.31	483.3	165	78	1
516	147.84	485.0	66	63	1
517	147.86	485.1	217	69	1
518	148.35	486.7	273	26	1
519	148.73	488.0	274	23	1
520	149.25	489.7	252	65	1
521	149.46	490.4	237	59	1
522	149.65	491.0	257	51	1
523	149.87	491.7	344	27	1
524	149.93	491.9	143	48	1
525	150.59	494.1	278	47	1
526	150.72	494.5	247	59	1
527	151.12	495.8	255	58	1
528	151.31	496.4	283	32	1
529	151.40	496.7	242	36	1
530	151.50	497.1	276	75	1
531	152.40	500.0	289	75	1
532	152.73	501.1	306	44	1
533	153.28	502.9	304	36	2
534	153.62	504.0	228	38	2
535	153.72	504.3	270	43	1
536	154.12	505.6	251	25	1
537	154.13	505.7	314	61	1
538	154.32	506.3	217	56	1
539	154.65	507.4	198	16	1
540	154.71	507.6	233	64	1

All directions are with respect to magnetic north.

Orientation Summary Table
Image Features
AMEC
Project: Squaw Gulch Valley VLF
Well: Hole #1
November 17, 2013

Feature No.	Depth (meters)	Depth (feet)	Dip Direction (degrees)	Dip Angle (degrees)	Feature Rank (0 to 5)
541	155.00	508.5	238	66	2
542	155.28	509.4	224	29	1
543	155.43	509.9	198	46	1
544	155.73	510.9	339	55	1
545	155.96	511.7	179	36	2
546	156.11	512.2	118	64	1
547	156.13	512.3	262	29	1
548	156.45	513.3	118	62	1
549	156.58	513.7	103	46	1
550	156.58	513.7	247	65	1
551	156.86	514.6	125	57	1
552	156.91	514.8	128	64	1
553	157.13	515.5	116	75	1
554	157.16	515.6	115	56	1
555	157.36	516.3	233	66	1
556	157.77	517.6	163	75	1
557	157.81	517.8	233	74	1
558	158.24	519.2	188	69	2
559	158.35	519.5	346	25	1
560	158.61	520.4	94	67	2
561	158.62	520.4	224	64	1
562	159.09	522.0	188	50	1
563	159.11	522.0	229	74	1
564	159.16	522.2	191	18	1
565	159.39	522.9	99	59	2
566	159.55	523.5	235	45	1
567	159.58	523.6	5	42	1
568	159.73	524.1	231	54	2
569	159.80	524.3	219	54	1
570	159.96	524.8	219	60	1
571	160.24	525.7	212	43	2
572	160.34	526.0	226	58	1
573	160.46	526.4	226	61	1
574	160.82	527.6	221	51	1
575	160.89	527.9	239	73	1
576	160.96	528.1	231	51	2
577	161.03	528.3	153	29	1
578	161.16	528.8	331	49	1
579	161.45	529.7	165	27	1
580	161.50	529.9	279	68	1
581	161.71	530.6	97	26	1
582	161.95	531.3	216	51	1
583	162.10	531.8	210	57	1
584	162.19	532.1	68	64	1
585	162.40	532.8	134	47	1

All directions are with respect to magnetic north.

Orientation Summary Table
Image Features
AMEC
Project: Squaw Gulch Valley VLF
Well: Hole #1
November 17, 2013

Feature No.	Depth (meters)	Depth (feet)	Dip Direction (degrees)	Dip Angle (degrees)	Feature Rank (0 to 5)
586	162.66	533.7	99	43	1
587	162.75	534.0	240	31	1
588	162.95	534.6	167	31	2
589	163.10	535.1	259	79	1
590	163.17	535.3	242	43	1
591	163.25	535.6	224	29	1
592	163.63	536.8	248	70	1
593	163.80	537.4	271	32	1
594	164.11	538.4	213	57	1
595	164.17	538.6	229	69	1
596	164.38	539.3	156	51	1
597	164.67	540.2	231	48	1
598	164.80	540.7	82	58	1
599	165.09	541.7	210	57	1
600	165.30	542.3	200	26	1
601	165.41	542.7	213	53	1
602	165.43	542.8	207	30	1
603	165.77	543.9	223	64	1
604	165.93	544.4	143	54	1
605	166.04	544.8	221	71	1
606	166.25	545.4	205	66	1
607	166.29	545.6	219	60	1
608	166.63	546.7	238	69	1
609	166.86	547.5	223	62	1
610	167.02	548.0	244	69	1
611	167.17	548.5	229	68	1
612	167.47	549.4	165	54	1
613	167.73	550.3	66	67	1
614	167.76	550.4	245	75	1
615	167.93	551.0	243	67	1
616	167.94	551.0	58	60	1
617	168.32	552.2	235	66	1
618	168.56	553.0	224	68	3
619	168.68	553.4	231	67	3
620	168.99	554.4	137	53	1
621	169.14	554.9	252	44	1
622	169.24	555.2	78	47	1
623	169.28	555.4	207	55	1
624	169.31	555.5	267	16	1
625	169.60	556.4	240	43	1
626	169.97	557.7	165	47	1
627	170.30	558.7	169	49	1
628	170.34	558.9	65	74	1
629	170.54	559.5	255	29	1
630	170.82	560.4	35	44	1

All directions are with respect to magnetic north.

Orientation Summary Table
Image Features
AMEC
Project: Squaw Gulch Valley VLF
Well: Hole #1
November 17, 2013

Feature No.	Depth (meters)	Depth (feet)	Dip Direction (degrees)	Dip Angle (degrees)	Feature Rank (0 to 5)
631	171.39	562.3	169	52	1
632	171.64	563.1	163	52	1
633	172.04	564.4	266	66	2
634	172.28	565.2	282	50	2
635	172.39	565.6	65	55	1
636	172.48	565.9	78	57	1
637	172.85	567.1	247	42	2
638	173.18	568.2	103	56	1
639	173.40	568.9	301	80	1
640	173.67	569.8	97	62	1
641	173.96	570.7	70	69	1
642	173.96	570.7	228	53	1
643	174.39	572.2	274	62	1
644	174.84	573.6	127	66	1
645	175.03	574.2	223	43	1
646	175.33	575.2	250	44	1
647	175.45	575.6	254	59	1
648	176.34	578.5	31	58	1
649	176.87	580.3	198	38	1
650	177.08	581.0	17	57	1
651	177.28	581.6	250	47	1
652	177.68	582.9	56	64	1
653	178.05	584.1	328	51	1
654	178.48	585.6	276	74	1
655	178.62	586.0	273	54	1
656	178.68	586.2	262	35	1
657	178.93	587.1	274	55	1
658	179.27	588.2	19	33	1
659	179.68	589.5	200	47	1
660	179.88	590.2	118	53	1
661	180.30	591.5	128	60	1
662	180.41	591.9	320	55	1
663	180.48	592.1	132	64	1
664	180.70	592.8	292	32	1
665	180.92	593.6	348	49	1
666	181.16	594.4	11	54	1
667	181.38	595.1	283	42	1
668	181.49	595.5	174	49	1
669	181.71	596.2	228	47	2
670	182.12	597.5	228	39	1
671	182.20	597.8	207	53	1
672	182.36	598.3	233	46	1
673	182.59	599.1	219	63	1
674	182.74	599.6	205	72	1
675	182.88	600.0	49	58	1

All directions are with respect to magnetic north.

Orientation Summary Table
Image Features
AMEC
Project: Squaw Gulch Valley VLF
Well: Hole #1
November 17, 2013

Feature No.	Depth (meters)	Depth (feet)	Dip Direction (degrees)	Dip Angle (degrees)	Feature Rank (0 to 5)
676	182.98	600.3	47	17	1
677	183.03	600.5	30	28	2
678	183.36	601.6	96	48	1
679	183.55	602.2	224	32	2
680	184.01	603.7	185	72	1
681	184.29	604.6	261	64	1
682	184.53	605.4	201	46	1
683	184.65	605.8	264	42	1
684	184.89	606.6	216	30	2
685	185.35	608.1	228	32	2
686	185.42	608.3	104	55	1
687	185.92	610.0	204	28	1
688	186.18	610.8	301	46	1
689	186.31	611.2	179	49	1
690	186.59	612.2	343	43	1
691	187.17	614.1	125	55	1
692	187.20	614.2	33	53	1
693	187.40	614.8	151	28	1
694	187.87	616.4	258	55	1
695	188.00	616.8	259	53	1
696	188.31	617.8	278	13	1
697	188.35	618.0	226	27	1
698	188.77	619.3	16	41	1
699	189.19	620.7	71	77	2
700	189.25	620.9	271	18	1
701	189.64	622.2	209	40	1
702	189.84	622.8	295	35	1
703	190.23	624.1	70	46	1
704	190.40	624.7	209	29	1
705	190.54	625.1	266	23	1
706	190.70	625.7	116	44	1
707	190.87	626.2	96	46	1
708	191.05	626.8	122	43	1
709	191.28	627.6	113	43	1
710	191.44	628.1	316	38	1
711	191.45	628.1	58	64	1
712	191.69	628.9	235	29	1
713	191.98	629.8	90	46	1
714	192.35	631.1	229	46	1
715	192.69	632.2	213	40	1
716	193.15	633.7	197	44	1
717	193.51	634.9	210	46	1
718	193.61	635.2	213	62	1
719	193.86	636.0	209	33	1
720	194.02	636.5	185	63	1

All directions are with respect to magnetic north.

Orientation Summary Table
Image Features
AMEC
Project: Squaw Gulch Valley VLF
Well: Hole #1
November 17, 2013

Feature No.	Depth (meters)	Depth (feet)	Dip Direction (degrees)	Dip Angle (degrees)	Feature Rank (0 to 5)
721	194.46	638.0	347	50	1
722	194.53	638.2	316	43	1
723	194.67	638.7	276	83	1
724	194.82	639.2	297	37	1
725	195.03	639.9	318	29	1
726	195.16	640.3	101	18	1
727	195.32	640.8	113	53	1
728	195.47	641.3	174	67	1
729	195.66	641.9	242	47	1
730	195.93	642.8	40	47	2
731	196.11	643.4	197	50	1
732	196.12	643.4	289	21	1
733	196.23	643.8	259	33	1
734	196.34	644.2	94	64	1
735	196.46	644.6	130	49	1
736	196.93	646.1	103	75	1
737	196.97	646.2	243	78	1
738	197.15	646.8	286	80	1
739	197.27	647.2	292	46	1
740	197.55	648.1	216	48	1
741	197.68	648.6	220	51	1
742	197.82	649.0	186	42	1
743	198.02	649.7	226	49	1
744	198.28	650.5	213	43	1
745	198.51	651.3	223	58	2
746	198.79	652.2	103	69	1
747	199.33	654.0	271	25	1
748	199.67	655.1	215	50	1
749	199.68	655.1	31	53	2
750	199.87	655.8	340	42	1
751	199.92	655.9	134	49	1
752	200.03	656.3	156	53	1
753	200.31	657.2	306	55	1
754	200.54	657.9	245	36	1
755	200.55	658.0	120	80	2
756	201.10	659.8	213	47	2
757	201.11	659.8	111	76	1
758	201.47	661.0	327	28	1
759	201.82	662.1	335	36	1
760	201.96	662.6	289	36	1
761	202.06	662.9	236	40	1
762	202.20	663.4	271	25	1
763	202.39	664.0	314	54	1
764	202.42	664.1	310	39	1
765	202.56	664.6	324	30	1

All directions are with respect to magnetic north.

Orientation Summary Table
Image Features
AMEC
Project: Squaw Gulch Valley VLF
Well: Hole #1
November 17, 2013

Feature No.	Depth (meters)	Depth (feet)	Dip Direction (degrees)	Dip Angle (degrees)	Feature Rank (0 to 5)
766	202.68	665.0	27	44	1
767	202.86	665.6	220	43	1
768	202.98	665.9	112	55	1
769	203.13	666.4	259	29	1
770	203.47	667.6	337	50	1
771	203.72	668.4	333	55	1
772	203.94	669.1	38	52	1
773	204.07	669.5	223	55	1
774	204.18	669.9	197	40	1
775	204.42	670.7	204	51	1
776	204.56	671.1	219	28	1
777	204.61	671.3	213	51	1
778	204.77	671.8	177	39	1
779	204.98	672.5	54	51	1
780	205.07	672.8	224	29	2
781	205.19	673.2	24	27	1
782	205.24	673.4	11	44	1
783	205.27	673.5	206	53	1
784	205.27	673.5	2	46	1
785	205.55	674.4	16	47	2
786	205.60	674.5	109	36	1
787	205.74	675.0	109	42	1
788	205.93	675.6	113	43	1
789	206.08	676.1	103	44	1
790	206.39	677.1	163	39	1
791	206.44	677.3	87	72	1
792	206.62	677.9	297	41	1
793	206.90	678.8	321	69	1
794	207.00	679.1	298	65	1
795	207.29	680.1	224	42	1
796	207.50	680.8	66	35	1
797	207.50	680.8	254	59	1
798	207.68	681.4	52	58	1
799	207.96	682.3	112	52	1
800	208.02	682.5	109	65	2
801	208.18	683.0	212	53	1
802	208.28	683.3	47	72	1
803	208.31	683.4	245	33	1
804	208.38	683.7	136	58	1
805	208.53	684.1	318	18	1
806	208.72	684.8	124	68	1
807	208.73	684.8	271	14	1
808	209.09	686.0	106	70	1
809	209.39	687.0	5	43	1
810	209.58	687.6	28	79	1

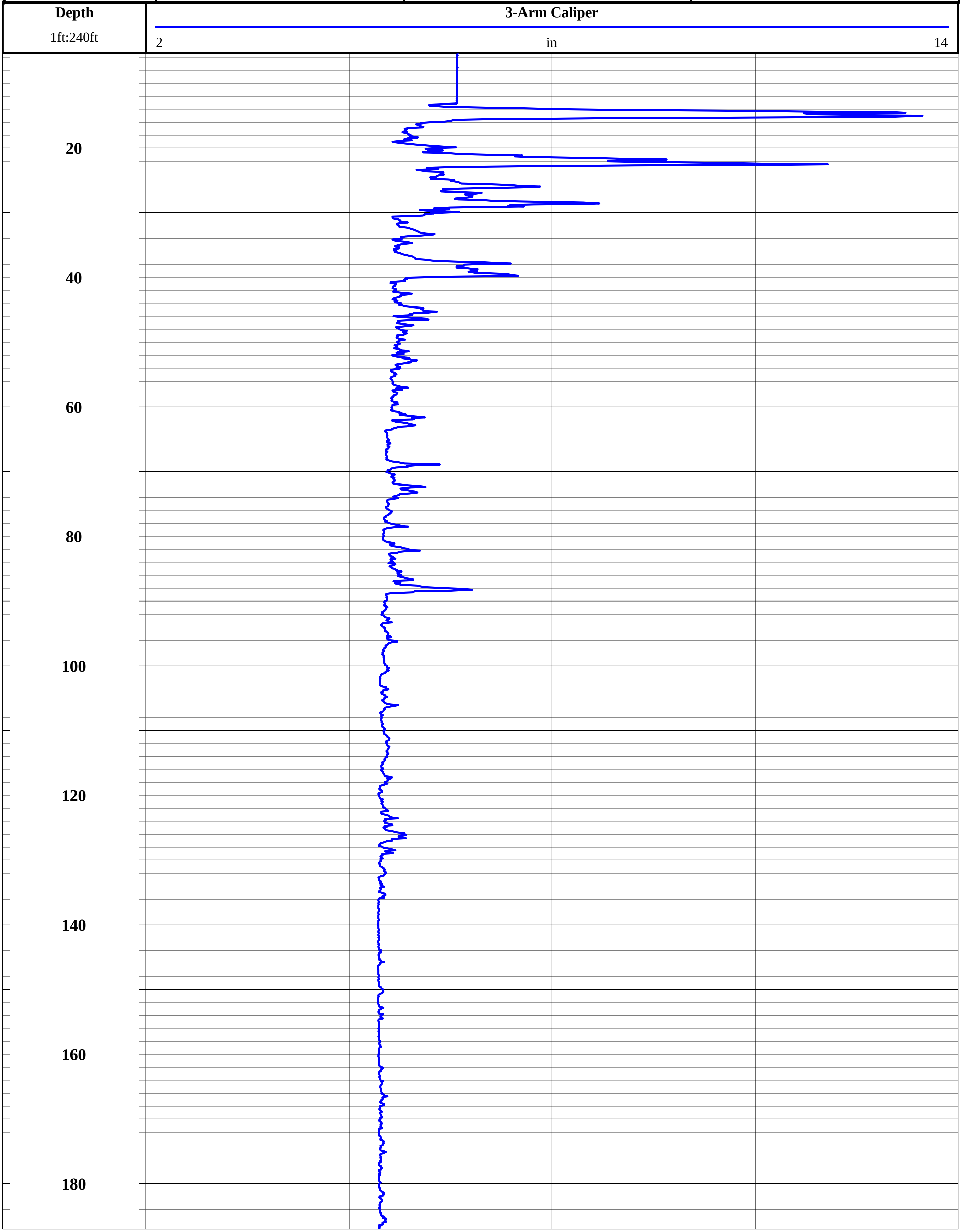
All directions are with respect to magnetic north.

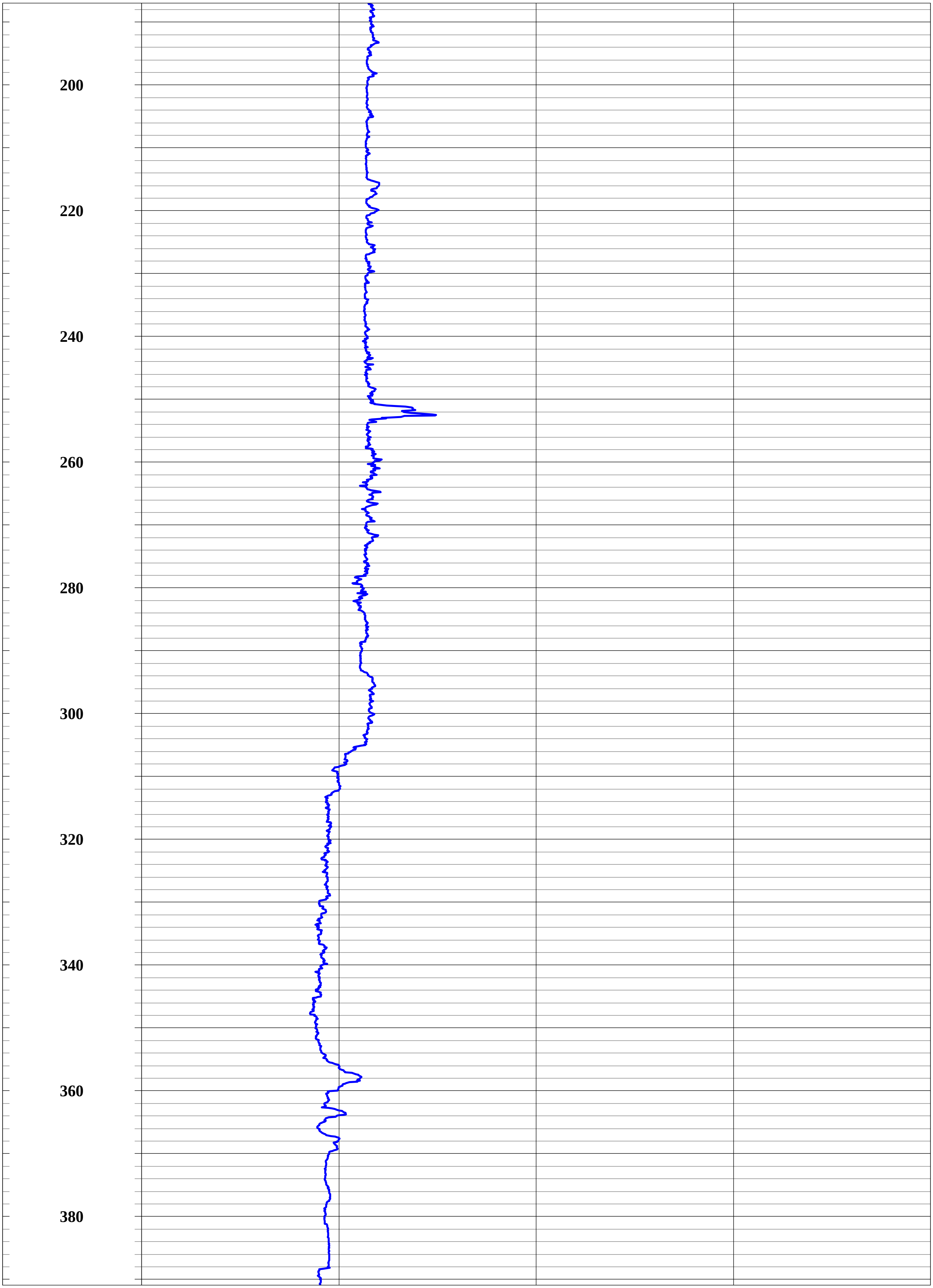
Orientation Summary Table
Image Features
AMEC
Project: Squaw Gulch Valley VLF
Well: Hole #1
November 17, 2013

Feature No.	Depth (meters)	Depth (feet)	Dip Direction (degrees)	Dip Angle (degrees)	Feature Rank (0 to 5)
811	209.79	688.3	17	68	1
812	209.99	689.0	148	31	3
813	210.14	689.4	306	29	1
814	210.20	689.6	112	68	2
815	210.31	690.0	231	75	1
816	210.57	690.9	328	47	1
817	210.80	691.6	279	39	1
818	210.92	692.0	99	53	1
819	211.03	692.4	85	53	1
820	211.21	693.0	165	61	1
821	211.41	693.6	254	45	1
822	211.58	694.2	321	46	2
823	211.62	694.3	112	61	1
824	211.66	694.4	273	40	1
825	211.75	694.7	233	43	1
826	211.96	695.4	35	32	1

All directions are with respect to magnetic north.

3-Arm Caliper		COLOG Main Office
COMPANY: AMEC	PROJECT: Squaw Gulch Valey VLF	810 Quail Street, Suite E, Lakewood, CO 80215
DATE LOGGED: 18 November 2013	WELL: Hole #3	Phone: (303) 279-0171, Fax: (303) 278-0135 www.colog.com

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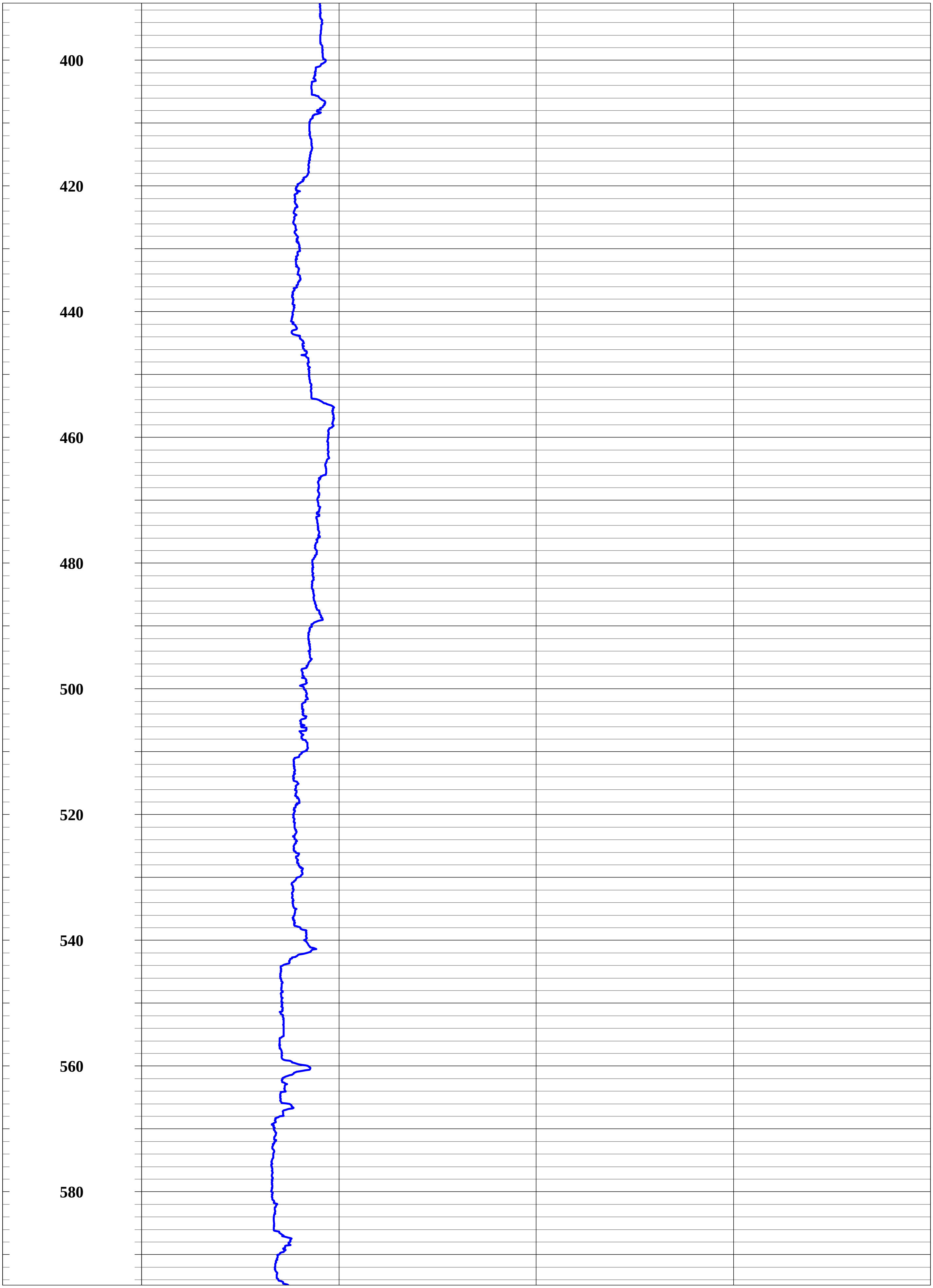
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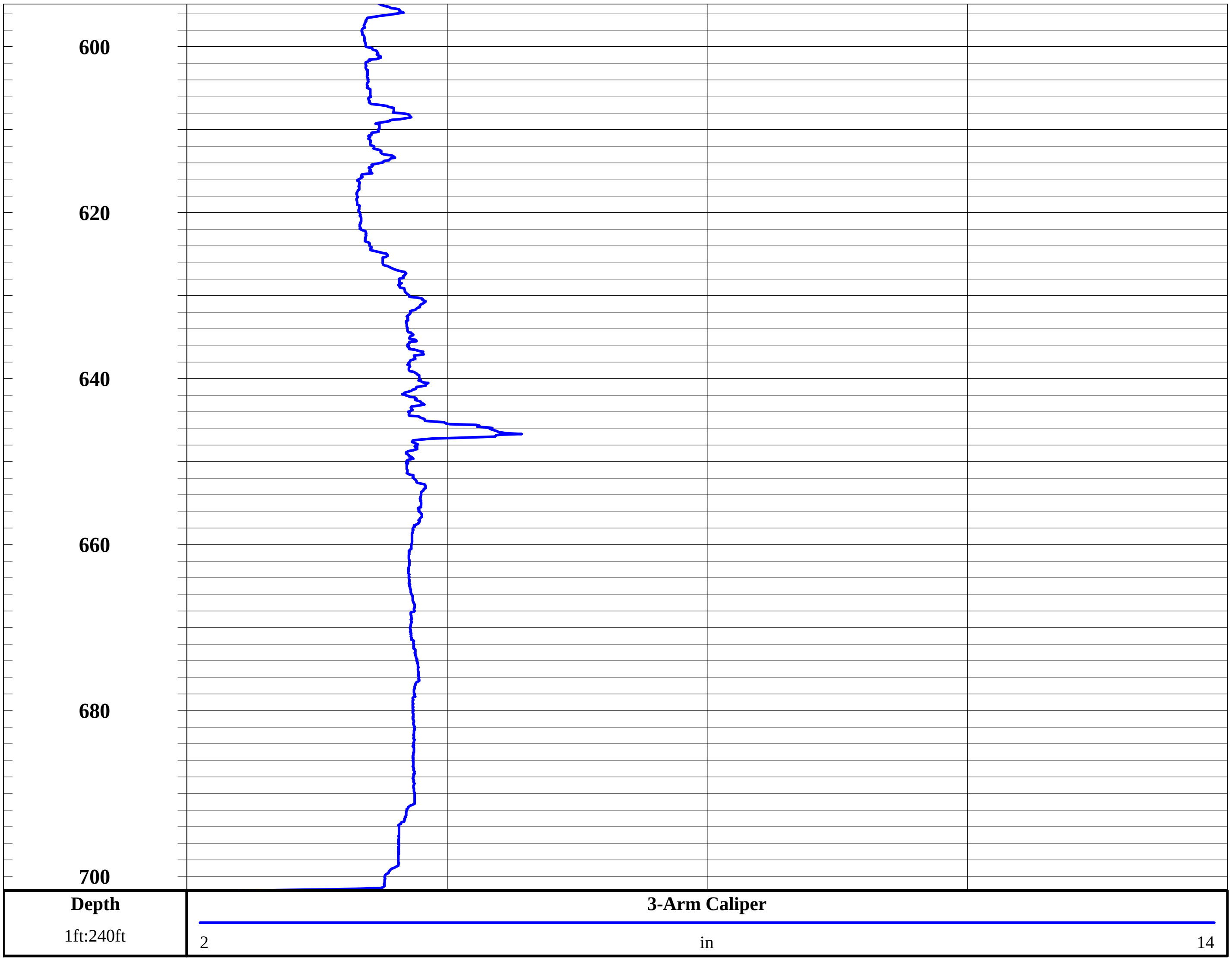
600
620
640
660
680
700
Depth
1ft:240ft
3-Arm Caliper
2
in
14

Appendix C

Valley Leach Field Geology provided by Scott McAnally-CC&V Exploration Geologist

Geologic interpretation of Precambrian contact under VLF2 site

The general geology of the holes in the VLF2 area suggests a sharp and steep contact from Precambrian to Tertiary rock (the diatreme) in most cases. A few holes, such as SGC12-10, previously drilled and logged, suggest a less distinct contact with transition zones comprised of Precambrian breccias, possibly tectonic breccia and/or collapsed material from the Tertiary volcanic events. The Precambrian surface is also cut by numerous intrusive phonolite dikes and lamprophyres ranging from about 1-5' at all depths.

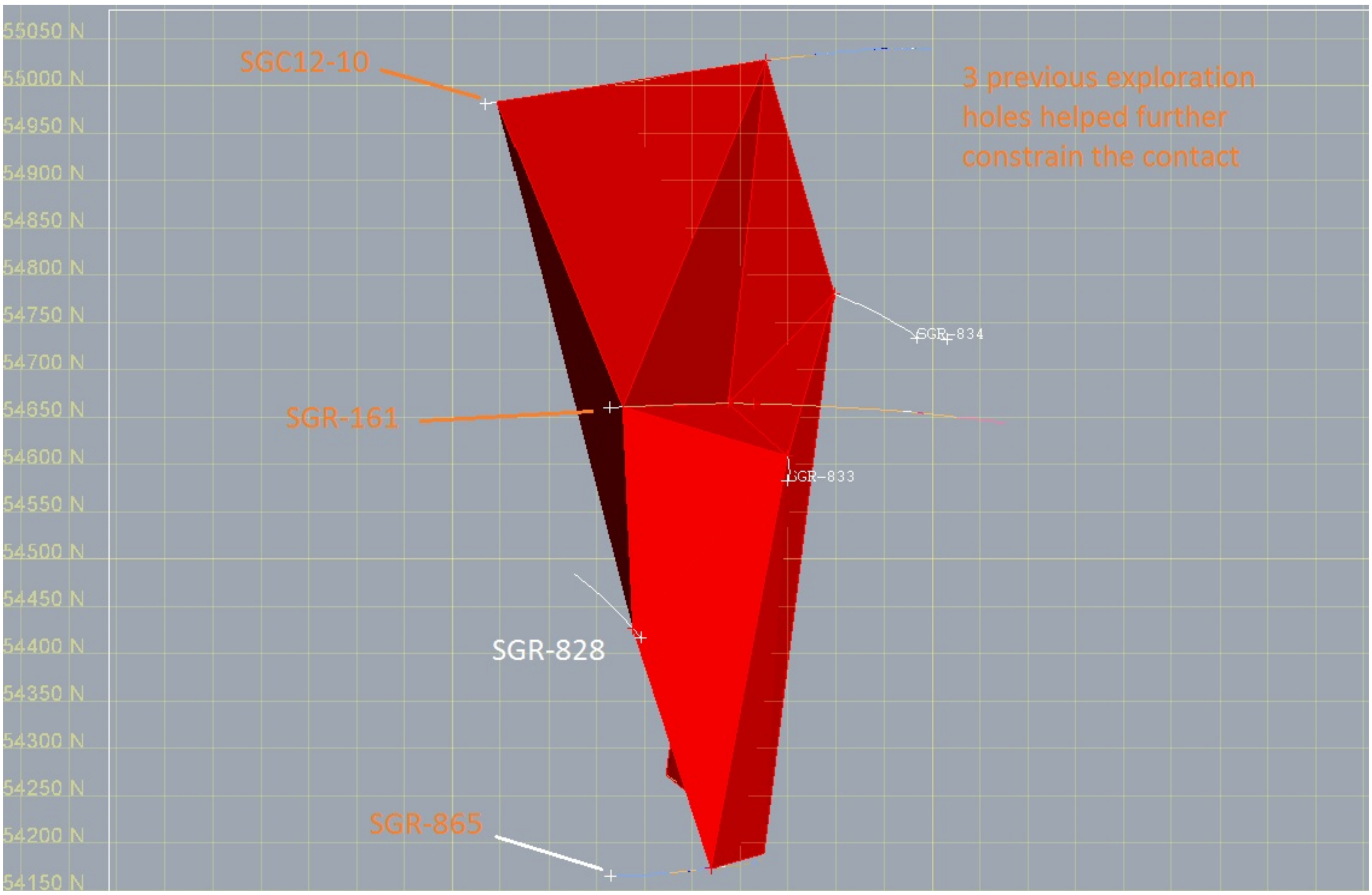

Fig. 1 Plan view of contact

There were 3 previous exploration holes in the vicinity of the VLF2 holes that helped interpret the shape of the contact. In general the Precambrian surface appears very steep and dips slightly to NNE.

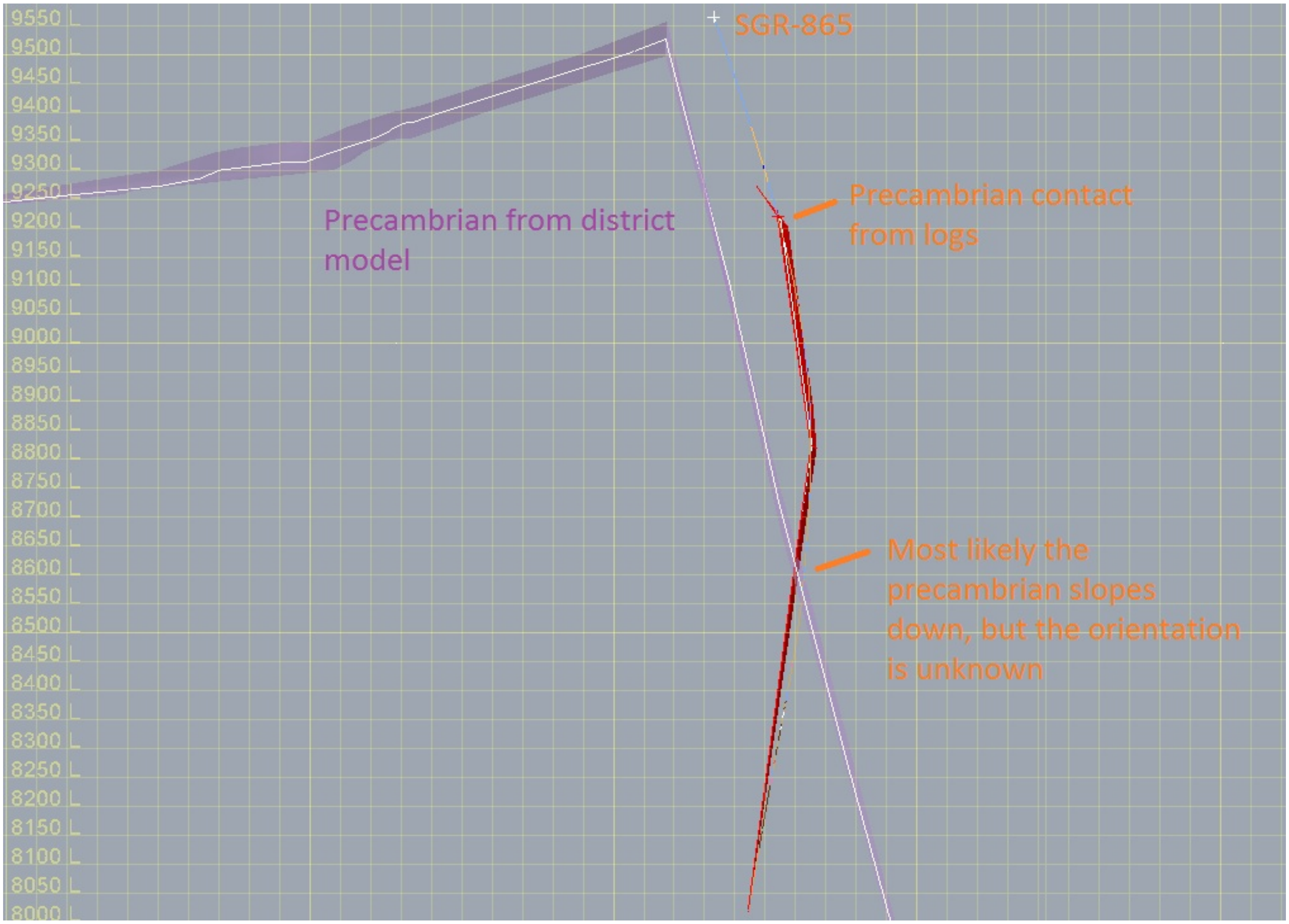

Fig. 2 Cross section looking north from SGR-865

The purple model is an older district-wide model showing the approximate Precambrian surface. The red model has been made from recent and old drilling in this area.

This drill hole (SGR-865) deviated substantially and bowed in on itself, suggesting the Precambrian surface curves down. This is an artifact from the lack of deep drilling in the area, and the true surface likely continues at a steep angle somewhat like the purple model above.

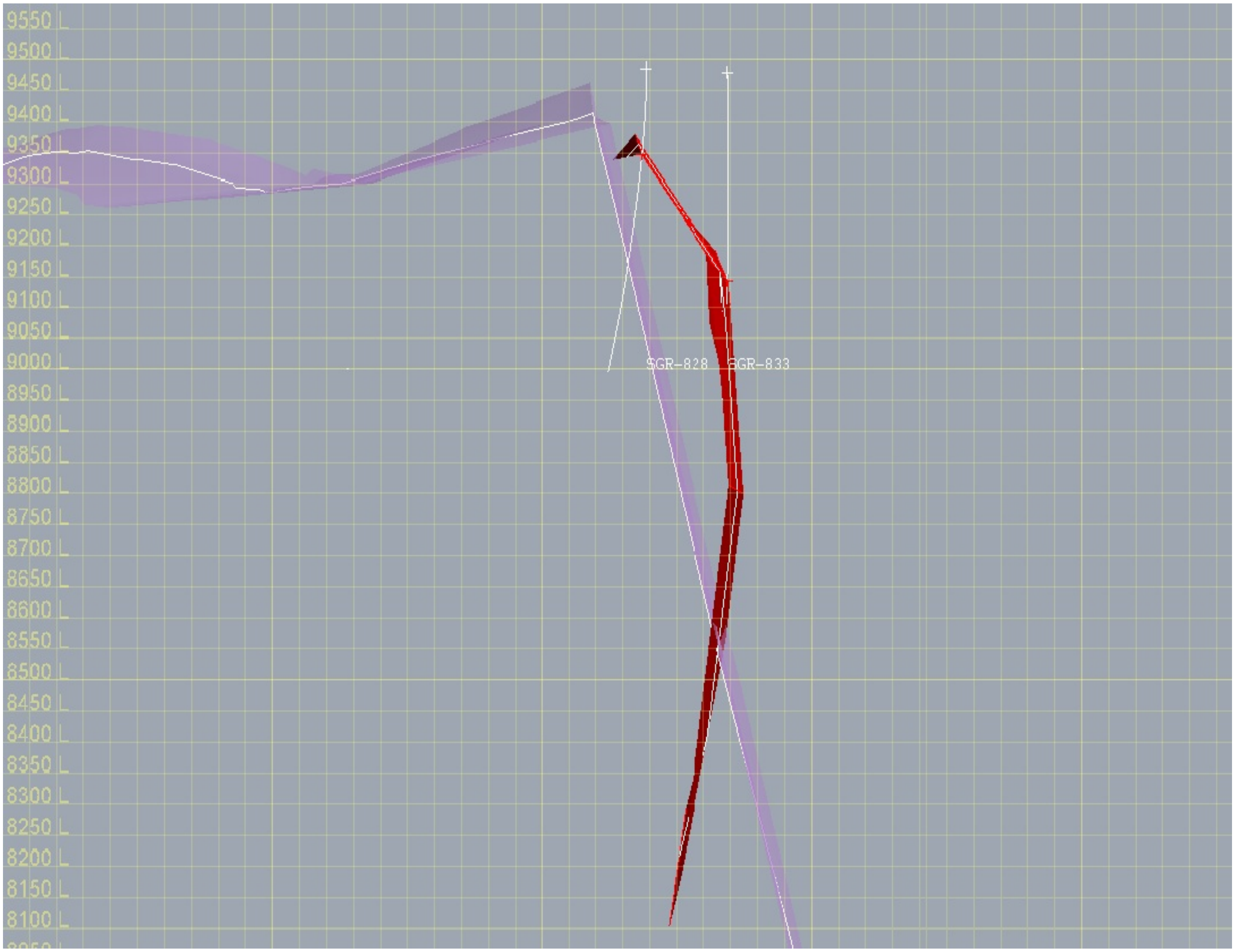

Fig. 3 Cross section looking north, 250ft section width, showing slope between SGR-828 & SGR-833

There is a steep slope between the observed depths to Precambrian rock in these two holes. At depth, the red model suggests the contact bows back, but more likely it continues to slope down steeply following the purple model.

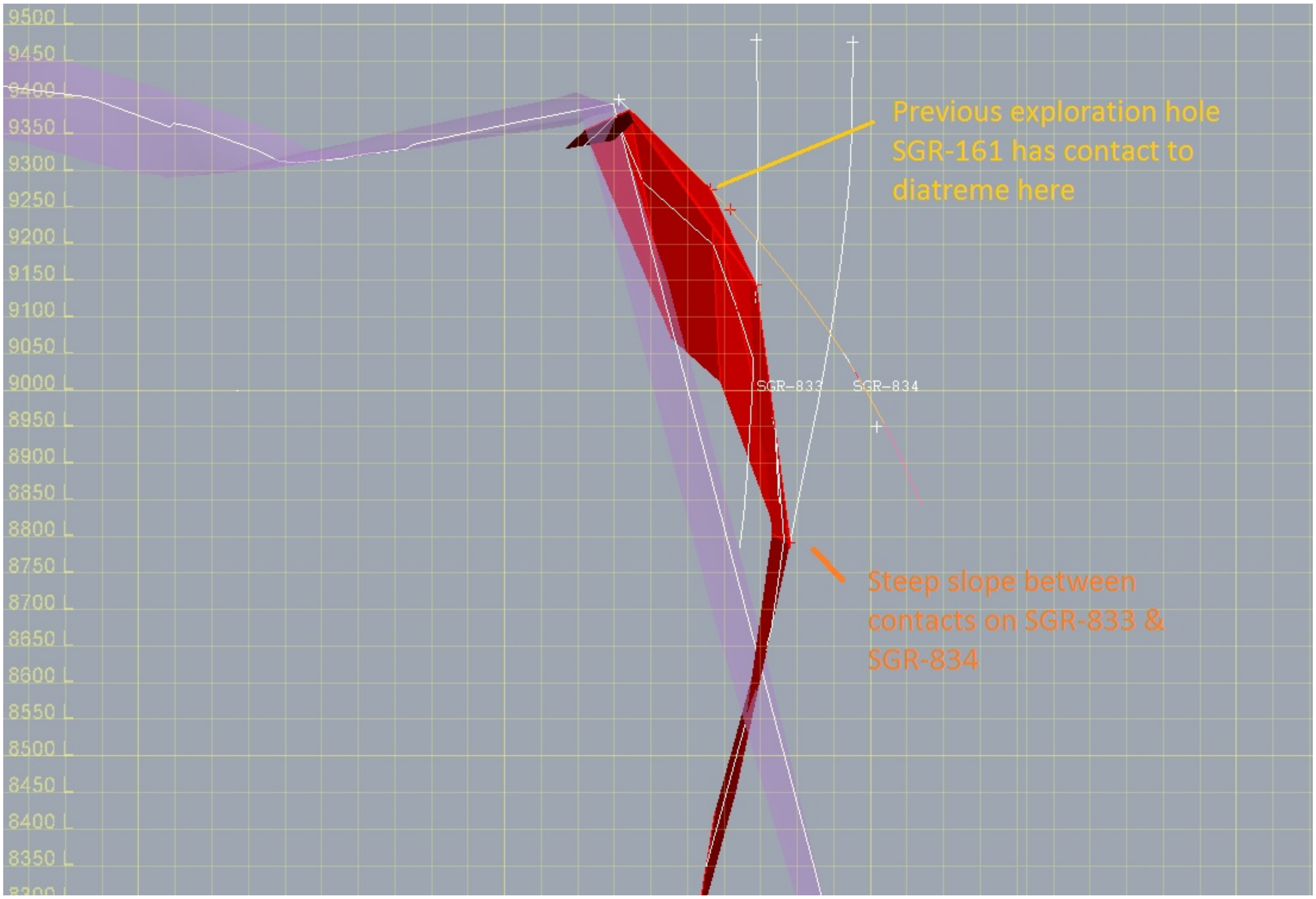

Fig. 4 Cross section looking north

SGR-161 was drilled between SGR-833 & SGR-834 with the contact logged at shallow depth, which suggests a steep inclination of the Precambrian surface to NNE. The Precambrian surface has a very steep slope between SGR-833 & SGR-834.

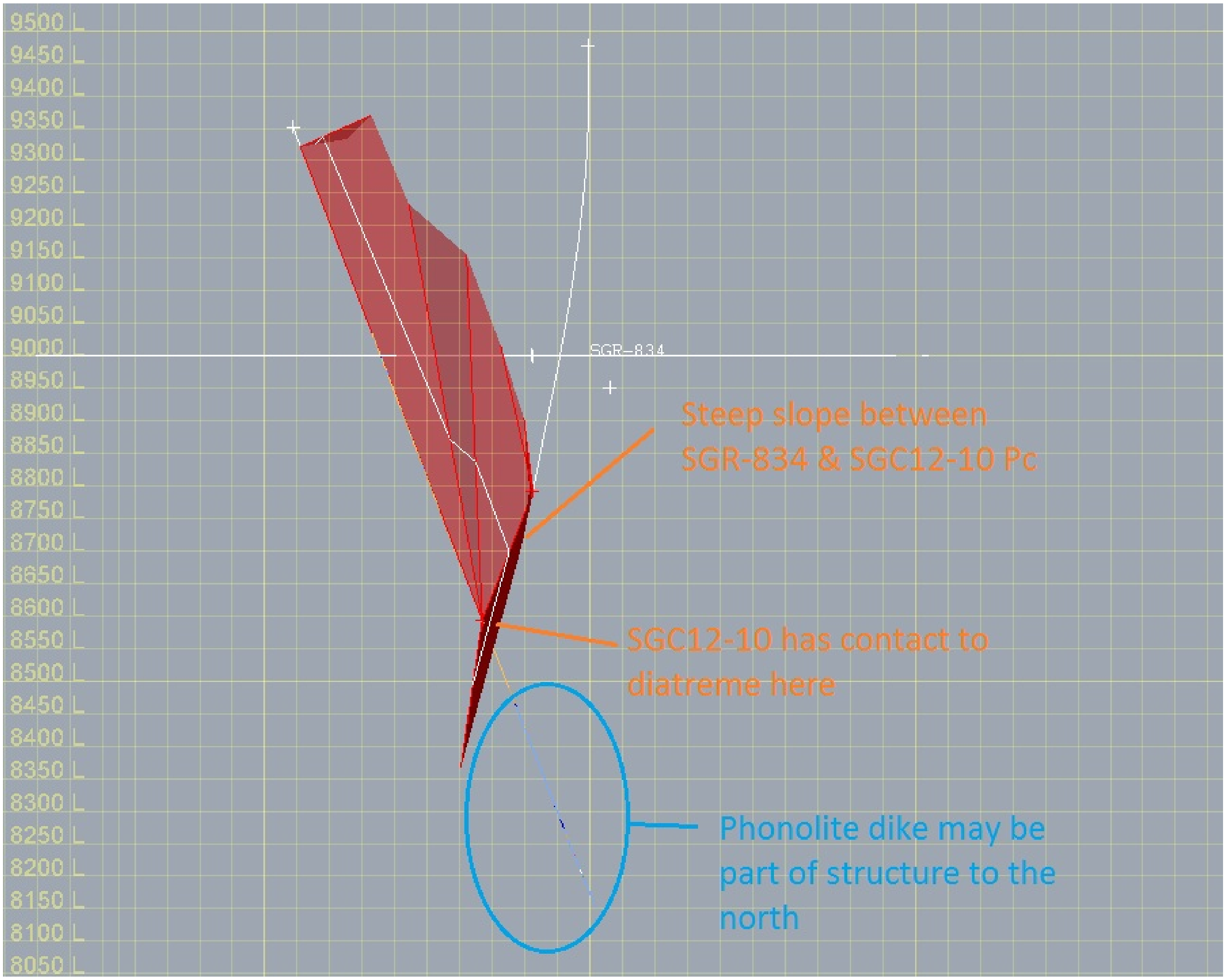

Fig. 5 Cross section looking north of SGC12-10, 340' section width

This core hole has the contact logged fairly deep and suggests the Precambrian surface is at a very steep angle. Precambrian tectonic breccias are present between solid Precambrian rock and the diatreme. SGR-834 & SGC12-10 are ~300' away from each other and the way the contacts are oriented relative to each other creates a possibility the Precambrian surface bows in on itself as seen in Fig. 4. Without more drilling in this area it's unclear what's really happening at depth although it appears the contact surface is vertical to subvertical and generally dips to the east.

The phonolite at the bottom of SGC12-10 (seen in blue) likely connects to the large phonolite dike in Fig. 6 below.

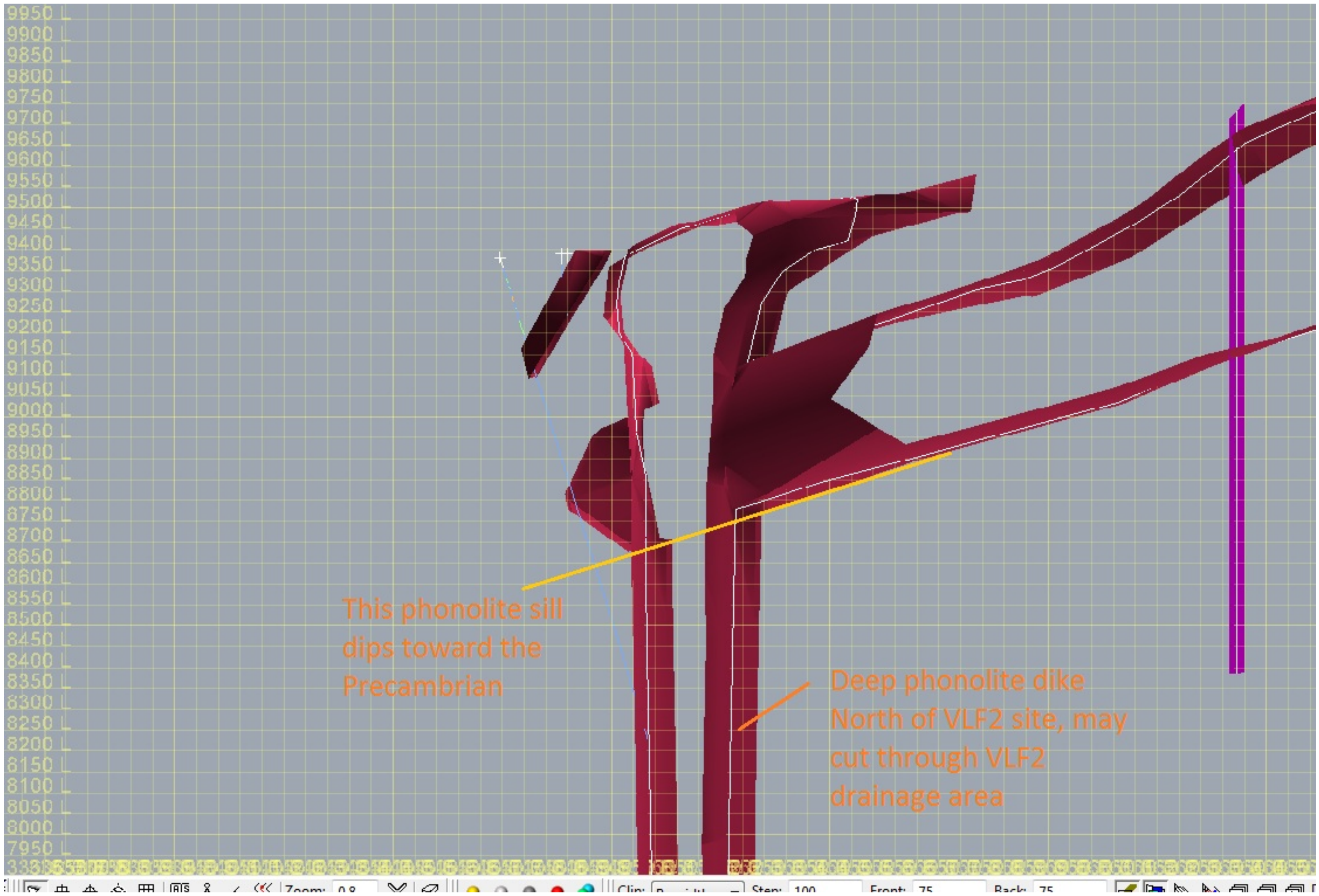

Fig. 6 Cross section of phonolite dike ~500’ north

This phonolite structure to the north appears to be a vertical dike that is deeper than the drilling and is closely associated with the Precambrian contact. The sill branching off it at and dipping toward the Precambrian may be a point of concern. Unfortunately there is no drilling further to the west of this sill to say with certainty where it ends.

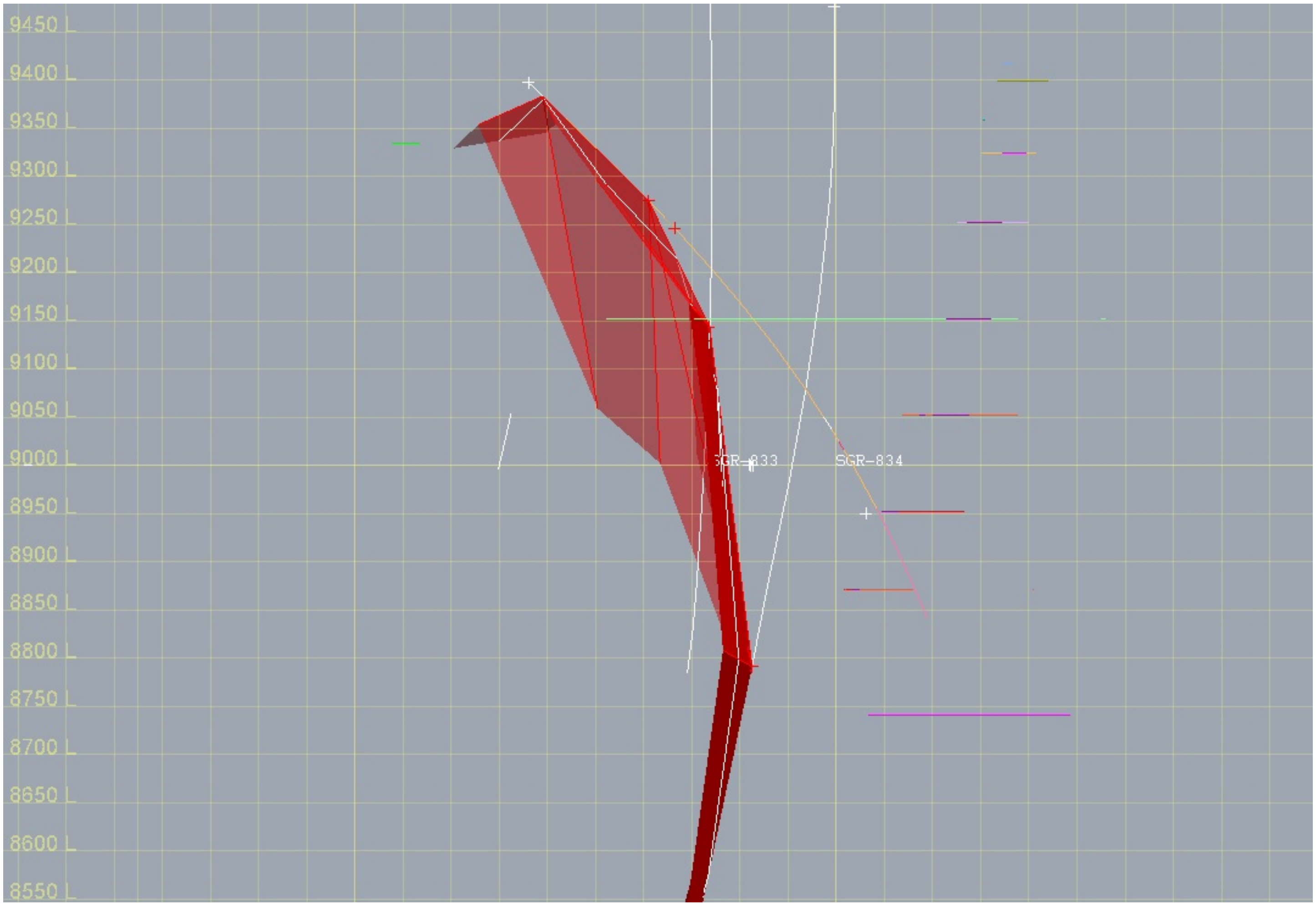

Fig. 7 Underground workings cross section, horizontal lines represent drifts and stopes

There are a number of underground workings near the contact, with a drift that cuts through it, illustrated above in Fig. 7 in the green horizontal line. These represent the known workings and there may be additional undocumented workings in the VLF2 area.

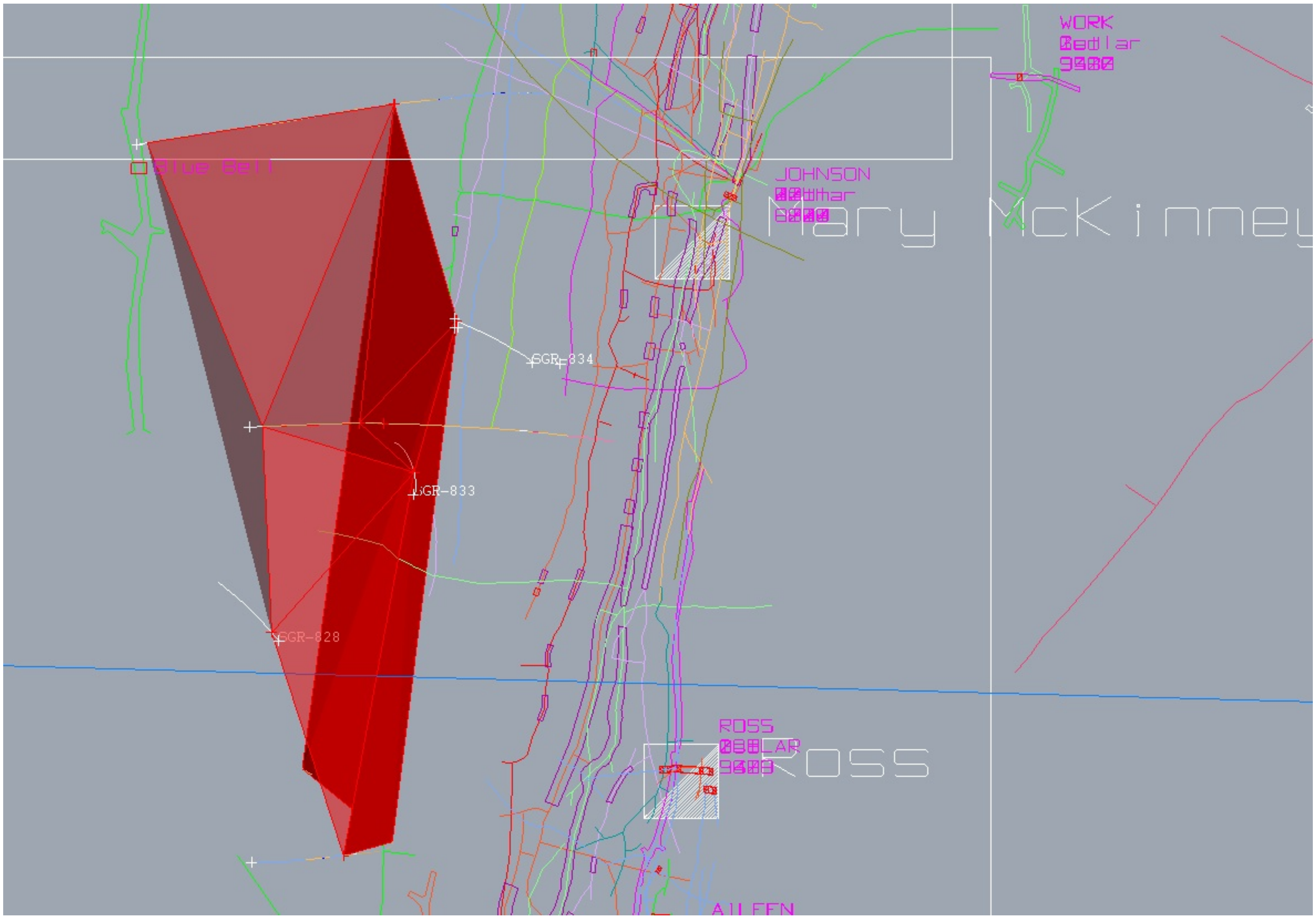

Fig. 8 Plan view of workings

The majority of these workings are inside the diatreme but a few cut through the contact and the deepest being at the 8740' level.

Appendix D

Infiltration Analysis

Client:	Cripple Creek & Victor Mine	Made by:	MEN	Job No.:	74201125N
Project:	Squaw Gulch Valley Leach Facility	Checked by:		Date:	1/30/14
Title:	Closure Drain Infiltration Analysis	Approved by:		Sheet:	1 of 20

amec

OBJECTIVE

- Estimate the annual infiltration flow rate through the closure cover at the Squaw Gulch Valley Leach Facility, Cripple Creek & Victor Gold Mine, Teller Country, Colorado.

ASSUMPTIONS

- Final closure grading is at 2.5H:1V.
- The 2.5H:1V closure grading is representative of all the grading at closure.
- Precipitation and temperature records from 2000 to 2012 will generate satisfactory average rainfall and infiltration results.

GIVEN

- Closure cover is expected to consist of a 6-inch layer of topsoil over crushed ore.
- Annual precipitation and temperature records for the mine from Jan 2000 to Dec 2012.

ANALYSES

- Infiltration analysis was performed with Hydraulic Evaluation of Landfill Performance. This method was selected because the analysis was expected to give the most conservative infiltration flow rate (i.e. the highest infiltration rate)
- Both the topsoil cover and the underlying crushed ore were modeled as vertical percolation layer to add to the conservatism.
- Annual precipitation and temperature data was from 2000 to 2012 was used to estimate the average annual rainfall and infiltration values.
- The following Tables provide the parameters used in the model (values shown were estimated or taken from HELP's menu of default parameters, unless specified with a reference):

Table 1. Evapotranspiration Input Parameters

Item Description	Input Parameter	Reference
Latitude of the Mine Site	38.7473° N	(WMG, 2013)
Evaporative Zone Depth	6 in	
Maximum Leaf Area	2 (Fair stand of grass)	(Schroeder et al.,1994)
Growing Season Start	121 Julian (May 1)	
Growing Season End	273 Julian (Sep 30)	
Average Wind Speed	21.25 mph	(WMG, 2013)
Relative Humidity (First Quarter)	74%	(WMG, 2013)
Relative Humidity (Second Quarter)	80%	(WMG, 2013)
Relative Humidity (Third Quarter)	77%	(WMG, 2013)
Relative Humidity (Fourth Quarter)	75%	(WMG, 2013)

Table 2. Soil and Design Input Parameters

Item Description	Input Parameter	Reference
Impoundment Area	288 ac	(AMEC, 2011)
Initial Moisture Storage	None	
Layer 1 (Topsoil)	Vertical Percolation	
Thickness	6 in	
Soil Texture	22 (Loam)	(Schroeder et al.,1994)
Layer 2 (Crushed Ore)	Vertical Percolation	
Thickness	100 ft	
Porosity	0.36	(AMEC, 2011)
Field Capacity	Gravel	(Schroeder et al.,1994)
Wilting Point	Gravel	(Schroeder et al.,1994)
Saturated Hydraulic Conductivity	10^{-3} cm/sec	(AMEC, 2011)

Table 3. Hydrologic Input Parameters

Item Description	Input Parameter	Reference
Slope	40% (2.5:1)	
Slope Length	1,200 ft	
Curve Number	71	(AMEC, 2011)

RESULTS

The infiltration analysis results are summarized in Table 4, below.

Table 4. Summary of Infiltration Analysis Results

Year	Annual Averages (in)	
	Precipitation	Percolation
2000	19.76	2.66
2001	**25.37**	**4.14**
2002	12.90	1.59
2003	18.96	2.60
2004	20.73	3.79
2005	16.29	2.12
2006	21.00	2.83
2007	24.97	3.10
2008	17.13	1.58
2009	20.07	2.88
2010	14.97	2.41
2011	19.00	2.85
2012	**12.10**	**2.02**
2000 - 2012	**18.71**	**2.66**

From the 13-year infiltration analysis, the average precipitation is estimated to be 18.71 inches with an average percolation through the cover estimated to be 2.66 inches or 39.54 gallons per minute (gpm).

The wettest year over the 13-year record was 25.37 inches of precipitation, while the driest was 12.10 inches of precipitation, with average percolation rates of 4.14 inches (61.59 gpm) and 2.02 inches (30.09 gpm), respectively.

LIST OF ATTACHMENTS

Attachment 1 – HELP Model Output

REFERENCES

AMEC Environment & Infrastructure (AMEC), September 2011. “Cripple Creek & Victor Gold Mining Company, Squaw Gulch Valley Leach Facility Design” Victor, Colorado.

Schroeder, P.R., Dozier, T.S., Zappi, P.A., McEnroe, B.M., Sjostrom, J.W., and Peyton, R.L. (Schroeder et al.),1994. “The Hydrologic Evaluation of Landfill Performance (HELP) Model: Engineering Documentation for Version 3, EPA/600/9-94/xxx”, U.S. Environmental Protection Agency Risk Reduction Engineering Laboratory, Cincinnati, OH.

World Media Group (WMG), 2013. Cripple Creek, Colorado Weather. Retrieved from http://www.usa.com/cripple-creek-co-weather.htm.

ATTACHMENT 1
HELP MODEL OUTPUT

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**                                                                          **
**                                                                          **
**              HYDROLOGIC EVALUATION OF LANDFILL PERFORMANCE               **
**                HELP MODEL VERSION 3.07  (1 NOVEMBER 1997)                **
**                 DEVELOPED BY ENVIRONMENTAL LABORATORY                    **
**                   USAE WATERWAYS EXPERIMENT STATION                      **
**           FOR USEPA RISK REDUCTION ENGINEERING LABORATORY                **
**                                                                          **
**                                                                          **
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PRECIPITATION DATA FILE:     C:\HELP3\DESIGN\HIST.D4
TEMPERATURE DATA FILE:       C:\HELP3\DESIGN\HIST.D7
SOLAR RADIATION DATA FILE:   C:\HELP3\DESIGN\SYN.D13
EVAPOTRANSPIRATION DATA:     C:\HELP3\DESIGN\HIST.D11
SOIL AND DESIGN DATA FILE:   C:\HELP3\DESIGN\DATA10.D10
OUTPUT DATA FILE:            C:\HELP3\DESIGN\HIST.OUT


TIME:  15:11      DATE:  12/20/2013


******************************************************************************

     TITLE:  CC&V SGVLF POST-CLOSURE INFILTRATION ANALYSIS

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     NOTE:  INITIAL MOISTURE CONTENT OF THE LAYERS AND SNOW WATER WERE
              COMPUTED AS NEARLY STEADY-STATE VALUES BY THE PROGRAM.


                                 LAYER  1
                                 --------

                      TYPE 1 - VERTICAL PERCOLATION LAYER
                          MATERIAL TEXTURE NUMBER  22
          THICKNESS                   =      6.00   INCHES
          POROSITY                    =      0.4190 VOL/VOL
          FIELD CAPACITY              =      0.3070 VOL/VOL
          WILTING POINT               =      0.1800 VOL/VOL
          INITIAL SOIL WATER CONTENT  =      0.2611 VOL/VOL
          EFFECTIVE SAT. HYD. COND.   =   0.189999992000E-04 CM/SEC
        NOTE:  SATURATED HYDRAULIC CONDUCTIVITY IS MULTIPLIED BY  3.00
                FOR ROOT CHANNELS IN TOP HALF OF EVAPORATIVE ZONE.


                                 LAYER  2
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HIST.OUT

TYPE 1 - VERTICAL PERCOLATION LAYER
MATERIAL TEXTURE NUMBER 0

THICKNESS	=	1200.00	INCHES
POROSITY	=	0.3600	VOL/VOL
FIELD CAPACITY	=	0.0320	VOL/VOL
WILTING POINT	=	0.0130	VOL/VOL
INITIAL SOIL WATER CONTENT	=	0.0331	VOL/VOL
EFFECTIVE SAT. HYD. COND.	=	0.100000005000E-02	CM/SEC

GENERAL DESIGN AND EVAPORATIVE ZONE DATA

NOTE: SCS RUNOFF CURVE NUMBER WAS COMPUTED FROM A USER-SPECIFIED CURVE NUMBER OF 71.0, A SURFACE SLOPE OF 40.% AND A SLOPE LENGTH OF 1200. FEET.

SCS RUNOFF CURVE NUMBER	=	71.50	
FRACTION OF AREA ALLOWING RUNOFF	=	100.0	PERCENT
AREA PROJECTED ON HORIZONTAL PLANE	=	288.000	ACRES
EVAPORATIVE ZONE DEPTH	=	6.0	INCHES
INITIAL WATER IN EVAPORATIVE ZONE	=	1.567	INCHES
UPPER LIMIT OF EVAPORATIVE STORAGE	=	2.514	INCHES
LOWER LIMIT OF EVAPORATIVE STORAGE	=	1.080	INCHES
INITIAL SNOW WATER	=	0.000	INCHES
INITIAL WATER IN LAYER MATERIALS	=	41.233	INCHES
TOTAL INITIAL WATER	=	41.233	INCHES
TOTAL SUBSURFACE INFLOW	=	0.00	INCHES/YEAR

EVAPOTRANSPIRATION AND WEATHER DATA

NOTE: EVAPOTRANSPIRATION DATA WAS OBTAINED FROM
CRIPPLE CREEK COLORADO

STATION LATITUDE	=	38.75	DEGREES
MAXIMUM LEAF AREA INDEX	=	2.00	
START OF GROWING SEASON (JULIAN DATE)	=	121	
END OF GROWING SEASON (JULIAN DATE)	=	273	
EVAPORATIVE ZONE DEPTH	=	6.0	INCHES
AVERAGE ANNUAL WIND SPEED	=	21.25	MPH
AVERAGE 1ST QUARTER RELATIVE HUMIDITY	=	74.00	%
AVERAGE 2ND QUARTER RELATIVE HUMIDITY	=	80.00	%
AVERAGE 3RD QUARTER RELATIVE HUMIDITY	=	77.00	%
AVERAGE 4TH QUARTER RELATIVE HUMIDITY	=	75.00	%

NOTE: PRECIPITATION DATA FOR CC&V MINE COLORADO
WAS ENTERED BY THE USER.

NOTE: TEMPERATURE DATA FOR CC&V MINE COLORADO
WAS ENTERED BY THE USER.

HIST.OUT

NOTE: SOLAR RADIATION DATA WAS SYNTHETICALLY GENERATED USING
COEFFICIENTS FOR COLORADO SPRINGS COLORADO
AND STATION LATITUDE = 38.49 DEGREES

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MONTHLY TOTALS (IN INCHES) FOR YEAR 2000

	JAN/JUL	FEB/AUG	MAR/SEP	APR/OCT	MAY/NOV	JUN/DEC
PRECIPITATION	0.95	0.79	2.74	1.22	2.03	2.26
	2.57	4.83	0.57	0.93	0.40	0.47
RUNOFF	0.008	0.000	0.000	0.000	0.000	0.000
	0.000	0.000	0.000	0.000	0.000	0.000
EVAPOTRANSPIRATION	0.638	0.981	2.154	1.280	1.343	1.424
	2.591	4.587	0.515	0.515	0.565	0.497
PERCOLATION/LEAKAGE THROUGH LAYER 2	0.0401	0.0260	0.0451	0.2595	0.6363	0.3021
	0.7688	0.2391	0.1268	0.0940	0.0627	0.0554

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ANNUAL TOTALS FOR YEAR 2000

	INCHES	CU. FEET	PERCENT
PRECIPITATION	19.76	20657900.000	100.00
RUNOFF	0.008	7885.578	0.04
EVAPOTRANSPIRATION	17.090	17866406.000	86.49
PERC./LEAKAGE THROUGH LAYER 2	2.655766	2776444.500	13.44
CHANGE IN WATER STORAGE	0.007	7166.503	0.03
SOIL WATER AT START OF YEAR	41.233	43107048.000	
SOIL WATER AT END OF YEAR	41.240	43114216.000	
SNOW WATER AT START OF YEAR	0.000	0.000	0.00
SNOW WATER AT END OF YEAR	0.000	0.000	0.00
ANNUAL WATER BUDGET BALANCE	0.0000	-2.243	0.00

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MONTHLY TOTALS (IN INCHES) FOR YEAR 2001

	JAN/JUL	FEB/AUG	MAR/SEP	APR/OCT	MAY/NOV	JUN/DEC
PRECIPITATION	0.58	0.80	1.85	1.69	3.01	1.58
	6.62	7.05	0.94	0.07	0.98	0.20
RUNOFF	0.000	0.000	0.000	0.000	0.000	0.000
	0.018	0.000	0.000	0.000	0.000	0.000
EVAPOTRANSPIRATION	0.473	0.764	1.603	1.904	2.450	1.724
	4.081	5.595	1.622	0.225	0.435	0.389
PERCOLATION/LEAKAGE THROUGH	0.0529	0.0429	0.0313	0.0263	0.1496	0.3580
LAYER 2	1.5995	1.0995	0.3478	0.2209	0.1244	0.0889

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ANNUAL TOTALS FOR YEAR 2001

	INCHES	CU. FEET	PERCENT
PRECIPITATION	25.37	26522820.000	100.00
RUNOFF	0.018	18483.354	0.07
EVAPOTRANSPIRATION	21.264	22230502.000	83.82
PERC./LEAKAGE THROUGH LAYER 2	4.142103	4330320.500	16.33
CHANGE IN WATER STORAGE	-0.054	-56498.523	-0.21
SOIL WATER AT START OF YEAR	41.240	43114216.000	
SOIL WATER AT END OF YEAR	41.186	43057716.000	
SNOW WATER AT START OF YEAR	0.000	0.000	0.00
SNOW WATER AT END OF YEAR	0.000	0.000	0.00
ANNUAL WATER BUDGET BALANCE	0.0000	12.961	0.00

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MONTHLY TOTALS (IN INCHES) FOR YEAR 2002

	JAN/JUL	FEB/AUG	MAR/SEP	APR/OCT	MAY/NOV	JUN/DEC
PRECIPITATION	0.48	0.80	0.74	0.23	1.50	0.73
	3.76	1.20	1.48	1.65	0.28	0.05
RUNOFF	0.000	0.000	0.000	0.000	0.000	0.000
	0.000	0.000	0.000	0.000	0.000	0.000
EVAPOTRANSPIRATION	0.418	0.428	0.807	0.266	1.538	0.973
	2.785	1.163	1.413	0.566	1.092	0.050
PERCOLATION/LEAKAGE THROUGH LAYER 2	0.0672	0.0487	0.0505	0.0181	0.0226	0.0600
	0.1622	0.5497	0.1904	0.1450	0.1229	0.1515

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ANNUAL TOTALS FOR YEAR 2002

	INCHES	CU. FEET	PERCENT
PRECIPITATION	12.90	13486180.000	100.00
RUNOFF	0.000	0.000	0.00
EVAPOTRANSPIRATION	11.498	12020231.000	89.13
PERC./LEAKAGE THROUGH LAYER 2	1.588730	1660921.750	12.32
CHANGE IN WATER STORAGE	-0.187	-194975.141	-1.45
SOIL WATER AT START OF YEAR	41.186	43057716.000	
SOIL WATER AT END OF YEAR	41.000	42862740.000	
SNOW WATER AT START OF YEAR	0.000	0.000	0.00
SNOW WATER AT END OF YEAR	0.000	0.000	0.00
ANNUAL WATER BUDGET BALANCE	0.0000	1.994	0.00

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MONTHLY TOTALS (IN INCHES) FOR YEAR 2003

	JAN/JUL	FEB/AUG	MAR/SEP	APR/OCT	MAY/NOV	JUN/DEC

PRECIPITATION	0.20	1.49	2.43	1.01	1.83	3.18
	2.71	3.60	1.25	0.64	0.36	0.26
RUNOFF	0.000	0.000	0.021	0.000	0.000	0.000
	0.000	0.000	0.000	0.000	0.000	0.000
EVAPOTRANSPIRATION	0.096	0.973	1.672	0.542	1.588	3.003
	2.608	3.246	1.609	0.623	0.319	0.319
PERCOLATION/LEAKAGE THROUGH LAYER 2	0.1093	0.0735	0.2958	0.5437	0.1969	0.2760
	0.5126	0.2062	0.1508	0.1054	0.0738	0.0600

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ANNUAL TOTALS FOR YEAR 2003

	INCHES	CU. FEET	PERCENT
PRECIPITATION	18.96	19821548.000	100.00
RUNOFF	0.021	22402.652	0.11
EVAPOTRANSPIRATION	16.597	17350910.000	87.54
PERC./LEAKAGE THROUGH LAYER 2	2.604080	2722409.750	13.73
CHANGE IN WATER STORAGE	-0.262	-274181.531	-1.38
SOIL WATER AT START OF YEAR	41.000	42862740.000	
SOIL WATER AT END OF YEAR	40.737	42588560.000	
SNOW WATER AT START OF YEAR	0.000	0.000	0.00
SNOW WATER AT END OF YEAR	0.000	0.000	0.00
ANNUAL WATER BUDGET BALANCE	0.0000	5.982	0.00

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MONTHLY TOTALS (IN INCHES) FOR YEAR 2004

	JAN/JUL	FEB/AUG	MAR/SEP	APR/OCT	MAY/NOV	JUN/DEC
PRECIPITATION	0.94	0.74	0.87	3.41	0.09	3.21
	5.43	3.67	0.95	0.68	0.61	0.13
RUNOFF	0.000	0.000	0.161	0.000	0.000	0.000
	0.000	0.000	0.000	0.000	0.000	0.000

EVAPOTRANSPIRATION	0.585	0.602	0.424	2.555	0.402	1.133
	4.976	3.590	0.849	0.897	0.362	0.385
PERCOLATION/LEAKAGE THROUGH LAYER 2	0.0486	0.0387	0.0240	0.4601	0.3527	0.1651
	1.6063	0.6081	0.2071	0.1254	0.0848	0.0665

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ANNUAL TOTALS FOR YEAR 2004

	INCHES	CU. FEET	PERCENT
PRECIPITATION	20.73	21671982.000	100.00
RUNOFF	0.161	167826.641	0.77
EVAPOTRANSPIRATION	16.759	17520022.000	80.84
PERC./LEAKAGE THROUGH LAYER 2	3.787367	3959464.750	18.27
CHANGE IN WATER STORAGE	0.024	24658.033	0.11
SOIL WATER AT START OF YEAR	40.737	42588560.000	
SOIL WATER AT END OF YEAR	40.761	42613216.000	
SNOW WATER AT START OF YEAR	0.000	0.000	0.00
SNOW WATER AT END OF YEAR	0.000	0.000	0.00
ANNUAL WATER BUDGET BALANCE	0.0000	11.964	0.00

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MONTHLY TOTALS (IN INCHES) FOR YEAR 2005

	JAN/JUL	FEB/AUG	MAR/SEP	APR/OCT	MAY/NOV	JUN/DEC
PRECIPITATION	0.80	0.73	1.19	1.52	0.71	1.53
	2.29	4.50	1.48	0.41	0.58	0.55
RUNOFF	0.000	0.000	0.000	0.000	0.000	0.000
	0.000	0.000	0.000	0.000	0.000	0.000
EVAPOTRANSPIRATION	0.282	0.679	0.807	0.978	0.977	1.578
	2.181	3.632	0.973	0.875	0.374	0.420
PERCOLATION/LEAKAGE THROUGH LAYER 2	0.0532	0.0424	0.0412	0.0311	0.3927	0.2200
	0.1584	0.4908	0.3426	0.1668	0.1046	0.0785

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ANNUAL TOTALS FOR YEAR 2005

	INCHES	CU. FEET	PERCENT
PRECIPITATION	16.29	17030220.000	100.00
RUNOFF	0.000	0.000	0.00
EVAPOTRANSPIRATION	13.756	14381120.000	84.44
PERC./LEAKAGE THROUGH LAYER 2	2.122315	2218752.750	13.03
CHANGE IN WATER STORAGE	0.412	430349.094	2.53
SOIL WATER AT START OF YEAR	40.761	42613216.000	
SOIL WATER AT END OF YEAR	41.173	43043568.000	
SNOW WATER AT START OF YEAR	0.000	0.000	0.00
SNOW WATER AT END OF YEAR	0.000	0.000	0.00
ANNUAL WATER BUDGET BALANCE	0.0000	-1.246	0.00

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MONTHLY TOTALS (IN INCHES) FOR YEAR 2006

	JAN/JUL	FEB/AUG	MAR/SEP	APR/OCT	MAY/NOV	JUN/DEC
PRECIPITATION	0.46	0.33	1.57	1.19	1.16	1.17
	5.40	5.11	1.35	2.21	0.38	0.67
RUNOFF	0.000	0.000	0.000	0.000	0.000	0.000
	0.000	0.000	0.000	0.000	0.000	0.000
EVAPOTRANSPIRATION	0.544	0.428	0.961	1.107	1.323	0.883
	3.868	4.880	1.249	1.843	0.666	0.142
PERCOLATION/LEAKAGE THROUGH LAYER 2	0.0608	0.0449	0.0453	0.0186	0.0571	0.1648
	1.4363	0.3267	0.2562	0.1503	0.1461	0.1187

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ANNUAL TOTALS FOR YEAR 2006

	INCHES	CU. FEET	PERCENT
PRECIPITATION	21.00	21954246.000	100.00
RUNOFF	0.000	0.000	0.00
EVAPOTRANSPIRATION	17.893	18705818.000	85.20
PERC./LEAKAGE THROUGH LAYER 2	2.825899	2954307.500	13.46
CHANGE IN WATER STORAGE	0.281	294115.656	1.34
SOIL WATER AT START OF YEAR	41.173	43043568.000	
SOIL WATER AT END OF YEAR	40.992	42854880.000	
SNOW WATER AT START OF YEAR	0.000	0.000	0.00
SNOW WATER AT END OF YEAR	0.462	482801.656	2.20
ANNUAL WATER BUDGET BALANCE	0.0000	4.487	0.00

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MONTHLY TOTALS (IN INCHES) FOR YEAR 2007

	JAN/JUL	FEB/AUG	MAR/SEP	APR/OCT	MAY/NOV	JUN/DEC
PRECIPITATION	1.94	0.90	2.33	2.08	4.06	1.58
	4.01	3.91	1.54	0.46	0.23	1.93
RUNOFF	0.051	0.006	0.000	0.000	0.000	0.000
	0.000	0.000	0.000	0.000	0.000	0.001
EVAPOTRANSPIRATION	0.966	1.109	1.633	2.454	3.563	1.381
	3.297	3.879	1.557	0.273	0.401	1.097
PERCOLATION/LEAKAGE THROUGH LAYER 2	0.1079	0.3926	0.2472	0.2816	0.4693	0.3152
	0.1543	0.3639	0.3977	0.1817	0.1091	0.0805

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ANNUAL TOTALS FOR YEAR 2007

	INCHES	CU. FEET	PERCENT
PRECIPITATION	24.97	26104648.000	100.00

RUNOFF	0.058	60258.285	0.23
EVAPOTRANSPIRATION	21.612	22593684.000	86.55
PERC./LEAKAGE THROUGH LAYER 2	3.101078	3241991.250	12.42
CHANGE IN WATER STORAGE	0.200	208711.734	0.80
SOIL WATER AT START OF YEAR	40.992	42854880.000	
SOIL WATER AT END OF YEAR	41.592	43481912.000	
SNOW WATER AT START OF YEAR	0.462	482801.656	1.85
SNOW WATER AT END OF YEAR	0.062	64482.301	0.25
ANNUAL WATER BUDGET BALANCE	0.0000	2.991	0.00

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MONTHLY TOTALS (IN INCHES) FOR YEAR 2008

	JAN/JUL	FEB/AUG	MAR/SEP	APR/OCT	MAY/NOV	JUN/DEC
PRECIPITATION	0.89	0.64	1.18	1.04	0.80	0.76
	3.04	5.24	1.24	0.37	0.55	1.38
RUNOFF	0.000	0.000	0.000	0.000	0.000	0.000
	0.000	0.000	0.000	0.000	0.000	0.000
EVAPOTRANSPIRATION	0.973	0.563	1.405	1.013	0.683	1.014
	3.089	4.239	1.052	0.370	0.290	0.551
PERCOLATION/LEAKAGE THROUGH	0.0550	0.0518	0.0409	0.0501	0.1028	0.0868
LAYER 2	0.0703	0.2129	0.4078	0.2702	0.1464	0.0896

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ANNUAL TOTALS FOR YEAR 2008

	INCHES	CU. FEET	PERCENT
PRECIPITATION	17.13	17908386.000	100.00
RUNOFF	0.000	0.000	0.00
EVAPOTRANSPIRATION	15.242	15934995.000	88.98
PERC./LEAKAGE THROUGH LAYER 2	1.584508	1656507.750	9.25

CHANGE IN WATER STORAGE	0.303	316885.719	1.77
SOIL WATER AT START OF YEAR	41.592	43481912.000	
SOIL WATER AT END OF YEAR	41.957	43863280.000	
SNOW WATER AT START OF YEAR	0.062	64482.301	0.36
SNOW WATER AT END OF YEAR	0.000	0.000	0.00
ANNUAL WATER BUDGET BALANCE	0.0000	-1.994	0.00

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MONTHLY TOTALS (IN INCHES) FOR YEAR 2009

	JAN/JUL	FEB/AUG	MAR/SEP	APR/OCT	MAY/NOV	JUN/DEC
PRECIPITATION	0.46	0.27	1.11	2.49	2.68	2.93
	3.56	1.95	2.33	1.33	0.56	0.40
RUNOFF	0.000	0.000	0.000	0.000	0.000	0.000
	0.000	0.000	0.000	0.000	0.000	0.000
EVAPOTRANSPIRATION	0.584	0.444	0.815	2.333	1.650	2.137
	3.354	2.142	2.707	0.604	0.638	0.449
PERCOLATION/LEAKAGE THROUGH LAYER 2	0.1800	0.1233	0.0765	0.1087	0.4571	1.2540
	0.2802	0.1439	0.0940	0.0722	0.0555	0.0315

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ANNUAL TOTALS FOR YEAR 2009

	INCHES	CU. FEET	PERCENT
PRECIPITATION	20.07	20981988.000	100.00
RUNOFF	0.000	0.000	0.00
EVAPOTRANSPIRATION	17.856	18667114.000	88.97
PERC./LEAKAGE THROUGH LAYER 2	2.876721	3007439.500	14.33
CHANGE IN WATER STORAGE	-0.662	-692574.500	-3.30
SOIL WATER AT START OF YEAR	41.957	43863280.000	
SOIL WATER AT END OF YEAR	41.294	43170704.000	

SNOW WATER AT START OF YEAR	0.000	0.000	0.00
SNOW WATER AT END OF YEAR	0.000	0.000	0.00
ANNUAL WATER BUDGET BALANCE	0.0000	8.973	0.00

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MONTHLY TOTALS (IN INCHES) FOR YEAR 2010

	JAN/JUL	FEB/AUG	MAR/SEP	APR/OCT	MAY/NOV	JUN/DEC
PRECIPITATION	0.21	0.56	1.60	1.88	0.77	0.76
	3.94	4.00	0.35	0.54	0.17	0.19
RUNOFF	0.000	0.000	0.000	0.000	0.000	0.000
	0.077	0.000	0.000	0.000	0.000	0.000
EVAPOTRANSPIRATION	0.189	0.527	1.693	1.215	0.898	0.772
	2.574	3.877	0.213	0.481	0.327	0.105
PERCOLATION/LEAKAGE THROUGH LAYER 2	0.0541	0.0484	0.0421	0.0370	0.2773	0.2035
	0.1267	1.0186	0.2848	0.1497	0.0953	0.0728

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ANNUAL TOTALS FOR YEAR 2010

	INCHES	CU. FEET	PERCENT
PRECIPITATION	14.97	15650237.000	100.00
RUNOFF	0.077	80946.117	0.52
EVAPOTRANSPIRATION	12.871	13455346.000	85.98
PERC./LEAKAGE THROUGH LAYER 2	2.410360	2519887.000	16.10
CHANGE IN WATER STORAGE	-0.388	-405943.781	-2.59
SOIL WATER AT START OF YEAR	41.294	43170704.000	
SOIL WATER AT END OF YEAR	40.822	42677088.000	
SNOW WATER AT START OF YEAR	0.000	0.000	0.00
SNOW WATER AT END OF YEAR	0.084	87671.500	0.56
ANNUAL WATER BUDGET BALANCE	0.0000	1.496	0.00

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MONTHLY TOTALS (IN INCHES) FOR YEAR 2011

	JAN/JUL	FEB/AUG	MAR/SEP	APR/OCT	MAY/NOV	JUN/DEC
PRECIPITATION	0.41 3.65	0.92 3.84	0.44 1.98	1.92 1.95	2.47 0.59	0.18 0.65
RUNOFF	0.000 0.000	0.000 0.000	0.000 0.000	0.000 0.000	0.000 0.000	0.000 0.000
EVAPOTRANSPIRATION	0.457 2.853	0.461 3.678	0.400 1.754	1.023 1.311	2.422 0.973	0.134 0.527
PERCOLATION/LEAKAGE THROUGH LAYER 2	0.0571 0.1437	0.0428 0.4382	0.0397 0.3737	0.0388 0.3373	0.6631 0.2409	0.3292 0.1416

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ANNUAL TOTALS FOR YEAR 2011

	INCHES	CU. FEET	PERCENT
PRECIPITATION	19.00	19863360.000	100.00
RUNOFF	0.000	0.000	0.00
EVAPOTRANSPIRATION	15.992	16718937.000	84.17
PERC./LEAKAGE THROUGH LAYER 2	2.845989	2975311.000	14.98
CHANGE IN WATER STORAGE	0.162	169106.250	0.85
SOIL WATER AT START OF YEAR	40.822	42677088.000	
SOIL WATER AT END OF YEAR	41.068	42933868.000	
SNOW WATER AT START OF YEAR	0.084	87671.500	0.44
SNOW WATER AT END OF YEAR	0.000	0.000	0.00
ANNUAL WATER BUDGET BALANCE	0.0000	5.484	0.00

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MONTHLY TOTALS (IN INCHES) FOR YEAR 2012

	JAN/JUL	FEB/AUG	MAR/SEP	APR/OCT	MAY/NOV	JUN/DEC
PRECIPITATION	0.23	0.18	0.08	1.26	1.13	0.57
	4.37	1.34	1.88	0.38	0.18	0.50
RUNOFF	0.000	0.000	0.000	0.000	0.000	0.000
	0.000	0.000	0.028	0.000	0.000	0.000
EVAPOTRANSPIRATION	0.353	0.156	0.104	0.448	0.806	0.958
	3.294	1.860	1.059	0.482	0.222	0.440
PERCOLATION/LEAKAGE THROUGH LAYER 2	0.0969	0.0666	0.0567	0.0441	0.0409	0.2047
	0.3384	0.2909	0.2758	0.3405	0.1612	0.1071

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ANNUAL TOTALS FOR YEAR 2012

	INCHES	CU. FEET	PERCENT
PRECIPITATION	12.10	12649828.000	100.00
RUNOFF	0.028	29711.566	0.23
EVAPOTRANSPIRATION	10.182	10645080.000	84.15
PERC./LEAKAGE THROUGH LAYER 2	2.023849	2115812.750	16.73
CHANGE IN WATER STORAGE	-0.135	-140777.703	-1.11
SOIL WATER AT START OF YEAR	41.068	42933868.000	
SOIL WATER AT END OF YEAR	40.933	42793088.000	
SNOW WATER AT START OF YEAR	0.000	0.000	0.00
SNOW WATER AT END OF YEAR	0.000	0.000	0.00
ANNUAL WATER BUDGET BALANCE	0.0000	1.745	0.00

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AVERAGE MONTHLY VALUES IN INCHES FOR YEARS 2000 THROUGH 2012

HIST.OUT

	JAN/JUL	FEB/AUG	MAR/SEP	APR/OCT	MAY/NOV	JUN/DEC
PRECIPITATION						
TOTALS	0.66 3.95	0.70 3.86	1.39 1.33	1.61 0.89	1.71 0.45	1.57 0.57
STD. DEVIATIONS	0.47 1.26	0.34 1.64	0.79 0.55	0.79 0.68	1.11 0.23	1.03 0.53
RUNOFF						
TOTALS	0.004 0.007	0.000 0.000	0.014 0.002	0.000 0.000	0.000 0.000	0.000 0.000
STD. DEVIATIONS	0.014 0.022	0.002 0.000	0.044 0.008	0.000 0.000	0.000 0.000	0.000 0.000
EVAPOTRANSPIRATION						
TOTALS	0.504 3.196	0.624 3.567	1.113 1.275	1.317 0.697	1.511 0.512	1.316 0.413
STD. DEVIATIONS	0.260 0.757	0.270 1.237	0.621 0.625	0.765 0.450	0.870 0.267	0.708 0.261
PERCOLATION/LEAKAGE THROUGH LAYER 2						
TOTALS	0.0756 0.5660	0.0802 0.4607	0.0797 0.2658	0.1475 0.1815	0.2937 0.1175	0.3030 0.0879
STD. DEVIATIONS	0.0388 0.5917	0.0969 0.3003	0.0866 0.1055	0.1809 0.0871	0.2208 0.0495	0.2999 0.0343

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AVERAGE ANNUAL TOTALS & (STD. DEVIATIONS) FOR YEARS 2000 THROUGH 2012

	INCHES		CU. FEET	PERCENT
PRECIPITATION	18.71	(4.039)	19561796.0	100.00
RUNOFF	0.029	(0.0467)	29808.78	0.152
EVAPOTRANSPIRATION	16.047	(3.3892)	16776167.00	85.760
PERCOLATION/LEAKAGE THROUGH LAYER 2	2.65914	(0.75470)	2779966.750	14.21120
CHANGE IN WATER STORAGE	-0.023	(0.3047)	-24150.63	-0.123

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PEAK DAILY VALUES FOR YEARS 2000 THROUGH 2012

	(INCHES)	(CU. FT.)
PRECIPITATION	1.78	1860883.120
RUNOFF	0.151	158216.0620
PERCOLATION/LEAKAGE THROUGH LAYER 2	0.513518	536851.81200
SNOW WATER	0.98	1021232.0600
MAXIMUM VEG. SOIL WATER (VOL/VOL)		0.4190
MINIMUM VEG. SOIL WATER (VOL/VOL)		0.1800

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FINAL WATER STORAGE AT END OF YEAR 2012

LAYER	(INCHES)	(VOL/VOL)
1	1.1398	0.1900
2	39.7933	0.0332
SNOW WATER	0.000	

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